[MS-IPAMM2]:
IP Address Management (IPAM) Management Protocol Version 2

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1 Introduction

This document specifies the IP Address Management (IPAM) Management Protocol. This protocol is used to remotely retrieve and manage the data in the **IPAM data store**. The IPAM data store consists of the data pertaining to the address space management, which includes the configuration data available with the DHCP and DNS server instances in the network.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are defined in [MS-GLOS]:

Active Directory domain
BLOB
domain
domain controller (DC)
forest
group object
GUID
host
Network Policy Server (NPS)
security account manager (SAM) built-in database
server role
SOAP action
SOAP fault
SOAP message
URI
URL
WSDL port type

The following terms are specific to this document:

access scope: A logical entity that determines whether a user would have access to an IPAM object. One or more IPAM objects can be associated with an access scope, but a given IPAM object can be associated with only one access scope. Access scopes follow a hierarchical tree structure.

address category: The categorization of an IP address or an address space based on the kind of communication that it enables. An address (or an address space) can be public when it is globally unique and can be used for communication over the Internet. [IANA-IPv4] specifies the address ranges that belong to this category. An address (or an address space) can be a private address, in which case it is unique within an enterprise or an autonomous network and cannot be used to communicate with the public network directly. [RFC1918] specifies the address ranges that belong to this category. For IPv6, the equivalent term for the public address category is the global unicast address space as specified by [RFC4291].

address space management: The activities that manage the IP address space of a network. Management activities include, but are not limited to, reserving and allocating addresses and

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address ranges to various hosts or portions of the network, or network planning based on current address space utilization.

audit log: A record of activities performed by the Dynamic Host Configuration Protocol (DHCP) server. The name of the audit log file is based on the current day of the week. For example, on Monday the name of the audit log file is DhcpSrvLog-Mon.

audit purge: The maintenance activity of purging the audit data such as DHCP configuration change events, IPAM configuration change events, and IP address tracking events.

built-in custom field: A custom field that is predefined in the IPAM data store.

built-in custom field value: a custom field value that is predefined in the IPAM data store.

built-in logical group: A logical group that is predefined in the IPAM data store.

configuration audit: This refers to the activity of a system to log any configuration change initiated by the users on an entity in a secure data store, to create a record of the configuration change activity.

configuration audit event: A specific event in the configuration change data store, containing information regarding a particular configuration change.

custom field: An extensible name-value property that can be tagged as additional metadata with IP address ranges, IP addresses, and servers in IPAM.

custom field value: Refers to a value of the custom field.

DHCP configuration audit: The configuration audit generated by the DHCP server to track DHCP configuration change events. Conditions can be specified based on a set of fields that are present in the DHCP client request. The settings are the network configuration parameters (IP address, options, lease duration) that are provided to clients in the DHCP server response.

DHCP failover: A high availability mechanism supported by Windows Server 2012. A failover relationship can be established between two DHCP servers, which can then provide a highly available DHCP service.

DHCP filter: A filter that allows a DHCP administrator to enable link layer filtering of clients requesting an IP address.

DHCP lease: The period for which a network address is allocated by the DHCP Server for a client. Once the lease expires, the DHCP client contacts the DHCP server to obtain a new network address.

DHCP policy: A policy that allows a DHCP administrator to assign IP addresses and options in a more granular fashion. Consists of policy conditions and policy settings.

DHCP server failover modes: A DHCP failover relationship can be configured to use either of the following two DHCP Failover modes, load balance or hot standby.

DHCP superscope: An administrative feature provided in Windows Server 2003 and subsequent server operating systems, in which multiple scopes can be grouped together and managed as a single administrative entity.

DHCP users: A security group whose members have read-only access to the DHCP server. The users of this group can read the configuration, settings, and the DHCP clients' lease record from the DHCP server but cannot modify it.

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DHCPv6 stateless client inventory: An inventory of stateless clients being serviced by the DHCPv6 server, maintained in the persistent store.

DUID: A DHCP unique identifier that is used to identify DHCPv6 clients and servers, as specified in [RFC3315] section 9.

event: A discrete piece of historical information that might be of interest to administrators of a computer system. An example of an event would be a particular user logging on to the computer.

event descriptor: A structure indicating the kind of event. For example, a user logging on to the computer could be one kind of event, and a user logging off would be another, and these events could be indicated by using distinct event descriptors.

event log: A collection of records, each of which corresponds to an event.

EventID: An integer indicating the type of event. For example, a user logging on to the computer could be one type of event and a user logging off would be another type; and these events could be indicated by using distinct EventID values.

exclusion range: The range of IP addresses in scope that are not given out to DHCP clients.

forward lookup DNS zone: A zone consisting of pointer (PTR) resource records that provide a mapping of DNS host names to their corresponding IP addresses.

initiating operation: A WSDL operation that is the first operation sent by the client.

IP address audit: The information that provides the various activities pertaining to the usage of an IP address on a device or a host.

IP address block: A container defined using the network number as defined in [RFC1519], and prefix length that can be used to organize the overall IP address space in any network. An IP address block can have other IP address blocks as child blocks to define smaller containers that can be used to organize a smaller portion of the same address space.

IP address block utilization: The utilization information calculated as the aggregate size of the assigned address space and utilized address space belonging to an IP address block.

IP address range: A range of contiguous IP address that is part of an IP address space and is assigned for use in various elements of the network in the form of assigned address space. An IP address range is typically configured as a DHCP scope on a DHCP server or as a static address pool for static address assignment to devices and hosts.

IP address range utilization: The size of the utilized address space of an IP address range.

IP address space: The set of all possible Internet addresses or any contiguous subset of Internet addresses.

IP subnet: A logical subdivision of an IP network.

IPAM Administrators: Users who have the privileges to view all IPAM data and perform all IPAM tasks.

IPAM ASM Administrators: Users who are in the IPAM Users IPAM security group and have the privileges to perform the add and modify address space management operations. Such users are Address Space Management (ASM) Administrators.

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IPAM configuration audit: The configuration audit generated for the IPAM-specific configuration changes performed on the IPAM server.

IPAM data store: The database used by the IPAM server to store data relevant for address space managment, including information from DHCP and DNS server instances.

IPAM IP Audit Administrators: Users who are in the IPAM Users IPAM security group and have the privileges to view IP address audit information.

IPAM MSM Administrators: Users who are in the IPAM Users IPAM security group and have the privileges to manage DHCP and DNS server instance-specific information. Such users are Multi Server Management (MSM) Administrators.

IPAM security groups: The security principals, as groups of users segregated by role. The IPAM server uses these groups to provide role-based access control over various features of IPAM. The IPAM security groups include IPAM Administrators, IPAM ASM Administrators, IPAM MSM Administrators, IPAM IP Audit Administrators, and IPAM Users.

IPAM server: The machine implementing the IPAM management protocol server.

IPAM task: Any of a set of tasks on the IPAM server which retrieve data from managed servers and IPAM servers to update IPAM views for tracking, monitoring, and managing those servers. These tasks include server discovery for automatic discovery of domain controllers, DHCP servers, and DNS servers; server configuration for collecting configuration information from DHCP and DNS servers; address utilization for collecting address utilization data from DHCP servers; event collection for collecting configuration audit events from DHCP and IPAM servers, user logon events from domain controllers and Network Policy Server (NPS) servers, and IP address audit information from DHCP servers; server availability for collecting service status information from DHCP and DNS servers; service monitoring for collecting DNS zone status events from DNS servers; and address expiry for calculating the expiration state of the addresses in the IPAM data store and logging expiration events.

IPAM Users: Users who have the privileges to view all information in IPAM data store except the IP address audit information.

lease record: A lease record is an entry in the DHCP server database that defines the IP address that is leased out to a client. The record includes details about the IP address bound to the client, and also contains a collection of other configuration parameters.

logical group: A user-defined hierarchical classification for objects such as IP addresses, IP address ranges, and active servers in the IPAM data store. It is a collection of multivalued custom fields that form the various levels of the hierarchy. Each level of the hierarchy contains the possible values of the custom field at that level.

logical group hierarchy: This specifies a hierarchy of custom field values generated from a logical group definition. The logical group defines the custom field used to generate a particular level in the hierarchy. The values of the custom field forms the nodes at that particular level.

logical group node: This is a specific node in the logical group hierarchy. The set of custom field values in the logical group hierarchy from the node to the root of the hierarchy will form a criteria. The data that have custom fields associated with them, such as addresses, address ranges and servers, can be queried for a logical group node. The data that contains all of the custom field values that form the hierarchy for the logical group node are considered to meet the criteria for the logical group node.

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logical network: A built-in custom field in IPAM that is used to specify the logical (physical) network information.

management server: The server endpoint of the IP Address Management (IPAM) Management Protocol.

network site: A built-in custom field in IPAM that is used to specify the Network site (an entity of a logical network).

option definition: Defines an option for a vendor class. The definition consists of two parts: an option ID and an option name.

option ID: A unique integer value used to identify a specific option [RFC2132].

option type: The data format type used for the value of a specific DHCP option value. The option definition can contain option values in various format types. Options can be of type BYTE, WORD, DWORD, DWORD_DWORD, IP Address, Unicode String, Binary, or Encapsulated binary format.

partner DHCP server: A server which forms the DHCP failover relationship with the primary DHCP server.

provisioning: The process of initially configuring the IPAM data store, which includes configuring the IPAM database, creating IPAM security groups, and configuring IPAM tasks.

reservation: An IP address that is reserved on the DHCP server for assignment to a specific client based on its hardware address. A reservation is used to ensure that a specific DHCP client is always assigned the same IP address.

reverse lookup DNS zone: a zone consisting of pointer (PTR) records that provide a mapping of host IP addresses to their corresponding DNS host names.

role-based access control: The concept of authorizing a user to perform an operation based on the set of user roles and corresponding access scopes that are assigned to that user.

schema conversion: The process of changing or upgrading the IPAM data store schema when the version of the IPAM server or the IPAM data store changes.

scope: A range of IP addresses and associated configuration options that are allocated to DHCP clients in a specific subnet.

service: The receiving endpoint of a Web services request message, and sender of any resulting Web services response message.

site: A group of related pages and data within a SharePoint site collection. The structure and content of a site is based on a site definition. Also referred to as SharePoint site and website.

subnet ID: An ID generated by the Dynamic Host Configuration Protocol (DHCP) server. The IPv4 subnet ID is generated by the DHCP server by performing the binary AND operation on the subnet IPv4 address and the IPv4 subnet mask. The IPv6 prefix ID is generated by the DHCP server by converting the least significant 64 bits of the IPv6 address to 0.

task: An object identifying an administrative action (for example, running a program) to be performed on specified triggers and conditions (for example, every day at a specific time). Synonym for Job.

tenant: A built-in custom field in IPAM that is used to specify the tenant machine.

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trigger: A change of state (for example, reaching a specific time of day) that signals when a task is to run. A task runs when any of its triggers and all of its conditions are satisfied.

user access policy: A policy that defines an operation and the access scope for which the operation is allowed for a specific user. The user is allowed to perform an operation only if the access policy for the user allows it.

user class: User-defined classes that contain user-specific DHCP options. A default user class is implementation-dependent.

user role: A container that is used to group together a set of IPAM operations and can be assigned to a user.

vendor class: User defined classes which contain vendor specific DHCP options. A default vendor class is implementation defined.

VMNetwork: A built-in custom field in IPAM that is used to specify the virtualized network.

zone: A domain namespace is divided up into several sections called zones [RFC1034] and [RFC2181]. A zone represents authority over a portion of the DNS namespace, excluding any subzones that are below delegations.

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as described in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the documents, which are updated frequently. References to other documents include a publishing year when one is available.

A reference marked "(Archived)" means that the reference document was either retired and is no longer being maintained or was replaced with a new document that provides current implementation details. We archive our documents online [Windows Protocol].

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

[ISO-8601] International Organization for Standardization, "Data Elements and Interchange Formats - Information Interchange - Representation of Dates and Times", ISO/IEC 8601:2004, December 2004, http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=40874&ICS1=1&ICS2=140&ICS3=30

Note There is a charge to download the specification.

[MS-DTYP] Microsoft Corporation, "Windows Data Types".

[MS-EVEN6] Microsoft Corporation, "EventLog Remoting Protocol Version 6.0".

[MS-IPAMM] Microsoft Corporation, "IP Address Management (IPAM) Management Protocol".

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[MS-NMFTB] Microsoft Corporation, ".NET Message Framing TCP Binding Protocol".

[MS-NRTP] Microsoft Corporation, ".NET Remoting: Core Protocol".

[MS-TDS] Microsoft Corporation,"Tabular Data Stream Protocol".

[MS-WSPOL] Microsoft Corporation, "Web Services: Policy Assertions and WSDL Extensions".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, http://www.rfc-editor.org/rfc/rfc2119.txt

[SOAP1.2-1/2007] Gudgin, M., Hadley, M., Mendelsohn, N., et al., "SOAP Version 1.2 Part 1: Messaging Framework (Second Edition) ", W3C Recommendation 27, April 2007, http://www.w3.org/TR/2007/REC-soap12-part1-20070427/

[SOAP1.2-2/2007] Gudgin, M., Hadley, M., Mendelsohn, N., et al., "SOAP Version 1.2 Part 2: Adjuncts (Second Edition)", W3C Recommendation, April 2007, http://www.w3.org/TR/2007/REC-soap12-part2-20070427

[WSADDCore1.0] Gudgin, M., Hadley, M., and Rogers, T., Eds.,"Web Services Addressing 1.0 - Core", W3C Recommendation, May 2006, http://www.w3.org/TR/2006/REC-ws-addr-core-20060509/ws-addr-core.pdf

[WSADDSoapBind1.0] Gudgin, M., Hadley, M., and Rogers, T., Eds.,"Web Services Addressing 1.0 - SOAP Binding", W3C Recommendation, May 2006, http://www.w3.org/TR/2006/REC-ws-addr-soap-20060509/ws-addr-soap.pdf

[WSAWSDL] World Wide Web Consortium, "Web Services Addressing 1.0 - WSDL Binding", May 2006, http://www.w3.org/TR/2006/CR-ws-addr-wsdl-20060529/

[WSDL] Christensen, E., Curbera, F., Meredith, G., and Weerawarana, S., "Web Services Description Language (WSDL) 1.1", W3C Note, March 2001, http://www.w3.org/TR/2001/NOTE-wsdl-20010315

[XMLNS-2ED] World Wide Web Consortium, "Namespaces in XML 1.0 (Second Edition)", August 2006, http://www.w3.org/TR/2006/REC-xml-names-20060816/

[XMLSCHEMA1] Thompson, H.S., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

[XMLSCHEMA2] Biron, P.V., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

1.2.2 Informative References

[IANA-IPV4] IANA, "IANA IPv4 Address Space Registry", February 2011, http://www.iana.org/assignments/ipv4-address-space/ipv4-address-space.txt

[IETF-DHCPFOP-12] Droms, R., Kinnear, K., Stapp, M., et al., "DHCP Failover Protocol", INTERNET DRAFT, draft-ietf-dhc-failover-12.txt, March 2003, http://tools.ietf.org/id/draft-ietf-dhc-failover-12.txt

[ISO-3166] International Organization for Standardization, "Codes for the Representation of Names of Countries and Their Subdivisions", ISO 3166, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=24591

Note There is a charge to download the specification.

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[MSDN-Tables] Microsoft Corporation, "Tables", http://msdn.microsoft.com/en-us/library/ms737220(VS.85).aspx

[MS-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary".

[RFC1918] Rekhter, Y., Moskowitz, B., Karrenberg, D., et al., "Address Allocation for Private Internets", BCP 5, RFC 1918, February 1996, http://www.ietf.org/rfc/rfc1918.txt

[RFC2131] Droms, R., "Dynamic Host Configuration Protocol", RFC 2131, March 1997, http://www.ietf.org/rfc/rfc2131.txt

[RFC2132] Alexander, S., and Droms, R., "DHCP Options and BOOTP Vendor Extensions", RFC 2132, March 1997, http://www.ietf.org/rfc/rfc2132.txt

[RFC3315] Droms, R., Bound, J., Volz, B., et al., "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)", RFC 3315, July 2003, http://www.ietf.org/rfc/rfc3315.txt

[RFC3330] IANA, "Special-Use IPv4 Addresses", RFC 3330, September 2002, http://www.rfc-editor.org/rfc/rfc3330.txt

[RFC3513] Hinden, R., and Deering, S., "Internet Protocol Version 6 (IPv6) Addressing Architecture", RFC 3513, April 2003, http://www.ietf.org/rfc/rfc3513.txt

[RFC4291] Hinden, R., and Deering, S., "IP Version 6 Addressing Architecture", RFC 4291, February 2006, http://www.ietf.org/rfc/rfc4291.txt

[RFC4701] Stapp, M., Lemon, T., and Gustafsson, A., "A DNS Resource Record (RR) for Encoding Dynamic Host Configuration Protocol (DHCP) Information (DHCID RR)", RFC 4701, October 2006, http://www.ietf.org/rfc/rfc4701.txt

[RFC4862] Thomson, S., Narten, T., and Jinmei, T., "IPv6 Stateless Address Autoconfiguration", RFC 4862, September 2007, http://www.rfc-editor.org/rfc/rfc4862.txt

1.3 Overview

This protocol consists of the management client and the **management server** roles. They form the end-points of the protocol. The management client performs remote management of the data in the IPAM data store by communicating with the management server using this protocol. The management server performs the management operations against the data in the IPAM data store on behalf of the management client. As indicated below, the **IPAM tasks** is one other entity which is not associated with this protocol. This entity interacts with the DHCP and DNS servers in the network to gather information from the address space management in an implementation specific manner and add them to the IPAM data store.

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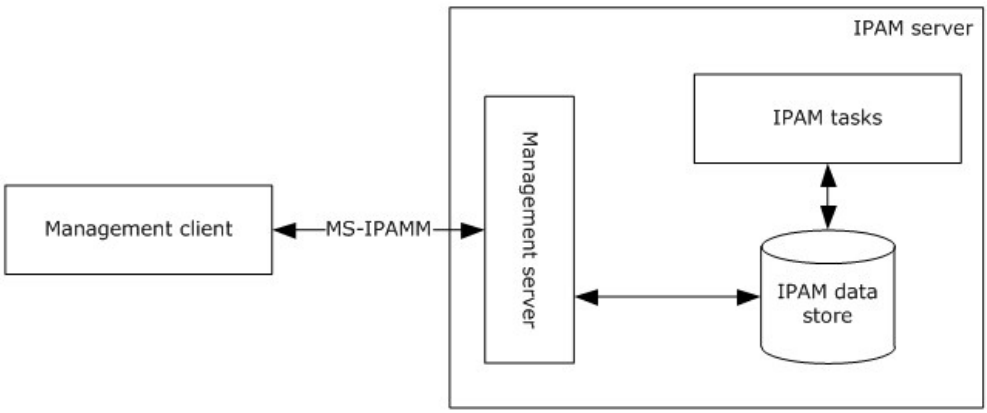

Figure 1: Overview

1.4 Relationship to Other Protocols

The IPAM Management Protocol uses **SOAP message** for formatting the requests and responses as specified in [SOAP1.2-1/2007] and [SOAP1.2-2/2007]. These SOAP messages are sent over the .NET Message Framing TCP Binding Protocol ([MS-NMFTB]) which is built on top of TCP/IP protocol.

The following diagram shows the underlying messaging and transport stack that is being used by this protocol.

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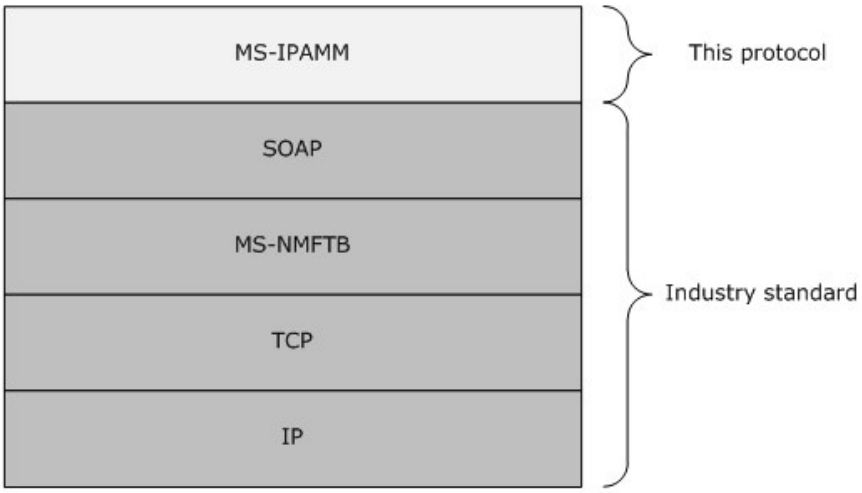

Figure 2: Protocol Stack Diagram

1.5 Prerequisites/Preconditions

It is assumed that the protocol client already knows the **URL** of the protocol server for connecting to the various port types exposed by the protocol server.

The protocol also assumes that the authentication has been performed by the underlying protocols.

1.6 Applicability Statement

This protocol is only applicable for the operations between the management client and the management server. Appendix C lists the products for which this protocol is applicable.

The functioning of the IPAM tasks and the IPAM data store are implementation specific and are outside the scope of this protocol.

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The host(1) which form the protocol client or the server have to be part of an Active Directory (AD) **domain** belonging to the same AD forest(1).

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Localization:** This protocol includes text strings in various messages. Localization considerations for such strings are specified in section 2.2 and section 3.
- **Protocol Versions:** This protocol is not versioned.
- **Capability Negotiation:** This protocol does not support version negotiation or any other means of negotiating capabilities.

This document specifies IPAM Management Protocol Version 2. Version 2 is not interoperable with IPAM Management Protocol Version 1, specified in [MS-IPAMM].<1>

1.8 Vendor-Extensible Fields

None

1.9 Standards Assignments

None

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2 Messages

2.1 Transport

- Protocol servers MUST support formatting of SOAP over TCP/IP as specified in [MS-NMFTB].
- All protocol messages MUST be transported by using TCP bindings at the transport level.
- All protocol messages MUST be formatted as specified in [SOAP1.2-1/2007] or [SOAP1.2-2/2007].
- Protocol server faults MUST be returned using the **SOAP fault** as specified in [SOAP1.2-1/2007] section 5.4.
- The protocol client MUST know the **URI** of the server for the various **WSDL port types** that need to be accessed.
- The protocol MUST use Message Framing Security Provider WindowsTransportSecurity as specified in [MS-WSPOL] section 2.2.3.8 with the ProtectionLevel being EncryptAndSign.

2.2 Common Message Syntax

This section contains common definitions used by this protocol. The syntax of the definitions uses XML Schema as defined in [XMLSCHEMA1] and [XMLSCHEMA2], and Web Services Description Language as defined in [WSDL].

In the following sections, the schema definition might be less restrictive than the processing rules imposed by the protocol. The **WSDL** in this specification provides a base description of the schema. The text that introduces the WSDL specifies additional restrictions that reflect protocol behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **present**, and **not null**.

2.2.1 Namespaces

This specification defines and references various XML namespaces using the mechanisms specified in [XMLNS-2ED]. Although this specification associates a specific XML namespace prefix for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and not significant for interoperability.

Prefix	Namespace URI	Reference
(none)	http://Microsoft.Windows.Ipam	
msc	http://schemas.microsoft.com/ws/2005/12/wsdl/contract	[MS-WSPOL]
xsd	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1] [XMLSCHEMA2]
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.2-1/2007] [SOAP1.2-2/2007]
s	http://www.w3.org/2003/05/soap-envelope	[SOAP1.2-1/2007]
a	http://www.w3.org/2005/08/addressing	[WSADDSoapBind1.0]

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Prefix	Namespace URI	Reference
		[WSADDCore1.0]
wsaw	http://www.w3.org/2006/05/addressing/wsdl	[WSAWSDL]
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
sys	http://schemas.datacontract.org/2004/07/System	
ser	http://schemas.microsoft.com/2003/10/Serialization/	
sysnet	http://schemas.datacontract.org/2004/07/System.Net	
serarr	http://schemas.microsoft.com/2003/10/Serialization/Arrays	
ipam1	http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam	
sysgen	http://schemas.datacontract.org/2004/07/System.Collections.Generic	
syssock	http://schemas.datacontract.org/2004/07/System.Net.Sockets	
sysser	http://schemas.datacontract.org/2004/07/System.ServiceModel	

2.2.2 Messages

Message	Description
Common Soap Fault	The structure of the common SOAP fault that is returned by the protocol server to the protocol client when there is an error processing the request.
Keepalive	The structure of the keepalive message sent by the management client to the management server to detect loss of the underlying transport connection.

2.2.2.1 Common SOAP Fault

The SOAP fault message is defined in [SOAP1.2-1/2007]. The following is the specific format used by this protocol.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body>
    <s:Fault>
      <s:Code>
        <s:Value>s:Sender</s:Value>
      </s:Code>
      <s:Reason>
        <s:Text xml:lang="en-US">The creator of this fault did not specify a Reason.</s:Text>
      </s:Reason>
      <s:Detail>
        [IpamException]
      </s:Detail>
    </s:Fault>
  </s:Body>
</s:Envelope>
```


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The [IpamException] element is the part of the message which provides more information about the fault itself. This will be of type IpamException (section 2.2.4.200) or the types that extend the same.

2.2.2.2 Keepalive

The following is the Keepalive message which gets transmitted by the protocol client in a period interval of inactivity and ignored by the server. This helps to detect the drop of TCP session because of inactivity.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
 <s:Header>
 <a:Action
s:mustUnderstand="1">Microsoft.WindowsServerSolutions.Common.ProviderFramework.Keepalive</a:A
ction>
 </s:Header>
 <s:Body/>
</s:Envelope>
```

2.2.3 Elements

This specification does not define any common XML schema element definitions.

2.2.4 Complex Types

The following table summarizes the set of common XML Schema complex type definitions defined by this specification. XML Schema complex type definitions that are specific to a particular operation are described with the operation.

Complex type	Description
AccessScope	The AccessScope allows extended attributes on an ipam: BaseIpamObject type. It specifically defines the scope of entities in IPAM datastore that a given user has access to. It also defines the hierarchy of **access scopes** in IPAM.
AccessScopeToUserRoleMapping	The AccessScopeToUserRoleMapping allows extended attributes on an ipam: BaseIpamObject type. It describes an access policy, which is an association between a **user role** and an access scope.
ActiveServerV4LogicalGroup	The ActiveServerV4LogicalGroup allows extended attributes on an ipam:**LogicalGroup** type. It specifically contains the definition of the **logical group** on server instances with IPv4-specific details, which are enabled for management in the IPAM data store.
ActiveServerV4LogicalGroupNode	The ActiveServerV4LogicalGroupNode allows extended attributes on an ipam:LogicalGroupNode type. It specifically defines the **custom field value** at a specific level in the logical group hierarchy. It will define the criteria for categorizing server

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Complex type	Description
	instances with IPv4-specific details, which are enabled for management.
ActiveServerV6LogicalGroup	The ActiveServerV6LogicalGroup allows extended attributes on an ipam:LogicalGroup type. It specifically contains the definition of the logical group on server instances with IPv6-specific details, which are enabled for management in the IPAM data store.
ActiveServerV6LogicalGroupNode	The ActiveServerV6LogicalGroupNode allows extended attributes on an ipam:LogicalGroupNode type. It specifically defines the custom field value at a specific level in the logical group hierarchy. It will define the criteria for categorizing server instances with IPv6-specific details, which are enabled for management.
AddressSpace	The AddressSpace complex type extends IPAM:BaseObject. A set of connected networks that are reachable (routable) from one another form an address space. In IPAM all IP blocks/subnets/ranges and IP addresses that belong to such a set of networks are grouped together within an Address Space container. In order to support network virtualization, IPAM provides two types of address spaces: Provider and Customer. By default all IPAM entities are deemed to reside in a built-in address space called DefaultIPAddressSpace. Any conventional (non-virtualized) network entity like a subnet or IP address range will lie in Default address space.
AddressSpaceByFilterEnumerationParameters	The AddressSpaceByFilterEnumerationParameters complex type extends ipam:EnumerationParametersBase and specifies a set of criterion that is applied to filter the list of address spaces before enumeration.
AddressSpaceEnumerationParameters	The AddressSpaceEnumerationParameters complex type extends Ipam:ENumerationParametersBase and specifies the set of parameters to be used for enumerating the address spaces.
AddScopesToSuperscopeParameters	The AddScopesToSuperscopeParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is AddScopesToSuperscope. It is used to associate a collection of DHCP scopes to an ipam:DhcpSuperscopeV4.
ApplyDhcpScopeConfigurationparameters	The ApplyDhcpScopeConfigurationparameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is ApplyScopeConfigurationTemplate. It specifically associates the ipam:DhcpScopeTemplateConfiguration details with a

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Complex type	Description
	List of scope Ids belonging to the same ipam:AddressFamily.
ApplyDhcpServerConfigurationParameters	The ApplyDhcpServerConfigurationParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is ApplyServerConfigurationTemplate. It specifically associates the ipam:DhcpServerTemplateConfiguration details with a List of Server Ids belonging to the same ipam:ServerAddressFamily.
ArrayOfAccessScopeToUserRoleMapping	The ArrayOfAccessScopeToUserRoleMapping complex type defines a list of ipam:AccessScopeToUserRoleMapping complex type.
ArrayOfAddressSpace	The ArrayOfAddressSpace complex type defines an array of AddressSpace complex type.
ArrayOfCustomField	The ArrayOfCustomField complex type defines an array of ipam:CustomField complex type.
ArrayOfCustomFieldAssociation	The ArrayOfCustomFieldAssociation complex type defines an array of ipam:CustomFieldAssociation complex type.
ArrayOfCustomFieldPartialValue	The ArrayOfCustomFieldPartialValue complex type defines an array of CustomFieldPartialValue complex type.
ArrayOfCustomFieldValue	The ArrayOfCustomFieldValue complex type defines an array of CustomFieldValue complex type.
ArrayOfDhcpExclusionRange	The ArrayOfDhcpExclusionRange complex type defines an array of DhcpExclusionRange complex type. The elements in the array MUST be either a DhcpExclusionRangeV4 complex type or a DhcpExclusionRangeV6 complex type.
ArrayOfDhcpFailoverOperations	The ArrayOfDhcpFailoverOperations complex type defines an array of ipam:DhcpFailoverOperations.
ArrayOfDhcpFilter	The ArrayOfDhcpFilter complex type defines an array of ipam:DhcpFilter.
ArrayOfDhcpFindAndReplaceOption	The ArrayOfDhcpFindAndReplaceOption complex type defines an array of ipam:DhcpFindAndReplaceOption.
ArrayOfDhcpOption	The ArrayOfDhcpOption complex type defines an array of DhcpOption complex type. The elements in the array MUST be either a DhcpOptionV4 or a DhcpOptionV6 complex type.
ArrayOfDhcpOptionDefinition	The ArrayOfDhcpOptionDefinition complex type defines an array of DhcpOptionDefinition complex type. The elements in the array MUST be either a DhcpOptionDefinitionV4 or a DhcpOptionDefinitionV6

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Complex type	Description
	complex type.
ArrayOfDhcpPolicyRangeV4	The ArrayOfDhcpPolicyRangeV4 complex type defines an array of ipam:DhcpPolicyRangeV4 complex type.
ArrayOfDhcpPolicyV4	The ArrayOfDhcpPolicyV4 complex type defines an array of ipam:DhcpPolicyV4 complex type.
ArrayOfDhcpReservation	The ArrayOfDhcpReservation complex type defines an array of DhcpReservation complex type. The elements in the array MUST be of type DhcpReservation.
ArrayOfDhcpScope	The ArrayOfDhcpScope complex type defines an array of ipam:DhcpScope complex type.
ArrayOfDhcpScopeV4	The ArrayOfDhcpScopeV4 complex type defines an array of ipam:DhcpScopeV4 complex type.
ArrayOfDhcpServer	The ArrayOfDhcpServer complex type defines an array of DhcpServer complex type. The elements in the array MUST be either a DhcpServerV4 or a DhcpServerV6 complex type.
ArrayOfDhcpServerV4	The ArrayOfDhcpServerV4complex type defines an array of ipam:DhcpServerV4 complex type.
ArrayOfDhcpSuperscopeV4	The ArrayOfDhcpSuperscopeV4 complex type defines an array of ipam:DhcpSuperscopeV4 complex type.
ArrayOfDhcpUserClass	The ArrayOfDhcpUserClass complex type defines an array of DhcpUserClass complex type. The elements in the array MUST be either a DhcpUserClassV4 or a DhcpUserClassV6 complex type.
ArrayOfDhcpVendorClass	The ArrayOfDhcpVendorClass complex type defines an array of DhcpVendorClass complex type. The elements in the array MUST be either a DhcpVendorClassV4 or a DhcpVendorClassV6 complex type.
ArrayOfDiscoveryConfig	The ArrayOfDiscoveryConfig complex type defines an array of DiscoveryConfig complex type.
ArrayOfDnsReverseLookupZone	The ArrayOfDnsReverseLookupZone complex type defines an array of ipam:DnsReverseLookupZone complex type.
ArrayOfDnsZone	The ArrayOfDnsZone complex type defines an array of ipam:DnsZone complex type.
ArrayOfEntityStatus	The ArrayOfEntityStatus complex type defines an array of ipam:EntityStatus complex type.
ArrayOfGatewayAddress	The ArrayOfGatewayAddress complex type defines an array of GatewayAddress complex type.
ArrayOfIpamAdminOperation	The ArrayOfIpamAdminOperation complex type

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Complex type	Description
	defines an array of ipam:IpamAdminOperation complex type.
ArrayOfIpamGpoError	The ArrayOfIpamGpoError complex type defines an array of ipam:IpamGpoError complex type.
ArrayOfIpamGpoErrorInfo	The ArrayOfIpamGpoErrorInfo complex type defines an array of ipam:IpamGpoErrorInfo complex type.
ArrayOfIpamIPAddress	The ArrayOfIpamIPAddress complex type defines an array of IpamIPAddress complex type. The elements in the array MUST be either an IpamIPv4Address or an IpamIPv6Address complex type.
ArrayOfIpamObject	The ArrayOfIpamObject complex type defines an array of IpamObject complex type. The elements in the array MUST be of a complex type that either directly or indirectly extends IpamObject.
ArrayOfIpamUpgradeValidationRuleStatus	The ArrayOfIpamUpgradeValidationRuleStatus complex type defines an array of ipam:IpamUpgradeValidationRuleStatus complex type.
ArrayOfIPBlock	The ArrayOfIPBlock complex type defines an array of IPBlock complex type. The elements in the array MUST be either an IPv4Block or an IPv6Block complex type.
ArrayOfIPRange	The ArrayOfIPRange complex type defines an array of IPRange complex type. The elements in the array MUST be either an IPv4Range or an IPv6Range complex type.
ArrayOfIPSubnet	The ArrayOfIPSubnet complex type defines an array of IPSubnet complex type. The elements in the array MUST be either an IPv4Subnet or an IPv6Subnet complex type.
ArrayOfIPUtilization	The ArrayOfIPUtilization complex type defines an array of IPUtilization complex type. The elements in the array MUST be either an IPv4Utilization or an IPv6Utilization complex type.
ArrayOfLogicalGroupField	The ArrayOfLogicalGroupField complex type defines an array of LogicalGroupField complex type.
ArrayOfLogicalGroupNode	The ArrayOfLogicalGroupNode complex type defines an array of LogicalGroupNode complex type. The elements in the array MUST be either of the following types that extend LogicalGroupNode.
ArrayOfPolicyOperations	The ArrayOfPolicyOperations complex type defines an array of ipam:PolicyOperations complex type.
ArrayOfReservationOperations	The ArrayOfReservationOperations specifies an array of simple type ReservationOperations that specifies the set of operations that can be performed for DHCP

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Complex type	Description
	reservations. This is used by the management server as a part of MsmDhcpScopeCreateOrEditAddress Reservation to identify the kind of changes that have to be committed to the IPAM data store for the specified DhcpReservation value.
ArrayOfServerInfo	The ArrayOfServerInfo complex type defines an array of ServerInfo complex type.
ArrayOfServerRole	The ArrayOfServerRole complex type defines an array of ServerRole complex type or the complex types that extend the ServerRole complex type.
ArrayOfSuperscopeOperations	The ArrayOfSuperscopeOperations complex type defines an array of ipam:SuperscopeOperations complex type.
ArrayOfTaskInfo	The ArrayOfTaskInfo complex type defines an array of TaskInfo complex type or the complex types that extend the TaskInfo complex type.
AuditPurgeSettings	The AuditPurgeSettings complex type specifies the configuration to be used for performing the **audit purge** operation.
BaseDnsServerZone	The BaseDnsServerZone complex type specifies the properties of a zone hosted on a DNS server. This consists of the properties common to both DnsServerZone as well as DnsServerReverseZone complex types that extend the BaseDnsServerZone.
BaseDnsZone	The BaseDnsZone complex type specifies the properties of a DNS **zone**. This consists of the properties common to both DnsZone as well as DnsReverseZone complex types that extend the BaseDnZone.
BaseIpamObject	The BaseIpamObject complex type is composed of the common properties that are applicable to most of the complex types defined in this protocol. This complex type allows extended attributes on the ipam:IpamObject that it extends.
ChangeDatabaseSettingsNotAllowedForDBTypesIpamExceptionData	The ChangeDatabaseSettingsNotAllowedForDBTypesIpamExceptionData complex type extends the ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorChangeDatabaseSettingsNotAllowedForDBTypes.
ConfigurationAuditEnumerationParameters	The ConfigurationAuditEnumerationParameters complex type is used to specify the enumeration criteria for the configuration audit information.
ConfigurationAuditRecord	The ConfigurationAuditRecord complex type specifies a single **configuration audit event** information. The **configuration audit** record can be used to represent

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Complex type	Description
	both an **IPAM configuration audit** as well as a **DHCP configuration audit** event.
ConflictingIPAddressFailureIpamExceptionData	The ConflictingIPAddressFailureIpamExceptionData complex type specifies the information pertaining to the IP address instance overlap. This is used as the IpamExceptionData to provide more fault-specific information when an operation fails because of IP address instance overlap.
ConflictingIPBlockFailureIpamExceptionData	The ConflictingIPBlockFailureIpamExceptionData specifies the information pertaining to the IP address block instance overlap.
ConflictingIPRangeFailureIpamExceptionData	The ConflictingIPRangeFailureIpamExceptionDAta specifies the information pertaining to the **IP address range** instance overlap.
CreateDhcpFiltersParameters	The CreateDhcpFiltersParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpFilters. It associates a list of ipam:DhcpFilter instances to the list of DhcpServers they have been created on.
CreateDhcpReservationParameters-	The CreateDhcpReservationParameters complex type specifies the set of parameters to be used in creating a new DHCP reservation.
CreateDhcpScopeParameters	The CreateDhcpScopeParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpScope and associates them to an ipam:DhcpScope.
CreateDhcpScopePolicyParameters	The CreateDhcpScopePolicyParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpScopePolicy. It associates a policy of type ipam:DhcpPolicyV4 to a collection of scopes of type ipam:DhcpScopev4.
CreateDhcpServerPolicyParameters	The CreateDhcpServerPolicyParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpServerPolicy. It associates a policy of type ipam:DhcpPolicyV4 to a collection of servers of type ipam:DhcpServerv4.
CreateIpamIPAddressParameters	The CreateIpamIPAddressParameters complex type specifies the information pertaining to the operation CreateIpamIpAddress. This is used as a callback.
CustomerAddressSpace	The CustomerAddressSpace complex type extends

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Complex type	Description
	the complex type ipam:AddressSpace. It includes information specific to an address space of type **Customer**. These contain the virtual networks (VM networks) that are built on top of physical/Fabric networks. Each customer address space is associated with a Provider address space to indicate the physical network on which the virtual network has been built.
CustomField	The CustomField complex type specifies a single **custom field** information.
CustomFieldAssociation	The CustomFieldAssociation complex type specifies an association between two custom fields defined in IPAM.
CustomFieldAssociationEnumerationParameters	The CustomFieldAssociationEnumerationParameters complex type extends ipam:EnumerationParametersBase complex type. This specifies the parameters used to enumerate custom field associations that exist in IPAM datastore.
CustomFieldEnumerationParameters	The CustomFieldEnumerationParameters complex type specifies the set of parameters to be used for enumerating the custom fields.
CustomFieldPartialValue	The CustomFieldPartialValue complex type specifies the custom field value with minimum information when compared to that of CustomFieldValue. This management server SHOULD use this to return the custom field values during the enumeration operations. The management client MUST NOT use this to specify custom field value. The management client MUST instead always use the CustomFieldValue complex type for specifying custom field values.
CustomFieldValue	The CustomFieldValue complex type specifies a custom field value.
DatabaseLocaleMismatchIpamExceptionData	The DatabaseLocaleMismatchIpamExceptionData allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is "IpamApiErrorDatabaseLocaleMismatch".
DatabaseSchemaVersionMismatchIpamExceptionData	The DatabaseSchemaVersionMismatchIpamExceptionData allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is "IpamApiErrorDatabaseSchemaVersionMismatch".
DatabaseServerEditionNotSupportedIpamExceptionData	The DatabaseServerEditionNotSupportedIpamExceptionData allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorDatabaseServerEditionNotSupported.

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Complex type	Description
DatabaseServerVersionNotSupportedIpamExceptionData	The DatabaseServerVersionNotSupportedIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorDatabaseServerVersionNotSupported.
DeleteDhcpReservationCollectionParameters	The DeleteDhcpReservationCollectionParameters complex type specifies the set of parameters to be used in deleting a collection of DHCP reservations.
DeleteDhcpReservationParameters	The DeleteDhcpReservationParameters complex type specifies the set of parameters to be used in deleting a DHCP reservation.
DeleteDhcpFiltersParameters	The DeleteDhcpFiltersParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpFilters. It is used to identify the list of ipam:DhcpFilter instances to be deleted on a server.
DeleteDhcpReservationCollectionParameters	The DeleteDhcpReservationCollectionParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpReservationCollection. It identifies a collection of DHCP reservations to be deleted and the post processing to be done after deleting them, such as delete associated DNS resource record and so on.
DeleteDhcpReservationParameters	The DeleteDhcpReservationParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpReservation. It identifies an instance of DHCP reservation to be deleted and the post processing to be done after deleting it, such as delete associated DNS resource record and so on.
DeleteDhcpScopeParameters	The DeleteDhcpScopeParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpScope and associates them to an ipam:DhcpScope.
DeletePolicyParameters	The DeletePolicyParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeletePolicy and associates them to a collection of policies of type ipam:DhcpPolicyV4.
DeleteSuperscopesParameters	The DeleteSuperscopesParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is

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Complex type	Description
	DeleteSuperscopes. It identifies the collection of ipam:DhcpSuperscopeV4 instances to be deleted
DhcpEffectiveScopePoliciesEnumerationParameters	The DhcpEffectiveScopePoliciesEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy and associates them to a scope of type ipam:DhcpScopeV4.
DhcpEffectiveServerPoliciesEnumerationParameters	The DhcpEffectiveServerPoliciesEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy and associates them to an ipam:DhcpServerV4 object.
DhcpExclusionRange	The DhcpExclusionRange complex type is used to specify the DHCP **exclusion range**.
DhcpExclusionRangeCollection	The DhcpExclusionRangeCollection complex type specifies a collection of DHCP exclusion ranges.
DhcpExclusionRangeV4	The DhcpExclusionRangeV4 complex type specifies a DHCP exclusion range for an IPv4-specific DHCP **scope**.
DhcpExclusionRangeV6	The DhcpExclusionRangeV6 complex type specifies a DHCP exclusion range for an IPv6-specific DHCP scope.
DhcpFailover	The DhcpFailover allows extended attributes on an ipam:BaseIpamObject and ipam: IComparable<DhcpFailover> type.
DhcpFailoverAllEnumerationParameters	The DhcpFailoverAllEnumerationParameters extends ipam:EnumerationParametersBase type. It creates objects whose ObjectType is \DhcpFailover.
DhcpFailoverByServerIdsEnumerationParameters	The DhcpFailoverByServerIdsEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFailover and associates them to a list of ServerIds whose type is long int.
DhcpFailoverDeleteParameters	The DhcpFailoverDeleteParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It associates a DhcpFailover object with a force delete flag. The force delete flag identifies whether the failover relationship deletion should be attempted on the selected server even if it fails on the partner server.
DhcpFailoverEnumerationParameters	The DhcpFailoverEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects

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Complex type	Description
	whose ObjectType is DhcpFailover and associates a DhcpFailover object to the same.
DhcpFailoverParameters	The DhcpFailoverParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It associates an ipam:DhcpFailover object to an object of this type.
DhcpFailoverRemoveScopesParameters	The DhcpFailoverRemoveScopesParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It associates its objects with a List of ipam:DhcpScope type objects and a bool member, Force. The Force parameter identifies whether the failover config removal should be attempted on the selected scopes, even if it fails on their partner scope.
DhcpFailoverScopesEnumerationParameters	The DhcpFailoverScopesEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpScope and associates them to an ipam:DhcpFailover object.
DhcpFailoverWithScopesParameters	The DhcpFailoverWithScopesParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It associates its objects with a List of ipam:DhcpScope objects and an ipam:DhcpFailover object.
DhcpFilter	The DhcpFilter complex type describes a **DHCP filter** and associates its various properties into one instance.
DhcpFilterAllEnumerationParameters	The DhcpFilterAllEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFilter. It is used to get the details of filters of a particular DHCP server.
DhcpFilterByServerIdsEnumerationParameters	The DhcpFilterByServerIdsEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFilter. It is used to get the details of filters of a list of Server IDs.
DhcpFindAndReplaceOption	The DhcpFindAndReplaceOption type creates an association between the ipam:DhcpOption and its old value, which is to be found, and the new value, with which it is to be replaced. The old and new values are represented by Object types.
DhcpFindAndReplaceOptionV4	The DhcpFindAndReplaceOptionV4 is a simple derivation of ipam:DhcpFindAndReplaceOption with no new attributes.
DhcpFindAndReplaceOptionV6	The DhcpFindAndReplaceOptionV6 is a simple derivation of ipam:DhcpFindAndReplaceOption with

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Complex type	Description
	no new attributes.
DhcpMsmOverallCompletionStatus	The DhcpMsmOverallCompletionStatus allows extended attributes on an ipam: IpamObject type.
DhcpOption	The DhcpOption complex type specifies the common information pertaining to a DHCP option which is independent of whether the option is IPv4-specific or IPv6-specific.
DhcpOptionCollection	The DhcpOptionCollection complex type specifies a collection of DHCP options.
DhcpOptionDefinition	The DhcpOptionDefinition complex type specifies the various properties of a DHCP **option definition**.
DhcpOptionDefinitionCollection	The DhcpOptionDefinitionCollection complex type specifies a collection of DhcpOptionDefinition complex type.
DhcpOptionDefinitionV4	The DhcpOptionDefinitionV4 complex type allows extension of the DhcpOptionDefinition complex type. This specifies the option definitions associated with the IPv4-specific DHCP server instance.
DhcpOptionDefinitionV6	The DhcpOptionDefinitionV6 complex type allows extension of the DhcpOptionDefinition complex type. This specifies the option definitions associated with the IPv6-specific DHCP server instance.
DhcpOptionV4	The DhcpOptionV4 complex type allows extension of the DhcpOption complex type. This specifies the DHCP option associated with the IPv4-specific DHCP server or scope instance.
DhcpOptionV6	The DhcpOptionV6 complex type allows extension of the DhcpOption complex type. This specifies the DHCP option associated with the IPv6-specific DHCP server or scope instance.
DhcpPoliciesByDhcpServerIdListEnumerationParameters	The DhcpPoliciesByDhcpServerIdListEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy and associates them to a collection of ipam:DhcpServerV4 objects.
DhcpPoliciesEnumerationParameters	The DhcpPoliciesEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy.
DhcpPolicyConditionV4	The DhcpPolicyConditionV4 allows extended attributes on an ipam: BaseIpamObject type.
DhcpPolicyRangeV4	The DhcpPolicyRangeV4 allows extended attributes on an ipam: BaseIpamObject type. It creates an association between the record Id of the range and

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Complex type	Description
	its start and end ipam:IPAddress objects.
DhcpPolicyV4	The DhcpPolicyV4 allows extended attributes on an ipam: BaseIpamObject type.
DhcpReservation	The DhcpReservation complex type specifies the details associated with a DHCP reservation.
DhcpReservationDataFormatter	The DhcpReservationDataFormatter complex type is used to format the fields of a DHCP reservation into a string used to display the result of operations. The string is formatted to include the scope ID and the server name.
DhcpReservationTemplateConfiguration	The DhcpReservationTemplateConfiguration complex type is used for edit operation on a collection of DHCP Reservation. It specifies the properties of the reservation that need to be changed for the collection in a multi-select edit operation.
DhcpReservationV4	The DhcpReservationV4 complex type is the extension of the DhcpReservation complex type. This specifies the properties associated with a IPv4 reservation.
DhcpReservationV4TemplateConfiguration	The DhcpReservationV4TemplateConfiguration complex type is the extension of the DhcpReservationTemplateConfiguration complex type. The DhcpReservationV4TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPV4 reservations. It specifies the properties of the IPv4 reservation that need to be changed for the collection in a multi-select edit operation.
DhcpReservationV6	The DhcpReservationV6 complex type is the extension of the DhcpReservation complex type. This specifies the properties associated with a IPv6 reservation.
DhcpReservationV6TemplateConfiguration	The DhcpReservationV6TemplateConfiguration complex type is the extension of the DhcpReservationTemplateConfiguration complex type. The DhcpReservationV6TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPV6 reservations. It specifies the properties of the IPv6 reservation that need to be changed for the collection in a multi-select edit operation.
DhcpScope	The DhcpScope complex type specifies the details associated with a DHCP scope.
DhcpScopeAllEnumerationParameters	The DhcpScopeAllEnumerationParameters complex type specifies the criteria to be used for enumerating the DHCP scopes.
DhcpScopeAssociatedWithVendorClassesEnumeration	The

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Complex type	Description
Parameters	DhcpScopeAssociatedWithVendorClassesEnumeration Parameters complex type specifies the criteria to be used for enumerating the scopes that are associated with a given set of vendor classes.
DhcpScopeForIpBlockEnumerationParameters	The DhcpScopeForIpBlockEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes belonging to a particular address block.
DhcpScopeObjectSpecificEnumerationParameters	The DhcpScopeObjectSpecificEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes that are associated with a given set of DHCP Reservations or DHCP Policies.
DhcpScopePoliciesWithoutRangesEnumerationParameters	The DhcpScopesPoliciesWithoutRangesEnumerationParameters complex type specifies the criteria to be used for enumerating the policies that do not have ranges, in a given DHCP scope.
DhcpScopesByDhcpServerIdListEnumerationParameters	The DhcpScopesByDhcpServerIdListEnumerationParameters complex type specifies the criteria for enumerating the scopes that belong to a set of DHCP servers.
DhcpScopeTemplateConfiguration	The DhcpScopeTemplateConfiguration complex type is used for edit operation on a collection of DHCP Scopes. It specifies the properties of the scope that need to be changed for the collection in a multi-select edit operation.
DhcpScopeUnmappedEnumerationParameters	The DhcpScopeUnmappedEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes that are not mapped to any address block.
DhcpScopeV4	The DhcpScopeV4 complex type allows the extension of the DhcpScope complex type. This specifies a scope for specifying IPv4 address assignment with DHCP. As this depicts the IPv4 DHCP scope, the StartAddress and EndAddress MUST be valid IPv4 address. The PrefixLength MUST be greater than or equal to 1 and MUST be no greater than 30.
DhcpScopeV4TemplateConfiguration	The DhcpScopeV4TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPv4 Scopes. It specifies the properties of the scope that need to be changed for the collection in a multi-select edit operation.
DhcpScopeV6	The DhcpScopeV6 complex type allows the extension of the DhcpScope complex type. This specifies a scope for specifying IPv6 address assignment with DHCP. As this depicts the IPv6 DHCP scope, the StartAddress and EndAddress MUST be valid IPv6 address. The PrefixLength MUST be greater than or equal to 1 and MUST be no greater than 127.

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Complex type	Description
DhcpScopeV6TemplateConfiguration	The DhcpScopeV6TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPv6 Scopes. It specifies the properties of the scope that need to be changed for the collection in a multi-select edit operation.
DhcpServer	The DhcpServer complex type specifies the common details of a DHCP server instance.
DhcpServerAllEnumerationParameters	The DhcpServerAllEnumerationParameters complex type is used to specify the parameters used for enumerating the DhcpServer instances.
DhcpServerByServerInfoIdsEnumerationParameters	The DhcpServerByServerInfoIdsEnumerationParameters is used to specify the record identifiers of ServerInfo instances for which the DhcpServer instances are to be enumerated.
DhcpServerTemplateConfiguration	The DhcpServerTemplateConfiguration allows extended attributes on an ipam:BaseIpamObject type.
DhcpServerV4	The DhcpServerV4 complex type allows specifying extensions to the DhcpServer complex type. This specifies the IPv4-specific information of the DHCP server instance. The OptionDefinitions MUST be a collection of DhcpOptionDefinitionV4 elements. The Options MUST be a collection of DhcpOptionV4 elements. The UserClasses MUST be a collection of DhcpUserClassV4. The VendorClasses MUST be a collection of DhcpVendorClassV4 elements.
DhcpServerV4TemplateConfiguration	The DhcpServerV4TemplateConfiguration allows extended attributes on an ipam: DhcpServerTemplateConfiguration type. It creates objects whose dnsNotRequestingClientsUpdateType is DhcpDnsNotRequestingClientsUpdateType.None.
DhcpServerV6	The DhcpServerV6 complex type allows specifying extensions to the DhcpServer complex type. This specifies the IPv6-specific information of the DHCP server instance. The OptionDefinitions MUST be a collection of DhcpOptionDefinitionV4 elements. The Options MUST be a collection of DhcpOptionV4 elements. The UserClasses MUST be a collection of DhcpUserClassV4. The VendorClasses MUST be a collection of DhcpVendorClassV4 elements.
DhcpServerV6TemplateConfiguration	The DhcpServerV6TemplateConfiguration allows extended attributes on an ipam: DhcpServerTemplateConfiguration type.
DhcpSuperscopeByDhcpServerIdListEnumerationParameters	The DhcpSuperscopeByDhcpServerIdListEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects

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Complex type	Description
	whose ObjectType is DhcpSuperscope.
DhcpSuperscopeEnumerationParameters	The DhcpSuperscopeEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is DhcpSuperscope.
DhcpSuperscopeV4	The DhcpSuperscopeV4 allows extended attributes on an ipam: BaseIpamObject type. This defines the properties of a DHCP superscope.
DhcpUserClass	The DhcpUserClass complex type specifies the common properties of a **user class**.
DhcpUserClassCollection	The DhcpUserClassCollection complex type specifies a collection of DhcpUserClass complex types.
DhcpUserClassV4	The DhcpUserClassV4 complex type allows the extension of the DhcpUserClass complex type. This specifies the DhcpUserClass instance associated with the IPv4-specific DhcpServer instance.
DhcpUserClassV6	The DhcpUserClassV6 complex type allows the extension of the DhcpUserClass complex type. This specifies the DhcpUserClass instance associated with the IPv6- specific DhcpServer instance.
DhcpVendorClass	The DhcpVendorClass complex type specifies the common properties of a **vendor class**.
DhcpVendorClassCollection	The DhcpVendorClassCollection complex type specifies a collection of DhcpVendorClass complex types.
DhcpVendorClassV4	The DhcpVendorClassV4 complex type allows the extension of the DhcpVendorClass complex type. This specifies the DhcpVendorClass instance associated with the IPv4-specific DhcpServer instance.
DhcpVendorClassV6	The DhcpVendorClassV6 complex type allows the extension of the DhcpVendorClass complex type. This specifies the DhcpVendorClass instance associated with the IPv6-specific DhcpServer instance.
DiscoveryConfig	The DiscoveryConfig complex type is used to describe the discovery configuration for a specific domain.
DiscoverySubnetEnumerationParameters	The DiscoverySubnetEnumerationParameters complex type specifies the criteria based on which the subnets for grouping the discovered servers are to be enumerated.
DnsRecordFormatter	The DnsRecordFormatter allows extended attributes on an ipam: IpamObject type. It represents the server name and zone name in a formatted manner.
DnsReverseLookupZone	The DnsReverseLookupZone complex type is used to specify the information pertaining to a single instance

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Complex type	Description
	of a **reverse lookup DNS zone**. The DnsReverseLookupZone complex type allows extending the BaseDnsZone complex type.
DnsReverseLookupZoneEnumerationParameters	The DnsReverseLookupZoneEnumerationParameters complex type is used to specify the criteria to be used for enumerating the reverse lookup zones.
DnsServer	The DnsServer complex type is used to specify the DNS server instance properties.
DnsServerByServerInfoIdsEnumerationParameters	The DnsServerByServerInfoIdsEnumerationParameters complex type specifies the parameters to enumerate the DnsServer instances based on the record identifiers of the ServerInfo instances.
DnsServerEnumerationParameters	The DnsServerEnumerationParameters complex type specifies the criteria to be used for enumerating the DNS servers.
DnsServerReverseZone	The DnsServerReverseZone complex type is used to specify the information regarding a specific reverse lookup DNS zone hosted on a particular server. The DnsServerReverseZone complex type allows the extension of attributes for the BaseDnsServerZone complex type.
DnsServerReverseZoneEnumerationParameters	The DnsServerReverseZoneEnumerationParameters specifies the criteria to be used for enumerating the DNS server hosting of reverse lookup zones.
DnsServerZone	The DnsServerZone complex type specifies the information regarding the **forward lookup DNS zone** hosting on a DNS server. The DnsServerZone complex type allows extending the attributes of the BaseDnsServerZone complex type.
DnsServerZoneEnumerationParameters	The DnsServerZoneEnumerationParameters complex type is used to specify the criteria to enumerate the DNS server hosting of forward lookup zones.
DnsZone	The DnsZone complex type specifies the information pertaining to a forward lookup DNS zone. The DnsZone complex type allows extension of attributes of the BaseDnsZone complex type.
DnsZoneEnumerationParameters	The DnsZoneEnumerationParameters specifies the filter criteria to be used for enumerating the forward lookup zones from the IPAM data store.
DnsZoneEvent	The DnsZoneEvent complex type specifies a specific instance of the DNS zone related **event**.
DnsZoneEventEnumerationParameters	The DnsZoneEventEnumerationParameters specifies the criteria to be used for enumerating the DnsZoneEvent rows from the IPAM data store.

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Complex type	Description
EntityStatus	The EntityStatus is a complex type that is used to describe the operation and its outcome on an IPAM object.
EntityStatusCollection	The EntityStatusCollection allows extended attributes on an ipam: IpamObject type. It is used to keep track of a list of EntityStatus complex types. This can be used to keep track of related operations through one object.
EnumerationParametersBase	The EnumerationParametersBase complex type forms the base element that all other complex types for specifying enumeration parameters extend.
ExclusionRangeDataFormatter	The ExclusionRangeDataFormatter complex type is used to format the fields of an exclusion range into a string used to display the result of operations. The string is formatted to include the scope ID, server name and the start and end IP addresses of the exclusion range to uniquely identify the exclusion range.
FailoverDataFormatter	The FailoverDataFormatter allows extended attributes on an ipam: IpamObject type. It is used to create a formatted string that contains the name of the failover relationship and the partner servers.
FilterDataFormatter	The FilterDataFormatter allows extended attributes on an ipam: IpamObject type. It is used to create a formatted string that contains the name of the server and the MAC address.
GatewayAddress	The GatewayAddress allows extended attributes on an ipam: BaseIpamObject type. It defines Gateway configuration on a DHCP scope.
InvalidDBConfigDatabaseTypeNotValidIpamExceptionData	The InvalidDBConfigDatabaseTypeNotValidIpamExceptionData allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidDBConfigDatabaseTypeNotValid.
InvalidSQLDBConfigAuthNotSupportedIpamExceptionData	The InvalidSQLDBConfigAuthNotSupportedIpamExceptionData allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidSQLDBConfigAuthNotSupported.
InvalidSQLDBConfigInvalidPortIpamExceptionData	The InvalidSQLDBConfigInvalidPortIpamExceptionData allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidSQLDBConfigInvalidPort.
InvalidWIDDBConfigAuthNotSupportedIpamException	The

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Complex type	Description
Data	InvalidWIDDBConfigAuthNotSupportedIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigAuthNotSupported.
InvalidWIDDBConfigDirectoryDoesNotExistIpamExceptionData	The InvalidWIDDBConfigDirectoryDoesNotExistIpamExceptionData complex type extends the ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigDirectoryDoesNotExist.
InvalidWIDDBConfigInvalidCredentialIpamExceptionData	The InvalidWIDDBConfigInvalidCredentialIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigInvalidCredential.
InvalidWIDDBConfigNameMustBeIPAMIpamExceptionData	The InvalidWIDDBConfigNameMustBeIPAMIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigNameMustBeIPAM.
InvalidWIDDBConfigPortNotAllowedIpamExceptionData	The InvalidWIDDBConfigPortNotAllowedIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigPortNotAllowed.
InvalidWIDDBConfigServerNotAllowedIpamExceptionData	The InvalidWIDDBConfigServerNotAllowedIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigServerNotAllowed.
ipam1:DhcpReservationAllEnumerationParameters	The DhcpReservationAllEnumerationParameters complex type specifies the criteria to be used for enumerating the reservations
ipam1:DhcpReservationScopeBasedEnumerationParameters	The DhcpReservationScopeBasedEnumerationParameters complex type specifies the criteria to be used for enumerating the reservations from a given set of scopes.
ipam1:IIpamRemotingModule	The ipam1:IIpamRemotingModule complex type provides the base type to provide abstraction for remote calls from the IPAM server.
ipam1:IpamException	The ipam1:IpamException complex type specifies the base type for providing the fault information from the

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Complex type	Description
	management server to the management client.
IpamAddressObject	The IpamAddressObject complex type specifies an IP address object that also extends the IpamObject so that it can be used with port types that allow enumeration of data from the server.
IpamAdminOperation	The IpamAdminOperation complex type allows extended attributes on an ipam: BaseIpamObject type. This specifies an administration operation in IPAM.
IpamCredential	The IpamCredential complex type allows extended attributes on an ipam: BaseIpamObject type. This specifies a set of credentials in IPAM.
IpamDatabaseConfiguration	The IpamDatabaseConfiguration complex type allows extended attributes on an ipam: BaseIpamObject type. It represents the configuration for an IPAM database.
IpamExceptionData	The IpamExceptionData complex type is used to specify the details pertaining to the fault specified by using IpamException instance.
IpamGenericExceptionData	The IpamGenericExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiGenericErrorOccurred.
IpamGpoError	The IpamGpoError complex type extends attributes on an ipam: BaseIpamObject type. This is used to encapsulate error while creating GPOs for a particular domain.
IpamGpoErrorInfo	The IpamGpoErrorInfo complex type allows extended attributes on an ipam: IpamExceptionData type.
IpamIPAddress	The IpamIPAddress complex type specifies the common address object information in the IPAM data store.
IpamIPAddressAllForLogicalGroupEnumerationParameters	The IpamIPAddressAllForLogicalGroupEnumerationParameters complex type specifies the parameters for enumerating the IP address instances that map to a specified logical group.
IpamIPAddressAllForLogicalGroupNodeEnumerationParameters	The IpamIPAddressAllForLogicalGroupNodeEnumerationParameters complex type specifies the criteria to be used for enumerating the addresses that map to a **logical group node**.
IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters	The IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating the address instances that are

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Complex type	Description
	associated with a particular AddressSpace, are of a given IPVirtualizationType, and belong to a given AddressFamily.
IpamIPAddressByBlockIdEnumerationParameters	The IpamIPAddressByBlockIdEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that map to a specified address block.
IpamIPAddressByFilterEnumerationParameters	The IpamIPAddressByFilterEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that belong to a particular address family and also meet a set of conditions defined by a set of filter criteria.
IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters	The IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that have a specified value for ManagedBy and ManagedByEntity **built-in custom field values**.
IpamIPAddressByRangeIdEnumerationParameters	The IpamIPAddressByRangeIdEnumerationParameters complex type specifies the filter criteria to be used for enumerating the address instances that map to a specific address range.
IpamIPAddressBySubnetIdEnumerationParameters	The IpamIPAddressBySubnetIdEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that map to a specified **IP subnet**.
IpamIPAddressByVirtualizationTypeParameters	The IpamIPAddressByVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating the address instances that are of a given virtualization type.
IpamIPAddressDataFormatter	The IpamIPAddressDataFormatter complex type is used to format error entities in operations relating to IPAddress.
IpamIPAddressForUnmappedRangesEnumerationParameters	The IpamIPAddressForUnmappedRangesEnumerationParameters retrieves the list of addresses in address ranges that are not already mapped to an address block.
IpamIPAddressRootAddressesEnumerationParameters	The IpamIPAddressRootAddressesEnumerationParameters complex type specifies the filter criteria to be used for enumerating the address instances belonging to a specified address category.
IpamIPAddressUnmappedAddressEnumerationParameters	The IpamIPAddressUnmappedAddressEnumerationParameters complex type specifies the criteria to be used

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Complex type	Description
	for enumerating the unmapped address instances. Unmapped address instances are those that are not mapped to any address range instances.
IpamIPSubnetByFilterEnumerationParameters	The IpamIPSubnetByFilterEnumerationParameters complex type specifies the criteria to be used for filtering the enumerated list of IP subnets.
IpamIPSubnetsByAddressCategoryEnumerationParameters	The IpamIPSubnetsByAddressCategoryEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets that belong to a given address category and a given address family.
IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters	The IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets that map to a given address space and are of a given virtualization type.
IpamIPSubnetsByBlockIdEnumerationParameters	The IpamIPSubnetsByBlockIdEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets that map to a given address block.
IpamIPSubnetsByUnmappedEnumerationParameters	The IpamIPSubnetsByUnmappedEnumerationParameters complex type specifies the criteria to be used for enumerating unmapped IP subnets of a given address family and virtualization type.
IpamIPSubnetsByVirtualizationTypeEnumerationParameters	The IpamIPSubnetsByVirtualizationTypeEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets of a given address family and virtualization type.
IpamIPSubnetsDirectChildrenByBlockIdEnumerationParameters	The IpamIPSubnetsByVirtualizationTypeEnumerationParameters complex type specifies the criteria to be used for enumerating the IP subnet instances of a given address family that map directly to the given address block.
IpamIPv4Address	The IpamIPv4Address complex type enables extension of attributes of the IpamIPAddress complex type. This is used to specify the details pertaining to the IPv4 address instance. The IPAddress, ParentIPRangeEndIP, ParentIPRangeStartIP, DhcpScopeSubnetId MUST be of address family Internet where they are applicable.
IpamIPv4AddressLogicalGroup	The IpamIPv4AddressLogicalGroup complex type allows extensions to the LogicalGroup complex type. This specifies the LogicalGroup which can be used to enumerate IPv4 address instances using the **logical group hierarchy**.

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Complex type	Description
IpamIPv4AddressLogicalGroupNode	The IpamIPv4AddressLoigicalGroupNode complex type allows extension of the LogicalGroupNode complex type. It defines the custom field value at a specific level in the logical group hierarchy. It will define the criteria for categorizing the IPv4 address instances based on the custom field values defined on them in the form of a logical group hierarchy.
IpamIPv6Address	The IpamIPv6Address complex type enables extension of attributes of the IpamIPAddress complex type. This is used to specify the details pertaining to the IPv6 address instance. The IPAddress, ParentIPRangeEndIP, ParentIPRangeStartIP, DhcpScopeSubnetId MUST be of address family InternetV6 where they are applicable.
IpamIPv6AddressLogicalGroup	The IpamIPv6AddressLogicalGroup complex type allows extensions to the LogicalGroup complex type. This specifies the LogicalGroup that can be used to enumerate IPv6 address instances using the logical group hierarchy.
IpamIPv6AddressLogicalGroupNode	The IpamIPv6AddressLoigicalGroupNode complex type allows extension of the LogicalGroupNode complex type. It defines the custom field value at a specific level in the logical group hierarchy. It will define the criteria for categorizing the IPv6 address instances based on the custom field values defined on them in the form of a logical group hierarchy.
IpamNumberOfRowsObject	The IpamNumberOfRowsObject complex type defines the type that can be used to return an integer value specifying the number of rows as a result from the IPAM enumeration port types.
IpamObject	The IpamObject complex type is used to identify and provide certain common functionality for types that are IPAM-specific.
IpamOperationWithProgressParameters	The IpamOperationWithProgressParameters complex type extends ipam: IpamObject. It extends the base type with an additional member of enum type ipam:IpamAdminOperationId, which identifies the type of operation being performed.
IpamProvisioningEnumerationParameters	The IpamProvisioningEnumerationParameters complex type allows extended attributes on an ipam: EnumerationParametersBase type.
IpamProvisioningSetting	The IpamProvisioningSetting complex type allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is AsyncProvision.
IpamSchemaVersion	The IpamSchemaVersion complex type allows extended attributes on an ipam: BaseIpamObject type. It defines the schema version of IPAM server.

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Complex type	Description
IpamUpgradeValidationRuleInfo	The IpamUpgradeValidationRuleInfo allows extended attributes on an ipam: BaseIpamObject type. It defines the schema version of IPAM server.
IpamUpgradeValidationRuleStatus	The IpamUpgradeValidationRuleStatus allows extended attributes on an ipam: BaseIpamObject type. It defines a set of rules used for validating whether a given instance of IPAM can be upgraded, along with the status for each rule.
IPAuditEnumerationParameters	The IPAuditEnumerationParameters complex type is used to specify the enumeration parameters for the **IP address audit**.
IPAuditRecord	The IPAuditRecord complex type is used to specify single IP address audit.
IPBlock	The IPBlock complex type specifies the address block information that is common to both IPv4Block and IPv6Block.
IPBlockChildBlockEnumerationParameters	The IPBlockChildBlockEnumerationParameters complex type specifies the criteria to be used for enumerating the address blocks that form the child blocks of a specified address block.
IPBlockDataFormatter	The IPBlockDataFormatter complex type extends the ipam:IpamObject and encapsulates the properties of an IP block that will be formatted.
IPBlockGetAllBlocksEnumerationParameters	The IPBlockGetAllBlocksEnumerationParameters complex type specifies the criteria to be used for enumerating all the address blocks in the IPAM data store.
IPBlockRootEnumerationParameters	The IPBlockRootEnumerationParameters complex type is used to specify the criteria for enumerating the rows that form the first level of address blocks (for which there are no parent blocks).
IPCumulativeUtilization	The IPCumulativeUtilization complex type specifies the address utilization statistics or trend information.
IPRange	The IPRange complex type specifies the common information pertaining to the address range.
IPRangeAllForBlockEnumerationParameter	The IPRangeAllForBlockEnumerationParameter complex type is used to specify the criteria based on which ranges corresponding to an address block instance can be retrieved.
IPRangeAllForDhcpServerEnumerationParameters	The IPRangeAllForDhcpServerEnumerationParameters complex type is used to specify the criteria based on which address ranges corresponding to the DHCP scope instances of a particular DHCP server are enumerated.
IPRangeAllForLogicalGroupNodeEnumerationParamet	The

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Complex type	Description
ers	IPRangeAllForLogicalGroupNodeEnumerationParameters complex type is used to specify the parameters for enumerating the IP range instances corresponding to a specified logical group node in the logical group hierarchy.
IPRangeByAddressSpaceAndVirtualizationTypeParameters	The IPRangeByAddressSpaceAndVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating IP range instances that map to a given address space and are of a given virtualization type.
IPRangeByFilterEnumerationParameters	The IPRangeByFilterEnumerationParameters complex type specifies the criteria to be used for enumerating the IP range instances that belong to a particular address family and also meet a set of conditions defined by a set of filter criteria.
IPRangeByManagedByAndManagedByEntityEnumerationParameters	The IPRangeByManagedByAndManagedByEntityEnumerationParameters complex type specifies the criteria required to enumerate the address ranges for which the **built-in custom fields** ManagedBy and ManagedByEntity are having a specific value.
IPRangeByVirtualizationTypeParameters	The IPRangeByVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating the IP range instances that are of a given virtualization type.
IPRangeDataFormatter	The IPRangeDataFormatter complex type specifies the key properties of an IP range, which will be formatted for display.
IPRangeForBlockEnumerationParameters	The IPRangeForBlockEnumerationParameters complex type is used to specify the criteria for enumerating the address ranges that map directly onto an address block and don't include the address ranges that map to a child block for the specified address block.
IPRangeForSubnetEnumerationParameter	The IPRangeForSubnetEnumerationParameter extends ipam:EnumerationParametersBase and specifies the parameters used to enumerate all ranges for a given subnet.
IPRangeRootEnumerationParameters	The IPRangeRootEnumerationParameters complex type is used to specify the criteria for enumerating all the address ranges that have a specific address category.
IPRangeUnmappedEnumerationParameters	The IPRangeUnmappedEnumerationParameters complex type is used to specify the criteria for enumerating the address ranges that are not mapped to any address block and are unmapped.
IPSubnet	The IPSubnet complex type allows extending the

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Complex type	Description
	attributes of the IPBlock complex type to represent information pertaining to an IP subnet.
IPUtilization	The IPUtilization complex type is used to specify the address utilization data for a specific time range.
IPv4Block	The IPv4Block complex type allows extending the attributes of the IPBlock complex type. This is used to specify the IPv4-specific address block. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type being Internet.
IPv4Range	The IPv4Range complex type allows extending the attributes of IPRange complex type. This specifies the details of IPv4-specific address range details. The DefaultGateway, EndIPAddress, ExclusionRanges, StartIPAddress, SubnetId, and SubnetMask MUST be of address family type being Internet.
IPv4RangeLogicalGroup	The IPv4RangeLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the address ranges.
IPv4RangeLogicalGroupNode	The IPv4RangeLogicalGroupNode complex type allows extending the attributes of LogicalGroupNode complex type. This specifies the criteria for a specific level in the logical group hierarchy that can be used to enumerate the address ranges that meet that particular level.
IPv4Subnet	The IPv4Subnet complex type allows extending the attributes of a IPSubnet complex type. This is used to specify the IPv4-specific subnet. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type Internet.
IPv4SubnetLogicalGroup	The IPv4SubnetLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the IP subnets.
IPv4SubnetLogicalGroupNode	The IPv4SubnetLogicalGroupNode complex type allows extending the attributes of LogicalGroupNode complex type. It defines the value of the custom field that occurs at the specific level in logical group hierarchy. The value of the custom field, which forms the logical group hierarchy up to this node, is used as a criteria to enumerate IPv4 subnets.
IPv4Utilization	The IPv4Utilization complex type allows extending the attributes of an IPUtilization complex type. This is used to specify the address utilization corresponding to IPv4-specific address space.
IPv6Block	The IPv4Block complex type allows extending the attributes of the IPBlock complex type. This is used

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Complex type	Description
	to specify the IPv4-specific address block. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type being Internet.
IPv6Range	The IPv6Range complex type allows extending the attributes of IPRange complex type. This specifies the details of IPv6-specific address range details. The DefaultGateway, EndIPAddress, ExclusionRanges, StartIPAddress, SubnetId, and SubnetMask MUST be of address family type being InternetV6.
IPv6RangeLogicalGroup	The IPv6RangeLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the address ranges.
IPv6RangeLogicalGroupNode	The IPv6RangeLogicalGroupNode complex type allows extending the attributes of LogicalGroupNode complex type. This specifies the criteria for a specific level in the logical group hierarchy that can be used to enumerate the address ranges that meet that particular level.
IPv6Subnet	The IPv6Subnet complex type allows extending the attributes of a IPSubnet complex type. This is used to specify the IPv6-specific subnet. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type InternetV6.
IPv6SubnetLogicalGroup	The IPv6SubnetLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the IP subnets.
IPv6SubnetLogicalGroupNode	The IPv6SubnetLogicalGroupNode complex type allows extending the attributes of LogicalGroupNode complex type. It defines the value of the custom field that occurs at the specific level in logical group hierarchy. The value of custom field, which forms the logical group hierarchy up to this node, is used as a criteria to enumerate IPv6 subnets.
IPv6Utilization	The IPv6Utilization complex type allows extending the attributes of an IPUtilization complex type. This is used to specify the address utilization corresponding to IPv6-specific address space.
LogicalGroup	The LogicalGroup complex type specifies the definition of a logical group.
LogicalGroupDataForLogicalGroupNodeEnumerationParameters	The LogicalGroupDataForLogicalGroupNodeEnumerationParameters complex type specifies the logical group node information that will form the criteria for enumerating the data.
LogicalGroupDataForRootAlternateItemsEnumeration	The

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Complex type	Description
Parameters	LogicalGroupDataForRootAlternateItemsEnumerationParameters complex type specifies the criteria for enumerating the data which will map to the specified logical group.
LogicalGroupDataUnmappedItemsEnumerationParameters	The LogicalGroupDataUnmappedItemsEnumerationParameters complex type specifies the criteria used to enumerate the data that do not map to a specified logical group.
LogicalGroupField	The LogicalGroupField complex type specifies one level of the multivalued custom field that forms the logical group hierarchy.
LogicalGroupNode	The LogicalGroupNode complex type specifies the actual custom field values that form the criteria for the data to be satisfied to match at a particular level in the logical group hierarchy.
LogicalGroupNodeChildrenEnumerationParameters	The LogicalGroupNodeChildrenEnumerationParameters complex type specifies the criteria to be used for enumerating the logical group nodes that form the next level of logical group nodes in a logical group hierarchy.
LogicalGroupNodeRootEnumerationParameters	The LogicalGroupNodeRootEnumerationParameters complex type specifies the criteria for enumerating the LogicalGroupNode that form the first level of LogicalGroupHierarchy.
LogicalGroupsEnumerationParameters	The LogicalGroupsEnumerationParameters complex type specifies the criteria for enumerating the logical groups from the IPAM data store.
MACAddress	The MACAddress complex type is used to specify the MAC address.
MovePolicyProcessingOrderParameters	The MovePolicyProcessingOrderParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is MovePolicyProcessingOrder and associates them to an ipam:DhcpPolicyV4 policy and an ipam:PolicyProcessingOrderDirection.
OptionDefinitionDataFormatter	The OptionDefinitionDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name, vendor class name, and the associated option ID.
PropertiesCouldNotBeValidatedIpamExceptionData	The PropertiesCouldNotBeValidatedIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiValidationFailure.

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Complex type	Description
ProviderAddressSpace	The ProviderAddressSpace complex type extends the complex type AddressSpace. A particular Provider address space contains provider or fabric/physical networks on top of which virtual networks can be built.
RemoveScopesFromSuperscopeParameters	The RemoveScopesFromSuperscopeParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is RemoveScopesFromSuperscope and associates them to a list of DHCP scope IDs that this operation is to be performed upon.
RenameSuperscopeParameters	The RenameSuperscopeParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is RenameSuperscope and associates them to a DhcpSuperscopeV4 that is to be renamed and the name it is to be given.
ReplicateRelationDataFormatter	The ReplicateRelationDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name from which the replication is initiated and the relationship name.
ReplicateRelationParameters	The ReplicateRelationParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is ReplicateRelation and associates them to an ipam:DhcpFailover object.
ReplicateScopeParameters	The ReplicateScopeParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is ReplicateScope and associates them to a list of ipam:DhcpScope objects.
ReplicateScopesDataFormatter	The ReplicateScopesDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name from which the replication is initiated and the scopes in the server that are to be replicated.
ReplicateServerDataFormatter	The ReplicateServerDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name from which the replication is performed.
ReplicateServerParameters	The ReplicateServerParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is ReplicateServer

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Complex type	Description
	and associates them to an ipam:DhcpServerV4 object.
ReservationDataFormatter	The ReservationDataFormatter complex type is used to format the fields of a DHCP reservation into a string used to display the result of operations. The string is formatted such that the DHCP reservation is identifiable uniquely.
ReservationOptionDataFormatter	The ReservationOptionDataFormatter complex type is used to format the fields of a DHCP option corresponding to a DHCP reservation into a string used to display the result of operations. The string is formatted such that the DHCP option and reservation are identifiable uniquely.
ResetConfigSyncStatusDataFormatter	The ResetConfigSyncStatusDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the list of DhcpScope objects' scope IDs for which this reset is applied.
ResetConfigSyncStatusParameters	The ResetConfigSyncStatusParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is ResetConfigSyncStatus and associates them to a list of ipam:DhcpScope objects on which this operation is to be performed.
ScopeDataFormatter	The ScopeDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name and the scope ID of the relevant scope.
ScopeOptionDataFormatter	The ScopeOptionDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name, scope ID, vendor class name, user class name and associated optionID.
ScopePolicyDataFormatter	The ScopePolicyDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name, scope ID, and the policy name.
ScopePolicyIpRangeDataFormatter	The ScopePolicyIpRangeDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the policy name, server name, scope ID, and the policy range.
ScopePolicyOptionDataFormatter	The ScopePolicyOptionDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name, scope ID, vendor class name, policy name, and the associated option ID.

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Complex type	Description
serarr:ArrayOfanyType	The serarr:ArrayOfanyType specifies an array whose elements can be of any type.
serarr:ArrayOfint	The serarr: ArrayOfint specifies an array whose elements are of type int.
serarr:ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz	The serarr:ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz complex type specifies an array of key value pairs where the key of the element has the DnsReverseLookupZoneFilterCriteria and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique, i.e. no two elements in the array can have the same key.
serarr:ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz	The serarr:ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz complex type specifies an array of key value pairs where the key of the element has the DnsZoneFilterCriteria and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique, i.e. no two elements in the array can have the same key.
serarr:ArrayOfKeyValueOfintanyType	The serarr:ArrayOfKeyValueOfintanyType complex type specifies an array of key value pairs where the key of the element has an integer and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique, i.e. no two elements in the array can have the same key.
serarr:ArrayOfKeyValueOfIPBlockDataFormatterIpamException0cupfWA8	The serarr:ArrayOfKeyValueOfIPBlockDataFormatterIpamException0cupfWA8 complex type specifies an array of key value pairs where the key of the element is of type ipam:IPBlockDataFormatter and the value of the element is of type ipam1:IpamException. The keys in the array MUST be unique, that is, no two elements in the array can have the same key.
serarr:ArrayOfKeyValueOfIPRangeDataFormatterIpamException0cupfWA8	The serarr:ArrayOfKeyValueOfIPRangeDataFormatterIpamException0cupfWA8 complex type specifies an array of key value pairs where the key of the element is of type ipam:IPRangeDataFormatter and the value of the element is of type ipam1:IpamException. The keys in the array MUST be unique, that is, no two elements in the array can have the same key.
serarr:ArrayOfKeyValueOflongDhcpScopem1ahUJFx	The serarr:ArrayOfKeyValueOflongDhcpScopem1auJFx complex type specifies an array of key value pairs where the key of the element has the DHCP scope instance record identifier and the value is the corresponding DHCP scope instance.
serarr:ArrayOfKeyValueOflongIpamExceptionmhTjmZ	The serarr:

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Complex type	Description
B3	ArrayOfKeyValueOflongIpamExceptionmhTjmZB3 complex type specifies an array of key value pairs where the key of the element is a record identifier and the value of the element is the IpamException instance having the record identifier specified in the key. The keys in the array MUST be unique so that no two elements in the array can have the same key.
serarr:ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz	The serarr:ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz complex type specifies an array of key value pairs where the key of the element has the ServerInfoGetServerFilter type and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique, i.e. no two elements in the array can have the same key.
serarr:ArrayOflong	The serarr:ArrayOflong specifies an array of elements of type xsd:long.
serarr:ArrayOfstring	The serarr:ArrayOfstring specifies an array of elements of type xsd:string.
serarr:ArrayOfunsignedByte	The serarr:ArrayOfunsignedByte specifies an array of elements of type xsd:unsignedByte.
serarr:ArrayOfunsignedShort	The serarr:ArrayOfunsignedShort specifies an array of elements of type xsd:unsignedShort.
ServerDataFormatter	The ServerDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name.
ServerInfo	The ServerInfo complex type specifies the information pertaining to the server instances in the IPAM data store.
ServerInfoEnumerationParameters	The ServerInfoEnumerationParameters complex type specifies the criteria to be used for enumerating the server instances from the IPAM data store.
ServerOptionDataFormatter	The ServerOptionDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name, vendor class name, user class name, and option ID.
ServerPolicyDataFormatter	The ServerPolicyDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name and policy name.
ServerPolicyOptionDataFormatter	The ServerPolicyOptionDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name, vendor class name, policy name, and the associated option ID.

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Complex type	Description
ServerRole	The ServerRole complex type specifies the common access status information pertaining to an individual **server role**.
ServerRoleDc	The ServerRoleDc complex type allows the extension of attributes of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Dc.
ServerRoleDhcp	The ServerRoleDhcp complex type allows the extension of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Dhcp.
ServerRoleDhcp.Version	The ServerRoleDhcp.Version complex type specifies the version of the DHCP server role.
ServerRoleDns	The ServerRoleDns complex type allows the extension of attributes of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Dns.
ServerRoleNps	The ServerRoleNps complex type allows the extension of attributes of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Nps.
SetDhcpReservationCollectionParameters	The SetDhcpReservationCollectionParameters complex type specifies the reservation fields to be changed and the collection of reservation on which edit operation should be done for multi-edit of DHCP reservations.
SetDhcpReservationParameters	The SetDhcpReservationParameters complex type specifies the reservation whose configuration needs to be modified.
SetSuperscopeActivationStatusParameters	The SetSuperscopeActivationStatusParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is SetSuperscopeActivationStatus. It associates a list of DhcpSuperscopeV4 objects to the activation status needed to be set on them.
SubnetLogicalGroupNodeRootEnumerationParameters	The SubnetLogicalGroupNodeRootEnumerationParameters complex type extends ipam:EnumerationParametersBase and specifies the logical group, address space, and the address family to be used to enumerate subnets.
SubTaskInstance	The SubTaskInstance complex type allows extended attributes on an ipam:IpamObject and ipam:INotifyPropertyChanged. These are used to break a task at a granular level so that they have a one on one correspondence with powershell commandlets that are used to execute them.

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Complex type	Description
SuperscopeV4DataFormatter	The SuperscopeV4DataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name and superscope name.
sys:ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S	The sys:ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S complex type specifies an array of pairs of two values of two custom fields.
sys:ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz	The sys:ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz complex type specifies an array of filters that are to be applied while enumerating address space data. Each filter is a key value pair wherein the key specifies a the type filter that is to be applied and the value specifies the value of the filter criteria.
sys:ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz	The sys:ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz complex type specifies an array of filters that are to be applied while enumerating IP address data. Each filter is a key value pair wherein the key specifies the type filter that is to be applied and the value specifies the value of the filter criteria.
sys:ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz	The sys:ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz complex type specifies an array of filters that are to be applied while enumerating IP range data. Each filter is a key value pair wherein the key specifies the type filter that is to be applied and the value specifies the value of the filter criteria.
sys:ArrayOfTupleOfGetIPSubnetFilteranyType2zwQHvQz	The sys:ArrayOfTupleOfGetIPSubnetFilteranyType2zwQHvQzcomplex type specifies an array of filters that are to be applied while enumerating IP subnet data. Each filter is a key value pair wherein the key specifies a the type filter that is to be applied and the value specifies the value of the filter criteria.
sys:ArrayOfTupleOflongstringstring	The sys:ArrayOfTupleOflongstringstring complex type specifies an array of a tuple representing a combination of a long integer and two strings.
sys:ArrayOfTupleOfstringstring	The ArrayOfTupleOfstringstring complex type specifies an array of tuples representing a pair of string values.
sys:Exception	The sys:Exception specifies the generic Exception complex type which is extended by the IpamException complex type for specifying the IPAM fault information.
sys:TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S	The sys:TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S complex type specifies a pair of custom field

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Complex type	Description
	values.
sys:TupleOfGetAddressSpaceFilteranyType2zwQHvQz	The sys:TupleOfGetAddressSpaceFilteranyType2zwQHvQz complex type specifies a key value pair wherein the **m_Item1** specifies an ipam:GetAddressSpaceFilter type specifying the type of filter that has to be applied with the value of the filter-specified data specified in the **m_Item2** portion key value pair entry.
sys:TupleOfGetIpamIPAddressFilteranyType2zwQHvQz	The sys: TupleOfGetIpamIPAddressFilteranyType2zwQHvQz complex type specifies a key value pair wherein the **m_Item1** specifies a ipam:GetIpamIPAddressFilter type specifying the type of filter that has to be applied with the value of the filter-specified data specified in the **m_Item2** portion key value pair entry.
sys:TupleOfGetIPRangeFilteranyType2zwQHvQz	The sys: TupleOfGetIPRangeFilteranyType2zwQHvQz complex type specifies a key value pair wherein the **m_Item1** specifies a ipam:GetIPRangeFilter type specifying the type of filter that has to be applied with the value of the filter-specified data specified in the **m_Item2** portion key value pair entry.
sys:TupleOfGetIPSubnetFilteranyType2zwQHvQz	The sys:TupleOfGetIPSubnetFilteranyType2zwQHvQz complex type specifies a key value pair wherein the **m_Item1** specifies a ipam:GetIPSubnetFilter type specifying the type of filter that has to be applied with the value of the filter-specified data specified in the **m_Item2** portion key value pair entry.
sys:TupleOflongstringstring	The sys: TupleOflongstringstring complex type specifies a row containing a long integer and a pair of strings.
sys:TupleOfstringstring	The sys:TupleOfstringstring complex type specifies a pair of string values.
sys:Version	The sys:Version complex type can be used to specify the version of a component or server.
sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S	The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpExclusionRange data specified in the value portion key value pair entry.
sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S	The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of

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Complex type	Description
	operation that has to be performed with the DhcpOption data specified in the value portion key value pair entry.
sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S	The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpOptionDefinition data specified in the value portion key value pair entry.
sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S	The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpUserClass data specified in the value portion key value pair entry.
sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S	The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpVendorClass data specified in the value portion key value pair entry.
sysgen:ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx	The sysgen:ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx complex type specifies an array of key value pairs wherein the key specifies the record identifier and the value specifies an AddressSpace object.
sysgen:ArrayOfKeyValuePairOflongArrayOfIPBlockm1ahUJFx	The sysgen:ArrayOfKeyValuePairOflongArrayOfIPBlockm1ahUJFx complex type specifies an array of key value pairs wherein the key specifies the record identifier and the value specifies an array of address block instances specifying the hierarchy of the address block corresponding to the record identifier.
sysgen:ArrayOfKeyValuePairOflongint	The sysgen:ArrayOfKeyValuePairOflongint complex type specifies an array of key value pairs wherein the key specifies a long integer and the value specifies an integer value.
sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3	The sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3 complex type specifies an array of key value pairs wherein the key specifies a long integer and the value specifies an IpamException.
sysgen:KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S	The sysgen:KeyValuePairOfCollectionOperationsDhcpExclu

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Complex type	Description
	sionRangenTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpExclusionRange data specified in the value portion.
sysgen:KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S	The sysgen:KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpOption data specified in the value portion.
sysgen:KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S	The sysgen:KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpOptionDefinition data specified in the value portion.
sysgen:KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S	The sysgen:KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpUserClass data specified in the value portion.
sysgen:KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S	The sysgen:KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpVendorClass data specified in the value portion.
sysgen:KeyValuePairOflongAddressSpacem1ahUJFx	The sysgen:KeyValuePairOflongAddressSpacem1ahUJFx complex type specifies a key value pair wherein the key specifies a long type element and the value specifies an element of type Ipam:AddressSpace.
sysgen:KeyValuePairOflongint	The sysgen:KeyValuePairOflongint complex type specifies a key value pair wherein the key specifies a long type element and the value specifies an int type element.
sysgen:KeyValuePairOflongIpamExceptionmhTjmZB3	The sysgen:KeyValuePairOflongIpamExceptionmhTjmZB3 complex type specifies a key value pair wherein the key specifies a long type element and the value specifies an IpamException type element.
sysnet:ArrayOfIPAddress	The sysgen:ArrayOfIPAddress complex type specifies

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Complex type	Description
	an array of IPAddress complex type.
sysnet:IPAddress	The sysnet:IPAddress specifies an IP address independent of the address family.
TaskInfo	The TaskInfo complex type specifies the set of details that provide more information about IPAM tasks.
UnmappedIpamIPAddressForLogicalGroupEnumerationParameters	The UnmappedIpamIPAddressForLogicalGroupEnumerationParameters complex type specifies the parameters for enumerating the IP address instances that do not map to a specific logical group.
UpdateDhcpFilterParameters	The UpdateDhcpFilterParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdateDhcpFilter and associates them to an ipam:DhcpFilter that is to be updated.
UpdateDhcpFiltersParameters	The UpdateDhcpFiltersParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdateDhcpFilters and associates them to the update parameters for a collection of DhcpFilter that are to be updated.
UpdateDhcpScopeParameters	The UpdateDhcpScopeParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is EditDhcpScope and associates them to an ipam:DhcpScope.
UpdateDhcpServerParameters	The UpdateDhcpServerParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is EditDhcpServer and associates them to an ipam:DhcpServer.
UpdateIpamIPAddressParameters	The UpdateIpamIPAddressParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type.
UpdatePolicyParameters	The UpdatePolicyParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdatePolicy and associates them to an ipam:DhcpPolicyV4.
UpdatePolicyPropertiesParameters	The UpdatePolicyPropertiesParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdatePolicyProperty and associates them to a Collection of ipam:DhcpPolicyV4 and an ipam:DhcpPolicyPropertyUpdate object.

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Complex type	Description
UserAccessPolicy	The UserAccessPolicy complex type allows extended attributes on an ipam: BaseIpamObject type. It specifies the properties of a user's access policy in IPAM data store.
UserClassDataFormatter	The UserClassDataFormatter complex type allows extended attributes on an ipam: IpamObject type. This presents the ServerName and UserClassName in a formatted string manner.
UserRole	The UserRole complex type allows extended attributes on an ipam: BaseIpamObject type. It specifies the properties that define a user's role in IPAM.
UsingExistingSchemaNotSupportedIpamExceptionData	The UsingExistingSchemaNotSupportedIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorUsingExistingSchemaNotSupported.
VendorClassDataFormatter	The VendorClassDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name and vendor class name.

2.2.4.1 AccessScope

The AccessScope allows extended attributes on an ipam:BaseIpamObject type.

```
<xs:complexType name="AccessScope">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="FullScopePath" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsBuiltIn" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Label" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ParentAccessScopeID" nillable="true"
type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```

AccessScopeId: This is of long int type and represents the record id of the access scope object in the IPAM data store.

Description: This is a string that represents the user input description of the access scope.

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FullScopePath: This is a string that represents the hierarchy of the access scope from the root level.

IsBuiltIn: This is of type bool and represents whether or not this is a default access scope (Global).

Label: This is a string that represents the user input name of the access scope.

ParentAccessScopeID: This is a long int and represents the data store record ID of the immediate predecessor of this access scope object.

2.2.4.2 AccessScopeToUserRoleMapping

The AccessScopeToUserRoleMapping allows extended attributes on an ipam:BaseIpamObject type. It describes an access policy that is an association between a user role and an access scope.

```
<xs:complexType name="AccessScopeToUserRoleMapping">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="AccessScopeName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="UserRoleId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="UserRoleName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
</xs:complexType>
```

AccessScopeId: This represents the record id of the access scope object in IPAM data store.

AccessScopeName: This is of type string and represents the hierarchy of the access scope from root level.

UserRoleId: This refers to this instance of the user role in IPAM data store.

UserRoleName: This is a string which corresponds to the name of the user role.

2.2.4.3 ActiveServerV4LogicalGroup

The ActiveServerV4LogicalGroup allows extended attributes on an ipam:LogicalGroup type. It specifically contains the definition of the logical group on server instances with IPv4-specific details, which are enabled for management in the IPAM data store.

```
<xs:complexType name="ActiveServerV4LogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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2.2.4.4 ActiveServerV4LogicalGroupNode

The ActiveServerV4LogicalGroupNode allows extended attributes on an ipam:LogicalGroupNode type. It specifically defines the custom field value at a specific level in the logical group hierarchy. It will define the criteria for categorizing server instances with IPv4-specific details, which are enabled for management.

```
<xs:complexType name="ActiveServerV4LogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.5 ActiveServerV6LogicalGroup

The ActiveServerV6LogicalGroup allows extended attributes on an ipam:LogicalGroup type. It specifically contains the definition of the logical group on server instances with IPv6-specific details, which are enabled for management in the IPAM data store.

```
<xs:complexType name="ActiveServerV6LogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.6 ActiveServerV6LogicalGroupNode

The ActiveServerV6LogicalGroupNode allows extended attributes on an ipam:LogicalGroupNode type. It specifically defines the custom field value at a specific level in the logical group hierarchy. It will define the criteria for categorizing server instances with IPv6-specific details, which are enabled for management.

```
<xs:complexType name="ActiveServerV6LogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.7 AddressSpace

A set of connected networks that are reachable (routable) from one another form an address space. In IPAM all IP blocks/subnets/ranges and IP addresses that belong to such a set of networks are grouped together within an Address Space container. In order to support network virtualization IPAM provides two types of address spaces: Provider and Customer. By default all IPAM entities are deemed to reside in a built-in address space called "DefaultIPAddressSpace". Any conventional (nonvirtualized) network entity like a subnet or IP address range will lie in the Default address space.

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```
<xs:complexType name="AddressSpace">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="AddressSpaceType" type="ipam:IPAddressSpaceType" />
        <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IPv4UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
        <xs:element minOccurs="0" name="IPv6UtilizationStatistics" nillable="true"
type="ipam:IPv6Utilization" />
        <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="PartialCustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldPartialValue" />
        <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AccessScopeId: Identifier of the access scope that is associated with this address space.

AddressSpaceType: This specifies whether the address space is of type Provider or Customer. The Provider address space encapsulates entities that are used for hosting the provider's infrastructure while the Customer address space encapsulates entities defined for **tenant** machines. This MUST NOT be null.

CustomFieldValues: This specifies the list of custom field values associated with the address space.

Description: This specifies the description for the address space.

IPv4UtilizationStatistics: This specifies the utilization statistics of the IPv4 subnets that map to this address space.

IPv6UtilizationStatistics: This specifies the utilization statistics of the IPv6 subnets that map to this address space.

IsInheritedAccessScope: This specifies whether the given address space inherits its access scope from another object.

Name: This specifies the name for the address space.

Owner: This specifies the owner for the address space. The length of the string MUST NOT exceed 100 characters.

PartialCustomFieldValues: This specifies the custom field values associated with the address space in the form of a collection of CustomFieldPartialValue. The management client MUST NOT use this for specifying the custom field values but rather use the CustomFieldValues property. The management server SHOULD use this to send across the custom field values as a part of enumeration processing.

RecordId: This specifies a unique identifier for the data in the IPAM data store.

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2.2.4.8 AddressSpaceByFilterEnumerationParameters

The AddressSpaceByFilterEnumerationParameters complex type specifies a set of criterion that is applied to filter the list of address spaces before enumeration.

```
<xs:complexType name="AddressSpaceByFilterEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="FilterInfo" nillable="true"
type="sys:ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
</xs:complexType>
```

sys:ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz: This specifies the filters that are to be applied before enumerating address spaces.

2.2.4.9 AddressSpaceEnumerationParameters

The AddressSpaceEnumerationParameters complex type specifies the set of parameters to be used for enumerating the address spaces.

```
<xs:complexType name="AddressSpaceEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressSpaceType: This specifies the type of address spaces to be retrieved.

2.2.4.10 AddScopesToSuperscopeParameters

The AddScopesToSuperscopeParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is AddScopesToSuperscope. It is used to associate a collection of DHCP scopes to an ipam:DhcpSuperscopeV4.

```
<xs:complexType name="AddScopesToSuperscopeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
/>
        <xs:element minOccurs="0" name="Superscope" nillable="true"
type="ipam:DhcpSuperscopeV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

ScopeIds: This represents the RecordIds of the DHCP scopes to be added to a superscope.

Superscope: This is of type ipam:DhcpSuperscopeV4 and is the superscope to which the DHCP scopes are added.

2.2.4.11 ApplyDhcpScopeConfigurationparameters

The ApplyDhcpScopeConfigurationparameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is ApplyScopeConfigurationTemplate. It specifically associates the ipam:DhcpScopeTemplateConfiguration details with a list of scope Ids belonging to the same ipam:AddressFamily.

```
<xs:complexType name="ApplyDhcpScopeConfigurationparameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="ScopeAddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="ScopeTemplate" nillable="true"
type="ipam:DhcpScopeTemplateConfiguration" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ScopeAddressFamily: This specifies the address family of the DHCP scopes to be configured.

ScopeId: This represents the RecordId of DHCP scopes to be configured.

ScopeTemplate: This is of type ipam:DhcpScopeTemplateConfiguration and is used to define the configuration values to be applied on DHCP scopes.

2.2.4.12 ApplyDhcpServerConfigurationParameters

The ApplyDhcpServerConfigurationParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is ApplyServerConfigurationTemplate. It specifically associates the ipam:DhcpServerTemplateConfiguration details with a list of server IDs belonging to the same ipam:ServerAddressFamily.

```
<xs:complexType name="ApplyDhcpServerConfigurationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerAddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ServerIds" nillable="true" type="serarr:ArrayOflong"
/>
        <xs:element minOccurs="0" name="ServerTemplate" nillable="true"
type="ipam:DhcpServerTemplateConfiguration" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

ServerAddressFamily: This specifies the address family of the DHCP servers to be configured.

ServerIds: This represents the RecordIds of DHCP servers to be configured.

ServerTemplate: This is of type ipam:DhcpServerTemplateConfiguration and is used to define the configuration values to be applied to DHCP servers.

2.2.4.13 ArrayOfAccessScopeToUserRoleMapping

The ArrayOfAccessScopeToUserRoleMapping complex type defines a list of ipam:AccessScopeToUserRoleMapping complex types.

```
<xs:complexType name="ArrayOfAccessScopeToUserRoleMapping">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AccessScopeToUserRoleMapping"
nillable="true" type="ipam:AccessScopeToUserRoleMapping" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.14 ArrayOfAddressSpace

The ArrayOfAddressSpace complex type defines an array of AddressSpace complex type.

```
<xs:complexType name="ArrayOfAddressSpace">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AddressSpace" nillable="true"
type="ipam:AddressSpace" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.15 ArrayOfCustomField

The ArrayOfCustomField complex type defines an array of CustomField complex type.

```
<xs:complexType name="ArrayOfCustomField">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="CustomField" nillable="true"
type="ipam:CustomField" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.16 ArrayOfCustomFieldAssociation

The ArrayOfCustomFieldAssociation complex type defines an array of CustomFieldAssociation complex type.

```
<xs:complexType name="ArrayOfCustomFieldAssociation">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="CustomFieldAssociation"
nillable="true" type="ipam:CustomFieldAssociation" />
```


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```
  </xs:sequence>
</xs:complexType>
```

2.2.4.17 ArrayOfCustomFieldPartialValue

The ArrayOfCustomFieldPartialValue complex type defines an array of CustomFieldPartialValue complex type.

```
<xs:complexType name="ArrayOfCustomFieldPartialValue">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="CustomFieldPartialValue"
nillable="true" type="ipam:CustomFieldPartialValue" />
    </xs:sequence>
</xs:complexType>
```

2.2.4.18 ArrayOfCustomFieldValue

The ArrayOfCustomFieldValue complex type defines an array of CustomFieldValue complex types.

```
<xs:complexType name="ArrayOfCustomFieldValue">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="CustomFieldValue" nillable="true"
type="ipam:CustomFieldValue" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.19 ArrayOfDhcpExclusionRange

The ArrayOfDhcpExclusionRange complex type defines an array of DhcpExclusionRange complex types. The elements in the array MUST be either a DhcpExclusionRangeV4 complex type or a DhcpExclusionRangeV6 complex type.

```
<xs:complexType name="ArrayOfDhcpExclusionRange">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpExclusionRange" nillable="true"
type="ipam:DhcpExclusionRange" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.20 ArrayOfDhcpFailoverOperations

The ArrayOfDhcpFailoverOperations complex type defines an array of ipam:DhcpFailoverOperations.

```
<xs:complexType name="ArrayOfDhcpFailoverOperations">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpFailoverOperations"
type="ipam:DhcpFailoverOperations" />
  </xs:sequence>
</xs:complexType>
```


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2.2.4.21 ArrayOfDhcpFilter

The ArrayOfDhcpFilter complex type defines an array of ipam:DhcpFilter.

```
<xs:complexType name="ArrayOfDhcpFilter">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpFilter" nillable="true"
type="ipam:DhcpFilter" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.22 ArrayOfDhcpFindAndReplaceOption

The ArrayOfDhcpFindAndReplaceOption complex type defines an array of ipam:DhcpFindAndReplaceOption.

```
<xs:complexType name="ArrayOfDhcpFindAndReplaceOption">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpFindAndReplaceOption"
nillable="true" type="ipam:DhcpFindAndReplaceOption" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.23 ArrayOfDhcpOption

The ArrayOfDhcpOption complex type defines an array of DhcpOption complex types. The elements in the array MUST be either a DhcpOptionV4 or a DhcpOptionV6 complex type.

```
<xs:complexType name="ArrayOfDhcpOption">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpOption" nillable="true"
type="ipam:DhcpOption" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.24 ArrayOfDhcpOptionDefinition

The ArrayOfDhcpOptionDefinition complex type defines an array of DhcpOptionDefinition complex types. The elements in the array MUST be either a DhcpOptionDefinitionV4 or a DhcpOptionDefinitionV6 complex type.

```
<xs:complexType name="ArrayOfDhcpOptionDefinition">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpOptionDefinition"
nillable="true" type="ipam:DhcpOptionDefinition" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.25 ArrayOfDhcpPolicyRangeV4

The ArrayOfDhcpPolicyRangeV4 complex type defines an array of ipam:DhcpPolicyRangeV4 complex types.

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```
<xs:complexType name="ArrayOfDhcpPolicyRangeV4">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpPolicyRangeV4" nillable="true"
type="ipam:DhcpPolicyRangeV4" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.26 ArrayOfDhcpPolicyV4

The ArrayOfDhcpPolicyV4 complex type defines an array of ipam:DhcpPolicyV4 complex type.

```
<xs:complexType name="ArrayOfDhcpPolicyV4">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpPolicyV4" nillable="true"
type="ipam:DhcpPolicyV4" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.27 ArrayOfDhcpReservation

The ArrayOfDhcpReservation complex type defines an array of DhcpReservation complex type. The elements in the array MUST be of type DhcpReservation.

```
<xs:complexType name="ArrayOfDhcpReservation">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpReservation" nillable="true"
type="ipam:DhcpReservation" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.28 ArrayOfDhcpScope

The ArrayOfDhcpScope complex type defines an array of ipam:DhcpScope complex type.

```
<xs:complexType name="ArrayOfDhcpScope">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpScope" nillable="true"
type="ipam:DhcpScope" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.29 ArrayOfDhcpScopeV4

The ArrayOfDhcpScopeV4 complex type defines an array of ipam:DhcpScopeV4 complex type.

```
<xs:complexType name="ArrayOfDhcpScopeV4">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpScopeV4" nillable="true"
type="ipam:DhcpScopeV4" />
  </xs:sequence>
</xs:complexType>
```


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2.2.4.30 ArrayOfDhcpServer

The ArrayOfDhcpServer complex type defines an array of DhcpServer complex type. The elements in the array MUST be either a DhcpServerV4 or a DhcpServerV6 complex type.

```
<xs:complexType name="ArrayOfDhcpServer">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpServer" nillable="true"
type="ipam:DhcpServer" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.31 ArrayOfDhcpServerV4

The ArrayOfDhcpServerV4 complex type defines an array of ipam:DhcpServerV4 complex type.

```
<xs:complexType name="ArrayOfDhcpServerV4">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpServerV4" nillable="true"
type="ipam:DhcpServerV4" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.32 ArrayOfDhcpSuperscopeV4

The ArrayOfDhcpSuperscopeV4 complex type defines an array of ipam:DhcpSuperscopeV4 complex type.

```
<xs:complexType name="ArrayOfDhcpSuperscopeV4">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpSuperscopeV4" nillable="true"
type="ipam:DhcpSuperscopeV4" />
    </xs:sequence>
  </xs:complexType>
```

2.2.4.33 ArrayOfDhcpUserClass

The ArrayOfDhcpUserClass complex type defines an array of DhcpUserClass complex type. The elements in the array MUST be either DhcpUserClassV4 or DhcpUserClassV6.

```
<xs:complexType name="ArrayOfDhcpUserClass">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpUserClass" nillable="true"
type="ipam:DhcpUserClass" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.34 ArrayOfDhcpVendorClass

The ArrayOfDhcpVendorClass complex type defines an array of DhcpVendorClass complex type. The elements in the array MUST be either DhcpVendorClassV4 or DhcpVendorClassV6.

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```
<xs:complexType name="ArrayOfDhcpVendorClass">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DhcpVendorClass" nillable="true"
type="ipam:DhcpVendorClass" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.35 ArrayOfDiscoveryConfig

The ArrayOfDiscoveryConfig complex type defines an array of DiscoveryConfig complex type.

```
<xs:complexType name="ArrayOfDiscoveryConfig">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DiscoveryConfig" nillable="true"
type="ipam:DiscoveryConfig" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.36 ArrayOfDnsReverseLookupZone

The ArrayOfDnsReverseLookupZone complex type defines an array of ipam:DnsReverseLookupZone complex type.

```
<xs:complexType name="ArrayOfDnsReverseLookupZone">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DnsReverseLookupZone"
nillable="true" type="ipam:DnsReverseLookupZone" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.37 ArrayOfDnsZone

The ArrayOfDnsZone complex type defines an array of ipam:DnsZone complex type.

```
<xs:complexType name="ArrayOfDnsZone">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="DnsZone" nillable="true"
type="ipam:DnsZone" />
    </xs:sequence>
</xs:complexType>
```

2.2.4.38 ArrayOfEntityStatus

The ArrayOfEntityStatus complex type defines an array of ipam:EntityStatus complex type.

```
<xs:complexType name="ArrayOfEntityStatus">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="EntityStatus" nillable="true"
type="ipam:EntityStatus" />
    </xs:sequence>
</xs:complexType>
```


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2.2.4.39 ArrayOfGatewayAddress

The ArrayOfGatewayAddress complex type defines an array of GatewayAddress complex type.

```
<xs:complexType name="ArrayOfGatewayAddress">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="GatewayAddress" nillable="true"
type="ipam:GatewayAddress" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.40 ArrayOfIpamAdminOperation

The ArrayOfIpamAdminOperation complex type defines an array of ipam:IpamAdminOperation complex type.

```
<xs:complexType name="ArrayOfIpamAdminOperation">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpamAdminOperation" nillable="true"
type="ipam:IpamAdminOperation" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.41 ArrayOfIpamGpoError

The ArrayOfIpamGpoError complex type defines an array of ipam:IpamGpoError complex type.

```
<xs:complexType name="ArrayOfIpamGpoError">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpamGpoError" nillable="true"
type="ipam:IpamGpoError" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.42 ArrayOfIpamGpoErrorInfo

The ArrayOfIpamGpoErrorInfo complex type defines an array of ipam:IpamGpoErrorInfo complex type.

```
<xs:complexType name="ArrayOfIpamGpoErrorInfo">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpamGpoErrorInfo" nillable="true"
type="ipam:IpamGpoErrorInfo" />
  </xs:sequence>
</xs:complexType>
```


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2.2.4.43 ArrayOfIpamIPAddress

The ArrayOfIpamIPAddress complex type defines an array of IpamIPAddress complex type. The elements in the array MUST be of either IpamIPv4Address or IpamIPv6Address complex type.

```
<xs:complexType name="ArrayOfIpamIPAddress">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpamIPAddress" nillable="true"
type="ipam:IpamIPAddress" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.44 ArrayOfIpamObject

The ArrayOfIpamObject complex type defines an array of IpamObject complex type. The elements in the array MUST be of a complex type that either directly or indirectly extends IpamObject.

```
<xs:complexType name="ArrayOfIpamObject">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpamObject" nillable="true"
type="ipam:IpamObject" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.45 ArrayOfIpamUpgradeValidationRuleStatus

The ArrayOfIpamUpgradeValidationRuleStatus complex type defines an array of ipam:IpamUpgradeValidationRuleStatus complex type.

```
 <xs:complexType name="ArrayOfIpamUpgradeValidationRuleStatus">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpamUpgradeValidationRuleStatus"
nillable="true" type="ipam:IpamUpgradeValidationRuleStatus" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.46 ArrayOfIPBlock

The ArrayOfIPBlock complex type defines an array of IPBlock complex type. The elements in the array MUST be of either IPv4Block or IPv6Block complex type.

```
<xs:complexType name="ArrayOfIPBlock">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IPBlock" nillable="true"
type="ipam:IPBlock" />
  </xs:sequence>
</xs:complexType>
```


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2.2.4.47 ArrayOfIPRange

The ArrayOfIPRange complex type defines an array of IPRange complex type. The elements in the array MUST be of either IPv4Range or IPv6Range complex type.

```
<xs:complexType name="ArrayOfIPRange">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IPRange" nillable="true"
type="ipam:IPRange" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.48 ArrayOfIPSubnet

The ArrayOfIPSubnet complex type defines an array of IPSubnet complex type. The elements in the array MUST be of either IPv4Subnet or IPv6Subnet complex type.

```
<xs:complexType name="ArrayOfIPSubnet">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IPSubnet" nillable="true"
type="ipam:IPSubnet" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.49 ArrayOfIPUtilization

The ArrayOfIPUtilization complex type defines an array of IPUtilization complex type. The elements in the array MUST be of either IPv4Utilization or IPv6Utilization complex type.

```
<xs:complexType name="ArrayOfIPUtilization">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IPUtilization" nillable="true"
type="ipam:IPUtilization" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.50 ArrayOfLogicalGroupField

The ArrayOfLogicalGroupField complex type defines an array of LogicalGroupField complex type.

```
<xs:complexType name="ArrayOfLogicalGroupField">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="LogicalGroupField" nillable="true"
type="ipam:LogicalGroupField" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.51 ArrayOfLogicalGroupNode

The ArrayOfLogicalGroupNode complex type defines an array of LogicalGroupNode complex type. The elements in the array MUST be either of the following types that extend LogicalGroupNode.

- ActiveServerV4LogicalGroupNode

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- ActiveServerV6LogicalGroupNode
- IpamIPv4AddressLogicalGroupNode
- IpamIPv6AddressLogicalGroupNode
- IPv4RangeLogicalGroupNode
- IPv6RangeLogicalGroupNode.

```
<xs:complexType name="ArrayOfLogicalGroupNode">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="LogicalGroupNode"
nillable="true" type="ipam:LogicalGroupNode" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.52 ArrayOfPolicyOperations

The ArrayOfPolicyOperations complex type defines an array of ipam:PolicyOperations complex type.

```
<xs:complexType name="ArrayOfPolicyOperations">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PolicyOperations"
type="ipam:PolicyOperations" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.53 ArrayOfReservationOperations

The ArrayOfReservationOperations specifies an array of simple type ReservationOperations that specifies the set of operations that can be performed for DHCP reservations. This is used by the management server as a part of MsmDhcpScopeCreateOrEditAddress Reservation to identify the kind of changes that have to be committed to the IPAM data store for the specified DhcpReservation value.

```
<xs:complexType name="ArrayOfReservationOperations">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ReservationOperations"
type="ipam:ReservationOperations" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.54 ArrayOfServerInfo

The ArrayOfServerInfo complex type defines an array of ServerInfo complex type.

```
<xs:complexType name="ArrayOfServerInfo">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ServerInfo" nillable="true"
type="ipam:ServerInfo" />
  </xs:sequence>
</xs:complexType>
```


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2.2.4.55 ArrayOfServerRole

The ArrayOfServerRole complex type defines an array of ServerRole complex type or the complex types that extend ServerRole complex type.

```
<xs:complexType name="ArrayOfServerRole">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ServerRole" nillable="true"
type="ipam:ServerRole" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.56 ArrayOfSuperscopeOperations

The ArrayOfSuperscopeOperations complex type defines an array of ipam:SuperscopeOperations complex type.

```
<xs:complexType name="ArrayOfSuperscopeOperations">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="SuperscopeOperations"
type="ipam:SuperscopeOperations" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.57 ArrayOfTaskInfo

The ArrayOfTaskInfo complex type defines an array of TaskInfo complex type or the complex types that extend TaskInfo complex type.

```
<xs:complexType name="ArrayOfTaskInfo">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="TaskInfo" nillable="true"
type="ipam:TaskInfo" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.58 AuditPurgeSettings

The AuditPurgeSettings complex type specifies the configuration to be used for performing the audit purge operation.

```
<xs:complexType name="AuditPurgeSettings">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EndDate" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="PurgeDhcpConfigurationAudit" type="xsd:boolean" />
        <xs:element minOccurs="0" name="PurgeIPAddressAudit" type="xsd:boolean" />
        <xs:element minOccurs="0" name="PurgeIpamConfigurationAudit" type="xsd:boolean" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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EndDate: This specifies the end date for the audit purge operation. All the rows in the applicable audit tables that have been logged before the specified date will be purged.

PurgeDhcpConfigurationAudit: This specifies whether the DHCP configuration audit entries are to be purged or not.

PurgeIPAddressAudit: This specifies whether the IP address audit entries are to be purged or not.

PurgeIpamConfigurationAudit: This specifies whether the IPAM configuration audit entries are to be purged or not.

2.2.4.59 BaseDnsServerZone

The BaseDnsServerZone complex type specifies the properties of a zone hosted on a DNS server. This consists of the properties common to both DnsServerZone as well as DnsServerReverseZone complex types that extend the BaseDnsServerZone.

```
<xs:complexType name="BaseDnsServerZone">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DnsServer" />
        <xs:element minOccurs="0" name="ZoneConfiguration" type="ipam:ZoneConfiguration" />
        <xs:element minOccurs="0" name="ZoneType" type="ipam:ZoneHostingDnsServerType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

RecordId: This specifies the unique identifier for the data in the IPAM data store.

Server: This specifies the DnsServer instance for the DNS server on which the zone has been hosted.

ZoneConfiguration: This specifies the way in which the zone is hosted on the server.

ZoneType: This specifies the mode in which the zone is hosted on the server.

2.2.4.60 BaseDnsZone

The BaseDnsZone complex type specifies the properties of a DNS zone. This consists of the properties common to both DnsZone as well as DnsReverseZone complex types that extend the BaseDnsZone.

```
<xs:complexType name="BaseDnsZone">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

AccessScopeId: This specifies the unique identifier for the associated access scope in the IPAM data store.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

Name: This specifies the name of the DNS zone. The Name MUST NOT be null and MUST NOT exceed 255 characters in length.

2.2.4.61 BaseIpamObject

The BaseIpamObject complex type consists of the common properties that are applicable to most of the complex types defined in this protocol. This complex type allows extended attributes on the ipam:IpamObject that it extends.

```
<xs:complexType name="BaseIpamObject">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ModifiedProperties" nillable="true"
type="serarr:ArrayOfstring" />

        <xs:element minOccurs="0" name="SetProperties" nillable="true"
type="serarr:ArrayOfstring" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ModifiedProperties: This specifies the list of property names that have been modified. This is used by the update operation on various IPAM objects to determine the set of properties the management client has modified. This enables selective update of the properties to the IPAM data store.

SetProperties: This specifies the list of property names on which the set operation has been performed on the management client. The set operation on an object may not necessarily lead to the value change. If there is a value change, ModifiedProperties will be updated with those properties.

2.2.4.62 ChangeDatabaseSettingsNotAllowedForDBTypesIpamExceptionData

The ChangeDatabaseSettingsNotAllowedForDBTypesIpamExceptionData complex type extends the ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorChangeDatabaseSettingsNotAllowedForDBTypes.

```
<xs:complexType name="ChangeDatabaseSettingsNotAllowedForDBTypesIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DestinationDatabaseType" type="ipam:IpamDatabaseType"
/>
        <xs:element minOccurs="0" name="SourceDatabaseType" type="ipam:IpamDatabaseType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

DestinationDatabaseType: This is of type IpamDatabaseType and represents the destination database type.

SourceDatabaseType: This is of type IpamDatabaseType and represents the source database type.

2.2.4.63 ConfigurationAuditEnumerationParameters

The ConfigurationAuditEnumerationParameters complex type is used to specify the enumeration criteria for the configuration audit information.

```
<xs:complexType name="ConfigurationAuditEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="NumberOfRecords" type="xsd:int" />
        <xs:element minOccurs="0" name="SearchCriteriaXml" nillable="true" type="xsd:string"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

NumberOfRecords: This specifies the maximum number of records to be returned to the management client.

SearchCriteriaXml: This specifies the search condition in the form of an XML string. The XML should be based on the following schema.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema id="NewDataSet" xmlns="" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
  <xs:element name="OP_AND">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="OP_OR" minOccurs="0" maxOccurs="unbounded">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="ConfigurationSearchNode" minOccurs="0" maxOccurs="unbounded">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element name="Name" type="xs:string" minOccurs="0" />
                    <xs:element name="Value1" type="xs:string" minOccurs="0" />
                    <xs:element name="Value2" type="xs:string" minOccurs="0" />
                    <xs:element name="Value" type="xs:string" minOccurs="0" />
                    <xs:element name="Operator" type="xs:string" minOccurs="0" />
                  </xs:sequence>
                </xs:complexType>
              </xs:element>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
        <xs:element ref="OP_AND" minOccurs="0" maxOccurs="unbounded" />
      </xs:sequence>
```


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```
      </xs:complexType>
    </xs:element>
    <xs:element name="ConfigurationSearchParameters">
      <xs:complexType>
        <xs:sequence>
          <xs:element ref="OP_AND" minOccurs="0" maxOccurs="unbounded" />
        </xs:sequence>
        <xs:attribute name="type" type="xs:string" />
      </xs:complexType>
    </xs:element>
    <xs:element name="NewDataSet" msdata:IsDataSet="true" msdata:UseCurrentLocale="true">
      <xs:complexType>
        <xs:choice minOccurs="0" maxOccurs="unbounded">
          <xs:element ref="OP_AND" />
          <xs:element ref="ConfigurationSearchParameters" />
        </xs:choice>
      </xs:complexType>
    </xs:element>
  </xs:schema>
```

type: This is an attribute of the top-level node ConfigurationSearchParameters. This MUST be one of the following values:

- IPAM – This specifies the configuration audit search is against the configuration change events in the IPAM data store pertaining to IPAM operations.
- DHCP – This specifies the configuration audit search is against the configuration change events in the IPAM data store pertaining to DHCP server management operational events of the various DHCP server instances present in the IPAM data store.

The element names OP_AND and OP_OR specify the operator to be applied on the criteria present as child nodes under them. The ConfigurationSearchNode can be used to specify the filter condition itself.

Name: This is the filter condition field name.

Operator: This specifies the filter operator for the filter condition. It can be one of the following values.

- EQUALS – Equality operator
- BETWEEN – Range comparison operator
- CONTAINS – Partial string match operator

Value1, Value2, Value: Values for the field specified by Name to be used with the specific operator specified by Operator. Value MUST be used to specify the value for operators EQUALS and CONTAINS. Value1 and Value2 MUST be used to specify the range of values which is required for BETWEEN operator.

The various field names, their supported operators and type of value for DHCP and IPAM configuration audit search MUST be validated to be as specified in the following table. DateTime values MUST be specified as Coordinated Universal Time (UTC) in the string representation as specified by [ISO-8601].

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Type	Name	Type	Operator
IPAM	EVENT_ID	Integer	EQUALS
	TIME_OF_EVENT	DateTime	BETWEEN
	USER_NAME	String	CONTAINS EQUALS
	USER_DOMAIN_NAME	String	CONTAINS EQUALS
	TASK_CATEGORY	String	CONTAINS EQUALS
	KEYWORDS	String	CONTAINS EQUALS
	OPCODE	String	CONTAINS EQUALS
	DESCRIPTION	String	EQUALS CONTAINS
	IP_BLOCK_ID	String	EQUALS
	IP_ADDRESS_RANGE_ID	String	EQUALS
	IP_ADDRESS	String	EQUALS
	LOGICAL_GROUP_NAME	String	CONTAINS EQUALS
	CUSTOM_FIELD_NAME	String	CONTAINS EQUALS
DHCP	EVENT_ID	Integer	EQUALS
	SERVER_NAME		
	TIME_OF_EVENT	DateTime	BETWEEN
	USER_NAME	String	CONTAINS EQUALS
	USER_DOMAIN_NAME	String	CONTAINS EQUALS
	SCOPE_NAME	String	CONTAINS EQUALS
	SCOPE_ID	String	EQUALS
	OPTION_ID	Integer	EQUALS
	OPTION_NAME	String	CONTAINS

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Type	Name	Type	Operator
			EQUALS
	RESERVATION_ADDRESS	String	EQUALS

2.2.4.64 ConfigurationAuditRecord

The ConfigurationAuditRecord complex type specifies a single configuration audit event information. The configuration audit record can be used to represent both the IPAM configuration audit as well as the DHCP configuration audit event.

```
<xs:complexType name="ConfigurationAuditRecord">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EventID" type="xsd:int" />
        <xs:element minOccurs="0" name="EventParameters" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Keywords" nillable="true" type="xsd:base64Binary" />
        <xs:element minOccurs="0" name="Opcode" nillable="true" type="xsd:int" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerType" type="ipam:ServerAuditType" />
        <xs:element minOccurs="0" name="ServerVersion" type="xsd:decimal" />
        <xs:element minOccurs="0" name="TaskCategory" nillable="true" type="xsd:int" />
        <xs:element minOccurs="0" name="TimeOfEvent" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="UserDomainName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

EventID: The event identifier for the configuration audit event.

EventParameters: The XML representation of the event parameters (see [MS-EVEN6] section 2.2.13 for more details).

Keywords: The keywords data associated with the configuration audit event.

Opcode: The operation code data associated with the configuration audit event.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

ServerName: The name of the server instance on which the configuration audit event was generated.

ServerType: The type of server which generated the event. This determines whether the audit event is generated from a DHCP or an IPAM server.

ServerVersion: The version of the server which generated the audit event.

TaskCategory: The **task** category data associated with the audit event.

TimeOfEvent: The time at which the event occurred.

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UserDomainName: The domain name of the user account which was responsible for the configuration change which triggered the audit event.

UserName: The name of the user responsible for the configuration change which triggered the audit event.

2.2.4.65 ConflictingIPAddressFailureIpamExceptionData

The ConflictingIPAddressFailureIpamExceptionData complex type specifies the information pertaining to the IP address instance overlap. This is used as the IpamExceptionData to provide more fault-specific information when an operation fails because of IP address instance overlap.

```
<xs:complexType name="ConflictingIPAddressFailureIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
        <xs:element minOccurs="0" name="AddressSpaceName" nillable="true" type="xsd:string"
/>
      <xs:sequence>
        <xs:element minOccurs="0" name="IPAddress" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ManagedBy" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ManagedByEntity" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressSpaceName: This specifies the AddressSpace to which the IP address is causing the conflict.

IPAddress: This specifies the IP address that is causing the conflict.

ManagedBy: This specifies the value of the ManagedBy built-in custom field value of the IpamIPAddress conflicting with the address that is being added or updated.

ManagedByEntity: This specifies the value of the ManagedByEntity built-in custom field value of the IpamIPAddress conflicting with the address that is being added or updated.

2.2.4.66 ConflictingIPBlockFailureIpamExceptionData

The ConflictingIPBlockFailureIpamExceptionData complex type specifies the information pertaining to the **IP address block** instance overlap. This is used as the IpamExceptionData to provide more fault-specific information when an operation fails because of IP address block instance overlap.

```
<xs:complexType name="ConflictingIPBlockFailureIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="ConflictingIPBlock" nillable="true" type="xsd:string"
/>
        <xs:element minOccurs="0" name="IPBlock" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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IPBlock: This specifies the IP address block that is causing the fault because of a conflict with existing address blocks in the IPAM data store.

ConflictingIPBlock: This specifies the string representation of a sequence of address blocks using [StartIPAddress, EndIPAddress] format for each address block with which the block creation or modification is conflicting.

2.2.4.67 ConflictingIPRangeFailureIpamExceptionData

The ConflictingIPRangeFailureIpamExceptionData specifies the information pertaining to the IP address range instance overlap. This is used as the IpamExceptionData to provide more fault-specific information when an operation fails because of an IP address range instance overlap.

```
<xs:complexType name="ConflictingIPRangeFailureIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="ConflictingIPRangesManaged" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="IPRangeManaged" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

IPRangeManaged: This specifies the address range information, in a string format, for the address range whose add or update is causing a fault because of conflict.

ConflictingIPRangesManaged: This specifies the list of address range information, in a string format, which is causing the conflict to an address range add or update.

2.2.4.68 CreateDhcpFiltersParameters

The CreateDhcpFiltersParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpFilters. It associates a list of ipam:DhcpFilter instances to the list of DhcpServers they have been created on.

```
<xs:complexType name="CreateDhcpFiltersParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="DhcpServerIds" nillable="true"
type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="Filters" nillable="true"
type="ipam:ArrayOfDhcpFilter" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DhcpServerIds: This represents RecordIds of DHCP servers on which filters are to be created.

Filters: This is of type ipam:ArrayOfDhcpFilter and represents the list of DHCP filters to be created.

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2.2.4.69 CreateDhcpReservationParameters

The CreateDhcpReservationParameters complex type specifies the set of parameters to be used in creating a new DHCP reservation.

```
<xs:complexType name="CreateDhcpReservationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Reservation" nillable="true"
type="ipam:DhcpReservation" />
        <xs:element minOccurs="0" name="scopeRecordId" type="xsd:long" />      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Reservation: This is of type ipam:DhcpReservation and represents the DHCP reservation to be created.

scopeRecordId: This is the identifier of the DHCP scope on which the DHCP reservation is created.

2.2.4.70 CreateDhcpScopeParameters

The CreateDhcpScopeParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpScope and associates them to an ipam:DhcpScope.

```
<xs:complexType name="CreateDhcpScopeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Scope: This is of type ipam:DhcpScope and represents the DHCP scope which is to be created.

2.2.4.71 CreateDhcpScopePolicyParameters

The CreateDhcpScopePolicyParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpScopePolicy. It associates a policy of type ipam:DhcpPolicyV4 to a collection of scopes of type ipam:DhcpScopev4.

```
<xs:complexType name="CreateDhcpScopePolicyParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
        <xs:element minOccurs="0" name="ScopeList" nillable="true" type="serarr:ArrayOflong"
/>
      </xs:sequence>
```


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```
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Policy: This is of type ipam:DhcpPolicyV4 and represents the policy which is to be created on DHCP scopes.

ScopeList: This is of type serarr:ArrayOflong and represents the list of identifiers for DHCP scopes on which the policy will be created.

2.2.4.72 CreateDhcpServerPolicyParameters

The CreateDhcpServerPolicyParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is CreateDhcpServerPolicy. It associates a policy of type ipam:DhcpPolicyV4 to a collection of servers of type ipam:DhcpServerv4.

```
<xs:complexType name="CreateDhcpServerPolicyParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
        <xs:element minOccurs="0" name="ServerList" nillable="true"
type="ipam:ArrayOfDhcpServerV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Policy: This is of type ipam:DhcpPolicyV4 and represents the policy which is to be created on DHCP servers.

ServerList: This is of type ipam:ArrayOfDhcpServerV4 and represents the DHCP servers on which the policy will be created.

2.2.4.73 CreateIpamIPAddressParameters

The CreateIpamIPAddressParameters complex type specifies the information pertaining to the operation CreateIpamIpAddress. This is used as a callback.

```
<xs:complexType name="CreateIpamIPAddressParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Address" nillable="true" type="ipam:IpamIPAddress" />
        <xs:element minOccurs="0" name="CreateDhcpReservation" type="xsd:boolean" />
        <xs:element minOccurs="0" name="CreateDnsRecord" type="xsd:boolean" />
        <xs:element minOccurs="0" name="OverrideMBEAndSI" type="xsd:boolean" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Address: The ipam:IpamIPAddress representing the IP address that is to be created.

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CreateDhcpReservation: Specifies whether a DHCP reservation needs to be created for this address or not.

CreateDnsRecord: Specifies whether a DNS records need to be created for this address or not.

OverrideMBEAndSI: Specifies whether the **ManagedByEntity** and **ManagedByEntityValue** custom fields associated with this IpamIPAddress need to be overridden.

2.2.4.74 CustomerAddressSpace

The CustomerAddressSpace complex type extends the complex type AddressSpace. It includes information specific to an address space of type **Customer**. These contain the virtual networks (VM networks) that are built on top of physical/Fabric networks. Each customer address space is associated with a Provider address space to indicate the physical network on which the virtual network is built.

```
<xs:complexType name="CustomerAddressSpace">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:AddressSpace">
      <xs:sequence>
        <xs:element minOccurs="0" name="ProviderAddressSpaceName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="ProviderAddressSpaceRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ProviderAddressSpaceName: This specifies the name of the Provider AddressSpace with which the given Customer AddressSpace is associated.

ProviderAddressSpaceRecordId: Identifier of the Provider AddressSpace with which the given Customer AddressSpace is associated.

2.2.4.75 CustomField

The CustomField complex type specifies a single custom field information.

```
<xs:complexType name="CustomField">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="BuiltInCustomFieldNumber"
type="ipam:BuiltInCustomField" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Origin" type="ipam:CustomFieldOrigin" />
        <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="Type" type="ipam:CustomFieldType" />
        <xs:element minOccurs="0" name="Values" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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BuiltInCustomFieldNumber: This specifies a unique and fixed identifier that uniquely identifies a particular built-in custom field. If the Origin is CustomFieldOrigin.External, the value of this MUST be ignored.

Name: This specifies the name of the custom field. This MUST be of length at least 2 characters and MUST NOT exceed 255 characters.

Origin: This specifies the origin of the custom field – whether it is built-in or user-defined. If it is built-in (i.e., CustomFieldOrigin.Builtin), the BuiltInCustomFieldNumber MUST be specified and MUST be a nonzero value.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

Type: This specifies the type of the custom field – whether it is multivalued or free-form.

Values: If the custom field is a multivalued custom field, this specifies the list of possible custom field values.

2.2.4.76 CustomFieldAssociation

The CustomFieldAssociation complex type specifies an association between two custom fields defined in IPAM.

```
<xs:complexType name="CustomFieldAssociation">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="CustomField1" nillable="true" type="ipam:CustomField"
/>
        <xs:element minOccurs="0" name="CustomField2" nillable="true" type="ipam:CustomField"
/>
        <xs:element minOccurs="0" name="CustomFieldValueAssociations" nillable="true"
type="sys:ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

CustomField1: One of the custom fields that is part of this association. CustomField1 is associated with CustomField2.

CustomField2: The second of the custom fields that is part of this association. CustomField1 is associated with CustomField2.

CustomFieldValueAssociations: The set of values of the associated custom fields.

2.2.4.77 CustomFieldAssociationEnumerationParameters

The CustomFieldAssociationEnumerationParameters complex type extends the ipam:EnumerationParametersBase complex type. This specifies the parameters used to enumerate custom field associations in the IPAM datastore.

```
<xs:complexType name="CustomFieldAssociationEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence />
```


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```
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.78 CustomFieldEnumerationParameters

The CustomFieldEnumerationParameters complex type specifies the set of parameters to be used for enumerating the custom fields.

```
<xs:complexType name="CustomFieldEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="CustomFieldName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

CustomFieldName: This specifies the name of the custom field to be retrieved.

2.2.4.79 CustomFieldPartialValue

The CustomFieldPartialValue complex type specifies the custom field value with minimum information when compared to that of CustomFieldValue. This management server SHOULD use this to return the custom field values during the enumeration operations. The management client MUST NOT use this to specify custom field value. The management client MUST instead always use the CustomFieldValue complex type for specifying custom field values.

```
<xs:complexType name="CustomFieldPartialValue">
  <xs:sequence>
    <xs:element minOccurs="0" name="ParentCustomFieldId" nillable="true" type="xsd:long" />
    <xs:element minOccurs="0" name="Value" nillable="true" type="xsd:string" />
    <xs:element minOccurs="0" name="ValueId" nillable="true" type="xsd:long" />
  </xs:sequence>
</xs:complexType>
```

ParentCustomFieldId: This specifies the custom field for which the value is specified.

Value: This specifies the value of the custom field if the custom field specified by ParentCustomFieldId is of type CustomFieldType.Freeform.

ValueId: This specifies the RecordId of the value for the custom field if the custom field specified by ParentCustomFieldId is of type CustomFieldType.Multivalued.

2.2.4.80 CustomFieldValue

The CustomFieldValue complex type specifies a custom field value.

```
<xs:complexType name="CustomFieldValue">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
```


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```
        <xs:element minOccurs="0" name="BuiltInCustomFieldValueId" type="xsd:long" />
        <xs:element minOccurs="0" name="ParentCustomFieldName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="ParentCustomFieldNumber" type="xsd:int" />
        <xs:element minOccurs="0" name="ParentCustomFieldRecordId" nillable="true"
type="xsd:long" />
        <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="Value" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

BuiltInCustomFieldValueId: If the value of the custom field is a built-in value, this specifies the unique identifier for the custom field value. This MUST be ignored if the type of the custom field specified by ParentCustomFieldRecordId is Freeform.

ParentCustomFieldName: This specifies the name of the custom field for which the value is being specified.

ParentCustomFieldRecordId: This specifies the RecordId of the custom field for which the value is being specified.

RecordId: If the custom field denoted by ParentCustomFieldRecordId is a multivalued custom field, this specifies the RecordId of the value. If the custom field is a free-form custom field, this field is not applicable and MUST be ignored.

Value: This specifies the value of the custom field. It MUST NOT be null and the length of the value MUST NOT exceed 256 characters.

2.2.4.81 DatabaseLocaleMismatchIpamExceptionData

The DatabaseLocaleMismatchIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorDatabaseLocaleMismatch.

```
<xs:complexType name="DatabaseLocaleMismatchIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseLocale" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="DatabaseName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IPAMServerLocale" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
</xs:complexType>
```

DatabaseLocale: A string which corresponds to the locale of the database.

DatabaseName: A string which corresponds to the name of the database.

IPAMServerLocale: A string which corresponds to the IPAM server's locale.

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2.2.4.82 DatabaseSchemaVersionMismatchIpamExceptionData

The DatabaseSchemaVersionMismatchIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorDatabaseSchemaVersionMismatch.

```
<xs:complexType name="DatabaseSchemaVersionMismatchIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseSchemaVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
          <xs:element minOccurs="0" name="IPAMServerSchemaVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
</xs:complexType>
```

DatabaseSchemaVersion: It is of type ipam:IpamSchemaVersion and corresponds to the schema version of the IPAM datastore.

IPAMServerSchemaVersion: It is of type ipam:IpamSchemaVersion and corresponds to the schema version supported by the IPAM server.

2.2.4.83 DatabaseServerEditionNotSupportedIpamExceptionData

The DatabaseServerEditionNotSupportedIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorDatabaseServerEditionNotSupported.

```
<xs:complexType name="DatabaseServerEditionNotSupportedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseServerEdition" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="ExpectedDatabaseServerEdition" nillable="true"
type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseServerEdition: A string which corresponds to the database server edition.

DatabaseServerNameOrIP: A string which represents the database server's name or IP address.

ExpectedDatabaseServerEdition: A string which corresponds to the database server edition supported by the IPAM server.

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2.2.4.84 DatabaseServerVersionNotSupportedIpamExceptionData

The DatabaseServerVersionNotSupportedIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is "IpamApiErrorDatabaseServerVersionNotSupported".

```
<xs:complexType name="DatabaseServerVersionNotSupportedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DatabaseServerVersion" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="MinSupportedDatabaseServerVersion" nillable="true"
type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseServerNameOrIP: A string which corresponds to the database server name or IP address.

DatabaseServerVersion: A string which corresponds to the database server version.

MinSupportedDatabaseServerVersion: A string which corresponds to the minimum database server version supported by the IPAM server.

2.2.4.85 DeleteDhcpFiltersParameters

The DeleteDhcpFiltersParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpFilters. It is used to identify the list of ipam:DhcpFilter instances to be deleted on a server.

```
<xs:complexType name="DeleteDhcpFiltersParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Filters" nillable="true"
type="ipam:ArrayOfDhcpFilter" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filters: This is of type ArrayOfDhcpFilter and represents the DHCP filters which are to be deleted.

2.2.4.86 DeleteDhcpReservationCollectionParameters

The DeleteDhcpReservationCollectionParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpReservationCollection. It identifies a collection of DHCP reservations to be deleted and

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the post processing to be done after deleting them, such as delete associated DNS resource record and so on.

```
<xs:complexType name="DeleteDhcpReservationCollectionParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Family" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="Flag" type="ipam:DhcpReservationDeletionFlag" />
        <xs:element minOccurs="0" name="ReservationRecordIds" nillable="true"
type="serarr:ArrayOflong" />      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Family: This specifies the address family of the DHCP reservation instances to be deleted.

Flag: This is of type ipam:DhcpReservationDeletionFlag and determines the nature of the cleanup needed after the deletion of a reservation, such as the removal of associated DNS resource records.

ReservationRecordIds: This is of type serarr:ArrayOflong and represents the list of identifiers of DHCP reservations that are to be deleted.

2.2.4.87 DeleteDhcpReservationParameters

The DeleteDhcpReservationParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpReservation. It identifies an instance of DHCP reservation to be deleted and the post processing to be done after deleting it, such as delete associated DNS resource record and so on.

```
<xs:complexType name="DeleteDhcpReservationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Family" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="Flag" type="ipam:DhcpReservationDeletionFlag" />
        <xs:element minOccurs="0" name="ReservationRecordId" type="xsd:long" />
type="ipam:DhcpReservation" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Family: This specifies the address family of the DHCP reservation instance to be deleted.

Flag: This is of type ipam:DhcpReservationDeletionFlag and determines the nature of the cleanup needed after the deletion of a reservation, such as the removal of associated DNS resource records.

ReservationRecordId: This represents the identifier of the DHCP reservation that is to be deleted.

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2.2.4.88 DeleteDhcpScopeParameters

The DeleteDhcpScopeParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteDhcpScope and associates them to an ipam:DhcpScope.

```
<xs:complexType name="DeleteDhcpScopeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Scope: This is of type ipam:DhcpScope and represents the DHCP scope which is to be deleted.

2.2.4.89 DeletePolicyParameters

The DeletePolicyParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeletePolicy and associates them to a collection of policies of type ipam:DhcpPolicyV4.

```
<xs:complexType name="DeletePolicyParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Policies" nillable="true"
type="ipam:ArrayOfDhcpPolicyV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Policies: This is of type ipam:ArrayOfDhcpPolicyV4 and represents the DHCP policies to be deleted.

2.2.4.90 DeleteSuperscopesParameters

The DeleteSuperscopesParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is DeleteSuperscopes. It identifies the collection of ipam:DhcpSuperscopeV4 instances to be deleted.

```
<xs:complexType name="DeleteSuperscopesParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Superscopes" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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Superscopes: This is of type ipam:ArrayOfDhcpSuperscopeV4 and represents the DHCP superscopes to be deleted.

2.2.4.91 DhcpEffectiveScopePoliciesEnumerationParameters

The DhcpEffectiveScopePoliciesEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy and associates them to a scope of type ipam:DhcpScopeV4.

```
<xs:complexType name="DhcpEffectiveScopePoliciesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DhcpScope" nillable="true" type="ipam:DhcpScopeV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DhcpScope: This is of type ipam:DhcpScopeV4 and represents the DHCP scope whose effective policies are to be enumerated.

2.2.4.92 DhcpEffectiveServerPoliciesEnumerationParameters

The DhcpEffectiveServerPoliciesEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy and associates them to an ipam:DhcpServerV4 object.

```
<xs:complexType name="DhcpEffectiveServerPoliciesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DhcpServer" nillable="true" type="ipam:DhcpServerV4"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DhcpServer: This is of type ipam:DhcpServerV4 and represents the DHCP server whose effective policies are to be enumerated.

2.2.4.93 DhcpExclusionRange

The DhcpExclusionRange complex type is used to specify the DHCP exclusion range.

```
<xs:complexType name="DhcpExclusionRange">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EndAddress" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="StartAddress" nillable="true" type="sysnet:IPAddress"
/>
```


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```
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

EndAddress: The end address of the exclusion range.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

StartAddress: The start address of the exclusion range.

2.2.4.94 DhcpExclusionRangeCollection

The DhcpExclusionRangeCollection complex type specifies a collection of DHCP exclusion ranges.

```
<xs:complexType name="DhcpExclusionRangeCollection">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ExclusionRangesInCollection" nillable="true"
type="ipam:ArrayOfDhcpExclusionRange" />
        <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ExclusionRangesInCollection: This is the collection of DhcpExclusionRange complex types. All the elements in the collection MUST be either of type DhcpExclusionRangeV4 or DhcpExclusionRangeV6.

OperationTracker: This specifies an array of key value pairs. The key specifies the operation to be performed. The value specifies the DhcpExclusionRange on which the operation specified by the key is to be performed. This is used by the DBCreateOrUpdateScope operation to perform management operations as requested by the management client.

2.2.4.95 DhcpExclusionRangeV4

The DhcpExclusionRangeV4 complex type specifies a DHCP exclusion range for an IPv4-specific DHCP scope.

```
<xs:complexType name="DhcpExclusionRangeV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpExclusionRange">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.96 DhcpExclusionRangeV6

The DhcpExclusionRangeV6 complex type specifies a DHCP exclusion range for an IPv6-specific DHCP scope.

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```
<xs:complexType name="DhcpExclusionRangeV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpExclusionRange">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.97 DhcpFailover

The DhcpFailover allows extended attributes on an ipam:BaseIpamObject and ipam:IComparable<DhcpFailover> type.

```
<xs:complexType name="DhcpFailover">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AutoStateTransition" type="xsd:boolean" />
        <xs:element minOccurs="0" name="MCLT" type="ser:duration" />
        <xs:element minOccurs="0" name="Mode" type="ipam:DhcpFailoverMode" />
        <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfDhcpFailoverOperations" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="RelationshipName" nillable="true" type="xsd:string"
/>
        <xs:element minOccurs="0" name="Server1IP" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="Server1Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Server1PSName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Server1Percentage" type="xsd:unsignedInt" />
        <xs:element minOccurs="0" name="Server1RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Server1State" type="ipam:DhcpFailoverState" />
        <xs:element minOccurs="0" name="Server2IP" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="Server2Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Server2PSName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Server2RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Server2State" type="ipam:DhcpFailoverState" />
        <xs:element minOccurs="0" name="ServerOwner" type="ipam:DhcpFailoverOperationOwner"
/>
        <xs:element minOccurs="0" name="SharedSecret" nillable="true" type="xsd:base64Binary"
/>
        <xs:element minOccurs="0" name="SharedSecretEnabled" type="xsd:boolean" />
        <xs:element minOccurs="0" name="StateSwitchInterval" type="ser:duration" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AutoStateTransition: A Boolean value which indicates if the associated DhcpFailover object supports automatic transition from the COMM-INTR failover state to the PARTNER DOWN failover state.

MCLT: An object of type TimeSpan, it is used to store the Maximum Client Lead Time of the associated DhcpFailover object.

Mode: An enum type ipam:DhcpFailoverMode. It is used to indicate the mode of functioning of the associated DhcpFailover object, Hot standby / Load Balanced.

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OperationTracker: It is used to keep track of whether a db update is needed after a failover operation. It is filled in after a DHCP server failover operation.

RecordId: A long int that refers to the record id in the data store of the corresponding failover relationship.

RelationshipName: A string which stores the name of the failover relationship.

Server1IP: This is of type ipam:IPAddress and stores the IP address of the primary server in the failover relationship.

Server1Name: This is of type string and stores the name of the primary server as known to IPAM.

Server1PSName: This is of type string and stores the primary server name as returned from the DHCP server.

Server1Percentage: A UINT, that stores the percentage address reserved/allocated for use of the primary server in the failover relationship.

Server1RecordId: A long which stores the data store record id of the primary server.

Server1State: This is of type ipam:DhcpFailoverState and stores the failover state of the primary server.

Server2IP: This is of type ipam:IPAddress and stores the IP address of the secondary server.

Server2Name: A string which stores the name of the secondary server as known to IPAM.

Server2PSName: A string which stores the secondary server name as returned from the DHCP server.

Server2RecordId: A long int and stores the data store record id of the secondary server.

Server2State: This is of type ipam:DhcpFailoverState and stores the failover state of the secondary server.

ServerOwner: This is of the enum type ipam:DhcpFailoverOperationOwner and is used to identify which server in the relationship was a failover operation, such as replication, initiated from.

SharedSecret: It stores the encryption secret as an array of bytes.

SharedSecretEnabled: A Boolean which indicates if encryption is enabled or not for this relationship.

StateSwitchInterval: This is of type TimeSpan and defines the time after which an automatic switch from COMM-INTR to PARTNER DOWN will occur.

2.2.4.98 DhcpFailoverAllEnumerationParameters

The DhcpFailoverAllEnumerationParameters extends an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFailover.

```
<xs:complexType name="DhcpFailoverAllEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence />
```


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```
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.99 DhcpFailoverByServerIdsEnumerationParameters

The DhcpFailoverByServerIdsEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFailover and associates them to a list of ServerIds whose type is long int. It is used to identify the DHCP servers whose failover relationships are to be enumerated from the IPAM data store.

```
<xs:complexType name="DhcpFailoverByServerIdsEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerIds" nillable="true" type="serarr:ArrayOflong"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerIds: This refers to DHCP servers in the IPAM data store.

2.2.4.100 DhcpFailoverDeleteParameters

The DhcpFailoverDeleteParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It associates a DhcpFailover object with a force delete flag. The force delete flag identifies if the failover relationship deletion should be attempted on the selected server even if it fails on the partner server.

```
<xs:complexType name="DhcpFailoverDeleteParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover" />
        <xs:element minOccurs="0" name="Force" type="xsd:boolean" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Failover: This is of type ipam:DhcpFailover and represents the DHCP failover relationship to be deleted.

Force: This is a Boolean which indicates whether deletion of the DHCP failover relationship should continue even if the operation is unsuccessful on the partner server.

2.2.4.101 DhcpFailoverEnumerationParameters

The DhcpFailoverEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFailover and

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associates a DhcpFailover object to the same. This type is used while refreshing data of a DHCP failover object which is already present in the IPAM data store.

```
<xs:complexType name="DhcpFailoverEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Failover: This is of type ipam:DhcpFailover and represents the DHCP failover object whose data is to be updated with the data store values for that failover relation.

2.2.4.102 DhcpFailoverParameters

The DhcpFailoverParameters allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It associates an ipam:DhcpFailover object to an object of this type. This type is used during the updation of a DHCP failover object in the IPAM data store.

```
<xs:complexType name="DhcpFailoverParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Failover: This is of type ipam:DhcpFailover and represents the DHCP failover object whose data will be used to update the data store values for that failover relation.

2.2.4.103 DhcpFailoverRemoveScopesParameters

The DhcpFailoverRemoveScopesParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It associates its objects with a List of ipam:DhcpScope type objects and a Boolean member, Force. The Force parameter identifies if the failover config removal should be attempted on the selected scopes, even if it fails on their partner scope.

```
<xs:complexType name="DhcpFailoverRemoveScopesParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Force" type="xsd:boolean" />
        <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
/>      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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Force: This is a Boolean which indicates whether removal of a DHCP scope from a failover relationship should continue even if the operation is unsuccessful on the partner scope.

ScopeIds: This is of type serarr:ArrayOflong and represents the list of identifiers of DHCP scopes to be removed from their failover relationship.

2.2.4.104 DhcpFailoverScopesEnumerationParameters

The DhcpFailoverScopesEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpScope and associates them to an ipam:DhcpFailover object. This type is used while enumerating the DHCP scopes which are a part of a failover relationship.

```
<xs:complexType name="DhcpFailoverScopesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Failover: This is of type ipam:DhcpFailover and represents the DHCP failover whose scopes are to be enumerated.

2.2.4.105 DhcpFailoverWithScopesParameters

The DhcpFailoverWithScopesParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It associates its objects with a List of ipam:DhcpScope objects and an ipam:DhcpFailover object. This type is used while creating a failover relationship or while adding DHCP scopes to an existing failover relationship.

```
<xs:complexType name="DhcpFailoverWithScopesParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover" />
        <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
/>      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Failover: This is of type ipam:DhcpFailover and represents the DHCP failover to be created or to add more scopes to.

ScopeIds: This is of type serarr:ArrayOflong and represents the list of identifiers of DHCP scopes to be added to a failover relationship.

2.2.4.106 DhcpFilter

The DhcpFilter complex type describes a DHCP filter and associates its various properties into one instance.

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```
<xs:complexType name="DhcpFilter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IsAllow" type="xsd:boolean" />
        <xs:element minOccurs="0" name="MacAddress" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OperationTrackerServerIds" nillable="true"
type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: A string which is used to store the description of the filter.

IsAllow: A Boolean which indicates if this filter instance is an allow or deny type.

MacAddress: A string which is used to store the MAC address this filter is defined for.

OperationTrackerServerIds: A list of long int. It is used to track if a data store update is needed after a filter operation is done.

RecordId: A long int which corresponds to the filter's record ID in the data store.

ServerName: A string which corresponds to the name of the server this filter is associated with.

ServerRecordId: A long which corresponds to the data store record ID of the server this filter is associated with.

2.2.4.107 DhcpFilterAllEnumerationParameters

The DhcpFilterAllEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFilter. It is used to get the details of filters of a particular DHCP server.

```
<xs:complexType name="DhcpFilterAllEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.108 DhcpFilterByServerIdsEnumerationParameters

The DhcpFilterByServerIdsEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpFilter. It is used to get the details of filters of a list of server IDs.

```
<xs:complexType name="DhcpFilterByServerIdsEnumerationParameters">
  <xs:complexContent mixed="false">
```


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```
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerIds" nillable="true" type="serarr:ArrayOflong"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerIds: This represents RecordIds of DHCP servers whose filters are to be enumerated.

2.2.4.109 DhcpFindAndReplaceOption

The DhcpFindAndReplaceOption type creates an association between the ipam:DhcpOption and its old value, which is to be found, and the new value, with which it is to be replaced. The old and new values are represented by Object types.

```
<xs:complexType name="DhcpFindAndReplaceOption">
  <xs:sequence>
    <xs:element minOccurs="0" name="NewValue" nillable="true" type="xsd:anyType" />
    <xs:element minOccurs="0" name="OldValue" nillable="true" type="xsd:anyType" />
    <xs:element minOccurs="0" name="Option" nillable="true" type="ipam:DhcpOption" />
  </xs:sequence>
  <xs:attribute ref="ser:Id" />
  <xs:attribute ref="ser:Ref" />
</xs:complexType>
```

NewValue: This is used to indicate the value to replace with.

OldValue: This is used to indicate the value to find.

Option: This is of type ipam:DhcpOption and represents the DHCP option to be updated.

2.2.4.110 DhcpFindAndReplaceOptionV4

The DhcpFindAndReplaceOptionV4 is a simple derivation of ipam:DhcpFindAndReplaceOption with no new attributes.

```
<xs:complexType name="DhcpFindAndReplaceOptionV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpFindAndReplaceOption">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.111 DhcpFindAndReplaceOptionV6

The DhcpFindAndReplaceOptionV6 is a simple derivation of ipam:DhcpFindAndReplaceOption with no new attributes.

```
<xs:complexType name="DhcpFindAndReplaceOptionV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpFindAndReplaceOption">
```


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```
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.112 DhcpMsmOverallCompletionStatus

The DhcpMsmOverallCompletionStatus allows extended attributes on an ipam:IpamObject type.

```
 <xs:complexType name="DhcpMsmOverallCompletionStatus">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EntityStatusCollectionObject" nillable="true"
type="ipam:IpamObject" />
        <xs:element minOccurs="0" name="ErrorInfo" nillable="true" type="ipam1:IpamException"
/>
        <xs:element minOccurs="0" name="HasIpamUpdateError" type="xsd:boolean" />
        <xs:element minOccurs="0" name="ReturnObject" nillable="true" type="ipam:IpamObject"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType
```

EntityStatusCollectionObject: An object to keep track of what operation took place and whether it was successful or not.

ErrorInfo: It is of type ipam:IpamException and stores any exception thrown during the operation associated with this instance of DhcpMsmOverallCompletionStatus.

HasIpamUpdateError: It is of type Boolean and indicates if the IPAM operation had errors.

ReturnObject: It is an ipam:IpamObject instance to hold the return data after the operation.

2.2.4.113 DhcpOption

The DhcpOption complex type specifies the common information pertaining to a DHCP option that is independent of whether the option is IPv4-specific or IPv6-specific.

```
<xs:complexType name="DhcpOption">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OptionDefinition" nillable="true"
type="ipam:DhcpOptionDefinition" />
        <xs:element minOccurs="0" name="OptionOwnerType" type="ipam:DhcpOptionOwnerType" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="UserClass" nillable="true" type="ipam:DhcpUserClass"
/>
        <xs:element minOccurs="0" name="Values" nillable="true" type="serarr:ArrayOfanyType"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

OptionDefinition: This specifies the DHCP option definition for which the DhcpOption specifies the value.

OptionOwnerType: This specifies whether the option is defined at the server-level or at a particular scope-level.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

UserClass: This specifies the user class for which the option value is specified.

Values: This specifies an array that can hold any type of value. Based on the type of the option as specified in the option definition and also whether the option is single-valued or multivalued, this can have single or multiple values of the specific type.

2.2.4.114 DhcpOptionCollection

The DhcpOptionCollection complex type specifies a collection of DHCP options.

```
<xs:complexType name="DhcpOptionCollection">
  <xs:sequence>
    <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S" />
    <xs:element minOccurs="0" name="OptionsInCollection" nillable="true"
type="ipam:ArrayOfDhcpOption" />
    <xs:element minOccurs="0" name="OwnerType" type="ipam:DhcpOptionOwnerType" />
  </xs:sequence>
  <xs:attribute ref="ser:Id" />
  <xs:attribute ref="ser:Ref" />
</xs:complexType>
```

OperationTracker: This specifies an array of key value pairs. The key specifies the operation to be performed and the value specifies the DhcpOption on which the operation has to be performed. This is used by the DBCreateOrUpdateScope and DBUpdateDhcpServer to manage the DHCP options either at the scope-level or server-level.

OptionsInCollection: This specifies thee list of options in the collection. The elements in the array MUST be either DhcpOptionV4 or DhcpOptionV6.

OwnerType: This specifies whether the option collection is defined at the server-level or at a particular scope-level.

2.2.4.115 DhcpOptionDefinition

The DhcpOptionDefinition complex type specifies the various properties of a DHCP option definition.

```
<xs:complexType name="DhcpOptionDefinition">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OptionCollectionType"
type="ipam:DhcpOptionCollectionType" />
```


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```
        <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
        <xs:element minOccurs="0" name="OptionType" type="ipam:DhcpOptionType" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Values" nillable="true" type="serarr:ArrayOfanyType"
/>
        <xs:element minOccurs="0" name="VendorClass" nillable="true"
type="ipam:DhcpVendorClass" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: This specifies the description for the DHCP option definition.

Name: This specifies the name of the option definition.

OptionCollectionType: This specifies whether the option is a single-valued or multi-valued option.

OptionId: This specifies the DHCP **option ID**.

OptionType: This specifies the DHCP **option type**.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

Values: This specifies the default value for the option.

VendorClass: This specifies the vendor class for which the option is defined.

2.2.4.116 DhcpOptionDefinitionCollection

The DhcpOptionDefinitionCollection complex type specifies a collection of DhcpOptionDefinition complex type.

```
<xs:complexType name="DhcpOptionDefinitionCollection">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S" />
        <xs:element minOccurs="0" name="OptionDefinitionsInCollection" nillable="true"
type="ipam:ArrayOfDhcpOptionDefinition" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OperationTracker: This specifies an array of key value pairs. The key specifies the operation to be performed and the value specifies the DhcpOptionDefinition on which the operation has to be performed. This is used by the DBUpdateDhcpServer to manage the DHCP options definitions at the server-level.

OptionDefinitionsInCollection: This is the array of DhcpOptionDefinition complex type. All the elements in the collection MUST be either DhcpOptionDefinitionV4 or DhcpOptionDefinitionV6.

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2.2.4.117 DhcpOptionDefinitionV4

The DhcpOptionDefinitionV4 complex type allows extension of the DhcpOptionDefinition complex type. This specifies the option definitions associated with the IPv4-specific DHCP server instance.

```
<xs:complexType name="DhcpOptionDefinitionV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpOptionDefinition">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.118 DhcpOptionDefinitionV6

The DhcpOptionDefinitionV6 complex type allows extension of the DhcpOptionDefinition complex type. This specifies the option definitions associated with the IPv6-specific DHCP server instance.

```
<xs:complexType name="DhcpOptionDefinitionV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpOptionDefinition">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.119 DhcpOptionV4

The DhcpOptionV4 complex type allows extension of the ipam:DhcpOption complex type. This specifies the DHCP option associated with the IPv4-specific DHCP server or scope instance. It also associates its objects with an object of type ipam:DhcpPolicyV4.

```
<xs:complexType name="DhcpOptionV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpOption">
      <xs:sequence>
        <xs:element minOccurs="0" name="PolicyOwner" nillable="true" type="ipam:DhcpPolicyV4"
/>
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PolicyOwner: This is of type ipam:DhcpPolicyV4 and represents the policy whose DHCP option is represented by this type.

2.2.4.120 DhcpOptionV6

The DhcpOptionV6 complex type allows extension of the DhcpOption complex type. This specifies the DHCP option associated with the IPv6-specific DHCP server or scope instance.

```
<xs:complexType name="DhcpOptionV6">
  <xs:complexContent mixed="false">
```


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```
    <xs:extension base="ipam:DhcpOption">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.121 DhcpPoliciesByDhcpServerIdListEnumerationParameters

The DhcpPoliciesByDhcpServerIdListEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy and associates them to a collection of ipam:DhcpServerV4 objects. It is used while enumerating DHCP policies associated with a list of DHCP servers and their scopes.

```
<xs:complexType name="DhcpPoliciesByDhcpServerIdListEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DhcpServers" nillable="true"
type="ipam:ArrayOfDhcpServerV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DhcpServers: This is of type ipam:ArrayOfDhcpServerV4 and represents the DHCP servers whose policies are to be enumerated.

2.2.4.122 DhcpPoliciesEnumerationParameters

The DhcpPoliciesEnumerationParameters allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is DhcpPolicy.

```
<xs:complexType name="DhcpPoliciesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.123 DhcpPolicyConditionV4

The DhcpPolicyConditionV4 allows extended attributes on an ipam:BaseIpamObject type.

```
<xs:complexType name="DhcpPolicyConditionV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ClientId" nillable="true" type="serarr:ArrayOfstring"
/>
        <xs:element minOccurs="0" name="Fqdn" nillable="true" type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="MacAddress" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="Operator" type="ipam:PolicyOperator" />
```


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```
        <xs:element minOccurs="0" name="RelayAgentCidInfo" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="RelayAgentInfo" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="RelayAgentRidInfo" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="RelayAgentSidInfo" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="UserClass" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="VendorClass" nillable="true"
type="serarr:ArrayOfstring" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ClientId: A list of strings which represent clientIDs.

Fqdn: A list of strings which represents the logical condition and FQDN to be applied on the FQDN of the requesting DHCP client, before applying the policy.

MacAddress: A list of strings which represent MAC Addresses.

Operator: This is of enum type ipam:PolicyOperator which represents whether this condition is an or condition or an AND condition.

RelayAgentCidInfo: A list of stings which represent relay agent circuit ID.

RelayAgentInfo: A list of strings which represent the relay agent information.

RelayAgentRidInfo: A list of strings which represent the relay agent remote ID.

RelayAgentSidInfo: A list of strings which represent the relay agent subscriber ID.

UserClass: A list of strings which represent the user class.

VendorClass: A list of strings which represent the vendor class.

2.2.4.124 DhcpPolicyRangeV4

The DhcpPolicyRangeV4 allows extended attributes on an ipam:BaseIpamObject type. It creates an association between the record ID of the range and its start and end ipam:IPAddress objects.

```
<xs:complexType name="DhcpPolicyRangeV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EndIPAddress" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
type="sysnet:IPAddress" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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EndIPAddress: This is used to identify the end IP address applicable for a Policy.

RecordId: This represents a unique identifier for the DhcpPolicyRangeV4 object in the IPAM data store.

StartIPAddress: This is used to identify the start IP address applicable for a Policy.

2.2.4.125 DhcpPolicyV4

The DhcpPolicyV4 allows extended attributes on an ipam:BaseIpamObject type.

```
<xs:complexType name="DhcpPolicyV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Condition" nillable="true"
type="ipam:DhcpPolicyConditionV4" />
        <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
        <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
        <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
        <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
        <xs:element minOccurs="0" name="DnsSuffix" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
        <xs:element minOccurs="0" name="LeaseDuration" type="ser:duration" />
        <xs:element minOccurs="0" name="LeaseDurationType" type="ipam:DhcpLeaseDurationType"
/>
        <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfPolicyOperations" />
        <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:DhcpOptionCollection" />
        <xs:element minOccurs="0" name="PolicyDescription" nillable="true" type="xsd:string"
/>
        <xs:element minOccurs="0" name="PolicyId" type="xsd:long" />
        <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ProcessingOrder" type="xsd:unsignedInt" />
        <xs:element minOccurs="0" name="Ranges" nillable="true"
type="ipam:ArrayOfDhcpPolicyRangeV4" />
        <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
        <xs:element minOccurs="0" name="ScopeRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DhcpServer" />
        <xs:element minOccurs="0" name="ServerRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="State" type="xsd:boolean" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Condition: This is of type ipam:DhcpPolicyConditionV4 and holds the condition associated with this policy.

DiscardDnsRecordOnLeaseDeletionStatus: This is of enum type ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus and represents whether the associated DNS record should be removed on lease deletion.

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DnsDisableDynamicPtrUpdates: This is of enum type ipam:DnsDisableDynamicPtrUpdateType and represents whether the DNS resource records should be dynamically updated based on lease status.

DnsNameProtectionStatus: This is of enum type ipam: DhcpDnsNameProtectionStatus and represents whether DNS name protection is enabled or not.

DnsNotRequestingClientsUpdateType: This is of enum type ipam:DhcpDnsNotRequestingClientsUpdateType and represents whether the DNS A and PTR records will be dynamically updated for clients that do not request updates.

DnsSuffix: This is a string which holds the DNS suffix for the policy.

DnsUpdateType: This is of enum ipam:DhcpDnsUpdateType and represents the conditions under which a DNS dynamic update would occur.

LeaseDuration: This is of type TimeSpan and represents the lease duration time for leases granted as a part of the associated policy.

LeaseDurationType: This is of type ipam:DhcpLeaseDurationType and represents whether the lease duration is limited or not.

OperationTracker: This data member is used to keep track of whether an IPAM data store update is needed after a policy operation.

Options: This is of type ipam:DhcpOptionCollection and represents the options associated with the policy.

PolicyDescription: This is a string which is used to describe the policy.

PolicyId: This is a long int which identifies the policy in IPAM data store.

PolicyName: This is a string which represents the name of the policy.

ProcessingOrder: This is a UINT which represents the priority of application of the policy.

Ranges: This is a collection of ipam:DhcpPolicyRangeV4 and associates them to this policy.

Scope: This is of type ipam:DhcpScope and represents the scope to which this policy belongs, if it is a scope-level policy.

ScopeRecordId: This represents the identifier of the scope to which this policy belongs, if it is a scope-level policy.

Server: This is of type ipam:DhcpServer and represents the server to which this policy belongs.

ServerRecordId: This represents the identifier of the server to which this policy belongs.

State: This is a bool which indicates whether this policy is enabled or disabled.

2.2.4.126 DhcpReservation

The DhcpReservation complex type specifies the details associated with a DHCP reservation.

```
<xs:complexType name="DhcpReservation">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
```


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```
        <xs:element minOccurs="0" name="Address" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
        <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
        <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfReservationOperations" />
        <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:DhcpOptionCollection" />
        <xs:element minOccurs="0" name="ParentScope" nillable="true" type="ipam:DhcpScope" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Status" type="ipam:DhcpReservationStatus" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Address: The IPv4 or IPv6 address for the reservation.

Description: This specifies the description for the reservation.

DiscardDnsRecordOnLeaseDeletionStatus: This specifies the DNS operation to be performed when the address lease expires and the lease record gets deleted.

DnsNameProtectionStatus: This specifies the setting of DNS name protection for the reservation. See [RFC4701] for information on the name protection.

DnsUpdateType: This specifies the dynamic DNS registration settings associated with the reservation.

Name: This is a descriptive name for the reservation.

OperationTracker: This specifies an array of ReservationOperations simple type on the type of operations to be performed for the reservation update.

Options: This specifies the collection of DHCP options associated with the reservation.

ParentScope: This specifies the RecordId of the DHCP scope against which the reservation is defined.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

Status: This specifies the status of the reservation. It is of the type DhcpReservationStatus.

2.2.4.127 DhcpReservationDataFormatter

The DhcpReservationDataFormatter complex type is used to format the fields of a DHCP reservation into a string used to display the result of operations. The string is formatted to include the scope ID and the server name.

```
<xs:complexType name="DhcpReservationDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
```


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```
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ScopeId: Specifies the DHCP scope to which the reservation belongs.

ServerName: Specifies the name of the DHCP server to which the DHCP scope belongs.

2.2.4.128 DhcpReservationTemplateConfiguration

The DhcpReservationTemplateConfiguration complex type is used for edit operation on a collection of DHCP Reservation. It specifies the properties of the reservation that need to be changed for the collection in a multi-select edit operation.

```
<xs:complexType name="DhcpReservationTemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
        <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
        <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
        <xs:element minOccurs="0" name="FindAndReplaceOptions" nillable="true"
type="ipam:ArrayOfDhcpFindAndReplaceOption" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OptionApplyType" type="ipam:DhcpOptionApplyType" />
        <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:ArrayOfDhcpOption" />
        <xs:element minOccurs="0" name="Status" type="ipam:DhcpReservationStatus" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: This specifies the description to be updated for reservations in the collection.

DiscardDnsRecordOnLeaseDeletionStatus: This specifies the DNS operation to be performed when the address lease expires and the lease record gets deleted.

DnsNameProtectionStatus: This specifies the setting of DNS name protection for the reservation. See [RFC4701] for information on the name protection.

FindAndReplaceOptions: This specifies the option values for Find and Replace action. It includes the option values that should be searched for and the new option values that should be assigned.

Name: This is a descriptive name for the reservation.

OptionApplyType: This specifies the action that needs to be taken with the options for the given set of DHCP scopes. The actions could be Add or overwrite, delete, append or Find and Replace.

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Options: This specifies the collection of DHCP options associated with the reservation.

Status: This specifies the status of the reservation. It is of the type DhcpReservationStatus.

2.2.4.129 DhcpReservationV4

The DhcpReservationV4 complex type is the extension of the DhcpReservation complex type. This specifies the properties associated with a IPv4 reservation.

```
<xs:complexType name="DhcpReservationV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpReservation">
      <xs:sequence>
        <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
        <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
        <xs:element minOccurs="0" name="MacAddress" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType
```

DnsDisableDynamicPtrUpdates: This is of enum type ipam:DnsDisableDynamicPtrUpdateType and represents whether the DNS resource records should be dynamically updated based on lease status.

DnsNotRequestingClientUpdateType: This specifies if the DHCP server must do the DNS registration on behalf of the client corresponding to this reservation. When this field is "Enabled" the DHCP server must do the DNS registration.

MacAddress: This specifies the MAC address of the machine for which the IPv4 reservation is being done.

ServingClientsType: This is of type DhcpServingsClientType, which indicates the protocol that the machine may use to claim reservation – bootp, DHCP or either of the two.

2.2.4.130 DhcpReservationV4TemplateConfiguration

The DhcpReservationV4TemplateConfiguration complex type is the extension of the DhcpReservationTemplateConfiguration complex type. The DhcpReservationV4TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPV4 reservations. It specifies the properties of the IPv4 reservation that need to be changed for the collection in a multi-select edit operation.

```
<xs:complexType name="DhcpReservationV4TemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpReservationTemplateConfiguration">
      <xs:sequence>
        <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdatesType"
type="ipam:DnsDisableDynamicPtrUpdateType" />
        <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
```


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```
        <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DnsDisableDynamicPtrUpdatesType: This is of enum type ipam:DnsDisableDynamicPtrUpdateType and represents whether the DNS resource records should be dynamically updated based on lease status.

DnsNotRequestingClientUpdateType: This specifies whether the DHCP server must do the DNS registration on behalf of the client corresponding to this reservation. When this field is "Enabled" the DHCP server must do the DNS registration.

ServingClientsType: This is of type DhcpServingsClientType, which indicates the protocol that the machine may use to claim reservation – bootp, DHCP, or either of the two.

2.2.4.131 DhcpReservationV6

The DhcpReservationV6 complex type is the extension of the DhcpReservation complex type. This specifies the properties associated with a IPv6 reservation.

```
<xs:complexType name="DhcpReservationV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpReservation">
      <xs:sequence>
        <xs:element minOccurs="0" name="Duid" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Iaid" type="xsd:unsignedInt" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Duid: This specifies the DHCP Unique Identifier (DUID) that is used by a client, as a unique identifier of that client, to get an IP address from the DHCPv6 server.

Iaid: This specifies the Interface Association Identifier (IAID) that is used to uniquely identify an IPv6 interface in a client. Each allocation in a DHCPv6 server is identified by a DUID and IAID.

2.2.4.132 DhcpReservationV6TemplateConfiguration

The DhcpReservationV6TemplateConfiguration complex type is the extension of the DhcpReservationTemplateConfiguration complex type. The DhcpReservationV6TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPV6 reservations. It specifies the properties of the IPv6 reservation that need to be changed for the collection in a multi-select edit operation.

```
<xs:complexType name="DhcpReservationV6TemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpReservationTemplateConfiguration">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

2.2.4.133 DhcpScope

The DhcpScope complex type specifies the details associated with a DHCP scope.

```
<xs:complexType name="DhcpScope">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
        <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
        <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
        <xs:element minOccurs="0" name="EndAddress" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="ExclusionRanges" nillable="true"
type="ipam:DhcpExclusionRangeCollection" />
        <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
        <xs:element minOccurs="0" name="NumberOfActiveLeases" type="xsd:double" />
        <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:DhcpOptionCollection" />
        <xs:element minOccurs="0" name="ParentDhcpServerRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ScopeName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="StartAddress" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="Status" type="ipam:DhcpScopeStatus" />
        <xs:element minOccurs="0" name="SubnetMask" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="TotalNumberOfAddressesInScope" type="xsd:double" />
        <xs:element minOccurs="0" name="TotalNumberOfExcludedAddressesInScope"
type="xsd:double" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType
```

AccessScopeId: This specifies the unique identifier corresponding to the access scope for this DHCP scope.

Description: The description for the DHCP scope.

DiscardDnsRecordOnLeaseDeletionStatus: This specifies the DNS operation to be performed when the address lease expires and the lease record gets deleted.

DnsNameProtectionStatus: This specifies the setting of DNS name protection for the scope. See [RFC4701] for information on the name protection.

DnsUpdateType: This specifies the dynamic DNS registration settings associated with the DHCP scope.

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EndAddress: This specifies the end address of the address range specified by the scope.

ExclusionRanges: This specifies the collection of DHCP exclusion ranges associated with the scope.

IsInheritedAccessScope: This is a Boolean field that specifies whether the access scope for this object is an inherited one.

NumberOfActiveLeases: This specifies the number of active leases associated with the scope.

Options: This specifies the collection DHCP options associated with the scope.

ParentDhcpServerRecordId: This specifies the RecordId of the DHCP server instance against which the scope instance is defined.

PrefixLength: This specifies the prefix length associated with the subnet mask that defines the scope.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

ScopeId: This specifies the **subnet ID** of the referenced DHCP scope.

ScopeName: This specifies the name of the DHCP scope.

StartAddress: This specifies the start address of the address range specified by the scope.

Status: This specifies whether the scope instance is activated or deactivated.

SubnetMask: This specifies the end IP address for the IP address range configured on the referenced DHCP scope.

TotalNumberOfAddressesInScope: This specifies the total number of addresses in the scope address range. This value MUST NOT be less than 0.

TotalNumberOfExcludedAddressesInScope: This specifies the total number of excluded addresses in the exclusion ranges of the scope. This value MUST NOT be less than 0.

2.2.4.134 DhcpScopeAllEnumerationParameters

The DhcpScopeAllEnumerationParameters complex type specifies the criteria to be used for enumerating the DHCP scopes.

```
<xs:complexType name="DhcpScopeAllEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressCategory" nillable="true"
type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressCategory: This specifies the **address category** of the scopes that need to be enumerated.

AddressFamily: This specifies the address family of the scopes that need to be enumerated.

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2.2.4.135 DhcpScopeAssociatedWithVendorClassesEnumerationParameters

The DhcpScopeAssociatedWithVendorClassesEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes that are associated with a given set of vendor classes.

```
<xs:complexType name="DhcpScopeAssociatedWithVendorClassesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ParentServerRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="VendorClassRecordIds" nillable="true"
type="serarr:ArrayOflong" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the scopes that need to be enumerated.

ParentServerRecordId: The RecordId of the DHCP server instance from which the scopes are to be enumerated.

VendorClassRecordIds: This is a collection of RecordId of the vendor classes.

2.2.4.136 DhcpScopeForIpBlockEnumerationParameters

The DhcpScopeForIpBlockEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes belonging to a particular address block.

```
<xs:complexType name="DhcpScopeForIpBlockEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ParentIPBlockRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the scopes that need to be enumerated.

ParentIPBlockRecordId: This specifies the RecordId of the address block for which the mapping DHCP scopes need to be enumerated by the enumeration operation.

2.2.4.137 DhcpScopeObjectSpecificEnumerationParameters

The DhcpScopeObjectSpecificEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes that are associated with a given set of DHCP reservations or DHCP policies.

```
<xs:complexType name="DhcpScopeObjectSpecificEnumerationParameters">
```


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```
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="IpamObjectTypeForEnumeration"
type="ipam:IpamObjectType" />
        <xs:element minOccurs="0" name="RecordIds" nillable="true" type="serarr:ArrayOflong"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the scopes to be enumerated.

IpamObjectTypeForEnumeration: This specifies the IPAM object type for which the scopes are to be enumerated. The IPAM object type MUST be one of IpamObjectType.DHCPReservationV4, IpamObjectType.DHCPReservationV6, or IpamObjectType.DHCPPolicyV4.

2.2.4.138 DhcpScopePoliciesWithoutRangesEnumerationParameters

The DhcpScopesPoliciesWithoutRangesEnumerationParameters complex type specifies the criteria to be used for enumerating the policies that do not have ranges, in a given DHCP scope.

```
<xs:complexType name="DhcpScopePoliciesWithoutRangesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DhcpScope" nillable="true" type="ipam:DhcpScopeV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DhcpScope: The DHCP IPv4 scope in which the policies without ranges are enumerated.

2.2.4.139 DhcpScopesByDhcpServerIdListEnumerationParameters

The DhcpScopesByDhcpServerIdListEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes that belong to a set of DHCP servers that are specified by using the RecordId in ADM_DHCPServersTable.

```
<xs:complexType name="DhcpScopesByDhcpServerIdListEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="DhcpServerIds" nillable="true"
type="serarr:ArrayOflong" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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AddressFamily: This specifies the address family of the scopes that are enumerated.

DhcpServerIds: This specifies the collection of record identifiers of the DHCP server instances in ADM_DHCPServersTable for which the scopes are enumerated.

2.2.4.140 DhcpScopeTemplateConfiguration

The DhcpScopeTemplateConfiguration complex type is used for edit operation on a collection of DHCP Scopes. It specifies the properties of the scope that need to be changed for the collection in a multi-select edit operation.

```
<xs:complexType name="DhcpScopeTemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
        <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
        <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
        <xs:element minOccurs="0" name="FindAndReplaceOptions" nillable="true"
type="ipam:ArrayOfDhcpFindAndReplaceOption" />
        <xs:element minOccurs="0" name="OptionApplyType" type="ipam:DhcpOptionApplyType" />
        <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:ArrayOfDhcpOption" />
        <xs:element minOccurs="0" name="Status" type="ipam:DhcpScopeStatus" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: The description for the DHCP scope.

DiscardDnsRecordOnLeaseDeletionStatus: This specifies the DNS operation to be performed when the address lease expires and the lease record gets deleted.

DnsNameProtectionStatus: This specifies the setting of DNS name protection for the scope. See [RFC4701] for information on the name protection.

DnsUpdateType: This specifies the dynamic DNS registration settings associated with the DHCP scope.

FindAndReplaceOptions: This specifies the option value for Find and Replace action. It includes the option value that should be searched for and the new option value that should be assigned.

OptionApplyType: This specifies the action that needs to be taken with the options for the given set of DHCP scopes. The actions could be Add or overwrite, delete, append or Find and Replace.

Options: This specifies the collection DHCP options associated with the scope.

Status: This specifies whether the scope instance is activated or deactivated.

2.2.4.141 DhcpScopeUnmappedEnumerationParameters

The DhcpScopeUnmappedEnumerationParameters complex type specifies the criteria to be used for enumerating the scopes that are not mapped to any address block.

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```
<xs:complexType name="DhcpScopeUnmappedEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the scopes that need to be enumerated.

2.2.4.142 DhcpScopeV4

The DhcpScopeV4 complex type allows the extension of the DhcpScope complex type. This specifies a scope for specifying IPv4 address assignment with DHCP. As this depicts the IPv4 DHCP scope, the StartAddress and EndAddress MUST be valid IPv4 address. The PrefixLength MUST be greater than or equal to 1 and MUST be no greater than 30.

```
<xs:complexType name="DhcpScopeV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpScope">
      <xs:sequence>
        <xs:element minOccurs="0" name="BootpLeaseDuration" type="ser:duration" />
        <xs:element minOccurs="0" name="BootpLeaseDurationType"
type="ipam:DhcpLeaseDurationType" />
        <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
        <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
        <xs:element minOccurs="0" name="FailoverConfigSyncStatus"
type="ipam:DhcpFailoverConfigSyncStatus" />
        <xs:element minOccurs="0" name="FailoverRelationshipName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="LeaseDuration" type="ser:duration" />
        <xs:element minOccurs="0" name="LeaseDurationType" type="ipam:DhcpLeaseDurationType"
/>
        <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
        <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
        <xs:element minOccurs="0" name="SubnetDelay" type="xsd:long" />
        <xs:element minOccurs="0" name="SuperscopeName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="SuperscopeRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

BootpLeaseDuration: This specifies the lease duration to be used for BOOTP protocol clients. See [RFC2132] for more information on BOOTP clients.

BootpLeaseDurationType: Specifies the lease duration type to be used for the BOOTP protocol clients.

DnsDisableDynamicPtrUpdates: This is of enum type ipam:DnsDisableDynamicPtrUpdateType and represents whether the Dns resource records should be dynamically updated based on lease status.

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DnsNotRequestingClientsUpdateType: This specifies the dynamic DNS registration behavior to be used for the scope. This specifically specifies the setting the DHCP server has to use for DHCP clients that do not provide any dynamic DNS registration requirements.

FailoverConfigSyncStatus: This specifies the status of configuration synchronization between this IPv4 scope and its failover partner.

FailoverRelationshipName: This specifies the name of the failover relationship to which this scope belongs. If null, it indicates that this scope does not belong to any failover relationship.

LeaseDuration: This specifies the lease duration of the DHCP scope to be used for DHCP clients.

LeaseDurationType: This specifies the type of lease duration specified for the DHCP clients configured on the DHCP scope.

PolicyActivationState: This specifies whether the DHCP policies are enabled for this scope.

ServingClientsType: This specifies the type of clients the DHCP scope on the DHCP server instance is to be used for.

SubnetDelay: This specifies the delay the DHCP server has to use before servicing the DHCP protocol clients.

SuperscopeName: This is a string. In case the scope is associated with a superscope, this value represents the superscope name.

SuperscopeRecordId: This is of type long int and points to superscope identifier in the data store, in case the scope is associated with one.

2.2.4.143 DhcpScopeV4TemplateConfiguration

The DhcpScopeV4TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPv4 Scopes. It specifies the properties of the scope that need to be changed for the collection in a multi-select edit operation.

```
<xs:complexType name="DhcpScopeV4TemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpScopeTemplateConfiguration">
      <xs:sequence>
        <xs:element minOccurs="0" name="BootpLeaseDuration" type="ser:duration" />
        <xs:element minOccurs="0" name="BootpLeaseDurationType"
type="ipam:DhcpLeaseDurationType" />
        <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdatesType"
type="ipam:DnsDisableDynamicPtrUpdateType" />
        <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
        <xs:element minOccurs="0" name="LeaseDuration" type="ser:duration" />
        <xs:element minOccurs="0" name="LeaseDurationType" type="ipam:DhcpLeaseDurationType"
/>
        <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
        <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
        <xs:element minOccurs="0" name="SubnetDelay" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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BootpLeaseDuration: This specifies the lease duration to be used for BOOTP protocol clients. See [RFC2132] for more information on BOOTP clients.

BootpLeaseDurationType: Specifies the lease duration type to be used for the BOOTP protocol clients.

DnsDisableDynamicPtrUpdates: This is of enum type ipam:DnsDisableDynamicPtrUpdateType and represents whether the Dns resource records should be dynamically updated based on lease status.

DnsNotRequestingClientsUpdateType: This specifies the dynamic DNS registration behavior to be used for the scope. This specifically specifies the setting the DHCP server has to use for DHCP clients that do not provide any dynamic DNS registration requirements.

LeaseDuration: This specifies the lease duration of the DHCP scope to be used for DHCP clients.

LeaseDurationType: This specifies the type of lease duration specified for the DHCP clients configured on the DHCP scope.

PolicyActivationState: This specifies whether the DHCP policies are enabled for this scope.

ServingClientsType: This specifies the type of clients the DHCP scope on the DHCP server instance is to be used for.

SubnetDelay: This specifies the delay the DHCP server has to use before servicing the DHCP protocol clients.

2.2.4.144 DhcpScopeV6

The DhcpScopeV6 complex type allows the extension of the DhcpScope complex type. This specifies a scope for specifying IPv6 address assignment with DHCP. As this depicts the IPv6 DHCP scope, the StartAddress and EndAddress MUST be valid IPv6 address. The PrefixLength MUST be greater than or equal to 1 and MUST be no greater than 127.

```
<xs:complexType name="DhcpScopeV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpScope">
      <xs:sequence>
        <xs:element minOccurs="0" name="PreferredLeaseTime" type="ser:duration" />
        <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
        <xs:element minOccurs="0" name="ScopePreference" type="xsd:unsignedByte" />
        <xs:element minOccurs="0" name="ScopeType" type="ipam:AddressAssignment" />
        <xs:element minOccurs="0" name="StatelessClientInventoryLoggingStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
        <xs:element minOccurs="0" name="ValidLeaseTime" type="ser:duration" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PreferredLeaseTime: This specifies the Preferred Lease Time duration of the DHCPv6 scope.

PurgeInterval: This specifies the duration at which the **DHCPv6 stateless client inventory** records are to be purged for the specified scope on the DHCP server instance.

ScopePreference: This specifies the scope preference setting associated with the DHCPv6 scope.

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ScopeType: This specifies the address assignment type of the scope – whether it is dynamic or stateless address assignment.

StatelessClientInventoryLoggingStatus: This specifies the DHCPv6 stateless client inventory logging is to be enabled for the scope or not.

ValidLeaseTime: This specifies the Valid Lease Time duration of the DHCPv6 scope.

2.2.4.145 DhcpScopeV6TemplateConfiguration

The DhcpScopeV6TemplateConfiguration complex type is used for edit operation on a collection of DHCP IPv6 Scopes. It specifies the properties of the scope that need to be changed for the collection in a multi-select edit operation.

```
<xs:complexType name="DhcpScopeV6TemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpScopeTemplateConfiguration">
      <xs:sequence>
        <xs:element minOccurs="0" name="PreferredLeaseTime" type="ser:duration" />
        <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
        <xs:element minOccurs="0" name="ScopePreference" type="xsd:unsignedByte" />
        <xs:element minOccurs="0" name="StatelessClientInventoryStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
        <xs:element minOccurs="0" name="ValidLeaseTime" type="ser:duration" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PreferredLeaseTime: This specifies the Preferred Lease Time duration of the DHCPv6 scope.

PurgeInterval: This specifies the duration at which the DHCPv6 stateless client inventory records are to be purged for the specified scope on the DHCP server instance.

ScopePreference: This specifies the scope preference setting associated with the DHCPv6 scope.

StatelessClientInventoryStatus: This specifies whether the DHCPv6 stateless client inventory logging is to be enabled for the scope.

ValidLeaseTime: This specifies the Valid Lease Time duration of the DHCPv6 scope.

2.2.4.146 DhcpServer

The DhcpServer complex type specifies the common details of a DHCP server instance.

```
<xs:complexType name="DhcpServer">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="AuditLoggingStatus"
type="ipam:DhcpAuditLoggingStatus" />
        <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
        <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
```


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```
        <xs:element minOccurs="0" name="DnsRegistrationCredentialDomainName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DnsRegistrationCredentialPassword" nillable="true"
type="xsd:base64Binary" />
        <xs:element minOccurs="0" name="DnsRegistrationCredentialUserName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
        <xs:element minOccurs="0" name="NumberOfActiveLeases" type="xsd:double" />
        <xs:element minOccurs="0" name="NumberOfAvailableAddresses" type="xsd:double" />
        <xs:element minOccurs="0" name="NumberOfScopes" type="xsd:int" />

        <xs:element minOccurs="0" name="OptionDefinitions" nillable="true"
type="ipam:DhcpOptionDefinitionCollection" />
        <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:DhcpOptionCollection" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="ServerRoleInfo" nillable="true"
type="ipam:ServerRoleDhcp" />
        <xs:element minOccurs="0" name="UserClasses" nillable="true"
type="ipam:DhcpUserClassCollection" />
        <xs:element minOccurs="0" name="VendorClasses" nillable="true"
type="ipam:DhcpVendorClassCollection" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AccessScopeId: This represents the unique identifier in IPAM data store of the access scope associated with this DhcpServer object.

AuditLoggingStatus: This specifies whether the **audit log** functionality of the DHCP server is enabled or not.

DiscardDnsRecordOnLeaseDeletionStatus: This specifies the DNS operation to be performed when the address lease expires and the lease record gets deleted.

DnsNameProtectionStatus: This specifies the setting of DNS name protection at the DHCP server instance level. See [RFC4701] for information on the name protection.

DnsRegistrationCredentialDomainName: This specifies the domain name of the user credential to be used for DNS registration on the DHCP server.

DnsRegistrationCredentialUserName: This specifies the user name of the user credential to be used for DNS registration on the DHCP server.

DnsUpdateType: This specifies the dynamic DNS registration settings defined on the DHCP server instance.

NumberOfActiveLeases: This specifies the total number of active leases on the DHCP server instance.

NumberOfAvailableAddresses: This specifies the total number of available addresses on the DHCP server instance.

NumberOfScopes: This specifies the total number of scopes that are available on the DHCP server instance.

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OptionDefinitions: This specifies the list of DHCP option definition instances defined on the DHCP server instance.

Options: This specifies the list of DHCP option defined at the server-level.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

ServerRoleInfo: This specifies the role-specific information for the DHCP server.

UserClasses: This specifies the user classes associated with the DHCP server instance.

VendorClasses: This specifies the vendor classes associated with the DHCP server instance.

2.2.4.147 DhcpServerAllEnumerationParameters

The DhcpServerAllEnumerationParameters complex type is used to specify the parameters that are used for enumerating the DhcpServer instances from the ADM_DHCPServersTable.

```
<xs:complexType name="DhcpServerAllEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the DHCP server instances that are enumerated.

Filter: This specifies a unique collection of key value pairs that are specifying the criteria to be used for enumerating the DHCP server instances. The value corresponds to the key specified.

2.2.4.148 DhcpServerByServerInfoIdsEnumerationParameters

The DhcpServerByServerInfoIdsEnumerationParameters is used to specify the record identifiers of ServerInfo instances for which the DhcpServer instances are to be enumerated.

```
<xs:complexType name="DhcpServerByServerInfoIdsEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ServerInfoIds" nillable="true"
type="serarr:ArrayOflong" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the DHCP server instances that are enumerated.

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ServerInfoIds: This specifies the list of record identifiers of ServerInfo instances for which the DhcpServer instances are to be enumerated.

2.2.4.149 DhcpServerTemplateConfiguration

The DhcpServerTemplateConfiguration allows extended attributes on an ipam: BaseIpamObject type.

```
<xs:complexType name="DhcpServerTemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AuditLoggingStatus"
type="ipam:DhcpAuditLoggingStatus" />
        <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
        <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
        <xs:element minOccurs="0" name="DnsRegistrationCredentialDomainName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DnsRegistrationCredentialPassword" nillable="true"
type="xsd:base64Binary" />
        <xs:element minOccurs="0" name="DnsRegistrationCredentialUserName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
        <xs:element minOccurs="0" name="FindAndReplaceOptions" nillable="true"
type="ipam:ArrayOfDhcpFindAndReplaceOption" />
        <xs:element minOccurs="0" name="OptionApplyType" type="ipam:DhcpOptionApplyType" />
        <xs:element minOccurs="0" name="OptionDefinitionApplyType"
type="ipam:DhcpOptionDefinitionApplyType" />
        <xs:element minOccurs="0" name="OptionDefinitions" nillable="true"
type="ipam:ArrayOfDhcpOptionDefinition" />
        <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:ArrayOfDhcpOption" />
        <xs:element minOccurs="0" name="UserClassApplyType"
type="ipam:DhcpUserClassApplyType" />
        <xs:element minOccurs="0" name="UserClasses" nillable="true"
type="ipam:ArrayOfDhcpUserClass" />
        <xs:element minOccurs="0" name="VendorClassApplyType"
type="ipam:DhcpVendorClassApplyType" />
        <xs:element minOccurs="0" name="VendorClasses" nillable="true"
type="ipam:ArrayOfDhcpVendorClass" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AuditLoggingStatus: This of the enum type ipam: DhcpAuditLoggingStatus. This data member indicates whether audit logging is enabled or disabled.

DiscardDnsRecordOnLeaseDeletionStatus: This is of enum type ipam: DhcpDiscardDnsRecordOnLeaseDeletionStatus. This data member indicates whether the DNS Resource records associated with a lease should be deleted when the lease is removed. This is a server-level config.

DnsNameProtectionStatus: This is of enum type ipam: DhcpDnsNameProtectionStatus. It indicates whether Dns name protection is enabled at the server level.

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DnsRegistrationCredentialDomainName: This is of string type, and is used to store the domain name used as credentials when performing operations on this server.

DnsRegistrationCredentialPassword: This is of type SecureString. It is used as credentials when performing operations on the server.

DnsRegistrationCredentialUserName: This is of string type, and is used to store the user name. It is used as credentials when performing operations on the server.

DnsUpdateType: This is of enum type ipam: DhcpDnsUpdateType. It is used to indicate how the dynamic DNS update will be initiated: never, when client requests, always, and so on.

FindAndReplaceOptions: This is of a list of ipam: DhcpFindAndReplaceOption.

OptionApplyType: This is of enum type ipam: DhcpOptionApplyType. It is used to define the kind of operation user wishes to perform on the server's options.

OptionDefinitionApplyType: This is of enum type ipam: DhcpOptionDefinitionApplyType. It is used to define the kind of operation user wishes to perform on the server option definition.

OptionDefinitions: This is a list of ipam: DhcpOptionDefinition.

Options: This is a list of ipam: DhcpOption.

UserClassApplyType: This is of enum type ipam: DhcpUserClassApplyType. It is used to indicate the type of operation user wishes to perform on the user class definitions of the server.

UserClasses: This is a list of ipam: DhcpUserClass.

VendorClassApplyType: This is of enum type ipam: DhcpVendorClassApplyType. It is used to indicate the type of operation user wishes to perform on the user class definitions of the server.

VendorClasses: This is a list of ipam: DhcpVendorClass.

2.2.4.150 DhcpServerV4

The DhcpServerV4 complex type allows specifying extensions to the DhcpServer complex type. This specifies the IPv4-specific information of the DHCP server instance. The OptionDefinitions MUST be a collection of DhcpOptionDefinitionV4 elements. The Options MUST be a collection of DhcpOptionV4 elements. The UserClasses MUST be a collection of DhcpUserClassV4. The VendorClasses MUST be a collection of DhcpVendorClassV4 elements.

```
<xs:complexType name="DhcpServerV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpServer">
      <xs:sequence>
        <xs:element minOccurs="0" name="AllowFilterEnabled" type="ipam:DhcpOperationState" />
        <xs:element minOccurs="0" name="DenyFilterEnabled" type="ipam:DhcpOperationState" />
        <xs:element minOccurs="0" name="DhcpDnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
        <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
        <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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AllowFilterEnabled: This is of enum type ipam:DhcpOperationState and indicates whether the allow filters are enabled in the associated DHCP server.

DenyFilterEnabled: This is of enum type ipam:DhcpOperationState and indicates whether the deny filters are enabled in the associated DHCP server.

DhcpDnsNotRequestingClientsUpdateType: This specifies the dynamic DNS registration behavior at the server-instance level. This specifically specifies the setting the DHCP server has to use for DHCP clients that do not provide any dynamic DNS registration requirements.

DnsDisableDynamicPtrUpdates: This is of enum type ipam:DnsDisableDynamicPtrUpdateType and represents whether the DNS resource records should be dynamically updated based on lease status.

PolicyActivationState: It is of enum type ipam:PolicyState and indicates whether policies are enabled for this server.

2.2.4.151 DhcpServerV4TemplateConfiguration

The DhcpServerV4TemplateConfiguration allows extended attributes on an ipam: DhcpServerTemplateConfiguration type. It creates objects whose dnsNotRequestingClientsUpdateType is DhcpDnsNotRequestingClientsUpdateType.None.

```
<xs:complexType name="DhcpServerV4TemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpServerTemplateConfiguration">
      <xs:sequence>
        <xs:element minOccurs="0" name="AllowFilterEnabled" type="ipam:DhcpOperationState" />
        <xs:element minOccurs="0" name="DenyFilterEnabled" type="ipam:DhcpOperationState" />
        <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdatesType"
type="ipam:DnsDisableDynamicPtrUpdateType" />
        <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
        <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AllowFilterEnabled: This is of enum type ipam:DhcpOperationState and indicates whether the allow filters are enabled in the associated DHCP server.

DenyFilterEnabled: This is of enum type ipam:DhcpOperationState and indicates whether the deny filters are enabled in the associated DHCP server.

DnsDisableDynamicPtrUpdates: This is of enum type ipam:DnsDisableDynamicPtrUpdateType and represents whether the Dns resource records should be dynamically updated based on lease status.

DnsNotRequestingClientsUpdateType: This is of enum type ipam: DhcpDnsNotRequestingClientsUpdateType. It is used to indicate whether dynamic DNS Resource Record updates of clients who do not request updates is supported.

PolicyActivationState: This is of enum type ipam:PolicyState and indicates whether the policy is enabled for the server.

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2.2.4.152 DhcpServerV6

The DhcpServerV6 complex type allows specifying extensions to the DhcpServer complex type. This specifies the IPv6-specific information of the DHCP server instance. The OptionDefinitions MUST be a collection of DhcpOptionDefinitionV4 elements. The Options MUST be a collection of DhcpOptionV4 elements. The UserClasses MUST be a collection of DhcpUserClassV4. The VendorClasses MUST be a collection of DhcpVendorClassV4 elements.

```
<xs:complexType name="DhcpServerV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpServer">
      <xs:sequence>
        <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
        <xs:element minOccurs="0" name="StatelessStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PurgeInterval: This specifies the interval at which the stateless client audit entries has to be purged at the DHCP server instance.

StatelessStatus: This specifies the state of stateless client audit logging on the DHCP server instance.

2.2.4.153 DhcpServerV6TemplateConfiguration

The DhcpServerV6TemplateConfiguration allows extended attributes on an ipam: DhcpServerTemplateConfiguration type.

```
<xs:complexType name="DhcpServerV6TemplateConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpServerTemplateConfiguration">
      <xs:sequence>
        <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
        <xs:element minOccurs="0" name="StatelessClientInventoryStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PurgeInterval: This is of type TimeSpan and identifies the purge interval after which a DHCP Client entry is removed from the server.

StatelessClientInventoryStatus: This is of enum type ipam: DhcpStatelessClientInventoryStatus. It indicates whether Stateless Client Inventory is enabled.

2.2.4.154 DhcpSuperscopeByDhcpServerIdListEnumerationParameters

The DhcpSuperscopeByDhcpServerIdListEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is "DhcpSuperscope ". It is used while enumerating superscopes belonging to a list of DHCP servers.

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```
<xs:complexType name="DhcpSuperscopeByDhcpServerIdListEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DhcpServers" nillable="true"
type="ipam:ArrayOfDhcpServerV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DhcpServers: This is of type ipam:ArrayOfDhcpServerV4 and represents the DHCP servers whose superscopes are to be enumerated.

2.2.4.155 DhcpSuperscopeEnumerationParameters

The DhcpSuperscopeEnumerationParameters allows extended attributes on an ipam: EnumerationParametersBase type. It creates objects whose ObjectType is "DhcpSuperscope".

```
<xs:complexType name="DhcpSuperscopeEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.156 DhcpSuperscopeV4

The DhcpSuperscopeV4 allows extended attributes on an ipam: BaseIpamObject type.

```
<xs:complexType name="DhcpSuperscopeV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="AccessScopePath" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfSuperscopeOperations" />
        <xs:element minOccurs="0" name="ParentServerId" type="xsd:long" />
        <xs:element minOccurs="0" name="PercentageUsed" type="xsd:double" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DhcpServerV4" />
        <xs:element minOccurs="0" name="Status" type="ipam:DhcpScopeStatus" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AccessScopeId : This corresponds to the access scope entry in the data store to which this superscope belongs.

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AccessScopePath : This is a string that holds the access scope path of the access scope this superscope belongs to.

IsInheritedAccessScope : This is a Boolean that indicates whether this superscope has inherited its access scope from its server's access scope.

Name : This is a string that holds the name of the superscope.

OperationTracker : This is of type ipam:ArrayOfSuperscopeOperation and is used to indicate whether the operation associated with this superscope requires a data store update.

ParentServerId: : This represents the identifier of the server to which this superscope belongs.

PercentageUsed : This is a double and indicates the percentage utilization of IP Addresses at the superscope level.

RecordId : This indicates the identifier of this superscope in the data store.

Server : This is of type ipam:DhcpServerV4 and indicates the server this superscope belongs to.

Status : This is of enum type ipam:DhcpScopeStatus and indicates whether this superscope is enabled.

2.2.4.157 DhcpUserClass

The DhcpUserClass complex type specifies the common properties of a user class.

```
<xs:complexType name="DhcpUserClass">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IsDefault" type="xsd:boolean" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Value" nillable="true"
type="serarr:ArrayOfunsignedByte" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: This specifies the description of the user class.

IsDefault: This specifies whether the user class instance is a default user class that was pre-created on the DHCP server instance.

Name: This specifies the name of the user class.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

Value: This specifies the identifier for the user class that is used with the DHCP protocol.

2.2.4.158 DhcpUserClassCollection

The DhcpUserClassCollection complex type specifies a collection of DhcpUserClass complex types.

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```
<xs:complexType name="DhcpUserClassCollection">
  <xs:sequence>
    <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S" />
    <xs:element minOccurs="0" name="UserClassesInCollection" nillable="true"
type="ipam:ArrayOfDhcpUserClass" />
  </xs:sequence>
  <xs:attribute ref="ser:Id" />
  <xs:attribute ref="ser:Ref" />
</xs:complexType>
```

OperationTracker: This specifies a collection of key value pairs. The key specifies the CollectionOperations to be performed and the value specifies the DhcpUserClass on which the operation specified by Key is to be performed. The DBUpdateDhcpServer uses this to identify and perform the various management operations using the DhcpUserClass complex types.

UserClassesInCollection: This specifies the actual collection of DhcpUserClass complex types. All the elements of the collection MUST be either DhcpUserClassV4 or DhcpUserClassV6.

2.2.4.159 DhcpUserClassV4

The DhcpUserClassV4 complex type allows the extension of the DhcpUserClass complex type. This specifies the DhcpUserClass instance associated with the IPv4-specific DhcpServer instance.

```
<xs:complexType name="DhcpUserClassV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpUserClass">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.160 DhcpUserClassV6

The DhcpUserClassV6 complex type allows the extension of the DhcpUserClass complex type. This specifies the DhcpUserClass instance associated with the IPv6-specific DhcpServer instance.

```
<xs:complexType name="DhcpUserClassV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpUserClass">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.161 DhcpVendorClass

The DhcpVendorClass complex type specifies the common properties of a vendor class.

```
<xs:complexType name="DhcpVendorClass">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
```


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```
        <xs:element minOccurs="0" name="IsDefault" type="xsd:boolean" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="Value" nillable="true"
type="serarr:ArrayOfunsignedByte" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: This specifies the description of the vendor class.

IsDefault: This specifies whether the vendor class is a default vendor class that is pre-created on a DHCP server instance.

Name: This specifies the name of the vendor class.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

Value: This specifies the identifier for the vendor class that is used with DHCP protocol

2.2.4.162 DhcpVendorClassCollection

The DhcpVendorClassCollection complex type specifies a collection of DhcpVendorClass complex types.

```
<xs:complexType name="DhcpVendorClassCollection">
  <xs:sequence>
    <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S" />
    <xs:element minOccurs="0" name="VendorClassesInCollection" nillable="true"
type="ipam:ArrayOfDhcpVendorClass" />
  </xs:sequence>
  <xs:attribute ref="ser:Id" />
  <xs:attribute ref="ser:Ref" />
</xs:complexType>
```

OperationTracker: This specifies a collection of key value pairs. The key specifies the CollectionOperations to be performed and the value specifies the DhcpVendorClass on which the operation specified by Key is to be performed. The DBUpdateDhcpServer uses this to identify and perform the various management operations using the DhcpVendorClass complex types.

UserClassesInCollection: This specifies the actual collection of DhcpVendorClass complex types. All the elements of the collection MUST be either DhcpVendorClassV4 or DhcpVendorClassV6.

2.2.4.163 DhcpVendorClassV4

The DhcpVendorClassV4 complex type allows the extension of the DhcpVendorClass complex type. This specifies the DhcpVendorClass instance associated with the IPv4-specific DhcpServer instance.

```
<xs:complexType name="DhcpVendorClassV4">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpVendorClass">
      <xs:sequence />
    </xs:extension>
```


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```
  </xs:complexContent>
</xs:complexType>
```

2.2.4.164 DhcpVendorClassV6

The DhcpVendorClassV6 complex type allows the extension of the DhcpVendorClass complex type. This specifies the DhcpVendorClass instance associated with the IPv6-specific DhcpServer instance.

```
<xs:complexType name="DhcpVendorClassV6">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:DhcpVendorClass">
      <xs:sequence>
        <xs:element minOccurs="0" name="IanaVendorID" type="xsd:unsignedInt" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

IanaVendorID: This specifies the IANA assigned vendor identified for the vendor class, which is specific to the IPv6 version of the DhcpVendorClass.

2.2.4.165 DiscoveryConfig

The DiscoveryConfig complex type is used to describe the discovery configuration for a specific domain.

```
<xs:complexType name="DiscoveryConfig">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="DiscoverDhcpServers" type="xsd:boolean" />
        <xs:element minOccurs="0" name="DiscoverDnsServers" type="xsd:boolean" />
        <xs:element minOccurs="0" name="DiscoverDomainControllers" type="xsd:boolean" />
<xs:element minOccurs="0" name="DiscoveryConfigurationStatus"
type="ipam:ADDomainConfigurationStatus" />
        <xs:element minOccurs="0" name="DiscoveryDomain" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DomainGuid" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DiscoverDhcpServers: This specifies whether the DHCP instances in the specific domain (specified by DiscoveryDomain) are enabled for automatic discovery by the IPAM server.

DiscoverDnsServers: This specifies whether the DNS instances in the specific domain (specified by DiscoveryDomain) are enabled for automatic discovery by the IPAM server.

DiscoverDomainControllers: This specifies whether the domain controllers in the specific domain (specified by DiscoveryDomain) are enabled for automatic discovery by the IPAM server.

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DiscoveryConfigurationStatus: This specifies whether the domain is configured for automatic discovery of servers or not.

DiscoveryDomain: This specifies the domain for which the DiscoveryConfig specifies the discovery configuration. This MUST NOT be null. The length of the string MUST be at least 1 character and lesser than 256 characters.

DomainGuid: This specifies the **GUID** in the string which uniquely identifies the domain specified by **DiscoveryDomain**.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

2.2.4.166 DiscoverySubnetEnumerationParameters

The DiscoverySubnetEnumerationParameters complex type specifies the criteria based on which the subnets for grouping the discovered servers are to be enumerated.

```
<xs:complexType name="DiscoverySubnetEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
                <xs:element minOccurs="0" name="InclusionStatus" nillable="true"
type="ipam:ManagementStatus" />
        <xs:element minOccurs="0" name="MultipleRole" nillable="true"
type="ipam:ServerMultipleRole" />
        <xs:element minOccurs="0" name="ServerRole" nillable="true"
type="ipam:ServerRoleType" />
        <xs:element minOccurs="0" name="SubnetType" nillable="true"
type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

InclusionStatus: This specifies the management status of the servers for which the subnets have to be enumerated.

MultipleRole: This specifies whether the subnets have to be enumerated for servers that host either a DHCP or a DNS server role.

ServerRole: This specifies the server role that has to be present on a server for it to be considered for constructing the subnets for enumeration.

SubnetType: This specifies whether the subnet enumeration is for IPv4 address or IPv6 address of the servers eligible based on the other criteria specified above.

2.2.4.167 DnsRecordFormatter

The DnsRecordFormatter allows extended attributes on an ipam: IpamObject type. It represents the server name and zone name in a formatted manner.

```
<xs:complexType name="DnsRecordFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
```


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```
        <xs:element minOccurs="0" name="ZoneName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerName: This is of type string and represents the DNS server on which the resource record processing needs to be done.

ZoneName: This is of type string and represents the DNS Zone on the server for which the resource record processing needs to be done.

2.2.4.168 DnsReverseLookupZone

The DnsReverseLookupZone complex type is used to specify the information pertaining to a single instance of a reverse lookup DNS zone. The DnsReverseLookupZone complex type allows extending the BaseDnsZone complex type.

```
<xs:complexType name="DnsReverseLookupZone">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseDnsZone">
      <xs:sequence>
        <xs:element minOccurs="0" name="EndIP" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="IPType" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="Prefix" nillable="true" type="xsd:int" />
        <xs:element minOccurs="0" name="StartIP" nillable="true" type="sysnet:IPAddress" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

EndIP: This specifies the end address of the address range possible that can map into the reverse lookup zone. This value MUST NOT be null and it MUST be of the address family specified by IPType.

IPType: This specifies the address family of the address range corresponding to the reverse lookup zone.

Prefix: This specifies the prefix length that determines the addresses that map into the reverse lookup zone.

StartIP: This specifies the start address of the address range possible that can map into the reverse lookup zone. This value MUST NOT be null and it MUST be of the address family specified by IPType.

2.2.4.169 DnsReverseLookupZoneEnumerationParameters

The DnsReverseLookupZoneEnumerationParameters complex type is used to specify the criteria to be used for enumerating the reverse lookup zones.

```
<xs:complexType name="DnsReverseLookupZoneEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz" />
```


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```
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filter: This specifies a key value pair of filter conditions. The key specifies the DnsReverseLookupZoneFilterCriteria and the value specifies the value to be used for filtering for the filter criteria specified in the key.

2.2.4.170 DnsServer

The DnsServer complex type is used to specify the DNS server instance properties.

```
<xs:complexType name="DnsServer">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="ServerRoleInfo" nillable="true"
type="ipam:ServerRoleDns" />
        <xs:element minOccurs="0" name="ZoneHealthSummary" type="ipam:HealthStatus" />
        <xs:element minOccurs="0" name="ZoneHealthSummaryLastUpdateTime" nillable="true"
type="xsd:dateTime" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AccessScopeId: Indicates the ID in IPAM data store, of the access scope to which this Dns Server is associated.

ServerRoleInfo: This specifies the role-specific information for the DNS server, which includes the various access statuses.

ZoneHealthSummary: This specifies the summary health status for the DNS server.

ZoneHealthSummaryLastUpdateTime: This specifies the time at which the ZoneHealthSummary was last updated by the IPAM server.

2.2.4.171 DnsServerByServerInfoIdsEnumerationParameters

The DnsServerByServerInfoIdsEnumerationParameters complex type is used to specify the parameters to enumerate the DnsServer instances that are based on the record identifiers of the ServerInfo instances from the ADM_DnsServersTable.

```
<xs:complexType name="DnsServerByServerInfoIdsEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerInfoIds" nillable="true"
type="serarr:ArrayOflong" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

ServerInfoIds: A collection of record identifiers for the ServerInfo instances for which the corresponding DnsServer instances are being requested.

2.2.4.172 DnsServerEnumerationParameters

The DnsServerEnumerationParameters complex type specifies the criteria to be used for enumerating the DNS servers.

```
<xs:complexType name="DnsServerEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filter: This is an array of key value pairs. The key specifies the filter criteria information and the value specifies the value to be used for applying the filter criteria specified in the key.

2.2.4.173 DnsServerReverseZone

The DnsServerReverseZone complex type is used to specify the information regarding a specific reverse lookup DNS zone hosted on a particular server. The DnsServerReverseZone complex type allows the extension of attributes for the BaseDnsServerZone complex type.

```
<xs:complexType name="DnsServerReverseZone">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseDnsServerZone">
      <xs:sequence>
        <xs:element minOccurs="0" name="Zone" nillable="true"
type="ipam:DnsReverseLookupZone" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Zone: This specifies the DnsReverseLookupZone instance that is hosted on a specific server.

2.2.4.174 DnsServerReverseZoneEnumerationParameters

The DnsServerReverseZoneEnumerationParameters specifies the criteria to be used for enumerating the DNS server hosting of reverse lookup zones.

```
<xs:complexType name="DnsServerReverseZoneEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DnsReverseLookupZoneId" type="xsd:long" />
        <xs:element minOccurs="0" name="DnsServerId" type="xsd:long" />
```


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```
        <xs:element minOccurs="0" name="ZoneType" nillable="true"
type="ipam:ZoneHostingDnsServerType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DnsReverseLookupZoneId: This specifies the RecordId of the reverse lookup DNS zone that has to be enumerated.

DnsServerId: This specifies the RecordId of the DNS server that is hosting the reverse lookup zones.

ZoneType: This specifies the type of hosting to be used for filtering the reverse lookup zone information.

2.2.4.175 DnsServerZone

The DnsServerZone complex type specifies the information regarding the forward lookup DNS zone hosting on a DNS server. The DnsServerZone complex type allows extending the attributes of the BaseDnsServerZone complex type.

```
<xs:complexType name="DnsServerZone">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseDnsServerZone">
      <xs:sequence>
        <xs:element minOccurs="0" name="Zone" nillable="true" type="ipam:DnsZone" />
        <xs:element minOccurs="0" name="ZoneHealth" type="ipam:HealthStatus" />
        <xs:element minOccurs="0" name="ZoneHealthLastUpdateTime" nillable="true"
type="xsd:dateTime" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Zone: This specifies the forward lookup DNS zone whose instance on a DNS server is being specified by this type.

ZoneHealth: This specifies the health status of the specific DNS zone.

ZoneHealthLastUpdateTime: This specifies the time when the ZoneHealth was last updated.

2.2.4.176 DnsServerZoneEnumerationParameters

The DnsServerZoneEnumerationParameters complex type is used to specify the criteria to enumerate the DNS server hosting of forward lookup zones.

```
<xs:complexType name="DnsServerZoneEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DnsServerId" type="xsd:long" />
        <xs:element minOccurs="0" name="DnsZoneId" type="xsd:long" />
        <xs:element minOccurs="0" name="ZoneType" nillable="true"
type="ipam:ZoneHostingDnsServerType" />
```


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```
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DnsServerId: This specifies the RecordId of the DNS server hosting a specific forward lookup zone.

DnsZoneId: This specifies the RecordId of the forward lookup DNS zone that is being hosted on the DNS Server specified by DnsServerId.

ZoneType: This specifies the type of hosting to be used for filtering the forward lookup zone information.

2.2.4.177 DnsZone

The DnsZone complex type specifies the information pertaining to a forward lookup DNS zone. The DnsZone complex type allows extension of attributes of the BaseDnsZone complex type.

```
<xs:complexType name="DnsZone">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseDnsZone">
      <xs:sequence>
        <xs:element minOccurs="0" name="ParentId" type="xsd:long" />
        <xs:element minOccurs="0" name="ParentZone" nillable="true" type="ipam:DnsZone" />
        <xs:element minOccurs="0" name="ShortName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ZoneOverallHealth" type="ipam:HealthStatus" />
        <xs:element minOccurs="0" name="ZoneOverallHealthLastUpdateTime" nillable="true"
type="xsd:dateTime" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ParentId: The RecordId of the forward lookup zone that is hosting the forward lookup DNS zone in a forward lookup DNS zone hierarchy.

ParentZone: This specifies the DnsZone corresponding to the parent zone specified by ParentId.

ShortName: This specifies the short name of the forward lookup DNS zone. This MUST NOT be null and the length MUST be lesser than 256 characters.

ZoneOverallHealth: This specifies the overall health of the zone.

ZoneOverallHealthLastUpdateTime: This specifies the time at which the ZoneOverallHealth was last updated.

2.2.4.178 DnsZoneEnumerationParameters

The DnsZoneEnumerationParameters specifies the filter criteria to be used for enumerating the forward lookup zones from the IPAM data store.

```
<xs:complexType name="DnsZoneEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
```


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```
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filter: This specifies an array of key value pairs which form the filter conditions. The key specifies the DnsZoneFilterCriteria, which specifies the type of filter condition. The value for the entry specifies the value to be applied for the filter condition specified by the Key.

2.2.4.179 DnsZoneEvent

The DnsZoneEvent complex type specifies a specific instance of the DNS zone related event.

```
<xs:complexType name="DnsZoneEvent">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EventId" type="xsd:long" />
        <xs:element minOccurs="0" name="EventParametersString" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="LoggedEventLevel" type="ipam:EventLevel" />
        <xs:element minOccurs="0" name="LoggedOn" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="ServerZone" nillable="true" type="ipam:DnsServerZone"
/>
        <xs:element minOccurs="0" name="ServerZoneId" type="xsd:long" />
        <xs:element minOccurs="0" name="TaskCategory" nillable="true" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

EventId: This specifies the **EventID** portion of the **event descriptor** for the DNS zone event.

EventParametersString: This specifies EventData portion of the event ([MS-EVEN6] section 2.2.13)

LoggedEventLevel: This specifies the critical nature of the event – whether it is informational, warning or an error event.

LoggedOn: This specifies the time at which the event was logged.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

ServerZone: This specifies the server zone instance pertaining to which the event was logged.

ServerZoneId: This specifies the RecordId of the server zone whose instance is specified in ServerZone element.

TaskCategory: This specifies the task category (Task portion of the event descriptor).

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2.2.4.180 DnsZoneEventEnumerationParameters

The DnsZoneEventEnumerationParameters specifies the criteria to be used for enumerating the DnsZoneEvent rows from the IPAM data store.

```
<xs:complexType name="DnsZoneEventEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="DnsServerId" type="xsd:long" />
        <xs:element minOccurs="0" name="DnsServerZoneId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DnsServerId: This specifies the DNS server RecordId from which the events for the various zones are to be enumerated.

DnsServerZoneId: This specifies the RecordId for a zone hosted on a specific server for which the zone events are to be enumerated.

2.2.4.181 EntityStatus

The EntityStatus is a complex type that is used to describe the operation and its outcome on an IPAM object.

```
<xs:complexType name="EntityStatus">
  <xs:sequence>
    <xs:element minOccurs="0" name="IsSuccessful" type="xsd:boolean" />
    <xs:element minOccurs="0" name="ObjectType" type="ipam:IpamObjectType" />
    <xs:element minOccurs="0" name="OperationType" type="ipam:EntityOperationType" />
    <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
  </xs:sequence>
</xs:complexType>
```

IsSuccessful: This is of type Boolean and indicates the success status of the associated operation.

ObjectType: This is of type ipam:IpamObjectType and indicates the object type to perform the operation on.

OperationType: This is of type ipam:EntityOperationType and indicates the type of operation to be performed.

RecordId: This is a unique identifier for the EntityStatus in the IPAM data store.

2.2.4.182 EntityStatusCollection

The EntityStatusCollection allows extended attributes on an ipam: IpamObject type. It is used to keep track of a list of EntityStatus complex types. This can be used to keep track of related operations through one object.

```
<xs:complexType name="EntityStatusCollection">
  <xs:complexContent mixed="false">
```


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```
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EntityStatusList" nillable="true"
type="ipam:ArrayOfEntityStatus" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

EntityStatusList: This is of type ipam:ArrayOfEntityStatus and forms a logical group of related entity operations.

2.2.4.183 EnumerationParametersBase

The EnumerationParametersBase complex type forms the base element that all other complex types for specifying enumeration parameters extend. It describes the type of enumeration required.

```
<xs:complexType name="EnumerationParametersBase">
  <xs:sequence>
    <xs:element name="FetchAllData" type="xsd:boolean" />
    <xs:element name="IncludeCustomFieldValues" type="xsd:boolean" />
    <xs:element name="ObjectType" type="ipam:EnumerationObjectType" />
  </xs:sequence>
</xs:complexType>
```

FetchAllData: This is of type Boolean; it indicates whether data of all objects passed for enumeration needs to be fetched or just the first object's data.

IncludeCustomFieldValues: This is of type Boolean; it indicates whether custom field values should be included .

ObjectType: This specifies the type of object that is expected to be enumerated as a result of enumeration having the specific type of EnumerationParametersBase.

2.2.4.184 ExclusionRangeDataFormatter

The ExclusionRangeDataFormatter complex type is used to format the fields of an exclusion range into a string used to display the result of operations. The string is formatted to include the scope ID, server name and the start and end IP addresses of the exclusion range to uniquely identify the exclusion range.

```
<xs:complexType name="ExclusionRangeDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EndIPAddress" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
type="sysnet:IPAddress" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

ScopeId: This specifies the DHCP scope to which the exclusion range belongs.

ServerName: This specifies the name of the DHCP server to which the DHCP scope belongs.

StartIPAddress: This specifies the start IP address of the exclusion range.

EndIPAddress: This specifies the end IP address of the exclusion range.

2.2.4.185 FailoverDataFormatter

The FailoverDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It is used to create a formatted string that contains the name of the failover relationship and the partner servers.

```
<xs:complexType name="FailoverDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="FailoverName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Server1Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Server2Name" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

FailoverName: This is a string that represents the DHCP failover relationship name.

Server1Name: This is a string that represents one of the DHCP server names that is part of the failover relationship.

Server2Name: This is a string that represents the partner DHCP server's name for the same failover relationship.

2.2.4.186 FilterDataFormatter

The FilterDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It is used to create a formatted string that contains the name of the server and the MAC address.

```
<xs:complexType name="FilterDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="MacAddress" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

MacAddress: This is a string that represents the MAC associated with a DHCP filter.

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ServerName: This is a string that represents the name of the DHCP server on which a filter is configured.

2.2.4.187 GatewayAddress

The GatewayAddress complex type allows extended attributes on an ipam:BaseIpamObject type.

```
<xs:complexType name="GatewayAddress">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="GatewayIP" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="IsAutomatic" type="xsd:boolean" />
        <xs:element minOccurs="0" name="Metric" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

GatewayIP: This is of type ipam:IPAddress and represents the gateway IP address.

IsAutomatic: This is a bool and represents whether the metric will be automatically configured.

Metric: This is of type int and represents the selectability of this gateway; a lower number means the gateway is more likely to be chosen for routing.

2.2.4.188 InvalidDBConfigDatabaseTypeNotValidIpamExceptionData

The InvalidDBConfigDatabaseTypeNotValidIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidDBConfigDatabaseTypeNotValid.

```
<xs:complexType name="InvalidDBConfigDatabaseTypeNotValidIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseType" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseType: It is an int that represents the database type.

2.2.4.189 InvalidSQLDBConfigAuthNotSupportedIpamExceptionData

The InvalidSQLDBConfigAuthNotSupportedIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidSQLDBConfigAuthNotSupported.

```
<xs:complexType name="InvalidSQLDBConfigAuthNotSupportedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseAuthenticationType" type="xsd:int" />
```


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```
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseAuthenticationType: It is an int that represents the authentication type of the database.

2.2.4.190 InvalidSQLDBConfigInvalidPortIpamExceptionData

The InvalidSQLDBConfigInvalidPortIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidSQLDBConfigInvalidPort.

```
<xs:complexType name="InvalidSQLDBConfigInvalidPortIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="InputPort" type="xsd:unsignedInt" />
        <xs:element minOccurs="0" name="MaxAllowedPort" type="xsd:unsignedInt" />
        <xs:element minOccurs="0" name="MinAllowedPort" type="xsd:unsignedInt" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

InputPort: : It is an unsigned int that represents the port configured for the SQL DB.

MaxAllowedPort: : It is an unsigned int that represents the maximum port number allowed for database configuration.

MinAllowedPort: : It is an unsigned int that represents the minimum port number allowed for database configuration.

2.2.4.191 InvalidWIDDBConfigAuthNotSupportedIpamExceptionData

The InvalidWIDDBConfigAuthNotSupportedIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is "IpamApiErrorInvalidWIDDBConfigAuthNotSupported".

```
<xs:complexType name="InvalidWIDDBConfigAuthNotSupportedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseAuthenticationType" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseAuthenticationType: It is an int that represents the database authentication type.

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2.2.4.192 InvalidWIDDBConfigDirectoryDoesNotExistIpamExceptionData

The InvalidWIDDBConfigDirectoryDoesNotExistIpamExceptionData complex type extends the ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigDirectoryDoesNotExist.

```
<xs:complexType name="InvalidWIDDBConfigDirectoryDoesNotExistIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="Path" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Path: This is a string that represents the location at which the database should be created.

2.2.4.193 InvalidWIDDBConfigInvalidCredentialIpamExceptionData

The InvalidWIDDBConfigInvalidCredentialIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigInvalidCredential.

```
<xs:complexType name="InvalidWIDDBConfigInvalidCredentialIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="Username" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Username: This is a string that represents the username associated with the invalid credential.

2.2.4.194 InvalidWIDDBConfigNameMustBeIPAMIpamExceptionData

The InvalidWIDDBConfigNameMustBeIPAMIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigNameMustBeIPAM.

```
<xs:complexType name="InvalidWIDDBConfigNameMustBeIPAMIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="ExpectedDatabaseName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="InputDatabaseName" nillable="true" type="xsd:string"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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ExpectedDatabaseName: This is a string that represents the value IPAM.

InputDatabaseName: This is a string that represents the database name configured for the WID.

2.2.4.195 InvalidWIDDBConfigPortNotAllowedIpamExceptionData

The InvalidWIDDBConfigPortNotAllowedIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigPortNotAllowed.

```
<xs:complexType name="InvalidWIDDBConfigPortNotAllowedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="Port" type="xsd:unsignedInt" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Port: This is an unsigned int that represents the port configured for the WID database.

2.2.4.196 InvalidWIDDBConfigServerNotAllowedIpamExceptionData

The InvalidWIDDBConfigServerNotAllowedIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorInvalidWIDDBConfigServerNotAllowed.

```
<xs:complexType name="InvalidWIDDBConfigServerNotAllowedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseServerNameOrIP: This is a string that represents the database server name or IP address configured for the WID database.

2.2.4.197 ipam1:DhcpReservationAllEnumerationParameters

The DhcpReservationAllEnumerationParameters complex type specifies the criteria to be used for enumerating the reservations.

```
<xs:complexType name="DhcpReservationAllEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="ReservationAddressFamily"
type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ReservationAddressType" type="ipam:AddressType" />
```


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```
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressCategory: This specifies the address category of the reservations that need to be enumerated.

AddressFamily: This specifies the address family of the reservations that need to be enumerated.

2.2.4.198 ipam1:DhcpReservationScopeBasedEnumerationParameters

The DhcpReservationScopeBasedEnumerationParameters complex type specifies the criteria to be used for enumerating the reservations from a given set of scopes.

```
<xs:complexType name="DhcpReservationScopeBasedEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="ReservationAddressFamily"
type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ReservationAddressType" type="ipam:AddressType" />
        <xs:element minOccurs="0" name="Scopes" nillable="true" type="ipam:ArrayOfDhcpScope"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressCategory: This specifies the address category of the reservations that need to be enumerated.

AddressFamily: This specifies the address family of the reservations that need to be enumerated.

Scopes: This specifies the list of scopes from which the reservations need to be enumerated.

2.2.4.199 ipam1:IIpamRemotingModule

The IIpamRemotingModule complex type provides the base type to provide abstraction for remote calls from the IPAM server.

```
<xs:complexType name="IIpamRemotingModule">
  <xs:sequence />
</xs:complexType>
```

2.2.4.200 ipam1:IpamException

The ipam1:IpamException complex type specifies the base type for providing the fault information from the management server to the management client. It takes the following fomat:

```
<IpamException xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam">
```


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```
  <IpamExceptionData ser:Id="i1" i:type="ipam:IpamExceptionData" xmlns="">
[IpamExceptionData]
  </IpamExceptionData>
  <InnerIpamException i:type="ipam1:IpamException" xmlns="">
[InnerIpamException]
  </InnerIpamException>
</IpamException>
```

[IpamExceptionData]: This is of type IpamExceptionData or of types that derive from IpamExceptionData specifying the ExceptionId and the ExceptionMessage data.

[InnerIpamException]: This is of type IpamException, which specifies the inner IpamException details. This allows for nested instances of the IpamException type.

2.2.4.201 IpamAddressObject

The IpamAddressObject complex type specifies an IP address object that also is extending the IpamObject so that it can be used with port types that allow enumeration of data from the server.

```
<xs:complexType name="IpamAddressObject">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Address" nillable="true" type="sysnet:IPAddress" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Address: This specifies the IP address information.

2.2.4.202 IpamAdminOperation

The IpamAdminOperation complex type allows extended attributes on an ipam: BaseIpamObject type.

```
<xs:complexType name="IpamAdminOperation">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Category" type="xsd:int" />
        <xs:element minOccurs="0" name="CategoryName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IsAdminRoleOnlyOperation" type="xsd:boolean" />
        <xs:element minOccurs="0" name="OperationId" type="xsd:int" />
        <xs:element minOccurs="0" name="OperationName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Category: This is of type int and indicates the operation group ID of the associated operation. It is an indication of the user role associated with the operation.

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CategoryName: This is of type sting and indicates the name of the operation group ID to which the associated operation belongs.

IsAdminRoleOnlyOperation: This is a bool that indicates whether the associated operation is allowed only for an admin.

OperationId: This is an int that identifies the operation being processed.

OperationName: This is a string that described the operation being processed.

2.2.4.203 IpamCredential

The IpamCredential complex type allows extended attributes on an ipam: BaseIpamObject type.

```
<xs:complexType name="IpamCredential">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Password" nillable="true" type="xsd:base64Binary" />
        <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Password: This is an array of bytes and indicates the password used for credentials while performing IPAM operations.

UserName: This is of type string and indicates the username used as credentials while performing IPAM operations.

2.2.4.204 IpamDatabaseConfiguration

The IpamDatabaseConfiguration complex type allows extended attributes on an ipam: BaseIpamObject type. It represents the configuration for an IPAM database.

```
<xs:complexType name="IpamDatabaseConfiguration">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseAuthenticationType"
type="ipam:IpamDatabaseAuthenticationType" />
        <xs:element minOccurs="0" name="DatabaseCredential" nillable="true"
type="ipam:IpamCredential" />
        <xs:element minOccurs="0" name="DatabaseName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DatabasePath" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DatabasePort" type="xsd:unsignedInt" />
        <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DatabaseType" type="ipam:IpamDatabaseType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseAuthenticationType: This is of enum type ipam: IpamDatabaseAuthenticationType.

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DatabaseCredential: This is of type ipam:IpamCredential and represents the credential configured for the database.

DatabaseName: This is of type string and represents the name of the database.

DatabasePath: This is of type string and represents the path of the database.

DatabasePort: This is of type unsigned int and represents the port configured for the database access.

DatabaseServerNameOrIP: This is of type string and represents the database name or IP address for the database.

DatabaseType: This is of enum type ipam:IpamDatabaseType.

2.2.4.205 IpamExceptionData

The IpamExceptionData complex type is used to specify the details pertaining to the fault specified using IpamException instance.

```
<xs:complexType name="IpamExceptionData">
  <xs:complexContent mixed="false">    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ExceptionId" type="ipam1:IpamExceptionId" />
        <xs:element minOccurs="0" name="ExceptionMessage" nillable="true" type="xsd:string"
/>
      </xs:sequence>
      </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ExceptionId: Specifies the IpamExceptionId that is specifying the identifier and providing more information about the fault.

Message: This is the string format of the message generated by using the **IPAM server** language describing the fault.

2.2.4.206 IpamGenericExceptionData

The IpamGenericExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiGenericErrorOccurred.

```
<xs:complexType name="IpamGenericExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.207 IpamGpoError

The IpamGpoError complex type extends attributes on an ipam: BaseIpamObject type. This is used to encapsulate error while creating GPOs for a particular domain.

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```
<xs:complexType name="IpamGpoError">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="DomainName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ErrorInfoCollection" nillable="true"
type="ipam:ArrayOfIpamGpoErrorInfo" />
        <xs:element minOccurs="0" name="GpoName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DomainName: This specifies the domain for which the error occurred.

ErrorInfoCollection: This specifies the collection of errors that occurred while adding/modifying the GPO.

GpoName: This specifies the GPO for which the error occurred.

2.2.4.208 IpamGpoErrorInfo

The IpamGpoErrorInfo complex type allows extended attributes on an ipam: IpamExceptionData type.

```
<xs:complexType name="IpamGpoErrorInfo">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Domain" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="GpoErrorType" type="ipam:IpamGpoErrorType" />
        <xs:element minOccurs="0" name="GpoName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="InnerErrorMessage" nillable="true" type="xsd:string"
/>
        <xs:element minOccurs="0" name="IpamGpoOperation" type="ipam:IpamGpoOperation" />
        <xs:element minOccurs="0" name="ServerInfo" nillable="true" type="ipam:ServerInfo" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Domain: This specifies the domain for which the error occurred.

GpoErrorType: This is of type ipam:IpamGpoErrorType and specifies the type of error that occurred while applying the GPO operation.

GpoName: This specifies the GPO for which the error occurred.

InnerErrorMessage: This specifies the error that occurred while applying the GPO operation.

IpamGpoOperation: This is of type ipam:IpamGpoOperation and specifies the type of operation that was being applied when the error occurred.

ServerInfo: This is of type ipam:ServerInfo and specifies the server details on which the GPO operation was being applied.

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2.2.4.209 IpamIPAddress

The IpamIPAddress complex type specifies the common address object information in the IPAM data store.

```
<xs:complexType name="IpamIPAddress">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="Address" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="AddressAssignment" type="ipam:AddressAssignment" />
        <xs:element minOccurs="0" name="AddressCategory" type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="AssetTag" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="AssignedDate" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="ChangedDate" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
        <xs:element minOccurs="0" name="CustomerAddressSpaceName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DeviceName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DhcpScopeDescription" nillable="true"
type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="DhcpScopeId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="DhcpScopeName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DhcpScopeSubnetId" nillable="true"
type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="DnsForwardLookupZoneDnsServerId" nillable="true"
type="xsd:long" />
        <xs:element minOccurs="0" name="DnsForwardLookupZoneServerName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DnsForwardSyncStatus" type="ipam:DnsSyncStatus" />
        <xs:element minOccurs="0" name="DnsReverseLookupZoneDnsServerId" nillable="true"
type="xsd:long" />
        <xs:element minOccurs="0" name="DnsReverseLookupZoneId" nillable="true"
type="xsd:long" />
        <xs:element minOccurs="0" name="DnsReverseLookupZoneName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DnsReverseLookupZonePrefix" nillable="true"
type="xsd:int" />
        <xs:element minOccurs="0" name="DnsReverseLookupZoneServerName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DnsReverseSyncStatus" type="ipam:DnsSyncStatus" />
        <xs:element minOccurs="0" name="DnsZoneId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="DnsZoneName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ExpiryAndAlertEventLoggingStatus"
type="ipam:IPAddressExpiryStatus" />
        <xs:element minOccurs="0" name="ExpiryDate" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="InWarningPeriod" type="xsd:boolean" />
        <xs:element minOccurs="0" name="IsDuplicate" type="xsd:boolean" />
        <xs:element minOccurs="0" name="IsExpired" type="xsd:boolean" />
        <xs:element minOccurs="0" name="MacAddress" nillable="true" type="ipam:MACAddress" />
        <xs:element minOccurs="0" name="Notes" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OSName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OSVersion" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ParentIPRangeEndIP" nillable="true"
type="sysnet:IPAddress" />
```


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```
        <xs:element minOccurs="0" name="ParentIPRangeRecordId" nillable="true"
type="xsd:long" />
        <xs:element minOccurs="0" name="ParentIPRangeStartIP" nillable="true"
type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="PartialCustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldPartialValue" />
        <xs:element minOccurs="0" name="ProviderAddressSpaceName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="ReservationDescription" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="ReservationName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ReservationRecordId" nillable="true" type="xsd:long"
/>
        <xs:element minOccurs="0" name="ReservationServerName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="ReservationSyncStatus"
type="ipam:DhcpReservationSyncStatus" />
        <xs:element minOccurs="0" name="SerialNumber" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VirtualizationType" type="ipam:IPVirtualizationType"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AccessScopeId: This specifies the Record identifier for the access scope object to which this address maps to.

AddressAssignment: This specifies the address assignment type specific to the IpamIPAddress.

AddressCategory: This specifies the category of the **IP address space** to which the address belongs to.

AddressSpaceRecordId: This specifies the Record identifier for the address space to which this address maps to.

AssetTag: This specifies the asset tag of the device to which the address is assigned.

AssignedDate: This specifies the date on which the address was assigned to a device.

ChangedDate: This specifies the date on which the address instance was modified last.

CustomFieldValues: This specifies the collection of CustomFieldValue complex types which specify the custom field values associated with the address instance.

CustomerAddressSpaceName: Specifies the name of the Customer address space associated with this address.

DeviceName: This specifies the device name to which the address has been assigned to.

ExpiryAndAlertEventLoggingStatus: This specifies the current status of the address instance with regard to address expiry.

ExpiryDate: This specifies the expiry data of the address.

InWarningPeriod: This specifies whether the address is in warning period but has not expired yet.

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Address: This specifies the IP address of the instance.

IsDuplicate: This specifies whether the address instance is a duplicate or not.

IsExpired: This specifies whether the address instance has already expired or not.

MacAddress: This specifies the MAC address of the device to which the address instance is assigned and associated with. This MUST be specified if a DHCP reservation has to be created for the address. Otherwise the field is optional.

Notes: This specifies any additional notes for the address instance.

OSName: This specifies the name of the OS that is hosting the specific address instance.

OSVersion: This specifies the version of the OS that is hosting the specific address instance.

Owner: This specifies the admin specified owner for the address instance.

ParentIPRangeEndIP: This specifies the end address of the address range to which the address instance maps to.

ParentIPRangeRecordId: This specifies the RecordId of the address range to which the address instance maps to.

ParentIPRangeStartIP: This specifies the start address of the address range to which the address instance maps to.

PartialCustomFieldValues: This specifies the collection of CustomFieldPartialValue which is used to specify the custom field values to the management client as a part of enumeration operations. The management client MUST NOT use this to specify the custom field values as a part of add or edit operations, but rather use the CustomFieldValues field to specify the same.

ProviderAddressSpaceName: Specifies the name of the provider address space associated with this address. The value SHOULD be Default if this is a nonvirtualized address space.

RecordId: This specifies a unique identifier for the data in the IPAM data store.

SerialNumber: This specifies the serial number of the device to which the address is assigned to.

The next set of properties is applicable only when the AddressAssignment is Dynamic i.e. there is a DHCP scope associated with the address range to which the address instance maps to.

DhcpScopeDescription: This specifies the subnet ID of the scope to which address instance maps.

DhcpScopeId: This specifies the RecordId of the DHCP scope to which the address belongs to. This is applicable only when AddressAssignment is Dynamic and the address maps to an address range specific to a DHCP scope instance.

DhcpScopeName: This specifies the name of the DHCP scope to which the address maps to.

DhcpScopeSubnetId: This specifies the subnet ID of the DHCP scope to which the address maps.

The next set of properties is applicable only when the address has been registered with the DNS server for A/AAA and PTR records.

DnsForwardLookupZoneDnsServerId: This specifies the RecordId of the DNS server forward lookup zone hosting information. This is applicable only when the address has been registered with forward lookup DNS zone.

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DnsForwardLookupZoneServerName: This specifies the name of the server hosting the forward lookup zone to which the address instance has been registered.

DnsForwardSyncStatus: This specifies the current status of the DNS registration of the IP address instance.

DnsReverseLookupZoneDnsServerId: This specifies the record identifier of the server hosting the reverse lookup zone instance.

DnsReverseLookupZoneId: This specifies the RecordId of the reverse lookup zone under which the address instance has been registered.

DnsReverseLookupZoneName: This specifies the name of the reverse lookup zone under which the address instance has been registered.

DnsReverseLookupZonePrefix: This specifies the prefix of the reverse lookup zone under which the address instance has been registered.

DnsReverseLookupZoneServerName: This specifies the name of the server hosting the reverse lookup zone against which the address instance has been registered.

DnsReverseSyncStatus: This specifies the current status of the DNS registration of the IP address instance under the reverse lookup zone.

DnsZoneId: This specifies the RecordId of the forward lookup zone under which the address has been registered.

DnsZoneName: This specifies the name of the forward lookup DNS zone under which the address instance has been registered.

The next set of properties are applicable only when there is a DHCP **reservation** associated with the address instance.

ReservationDescription: If there is a reservation in a DHCP server instance associated with the address instance, this specifies the description of the reservation.

ReservationName: If there is a reservation in a DHCP server instance associated with the address instance, this specifies the name of the reservation.

ReservationServerName: If there is a reservation in a DHCP server instance associated with the address instance, this specifies the name of the DHCP server instance.

ReservationSyncStatus: This specifies the current status of the DHCP reservation status.

VirtualizationType: Specifies the virtualization type of the given address. It can be NonVirtualized, Fabric and Virtual.

2.2.4.210 IpamIPAddressAllForLogicalGroupEnumerationParameters

The IpamIPAddressAllForLogicalGroupEnumerationParameters complex type is used to specify the parameters for enumerating the IP address instances that map to a specified logical group.

```
<xs:complexType name="IpamIPAddressAllForLogicalGroupEnumerationParameters">
  <xs:complexContent mixed="false">
```


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```
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="LogicalGroupRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP address instances that are enumerated for the specified logical group.

LogicalGroupRecordId: This specifies the record identifier of the logical group for which the mapping address instances are to be enumerated.

LogicalGroupType: This MUST be LogicalGroupType.Range.

2.2.4.211 IpamIPAddressAllForLogicalGroupNodeEnumerationParameters

The IpamIPAddressAllForLogicalGroupNodeEnumerationParameters complex type specifies the criteria to be used for enumerating the addresses that map to a logical group node.

```
<xs:complexType name="IpamIPAddressAllForLogicalGroupNodeEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="LogicalGroupNode" nillable="true"
type="ipam:LogicalGroupNode" />
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances which need to be enumerated.

LogicalGroupNode: This specifies the logical group node which forms the criteria for identifying and enumerating the address instances. The ranges which satisfy the criteria specified by this logical group node is enumerated first and all the addresses which map to these ranges are enumerated. This MUST be of type either IPv4RangeLogicalGroupNode or IPv6RangeLogicalGroupNode.

LogicalGroupType: This MUST be of value LogicalGroupType.Range.

2.2.4.212 IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters

The IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating the address instances that are associated with a particular AddressSpace, are of a given IPVirtualizationType, and belong to a given AddressFamily.

```
<xs:complexType name="IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
```


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```
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="AddressSpaceRecordID" type="xsd:long" />
        <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP address instances that are to be enumerated for the specified address space and virtualization type.

AddressSpaceRecordID: This specifies the record identifier of the address space for which the mapping address instances are to be enumerated.

VirtualizationType: This specifies the virtualization type of the IP address instances that are to be enumerated. Only the IP address instances that are of this virtualization type will meet the criteria.

2.2.4.213 IpamIPAddressByBlockIdEnumerationParameters

The IpamIPAddressByBlockIdEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that map to a specified address block.

```
<xs:complexType name="IpamIPAddressByBlockIdEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="BlockId" nillable="true" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances that need to be enumerated.

BlockId: This specifies the RecordId of the address block. The address instances that map to this address block have to be enumerated.

2.2.4.214 IpamIPAddressByFilterEnumerationParameters

The IpamIPAddressByFilterEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that belong to a particular address family and also meet a set of conditions defined by a set of filter criteria.

```
<xs:complexType name="IpamIPAddressByFilterEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="FilterInfo" nillable="true"
type="sys:ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz" />
      </xs:sequence>
```


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```
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP address instances that are to be enumerated.

FilterInfo: This specifies the set of criterion to be applied to filter IP addresses of a given address family.

2.2.4.215 IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters

The IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that have a specified value for ManagedBy and ManagedByEntity built-in custom field values.

```
<xs:complexType name="IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ManagedByEntityValue" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="ManagedByValue" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances that need to be enumerated.

ManagedByEntityValue: The value for the built-in custom field ManagedByEntity, which needs to be present for an address instance to meet the required criteria.

ManagedByValue: The value for the built-in custom field ManagedBy, which needs to be present for an address instance to meet the required criteria.

2.2.4.216 IpamIPAddressByRangeIdEnumerationParameters

The IpamIPAddressByRangeIdEnumerationParameters complex type specifies the filter criteria to be used for enumerating the address instances that map to a specific address range.

```
<xs:complexType name="IpamIPAddressByRangeIdEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="RangeId" nillable="true" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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AddressFamily: This specifies the address family of the address instances that need to be enumerated.

RangeId: This specifies the RecordId of the address range. The address instances that map to this address range have to be enumerated.

2.2.4.217 IpamIPAddressBySubnetIdEnumerationParameters

The IpamIPAddressBySubnetIdEnumerationParameters complex type specifies the criteria to be used for enumerating the address instances that map to a specified IP subnet.

```
<xs:complexType name="IpamIPAddressBySubnetIdEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="SubnetId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances that need to be enumerated.

SubnetId: This specifies the RecordId of the IP subnet. The address instances that map to this IP subnet have to be enumerated.

2.2.4.218 IpamIPAddressByVirtualizationTypeParameters

The IpamIPAddressByVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating the address instances that are of a given virtualization type.

```
<xs:complexType name="IpamIPAddressByVirtualizationTypeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances that need to be enumerated.

VirtualizationType: This specifies the virtualization type to be used to filter the list of address instances that are enumerated.

2.2.4.219 IpamIPAddressDataFormatter

The IpamIPAddressDataFormatter complex type is used to format error entities in operations relating to IPAddress object.

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```
<xs:complexType name="IpamIPAddressDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Address" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Address: This is a string that represents the IP address.

ServerName: This is a string that indicates the hostname of the IPAM server.

2.2.4.220 IpamIPAddressForUnmappedRangesEnumerationParameters

The IpamIPAddressForUnmappedRangesEnumerationParameters complex type is used to retrieve the list of addresses that belong to address ranges that are not already mapped to an address block.

```
<xs:complexType name="IpamIPAddressForUnmappedRangesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances that are enumerated.

2.2.4.221 IpamIPAddressRootAddressesEnumerationParameters

The IpamIPAddressRootAddressesEnumerationParameters complex type specifies the filter criteria to be used for enumerating the address instances belonging to a specified address category.

```
<xs:complexType name="IpamIPAddressRootAddressesEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressCategory" nillable="true"
type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressCategory: This specifies the address category of the address instances that need to be enumerated.

AddressFamily: This specifies the address family of the address instances that need to be enumerated.

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2.2.4.222 IpamIPAddressUnmappedAddressEnumerationParameters

The IpamIPAddressUnmappedAddressEnumerationParameters complex type specifies the criteria to be used for enumerating the unmapped address instances. Unmapped address instances are those that are not mapped to any address range instances.

```
<xs:complexType name="IpamIPAddressUnmappedAddressEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances that need to be enumerated.

2.2.4.223 IpamIPSubnetByFilterEnumerationParameters

The IpamIPSubnetByFilterEnumerationParameters complex type specifies the criteria to be used for filtering the enumerated list of IP subnets.

```
<xs:complexType name="IpamIPSubnetByFilterEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="FilterInfo" nillable="true"
type="sys:ArrayOfTupleOfGetIPSubnetFilteranyType2zwQHvQz" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: Specifies the address family of the IP subnet instances that need to be enumerated.

FilterInfo: Specifies the set of criteria to be applied while filtering the IP subnets.

2.2.4.224 IpamIPSubnetsByAddressCategoryEnumerationParameters

The IpamIPSubnetsByAddressCategoryEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets that belong to a given address category and a given address family.

```
<xs:complexType name="IpamIPSubnetsByAddressCategoryEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressCategory" type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
```


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```
    </xs:complexContent>
  </xs:complexType>
```

AddressCategory: Specifies the address category of the scopes that need to be enumerated.

AddressFamily: Specifies the address family of the address instances that need to be enumerated.

2.2.4.225 IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters

The IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets that map to a given address space and are of a given virtualization type.

```
<xs:complexType name="IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: Specifies the address family of the IP subnet instances that need to be enumerated.

AddressSpaceRecordId: Specifies the record identifier of the address space to which the enumerated subnets map.

VirtualizationType: Specifies the virtualization type value to be used to filter IP subnet instances.

2.2.4.226 IpamIPSubnetsByBlockIdEnumerationParameters

The IpamIPSubnetsByBlockIdEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets that map to a given address block.

```
<xs:complexType name="IpamIPSubnetsByBlockIdEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP subnet instances to be enumerated.

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ParentBlockRecordId: This specifies the record identifier of the address block that the enumerated subnets map to.

2.2.4.227 IpamIPSubnetsByUnmappedEnumerationParameters

The IpamIPSubnetsByUnmappedEnumerationParameters complex type specifies the criteria to be used for enumerating unmapped IP subnets of a given address family and virtualization type.

```
<xs:complexType name="IpamIPSubnetsByUnmappedEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP subnet instances that need to be enumerated.

VirtualizationType: This specifies the virtualization type on which the IP subnet instances need to be filtered on.

2.2.4.228 IpamIPSubnetsByVirtualizationTypeEnumerationParameters

The IpamIPSubnetsByVirtualizationTypeEnumerationParameters complex type specifies the criteria to be used for enumerating IP subnets of a given address family and virtualization type.

```
<xs:complexType name="IpamIPSubnetsByVirtualizationTypeEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="EmptySubnetsOnly" type="xsd:boolean" />
        <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP subnet instances to be enumerated.

EmptySubnetsOnly: This specifies that only empty subnets are enumerated.

VirtualizationType: This specifies the virtualization type on which the IP subnet instances are filtered.

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2.2.4.229 IpamIPSubnetsDirectChildrenByBlockIdEnumerationParameters

The IpamIPSubnetsByVirtualizationTypeEnumerationParameters complex type specifies the criteria to be used for enumerating the IP subnet instances of a given address family, that map directly to the given address block.

```
<xs:complexType name="IpamIPSubnetsDirectChildrenByBlockIdEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP subnet instances that need to be enumerated.

ParentBlockId: This specifies the RecordId of the address block to which the enumerated subnets must map. Note that only the direct child subnets of the address block will be enumerated.

2.2.4.230 IpamIPv4Address

The IpamIPv4Address complex type enables extension of attributes of the IpamIPAddress complex type. This is used to specify the details pertaining to the IPv4 address instance. The IPAddress, ParentIPRangeEndIP, ParentIPRangeStartIP, DhcpScopeSubnetId MUST be of address family Internet where they are applicable.

```
<xs:complexType name="IpamIPv4Address">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamIPAddress">
      <xs:sequence>
        <xs:element minOccurs="0" name="ClientID" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ReservationType" type="ipam:DhcpServingClientsType"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ClientId: This specifies the client ID for the host for which the reservation needs to be created.

ReservationType: This specifies whether the reservation can be used for DHCP or BOOTP clients or both by the DHCP server instance. This is applicable only when the AddressAssignment type is Dynamic or Global and the address is mapped to an address range that is having AddressAssignment type to be either Dynamic or Global.

2.2.4.231 IpamIPv4AddressLogicalGroup

The IpamIPv4AddressLogicalGroup complex type allows extensions to the LogicalGroup complex type. This specifies the LogicalGroup that can be used to enumerate IPv4 address instances using the logical group hierarchy.

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```
<xs:complexType name="IpamIPv4AddressLogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.232 IpamIPv4AddressLogicalGroupNode

The IpamIPv4AddressLoigicalGroupNode complex type allows extension of the LogicalGroupNode complex type. It defines the custom field value at a specific level in the logical group hierarchy. It will define the criteria for categorizing the IPv4 address instances based on the custom field values defined on them in the form of a logical group hierarchy.

```
<xs:complexType name="IpamIPv4AddressLogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.233 IpamIPv6Address

The IpamIPv6Address complex type enables extension of attributes of the IpamIPAddress complex type. This is used to specify the details pertaining to the IPv6 address instance. The IPAddress, ParentIPRangeEndIP, ParentIPRangeStartIP, and DhcpScopeSubnetId MUST be of address family InternetV6 where they are applicable.

```
<xs:complexType name="IpamIPv6Address">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamIPAddress">
      <xs:sequence>
        <xs:element minOccurs="0" name="Duid" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Iaid" nillable="true" type="xsd:unsignedInt" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Duid: This specifies the **DUID** of the host or device to which the DHCP reservation is associated with.

Iaid: This specifies the interface identifier within the host or device identified by Duid to which the DHCP reservation is associated with.

2.2.4.234 IpamIPv6AddressLogicalGroup

The IpamIPv6AddressLogicalGroup complex type allows extensions to the LogicalGroup complex type. This specifies the LogicalGroup that can be used to enumerate IPv6 address instances using the logical group hierarchy.

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```
<xs:complexType name="IpamIPv6AddressLogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.235 IpamIPv6AddressLogicalGroupNode

The IpamIPv6AddressLoigicalGroupNode complex type allows extension of the LogicalGroupNode complex type. It defines the custom field value at a specific level in the logical group hierarchy. It will define the criteria for categorizing the IPv6 address instances based on the custom field values defined on them in the form of a logical group hierarchy.

```
<xs:complexType name="IpamIPv6AddressLogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.236 IpamNumberOfRowsObject

The IpamNumberOfRowsObject complex type defines the type that can be used to return an integer value specifying the number of rows as a result from the IPAM enumeration port types.

```
<xs:complexType name="IpamNumberOfRowsObject">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="NumberOfRows" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

NumberOfRows: This specifies an integer specifying the number of rows returned.

2.2.4.237 IpamObject

The IpamObject complex type is used to identify and provide certain common functionality for types that are IPAM-specific.

```
<xs:complexType name="IpamObject">
  <xs:sequence />
  <xs:attribute ref="ser:Id" />
  <xs:attribute ref="ser:Ref" />
</xs:complexType>
```


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2.2.4.238 IpamOperationWithProgressParameters

The IpamOperationWithProgressParameters complex type extends ipam: IpamObject. It extends the base type with an additional member of enum type ipam:IpamAdminOperationId, which identifies the type of operation being performed.

```
<xs:complexType name="IpamOperationWithProgressParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OperationId" type="ipam1:IpamAdminOperationId" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OperationId: This is of type ipam1:IpamAdminOperationId and indicates the type of operation to be performed.

2.2.4.239 IpamProvisioningEnumerationParameters

The IpamProvisioningEnumerationParameters complex type allows extended attributes on an ipam: EnumerationParametersBase type.

```
<xs:complexType name="IpamProvisioningEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="IpamProvisioningSetting" nillable="true"
type="ipam:IpamProvisioningSetting" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

IpamProvisioningSetting: This is of type ipam:IpamProvisioningSetting. It specifies settings used for provisioning the IPAM server.

2.2.4.240 IpamProvisioningSetting

The IpamProvisioningSetting complex type allows extended attributes on an ipam:EnumerationParametersBase type. It creates objects whose ObjectType is "AsyncProvision".

```
<xs:complexType name="IpamProvisioningSetting">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="CreateNewSchema" type="xsd:boolean" />
        <xs:element minOccurs="0" name="DatabaseConfiguration" nillable="true"
type="ipam:IpamDatabaseConfiguration" />
        <xs:element minOccurs="0" name="GpoPrefix" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ProvisioningMethod" type="ipam:ProvisioningMethod" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

CreateNewSchema: This is of type bool and indicates whether a new schema needs to be created.

DatabaseConfiguration: This is of type ipam:IpamDatabaseConfiguration and specifies the configuration settings for IPAM datastore.

GpoPrefix: This specifies the prefix for the GPOs that this instance of IPAM uses to provision the managed servers.

ProvisioningMethod: This is of type ipam:ProvisioningMethod and specifies whether the servers managed by IPAM are provisioned via GPOs or are provisioned manually.

2.2.4.241 IpamSchemaVersion

The IpamSchemaVersion complex type allows extended attributes on an ipam: BaseIpamObject type. It defines the schema version of IPAM server.

```
<xs:complexType name="IpamSchemaVersion">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="MajorVersion" type="xsd:int" />
        <xs:element minOccurs="0" name="MinorVersion" type="xsd:int" />
        <xs:element minOccurs="0" name="PatchVersion" type="xsd:int" />
        <xs:element minOccurs="0" name="SPVersion" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

MajorVersion: Specifies the major version of IPAM server schema.

MinorVersion: Specifies the minor version of IPAM server schema.

PatchVersion: Specifies the latest patch that is installed on IPAM server.

SPVersion: Specifies the service pack version of IPAM server schema.

2.2.4.242 IpamUpgradeValidationRuleInfo

The IpamUpgradeValidationRuleInfo complex type allows extended attributes on an ipam: BaseIpamObject type. It defines the schema version of IPAM server.

```
<xs:complexType name="IpamUpgradeValidationRuleInfo">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="RuleDescription" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="RuleDescriptionId"
type="ipam1:IpamUpgradeValidationRuleDescriptionId" />
        <xs:element minOccurs="0" name="RuleName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="RuleNameId"
type="ipam1:IpamUpgradeValidationRuleNameId" />
      </xs:sequence>
```


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```
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

RuleDescription: Specifies a description for the rule that verifies whether an IPAM system can be upgraded.

RuleDescriptionId: This is of type ipam1:IpamUpgradeValidationRuleDescriptionId and specifies an identifier for upgrade rule description .

RuleName: Specifies a name for the rule that verifies whether an IPAM system can be upgraded.

RuleNameId: This is of type ipam1: IpamUpgradeValidationRuleNameId and specifies an identifier for upgrade rule description.

2.2.4.243 IpamUpgradeValidationRuleStatus

The IpamUpgradeValidationRuleStatus complex type allows extended attributes on an ipam: BaseIpamObject type. It defines a set of rules used for validating whether a given instance of IPAM can be upgraded, along with the status for each rule.

```
<xs:complexType name="IpamUpgradeValidationRuleStatus">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="RuleInfo" nillable="true"
type="ipam:IpamUpgradeValidationRuleInfo" />
        <xs:element minOccurs="0" name="RuleStatus" type="ipam:IpamUpgradeValidationStatus"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

RuleInfo: Specifies a particular rule to ensure sanity of an IPAM instance.

RuleStatus: Specifies whether the rule specified in RuleInfo passed or failed for the given instance of IPAM.

2.2.4.244 IPAuditEnumerationParameters

The IPAuditEnumerationParameters complex type is used to specify the enumeration parameters for the IP address audit.

```
<xs:complexType name="IPAuditEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="IncludeUserInformation" type="xsd:boolean" />
        <xs:element minOccurs="0" name="NumberOfRecords" type="xsd:int" />
        <xs:element minOccurs="0" name="SearchCriteriaXml" nillable="true" type="xsd:string"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

IncludeUserInformation: This specifies whether or not the user logon event information will be used to correlate the IP address audit information.

NumberOfRecords: This specifies the maximum number of records to be retrieved.

SearchCriteriaXml: This specifies the IP Audit filter conditions in the form of an XML. The following is the XML schema associated with the same.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema id="IPSearchParameters" xmlns="" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
  <xs:element name="IPSearchParameters" msdata:IsDataSet="true"
msdata:UseCurrentLocale="true">
    <xs:complexType>
      <xs:choice minOccurs="0" maxOccurs="unbounded">
        <xs:element name="OP_AND">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="IPSearchNode" minOccurs="0" maxOccurs="unbounded">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element name="Name" type="xs:string" minOccurs="0" />
                    <xs:element name="Value1" type="xs:string" minOccurs="0" />
                    <xs:element name="Value2" type="xs:string" minOccurs="0" />
                    <xs:element name="Value" type="xs:string" minOccurs="0" />
                  </xs:sequence>
                </xs:complexType>
              </xs:element>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:choice>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

Name: This specifies the name of the field on which the IPSearchNode specifies the filter condition. It can be one of the following values.

1. TIME_DURATION
2. IP_ADDRESS
3. MAC_ADDRESS
4. HOST_NAME
5. USER_NAME

If the Name is TIME_DURATION, Value1 and Value2 MUST be specified to give the date and time range between which the IP address audit information is to be searched. Value element MUST NOT be present.

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Value1: This specifies the start date time of the duration when the Name field is TIME_DURATION. This MUST NOT be used in IPSearchNode otherwise. The date time MUST be specified in Coordinated Universal Time (UTC) string representation as specified by [ISO-8601].

Value2: This specifies the end date time of the duration when the Name field is TIME_DURATION. This MUST NOT be used in IPSearchNode otherwise. The date time MUST be specified in Coordinated Universal Time (UTC) string representation as specified by [ISO-8601].

Value: This specifies a value for the field specified with **Name** when the Name is IP_ADDRESS, MAC_ADDRESS, HOST_NAME, or USER_NAME. If the Name is IP_ADDRESS, the Value MUST be a valid IP address denoted in the textual form.

2.2.4.245 IPAuditRecord

The IPAuditRecord complex type is used to specify single IP address audit.

```
<xs:complexType name="IPAuditRecord">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ClientId" nillable="true" type="xsd:base64Binary" />
        <xs:element minOccurs="0" name="DomainName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="EventType" type="ipam:IPAuditEventType" />
        <xs:element minOccurs="0" name="HostName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IPAddress" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="ServerType" type="ipam:ServerAuditType" />
        <xs:element minOccurs="0" name="SourceServerName" nillable="true" type="xsd:string"
/>
        <xs:element minOccurs="0" name="TimeOfEvent" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ClientId: This specifies the client identifier associated with the address audit event row if applicable.

DomainName: This specifies the name of the domain associated with the address audit row if applicable.

EventType: This specifies the type of the audit event the row represents.

HostName: This specifies the name of the host machine associated with the address audit row if applicable.

IPAddress: This specifies the IP address associated with the address audit row if applicable.

RecordId: This specifies a unique identifier for the data in the IPAM data store.

ServerType: This specifies the type of server that generated the address audit event.

SourceServerName: This specifies the name of the server that is the source of the address audit event.

TimeOfEvent: This specifies the time at which the audit event was generated.

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UserName: This specifies the name of the user associated with the audit event if applicable.

2.2.4.246 IPBlock

The IPBlock complex type specifies the address block information that is common to both IPv4Block and IPv6Block.

```
<xs:complexType name="IPBlock">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="AddressCategory" type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="EndIPAddress" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
        <xs:element minOccurs="0" name="LastAssignedDate" nillable="true" type="xsd:dateTime"
/>
        <xs:element minOccurs="0" name="LastModifiedDate" nillable="true" type="xsd:dateTime"
/>
        <xs:element minOccurs="0" name="NetworkId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="NumberOfChildBlocks" type="xsd:int" />
        <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ParentIPBlockRecordId" nillable="true"
type="xsd:long" />
        <xs:element minOccurs="0" name="PartialCustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldPartialValue" />
        <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
        <xs:element minOccurs="0" name="RIRReceivedDate" nillable="true" type="xsd:dateTime"
/>
        <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="SubnetMask" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPUtilization" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AccessScopeId: This specifies the Record identifier for the access scope object to which this block maps.

AddressCategory: This specifies the address category of the address range represented by the address block.

AddressSpaceRecordId: This specifies the Record identifier for the address space to which this block maps.

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CustomFieldValues: This specifies the list of custom field values associated with the address block. RIR MUST be the only custom field for which the value can be associated with the address block instance. This is mandatory if the address block belongs to AddressCategory of Public or Global.

Description: This specifies the description for the address block.

EndIPAddress: This specifies the end address of the address block range.

IsInheritedAccessScope: Specifies whether this block inherits access scope from its parent block.

LastAssignedDate: This specifies the last time when an address range was created out of the address block.

LastModifiedDate: This specifies the last time when this address block was modified.

NetworkId: This specifies network portion of the address block when it is represented as a range of address when denoted in the network id/prefix format.

NumberOfChildBlocks: This specifies the number of child block under the specified address block.

Owner: This specifies the owner for the address block. The length of the string MUST NOT exceed 100 characters.

ParentIPBlockRecordId: This specifies the RecordId of the Parent address block if the block itself is a child block of some other block.

PartialCustomFieldValues: This specifies the custom field values associated with the address block in the form of a collection of CustomFieldPartialValue. The management client MUST NOT use this for specifying the custom field values but rather use the CustomFieldValues property. The management server SHOULD use this to send across the custom field values as a part of enumeration processing.

PrefixLength: This specifies the length of the prefix associated with the address block.

RecordId: This specifies a unique identifier for the data in the IPAM data store.

RIRReceivedDate: This specifies the last date when the block was allocated and received from the Regional Internet Registries (RIR).

StartIPAddress: This specifies the start IP address of the address range corresponding to this address block.

SubnetMask: This specifies the subnet mask specific to the prefix length of the address block.

UtilizationStatistics: This specifies the current utilization statistics of the address block.

2.2.4.247 IPBlockChildBlockEnumerationParameters

The IPBlockChildBlockEnumerationParameters complex type specifies the criteria to be used for enumerating the address blocks that form the child blocks of a specified address block.

```
<xs:complexType name="IPBlockChildBlockEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
```


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```
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address block instances that need to be enumerated.

ParentBlockRecordId: This specifies the record identifier of the address block for which the child blocks need to be enumerated.

2.2.4.248 IPBlockDataFormatter

The IPBlockDataFormatter complex type extends the ipam:IpamObject and encapsulates the properties of an IP block that will be formatted.

```
<xs:complexType name="IPBlockDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EndIP" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="NetwordkId" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
        <xs:element minOccurs="0" name="StartIP" nillable="true" type="sysnet:IPAddress" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

EndIP: This specifies the end IP address of the IP block.

NetworkId: This specifies the NetworkId of the IP block.

PrefixLength: This specifies the prefix length of the IP block.

StartIP: This specifies the start IP address of the IP block.

2.2.4.249 IPBlockGetAllBlocksEnumerationParameters

The IPBlockGetAllBlocksEnumerationParameters complex type specifies the criteria to be used for enumerating all the address blocks in the IPAM data store.

```
<xs:complexType name="IPBlockGetAllBlocksEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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AddressFamily: This specifies the address family of the address block instances that need to be enumerated.

2.2.4.250 IPBlockRootEnumerationParameters

The IPBlockRootEnumerationParameters complex type is used to specify the criteria for enumerating the rows that form the first level of address blocks (for which there are no parent blocks).

```
<xs:complexType name="IPBlockRootEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressCategory" nillable="true"
type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address block instances that need to be enumerated.

AddressCategory: This specifies the address category of the address blocks that need to be enumerated.

2.2.4.251 IPCumulativeUtilization

The IPCumulativeUtilization complex type specifies the address utilization statistics or trend information.

```
<xs:complexType name="IPCumulativeUtilization">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="IpUtilization" nillable="true"
type="ipam:ArrayOfIPUtilization" />
        <xs:element minOccurs="0" name="IPUtilizationType" type="ipam:IPUtilizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

IpUtilization: This specifies an array of IPUtilization complex type that forms the various data points for the enumeration trend, or it has a single element that specifies the current utilization statistics. This is of type either IPv4Utilization or IPv6Utilization.

IPUtilizationType: This specifies the type of data that is present in IpUtilization. If it is of length > 1, this will have the address utilization trend information.

2.2.4.252 IPRange

The IPRange complex type specifies the common information pertaining to the address range.

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```
<xs:complexType name="IPRange">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
        <xs:element minOccurs="0" name="AddressAssignment" type="ipam:AddressAssignment" />
        <xs:element minOccurs="0" name="AddressCategory" type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="ConnectionSpecificDNSSuffix" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
        <xs:element minOccurs="0" name="CustomerAddressSpaceName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="DNSServers" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="DNSSuffixes" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DhcpScopeName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DhcpServerGuid" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DhcpServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="EndIPAddress" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="ExclusionRanges" nillable="true"
type="ipam:ArrayOfDhcpExclusionRange" />
        <xs:element minOccurs="0" name="Gateways" nillable="true"
type="ipam:ArrayOfGatewayAddress" />
        <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
        <xs:element minOccurs="0" name="IsOverlapping" type="xsd:boolean" />
        <xs:element minOccurs="0" name="LastAssignedDate" nillable="true" type="xsd:dateTime"
/>
        <xs:element minOccurs="0" name="LastChangeDate" nillable="true" type="xsd:dateTime"
/>
        <xs:element minOccurs="0" name="LastReclaimRuntime" nillable="true"
type="xsd:dateTime" />
        <xs:element minOccurs="0" name="NumberOfChildAddresses" type="xsd:int" />
        <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ParentIPBlockRecordId" nillable="true"
type="xsd:long" />
        <xs:element minOccurs="0" name="PartialCustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldPartialValue" />
        <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
        <xs:element minOccurs="0" name="ProviderAddressSpaceName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="RangeOverlapState" type="ipam:IPRangeOverlap" />
        <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="ReservedIPRanges" nillable="true"
type="sys:ArrayOfTupleOfstringstring" />
        <xs:element minOccurs="0" name="ReservedIPs" nillable="true"
type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="ScopeRecordId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="SubnetId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="SubnetMask" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="UseForUtilization" type="xsd:boolean" />
        <xs:element minOccurs="0" name="UtilizationCalculationType"
type="ipam:IPUtilizationCalculationType" />
```


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```
        <xs:element minOccurs="0" name="UtilizationEventLogStatus"
type="ipam:UtilizationStatus" />
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPUtilization" />
        <xs:element minOccurs="0" name="VIPRanges" nillable="true"
type="sys:ArrayOfTupleOfstringstring" />
        <xs:element minOccurs="0" name="VIPs" nillable="true" type="serarr:ArrayOfstring" />
        <xs:element minOccurs="0" name="VirtualizationType" type="ipam:IPVirtualizationType"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AccessScopeId: This specifies the Record identifier for the access scope object to which this range maps.

AddressAssignment: This specifies the type of address assignment associated with the address range.

AddressCategory: This specifies the address category to which the address range belongs to.

AddressSpaceRecordId: This specifies the Record identifier for the address space to which this range maps.

ConnectionSpecificDNSSuffix: Specifies a connection specific DNS suffix associated with a scope that is stored as a range in IPAM.

CustomFieldValues: This specifies the list of custom field values associated with the address range.

CustomerAddressSpaceName: Specifies the name of the Customer address space associated with this range.

Description: This specifies the description for the address range.

DefaultGateway: This specifies the address of the default gateway that is mapped to this address range.

EndIPAddress: This specifies the end address of the address range.

ParentIPBlockRecordId: If the address range is mapped to an address block, this specifies the RecordId of the associated address block. Otherwise this will not be set.

IsOverlapping: This specifies whether there are other address ranges that overlap with this address range.

LastAssignedDate: This specifies the date when the address range was used last to assign addresses from.

LastChangeDate: This specifies the date when the last change was made to the address range.

LastReclaimRuntime: This specifies the time at which the addresses mapping to this address range have been reclaimed.

NumberofChildAddresses: This specifies the number of child addresses that are mapping to the specific address range.

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Owner: This specifies the owner of the address range. The length of this field MUST NOT be greater than 100.

PartialCustomFieldValues: This specifies the custom field values in the form of a collection of CustomFieldPartialValue. The management server will use this to pass the custom field values during the enumeration operations. This MUST NOT be used by the management client to pass custom field values. The management client MUST instead use CustomFieldValues to perform the required processing.

PrefixLength: This specifies the prefix length for the address range.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

StartIPAddress: This specifies the start IP address of the address range.

UtilizationCalculationType: This specifies the type of utilization calculation type to be used.

UtilizationEventLogStatus: This specifies the current utilization status of the address range.

UtilizationStatistics: This specifies the utilization statistics information associated with the address range. If the address assignment type is Dynamic or Auto, the address range will have an associated DHCP scope instance. From the DHCP scope information, the following data are computed.

DhcpScopeName: This specifies the name of the DHCP scope associated with the address range.

DhcpServerGuid: This specifies the GUID of the server having the scope instance associated with the address range.

DhcpServerName: This specifies the name of the server having the scope instance associated with the address range.

ExclusionRanges: This specifies the list of exclusion ranges that are associated with the scope corresponding to the address range.

ScopeRecordId: This specifies the RecordId of the scope associated with the address range.

SubnetId: This specifies the subnet ID of the DHCP scope associated with the address range.

SubnetMask: This specifies the subnet mask corresponding to the prefix length of the address range.

DNSServers: Specifies a list of DNS servers associated with the scope that is represented as a range in IPAM.

DNSSuffixes: Specifies a list of DNS suffixes associated with the scope that is represented as a range in IPAM.

Gateways: Specifies a list of gateway servers associated with the scope that is represented as a range in IPAM.

IsInheritedAccessScope: Specifies whether this block inherits access scope from its parent subnet.

ReservedIPRanges: Specifies a list of reserved IP ranges associated with the scope that is represented as a range in IPAM.

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ReservedIPs: Specifies a list of reserved IP addresses associated with the scope that is represented as a range in IPAM.

UseForUtilization: Specifies whether this range, of all the conflicting ranges, is used for calculating the utilization of the parent subnet.

2.2.4.253 IPRangeAllForBlockEnumerationParameter

The IPRangeAllForBlockEnumerationParameter complex type is used to specify the criteria based on which the ranges corresponding to an address block instance can be retrieved.

```
<xs:complexType name="IPRangeAllForBlockEnumerationParameter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address range instances that need to be enumerated.

ParentBlockRecordId: This specifies the RecordId of the parent address block for which the mapped address ranges are to be enumerated.

2.2.4.254 IPRangeAllForDhcpServerEnumerationParameters

The IPRangeAllForDhcpServerEnumerationParameters complex type is used to specify the criteria based on which the address ranges corresponding to the DHCP scope instances of a particular DHCP server are enumerated.

```
<xs:complexType name="IPRangeAllForDhcpServerEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="IncludeAutoTypeRanges" type="xsd:boolean" />
        <xs:element minOccurs="0" name="ServerGuid" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address range instances that need to be enumerated.

IncludeAutoTypeRanges: This specifies whether the ranges whose address category is Auto also needs to be included in the enumeration. These are the ranges corresponding to the scopes configured for Stateless IPv6 address assignment.

ServerGuid: This specifies the guid of the DHCP server instance for which the ranges are to be enumerated.

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2.2.4.255 IPRangeAllForLogicalGroupNodeEnumerationParameters

The IPRangeAllForLogicalGroupNodeEnumerationParameters complex type is used to specify the parameters for enumerating the IP range instances corresponding to a specified logical group node in the logical group hierarchy.

```
<xs:complexType name="IPRangeAllForLogicalGroupNodeEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="LogicalGroupNode" nillable="true"
type="ipam:LogicalGroupNode" />
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP range instances that are enumerated for the specified logical group.

LogicalGroupRecordId: This specifies the record identifier of the logical group for which the mapping IP range instances are to be enumerated.

LogicalGroupType: This MUST be LogicalGroupType.Subnet.

2.2.4.256 IPRangeByAddressSpaceAndVirtualizationTypeParameters

The IPRangeByAddressSpaceAndVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating IP range instances that map to a given address space and are of a given virtualization type.

```
<xs:complexType name="IPRangeByAddressSpaceAndVirtualizationTypeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="AddressSpaceRecordID" type="xsd:long" />
        <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP ranges instances that need to be enumerated.

AddressSpaceRecordId: This specifies the record identifier of the address space that the enumerated ranges should map to.

VirtualizationType: This specifies the virtualization type value that will be used to filter IP ranges instances.

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2.2.4.257 IPRangeByFilterEnumerationParameters

The IPRangeByFilterEnumerationParameters complex type specifies the criteria to be used for enumerating the IP range instances that belong to a particular address family and also meet a set of conditions defined by a set of filter criteria.

```
<xs:complexType name="IPRangeByFilterEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="FilterInfo" nillable="true"
type="sys:ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP range instances that are to be enumerated.

FilterInfo: This specifies the set of criterion to be applied to filter IP range of a given address family.

2.2.4.258 IPRangeByManagedByAndManagedByEntityEnumerationParameters

The IPRangeByManagedByAndManagedByEntityEnumerationParameters complex type specifies the criteria required to enumerate the address ranges for which the built-in custom fields ManagedBy and ManagedByEntity are having a specific value.

```
<xs:complexType name="IPRangeByManagedByAndManagedByEntityEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="AddressSpaceId" nillable="true" type="xsd:long" />
<xs:element minOccurs="0" name="ManagedByEntityValue" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ManagedByValue" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address range instances that need to be enumerated.

AddressSpaceId: This specifies the identifier of address space of the IP range instance, which needs to be present for an address range instance to meet the required criteria.

ManagedByEntityValue: This specifies the value for the built-in custom field ManagedByEntity, which needs to be present for an address range instance to meet the required criteria.

ManagedByValue: This specifies the value for the built-in custom field ManagedBy, which needs to be present for an address range instance to meet the required criteria.

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2.2.4.259 IPRangeByVirtualizationTypeParameters

The IPRangeByVirtualizationTypeParameters complex type specifies the criteria to be used for enumerating the IP range instances that are of a given virtualization type.

```
<xs:complexType name="IPRangeByVirtualizationTypeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP range instances to be enumerated.

VirtualizationType: This specifies the virtualization type to be used to filter the list of IP range instances that are enumerated.

2.2.4.260 IPRangeDataFormatter

The IPRangeDataFormatter complex type specifies the key properties of an IP range, which will be formatted for display.

```
<xs:complexType name="IPRangeDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressSpaceName" nillable="true" type="xsd:string"
/>
        <xs:element minOccurs="0" name="EndIP" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ManagedByService" nillable="true" type="xsd:string"
/>
        <xs:element minOccurs="0" name="NetwordkId" nillable="true" type="sysnet:IPAddress"
/>
        <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
        <xs:element minOccurs="0" name="ServiceInstance" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="StartIP" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="VirtualizationType" type="ipam:IPVirtualizationType"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressSpaceName: This specifies the address space of the IP range instance.

EndIP: This specifies the end IP address of the IP range instance.

ManagedByService: This specifies the ManagedByValue custom field of the IP range instance.

NetworkId: This specifies the network Id of the IP range instance.

PrefixLength: This specifies the prefix length of the IP range instance.

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ServiceInstance: This specifies the ManagedByEntityValue custom field of the IP range instance.

VirtualizationType: This specifies the virtualization type of the IP range instance.

2.2.4.261 IPRangeForBlockEnumerationParameters

The IPRangeForBlockEnumerationParameters complex type is used to specify the criteria for enumerating the address range that maps directly onto an address block and doesn't include the address ranges that map to a child block for the specified address block.

```
<xs:complexType name="IPRangeForBlockEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressAssignment" nillable="true"
type="ipam:AddressAssignment" />
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressAssignment: This specifies the type of address assignment the ranges need to have for them to be enumerated. This is an optional filter condition.

AddressFamily: This specifies the address family of the address range instances that need to be enumerated.

ParentBlockRecordId: This specifies the RecordId of the parent address block for which the mapped address ranges are to be enumerated.

2.2.4.262 IPRangeForSubnetEnumerationParameter

The IPRangeForSubnetEnumerationParameter complex type specifies the criteria to be used for enumerating the IP range instances that map to a specified IP subnet.

```
<xs:complexType name="IPRangeForSubnetEnumerationParameter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="SubnetId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP range instances to be enumerated.

SubnetId: This specifies the RecordId of the IP subnet. The IP range instances that map to this IP subnet MUST be enumerated.

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2.2.4.263 IPRangeRootEnumerationParameters

The IPRangeRootEnumerationParameters complex type is used to specify the criteria for enumerating all the address ranges that have a specific address category.

```
<xs:complexType name="IPRangeRootEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressCategory" nillable="true"
type="ipam:AddressCategory" />
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address range instances that need to be enumerated.

AddressCategory: This specifies the address category of the address range instances that need to be enumerated.

2.2.4.264 IPRangeUnmappedEnumerationParameters

The IPRangeUnmappedEnumerationParameters complex type is used to specify the criteria for enumerating the address ranges that are not mapped to any address block and are unmapped.

```
<xs:complexType name="IPRangeUnmappedEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address range instances that need to be enumerated.

2.2.4.265 IPSubnet

The IPSubnet complex type allows extending the attributes of the IPBlock complex type to represent information pertaining to an IP subnet.

```
<xs:complexType name="IPSubnet">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPBlock">
      <xs:sequence>
        <xs:element minOccurs="0" name="CustomerAddressSpaceName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="IsOverlapping" type="xsd:boolean" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
```


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```
        <xs:element minOccurs="0" name="ProviderAddressSpaceName" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="UseForUtilization" type="xsd:boolean" />
        <xs:element minOccurs="0" name="VLANId" nillable="true" type="serarr:ArrayOfint" />
        <xs:element minOccurs="0" name="VSId" type="xsd:int" />
        <xs:element minOccurs="0" name="VirtualizationType" type="ipam:IPVirtualizationType"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

CustomerAddressSpaceName: This specifies the name of the customer address space that the IP subnet is associated with.

IsOverlapping: This specifies whether this subnet overlaps with any other subnet in this address space.

Name: This specifies the name of the IP subnet.

ProviderAddressSpaceName: This specifies the name of the provider address space that the IP subnet is associated with.

UseForUtilization: This specifies whether the subnet is used for utilization calculation of the IP block. In case of overlapping subnets, only one of the overlapping ones is used for calculating utilization information for the parent block. The subnet that is used for the utilization calculation of the parent block will have this set to true.

VLANId: This specifies the array containing the identifiers of the VLANs that this subnet maps to.

VSId: This specifies the identifier of the virtual subnet that is associated with this subnet.

VirtualizationType: This specifies whether the given subnet is a physical subnet, in which case this property will be marked as NonVirtualized, or whether it is being used in a virtual environment, in which case its VirtualizationType will be set to either fabric or virtual.

2.2.4.266 IPUtilization

The IPUtilization complex type is used to specify the address utilization data for a specific time range.

```
<xs:complexType name="IPUtilization">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="EndTime" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="IsValid" type="xsd:boolean" />
        <xs:element minOccurs="0" name="StartTime" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="TotalAssignedAddresses" type="xsd:double" />
        <xs:element minOccurs="0" name="TotalAvailableAddresses" type="xsd:double" />
        <xs:element minOccurs="0" name="TotalUtilizedAddresses" type="xsd:double" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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EndTime: This specifies the end time of the time period for which the IPUtilization specifies the address utilization.

IsValid: This specifies whether the address utilization data is valid or not.

StartTime: This specifies the start time of the time period for which the IPUtilization specifies the address utilization.

TotalAssignedAddresses: This defines the number of addresses that is assigned from an IP address space. Typically this is based on the start and end address for an IP addresses space. In case of an IP address space being an IP address range, then the available addresses is the same as assigned addresses. In case of an IP address space being an IP address block, then the assigned addresses will be based on the volume of IP address ranges that is mapped under the IP address block.

TotalAvailableAddresses: This defines the available number of addresses in an IP address space. Typically this is based on the start and end address for an IP addresses space.

TotalUtilizedAddresses: This defines the number of addresses that is utilized from the assigned pool of IP address space. Typically the utilized count of IP address space will be based on the number of addresses that is either reserved in IPAM (in case of address assignment type being AddressAssignment.Static) or allocated to the network (in case of address assignment type being AddressAssignment.Dynamic).

2.2.4.267 IPv4Block

The IPv4Block complex type allows extending the attributes of the IPBlock complex type. This is used to specify the IPv4-specific address block. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type being Internet.

```
<xs:complexType name="IPv4Block">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPBlock">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.268 IPv4Range

The IPv4Range complex type allows extending the attributes of IPRange complex type. This specifies the details of IPv4-specific address range details. The DefaultGateway, EndIPAddress, ExclusionRanges, StartIPAddress, SubnetId, and SubnetMask MUST be of address family type being Internet.

```
<xs:complexType name="IPv4Range">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPRange">
      <xs:sequence />
      <xs:sequence>
        <xs:element minOccurs="0" name="WINSServers" nillable="true"
type="serarr:ArrayOfstring" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

2.2.4.269 IPv4RangeLogicalGroup

The IPv4RangeLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the address ranges.

```
<xs:complexType name="IPv4RangeLogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence>
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

UtilizationStatistics: This specifies the utilization statistics of the address ranges that map to the logical group.

2.2.4.270 IPv4RangeLogicalGroupNode

The IPv4RangeLogicalGroupNode complex type allows extending the attributes of LogicalGroupNode complex type. This specifies the criteria for a specific level in the logical group hierarchy that can be used to enumerate the address ranges that meet that particular level.

```
<xs:complexType name="IPv4RangeLogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence>
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

UtilizationStatistics: This specifies the utilization statistics of the address ranges that map to the logical group node.

2.2.4.271 IPv4Subnet

The IPv4Subnet complex type allows extending the attributes of a IPSubnet complex type. This is used to specify the IPv4-specific subnet. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type Internet.

```
<xs:complexType name="IPv4Subnet">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPSubnet">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

2.2.4.272 IPv4SubnetLogicalGroup

The IPv4SubnetLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the IP subnets.

```
<xs:complexType name="IPv4SubnetLogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.273 IPv4SubnetLogicalGroupNode

The IPv4SubnetLogicalGroupNode complex type allows extending the attributes of LogicalGroupNode complex type. It defines the value of the custom field that occurs at the specific level in logical group hierarchy. This values of custom fields that form the logical group hierarchy up to this node will be used as a criteria to enumerate IPv4 subnets.

```
<xs:complexType name="IPv4SubnetLogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressSpaceRecordId: This specifies the record identifier of the address space that the logical group is associated with. The enumerated IP subnet instances would map to this address space.

UtilizationStatistics: This specifies the utilization details for the addresses contained in this address space.

2.2.4.274 IPv4Utilization

The IPv4Utilization complex type allows extending the attributes of an IPUtilization complex type. This is used to specify the address utilization corresponding to IPv4-specific address space.

```
<xs:complexType name="IPv4Utilization">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPUtilization">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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2.2.4.275 IPv6Block

The IPv4Block complex type allows extending the attributes of the IPBlock complex type. This is used to specify the IPv4-specific address block. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type being Internet.

```
<xs:complexType name="IPv6Block">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPBlock">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.276 IPv6Range

The IPv6Range complex type allows extending the attributes of IPRange complex type. This specifies the details of IPv6-specific address range details. The DefaultGateway, EndIPAddress, ExclusionRanges, StartIPAddress, SubnetId, and SubnetMask MUST be of address family type being InternetV6.

```
<xs:complexType name="IPv6Range">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPRange">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.277 IPv6RangeLogicalGroup

The IPv6RangeLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the address ranges.

```
<xs:complexType name="IPv6RangeLogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence>
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv6Utilization" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

UtilizationStatistics: This specifies the utilization statistics of the address ranges that map to the logical group

2.2.4.278 IPv6RangeLogicalGroupNode

The IPv6RangeLogicalGroupNode complex type allows extending the attributes of LogicalGroupNode complex type. This specifies the criteria for a specific level in the logical group hierarchy, which can be used to enumerate the address ranges that meet that particular level.

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```
<xs:complexType name="IPv6RangeLogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence>
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv6Utilization" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

UtilizationStatistics: This specifies the utilization statistics of the address ranges that map to the logical group node

2.2.4.279 IPv6Subnet

The IPv6Subnet complex type allows extending the attributes of a IPSubnet complex type. This is used to specify the IPv6-specific subnet. The EndIPAddress, NetworkId, StartIPAddress, and SubnetMask MUST be of address family type InternetV6.

```
<xs:complexType name="IPv6Subnet">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IPSubnet">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.280 IPv6SubnetLogicalGroup

The IPv6SubnetLogicalGroup complex type allows extending the attributes of LogicalGroup complex type. This specifies a logical group definition that can be used for enumerating the IP subnets.

```
<xs:complexType name="IPv6SubnetLogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroup">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.281 IPv6SubnetLogicalGroupNode

The IPv6SubnetLogicalGroupNode complex type allows extending the attributes of the LogicalGroupNode complex type. It defines the value of the custom field that occurs at the specific level in logical group hierarchy. This value of custom fields, which form the logical group hierarchy up to this node, will be used as criteria to enumerate IPv6 subnets.

```
<xs:complexType name="IPv6SubnetLogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:LogicalGroupNode">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
```


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```
        <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv6Utilization" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressSpaceRecordId: This specifies the record identifier of the address space that the logical group is associated with. The enumerated IP subnet instances would map to this address space.

UtilizationStatistics: This specifies the utilization details for the addresses contained in this address space.

2.2.4.282 IPv6Utilization

The IPv6Utilization complex type allows extending the attributes of an IPUtilization complex type. This is used to specify the address utilization corresponding to IPv6-specific address space.

```
<xs:complexType name="IPv6Utilization">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPUtilization">
        <xs:sequence>
          <xs:element minOccurs="0" name="TotalStatefulAddresses" type="xsd:double" />
          <xs:element minOccurs="0" name="TotalStatelessAddresses" type="xsd:double" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
</xs:complexType>
```

TotalStatefulAddresses: This specifies the total number of addresses that are part of the address space having address assignment type being Dynamic and with the address family being InternetV6.

TotalStatelessAddresses: This specifies the total number of addresses that are part of the address space having address assignment type being Auto and with the address family being InternetV6.

2.2.4.283 LogicalGroup

The LogicalGroup complex type specifies the definition of a logical group.

```
<xs:complexType name="LogicalGroup">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="BuiltInLogicalGroupNumber"
type="ipam:BuiltInLogicalGroup" />
        <xs:element minOccurs="0" name="Fields" nillable="true"
type="ipam:ArrayOfLogicalGroupField" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Origin" type="ipam:LogicalGroupOrigin" />
        <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="Users" type="ipam:LogicalGroupUsers" />
      </xs:sequence>
    </xs:extension>
```


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```
    </xs:complexContent>
  </xs:complexType>
```

BuiltInLogicalGroupNumber: If the logical group is a **built-in logical group**, this specifies a unique identifier for the built-in logical group.

Fields: This specifies the array of LogicalGroupField specifying the multivalued custom fields whose values form the various levels of the logical group hierarchy.

Name: This specifies the name of the logical group. This MUST NOT be null and MUST have a length of at least 2 characters and no more than 50 characters.

Origin: This specifies the origin of the logical group – whether it was a built-in logical group or user-defined logical group.

RecordId: This specifies a unique identifier for the data in the IPAM data store.

Users: This specifies functional areas to which the specific logical group is applicable. It can be used for either address space management or active server management.

2.2.4.284 LogicalGroupDataForLogicalGroupNodeEnumerationParameters

The LogicalGroupDataForLogicalGroupNodeEnumerationParameters complex type specifies the logical group node information that will form the criteria for enumerating the data.

```
<xs:complexType name="LogicalGroupDataForLogicalGroupNodeEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
        <xs:element minOccurs="0" name="LogicalGroupNode" nillable="true"
type="ipam:LogicalGroupNode" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filter: This specifies the filter in the form of a key value pair that can be used specifying additional criteria for enumeration. This is applicable only when the LogicalGroupNode is of either ActiveServerV4LogicalGroupNode or ActiveServerV6LogicalGroupNode and MUST NOT be specified otherwise.

LogicalGroupNode: This specifies the logical group node for which the data meeting the specified criteria has to be enumerated.

2.2.4.285 LogicalGroupDataForRootAlternateItemsEnumerationParameters

The LogicalGroupDataForRootAlternateItemsEnumerationParameters complex type specifies the criteria for enumerating the data that will map to the specified logical group.

```
<xs:complexType name="LogicalGroupDataForRootAlternateItemsEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
```


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```
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
        <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
type="ipam:LogicalGroup" />
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filter: This specifies the filter in the form of a key value pair that can be used specifying additional criteria for enumeration. This is applicable only when the LogicalGroupNode is of either ActiveServerV4LogicalGroupNode or ActiveServerV6LogicalGroupNode and MUST NOT be specified otherwise.

LogicalGroup: This specifies the logical group for which the mapping data is to be enumerated.

LogicalGroupType: This MUST be either LogicalGroupType.Range, LogicalGroupType.IPAddress, or LogicalGroupType.ActiveServer.

2.2.4.286 LogicalGroupDataUnmappedItemsEnumerationParameters

The LogicalGroupDataUnmappedItemsEnumerationParameters complex type specifies the criteria used to enumerate the data that do not map to a specified logical group.

```
<xs:complexType name="LogicalGroupDataUnmappedItemsEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
        <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
type="ipam:LogicalGroup" />
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filter: This specifies the filter in the form of a key value pair that can be used specifying additional criteria for enumeration. This is applicable only when the LogicalGroupNode is of either ActiveServerV4LogicalGroupNode or ActiveServerV6LogicalGroupNode and MUST NOT be specified otherwise.

LogicalGroup: This specifies the logical group for which the data that are not mapping data has to be enumerated.

LogicalGroupType: This MUST be either LogicalGroupType.Range, LogicalGroupType.IPAddress, or LogicalGroupType.ActiveServer.

2.2.4.287 LogicalGroupField

The LogicalGroupField complex type specifies one level of the multivalued custom field that forms the logical group hierarchy.

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```
<xs:complexType name="LogicalGroupField">
  <xs:sequence>
    <xs:element minOccurs="0" name="CustomFieldName" nillable="true" type="xsd:string" />
    <xs:element minOccurs="0" name="CustomFieldRecordId" nillable="true" type="xsd:long" />
    <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
  </xs:sequence>
</xs:complexType>
```

CustomFieldName: This specifies the name of the custom field that forms a particular level in the logical group hierarchy.

CustomFieldRecordId: This specifies the RecordId of the custom field that forms a particular level in the logical group hierarchy.

RecordId: This specifies a unique identifier for the data in the IPAM data store.

2.2.4.288 LogicalGroupNode

The LogicalGroupNode complex type specifies the actual custom field values that form the criteria for the data to be satisfied to match at a particular level in the logical group hierarchy.

```
<xs:complexType name="LogicalGroupNode">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AncestorNodes" nillable="true"
type="ipam:ArrayOfLogicalGroupNode" />
        <xs:element minOccurs="0" name="CustomFieldRecordId" nillable="true" type="xsd:long"
/>
        <xs:element minOccurs="0" name="LogicalGroupRecordId" nillable="true" type="xsd:long"
/>
        <xs:element minOccurs="0" name="NodeLevel" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="NodeValue" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AncestorNodes: This is an array of logical group nodes that form the hierarchy of the criteria before the level specified by the LogicalGroupNode.

CustomFieldRecordId: This specifies the RecordId of the custom field that forms the current level in the logical group hierarchy.

LogicalGroupRecordId: This specifies the RecordId of the logical group to which the LogicalGroupNode belongs to.

NodeLevel: This specifies the RecordId of the LogicalGroupField specifying the current level in the LogicalGroup.Fields that forms the logical group hierarchy.

NodeValue: The value for the custom field specified by CustomFieldRecordId that forms the criteria for the logical group node along with the criteria specified by the ancestor nodes.

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2.2.4.289 LogicalGroupNodeChildrenEnumerationParameters

The LogicalGroupNodeChildrenEnumerationParameters complex type specifies the criteria to be used for enumerating the logical group nodes that form the next level of logical group nodes in a logical group hierarchy.

```
<xs:complexType name="LogicalGroupNodeChildrenEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="ParentLogicalGroupNode" nillable="true"
type="ipam:LogicalGroupNode" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ParentLogicalGroupNode: This specifies the logical group node for which the next level in the logical group hierarchy needs to be enumerated.

2.2.4.290 LogicalGroupNodeRootEnumerationParameters

The LogicalGroupNodeRootEnumerationParameters complex type specifies the criteria for enumerating the LogicalGroupNode that form the first level of LogicalGroupHierarchy.

```
<xs:complexType name="LogicalGroupNodeRootEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
type="ipam:LogicalGroup" />
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

LogicalGroup: This specifies the logical group for which the logical group nodes that form the first level of hierarchy needs to be enumerated.

LogicalGroupType: This MUST be either LogicalGroupType.Range, LogicalGroupType.IPAddress, or LogicalGroupType.ActiveServer.

2.2.4.291 LogicalGroupsEnumerationParameters

The LogicalGroupsEnumerationParameters complex type specifies the criteria for enumerating the logical groups from the IPAM data store.

```
<xs:complexType name="LogicalGroupsEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="LogicalGroupName" nillable="true" type="xsd:string"
/>
```


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```
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the data that needs to be enumerated by the logical group. Based on this, the **LogicalGroup** enumerated for the address family Internet will be ActiveServerV4LogicalGroup, IpamIPv4AddressLogicalGroup, or IPv4RangeLogicalGroup, based on the logical group type. Similarly, the **LogicalGroup** enumerated for the address family InternetV6 will be ActiveServerV6LogicalGroup, IpamIPv6AddressLogicalGroup, or IPv6RangeLogicalGroup based on the logical group type.

LogicalGroupName: This specifies the logical group name if a specific logical group name has to be enumerated.

LogicalGroupType: This specifies the type of the logical group that needs to be enumerated.

2.2.4.292 MACAddress

The MACAddress complex type is used to specify the MAC address.

```
<xs:complexType name="MACAddress">
  <xs:sequence>
    <xs:element minOccurs="0" name="Address" nillable="true" type="xsd:base64Binary" />
  </xs:sequence>
</xs:complexType>
```

Address: This is a binary value specific to the MAC address.

2.2.4.293 MovePolicyProcessingOrderParameters

The MovePolicyProcessingOrderParameters complex type allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is MovePolicyProcessingOrder and associates them to an ipam:DhcpPolicyV4 policy and an ipam:PolicyProcessingOrderDirection.

```
<xs:complexType name="MovePolicyProcessingOrderParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Direction" type="ipam:PolicyProcessingOrderDirection"
/>
        <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Direction: This is of type ipam:PolicyProcessingOrderDirection and indicates whether the policy should be moved up or down in the processing order.

Policy: This is of type ipam:DhcpPolicyV4 and is the policy whose processing order is to be modified.

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2.2.4.294 OptionDefinitionDataFormatter

The OptionDefinitionDataFormatter allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name, vendor class name, and the associated option ID.

```
<xs:complexType name="OptionDefinitionDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OptionId: This is of type int and identifies the DHCP option uniquely.

ServerName: This is of type string and represents the name of the DHCP server where the option is configured.

VendorClassName: This is of type string and represents the name of the vendor class associated with the option on the DHCP server.

2.2.4.295 PropertiesCouldNotBeValidatedIpamExceptionData

The PropertiesCouldNotBeValidatedIpamExceptionData complex type allows extended attributes on an ipam: IpamExceptionData type. It creates objects whose IpamExceptionId is "IpamApiValidationFailure".

```
<xs:complexType name="PropertiesCouldNotBeValidatedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="PropertiesNotValidated" nillable="true"
type="serarr:ArrayOfstring" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PropertiesNotValidated: This is an array of strings that identifies the properties that failed to validate.

2.2.4.296 ProviderAddressSpace

The ProviderAddressSpace complex type extends the complex type AddressSpace. A particular Provider address space contains provider or fabric/physical networks on top of which virtual networks can be built.

```
<xs:complexType name="ProviderAddressSpace">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:AddressSpace">
```


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```
      <xs:sequence>
        <xs:element minOccurs="0" name="IsDefault" type="xsd:boolean" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

IsDefault: When set to true, this parameter specifies that the given provider address space is the built-in, default provider address space. In IPAM, an end user cannot create a default Provider address space.

2.2.4.297 RemoveScopesFromSuperscopeParameters

The RemoveScopesFromSuperscopeParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is RemoveScopesFromSuperscope and associates them to a list of DHCP scope IDs upon which this operation is to be performed.

```
<xs:complexType name="RemoveScopesFromSuperscopeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ScopeIds: This represents RecordIds of DHCP scopes to be removed from a superscope.

2.2.4.298 RenameSuperscopeParameters

The RenameSuperscopeParameters complex type allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is RenameSuperscope and associates them to a DhcpSuperscopeV4 that is to be renamed with the specified name.

```
<xs:complexType name="RenameSuperscopeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="NewName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Superscope" nillable="true"
type="ipam:DhcpSuperscopeV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

NewName: This is a string that represents the new name for a superscope.

Superscope: This is of type ipam:DhcpSuperscopeV4 and identifies the superscope to be renamed.

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2.2.4.299 ReplicateRelationDataFormatter

The ReplicateRelationDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name from which the replication is initiated and the relationship name.

```
<xs:complexType name="ReplicateRelationDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="RelationName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

RelationName: This is a string that indicates the DHCP failover relationship on which the replication is performed.

ServerName: This is a string that indicates the name of the DHCP server from which the replication was initiated.

2.2.4.300 ReplicateRelationParameters

The ReplicateRelationParameters complex type allows extended attributes on an ipam: IpamOperationWithProgressParameters type. It creates objects whose OperationId is ReplicateRelation and associates them to an ipam:DhcpFailover object.

```
<xs:complexType name="ReplicateRelationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="FailoverRelation" nillable="true"
type="ipam:DhcpFailover" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

FailoverRelation: This is of type ipam:DhcpFailover and represents the DHCP failover relationship to be replicated.

2.2.4.301 ReplicateScopeParameters

The ReplicateScopeParameters complex type allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is ReplicateScope and associates them to a list of ipam:DhcpScope objects.

```
<xs:complexType name="ReplicateScopeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Scopes" nillable="true" type="ipam:ArrayOfDhcpScope"
/>
```


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```
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Scopes: This is of type ipam:ArrayOfDhcpScope and indicates the DHCP scopes whose configuration is replicated to their failover partner.

2.2.4.302 ReplicateScopesDataFormatter

The ReplicateScopesDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name from which the replication is initiated and the scopes in the server that are to be replicated.

```
<xs:complexType name="ReplicateScopesDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="scopeListString" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerName: This is a string that represents the name of the DHCP server from which replication is initiated.

scopeListString: This is a string that represents the DHCP scopes whose configuration is replicated to their failover partner.

2.2.4.303 ReplicateServerDataFormatter

The ReplicateServerDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name from which the replication is performed.

```
<xs:complexType name="ReplicateServerDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerName: This is a string that represents the name of the DHCP server from which replication is initiated to its partner servers for the scopes that are part of a failover relationship.

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2.2.4.304 ReplicateServerParameters

The ReplicateServerParameters complex type allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is ReplicateServer and associates them to an ipam:DhcpServerV4 object.

```
<xs:complexType name="ReplicateServerParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DhcpServerV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Server: This is of type ipam:DhcpServerV4 and represents the DHCP server from which replication is initiated to its partner servers for the scopes that are part of a failover relationship.

2.2.4.305 ReservationDataFormatter

The ReservationDataFormatter complex type is used to format the fields of a DHCP reservation into a string that is used to display the result of operations. The string is formatted such that the DHCP reservation is identifiable uniquely.

```
<xs:complexType name="ReservationDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ReservationAddress" nillable="true"
type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ReservationAddress: This specifies the IP address corresponding to the reservation.

ScopeId: This specifies the DHCP scope to which the reservation belongs.

ServerName: This specifies the name of the DHCP server to which the DHCP scope belongs.

2.2.4.306 ReservationOptionDataFormatter

The ReservationOptionDataFormatter complex type is used to format the fields of a DHCP option corresponding to a DHCP reservation into a string used to display the result of operations. The string is formatted such that the DHCP option and reservation are identifiable uniquely.

```
<xs:complexType name="ReservationOptionDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
```


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```
        <xs:element minOccurs="0" name="ReservationAddress" nillable="true"
type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="UserClassName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OptionId: This specifies the unique identifier of the DHCP option.

ReservationAddress: This specifies the IP address corresponding to the reservation.

ScopeId: This specifies the DHCP scope to which the reservation belongs.

ServerName: This specifies the name of the DHCP server to which the DHCP scope belongs.

UserClassName: This specifies the name of the user class.

VendorClassName: This specifies the name of the vendor class.

2.2.4.307 ResetConfigSyncStatusDataFormatter

The ResetConfigSyncStatusDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the list of DhcpScope objects' scope IDs for which this reset is applied.

```
<xs:complexType name="ResetConfigSyncStatusDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Scopes" nillable="true" type="ipam:ArrayOfDhcpScope"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Scopes: This is of type ipam:ArrayOfDhcpScope and represents the DHCP scopes whose config sync status has been cleared.

2.2.4.308 ResetConfigSyncStatusParameters

The ResetConfigSyncStatusParameters complex type allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is ResetConfigSyncStatus and associates them to a list of ipam:DhcpScope objects on which this operation is to be performed.

```
<xs:complexType name="ResetConfigSyncStatusParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
```


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```
        <xs:element minOccurs="0" name="Scopes" nillable="true" type="ipam:ArrayOfDhcpScope"
/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Scopes: This is of type ipam:ArrayOfDhcpScope and represents the DHCP scopes whose config sync status is to be cleared.

2.2.4.309 ScopeDataFormatter

The ScopeDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name and the scope ID of the relevant scope.

```
<xs:complexType name="ScopeDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ScopeId: This represents the DHCP scope in IP address format that includes the start IP address of the DHCP scope and its subnet mask.

ServerName: This is a string that represents the name of the DHCP server on which the DHCP scope is present.

2.2.4.310 ScopeOptionDataFormatter

The ScopeOptionDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name, scope ID, vendor class name, user class name, and associated optionID.

```
<xs:complexType name="ScopeOptionDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="UserClassName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OptionId: This is of type int and uniquely identifies the DHCP option.

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ScopeId: This represents the DHCP scope in IP address format.

ServerName: This is of type string and represents the name of the DHCP server to which the scope belongs.

UserClassName: This is of type string and represents the name of the user class associated with the DHCP option.

VendorClassName: This is of type string and represents the name of the vendor class associated with the DHCP option.

2.2.4.311 ScopePolicyDataFormatter

The ScopePolicyDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name, scope ID and the policy name.

```
<xs:complexType name="ScopePolicyDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PolicyName: This is a string that represents the name of the DHCP scope policy.

ScopeId: This represents the DHCP scope in IP Address format.

ServerName: This is of type string and represents the name of the DHCP server to which the scope belongs.

2.2.4.312 ScopePolicyIpRangeDataFormatter

The ScopePolicyIpRangeDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the policy name, server name, scope ID, and the policy range.

```
<xs:complexType name="ScopePolicyIpRangeDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="PolicyRange" nillable="true"
type="ipam:DhcpPolicyRangeV4" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PolicyName: This is a string that represents the name of the DHCP scope policy.

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PolicyRange: This is of type DhcpPolicyRangeV4 and represents the range associated with the policy.

ScopeId: This represents the DHCP scope in IP Address format.

ServerName: This is of type string and represents the name of the DHCP server to which the scope belongs.

2.2.4.313 ScopePolicyOptionDataFormatter

The ScopePolicyOptionDataFormatter complex type allows extended attributes on an ipam: IpamObject type. It creates formatted strings with data about the server name, scope id, vendor class name, policy name, and the associated option ID.

```
<xs:complexType name="ScopePolicyOptionDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
        <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OptionId: This is of type int and identifies the DHCP option uniquely.

PolicyName: This is a string that represents the name of the policy.

ScopeId: This represents the DHCP scope in IP address format, that is, the DHCP scope's start IP address and its subnet mask.

ServerName: This is of type string and represents the name of the DHCP server where the option is configured.

VendorClassName: This is of type string and represents the name of the vendor class associated with the DHCP option.

2.2.4.314 serarr:ArrayOfanyType

The serarr:ArrayOfanyType complex type specifies an array whose elements can be of any type.

```
<xs:complexType name="ArrayOfanyType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="anyType" nillable="true"
type="xsd:anyType" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.315 serarr:ArrayOfint

The serarr:ArrayOfint complex type specifies an array whose elements are of type int.

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```
<xs:complexType name="ArrayOfint">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="int" type="xsd:int" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.316 serarr:ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz

The serarr:ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz complex type specifies an array of key value pairs where the key of the element has the DnsReverseLookupZoneFilterCriteria and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique, i.e. no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Key" type="ipam:DnsReverseLookupZoneFilterCriteria" />
          <xs:element name="Value" nillable="true" type="xsd:anyType" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

2.2.4.317 serarr:ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz

The serarr:ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz complex type specifies an array of key value pairs where the key of the element has the DnsZoneFilterCriteria and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique i.e. no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz">
      <xs:complexType>
        <xs:sequence>
```


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```
          <xs:element name="Key" type="ipam:DnsZoneFilterCriteria" />
          <xs:element name="Value" nillable="true" type="xsd:anyType" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

2.2.4.318 serarr:ArrayOfKeyValueOfintanyType

The serarr:ArrayOfKeyValueOfintanyType complex type specifies an array of key value pairs where the key of the element has an integer and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique, i.e. no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOfintanyType">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValueOfintanyType">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Key" type="xsd:int" />
          <xs:element name="Value" nillable="true" type="xsd:anyType" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

2.2.4.319 serarr:ArrayOfKeyValueOfIPBlockDataFormatterIpamException0cupfWA8

The serarr:ArrayOfKeyValueOfIPBlockDataFormatterIpamException0cupfWA8 complex type specifies an array of key value pairs where the key of the element is of type ipam:IPBlockDataFormatter and the value of the element is of type ipam1:IpamException. The keys in the array MUST be unique; that is, no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOfIPBlockDataFormatterIpamException0cupfWA8">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfIPBlockDataFormatterIpamException0cupfWA8">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Key" nillable="true" type="ipam:IPBlockDataFormatter" />
```


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```
          <xs:element name="Value" nillable="true" type="ipam1:IpamException" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

2.2.4.320 serarr:ArrayOfKeyValueOfIPRangeDataFormatterIpamException0cupfWA8

The serarr:ArrayOfKeyValueOfIPRangeDataFormatterIpamException0cupfWA8 complex type specifies an array of key value pairs where the key of the element is of type ipam:IPRangeDataFormatter and the value of the element is of type ipam1:IpamException. The keys in the array MUST be unique; that is, no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOfIPRangeDataFormatterIpamException0cupfWA8">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfIPRangeDataFormatterIpamException0cupfWA8">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Key" nillable="true" type="ipam:IPRangeDataFormatter" />
          <xs:element name="Value" nillable="true" type="ipam1:IpamException" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
```

2.2.4.321 serarr:ArrayOfKeyValueOflongDhcpScopem1ahUJFx

The serarr:ArrayOfKeyValueOflongDhcpScopem1ahUJFx complex type specifies an array of key value pairs where the key of the element is a record identifier and the value of the element is the DhcpScope instance having the record identifier specified in the key. The keys in the array MUST be unique so that no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOflongDhcpScopem1ahUJFx">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValueOflongDhcpScopem1ahUJFx">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Key" type="xsd:long" />
          <xs:element name="Value" nillable="true" type="ipam:DhcpScope" />
        </xs:sequence>
```


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```
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

2.2.4.322 serarr:ArrayOfKeyValueOflongIpamExceptionmhTjmZB3

The serarr:ArrayOfKeyValueOflongIpamExceptionmhTjmZB3 complex type specifies an array of key value pairs where the key of the element is a record identifier and the value of the element is the IpamException instance having the record identifier specified in the key. The keys in the array MUST be unique so that no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOflongIpamExceptionmhTjmZB3">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOflongIpamExceptionmhTjmZB3">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Key" type="xsd:long" />
          <xs:element name="Value" nillable="true" type="ipam1:IpamException" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

2.2.4.323 serarr:ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz

The serarr:ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz complex type specifies an array of key value pair where the key of the element has the ServerInfoGetServerFilter type and the value of the element can be any value appropriate for the key specified. The keys in the array MUST be unique; that is, no two elements in the array can have the same key.

```
<xs:complexType name="ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz">
  <xs:annotation>
    <xs:appinfo>
      <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfServerInfoGetServerFilteranyType2zwQHvQz">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Key" type="ipam:ServerInfoGetServerFilter" />
          <xs:element name="Value" nillable="true" type="xsd:anyType" />
        </xs:sequence>
      </xs:complexType>
```


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```
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

2.2.4.324 serarr:ArrayOflong

The serarr:ArrayOflong complex type specifies an array of elements of type xsd:long.

```
<xs:complexType name="ArrayOflong">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="long" type="xsd:long" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.325 serarr:ArrayOfstring

The serarr:ArrayOfstring complex type specifies an array of elements of type xsd:string.

```
<xs:complexType name="ArrayOfstring">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="xsd:string" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.326 serarr:ArrayOfunsignedByte

The serarr:ArrayOfunsignedByte complex type specifies an array of elements of type xsd:unsignedByte.

```
<xs:complexType name="ArrayOfunsignedByte">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="unsignedByte"
type="xsd:unsignedByte" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.327 serarr:ArrayOfunsignedShort

The serarr:ArrayOfunsignedShort complex type specifies an array of elements of type xsd:unsignedShort.

```
<xs:complexType name="ArrayOfunsignedShort">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="unsignedShort"
type="xsd:unsignedShort" />
  </xs:sequence>
</xs:complexType>
```


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2.2.4.328 ServerDataFormatter

The ServerDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name.

```
<xs:complexType name="ServerDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerName: This is of type string and represents the name of the DHCP server.

2.2.4.329 ServerInfo

The ServerInfo complex type specifies the information pertaining to the server instances in the IPAM data store.

```
<xs:complexType name="ServerInfo">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ADDomain" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ADDomainRecordId" type="xsd:int" />
        <xs:element minOccurs="0" name="ConfigurationRetrievalFlag"
type="ipam:ServerInfoConfigRetrievalStatus" />
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Domain" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IPAddresses" nillable="true"
type="sysnet:ArrayOfIPAddress" />
        <xs:element minOccurs="0" name="LastModified" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="ManagementStatus" type="ipam:ManagementStatus" />
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="NewFlag" type="ipam:ServerInfoNewFlag" />
        <xs:element minOccurs="0" name="OSName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="OSVersion" type="xsd:decimal" />
        <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="SamAccountName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerCustomDataCollection" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
        <xs:element minOccurs="0" name="ServerGuid" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerRoleCollection" nillable="true"
type="ipam:ArrayOfServerRole" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ADDomain: This specifies the **Active Directory domain** that the server instance belongs to.

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ADDomainRecordId: This specifies the record identifier of the domain information in the ADM_DiscoveryConfigTable.

ConfigurationRetrievalFlag: This flag specifies the status of the data collection from the server by the IPAM task.

Description: This specifies the description that is associated with the server instance. The length of this element MUST NOT exceed 1024 characters.

Domain: This specifies the name of the domain to which the server instance is joined to. The length of this element MUST NOT exceed 255 characters.

IPAddresses: This specifies the list of IP addresses that are registered with the DNS for the server instance.

LastModified: This specifies the time stamp when the server instance information was last modified.

ManagementStatus: This specifies whether the server instance is enabled for management through the IPAM server or not.

Name: This specifies the name of the server instance. The length of this element MUST NOT exceed 63 characters.

NewFlag: This specifies the new or modified flag associated with the server instance.

OSName: This specifies the name of the OS running on the server instance. The length of this element MUST NOT exceed 255 characters.

OSVersion: This specifies the version of the OS running on the server instance.

Owner: This specifies the owner of the server instance. The length of this element MUST NOT exceed 255 characters.

RecordId: This specifies the unique identifier for the data in the IPAM data store.

SamAccountName: This specifies the account name of the server in the **security account manager (SAM) built-in database** of the domain.

ServerCustomDataCollection: This specifies the list of custom field values associated with the server instance.

ServerGuid: This specifies the GUID associated with the server that uniquely identifies the server in the domain. The length of this element MUST NOT exceed 38 characters.

ServerRoleCollection: This specifies the collection of server role instances associated with the server. For example, if the DHCP and DNS server roles are installed on the same server instance, this collection will have 2 entries – one corresponding to each role.

2.2.4.330 ServerInfoEnumerationParameters

The ServerInfoEnumerationParameters complex type specifies the criteria to be used for enumerating the server instances from the IPAM data store.

```
<xs:complexType name="ServerInfoEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
```


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```
      <xs:sequence>
        <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Filter: This specifies the key value pair specifying the filter condition to be applied for enumerating the server instances.

2.2.4.331 ServerOptionDataFormatter

The ServerOptionDataFormatter allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name, vendor class name, user class name and option ID.

```
<xs:complexType name="ServerOptionDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="UserClassName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OptionId: This is of type int and identifies the DHCP option uniquely.

ServerName: This is of type string and represents the name of the DHCP server.

UserClassName: This is of type string and represents the name of the user class associated with the DHCP option.

VendorClassName: This is of type string and represents the name of the vendor class associated with the DHCP option.

2.2.4.332 ServerPolicyDataFormatter

The ServerPolicyDataFormatter allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name and policy name.

```
<xs:complexType name="ServerPolicyDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

PolicyName: This is a string that represents the name of the **DHCP policy**.

ServerName: This is of type string and represents the name of the DHCP server.

2.2.4.333 ServerPolicyOptionDataFormatter

The ServerPolicyOptionDataFormatter complex type allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name, vendor class name, policy name, and the associated option ID.

```
<xs:complexType name="ServerPolicyOptionDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
        <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

OptionId: This is of type int and uniquely identifies the DHCP option.

PolicyName: This is a string that represents the name of the policy.

ServerName: This is of type string and represents the name of the DHCP server on which the option is configured.

VendorClassName: This is of type string and represents the name of the vendor class associated with the DHCP option.

2.2.4.334 ServerRole

The ServerRole complex type specifies the common access status information pertaining to the individual server roles.

```
<xs:complexType name="ServerRole">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="AuditFileAccessStatus"
type="ipam:ServerRoleAuditFileAccess" />
        <xs:element minOccurs="0" name="EventViewerAccessStatus"
type="ipam:ServerRoleEventViewerAccess" />
        <xs:element minOccurs="0" name="LastRefreshTime" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="ParentServer" nillable="true" type="ipam:ServerInfo"
/>
        <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="RpcAccessStatus" type="ipam:ServerRoleRpcAccess" />
        <xs:element minOccurs="0" name="ServerRoleFlag" type="ipam:ServerRoleType" />
        <xs:element minOccurs="0" name="ServerRoleInclusionStatus" type="xsd:boolean" />
```


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```
        <xs:element minOccurs="0" name="ServiceStatus" type="ipam:ServiceRunningStatus" />
        <xs:element minOccurs="0" name="ServiceStatusModifiedTime" nillable="true"
type="xsd:dateTime" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AuditFileAccessStatus: This is applicable only for ServerRoleType.Dhcp. This specifies the access status of the audit log files from the DHCP server instance by the IPAM server. For instances with other ServerRoleType values, this MUST be set to ServerRoleAuditFileAccessStatus.NotApplicable.

EventViewerAccessStatus: This is applicable for all the server roles (DHCP, DNS, NPS, and DC). This specifies the status of the **event log** access to these server role instances by the IPAM server.

LastRefreshTime: This specifies the time at which the access statuses were last updated.

ParentServer: This specifies the ServerInfo instance to which the role is associated with.

RecordId: This is a unique identifier for the data in the IPAM data store.

RpcAccessStatus: This is applicable only for server role instances with ServerRoleType Dhcp or Dns. This specifies the access status of the RPC endpoint specific to the server role.

ServerRoleFlag: This identifies the type of server role the instance represents.

ServerRoleInclusionStatus: This specifies whether the role instance on the server instance is enabled for management or not.

ServerStatus: This is applicable for server role instances with ServerRoleType of DHCP or DNS. This specifies the status of the services for the roles.

ServiceStatusModifiedTime: The time at which the ServiceStatus was last modified.

2.2.4.335 ServerRoleDc

The ServerRoleDc complex type allows the extension of attributes of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Dc.

```
<xs:complexType name="ServerRoleDc">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:ServerRole">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.336 ServerRoleDhcp

The ServerRoleDhcp complex type allows the extension of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Dhcp.

```
<xs:complexType name="ServerRoleDhcp">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:ServerRole">
```


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```
      <xs:sequence>
        <xs:element minOccurs="0" name="BackupPath" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DatabasePath" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="DhcpCommonInfoId" type="xsd:long" />
        <xs:element minOccurs="0" name="ServerVersion" nillable="true"
type="ipam:ServerRoleDhcp.Version" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

BackupPath: This specifies the backup file path for the database configured on the DHCP server instance.

DatabasePath: This specifies the database file path configured on the DHCP server instance.

DhcpCommonInfoId: This is the unique identifier for the data in the IPAM data store.

ServerVersion: This specifies the version information of the DHCP server role.

2.2.4.337 ServerRoleDhcp.Version

The ServerRoleDhcp.Version complex type specifies the version of the DHCP server role.

```
<xs:complexType name="ServerRoleDhcp.Version">
  <xs:sequence>
    <xs:element minOccurs="0" name="MajorVersion" type="xsd:unsignedInt" />
    <xs:element minOccurs="0" name="MinorVersion" type="xsd:unsignedInt" />
  </xs:sequence>
</xs:complexType>
```

MajorVersion: This specifies the major number of the version.

MinorVersion: This specifies the minor number of the version.

2.2.4.338 ServerRoleDns

The ServerRoleDns complex type allows the extension of attributes of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Dns.

```
<xs:complexType name="ServerRoleDns">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:ServerRole">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.339 ServerRoleNps

The ServerRoleNps complex type allows the extension of attributes of the ServerRole complex type. The ServerRoleFlag MUST be set to ServerRoleType.Nps.

```
<xs:complexType name="ServerRoleNps">
```


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```
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:ServerRole">
      <xs:sequence />
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

2.2.4.340 SetDhcpReservationCollectionParameters

The SetDhcpReservationCollectionParameters complex type specifies the reservation fields to be changed and the collection of reservations on which edit operations should be done for multi-edit of DHCP reservations.

```
<xs:complexType name="SetDhcpReservationCollectionParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Configuration" nillable="true"
type="ipam:DhcpReservationTemplateConfiguration" />
        <xs:element minOccurs="0" name="Family" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="ReservationRecordIds" nillable="true"
type="serarr:ArrayOflong" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Configuration: This parameter is of the type DhcpReservationTemplateConfiguration and specifies the reservation properties that need to be modified.

Family: This specifies the address family of the DHCP Reservation instances that are to be modified.

ReservationRecordId**s**: This specifies the collection of identifiers of reservations on which the configuration edit needs to be done.

2.2.4.341 SetDhcpReservationParameters

The SetDhcpReservationParameters complex type specifies the reservation whose configuration needs to be modified.

```
<xs:complexType name="SetDhcpReservationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Reservation" nillable="true"
type="ipam:DhcpReservation" />
        <xs:element minOccurs="0" name="scopeRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Reservation: This specifies the reservation on which the configuration edit is done.

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scopeRecordId: This is the identifier of the DHCP scope on which the DHCP reservation is to be modified.

2.2.4.342 SetSuperscopeActivationStatusParameters

The SetSuperscopeActivationStatusParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is SetSuperscopeActivationStatus. It associates a list of DhcpSuperscopeV4 objects to the activation status needed to be set on them.

```
<xs:complexType name="SetSuperscopeActivationStatusParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="ActivationStatus" type="xsd:boolean" />
        <xs:element minOccurs="0" name="Superscopes" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ActivationStatus: This is of type Boolean and indicates whether the scopes in the superscope are to be activated (if true) or deactivated (if false).

Superscopes: This is of type ipam:ArrayOfDhcpSuperscopeV4 and indicates the DHCP superscopes on which an activation/deactivation operation is to be performed.

2.2.4.343 SubnetLogicalGroupNodeRootEnumerationParameters

The SubnetLogicalGroupNodeRootEnumerationParameters complex type is used to specify the parameters for enumerating root level logical group nodes. Root level logical group nodes are the various values of the custom field that forms the root of the logical group hierarchy that is present on the subnet instances of the given family.

```
<xs:complexType name="SubnetLogicalGroupNodeRootEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="AddressSpaceId" type="xsd:long" />
        <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
type="ipam:LogicalGroup" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the IP subnet instances, which is used to get distinct values of root level custom field.

AddressSpaceId: This specifies the address space of the IP subnet, which is used to get distinct values of root level custom field.

LogicalGroup: This MUST be set to IPv4SubnetLogicalGroup or IPv6SubnetLogicalGroup.

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2.2.4.344 SubTaskInstance

The SubTaskInstance allows extended attributes on an ipam:IpamObject and ipam:INotifyPropertyChanged. These are used to break a task at a granular level so that they have a one-on-one correspondence with powershell commandlets that are used to execute them.

```
<xs:complexType name="SubTaskInstance">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="FailedCompletionStatus" nillable="true"
type="ipam1:IpamException" />
        <xs:element minOccurs="0" name="IsNonDeterministicProgress" type="xsd:boolean" />
        <xs:element minOccurs="0" name="ProgressStatusDescriptions" nillable="true"
type="xsd:string" />
        <xs:element minOccurs="0" name="SubTaskInstanceDetails" nillable="true"
type="ipam:IpamObject" />
        <xs:element minOccurs="0" name="SubTaskInstanceId" type="xsd:int" />
        <xs:element minOccurs="0" name="SubTaskName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="SubTaskStatus" type="ipam:SubTaskStatus" />
        <xs:element minOccurs="0" name="SubTaskUniqueId" type="xsd:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

FailedCompletionStatus: This is of type ipam:IpamException.

IsNonDeterministicProgress: It is of type bool.

ProgressStatusDescriptions: It is of type string and is used to describe the progress of the subtask.

SubTaskInstanceDetails: It is of type ipam:IpamObject and identifies the specific object on which the subtask is being performed.

SubTaskInstanceId: This is of type int and identifies the subtask instance.

SubTaskName: This is of type string and is used to identify the subtask instance.

SubTaskStatus: This of enum type ipam:SubTaskStatus and identifies the current status of the subtask.

SubTaskUniqueId: This is of type int and is used to identify the type of subtask being performed; it has a one-on-one correspondence with the powershell commandlet used.

2.2.4.345 SuperscopeV4DataFormatter

The SuperscopeV4DataFormatter allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name and superscope name.

```
<xs:complexType name="SuperscopeV4DataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="SuperscopeName" nillable="true" type="xsd:string" />
```


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```
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerName: This is a string that represents the name of the DHCP server.

SuperscopeName: This is a string that represents the name of the superscope.

2.2.4.346 sys:ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S

The sys:ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S complex type specifies an array of pairs of two values of two custom fields.

```
<xs:complexType name="ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S" nillable="true"
type="sys:TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S" />
  </xs:sequence>
</xs:complexType>
```

TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S: This specifies a pair of values of two custom fields.

2.2.4.347 sys:ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz

The sys:ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz complex type specifies an array of filters that are to be applied while enumerating address space data. Each filter is a key value pair wherein the key specifies a filter type that is to be applied and the value specifies the value of the filter criteria.

```
<xs:complexType name="ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetAddressSpaceFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetAddressSpaceFilteranyType2zwQHvQz" />
  </xs:sequence>
</xs:complexType>
```

TupleOfGetAddressSpaceFilteranyType2zwQHvQz: This specifies a filter as a key value pair of filter criteria and the associated criteria value.

2.2.4.348 sys:ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz

The sys:ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz complex type specifies an array of filters that are to be applied while enumerating IP address data. Each filter is a key value pair wherein the key specifies a filter type that is to be applied and the value specifies the value of the filter criteria.

```
<xs:complexType name="ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz">
  <xs:sequence>
```


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```
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetIpamIPAddressFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetIpamIPAddressFilteranyType2zwQHvQz" />
  </xs:sequence>
</xs:complexType>
```

TupleOfGetIpamIPAddressFilteranyType2zwQHvQz: This specifies a filter as a key value pair of filter criteria and the associated criteria value.

2.2.4.349 sys:ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz

The sys:ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz complex type specifies an array of filters that are to be applied while enumerating IP range data. Each filter is a key value pair wherein the key specifies a filter type that is to be applied and the value specifies the value of the filter criteria.

```
<xs:complexType name="ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetIPRangeFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetIPRangeFilteranyType2zwQHvQz" />
  </xs:sequence>
</xs:complexType>
```

TupleOfGetIPRangeFilteranyType2zwQHvQz: This specifies a filter as a key value pair of filter criteria and the associated criteria value.

2.2.4.350 sys:ArrayOfTupleOfGetIPSubnetFilteranyType2zwQHvQz

The sys:ArrayOfTupleOfGetIPSubnetFilteranyType2zwQHvQzcomplex type specifies an array of filters that are to be applied while enumerating IP subnet data. Each filter is a key value pair wherein the key specifies the type filter that is to be applied and the value specifies the value of the filter criteria.

```
<xs:complexType name="ArrayOfTupleOfGetIPSubnetFilteranyType2zwQHvQz">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetIPSubnetFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetIPSubnetFilteranyType2zwQHvQz" />
  </xs:sequence>
</xs:complexType>
```

TupleOfGetIPSubnetFilteranyType2zwQHvQz: This specifies a filter as a key value pair of filter criteria and the associated criteria value.

2.2.4.351 sys:ArrayOfTupleOflongstringstring

The sys:ArrayOfTupleOflongstringstring complex type specifies an array of a tuple representing a combination of a long integer and two strings.

```
<xs:complexType name="ArrayOfTupleOflongstringstring">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="TupleOflongstringstring"
nillable="true" type="sys:TupleOflongstringstring" />
```


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```
  </xs:sequence>
</xs:complexType>
```

TupleOflongstringstring: This specifies a row containing a long integer and two string values.

2.2.4.352 sys:ArrayOfTupleOfstringstring

The ArrayOfTupleOfstringstring complex type specifies an array of tuples representing a pair of string values.

```
<xs:complexType name="ArrayOfTupleOfstringstring">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="TupleOfstringstring"
nillable="true" type="sys:TupleOfstringstring" />
  </xs:sequence>
</xs:complexType>
```

TupleOfstringstring: This specifies a tuple representing a pair of string values.

2.2.4.353 sys:Exception

The sys:Exception specifies the generic Exception complex type that is extended by the IpamException complex type for specifying the IPAM fault information. This is the serialized form of System.Exception class as described in [MS-NRTP] section 2.2.2.7.

2.2.4.354 sys:TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S

The sys:TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S complex type specifies a pair of custom field values.

```
<xs:complexType name="TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="CustomFieldValue" Namespace="http://Microsoft.Windows.Ipam"
/>
        <GenericParameter Name="CustomFieldValue" Namespace="http://Microsoft.Windows.Ipam"
/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="m_Item1" nillable="true" type="ipam:CustomFieldValue" />
    <xs:element name="m_Item2" nillable="true" type="ipam:CustomFieldValue" />
  </xs:sequence>
</xs:complexType>
```

CustomFieldValue: This specifies a value of a particular custom field from IPAM datastore.

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CustomFieldValue: This specifies a value of a particular custom field from IPAM datastore.

2.2.4.355 sys:TupleOfGetAddressSpaceFilteranyType2zwQHvQz

The sys:TupleOfGetAddressSpaceFilteranyType2zwQHvQz complex type specifies a key value pair wherein the **m_Item1** specifies an ipam:GetAddressSpaceFilter type specifying the type of filter that has to be applied with the value of the filter specified data specified in the **m_Item2** portion key value pair entry.

```
<xs:complexType name="TupleOfGetAddressSpaceFilteranyType2zwQHvQz">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="GetAddressSpaceFilter"
Namespace="http://Microsoft.Windows.Ipam" />
        <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="m_Item1" type="ipam:GetAddressSpaceFilter" />
    <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
  </xs:sequence>
</xs:complexType>
```

m_Item1: This specifies a filter key criteria as GetAddressSpaceFilter.

m_Item2: This specifies an optional value that should be satisfied to meet the filter criteria defined in m_Item1.

2.2.4.356 sys:TupleOfGetIpamIPAddressFilteranyType2zwQHvQz

The sys:TupleOfGetIpamIPAddressFilteranyType2zwQHvQz complex type specifies a key value pair in which **m_Item1** is an ipam:GetIpamIPAddressFilter type specifying the filter type to be applied with the value specified in **m_Item2**.

```
<xs:complexType name="TupleOfGetIpamIPAddressFilteranyType2zwQHvQz">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="GetIpamIPAddressFilter"
Namespace="http://Microsoft.Windows.Ipam" />
        <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="m_Item1" type="ipam:GetIpamIPAddressFilter" />
    <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
  </xs:sequence>
</xs:complexType>
```


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m_Item1: This specifies the filter key criteria as GetIpamIpAddressFilter.

m_Item2: This specifies an optional value that should be satisfied to meet the filter criteria defined in m_Item1.

2.2.4.357 sys:TupleOfGetIPRangeFilteranyType2zwQHvQz

The sys:TupleOfGetIPRangeFilteranyType2zwQHvQz complex type specifies a key value pair in which **m_Item1** is an ipam:GetIPRangeFilter type specifying the filter type to be applied with the value of the filter specified in **m_Item2**.

```
<xs:complexType name="TupleOfGetIPRangeFilteranyType2zwQHvQz">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="GetIPRangeFilter" Namespace="http://Microsoft.Windows.Ipam"
/>
        <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="m_Item1" type="ipam:GetIPRangeFilter" />
    <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
  </xs:sequence>
</xs:complexType>
```

m_Item1: This specifies the filter key criteria as GetIPRangeFilter.

m_Item2: This specifies an optional value that should be satisfied to meet the filter criteria defined in m_Item1.

2.2.4.358 sys:TupleOfGetIPSubnetFilteranyType2zwQHvQz

The sys:TupleOfGetIPSubnetFilteranyType2zwQHvQz complex type specifies a key value pair wherein **m_Item1** is an ipam:GetIPSubnetFilter type specifying the type of filter to be applied with the filter value specified in **m_Item2**.

```
<xs:complexType name="TupleOfGetIPSubnetFilteranyType2zwQHvQz">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="GetIPSubnetFilter" Namespace="http://Microsoft.Windows.Ipam"
/>
        <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="m_Item1" type="ipam:GetIPSubnetFilter" />
    <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
  </xs:sequence>
```


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```
</xs:complexType>
```

m_Item1: This specifies a filter key criteria as GetIPSubnetFilter.

m_Item2: This specifies an optional value that should be satisfied to meet the filter criteria defined in m_Item1.

2.2.4.359 sys:TupleOflongstringstring

The sys:TupleOflongstringstring complex type specifies a row containing a long integer and a pair of strings.

```
<xs:complexType name="TupleOflongstringstring">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="TupleOf{0}{1}{2}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
        <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
        <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="m_Item1" type="xsd:long" />
    <xs:element name="m_Item2" nillable="true" type="xsd:string" />
    <xs:element name="m_Item3" nillable="true" type="xsd:string" />
  </xs:sequence>
</xs:complexType>
```

m_Item1: Data represented as a long integer in the tuple. This MUST NOT be null.

m_Item2: Data represented as a string integer in the tuple. This MUST be set to null.

m_Item3: Data represented as a string integer in the tuple. This MUST be set to null.

2.2.4.360 sys:TupleOfstringstring

The sys:TupleOfstringstring complex type specifies a pair of string values.

```
<xs:complexType name="TupleOfstringstring">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
        <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="m_Item1" nillable="true" type="xsd:string" />
    <xs:element name="m_Item2" nillable="true" type="xsd:string" />
  </xs:sequence>
```


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```
</xs:complexType>
```

m_Item1: One of the string values that is part of the pair of string values represented by this tuple. This CAN be set to null.

m_Item2: The other string value that is part of the pair of string values represented by this tuple. This CAN be set to null.

2.2.4.361 sys:Version

The sys:Version complex type can be used to specify the version of a component or server.

```
<xs:complexType name="Version">
  <xs:sequence>
    <xs:element name="_Build" type="xsd:int" />
    <xs:element name="_Major" type="xsd:int" />
    <xs:element name="_Minor" type="xsd:int" />
    <xs:element name="_Revision" type="xsd:int" />
  </xs:sequence>
</xs:complexType>
```

_Build: The build number of the component or server.

_Major: The major number of the version of the component or server.

_Minor: The minor number of the version of the component or server.

_Revision: The revision number of the version of the component or server.

2.2.4.362 sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S

The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpExclusionRange data specified in the value portion key value pair entry.

```
<xs:complexType name="ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S"
type="sysgen:KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.363 sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S

The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpOption data specified in the value portion key value pair entry.

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```
<xs:complexType name="ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S"
type="sysgen:KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S" />       </xs:sequence>
</xs:complexType>
```

2.2.4.364 sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S

The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpOptionDefinition data specified in the value portion key value pair entry.

```
<xs:complexType
name="ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S">  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S"
type="sysgen:KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S" />
</xs:sequence>
</xs:complexType>
```

2.2.4.365 sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S

The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpUserClass data specified in the value portion key value pair entry.

```
<xs:complexType name="ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S"
type="sysgen:KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S" />  </xs:sequence>
</xs:complexType>
```

2.2.4.366 sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S

The sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S complex type specifies an array of key value pairs wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed with the DhcpVendorClass data specified in the value portion key value pair entry.

```
<xs:complexType name="ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S"
type="sysgen:KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S" />
  </xs:sequence>
```


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```
</xs:complexType>
```

2.2.4.367 sysgen:ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx

The sysgen:ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx complex type specifies an array of key value pairs wherein the key specifies the record identifier and the value specifies an AddressSpace object.

```
<xs:complexType name="ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOflongAddressSpacem1ahUJFx"
type="sysgen:KeyValuePairOflongAddressSpacem1ahUJFx" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.368 sysgen:ArrayOfKeyValuePairOflongArrayOfIPBlockm1ahUJFx

The sysgen:ArrayOfKeyValuePairOflongArrayOfIPBlockm1ahUJFx complex type specifies an array of key value pairs wherein the key specifies the record identifier and the value specifies an array of address block instances specifying the hierarchy of the address block corresponding to the record identifier.

```
<xs:complexType name="ArrayOfKeyValuePairOflongArrayOfIPBlockm1ahUJFx">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOflongArrayOfIPBlockm1ahUJFx"
type="sysgen:KeyValuePairOflongArrayOfIPBlockm1ahUJFx" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.369 sysgen:ArrayOfKeyValuePairOflongint

The sysgen:ArrayOfKeyValuePairOflongint complex type specifies an array of key value pairs wherein the key specifies a long integer and the value specifies an integer value.

```
<xs:complexType name="ArrayOfKeyValuePairOflongint">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValuePairOflongint"
type="sysgen:KeyValuePairOflongint" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.370 sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3

The sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3complex type specifies an array of key value pairs wherein the key specifies a long integer and the value specifies an IpamException.

```
<xs:complexType name="ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3">
  <xs:sequence>
```


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```
    <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOflongIpamExceptionmhTjmZB3"
type="sysgen:KeyValuePairOflongIpamExceptionmhTjmZB3" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.371 sysgen:KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S

The sysgen:KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpExclusionRange data specified in the value portion.

```
<xs:complexType name="KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
        <GenericParameter Name="DhcpExclusionRange" Namespace="http://Microsoft.Windows.Ipam"
/>
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="key" type="ipam:CollectionOperations" />
    <xs:element name="value" nillable="true" type="ipam:DhcpExclusionRange" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.372 sysgen:KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S

The sysgen:KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpOption data specified in the value portion.

```
<xs:complexType name="KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
        <GenericParameter Name="DhcpOption" Namespace="http://Microsoft.Windows.Ipam" />
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
```


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```
    <xs:element name="key" type="ipam:CollectionOperations" />
    <xs:element name="value" nillable="true" type="ipam:DhcpOption" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.373 sysgen:KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S

The sysgen:KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpOptionDefinition data specified in the value portion.

```
<xs:complexType name="KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
        <GenericParameter Name="DhcpOptionDefinition"
Namespace="http://Microsoft.Windows.Ipam" />
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="key" type="ipam:CollectionOperations" />
    <xs:element name="value" nillable="true" type="ipam:DhcpOptionDefinition" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.374 sysgen:KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S

The sysgen:KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpUserClass data specified in the value portion.

```
<xs:complexType name="KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
        <GenericParameter Name="DhcpUserClass" Namespace="http://Microsoft.Windows.Ipam" />
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="key" type="ipam:CollectionOperations" />
```


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```
    <xs:element name="value" nillable="true" type="ipam:DhcpUserClass" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.375 sysgen:KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S

The sysgen:KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S complex type specifies a key value pair wherein the key specifies a CollectionOperations type specifying the type of operation that has to be performed on the DhcpVendorClass data specified in the value portion.

```
<xs:complexType name="KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
        <GenericParameter Name="DhcpVendorClass" Namespace="http://Microsoft.Windows.Ipam" />
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="key" type="ipam:CollectionOperations" />
    <xs:element name="value" nillable="true" type="ipam:DhcpVendorClass" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.376 sysgen:KeyValuePairOflongAddressSpacem1ahUJFx

The sysgen:KeyValuePairOflongAddressSpacem1ahUJFx complex type specifies a key value pair wherein the key specifies a long type element and the value specifies an element of type Ipam:AddressSpace.

```
<xs:complexType name="KeyValuePairOflongAddressSpacem1ahUJFx">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
        <GenericParameter Name="AddressSpace" Namespace="http://Microsoft.Windows.Ipam" />
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="key" type="xsd:long" />
    <xs:element name="value" nillable="true" type="ipam:AddressSpace" />
  </xs:sequence>
</xs:complexType>
```


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key: This specifies the long integer which usually specifies the ID of the corresponding AddressSpace.

value: The AddressSpace object corresponding to the key.

2.2.4.377 sysgen:KeyValuePairOflongint

The sysgen:KeyValuePairOflongint complex type specifies a key value pair wherein the key specifies a long type element and the value specifies an int type element.

```
<xs:complexType name="KeyValuePairOflongint">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
        <GenericParameter Name="int" Namespace="http://www.w3.org/2001/XMLSchema" />
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="key" type="xsd:long" />
    <xs:element name="value" type="xsd:int" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.378 sysgen:KeyValuePairOflongIpamExceptionmhTjmZB3

The sysgen:KeyValuePairOflongIpamExceptionmhTjmZB3complex type specifies a key value pair wherein the key specifies a long type element and the value specifies an IpamException type element.

```
<xs:complexType name="KeyValuePairOflongIpamExceptionmhTjmZB3">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
        <GenericParameter Name="IpamException"
Namespace="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam" />
      </GenericType>
      <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
    </xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="key" type="xsd:long" />
    <xs:element name="value" nillable="true" type="ipam1:IpamException" />
  </xs:sequence>
</xs:complexType>
```


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2.2.4.379 sysnet:ArrayOfIPAddress

The sysnet:ArrayOfIPAddress complex type specifies an array of IPAddress complex type.

```
<xs:complexType name="ArrayOfIPAddress">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IPAddress" nillable="true"
type="sysnet:IPAddress" />
  </xs:sequence>
</xs:complexType>
```

2.2.4.380 sysnet:IPAddress

The sysnet:IPAddress specifies an IP address independent of the address family.

```
<xs:complexType name="IPAddress">
  <xs:sequence>
    <xs:element name="m_Address" type="xsd:long" />
    <xs:element name="m_Family" type="syssock:AddressFamily" />
    <xs:element name="m_HashCode" type="xsd:int" />
    <xs:element name="m_Numbers" nillable="true" type="serarr:ArrayOfunsignedShort" />
    <xs:element name="m_ScopeId" type="xsd:long" />
  </xs:sequence>
</xs:complexType>
```

m_Address: This specifies the address as a 4-byte integer. This is used to represent the IPv4 address.

m_Family: This specifies the address family of the address. The supported values for this are Internet and InternetV6.

m_HashCode: This is a reserved element and MUST be ignored.

m_Numbers: This specifies the bytes of the IP address represented as an array.

m_ScopeId: This specifies the scope identifier of the address (specifically when the address family is InternetV6).

2.2.4.381 TaskInfo

The TaskInfo complex type specifies the set of details that provide more information about IPAM tasks.

```
<xs:complexType name="TaskInfo">
  <xs:sequence>
    <xs:element minOccurs="0" name="LastRunTime" nillable="true" type="xsd:dateTime" />
    <xs:element minOccurs="0" name="NextRunTime" nillable="true" type="xsd:dateTime" />
    <xs:element minOccurs="0" name="State" type="ipam:IpamTaskState" />
    <xs:element minOccurs="0" name="Status" nillable="true" type="xsd:string" />
    <xs:element minOccurs="0" name="TaskType" type="ipam:IpamTaskType" />
    <xs:element minOccurs="0" name="Triggers" nillable="true" type="xsd:string" />
  </xs:sequence>
</xs:complexType>
```


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LastRunTime: This specifies the time at which the task was last run.

NextRunTime: This specifies the next runtime for the task.

State: This specifies the localized string representation of the Status.

Status: This specifies the status of the Task.

TaskType: This specifies the enumeration value to uniquely identify the IPAM task.

Triggers: This specifies the **trigger**s associated with the IPAM task.

2.2.4.382 UnmappedIpamIPAddressForLogicalGroupEnumerationParameters

The UnmappedIpamIPAddressForLogicalGroupEnumerationParameters complex type is used to specify the required parameters for enumerating the address instances that do not map to a specified logical group.

```
<xs:complexType name="UnmappedIpamIPAddressForLogicalGroupEnumerationParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:EnumerationParametersBase">
      <xs:sequence>
        <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="LogicalGroupId" type="xsd:long" />
        <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

AddressFamily: This specifies the address family of the address instances that are enumerated.

LogicalGroupId: This specifies the record identifier of the logical group for which the unmapped address instances are enumerated.

LogicalGroupType: This specifies the logical group type for which the unmapped address instances are enumerated. This MUST be LogicalGroupType.Range.

2.2.4.383 UpdateDhcpFilterParameters

The UpdateDhcpFilterParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdateDhcpFilter and associates them to an ipam:DhcpFilter that is to be updated.

```
<xs:complexType name="UpdateDhcpFilterParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Filter" nillable="true" type="ipam:DhcpFilter" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


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Filter: This is of type ipam:DhcpFilter and represents the data that is to be updated for the DHCP filter.

2.2.4.384 UpdateDhcpFiltersParameters

The UpdateDhcpFiltersParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdateDhcpFilters and associates them to the update parameters for a collection of DhcpFilter that are to be updated.

```
<xs:complexType name="UpdateDhcpFiltersParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="EditFields" type="ipam:DhcpFilterMultiEditFields" />
        <xs:element minOccurs="0" name="Filters" nillable="true"
type="ipam:ArrayOfDhcpFilter" />
        <xs:element minOccurs="0" name="IsAllow" type="xsd:boolean" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: This is a string that describes the filters to be updated.

EditFields: This is of enum type ipam:DhcpFilterMultiEditFields and defines which filter parameter is to be updated.

Filters: This is a collection of ipam:DhcpFilter and corresponds to the list of filters to be updated.

IsAllow: This is a bool and indicates whether the Allow flag should be set or not for the filters associated with this update.

2.2.4.385 UpdateDhcpScopeParameters

The UpdateDhcpScopeParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is EditDhcpScope and associates them to an ipam:DhcpScope.

```
<xs:complexType name="UpdateDhcpScopeParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Scope: This is of type ipam:DhcpScope and represents the configuration to be updated for the DHCP scope.

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2.2.4.386 UpdateDhcpServerParameters

The UpdateDhcpServerParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is EditDhcpServer and associates them to an ipam:DhcpServer.

```
<xs:complexType name="UpdateDhcpServerParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DhcpServer" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Server: This is of type ipam:DhcpServer and represents the configuration to be updated for the DHCP server.

2.2.4.387 UpdateIpamIPAddressParameters

The UpdateIpamIPAddressParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type.

```
<xs:complexType name="UpdateIpamIPAddressParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Address" nillable="true" type="ipam:IpamIPAddress" />
        <xs:element minOccurs="0" name="CreateDhcpReservation" type="xsd:boolean" />
        <xs:element minOccurs="0" name="CreateDnsRecord" type="xsd:boolean" />
        <xs:element minOccurs="0" name="OldAddress" nillable="true" type="ipam:IpamIPAddress"
/>
        <xs:element minOccurs="0" name="OverrideMBEAndSI" type="xsd:boolean" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Address: The iapm:IpamIPAddress object containing latest properties.

CreateDhcpReservation: This is a bool which identifies if a DHCP reservation is to be created.

CreateDnsRecord: This is a bool which identifies if a DNS records are to be created.

OldAddress: The iapm:IpamIPAddress object containing old IP address properties.

OverrideMBEAndSI: Specifies whether ManagedByEntity and ManagedByEntityValue fields are to be overridden.

2.2.4.388 UpdatePolicyParameters

The UpdatePolicyParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdatePolicy and associates them to an ipam:DhcpPolicyV4.

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```
<xs:complexType name="UpdatePolicyParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Policy: This is of type ipam:DhcpPolicyV4 and represents the configuration to be updated for the DHCP policy.

2.2.4.389 UpdatePolicyPropertiesParameters

The UpdatePolicyPropertiesParameters allows extended attributes on an ipam:IpamOperationWithProgressParameters type. It creates objects whose OperationId is UpdatePolicyProperty and associates them to a Collection of ipam:DhcpPolicyV4 and an ipam:DhcpPolicyPropertyUpdate object.

```
<xs:complexType name="UpdatePolicyPropertiesParameters">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamOperationWithProgressParameters">
      <xs:sequence>
        <xs:element minOccurs="0" name="Policies" nillable="true"
type="ipam:ArrayOfDhcpPolicyV4" />
        <xs:element minOccurs="0" name="Update" type="ipam:DhcpPolicyPropertyUpdate" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Policies: This is of type ipam:ArrayOfDhcpPolicyV4 and represents the policies to be updated.

Update: This is of type ipam:DhcpPolicyPropertyUpdate and represents whether the set of policies should be activated or deactivated.

2.2.4.390 UserAccessPolicy

The UserAccessPolicy allows extended attributes on an ipam:BaseIpamObject type.

```
<xs:complexType name="UserAccessPolicy">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IsUserAliasValid" nillable="true" type="xsd:boolean"
/>
        <xs:element minOccurs="0" name="PolicyDefinition" nillable="true"
type="ipam:ArrayOfAccessScopeToUserRoleMapping" />
        <xs:element minOccurs="0" name="PolicyId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="UserAlias" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="UserGroupId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="UserGroupSecurityIdentifierBytes" nillable="true"
type="xsd:base64Binary" />
```


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```
        <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: This is a string type that is used to describe the access policy.

IsUserAliasValid: This is a bool that identifies if the associated user alias is valid.

PolicyDefinition: It is an array of ipam:AccessScopeToUserRoleMapping objects that are part of this access policy instance.

PolicyId: It is a long int that uniquely identifies this access policy in the IPAM data store.

UserAlias: This is a string that corresponds to the user alias associated with this access policy.

UserGroupId: This is a long that corresponds to the user group ID of the associated user.

UserGroupSecurityIdentifierBytes: This is an array of bytes and represents the SID associated with the corresponding user or group. This is verified with the SID retrieved from the local machine when validating access policy users.

UserName: This is a string that represents the user name.

2.2.4.391 UserClassDataFormatter

The UserClassDataFormatter allows extended attributes on an ipam:IpamObject type. This presents the ServerName and UserClassName in a formatted string manner.

```
<xs:complexType name="UserClassDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="UserClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

ServerName: This is a string that represents the name of the DHCP server.

UserClassName: This is a string that represents the name of the user class.

2.2.4.392 UserRole

The UserRole allows extended attributes on an ipam:BaseIpamObject type.

```
<xs:complexType name="UserRole">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:BaseIpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="IsBuiltinRole" type="xsd:boolean" />
```


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```
        <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="Operations" nillable="true"
type="ipam:ArrayOfIpamAdminOperation" />
        <xs:element minOccurs="0" name="UserRoleID" nillable="true" type="xsd:long" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Description: This is a string that holds the description of the user role.

IsBuiltinRole: This is a bool that indicates if this instance of UserRole is built in or user input.

Name: This is a string that corresponds to the name of the user role.

Operations: This is an array of ipam:IpamAdminOperation objects that holds the operations allowed for this instance of UserRole.

UserRoleID: This is a long int that holds the reference in IPAM data store to this instance of the user role.

2.2.4.393 UsingExistingSchemaNotSupportedIpamExceptionData

The UsingExistingSchemaNotSupportedIpamExceptionData allows extended attributes on an ipam:IpamExceptionData type. It creates objects whose IpamExceptionId is IpamApiErrorUsingExistingSchemaNotSupported.

```
<xs:complexType name="UsingExistingSchemaNotSupportedIpamExceptionData">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamExceptionData">
      <xs:sequence>
        <xs:element minOccurs="0" name="DatabaseType" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

DatabaseType: This is a string that represents the type of database. This exception indicates that provisioning of the database is not allowed on the current schema of the IPAM server.

2.2.4.394 VendorClassDataFormatter

The VendorClassDataFormatter allows extended attributes on an ipam:IpamObject type. It creates formatted strings with data about the server name and vendor class name.

```
<xs:complexType name="VendorClassDataFormatter">
  <xs:complexContent mixed="false">
    <xs:extension base="ipam:IpamObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```


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```
</xs:complexType>
```

2.2.5 Simple Types

2.2.5.1 ADDomainConfigurationStatus

This simple type is an enumeration used to specify the discovery configuration status of a domain in the IPAM data store.

```
<xs:simpleType name="ADDomainConfigurationStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="NotConfigured" />
    <xs:enumeration value="Configured" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
NotConfigured	The domain instance is not configured for auto discovery.
Configured	The domain instance is configured for auto discovery.

2.2.5.2 AddressAssignment

This simple type is an enumeration used to specify the type of address assignment.

```
<xs:simpleType name="AddressAssignment">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Static" />
    <xs:enumeration value="Dynamic" />
    <xs:enumeration value="Auto" />
    <xs:enumeration value="VIP" />
    <xs:enumeration value="Reserved" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Static	The address assignment type is static.
Dynamic	The address assignment type is dynamic, i.e. using either DHCPv4 ([RFC2131]) or DHCPv6 ([RFC3315]) protocols.

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Value	Description
Auto	The address assignment type is using the stateless auto-configuration ([RFC4862]).
VIP	The address assignment is being done for virtual IP load balancing.
Reserved	The address assignment type specifies a reservation address or an address range.

2.2.5.3 AddressCategory

This simple type is an enumeration that is used to specify the address space to which an entity (such as IP address, IP address range, and so on) belongs.

```
<xs:simpleType name="AddressCategory">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Public" />
    <xs:enumeration value="Private" />
    <xs:enumeration value="GlobalIPv6Unicast" />
  </xs:restriction>
</xs:simpleType>
```

Value	Description
None	Unspecified or an invalid value.
Public	The address category is public address space ([IANA-IPV4]).
Private	The address category is private address space ([RFC1918]).
GlobalIPv6Unicast	The address category is IPv6 global unicast address space ([RFC4291]).

2.2.5.4 AddressType

This simple type is an enumeration that is used to specify the type of the IP address.

```
AddressType
<xs:simpleType name="AddressType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Public" />
    <xs:enumeration value="Private" />
    <xs:enumeration value="Unmapped" />
    <xs:enumeration value="GlobalIPv6Unicast" />
    <xs:enumeration value="All" />
  </xs:restriction>
</xs:simpleType>
```

Value	Description
None	Unspecified or an invalid value.
Public	The address type is public address space ([IANA-IPV4]).
Private	The address type is private address space ([RFC1918]).

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Value	Description
Unmapped	The address range is not mapped to any block.
GlobalIPv6Unicast	The address type is IPv6 global unicast address space ([RFC4291]).
All	All of above.

2.2.5.5 BuiltInCustomField

This simple type is an enumeration that is used to specify the identifier for the predefined custom field.

```
<xs:simpleType name="BuiltInCustomField">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Rir" />
    <xs:enumeration value="RegionLegacy" />
    <xs:enumeration value="CountryOrRegion" />
    <xs:enumeration value="TypeOfNetworks" />
    <xs:enumeration value="ADSite" />
    <xs:enumeration value="MicrosoftServerRole" />
    <xs:enumeration value="DeviceType" />
    <xs:enumeration value="ManagedBy" />
    <xs:enumeration value="ManagedByEntity" />
    <xs:enumeration value="IPAddressState" />
    <xs:enumeration value="IPAddressPoolName" />
    <xs:enumeration value="LogicalNetwork " />
    <xs:enumeration value="DnsSuffix " />
    <xs:enumeration value="NetworkSite" />
    <xs:enumeration value="VMNetwork" />
    <xs:enumeration value="Tenant" />
    <xs:enumeration value="Isolation" />
    <xs:enumeration value="Region" />
  </xs:restriction>
</xs:simpleType>
```

Value	Description
None	Unspecified or an invalid value.
Rir	The custom field that specifies the Regional Internet Registry (RIR) information. See [IANA-IPV4] for information on RIR.
Region	The custom field that specifies the region information as represented in previous versions of IPAM.
CountryOrRegion	The custom field that specifies the country or region information.
TypeOfNetworks	The custom field that specifies the type of network.
ADSite	The custom field that specifies the active directory **site**.
MicrosoftServerRole	The custom field that specifies the Microsoft server role.

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Value	Description
DeviceType	The custom field that specifies the device type.
ManagedBy	The custom field that is used to specify a management entity.
ManagedByEntity	The custom field that is used to specify a specific instance of a management entity.
IPAddressState	The custom field that is used to specify the address state (in-use or inactive).
IPAddressPoolName	The custom field that is used to specify the IP address pool information.
LogicalNetwork	The custom field that is used to specify the **logical network** information.
DnsSuffix	The custom field that is used to specify the DNS suffix.
NetworkSite	The custom field that is used to specify the **network site**.
VMNetwork	The custom field that is used to specify the virtualized network.
Tenant	The custom field that is used to specify the tenant.
Isolation	The custom field that is used to specify the network isolation technology used in virtualized networks, for example, IP Rewrite, NVGRE, VLAN, or VXLAN.
Region	The custom field that specifies the region information.

2.2.5.6 BuiltInLogicalGroup

This simple type is an enumeration that is used to specify the identifier for the predefined logical group.

```
<xs:simpleType name="BuiltInLogicalGroup">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="NetworkDevices" />
    <xs:enumeration value="ManagedBy" />
    <xs:enumeration value="VirtualizedProviderAddressSpace" />
  </xs:restriction>
</xs:simpleType>
```

Value	Description
None	Unspecified or an invalid value.
NetworkDevices	The logical group is a built-in logical group that can be used to arrange the IP address instances based on the value of the DeviceType custom field.
ManagedBy	The logical group is a built-in logical group that can be used to arrange data by the value of the ManagedBy and ManagedByEntity custom fields.
VirtualizedProviderAddressSpace	The logical group is a built-in logical group that can be used to arrange data by the value of the **VMNetwork** custom field.

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2.2.5.7 CollectionOperations

This simple type is an enumeration that specifies an operation against each option in actions such as **SetOptions** and **DeleteOptions** that take multiple options.

```
<xs:simpleType name="CollectionOperations">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Add" />
    <xs:enumeration value="Set" />
    <xs:enumeration value="Delete" />
    <xs:enumeration value="PartnerAdd" />
    <xs:enumeration value="PartnerSet" />
    <xs:enumeration value="PartnerDelete" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Add	The add operation has to be performed on the option.
Set	The set operation has to be done on the option.
Delete	The delete operation has to be performed on the option.
PartnerAdd	The add operation has to be performed for the option on the **partner DHCP server**.
PartnerSet	The set operation has to be performed for the option on the partner DHCP server.
PartnerDelete	The delete operation has to be performed for the option on the partner DHCP server.

2.2.5.8 CommonProperties

This simple type is an enumeration that specifies the identifier for all the common IPAM server properties.

```
<xs:simpleType name="CommonProperties">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="MaximumUtilizationThreshold" />
    <xs:enumeration value="MinimumUtilizationThreshold" />
    <xs:enumeration value="LastAddressUtilizationCollectionTaskRuntime" />
    <xs:enumeration value="GpoPrefix">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">5</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="DeploymentType">
      <xs:annotation>
        <xs:appinfo>
```


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```
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">6</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="ExpiryAlertThreshold">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">8</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="IpamExpiryLoggingPeriodicity">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">9</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="IpamSecurityGroupIpamUsers">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">10</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="IpamSecurityGroupIpamAdministrators">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">11</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="IpamSecurityGroupIpamAsmAdministrators">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">12</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="IpamSecurityGroupIpamMsmAdministrators">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">13</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="IpamSecurityGroupIpamIPAuditAdministrators">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">14</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
```


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```
    </xs:enumeration>
    <xs:enumeration value="IpamConfiguredDate">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">25</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="LastPurgeAuditResult">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">26</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="IPAuditTracking">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">27</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="RowCountOnFirstFetch">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">28</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
MaximumUtilizationThreshold	The percentage utilization threshold above which a utilization value is deemed to be over-utilized.
MinimumUtilizationThreshold	The percentage utilization threshold below which a utilization value is deemed to be under-utilized.
LastAddressUtilizationCollectionTaskRuntime	The last runtime of the address utilization IPAM task.
GpoPrefix	The prefix of the group policy object-names that will be used by the **IPAM server** to enable automatic provisioning of the access settings on the managed servers.
DeploymentType	This specifies whether the IPAM server is provisioned for Automatic or Manual **provisioning** model.

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Value	Description
ExpiryAlertThreshold	The number of days before expiry during which an IP address state will be marked to be due for address expiry.
IpamExpiryLoggingPeriodicity	The frequency at which the address expiry IPAM task has to log the 'Expiry Due' and 'Expired' events.
IpamSecurityGroupIpamUsers	The name of IPAM security group '**IPAM Users**' in the IPAM server system language.
IpamSecurityGroupIpamAdministrators	The name of IPAM security group '**IPAM Administrators**' in the IPAM server system language.
IpamSecurityGroupIpamAsmAdministrators	The name of IPAM security group '**IPAM ASM Administrators**' in the IPAM server system language.
IpamSecurityGroupIpamMsmAdministrators	The name of IPAM security group '**IPAM MSM Administrators**' in the IPAM server system language.
IpamSecurityGroupIpamIPAuditAdministrators	The name of IPAM security group '**IPAM IP Audit Administrators**' in the IPAM server system language.
IpamConfiguredDate	The date on which the IPAM server was provisioned.
LastPurgeAuditResult	The result of the last audit log purge operation.
IPAuditTracking	Optional IPAM capability which allows tracking of IP addresses using **DHCP lease** events and user logon events collected from Network Policy Server (NPS), domain controllers, and DHCP servers.
RowCountOnFirstFetch	Represents the number of rows that will be fetched on the first fetch by the IPAM Server.

2.2.5.9 CustomFieldOrigin

This simple type is an enumeration that specifies the origin of the custom field, i.e. whether it is a predefined custom field or user-defined.

```
<xs:simpleType name="CustomFieldOrigin">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="BuiltIn" />
    <xs:enumeration value="External" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
BuiltIn	The custom field is a predefined custom field.

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Value	Description
External	The custom field is a user-defined custom field.

2.2.5.10 CustomFieldType

This simple type is an enumeration that specifies the type of custom field, that is, whether the custom field is free-form or multivalued.

```
<xs:simpleType name="CustomFieldType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Freeform" />
    <xs:enumeration value="Multivalued" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Freeform	The custom field can hold any value and there are no restrictions on the valid values for the custom field.
Multivalued	The custom field consists of a fixed set of valid values and the custom field can take only a particular value that is present in this fixed set.

2.2.5.11 DhcpOptionCollectionType

This simple type is an enumeration that specifies the type of DHCP option, that is, whether the option is single-valued or multivalued.

```
<xs:simpleType name="DhcpOptionCollectionType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="SingleValue" />
    <xs:enumeration value="MultiValue" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
SingleValue	The DHCP option can be assigned a single value.
MultiValue	The DHCP option can be assigned a list of values.

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2.2.5.12 DhcpLeaseDurationType

This simple type is an enumeration that specifies the type of DHCP address lease duration.

```
<xs:simpleType name="DhcpLeaseDurationType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Limited" />
    <xs:enumeration value="Unlimited" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Limited	The lease duration type for the DHCP client is limited to the specified value of lease duration.
Unlimited	The lease duration is unlimited for the DHCP client.

2.2.5.13 DhcpDnsUpdateType

This simple type is an enumeration that specifies the configuration of a DHCP server instance whether the dynamic DNS registrations are enabled or not.

```
<xs:simpleType name="DhcpDnsUpdateType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Never" />
    <xs:enumeration value="DynamicUpdateOnRequestByClient" />
    <xs:enumeration value="DynamicUpdateAlways" />

  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Never	Never perform Dynamic DNS registration on behalf of DHCP clients.
DynamicUpdateOnRequestByClient	Perform Dynamic DNS registration when requested by client.
DynamicUpdateAlways	Always perform Dynamic DNS registration on behalf of DHCP clients.

2.2.5.14 DhcpFailoverConfigSyncStatus

This simple type is an enumeration that specifies the configuration sync status between two partner DHCP servers in a failover setup.

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```
<xs:simpleType name="DhcpFailoverConfigSyncStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Unknown" />
    <xs:enumeration value="InSync" />
    <xs:enumeration value="OutOfSync" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
Unknown	Configuration sync status is not known.
InSync	The configuration between the partner DHCP servers is in sync.
OutOfSync	The configuration between the partner DHCP servers is not in sync.

2.2.5.15 DhcpFailoverMode

This simple type is an enumeration that specifies the configured **DHCP server failover modes** between the partner DHCP servers in a failover setup.

```
<xs:simpleType name="DhcpFailoverMode">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="LoadBalance" />
    <xs:enumeration value="HotStandby" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
LoadBalance	The DHCP servers are configured in a "Load Balanced" failover mode.
HotStandby	The DHCP servers are configured in a "Hot Standby" failover mode.

2.2.5.16 DhcpFailoverOperationOwner

This simple type is an enumeration that specifies which of the servers in a DHCP failover relationship is the initiator for an operation.

```
<xs:simpleType name="DhcpFailoverOperationOwner">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="ServerOne" />
    <xs:enumeration value="ServerTwo" />
  </xs:restriction>
</xs:simpleType>
```


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The following table specifies the valid values for this type.

Value	Description
ServerOne	The first server in the DHCP failover relationship is the initiator of the operation.
ServerTwo	The second server in the DHCP failover relationship is the initiator of the operation.

2.2.5.17 DhcpFailoverOperations

This simple type is an enumeration that specifies the set of operations that can be performed on a failover relationship between two DHCP servers.

```
<xs:simpleType name="DhcpFailoverOperations">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="FailoverCreate" />
    <xs:enumeration value="FailoverUpdate" />
    <xs:enumeration value="FailoverAddScopes" />
    <xs:enumeration value="FailoverRemoveScopes" />
    <xs:enumeration value="FailoverDelete" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
FailoverCreate	A new failover relationship has to be created.
FailoverUpdate	A failover relationship has to be updated with modified configuration parameters.
FailoverAddScopes	New scopes need to be added to an existing failover relationship.
FailoverRemoveScopes	Some scopes have to be removed from an existing failover relationship.
FailoverDelete	A failover relationship has to be deleted.

2.2.5.18 DhcpFailoverState

This simple type is an enumeration that specifies the state of the failover relationship between two DHCP servers.

```
<xs:simpleType name="DhcpFailoverState">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Unknown" />
    <xs:enumeration value="NoState" />
    <xs:enumeration value="Init" />
    <xs:enumeration value="Startup" />
    <xs:enumeration value="Normal" />
    <xs:enumeration value="CommunicationsInterrupted" />
    <xs:enumeration value="PartnerDown" />
    <xs:enumeration value="PotentialConflict" />
```


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```
      <xs:enumeration value="ConflictDone" />
      <xs:enumeration value="ResolutionInterrupted" />
      <xs:enumeration value="Recover" />
      <xs:enumeration value="RecoverWait" />
      <xs:enumeration value="RecoverDone" />
    </xs:restriction>
  </xs:simpleType>
```

The following table specifies the valid values for this type. For more details on each state, see [IETF-DHCPFOP-12].

Value	Description
Unknown	The state of the failover relationship is unknown.
NoState	No state has been set for the failover relationship.
Init	The failover relationship is in an Init state.
Startup	The failover relationship is in the startup state.
Normal	The failover relationship is in the Normal state.
CommunicationsInterrupted	The failover relationship is in CommunicationsInterrupted state.
PartnerDown	The failover relationship is in PartnerDown state.
PotentialConflict	The failover relationship is in PotentialConflict state.
ConflictDone	The failover relationship is in ConflictDone state.
ResolutionInterrupted	The failover relationship is in ResolutionInterrupted state.
Recover	The failover relationship is in Recover state.
RecoverWait	The failover relationship is in RecoverWait state.
RecoverDone	The failover relationship is in RecoverDone state.

2.2.5.19 DhcpFilterMultiEditFields

This simple type is an enumeration that specifies the field of a filter to be updated on a multi-selection of DhcpFilter of a single DHCP server.

```
<xs:simpleType name="DhcpFilterMultiEditFields">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="AllowOrDeny" />
    <xs:enumeration value="Description" />
    <xs:enumeration value="Both" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

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Value	Description
AllowOrDeny	This identifies that the allow flag is to be edited.
Description	This identifies that the description is to be edited.
Both	This identifies that both the allow flag and the description are to be edited.

2.2.5.20 DhcpOperationState

This simple type is an enumeration that specifies the configured or enabled or disabled nature of the allow and deny filters of a DHCP server.

```
<xs:simpleType name="DhcpOperationState">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Enabled" />
    <xs:enumeration value="Disabled" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Enabled	This indicates that the associated field’s state is enabled.
Disabled	This indicates that the associated field’s state is disabled.

2.2.5.21 DhcpOptionApplyType

This simple type is an enumeration that specifies the operation related to option type to be performed on a multi-selection of server or scope.

```
<xs:simpleType name="DhcpOptionApplyType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="AddOrOverwrite" />
    <xs:enumeration value="Delete" />
    <xs:enumeration value="Append" />
    <xs:enumeration value="FindAndReplace" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
AddOrOverwrite	The option should be overwritten with the new value, or should be added with the new value.

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Value	Description
Delete	The option should be deleted.
Append	The option value should be appended.
FindAndReplace	Look for the option value, and if found, replace it with the new value.

2.2.5.22 DhcpOptionDefinitionApplyType

This simple type is an enumeration that specifies the operation related to option definition on a multi-selection of servers.

```
<xs:simpleType name="DhcpOptionDefinitionApplyType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="AddOrOverwrite" />
    <xs:enumeration value="Append" />
    <xs:enumeration value="Delete" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
AddOrOverwrite	Add or overwrite the option definition.
Append	Append the option definition.
Delete	Delete the option definition.

2.2.5.23 DhcpDnsNotRequestingClientsUpdateType

This simple type is an enumeration that specifies whether A/AAAA and PTR DNS records are registered by the DHCP server instance when the DHCP client doesn't request the DHCP server to register them.

```
<xs:simpleType name="DhcpDnsNotRequestingClientsUpdateType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Enabled" />
    <xs:enumeration value="Disabled" />

  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.

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Value	Description
Enabled	Register A/AAAA/PTR DNS records on behalf of clients that do not request the server to perform DNS registration.
Disabled	Do not register A/AAAA/PTR DNS records on behalf of clients that do not request the server to perform DNS registration.

2.2.5.24 DhcpDnsNameProtectionStatus

This simple type is an enumeration that specifies whether DNS name protection is enabled on a DHCP server instance.

```
<xs:simpleType name="DhcpDnsNameProtectionStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Enabled" />
    <xs:enumeration value="Disabled" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Enabled	DNS name protection is enabled (See [RFC4701] for information on DNS name protection.)
Disabled	DNS name protection is not enabled.

2.2.5.25 DhcpDiscardDnsRecordOnLeaseDeletionStatus

This simple type is an enumeration that specifies whether A/AAAA and PTR records are discarded when the address lease is expired on the DHCP server instance.

```
<xs:simpleType name="DhcpDiscardDnsRecordOnLeaseDeletionStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Enabled" />
    <xs:enumeration value="Disabled" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Enabled	Discard A/AAAA and PTR records when the lease is deleted.
Disabled	Do not discard A/AAAA and PTR records when the lease is deleted.

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2.2.5.26 DhcpAuditLoggingStatus

This simple type is an enumeration that specifies whether DHCP audit logging is enabled.

```
<xs:simpleType name="DhcpAuditLoggingStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Enabled" />
    <xs:enumeration value="Disabled" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Enabled	DHCP server Audit log functionality is enabled.
Disabled	DHCP server Audit log functionality is disabled.

2.2.5.27 DhcpOptionOwnerType

This simple type is an enumeration that specifies the entity to which the DHCP option is associated; that is, whether the option is a server-level option or scope-level option.

```
<xs:simpleType name="DhcpOptionOwnerType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Scope" />
    <xs:enumeration value="Server" />
    <xs:enumeration value="Policy" />
    <xs:enumeration value="Reservation" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Scope	The option is set at the scope level.
Server	The option is set at the server level.
Policy	The option is part of a DHCP policy.
Reservation	The option is set at the reservation level.

2.2.5.28 DhcpOptionType

This simple type is an enumeration that specifies the type of the DHCP option.

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```
<xs:simpleType name="DhcpOptionType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Byte" />
    <xs:enumeration value="Word" />
    <xs:enumeration value="DWord" />
    <xs:enumeration value="DWordDWord" />
    <xs:enumeration value="Encapsulated" />
    <xs:enumeration value="String" />
    <xs:enumeration value="IPAddress" />
    <xs:enumeration value="BinaryData" />
    <xs:enumeration value="IPv6Address" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Byte	The option value is a byte (8-bit) unsigned value.
Word	The option value is a 2-byte unsigned value.
DWord	The option value is a 4-byte unsigned value.
DWordDWord	The option value is an 8-byte unsigned value.
Encapsulated	The option value is encapsulated and stored as a variable length binary **BLOB**.
String	The option value is a null-terminated **Unicode** string.
IPAddress	The option value is an IPv4 address represented as a 4-byte value.
BinaryData	The option value is stored as a variable length binary BLOB.
IPv6Address	The option value is an IPv6 address represented as a null-terminated Unicode string.

2.2.5.29 DhcpPolicyPropertyUpdate

This simple type is an enumeration that specifies whether a DHCP policy is enabled.

```
<xs:simpleType name="DhcpPolicyPropertyUpdate">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="EnablePolicy" />
    <xs:enumeration value="DisablePolicy" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
EnablePolicy	The DHCP policy is enabled.

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Value	Description
DisablePolicy	The DHCP policy is disabled.

2.2.5.30 DhcpScopeStatus

This simple type is an enumeration that specifies whether a scope instance is activated or deactivated.

```
<xs:simpleType name="DhcpScopeStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Activated" />
    <xs:enumeration value="Deactivated" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Activated	The DHCP scope is active on the DHCP server instance.
Deactivated	The DHCP scope is disabled on the DHCP server instance.

2.2.5.31 DhcpServingClientsType

This simple type is an enumeration that specifies the type of clients a scope instance serves.

```
<xs:simpleType name="DhcpServingClientsType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Dhcp" />
    <xs:enumeration value="Bootp" />
    <xs:enumeration value="Both" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Dhcp	The scope is configured for serving DHCP clients only.
Bootp	The scope is configured for serving BOOTP clients only.
Both	The scope is configured for serving both DHCP and BOOTP clients.

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2.2.5.32 DhcpStatelessClientInventoryStatus

This simple type is an enumeration that specifies whether the DHCPv6 stateless client inventory is enabled for a DHCP server instance.

```
<xs:simpleType name="DhcpStatelessClientInventoryStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Enabled" />
    <xs:enumeration value="Disabled" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Enabled	The DHCPv6 stateless client inventory is enabled for the DHCP server instance.
Disabled	The DHCPv6 stateless client inventory is disabled for the DHCP server instance.

2.2.5.33 DhcpReservationDeletionFlag

This simple type is an enumeration that specifies post-processing options after the deletion of a DHCP reservation.

```
<xs:simpleType name="DhcpReservationDeletionFlag">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Default" />
    <xs:enumeration value="DeleteReservationRecord" />
    <xs:enumeration value="DeleteIPAddressRecord" />
    <xs:enumeration value="DeleteDnsRecord" />
    <xs:enumeration value="DeleteIPAddressAndDnsRecord" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
Default	The default selection of the option will apply.
DeleteReservationRecord	The reservation record will be deleted from the DHCP server and the IPAM data store.
DeleteIPAddressRecord	The IP address record associated with the reservation will be removed from the IPAM data store after the reservation is deleted.
DeleteDnsRecord	The DNS record associated with the IP address of the reservation will be removed from the DNS server.
DeleteIPAddressAndDnsRecord	The DNS resource record from the remote DNS server and the associated IP address record will be removed.

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2.2.5.34 DhcpReservationStatus

This simple type is an enumeration that specifies when a reservation on a DHCP server is active or inactive.

```
<xs:simpleType name="DhcpReservationStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Inactive" />
    <xs:enumeration value="Active" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
Inactive	The DHCP reservation is inactive.
Active	The DHCP reservation is active.

2.2.5.35 DhcpReservationSyncStatus

This simple type is an enumeration that specifies the current state of a DHCP reservation or the result of the DHCP reservation creation attempted by the IPAM server for an IP address.

```
<xs:simpleType name="DhcpReservationSyncStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="NotAttempted" />
    <xs:enumeration value="CreateSuccess" />
    <xs:enumeration value="CreateFailure" />
    <xs:enumeration value="DeleteSuccess" />
    <xs:enumeration value="DeleteFailure" />
    <xs:enumeration value="Exists" />
    <xs:enumeration value="Deleted" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
NotAttempted	A DHCP reservation has not yet been attempted using the IPAM server.
CreateSuccess	The DHCP reservation was successfully created.
CreateFailure	The DHCP reservation was not created successfully.
DeleteSuccess	The DHCP reservation was deleted successfully.
DeleteFailure	The DHCP reservation could not be deleted successfully.
Exists	The DHCP reservation exists in the DHCP server.

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Value	Description
Deleted	The DHCP reservation existed but is no longer found in the DHCP server.

2.2.5.36 DhcpUserClassApplyType

This simple type is an enumeration that specifies a user class operation on a multi-selection of DHCP servers.

```
<xs:simpleType name="DhcpUserClassApplyType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Create" />
    <xs:enumeration value="AddOrOverwrite" />
    <xs:enumeration value="Delete" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Create	Create a new user class.
AddOrOverwrite	Add or overwrite the existing user class.
Delete	Delete an existing user class.

2.2.5.37 DhcpVendorClassApplyType

This simple type is an enumeration that specifies a vendor class operation on a multi-selection of DHCP servers.

```
<xs:simpleType name="DhcpVClaendorssApplyType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Create" />
    <xs:enumeration value="AddOrOverwrite" />
    <xs:enumeration value="Delete" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Create	Create a new vendor class.
AddOrOverwrite	Add or overwrite the existing vendor class.

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Value	Description
Delete	Delete an existing vendor class.

2.2.5.38 DnsDisableDynamicPtrUpdateType

This simple type is an enumeration that specifies whether the DNS resource records associated with a lease should be dynamically updated.

```
<xs:simpleType name="DnsDisableDynamicPtrUpdateType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Enabled" />
    <xs:enumeration value="Disabled" />
  </xs:restriction>
</xs:simpleType>
The following table specifies the valid values for this type.
```

Value	Description
None	Unspecified or an invalid value.
Enabled	The dynamic update of DNS resource records is disabled.
Disabled	The dynamic update of DNS resource records is enabled.

2.2.5.39 DnsReverseLookupZoneFilterCriteria

This simple type is an enumeration that specifies the basis for filter criteria for the reverse lookup zone.

```
<xs:simpleType name="DnsReverseLookupZoneFilterCriteria">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="IP" />
    <xs:enumeration value="RecordId" />
    <xs:enumeration value="Name" />
    <xs:enumeration value="IPType" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
IP	The filter criteria are on the specified IP address and are within the StartIP and EndIP of the reverse lookup zone.
RecordId	The filter criteria are on the RecordId of the reverse lookup zone in the IPAM data store.
Name	The filter criteria are on the name of the reverse lookup zone.
IPType	The filter criteria are on the address family of the reverse lookup zone.

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2.2.5.40 DnsSyncStatus

This simple type is an enumeration that specifies the result of the DNS record creation attempted by the IPAM server for an IP address.

```
<xs:simpleType name="DnsSyncStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="NotAttempted" />
    <xs:enumeration value="CreateSuccess" />
    <xs:enumeration value="CreateFailure" />
    <xs:enumeration value="DeleteSuccess" />
    <xs:enumeration value="DeleteFailure" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
NotAttempted	The DNS registration has not yet been attempted using the IPAM server.
UpdateSuccess	The DNS registration was successfully created.
UpdateFailure	The DNS registration was not created successfully.
DeleteSuccess	The DNS registration was deleted successfully.
DeleteFailure	The DNS registration could not be deleted successfully.

2.2.5.41 DnsZoneFilterCriteria

This simple type is an enumeration that specifies the basis for filter criteria for the DNS zone.

```
<xs:simpleType name="DnsZoneFilterCriteria">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="ParentRecordId" />
    <xs:enumeration value="RecordId" />
    <xs:enumeration value="Name" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
ParentRecordId	The filter criteria are on the RecordId of the DNS zone that is hosting the required zone of interest.
RecordId	The filter criteria are on the RecordId of the DNS zone that is the required zone of

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Value	Description
	interest.
Name	The filter criteria are on the Name of the DNS zone.

2.2.5.42 EntityOperationType

This simple type is an enumeration that specifies the type of operation to be performed on an entity of ipam:IpamObjectType.

```
<xs:simpleType name="EntityOperationType">t
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Unknown" />
    <xs:enumeration value="Add" />
    <xs:enumeration value="Update" />
    <xs:enumeration value="Delete" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
Unknown	Unspecified or an invalid value.
Add	An add operation is to be performed.
Update	An update operation is to be performed.
Delete	A delete operation is to be performed.

2.2.5.43 EnumerationObjectType

This simple type is an enumeration that specifies the type of object to be enumerated.

```
<xs:simpleType name="EnumerationObjectType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="ServerInfo" />
    <xs:enumeration value="IPAddress" />
    <xs:enumeration value="IPRange" />
    <xs:enumeration value="IPBlock" />
    <xs:enumeration value="LogicalGroupData" />
    <xs:enumeration value="CustomField" />
    <xs:enumeration value="CustomFieldAssociation" />
    <xs:enumeration value="LogicalGroup" />
    <xs:enumeration value="LogicalGroupNode" />
    <xs:enumeration value="DiscoveredSubnets" />
    <xs:enumeration value="DhcpServer" />
    <xs:enumeration value="DhcpScope" />
    <xs:enumeration value="DhcpReservation" />
    <xs:enumeration value="DhcpVendorClass" />
    <xs:enumeration value="DhcpUserClass" />
    <xs:enumeration value="DhcpOptionDefinition" />
    <xs:enumeration value="DhcpOption" />
```


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```
      <xs:enumeration value="DhcpExclusionRange" />
      <xs:enumeration value="ConfigurationAudit" />
      <xs:enumeration value="IPAudit" />
      <xs:enumeration value="DnsServerReverseZone" />
      <xs:enumeration value="DnsReverseLookupZone" />
      <xs:enumeration value="DnsServerZone" />
      <xs:enumeration value="DnsZone" />
      <xs:enumeration value="DnsServer" />
      <xs:enumeration value="DnsZoneEvent" />
      <xs:enumeration value="AsyncProvision" />
      <xs:enumeration value="AsyncSchemaConversion" />
      <xs:enumeration value="Operations" />
      <xs:enumeration value="UserRoles" />
      <xs:enumeration value="AddressSpace" />
      <xs:enumeration value="AccessScopes" />
      <xs:enumeration value="UserAccessPolicies" />
      <xs:enumeration value="IPSubnet" />
      <xs:enumeration value="DhcpPolicy" />
      <xs:enumeration value="DhcpFailover" />
      <xs:enumeration value="DhcpSuperscope" />
      <xs:enumeration value="DhcpFilter" />  </xs:restriction>
  </xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
ServerInfo	The type of object to be enumerated is ServerInfo.
IPAddress	The type of object to be enumerated is IpamIPAddress.
IPRange	The type of object to be enumerated is IPRange.
IPBlock	The type of object to be enumerated is IPBlock.
LogicalGroupData	The type of object to be enumerated is the logical group data associated with active servers, range or addresses.
CustomField	The type of object to be enumerated is CustomField.
CustomFieldAssociation	The type of object to be enumerated is CustomFieldAssociation. This represents the association between two custom fields in IPAM.
LogicalGroup	The type of object to be enumerated is LogicalGroup.
LogicalGroupNode	The type of object to be enumerated is LogicalGroupNode.
DiscoveredSubnets	The type of object to be enumerated is IPAddress for discovered subnets.
DhcpServer	The type of object to be enumerated is DhcpServer.
DhcpScope	The type of object to be enumerated is DhcpScope.
DhcpReservation	The type of object to be enumerated is DhcpReservation.
DhcpVendorClass	The type of object to be enumerated is DhcpVendorClass.

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Value	Description
DhcpUserClass	The type of object to be enumerated is DhcpUserClass.
DhcpOptionDefinition	The type of object to be enumerated is DhcpOptionDefinition.
DhcpOption	The type of object to be enumerated is DhcpOption.
DhcpExclusionRange	The type of object to be enumerated is DhcpExclusionRange.
ConfigurationAudit	The type of object to be enumerated is ConfigurationAuditRecord.
IPAudit	The type of object to be enumerated is IPAuditRecord.
DnsServerReverseZone	The type of object to be enumerated is DnsServerReverseZone.
DnsReverseLookupZone	The type of object to be enumerated is DnsReverseLookupZone.
DnsServerZone	The type of object to be enumerated is DnsServerZone.
DnsZone	The type of object to be enumerated is DnsZone.
DnsServer	The type of object to be enumerated is DnsServer.
DnsZoneEvent	The type of object to be enumerated is DnsZoneEvent.
AsyncProvision	The enumeration parameter specifies the input parameter for IIpamAsyncProvision port type.
AsyncSchemaConversion	The enumeration parameter specifies the input parameter for IIpamAsyncSchemaConversion port type.
Operations	The type of object to be enumerated is Operations.
UserRoles	The type of object to be enumerated is UserRoles.
AddressSpace	The type of object to be enumerated is AddressSpace.
AccessScopes	The type of object to be enumerated is AccessScopes.
UserAccessPolicies	The type of object to be enumerated is UserAccessPolicies.
IPSubnet	The type of object to be enumerated is IPSubnet.
DhcpPolicy	The type of object to be enumerated is DhcpPolicy.
DhcpFailover	The type of object to be enumerated is DhcpFailover.
DhcpSuperscope	The type of object to be enumerated is DhcpSuperscope.
DhcpFilter	The type of object to be enumerated is DhcpFilter.

2.2.5.44 EventLevel

This simple type is an enumeration that specifies the severity of the DNS zone event.

```
<xs:simpleType name="EventLevel">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
```


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```
      <xs:enumeration value="Information" />
      <xs:enumeration value="Warning" />
      <xs:enumeration value="Error" />
    </xs:restriction>
  </xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Information	The event is an informational event.
Warning	The event is a warning event.
Error	The event is an error event.

2.2.5.45 GetAddressSpaceFilter

This simple type is an enumeration that specifies the filter to apply when retrieving address spaces from the server.

```
<xs:simpleType name="GetAddressSpaceFilter">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="IPAddressSpaceType" />
    <xs:enumeration value="MappingProviderAddressSpaceName" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
IPAddressSpaceType	Apply the filter for the type of address space, for example, Provider or Customer.
MappingProviderAddressSpaceName	Apply the filter for the corresponding ProviderAddressSpace.

2.2.5.46 GetIpamIPAddressFilter

This simple type is an enumeration that specifies the filter to apply when retrieving IP addresses from the server.

```
<xs:simpleType name="GetIpamIPAddressFilter">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="VirtualizationType" />
    <xs:enumeration value="AddressCategory" />
    <xs:enumeration value="AddressSpaceName" />
    <xs:enumeration value="ManagedByService" />
    <xs:enumeration value="ServiceInstance" />
    <xs:enumeration value="Unmapped" />
    <xs:enumeration value="IpAddress" />
```


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```
    </xs:restriction>
  </xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
VirtualizationType	Apply the filter for VirtualizationType; for example, fabric or virtualized.
AddressCategory	Apply the filter for Address category; for example, public or private.
AddressSpaceName	Apply the filter for AddressSpaceName.
ManagedByService	Apply the filter for ManagedByService.
ServiceInstance	Apply the filter for ServiceInstance.
Unmapped	Apply the filter to retrieve unmapped addresses.
IpAddress	Apply the filter to retrieve specified addresses.

2.2.5.47 GetIPRangeFilter

This simple type is an enumeration that specifies the filter to apply when retrieving IP address ranges from the server.

```
<xs:simpleType name="GetIPRangeFilter">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="VirtualizationType" />
    <xs:enumeration value="AddressCategory" />
    <xs:enumeration value="AddressSpaceName" />
    <xs:enumeration value="ManagedByService" />
    <xs:enumeration value="ServiceInstance" />
    <xs:enumeration value="Unmapped" />
    <xs:enumeration value="AddressSpaceId" />
    <xs:enumeration value="StartIP" />
    <xs:enumeration value="EndIP" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
VirtualizationType	Apply the filter for VirtualizationType; for example, fabric or virtualized.
AddressCategory	Apply the filter for Address category; for example, public or private.
AddressSpaceName	Apply the filter for AddressSpaceName.
ManagedByService	Apply the filter for ManagedByService.
ServiceInstance	Apply the filter for ServiceInstance.
Unmapped	Apply the filter to retrieve unmapped address ranges.

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Value	Description
AddressSpaceId	Apply the filter for Address Space.
StartIP	Apply the filter for StartIP IP address.
EndIP	Apply the filter for EndIP IP address.

2.2.5.48 GetIPSubnetFilter

This simple type is an enumeration that specifies the filter to apply when retrieving IP address ranges from the server.

```
<xs:simpleType name="GetIPSubnetFilter">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="VirtualizationType" />
    <xs:enumeration value="AddressSpaceName" />
    <xs:enumeration value="NetworkId" />
    <xs:enumeration value="PrefixLength" />
    <xs:enumeration value="EmptySubnets" />
    <xs:enumeration value="LogicalNetwork" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
VirtualizationType	Apply the filter for VirtualizationType; for example, fabric or virtualized.
AddressSpaceName	Apply the filter for AddressSpaceName.
NetworkId	Apply the filter for NetworkId.
PrefixLength	Apply the filter for prefix length for the subnet.
EmptySubnets	Apply the filter to retrieve empty subnets.
LogicalNetwork	Apply the filter to LogicalNetwork.

2.2.5.49 HealthStatus

This simple type is an enumeration that specifies the health of a specific DNS zone or a DNS server.

```
<xs:simpleType name="HealthStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Healthy" />
    <xs:enumeration value="HealthyWithWarnings" />
    <xs:enumeration value="Unhealthy" />
    <xs:enumeration value="NotApplicable" />
    <xs:enumeration value="Unknown" />
    <xs:enumeration value="Unchecked" />
  </xs:restriction>
</xs:simpleType>
```


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The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Healthy	No error or warning events are present.
HealthyWithWarnings	Warning events but no error events are present.
Unhealthy	Error events are present.
NotApplicable	The health status is not applicable for the entity.
Unknown	The health status is unknown.
Unchecked	The health status has not yet been checked.

2.2.5.50 IPAddressExpiryStatus

This simple type is an enumeration that specifies the expiry status of an IP address.

```
<xs:simpleType name="IPAddressExpiryStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Active" />
    <xs:enumeration value="Alert" />
    <xs:enumeration value="Expired" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
Active	The assigned address is currently in an active state.
Alert	The assigned address is currently in an alert state and will expire soon.
Expired	The assigned address has expired.

2.2.5.51 IpamTaskState

This simple type is an enumeration that indicates the state of an IPAM task.

```
<xs:simpleType name="IpamTaskState">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Disabled" />
    <xs:enumeration value="Queued" />
    <xs:enumeration value="Ready" />
    <xs:enumeration value="Running" />
    <xs:enumeration value="Unknown" />
  </xs:restriction>
```


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```
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Disabled	The task is registered but is disabled and no instances of the task are queued or running. The task cannot be run until it is enabled.
Queued	Instances of the task are queued.
Ready	The task is ready to be executed, but no instances are queued or running.
Running	One or more instances of the task are running.
Unknown	The state of the task is unknown.

2.2.5.52 IpamTaskType

This simple type is an enumeration which uniquely identifies the type of an IPAM task.

```
<xs:simpleType name="IpamTaskType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Discovery" />
    <xs:enumeration value="Utilization" />
    <xs:enumeration value="Audit" />
    <xs:enumeration value="Configuration" />
    <xs:enumeration value="ServerAvailability" />
    <xs:enumeration value="Monitoring" />
    <xs:enumeration value="Expiry" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Discovery	The task is an IPAM server discovery task.
Utilization	The task is an IPAM utilization collection task.
Audit	The task is an IPAM event data collection task.
Configuration	The task is an IPAM server configuration collection task.
ServerAvailability	The task is an IPAM server availability collection task.
Monitoring	The task is an IPAM monitoring information collection task.
Expiry	The task is an IPAM address expiry calculation task.

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2.2.5.53 IpamUpgradeValidationStatus

This simple type is an enumeration that specifies the validation status of an upgrade.

```
<xs:simpleType name="IpamUpgradeValidationStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="UpgradeAllowed" />
    <xs:enumeration value="UpgradeAllowedWithDefaultChanges" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
UpgradeAllowed	The upgrade is allowed.
UpgradeAllowedWithDefaultChanges	The upgrade is allowed after making default changes to the IPAM store.

2.2.5.54 IPAuditEventType

This simple type is an enumeration specifying the type of an IP address audit event.

```
<xs:simpleType name="IPAuditEventType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="DHCPNewLease" />
    <xs:enumeration value="DHCPRenewLease" />
    <xs:enumeration value="DHCPReleaseLease" />
    <xs:enumeration value="DHCPLeaseExpired" />
    <xs:enumeration value="DHCPDeleteLease" />
    <xs:enumeration value="DHCPBootpLease" />
    <xs:enumeration value="DHCPBootpDynamicLease" />
    <xs:enumeration value="DHCPStatelessInfoReq" />
    <xs:enumeration value="DHCPStatelessClientPurged" />
    <xs:enumeration value="DCAuthentication" />
    <xs:enumeration value="NPSAuthentication" />
  </xs:restriction>
</xs:simpleType>
```

The following are the description of the values of this type.

Value	Description
None	Unspecified or invalid value.
DHCPNewLease	A new IP address was leased to a client.
DHCPRenewLease	A lease was renewed by a client.
DHCPReleaseLease	A lease was released by a client.
DHCPLeaseExpired	A lease was expired.

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Value	Description
DHCPDeleteLease	A lease was deleted.
DHCPBootpLease	A Bootstrap Protocol (BOOTP) address was leased to a client.
DHCPBootpDynamicLease	A dynamic BOOTP address was leased to a client.
DHCPStatelessInfoReq	An IPv6 stateless inventory record was added on servicing an option request for a stateless client.
DHCPStatelessClientPurged	An IPv6 stateless inventory record was purged after the configured purge interval timeout for a stateless client.
DCAuthentication	A Kerberos authentication request to the **domain controller (DC)** is successful for a machine or a user.
NPSAuthentication	An authentication request to **Network Policy Server (NPS)** is successful for a user.

2.2.5.55 IPUtilizationCalculationType

This simple type is an enumeration that specifies the address utilization calculation mechanisms available for an IP address range.

```
<xs:simpleType name="IPUtilizationCalculationType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Auto" />
    <xs:enumeration value="Manual" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Auto	Utilization for the IP address range is calculated automatically by IPAM.
Manual	Utilization for the IP address range is specified by the user.

2.2.5.56 IPUtilizationType

This simple type is an enumeration that specifies the time period for which utilization data is being requested.

```
<xs:simpleType name="IPUtilizationType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Current" />
    <xs:enumeration value="OneDay" />
    <xs:enumeration value="Week" />
    <xs:enumeration value="OneMonth" />
    <xs:enumeration value="ThreeMonth" />
```


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```
      <xs:enumeration value="SixMonth" />
      <xs:enumeration value="OneYear" />
      <xs:enumeration value="TwoYear" />
      <xs:enumeration value="FiveYear" />
    </xs:restriction>
  </xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Current	The current utilization statistics.
OneDay	The utilization trend for the last day.
Week	The utilization trend for the last week.
OneMonth	The utilization trend for the last month.
ThreeMonth	The utilization trend for the last three months.
SixMonth	The utilization trend for the last six months.
OneYear	The utilization trend for the last year.
TwoYear	The utilization trend for the last two years.
FiveYear	The utilization trend for the last five years.

2.2.5.57 IPRangeOverlap

This simple type is an enumeration that indicates whether an IP address range overlaps with another IP address range.

```
<xs:simpleType name="IPRangeOverlap">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="NotOverlapping" />
    <xs:enumeration value="Overlapping" />
    <xs:enumeration value="OverlappingBecauseFailover" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
NotOverlapping	The IP address range does not overlap with any other IP address range.
Overlapping	The IP address range overlaps with another IP address range.
OverlappingBecauseFailover	The IP address range overlaps with another IP address range and the two address ranges are used in different DHCP servers that are in a failover relationship.

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2.2.5.58 IPVirtualizationType

This simple type is an enumeration that specifies the virtualization type for an address space.

```
<xs:simpleType name="IPVirtualizationType">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xsd:string">
        <xs:enumeration value="NonVirtualized" />
        <xs:enumeration value="Fabric" />
        <xs:enumeration value="Virtual" />
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
NonVirtualized	The address space is for a network that is not virtualized.
Fabric	The address space is for the physical infrastructure of a virtualized environment.
Virtual	The address space is for the virtual machines of a virtualized environment.

2.2.5.59 IPAddressSpaceType

This simple type is an enumeration that specifies whether an address space is for the Provider infrastructure or for the Customer infrastructure.

```
IPAddressSpaceType
<xs:simpleType name="IPAddressSpaceType">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="Provider">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="Customer">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
```


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```
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Provider	The address space is used for the Provider (physical) infrastructure.
Customer	The address space is used for the Customer (virtual) infrastructure.

2.2.5.60 ipam1:IpamAdminOperationId

This simple type is an enumeration that specifies operations corresponding to which a role-based access control may be added.

```
<xs:simpleType name="IpamAdminOperationId">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="EditDhcpServer" />
    <xs:enumeration value="ApplyServerConfigurationTemplate" />
    <xs:enumeration value="CreateDhcpScope" />
    <xs:enumeration value="EditDhcpScope" />
    <xs:enumeration value="DeleteDhcpScope" />
    <xs:enumeration value="ApplyScopeConfigurationTemplate" />
    <xs:enumeration value="AddScopesToSuperscope" />
    <xs:enumeration value="RemoveScopesFromSuperscope" />
    <xs:enumeration value="RenameSuperscope" />
    <xs:enumeration value="DeleteSuperscopes" />
    <xs:enumeration value="SetSuperscopeActivationStatus" />
    <xs:enumeration value="CreateDhcpServerPolicy" />
    <xs:enumeration value="CreateDhcpScopePolicy" />
    <xs:enumeration value="UpdatePolicy" />
    <xs:enumeration value="DeletePolicy" />
    <xs:enumeration value="UpdatePolicyProperty" />
    <xs:enumeration value="MovePolicyProcessingOrder" />
    <xs:enumeration value="CreateDhcpReservation" />
    <xs:enumeration value="DeleteDhcpReservation" />
    <xs:enumeration value="DeleteDhcpReservationCollection" />
    <xs:enumeration value="SetDhcpReservation" />
    <xs:enumeration value="SetDhcpReservationCollection" />
    <xs:enumeration value="CreateDhcpFailover" />
    <xs:enumeration value="EditDhcpFailover" />
    <xs:enumeration value="AddDhcpFailoverScopes" />
    <xs:enumeration value="RemoveDhcpFailoverScopes" />
    <xs:enumeration value="DeleteDhcpFailover" />
    <xs:enumeration value="ResetConfigSyncStatus" />
    <xs:enumeration value="ReplicateScope" />
    <xs:enumeration value="ReplicateRelation" />
    <xs:enumeration value="ReplicateServer" />
```


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```
      <xs:enumeration value="CreateDhcpFilters" />
      <xs:enumeration value="UpdateDhcpFilter" />
      <xs:enumeration value="UpdateDhcpFilters" />
      <xs:enumeration value="DeleteDhcpFilters" />
      <xs:enumeration value="CreateIpamIPAddress" />
      <xs:enumeration value="UpdateIpamIPAddress" />
    </xs:restriction>
  </xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
EditDhcpServer	Editing the properties of a DHCP server.
ApplyServerConfigurationTemplate	In multi-server editing, applying a few properties to multiple servers.
CreateDhcpScope	Creating a DHCP scope.
EditDhcpScope	Editing the properties of a DHCP scope.
DeleteDhcpScope	Deleting a DHCP scope.
ApplyScopeConfigurationTemplate	In multi-server editing, applying a few properties to multiple scopes.
AddScopesToSuperscope	Adding a scope to an existing superscope.
RemoveScopesFromSuperscope	Removing an existing scope from an existing superscope.
RenameSuperscope	Renaming a superscope.
DeleteSuperscopes	Deleting superscopes.
SetSuperscopeActivationStatus	Setting status specifying a superscope as active or inactive.
CreateDhcpServerPolicy	Creating DHCP server policy.
CreateDhcpScopePolicy	Creating DHCP scope policy.
UpdatePolicy	Updating an existing DHCP policy.
DeletePolicy	Deleting an existing DHCP policy.
UpdatePolicyProperty	Updating the property of an existing DHCP policy.
MovePolicyProcessingOrder	Changing the order of processing of policies.
CreateDhcpReservation	Creating a DHCP reservation.
DeleteDhcpReservation	Deleting a DHCP reservation.
DeleteDhcpReservationCollection	Deleting a DHCP reservation collection.
SetDhcpReservation	Creating a new DHCP reservation.
SetDhcpReservationCollection	Creating a new DHCP reservation collection.
CreateDhcpFailover	Creating a DHCP failover relation.

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Value	Description
EditDhcpFailover	Editing the properties of a DHCP failover relation.
AddDhcpFailoverScopes	Adding scopes to an existing DHCP failover relationship.
RemoveDhcpFailoverScopes	Removing scopes from an existing DHCP failover relationship.
DeleteDhcpFailover	Deleting a DHCP failover relationship.
ResetConfigSyncStatus	Resetting the configuration sync status of the DHCP failover relationship partners.
ReplicateScope	Replicating a DHCP scope.
ReplicateRelation	Replicating a DHCP relationship.
ReplicateServer	Replicating a DHCP server.
CreateDhcpFilters	Creating a DHCP filter.
UpdateDhcpFilter	Updating a DHCP filter.
UpdateDhcpFilters	Updating multiple DHCP filters in a multi-server environment.
DeleteDhcpFilters	Deleting DHCP filters.
CreateIpamIPAddress	Creating an IPAM IP address.
UpdateIpamIPAddress	Updating an IPAM IP address.

2.2.5.61 ipam1:IpamExceptionId

This simple type is an enumeration that specifies the list of error identifiers possible from the IPAM.

```
<xs:simpleType name="IpamExceptionId">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="IpamApiAccessDenied" />
    <xs:enumeration value="IpamApiInvalidParameter" />
    <xs:enumeration value="IpamApiCustomFieldValueExists" />
    <xs:enumeration value="IpamApiInvalidIPAddress" />
    <xs:enumeration value="IpamApiMaxChildrenReached" />
    <xs:enumeration value="IpamApiFindParentFailed" />
    <xs:enumeration value="IpamApiFailedToAdd" />
    <xs:enumeration value="IpamApiServerRoleEntryUnavailable" />
    <xs:enumeration value="IpamApiDataUpdateErrorInServerAuditBookmark" />
    <xs:enumeration value="IpamApiFailedToDelete" />
    <xs:enumeration value="IpamApiFailedToUpdate" />
    <xs:enumeration value="IpamApiObjectStateIsInvalid" />
    <xs:enumeration value="IpamApiGetIPBlockAddressAssignmentFailed" />
    <xs:enumeration value="IpamApiAdjustChildBlocksFailed" />
    <xs:enumeration value="IpamApiAdjustChildRangesFailed" />
    <xs:enumeration value="IpamApiAdjustChildIPAddressesFailed" />
    <xs:enumeration value="IpamApiGetIPBlockChildrenFailed" />
    <xs:enumeration value="IpamApiGetIPBlockDepthFailed" />
    <xs:enumeration value="IpamApiObjectNotFound" />
    <xs:enumeration value="IpamApiNonadjustableConflictingRangesFound" />
    <xs:enumeration value="IpamApiServerDoesNotExist" />
```


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```
<xs:enumeration value="IpamApiAddScopeFailed" />
<xs:enumeration value="IpamApiFetchFailed" />
<xs:enumeration value="IpamApiCheckForConflictsFailed" />
<xs:enumeration value="IpamApiDeleteScopeFailed" />
<xs:enumeration value="IpamApiMaxCustomFieldsReached" />
<xs:enumeration value="IpamApiCannotAddBuiltInField" />
<xs:enumeration value="IpamApiCannotDeleteBuiltInField" />
<xs:enumeration value="IpamApiAdjustUnmappedRangesFailed" />
<xs:enumeration value="IpamApiTaskTriggerDoesNotExist" />
<xs:enumeration value="IpamApiTaskActionDoesNotExist" />
<xs:enumeration value="IpamApiTaskDoesNotExist" />
<xs:enumeration value="IpamApiTaskError" />
<xs:enumeration value="IpamApiAddressCategoryCheckFailed" />
<xs:enumeration value="IpamApiInvalidAddressRange" />
<xs:enumeration value="IpamApiIPBlockOverlapCheckFailed" />
<xs:enumeration value="IpamApiConflictingIPBlocksExist" />
<xs:enumeration value="IpamApiNoDhcpLogFilesAvailable" />
<xs:enumeration value="IpamApiErrorObtainingRemoteServerTimeZoneDifference" />
<xs:enumeration value="IpamApiFailedToSaveIPAddress" />
<xs:enumeration value="IpamApiFailedToDeleteIPAddress" />
<xs:enumeration value="IpamApiServerNotFoundInDC" />
<xs:enumeration value="IpamApiOSNotSupported" />
<xs:enumeration value="IpamApiFetchGuidFailed" />
<xs:enumeration value="IpamApiGuidDoesntMatch" />
<xs:enumeration value="IpamApiInvalidServerNameAndDomain" />
<xs:enumeration value="IpamApiAddressResolutionFailed" />
<xs:enumeration value="IpamApiServerNotFoundInDB" />
<xs:enumeration value="IpamApiServerAlreadyInDB" />
<xs:enumeration value="IpamApiGetServersFailed" />
<xs:enumeration value="IpamApiInvalidServerRole" />
<xs:enumeration value="IpamApiDnsServersNotFound" />
<xs:enumeration value="IpamApiGetDomains" />
<xs:enumeration value="IpamApiFailedToAddServerToIpam" />
<xs:enumeration value="IpamApiFailedToProcessDhcpServer" />
<xs:enumeration value="IpamApiFailedToFetchDCServers" />
<xs:enumeration value="IpamApiFailedToFetchDhcpServers" />
<xs:enumeration value="IpamApiDhcpInformNotAcknowledged" />
<xs:enumeration value="IpamApiDnsnsQueryFailed" />
<xs:enumeration value="IpamApiCantGetSelfIP" />
<xs:enumeration value="IpamApiCannotCreateUdpState" />
<xs:enumeration value="IpamApiFailedToValidateDhcpServers" />
<xs:enumeration value="IpamApiFailedToSendToValidateDhcpServers" />
<xs:enumeration value="IpamApiFailedToReceiveToValidateDhcpServers" />
<xs:enumeration value="IpamApiFailedToCloseUdpState" />
<xs:enumeration value="IpamApiFailedToFetchBindingAddress" />
<xs:enumeration value="IpamApiFieldIdNotSpecified" />
<xs:enumeration value="IpamApiInvalidUpdate" />
<xs:enumeration value="IpamApiCustomFieldValueForMultiValueCustomFieldDoesntExist" />
<xs:enumeration value="IpamApiSetCustomFieldsValuesFailed" />
<xs:enumeration value="IpamApiGetCustomFieldsValuesFailed" />
<xs:enumeration value="IpamApiLogicalGroupContainsInvalidFields" />
<xs:enumeration value="IpamApiLogicalGroupCannotContainFreeformCustomFields" />
<xs:enumeration value="IpamApiFailedToSetUtilizationData" />
<xs:enumeration value="IpamApiFailedToGetUtilizationData" />
<xs:enumeration value="IpamApiFailedToClearUtilizationData" />
<xs:enumeration value="IpamApiFailedToRollupUtilizationData" />
<xs:enumeration value="IpamApiFailedToRetrieveProperty" />
<xs:enumeration value="IpamApiFailedToSaveProperty" />
<xs:enumeration value="IpamApiImportAddressFailed" />
```


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```
<xs:enumeration value="IpamApiInvalidImportColumn" />
<xs:enumeration value="IpamApiInvalidImportColumnType" />
<xs:enumeration value="IpamApiDeviceTypeDoNotExists" />
<xs:enumeration value="IpamApiInvalidDeviceType" />
<xs:enumeration value="IpamApiExportAddressFailed" />
<xs:enumeration value="IpamApiTaskWriteScopesFailed" />
<xs:enumeration value="IpamApiIPAddressExists" />
<xs:enumeration value="IpamApiUnsupportedDhcpServerVersionForConfigurationAudit" />
<xs:enumeration value="IpamApiGetLogicalNodeUtilizationFailed" />
<xs:enumeration value="IpamApiGetLogicalGroupUtilizationFailed" />
<xs:enumeration value="IpamApiAdditionOfIncompatibleIPUtilizations" />
<xs:enumeration value="IpamApiNoStaticAddressToExport" />
<xs:enumeration value="IpamApiImportStaticAddressFailed" />
<xs:enumeration value="IpamApiNoStaticAddressToImport" />
<xs:enumeration value="IpamApiDynamicRangeHasNoAssociatedScope" />
<xs:enumeration value="IpamApiAuditSearchEndTimeLessThanStartTime" />
<xs:enumeration value="IpamApiGenericErrorOccurred" />
<xs:enumeration value="IpamApiCannotUpdateOrDeleteBuiltInValues" />
<xs:enumeration value="IpamApiCannotUpdateValueOfManagedByServiceCustomField" />
<xs:enumeration value="IpamApiEnumerationAborted" />
<xs:enumeration value="IpamApiDuplicateCustomFieldsSpecified" />
<xs:enumeration value="IpamApiInvalidIPAddressConflict" />
<xs:enumeration value="IpamApiFetchFreeIPAccessDenied" />
<xs:enumeration value="IpamApiCallsAreNotAllowedUntilProvisioningIsDone" />
<xs:enumeration value="IpamApiCallsAreNotAllowedUntilSchemaConversionIsDone" />
<xs:enumeration value="IpamApiUpdateAddressExpiryStatusFailed" />
<xs:enumeration value="IpamApiAdjustingOverlappingRangesFailed" />
<xs:enumeration value="IpamApiGetOverlappingRangesFailed" />
<xs:enumeration value="IpamApiRemapRangeFailedNoParentBlock" />
<xs:enumeration value="IpamApiRemapRangeFailed" />
<xs:enumeration value="IpamApiCannotUpdateManagedByValueForMsDhcpRange" />
<xs:enumeration value="IpamApiImportFailed" />
<xs:enumeration value="IpamApiNameCollidesWithBuiltInImportableColumnName" />
<xs:enumeration value="IpamApiInvalidPrefixLength" />
<xs:enumeration value="IpamApiOwnerStringLengthNotAcceptable" />
<xs:enumeration value="IpamApiMandatoryFieldNotSpecified" />
<xs:enumeration value="IpamApiISubnetIDSubnetMaskMismatch" />
<xs:enumeration value="IpamApiInvalidStartIPAddress" />
<xs:enumeration value="IpamApiIpAddressOutOfRange" />
<xs:enumeration value="IpamApiRIRNotSpecifiedForAPublicIPv4Block" />
<xs:enumeration value="IpamApiRIRSpecifiedForAPrivateIPv4Block" />
<xs:enumeration value="IpamApiRIRReceivedDateSpecifiedForAPrivateIPv4Block" />
<xs:enumeration value="IpamApiFailedWithUniqueKeyViolation" />
<xs:enumeration value="IpamApiInvalidAddressAssignment" />
<xs:enumeration value="IpamApiInvalidUtilizationCalculationType" />
<xs:enumeration value="IpamApiInvalidUtilizationStatistics" />
<xs:enumeration value="IpamApiMandatoryCustomFieldsNotSpecified" />
<xs:enumeration value="IpamApiDhcpDataSpecifiedForStaticRange" />
<xs:enumeration value="IpamApiUtilizationDataNotSpecifiedForStaticRange" />
<xs:enumeration value="IpamApiInvalidExclusionRanges" />
<xs:enumeration value="IpamApiInvalidMacAddress" />
<xs:enumeration value="IpamApiStringLengthNotAcceptable" />
<xs:enumeration value="IpamMsmInvalidReservationSyncStatus" />
<xs:enumeration value="IpamMsmInvalidDnsSyncStatus" />
<xs:enumeration value="IpamApiDnsServerSpecifiedWithNoDnsZone" />
<xs:enumeration value="IpamApiForwardLookUpDnsServerDoesNotBelongToZone" /
<xs:enumeration value="IpamApiInvalidAddressExpiryDate" />
<xs:enumeration value="IpamApiInvalidIPv4ReservationType" />
<xs:enumeration value="IpamApiInvalidIaid" />
```


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```
      <xs:enumeration value="IpamApiInvalidDuidFormat" />
      <xs:enumeration value="IpamApiValueSpecifiedForFreeformCustomField" />
      <xs:enumeration value="IpamApiCustomFieldValueCannotBeNull" />
      <xs:enumeration value="IpamApiInvalidEnumeration" />
      <xs:enumeration value="IpamApiCustomFieldValueCollectionHasMultipleParents" />
      <xs:enumeration value="IpamApiFailedToAddBlock" />
      <xs:enumeration value="IpamApiFailedToDeleteBlock" />
      <xs:enumeration value="IpamApiFailedToUpdateBlock" />
      <xs:enumeration value="IpamApiFailedToFetchBlocks" />
      <xs:enumeration value="IpamApiFailedToAddRange" />
      <xs:enumeration value="IpamApiFailedToDeleteRange" />
      <xs:enumeration value="IpamApiFailedToUpdateRange" />
      <xs:enumeration value="IpamApiFailedToFetchRanges" />
      <xs:enumeration value="IpamApiFailedToAddAddress" />
      <xs:enumeration value="IpamApiFailedToDeleteAddress" />
      <xs:enumeration value="IpamApiFailedToUpdateAddress" />
      <xs:enumeration value="IpamApiFailedToFetchAddresses" />
      <xs:enumeration value="IpamApiFailedToAddCustomField" />
      <xs:enumeration value="IpamApiFailedToDeleteCustomField" />
      <xs:enumeration value="IpamApiFailedToUpdateCustomField" />
      <xs:enumeration value="IpamApiFailedToFetchCustomFields" />
      <xs:enumeration value="IpamApiInvalidDnsServer" />
      <xs:enumeration value="IpamApiFailedToFetchRangeCount" />
      <xs:enumeration value="IpamApiFailedToUpdateRanges" />
      <xs:enumeration value="IpamApiFailedToUpdateBlocks" />
      <xs:enumeration value="IpamApiFailedToUpdateAddresses" />
      <xs:enumeration value="IpamApiFailedToFetchScopes" />
      <xs:enumeration value="IpamApiFailedToFetchLogicalGroups" />
      <xs:enumeration value="IpamApiFailedToAddLogicalGroup" />
      <xs:enumeration value="IpamApiFailedToUpdateLogicalGroup" />
      <xs:enumeration value="IpamApiFailedToDeleteLogicalGroup" />
      <xs:enumeration value="IpamApiFailedToFetchLogicalGroupNodes" />
      <xs:enumeration value="IpamApiScopeNameAndMbeMismatch" />
      <xs:enumeration value="IpamApInvalidUpdateOriginModified" />
      <xs:enumeration value="IpamApInvalidUpdateTypeModified" />
      <xs:enumeration value="IpamApiCustomFieldInvalidBuiltInUpdate" />
      <xs:enumeration value="IpamApiLogicalFieldInvalidBuiltInUpdate" />
      <xs:enumeration value="IpamApiFailedToFetchLogicalGroupChildren" />
      <xs:enumeration
  value="IpamApiCannotUpdateDifferentServerManagedByEntityValueForMsDhcpRange" />
      <xs:enumeration value="IpamApiErrorImportOfMsDhcpRangesNotAllowed" />
      <xs:enumeration value="IpamApiIPAddressOutsideReverseLookupZoneBounds" />
      <xs:enumeration value="IpamUnableToEstablishSession" />
      <xs:enumeration value="IpamApiInvalidExpiryEventsLoggingPeriodicity" />
      <xs:enumeration value="IpamApiDuplicateCustomFieldValuesSpecified" />
      <xs:enumeration value="IpamApiImportInvalidManagedByValue" />
      <xs:enumeration value="IpamApiImportInvalidServiceInstanceValue" />
      <xs:enumeration value="IpamApiReverseLookUpDnsServerDoesNotBelongToZone" />
      <xs:enumeration value="IpamApiEndIpAddressOutOfRange" />
      <xs:enumeration value="IpamApiInvalidDeviceName" />
      <xs:enumeration value="IpamApiInvalidAssetTag" />
      <xs:enumeration value="IpamApiInvalidSerialNumber" />
      <xs:enumeration value="IpamApiInvalidDescription" />
      <xs:enumeration value="IpamApiInvalidReservationDescription" />
      <xs:enumeration value="IpamApiInvalidReservationName" />
      <xs:enumeration
  value="IpamApiCustomFieldValueCollidesWithBuiltInImportableCustomFieldValue" />
      <xs:enumeration value="IpamApiInvalidStartIPWithAllZeroes" />
      <xs:enumeration value="IpamApiInvalidEndIPHostIdAllOnes" />
```


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```
<xs:enumeration value="IpamApiCustomFieldNameExists" />
<xs:enumeration value="IpamApiInvalidAlertThreshold" />
<xs:enumeration value="IpamApiObjectNotFoundInDatabase" />
<xs:enumeration value="IpamApiInvalidIPv6GlobalAddress" />
<xs:enumeration value="IpamApiUnableToQueryDefaultAddressSpace" />
<xs:enumeration value="IpamApiFailedToAddAddressSpace" />
<xs:enumeration value="IpamApiFailedToUpdateAddressSpace" />
<xs:enumeration value="IpamApiFailedToAddOrUpdateAddressSpace" />
<xs:enumeration value="IpamApiFailedToDeleteAddressSpace" />
<xs:enumeration value="IpamApiFailedToFetchAddressSpaces" />
<xs:enumeration value="IpamApiAddressSpaceTypeCanNotBeChanged" />
<xs:enumeration value="IpamApiAddressSpaceNameNotSpecified" />
<xs:enumeration value="IpamApiAddressSpaceTypeNotSpecified" />
<xs:enumeration value="IpamApiIsolationMethodNotSpecified" />
<xs:enumeration value="IpamApiAddressSpaceNameAlreadyExists" />
<xs:enumeration value="IpamApiInvalidProviderAddressSpace" />
<xs:enumeration value="IpamApiDefaultProviderAddressSpaceCannotBeModified" />
<xs:enumeration value="IpamApiDefaultProviderAddressSpaceCannotBeDeleted" />
<xs:enumeration value="IpamApiInvalidAddressSpace" />
<xs:enumeration value="IpamApiReservedIPNotInRange" />
<xs:enumeration value="IpamApiVIPNotInRange" />
<xs:enumeration value="IpamApiVirtualizationTypeCanNotBeChanged" />
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<xs:enumeration value="IpamApiDhcpFailedToGetScopesForSuperscope" />
<xs:enumeration value="IpamApiDhcpFailedToGetSuperscopes" />
<xs:enumeration value="IpamApiDhcpFailedToAddScopesToSuperscopeInDatabase" />
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<xs:enumeration value="IpamApiDhcpFailedToRenameSuperscopeInDatabase" />
<xs:enumeration value="IpamApiDhcpFailedToDeleteSuperscopesInDatabase" />
<xs:enumeration value="IpamApiDhcpFailedToCreatePolicyInRemoteServer" />
<xs:enumeration value="IpamApiDhcpFailedToUpdatePolicyInRemoteServer" />
```


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<xs:enumeration value="IpamApiDhcpFailedToDeletePolicyInRemoteServer" />
<xs:enumeration value="IpamApiDhcpFailedToDeletePolicyInDatabase" />
<xs:enumeration value="IpamApiDhcpFailedToCreatePolicyInDatabase" />
<xs:enumeration value="IpamApiDhcpFailedToUpdatePolicyInDatabase" />
<xs:enumeration value="IpamApiDhcpFailedToFetchPolicyFromIpamDatabase" />
<xs:enumeration value="IpamApiDhcpFailedToFetchPolicyPropertyFromIpamDatabase" />
<xs:enumeration value="IpamApiInvalidClientId" />
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<xs:enumeration value="IpamApiBuiltinRoleCannotBeManaged" />
<xs:enumeration value="IpamApiInvalidRoleName" />
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<xs:enumeration value="IpamApiFailedToCreateUserRole" />
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<xs:enumeration value="IpamApiFailedToUpdateUserRole" />
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<xs:enumeration value="IpamApiParentAccessScopeNotFound" />
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<xs:enumeration value="IpamApiMaximumAccessScopeLevelReached" />
<xs:enumeration value="IpamApiSetAccessScopeForObjectsFailed" />
<xs:enumeration value="IpamApiAccessScopeManagementNotApplicable" />
<xs:enumeration value="IpamApiGetAccessScopeForObjectsFailed" />
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<xs:enumeration value="IpamApiFailedToDeleteAccessScopeAssociation" />
<xs:enumeration value="IpamApiFailedToValidateAccessScopeAssociationEntries" />
<xs:enumeration value="IpamApiCannotConnectUntilConfigurationCompleted" />
<xs:enumeration value="IpamApiAccessScopeMigrationFailed" />
<xs:enumeration value="IpamApiSecretKeyUnavailableOperationDenied" />
<xs:enumeration value="IpamApiHashRecomputationAlreadyInProgress" />
<xs:enumeration value="IpamApiHashRecomputationFailed" />
<xs:enumeration value="IpamApiOperationDeniedDueToAccessScopeTampering" />
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<xs:enumeration value="IpamApiDhcpFailoverFailedToFetchFromIpamDatabase" />
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<xs:enumeration value="IpamApiDhcpFailoverFailedToReplicateScopes" />
<xs:enumeration value="IpamApiDhcpFailoverFailedToReplicateServer" />
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<xs:enumeration value="IpamApiDhcpFilterFailedToDeleteInIpamDatabase" />
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      <xs:enumeration value="IpamApiDhcpFilterFailedToFetchFromIpamDatabase" />
      <xs:enumeration value="IpamApiUnableToResolveUserToSid" />
      <xs:enumeration value="IpamApiFailedToAddUserAccessPolicy" />
      <xs:enumeration value="IpamApiFailedToDeleteUserAccessPolicy" />
      <xs:enumeration value="IpamApiFailedToUpdateUserAccessPolicy" />
      <xs:enumeration value="IpamApiInsufficientPrivilege" />
      <xs:enumeration value="IpamApiInvalidAddressFamily" />
      <xs:enumeration value="IpamApiAccessDeniedForDeletionOfChildrenBlocks" />
      <xs:enumeration value="IpamErrorGetConfigurationStatusFailed" />
      <xs:enumeration value="IpamErrorIPAMNotProvisioned" />
      <xs:enumeration value="IpamApiErrorInvalidDBConfigDatabaseTypeNotValid" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigNameMustBeIPAM" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigPathCannotBeEmpty" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigPathIsNotRooted" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigDirectoryDoesNotExist" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigPathFormatError" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigServerNotAllowed" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigAuthNotSupported" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigInvalidCredential" />
      <xs:enumeration value="IpamApiErrorInvalidWIDDBConfigPortNotAllowed" />
      <xs:enumeration value="IpamApiErrorInvalidSQLDBConfigDatabaseNameCannotBeEmpty" />
      <xs:enumeration value="IpamApiErrorInvalidSQLDBConfigDatabasePathNotSupported" />
      <xs:enumeration value="IpamApiErrorInvalidSQLDBConfigDatabaseServerCannotBeEmpty" />
      <xs:enumeration value="IpamApiErrorInvalidSQLDBConfigInvalidPort" />
      <xs:enumeration value="IpamApiErrorInvalidSQLDBConfigAuthNotSupported" />
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      <xs:enumeration value="IpamApiErrorIpamAlreadyProvisioned" />
      <xs:enumeration value="IpamApiErrorUsingExistingSchemaNotSupported" />
      <xs:enumeration value="IpamApiErrorDatabaseDoesNotExist" />
      <xs:enumeration value="IpamApiErrorDatabaseIsEmpty" />
      <xs:enumeration value="IpamApiErrorDatabaseSchemaExists" />
      <xs:enumeration value="IpamApiErrorDatabaseCreateFailed" />
      <xs:enumeration value="IpamApiErrorDatabaseSchemaCreateFailed" />
      <xs:enumeration value="IpamErrorExpandPath" />
      <xs:enumeration value="IpamApiErrorDatabaseFileAlreadyExists" />
      <xs:enumeration value="IpamApiErrorConfigureDatabasServerFailed" />
      <xs:enumeration value="IpamApiErrorStartDatabaseServiceFailed" />
      <xs:enumeration value="IpamApiErrorCreateDatabasePreProcessingFailed" />
      <xs:enumeration value="IpamApiErrorCreateDatabasePostProcessingFailed" />
      <xs:enumeration value="IpamApiErrorFailedToConnectToDatabaseServer" />
      <xs:enumeration value="IpamApiErrorDatabaseLoginFailed" />
      <xs:enumeration value="IpamApiErrorDatabaseLoginFailedInvalidUserId" />
      <xs:enumeration value="IpamApiErrorDatabaseLoginFailedInvalidPassword" />
      <xs:enumeration value="IpamApiErrorDatabaseLoginFailedPasswordChangeRequired" />
      <xs:enumeration value="IpamErrorFailedToConnectToDatabase" />
      <xs:enumeration value="IpamApiErrorInvalidDatabaseConfiguration" />
      <xs:enumeration value="IpamApiErrorChangeDatabaseSettingsNotAllowedForDBTypes" />
      <xs:enumeration value="IpamApiErrorFailedToChangeDatabaseSettings" />
      <xs:enumeration value="IpamApiErrorMoveDBNotAllowedFromCurrentDBType" />
      <xs:enumeration value="IpamApiErrorMoveDBAllowedOnlyToMSSQL" />
      <xs:enumeration value="IpamApiErrorFailedToMoveDatabase" />
      <xs:enumeration value="IpamApiErrorMoveDatabaseFailedInSettingDatabaseConfiguration" />
      <xs:enumeration value="IpamApiErrorFailedToGetDBServerVersion" />
      <xs:enumeration value="IpamApiErrorDatabaseServerVersionNotSupported" />
      <xs:enumeration value="IpamApiErrorDatabaseServerEditionNotSupported" />
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      <xs:enumeration value="IpamApiErrorDatabaseLocaleMismatch" />
      <xs:enumeration value="IpamApiErrorFailedToGetDatabaseSchemaVersion" />
      <xs:enumeration value="IpamApiErrorDatabaseSchemaVersionMismatch" />
      <xs:enumeration value="IpamApiErrorFailedToGetSchemaValidationScript" />
      <xs:enumeration value="IpamApiErrorVerifySchemaFailed" />
      <xs:enumeration value="IpamApiErrorInvalidCredentialStoreType" />
      <xs:enumeration value="IpamApiErrorInvalidCredentialIdentifierFormat" />
      <xs:enumeration value="IpamApiErrorFailedToCreateCredentialRootKey" />
      <xs:enumeration value="IpamApiErrorFailedToOpenCredentialRootKey" />
      <xs:enumeration value="IpamApiErrorCredentialAlreadyExist" />
      <xs:enumeration value="IpamAPiErrorCredentialDoesNotExist" />
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      <xs:enumeration value="IpamApiErrorReadCredentialFailed" />
      <xs:enumeration value="IpamApiErrorUpdateCredentialFailed" />
      <xs:enumeration value="IpamApiErrorDeleteCredentialFailed" />
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      <xs:enumeration value="IpamApiErrorFailedToCreateDBConfigurationRootKey" />
      <xs:enumeration value="IpamApiErrorFailedToOpenDBConfigurationRootKey" />
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      <xs:enumeration value="IpamApiErrorDeleteDBConfigurationFailed" />
      <xs:enumeration value="IpamApiFailedToRetrieveDatabaseConfiguration" />
      <xs:enumeration value="IpamApiFailedToConnectToDatabase" />
      <xs:enumeration value="IpamApiErrorDatabaseSchemaIsModified" />
      <xs:enumeration value="IpamApiErrorUpgradePathNotAvailable" />
      <xs:enumeration value="IpamApiErrorDatabaseIsAtHigherVersion" />
      <xs:enumeration value="IpamApiErrorSchemaVersionNumberFormatError" />
      <xs:enumeration value="IpamMsmGetDnsResourceRecordNonExistentRecord" />
      <xs:enumeration value="IpamApiSameCustomFieldsInAssociation" />
      <xs:enumeration value="IpamApiInvalidCustomFieldAssociationValues" />
      <xs:enumeration value="IpamApiInvalidCustomFieldTypeInAssociation" />
      <xs:enumeration value="IpamApiDuplicateCustomFieldAssociationValues" />
      <xs:enumeration value="IpamApiCustomFieldAssociationIntersectionEmpty" />
      <xs:enumeration value="IpamApiFailedToAddCustomFieldAssociation" />
      <xs:enumeration value="IpamApiFailedToDeleteCustomFieldAssociation" />
      <xs:enumeration value="IpamApiFailedToUpdateCustomFieldAssociation" />
      <xs:enumeration value="IpamApiFailedToFetchCustomFieldAssociations" />
      <xs:enumeration value="IpamApiCustomFieldAssociationAlreadyExists" />
      <xs:enumeration value="IpamApiInvalidIPAuditTrackingSetting" />
      <xs:enumeration value="IpamApiInvalidGpoPrefix" />
      <xs:enumeration value="IpamApiErrorReadSecretKeyFailed" />
      <xs:enumeration value="IpamApiErrorCreateSecretKeyFailed" />
      <xs:enumeration value="IpamApiErrorDeleteSecretKeyFailed" />
      <xs:enumeration value="IpamApiErrorUpdateSecretKeyFailed" />
      <xs:enumeration value="IpamApiErrorSecretKeyIsNotGUID" />
      <xs:enumeration value="IpamWmiInvalidUnmanagedObject" />
      <xs:enumeration value="IpamwmiInvalidManagedObject" />
      <xs:enumeration value="IpamWmiInvalidIPRangeRecordId" />
      <xs:enumeration value="IpamWmiInvalidNetworkId" />
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      <xs:enumeration value="IpamWmiInvalidIpamIPAddressRecordId" />
    </xs:restriction>
  </xs:simpleType>
```

The following table specifies the description for each of the error identifiers specified above.

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Value	Description
IpamApiAccessDenied	The logged-in user doesn't have privileges to perform this action. Log in as local administrator or a member of an appropriate **IPAM security group** before attempting this action.
IpamApiAdditionOfIncompatibleIPUtilizations	Addition of incompatible IP utilizations attempted. The start date and/or end date are not the same.
IpamApiAddressCategoryCheckFailed	Failed to do the address category check of the current item against existing items.
IpamApiAddressResolutionFailed	Could not resolve the IP address. Check inner exception for more details.
IpamApiAddScopeFailed	Addition of scope failed. Check inner exception for more details.
IpamApiAdjustChildBlocksFailed	Adjust IP address blocks failed. Check inner exception for more details.
IpamApiAdjustChildIPAddressesFailed	Adjust IP addresses failed. Check inner exception for more details.
IpamApiAdjustChildRangesFailed	Adjust IP address blocks failed. Check inner exception for more details.
IpamApiAdjustingOverlappingRangesFailed	Failed to adjust the overlapping ranges on range add, update or delete.
IpamApiAdjustUnmappedRangesFailed	Failed to update the unmapped ranges. Check inner exception for more details.
IpamApiAssociatedScopesForVendorClassFailedToGetUnionFromCollection	Failed to get union of associated scopes for vendor class from collection object.

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Value	Description
IpamApiAuditLogFailedToUpdateInIpamDatabase	Failed to update audit log for DHCP in database. Check inner exception for more details.
IpamApiAuditPurgeAlreadyInProgress	An active session of purging of event catalog data is in progress. There is no further action required. Please try purge after completion of the active session.
IpamApiDhcpScopesNotPartOfSameServer	Unable to perform operation since scopes must belong to same server.
IpamApiDhcpFailedToAddScopesToSuperscope	Failed to add one or more DHCP scopes to superscope.
IpamApiDhcpFailedToRemoveScopesFromSuperscope	Failed to remove one or more DHCP scopes from superscopes.
IpamApiDhcpFailedToSetSuperscopeActivateStatus	Failed to set superscope activation status.
IpamApiDhcpFailedToRenameSuperscope	Failed to rename superscope.
IpamApiDhcpFailedToDeleteSuperscopes	Failed to delete one or more superscopes.
IpamApiDhcpFailedToGetScopesForSuperscope	Failed to get scopes for superscope
IpamApiDhcpFailedToGetSuperscopes	Failed to get superscopes.
IpamApiAuditSearchEndTimeLessThanStartTime	The specified search end time is not greater than the start time.
IpamApiCallsAreNotAllowedUntilProvisioningIsDone	IPAM configuration has not been completed. Launch the configuration wizard from the IPAM homepage to complete the configuration before attempting any IPAM operation.
IpamApiCallsAreNotAllowedUntilSchemaConversionIsDone	The **schema conversion** has not been completed. Convert the schema of the database from the IPAM homepage to complete

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Value	Description
	the configuration before attempting any IPAM operation.
IpamApiCannotAddBuiltInField	Cannot add a built-in field.
IpamApiCannotCreateUdpState	Cannot create socket to send or receive DHCP INFORM.
IpamApiCannotDeleteBuiltInField	Cannot delete a built-in field.
IpamApiCannotUpdateValueOfManagedByServiceCustomField	The values of built-in custom field ManagedByService cannot be updated.
IpamApiCannotUpdateDifferentServerManagedByEntityValueForMsDhcpRange	Service instance value of an MS DHCP range cannot be updated due to a different DHCP server.
IpamApiCannotUpdateManagedByValueForMsDhcpRange	The service value of an MS DHCP range cannot be updated.
IpamApiCannotUpdateOrDeleteBuiltInValues	The built-in values of built-in custom fields cannot be updated/deleted.
IpamApiCantGetSelfIP	Cannot get the server's network interface to reach DHCP servers.
IpamApiCheckForConflictsFailed	Check for IP address range conflicts. See the inner exception for more details.
IpamApiCmdletGetDhcpServerAuditLogConfigurationFailed	Could not fetch audit logging status.
IpamApiCmdletGetDhcpServerDatabaseConfigurationFailed	Could not fetch database configurations for DHCP server.
IpamApiCmdletGetDnsServerRecursionFailed	Could not get recursion setting on DNS server.
IpamApiCmdletGetDnsServerZoneFailed	Could not fetch zones for DNS server.
IpamApiCmdletGetServiceFailed	Could not get service running status.

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Value	Description
IpamApiCmdletSetDhcpServerAuditLogConfigurationFailed	Could not set audit logging status.
IpamApiConflictingIPBlocksExist	The proposed block {0} conflicts with the following existing blocks - {1}. Modify the proposed IP address block so that it does not overlap with the existing block, or ensure that it is an absolute super-block or a sub-block of the existing block.
IpamApiCustomFieldInvalidBuiltInUpdate	The name, type or origin of the built-in fields cannot be modified.
IpamApiCustomFieldNameExists	The specified custom field name already exists. Select a different name.
IpamApiCustomFieldValueCannotBeNull	The value specified for a custom field value cannot be NULL.
IpamApiCustomFieldValueCollectionHasMultipleParents	The custom field value collection contains multiple parent custom fields.
IpamApiCustomFieldValueCollidesWithBuiltInImportableCustomFieldValue	Specified custom field value is the same as a built-in fixed value for this custom field.
IpamApiCustomFieldValueExists	The specified custom field value already exists. Choose a different value.
IpamApiCustomFieldValueForMultiValueCustomFieldDoesntExist	The value specified for the multiple value custom field does not exist.
IpamApiDatabaseConnectionLost	Unable to perform the operation as the communication to IPAM database has failed. Confirm whether the Windows Internal Database service is running on the IPAM server and try the operation again.
IpamApiDataUpdateErrorInServerBookmark	Error occurred while updating server

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Value	Description
	bookmark.
IpamApiDeleteScopeFailed	Failed to delete the scope. Check inner exception for more details.
IpamApiDeviceTypeDoNotExists	Device type custom field does not exist.
IpamApiDhcpDataSpecifiedForStaticRange	The DHCP server-specific data was specified for a static range.
IpamApiDhcpExclusionRangeFailedToFetch	Failed to fetch DHCPExclusionRange from database. Please check inner exception for more details.
IpamApiDhcpInformNotAcknowledged	There was no response for DHCP Inform from server.
IpamApiDhcpOptionDefinitionFailedToGetFromCollection	Failed to get DHCP Option Definitions from collection object.
IpamApiDhcpOptionFailedToDeleteInIpamDatabase	Failed to delete DHCP Option from database. Please check inner exception for more details.
IpamApiDhcpOptionFailedToGetFromCollection	Failed to get DHCP Option from DHCP Option collection.
IpamApiDhcpOptionFailedToUpdateInIpamDatabase	Failed to update DHCP Option in database. Check inner exception for more details.
IpamApiDhcpScopeFailedToAddInIpamDatabase	Failed to add DHCP scope in database. Check inner exception for more details.
IpamApiDhcpScopeFailedToAddInRemoteServer	Failed to add DHCP scope in remote DHCP server. Check inner exception for more details.
IpamApiDhcpScopeFailedToApplyConfiguration	Failed to apply configuration on DHCP scope on remote DHCP server.
IpamApiDhcpScopeFailedToDeleteInIpamDatabase	Failed to delete DHCP scope from database.

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Value	Description
	Check inner exception for more details.
IpamApiDhcpScopeFailedToDeleteInRemoteServer	Failed to delete DHCP scope from remote DHCP server. Check inner exception for more details.
IpamApiDhcpScopeFailedToFetchFromIpamDatabase	Failed to fetch DHCP scope from database. Please check inner exception for more details.
IpamApiDhcpScopeFailedToGetAllScopeIds	Failed to fetch all DHCP scope IDs from database. Please check inner exception for more details.
IpamApiDhcpScopeFailedToGetAllStatelessScopeIds	Failed to fetch all stateless DHCP scope IDs from database. Please check inner exception for more details.
IpamApiDhcpScopeFailedToUpdateInIpamDatabase	Failed to update DHCP scope in database. Please check inner exception for more details.
IpamApiDhcpServerCollectionFailedToGetFromDhcpScopeCollectionObject	Failed to get DHCP servers collection from DHCP scope collection objects.
IpamApiDhcpServerFailedToApplyConfiguration	Failed to apply configuration on DHCP server.
IpamApiDhcpServerFailedToFetchFromIpamDatabase	Failed to fetch DHCP server from database. Please check inner exception for more details.
IpamApiDhcpServerFailedToFetchFromRemoteServer	Failed to fetch DHCP server data from remote DCHP server. Please check inner exception for more details.
IpamApiDhcpServerFailedToGetFromCollection	Failed to get DHCP servers from collection object.
IpamApiDhcpServerFailedToUpdateInIpamDatabase	Failed to update DHCP

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Value	Description
	server in ipam database.
IpamApiDhcpServerFailedToUpdateInRemoteServer	Failed to update DHCP server on remote server.
IpamApiDhcpServerQueryDnsRegCredentialsFailed	Query for DNS registration credentials failed.
IpamApiDiscoveredSubnetsFailedToFetch	Failed to fetch discovered subnets from database. Please check inner exception for more details.
IpamApiDiscoveryConfigFailedToAdd	Failed to add discovery configuration in database. Please check inner exception for more details.
IpamApiDiscoveryConfigFailedToDelete	Failed to delete discovery configuration in database. Please check inner exception for more details.
IpamApiDiscoveryConfigFailedToFetch	Failed to fetch discovery configuration from database. Please check inner exception for more details.
IpamApiDiscoveryConfigFailedToUpdate	Failed to update discovery configuration in database. Please check inner exception for more details.
IpamApiDiscoveryConfigObjectNotFoundInDatabase	Discovery configuration object not found in database.
IpamApiDNSNSQueryFailed	DNS Name Servers Query failed.
IpamApiDnsRegCredentialsFailedToUpdateInIpamDatabase	Failed to update DNS Registration Credentials for DHCP in database. Please check inner exception for more details.
IpamApiDnsReverseLookupZoneFailedToAdd	Failed to add DNS reverse lookup zone into database.
IpamApiDnsReverseLookupZoneFailedToDelete	Failed to delete DNS

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Value	Description
	reverse lookup zone from database.
IpamApiDnsReverseLookupZoneFailedToFetch	Failed to fetch dns reverse lookup zone from database.
IpamApiDnsReverseLookupZoneFailedToUpdate	Failed to update dns reverse lookup zone into database.
IpamApiDnsServerFailedToFetchFromIpamDatabase	Failed to fetch dns server from database. Please check inner exception for more details.
IpamApiDnsServerFailedToUpdateInIpamDatabase	Failed to update dns server into database.
IpamApiDnsServerReverseZoneFailedToAdd	Failed to add dns server reverse zone in database.
IpamApiDnsServerReverseZoneFailedToDelete	Failed to delete dns server reverse zone from database.
IpamApiDnsServerReverseZoneFailedToFetch	Failed to fetch dns server reverse zone from database. Please check inner exception for more details.
IpamApiDnsServerReverseZoneFailedToUpdate	Failed to update dns server reverse zone in database.
IpamApiDnsServersNotFound	Dns servers for specified domain could not be found on network.
IpamApiDnsServerSpecifiedWithNoDnsZone	Dns server value is specified without a valid dns zone.
IpamApiDnsServerZoneFailedToAdd	Failed to add dns server zone in database.
IpamApiDnsServerZoneFailedToDelete	Failed to delete dns server zone from database.
IpamApiDnsServerZoneFailedToFetch	Failed to fetch dns server zone from database. Please check inner exception for more details.
IpamApiDnsServerZoneFailedToUpdate	Failed to update dns server zone in database.

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Value	Description
IpamApiDnsSettingsFailedToUpdateInIpamDatabase	Failed to update DNS Settings for DHCP in database. Please check inner exception for more details.
IpamApiDnsZoneEventFailedToAdd	Failed to add dns zone event in database.
IpamApiDnsZoneEventFailedToDelete	Failed to delete dns zone event from database.
IpamApiDnsZoneEventFailedToFetch	Failed to fetch dns zone events from database.
IpamApiDnsZoneEventFailedToFetchFromRemoteServer	Failed to fetch dns zone event from remote server.
IpamApiDnsZoneEventGroupFailedToAdd	Failed to add dns zone event group in database.
IpamApiDnsZoneEventGroupFailedToDelete	Failed to delete dns zone event group from database.
IpamApiDnsZoneEventGroupFailedToFetch	Failed to fetch dns zone event group from database.
IpamApiDnsZoneEventGroupFailedToUpdate	Failed to update dns zone event group in database.
IpamApiDnsZoneFailedToAdd	Failed to add dns forward lookup zone in database.
IpamApiDnsZoneFailedToDelete	Failed to delete dns forward lookup zone from database.
IpamApiDnsZoneFailedToResetHealth	Failed to reset zone status.
IpamApiDnsZoneFailedToFetch	Failed to fetch dns forward lookup zone from database.
IpamApiDnsZoneFailedToUpdate	Failed to update dns forward lookup zone in database.
IpamApiDuplicateCustomFieldsSpecified	The item cannot contain values for duplicate custom fields.
IpamApiDuplicateCustomFieldValuesSpecified	Duplicate custom field values specified.
IpamApiDynamicRangeHasNoAssociatedScope	Dynamic range has no

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Value	Description
	associated scope.
IpamApiEndIpAddressOutOfRange	Invalid value of end IP address specified. End IP address should exist within the specified Network ID.
IpamApiEnumerationAborted	Unable to retrieve the data. The communication to the server has failed.
IpamApiErrorDatabaseCreationOrPopulationFailed	Creation and pre-fill with default values of IPAM database failed.
IpamApiErrorDatabasePostProcessingFailed	Provisioning IPAM database permissions for IPAM security groups failed.
IpamApiErrorFetchCountryOrRegionListFailed	Failed to retrieve the Country/Region list. See the event log for more information.
IpamApiErrorImportOfMsDhcpRangesNotAllowed	Range inventory for service instance cannot be imported since the managed by service value is specified as MS DHCP. MS DHCP is used by IPAM to signify IP address ranges automatically discovered from the managed DHCP servers. If intended, specify another value of the managed by service field to import this range inventory.
IpamApiErrorInvalidPortConfiguration	Unable to query the server port due to invalid port configuration. Use PowerShell commandlet Set-IpamConfiguration to set the IPAM server port.
IpamApiErrorObtainingRemoteServerTimeZoneDifference	The time zone difference of the DHCP server could not be obtained.
IpamApiErrorSecurityGroupCreationFailed	Creation of IPAM security groups failed.
IpamApiErrorSQLServiceConfigurationFailed	Database service startup failed.

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Value	Description
IpamApiErrorUnabletoGetIpamConfigurationStatus	Failed to get IPAM configuration status. Check inner exception for more details.
IpamApiErrorUnabletoGetSchemaOfIpam	Failed to get schema version of database. Check inner exception for more details.
IpamApiErrorUnabletoGetSchemaOfIpamDueToDatabaseFailure	Failed to get schema version of database. Confirm whether the Windows Internal Database service is running on the IPAM server and try the operation again.
IpamApiErrorUpdatingAuditFolderPermissionsFailed	Provisioning IPAM Audit folder permissions for IPAM security groups failed.
IpamApiErrorUpdatingDatabaseFolderPermissionsFailed	Provisioning IPAM Database folder permissions for WID Service failed.
IpamApiErrorUpdatingEventLogReaderGroupFailed	Provisioning IPAM Audit task for access to Event Log Reader group failed.
IpamApiErrorUpdatingIpamTaskPermissionsFailed	Updating IPAM tasks permissions for IPAM security groups failed.
IpamApiEventIdNotSupported	Event ID is not supported for monitoring in IPAM.
IpamApiExclusionRangeAlreadyExists	The specified exclusion range already exists.
IpamApiExclusionRangeDoesNotExist	The specified exclusion range does not exist.
IpamApiExclusionRangeFailedToAdd	Failed to add exclusion range in database. Please check inner exception for more details.
IpamApiExclusionRangeFailedToDelete	Failed to delete exclusion range from database. Check inner exception for more details.
IpamApiExportAddressFailed	Export of static IP addresses failed.

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Value	Description
IpamApiFailedCheckCollectionContainsDhcpOption	Failed to check whether DHCP option collection contains given DHCP option.
IpamApiFailedInCheckObjectConsistency	Error occurred while checking object consistency.
IpamApiFailedToAdd	Addition failed. Check inner exception for more details.
IpamApiFailedToAddAddress	Failure occurred when trying to add IP address.
IpamApiFailedToAddBlock	Failure occurred when trying to add IP address block.
IpamApiFailedToAddConfigurationAuditRecord	Failed to add configuration audit record.
IpamApiFailedToAddCustomField	Failure occurred when trying to add Custom Field.
IpamApiFailedToAddIPAuditRecord	Failed to add IP Audit record.
IpamApiFailedToAddLogicalGroup	Failure occurred when trying to add logical group.
IpamApiFailedToAddRange	Failure occurred when trying to add IP Range.
IpamApiFailedToCheckAvailabilityConfigurationAuditRecord	Failed to check availability of configuration audit record.
IpamApiFailedToCheckAvailabilityIPAuditRecord	Failed to check availability of IP audit record.
IpamApiFailedToClearUtilizationData	Failed to clear utilization data.
IpamApiFailedToCloseUdpState	Error while closing socket connection.
IpamApiFailedToCollectConfigurationInfo	Failed to collect configuration information from remote server.
IpamApiFailedToCollectDcIPAuditInfo	Failed to collect DC IP-Audit data.
IpamApiFailedToCollectDhcpConfigurationAuditInfo	Failed to collect DHCP

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Value	Description
	Configuration-Audit data.
IpamApiFailedToCollectDhcpConfigurationInfo	Failed to collect DHCP data from remote server.
IpamApiFailedToCollectDhcpIPAuditInfo	Failed to collect DHCP IP-Audit data.
IpamApiFailedToCollectIpamConfigurationAuditInfo	Failed to collect IPAM Configuration-Audit data.
IpamApiFailedToCollectNpsIPAuditInfo	Failed to collect NPS IP-Audit data.
IpamApiFailedToDelete	Deletion failed. Check inner exception for more details.
IpamApiFailedToDeleteAddress	Failure occurred when trying to delete IP address.
IpamApiFailedToDeleteBlock	Failure occurred when trying to delete IP address block.
IpamApiFailedToDeleteConfigurationAuditRecord	Failed to delete configuration audit records.
IpamApiFailedToDeleteCustomField	Failure occurred when trying to delete Custom Field.
IpamApiFailedToDeleteEventsNotUsed	Failed to delete events not being used anymore.
IpamApiFailedToDeleteIPAddress	Failed to delete IP addresses of server.
IpamApiFailedToDeleteIPAuditRecord	Failed to delete IP Audit records.
IpamApiFailedToDeleteLogicalGroup	Failure occurred when trying to delete logical group.
IpamApiFailedToDeleteOldEventsMapping	Failed to delete old events mapping.
IpamApiFailedToDeleteRange	Failure occurred when trying to delete IP Range.
IpamApiFailedToDeRegisterIPAddress	Failed to de register IP address from DNS server.
IpamApiFailedToFetchADDomain	Failed to get AD domain name for this server.

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Value	Description
IpamApiFailedToFetchAddresses	Failure occurred when trying to fetch IP addresses.
IpamApiFailedToFetchBindingAddress	Could not fetch DHCP Binding addresses.
IpamApiFailedToFetchBlocks	Failure occurred when trying to fetch IP address blocks.
IpamApiFailedToFetchCustomFields	Failure occurred when trying to fetch Custom Fields.
IpamApiFailedToFetchDCServers	Could not fetch DC servers for given domain.
IpamApiFailedToFetchDHCPServers	Could not fetch List of DHCP servers.
IpamApiFailedToFetchIpAddressFromNetwork	Failed to fetch IP address from network.
IpamApiFailedToFetchLogicalGroupChildren	Failure occurred when trying to fetch logical group children.
IpamApiFailedToFetchLogicalGroupNodes	Failure occurred when trying to fetch logical group nodes.
IpamApiFailedToFetchRangeCount	Failed to get the total range count.
IpamApiFailedToFetchRanges	Failure occurred when trying to fetch IP ranges.
IpamApiFailedToFetchScopes	Failed to fetch scopes.
IpamApiFailedToFindChildZones	Could not find child zones for this zone. Check inner exception for more details.
IpamApiFailedToFindParentZone	Could not find parent zone for this zone. Check inner exception for more details.
IpamApiFailedToGetAllExclusionRanges	Failed to get all exclusion ranges.
IpamApiFailedToGetConfigurationAuditBookmarkInformation	Failed to get Configuration Audit Bookmark.
IpamApiFailedToGetIPAddressesFromName	Failed to get IP addresses from reverse lookup zone

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Value	Description
	name.
IpamApiFailedToGetIPAuditBookmarkInformation	Failed to get IP Audit Bookmark.
IpamApiFailedToGetNoOfForwardLookupZones	Failed to get number of forward lookup zones.
IpamApiFailedToGetNumberOfForwardLookupZones	Failed to get number of forward lookup zones for DNS server.
IpamApiFailedToGetOverallAuditFileAccessStatus	Failed to get overall DHCP audit file access status.
IpamApiFailedToGetOverallEventViewerAccessStatus	Failed to get overall event viewer access status.
IpamApiFailedToGetOverallRpcAccessStatus	Failed to get overall RPC access status.
IpamApiFailedToGetOverallServerAccessStatus	Failed to get overall server access status.
IpamApiFailedToGetServerConfiguration	Failed to get the IPAM configuration.
IpamApiFailedToGetUtilizationData	Utilization data cannot be retrieved.
IpamApiFailedToProcessDhcpServer	Failed while trying to process DHCP server and add it to the database.
IpamApiFailedToPurgeAuditData	Failed to purge audit data. Check inner exception for details.
IpamApiFailedToReceiveToValidateDhcpServers	Error while validating DHCP servers by sending INFORM packets. Could not receive packets.
IpamApiFailedToRefreshDhcpServiceStatus	Failed to get DHCP service running status from remote server.
IpamApiFailedToRefreshServiceStatus	Failed to refresh service status from remote server.
IpamApiFailedToRegisterIPAddress	Failed to register IP address on DNS server.
IpamApiFailedToRemoveFromChildAndParentRelation	Failed to remove given zone from parent and child relationship.

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Value	Description
IpamApiFailedToResetDhcpCommonInfo	Failed to delete all DHCP data and reset it to default data.
IpamApiFailedToRetrieveProperty	Failed to retrieve the property.
IpamApiFailedToRollupUtilizationData	The utilization data cannot be rolled up. Check inner exception for details.
IpamApiFailedToSaveIPAddress	Failed to save IP addresses of server.
IpamApiFailedToSaveProperty	Failed to save the property.
IpamApiFailedToSendToValidateDhcpServers	Error while validating DHCP servers by sending INFORM packets. Could not send packets.
IpamApiFailedToSetConfigurationAuditBookmarkInformation	Failed to set Configuration Audit Bookmark.
IpamApiFailedToSetIPAuditBookmarkInformation	Failed to set IP Audit Bookmark.
IpamApiFailedToSetUtilizationData	Failed to set the utilization data. Check inner exception for details.
IpamApiFailedToUpdate	Update failed. Check inner exception for more details.
IpamApiFailedToUpdateAddress	Failure occurred when trying to update IP Address.
IpamApiFailedToUpdateAddresses	Failure occurred when trying to update addresses.
IpamApiFailedToUpdateBlock	Failure occurred when trying to update IP address block.
IpamApiFailedToUpdateBlocks	Failure occurred when trying to update IP address blocks.
IpamApiFailedToUpdateCustomField	Failure occurred when trying to update Custom Field.
IpamApiFailedToUpdateLogicalGroup	Failure occurred when trying to update logical

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Value	Description
	group.
IpamApiFailedToUpdateRange	Failure occurred when trying to update IP range.
IpamApiFailedToUpdateRanges	Failure occurred when trying to update ranges.
IpamApiFailedToUpdateZonesHealthAndDeleteOldEvents	Failed to update zone health and delete old events.
IpamApiFailedToValidateDhcpServers	Error while validating DHCP servers by sending INFORM packets.
IpamApiFailedWithUniqueKeyViolation	This operation has failed for the record, as it conflicts with an existing record in the IPAM database. Please retry by providing appropriate value for its uniquely identifiable properties.
IpamApiFetchFailed	Failed to retrieve the data. Check inner exception for more details.
IpamApiFetchFreeIPAccessDenied	Find Available IP Address: Unable to find an available IP address due to insufficient privileges. **DHCP Users** privileges are required to complete this operation.
IpamApiFetchGuidFailed	Could not fetch GUID from DC for server.
IpamApiFetchNameAndOsFromGuidFailed	Failed to fetch new name, DNS suffix, and OS information regarding a server using its GUID and AD domain.
IpamApiFetchSamAccountNameFailed	Failed to fetch SamAccountName of server from Global Catalog.
IpamApiFieldIdNotSpecified	The database ID was not specified.
IpamApiFindParentFailed	Parent cannot be found. Check inner exception for more details.

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Value	Description
IpamApiForwardLookUpDnsServerDoesNotBelongToZone	Invalid value of forward lookup primary server specified. The specified server is not a primary server for the specified forward lookup zone.
IpamApiForwardLookupZoneAlreadyExists	Forward lookup zone already exists in database.
IpamApiFreeIPAddressesFailedToFetchFromRemoteServer	Failed to fetch free IP address from remote server.
IpamApiGenericDatabaseError	Unable to perform the operation. Database exception occurred.
IpamApiGenericErrorOccurred	The operation failed because of the following error.
IpamApiGetCustomFieldsValuesFailed	Failed to retrieve the custom field data. Check inner exception for more details.
IpamApiGetDhcpServersFailed	Get list of DHCP servers failed.
IpamApiGetDnsServersFailed	Failed to get DNS servers. Check inner exception for more details.
IpamApiGetDomains	Failed to fetch domains in the enterprise. Check inner exception for more details.
IpamApiGetIPBlockAddressAssignmentFailed	Retrieval of IP address block address assignment failed. Check inner exception for more details.
IpamApiGetIPBlockChildrenFailed	Cannot retrieve the IP address block children. Check inner exception for more details.
IpamApiGetIPBlockDepthFailed	Failed to retrieve IP address block depth. Check inner exception for more details.
IpamApiGetLogicalGroupUtilizationFailed	Failed to get logical group utilization. Check inner

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Value	Description
	exception for details.
IpamApiGetLogicalNodeUtilizationFailed	Failed to get logical node utilization. Check inner exception for details.
IpamApiGetOverlappingRangesFailed	Failed to retrieve overlapping IP address ranges.
IpamApiGetServerPortAccessDenied	The user access is denied for querying the IPAM server configuration. Retry the operation as a local administrator, or ensure the IPAM is provisioned and the user is part of the appropriate IPAM security group on the server.
IpamApiGetServersFailed	Failed to get list of servers from database.
IpamApiGetVendorClassFromObjectFailed	Failed to get Vendor class from collection object.
IpamApiGuidDoesntMatch	Specified name or domain is not correct for specified server.
IpamApiImportAddressFailed	Import of static IP addresses failed.
IpamApiImportFailed	Import failed.
IpamApiImportInvalidManagedByValue	Invalid value of managed by service specified. If intended, add the new value using the custom field mapper or else use one of the existing supported values.
IpamApiImportInvalidServiceInstanceValue	Invalid value of service instance specified. If intended, add the new value using the custom field mapper or else use one of the existing supported values.
IpamApiImportStaticAddressFailed	Unable to import the static IP addresses from the specified file. This could be either because the file format is incorrect or the file itself is

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Value	Description
	corrupted. Correct the problem and try again.
IpamApiInvalidADDomain	Active Directory Domain is invalid.
IpamApiInvalidADDomainConfigurationStatus	Configuration status of AD domain is invalid.
IpamApiInvalidADDomainGuid	GUID of AD domain is invalid.
IpamApiInvalidADDomainRecordId	Database record ID of AD domain is invalid.
IpamApiInvalidAddressAssignment	Invalid value of assignment type specified. Supported values are Auto, VIP, Static, or Dynamic.
IpamApiInvalidAddressExpiryDate	Invalid value of expiry date specified. Expiry date should be more than the value of assignment date, if assignment date is specified.
IpamApiInvalidAddressRange	The specified IP address range or block contains both public and private IP addresses. Modify the start and end IP addresses so that it contains only public or private IP addresses.
IpamApiInvalidAlertThreshold	Invalid value specified for expiry alert threshold. Enter a value between 0 days to 3500 days.
IpamApiInvalidAssetTag	Invalid value of asset tag specified. Maximum length of asset tag string can be 255.
IpamApiInvalidAuditFileAccessStatus	Server Audit File Access status is not valid.
IpamApiInvalidAuditLoggingStatus	Audit logging status is invalid.
IpamApiInvalidBackupPath	Backup database path for DHCP server is invalid.
IpamApiInvalidCharactersSpecified	Invalid characters are specified in the input.

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Value	Description
IpamApiInvalidDatabasePath	Database path for DHCP server is invalid.
IpamApiInvalidDescription	Invalid value of description specified. Maximum length of description string can be 4000.
IpamApiInvalidDeviceName	Invalid value of device name specified. Maximum length of device name string can be 255.
IpamApiInvalidDeviceType	Device type is invalid.
IpamApiInvalidDhcpDnsNotRequestingClientsUpdateType	DHCP DNS not requesting clients update type is invalid.
IpamApiInvalidDhcpServerRecordId	Invalid DHCP server record ID.
IpamApiInvalidDhcpServerRoleInfo	DHCP server role info in DHCP server is invalid.
IpamApiInvalidDiscardDnsRecordOnLeaseDeletionStatus	Status flag, whether to discard DNS record when lease deleted or not, is invalid.
IpamApiInvalidDiscoveryDomain	Discovery domain is invalid.
IpamApiInvalidDnsNameProtectionStatus	DNS name protection status is invalid.
IpamApiInvalidDnsRegistrationCredentialDomainName	Domain name used for DNS credentials is not valid.
IpamApiInvalidDnsRegistrationCredentialPassword	Password used for DNS credentials is not valid.
IpamApiInvalidDnsRegistrationCredentialUserName	User name used for DNS credentials is not valid.
IpamApiInvalidDnsReverseLookupZoneRecordId	Invalid DNS reverse lookup zone record ID.
IpamApiInvalidDnsServer	DNS server object is invalid.
IpamApiInvalidDnsServerRecordId	DNS server record ID is invalid.
IpamApiInvalidDnsServerReverseZoneRecordId	Invalid DNS server reverse zone record ID.

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Value	Description
IpamApiInvalidDnsServerRoleInfo	Server role object is invalid.
IpamApiInvalidDnsServerZoneRecordId	Invalid DNS server zone record ID.
IpamApiInvalidDnsUpdateType	DNS update type is invalid.
IpamApiInvalidDnsZoneEvent	Invalid DNS zone event.
IpamApiInvalidDnsZoneEventGroup	Invalid DNS zone event group.
IpamApiInvalidDnsZoneEventGroupRecordId	Invalid DNS zone event group ID.
IpamApiInvalidDnsZoneEventRecordId	Invalid DNS zone event record ID.
IpamApiInvalidDnsZoneName	DNS zone name is invalid.
IpamApiInvalidDnsZoneRecordId	Invalid DNS zone record ID.
IpamApiInvalidDuidFormat	DUID – Invalid value of DUID specified. Supported format is a hex value, maximum 65 bytes in length.
IpamApiInvalidEndIPAddress	The end IP address is invalid.
IpamApiInvalidEndIPHostIdAllOnes	Specified End IP address has the Host ID as all ones. This is not allowed for IPv4 ranges.
IpamApiInvalidEnumeration	Invalid value is specified for the enumeration.
IpamApiInvalidEventViewerAccessStatus	Server Event Viewer Access status is not valid.
IpamApiInvalidExclusionRanges	Invalid exclusion ranges specified.
IpamApiInvalidExpiryEventsLoggingPeriodicity	Invalid value of expiry events logging periodicity.
IpamApiInvalidGetDiscoveryConfigFilter	Invalid filter key provided to fetch discovery config AD domains.
IpamApiInvalidGroup	Monitoring group is invalid.

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Value	Description
IpamApiInvalidGroupHealth	Health status of monitoring group is invalid.
IpamApiInvalidIaid	Invalid value of IAID specified. Supported format is an integer value, maximum 4 bytes in length.
IpamApiInvalidIgnoreStatus	Server ignore status is not valid.
IpamApiInvalidImportColumn	The column name is invalid.
IpamApiInvalidImportColumnType	The column data type is invalid.
IpamApiInvalidIPAddress	Invalid value of IP address specified.
IpamApiInvalidIPAddressConflict	An invalid conflict for IPAM is detected for the proposed address: {0}, {1}, {2}. Modify the proposed IP address so that it is not a duplicate of the existing address, or ensure that it is uniquely identified by the managed by service and service instance value pair.
IpamApiInvalidIPAddressFamily	IP address family is invalid.
IpamApiInvalidIpRangesCountAllowedForTask	On-demand retrieval of data exceeds the maximum limit of 10 servers. Select ranges that belong to no more than 10 DHCP servers at a time to perform this operation.
IpamApiInvalidIPv4ReservationType	Invalid value of reservation type specified. Supported values are BOOTP, DHCP, or both.
IpamApiInvalidIPv6GlobalAddress	Invalid IPv6 address specified. Enter a value other than ::0.
IpamApiInvalidLastRefreshTime	Last server configuration data refresh time is

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Value	Description
	invalid.
IpamApiInvalidMacAddress	Invalid value of MAC address specified. Supported format is a hex value, 6 bytes in length in the format <xxxxxxxxxxxx>, <xx-xx-xx-xx-xx-xx>, or <xx:xx:xx:xx:xx:xx>.
IpamApiInvalidMonitoringEvent	Monitoring event data is invalid. Check inner exception for more details.
IpamApiInvalidNewHealth	New health status is invalid. Check inner exception for more details.
IpamApiInvalidNumberOfActiveLeases	Number of active leases on DNCP server is invalid.
IpamApiInvalidNumberOfAvailableAddresses	Number of available addresses on DNCP server is invalid.
IpamApiInvalidParameter	An invalid parameter has been passed.
IpamApiInvalidParameterServerInfoIPType	ServerInfo IP Type is invalid.
IpamApiInvalidParameterServerMultipleRoleEN	Multiple server roles selected are invalid.
IpamApiInvalidParameterServerRoleEN	Server role flag is invalid.
IpamApiInvalidParentZoneId	Parent zone ID of this zone is invalid.
IpamApiInvalidPrefixLength	Invalid prefix length specified. For IPv4, subnet mask should be between 1-30; and for IPv6, prefix length can be between 1-127.
IpamApiInvalidPSObject	PowerShell return object is invalid.
IpamApiInvalidReservationDescription	Invalid value of reservation description specified. Maximum length of reservation description string can be 4000.

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Value	Description
IpamApiInvalidReservationName	Invalid value of reservation name specified. Maximum length of reservation name string can be 255.
IpamApiInvalidRpcAccessStatus	RPC access status is invalid.
IpamApiInvalidRPCStatus	Server RPC access status is not valid.
IpamApiInvalidScopeEndAddress	The specified end address of the scope is invalid.
IpamApiInvalidScopePrefix	The specified scope prefix is invalid.
IpamApiInvalidScopeStartAddress	The specified start address of the scope is invalid.
IpamApiInvalidSerialNumber	Invalid value of serial number specified. Maximum length of serial number string can be 255.
IpamApiInvalidServerADDomain	Active Directory domain is invalid.
IpamApiInvalidServerAllZoneHealth	DNS server all zone health is invalid.
IpamApiInvalidServerAllZoneHealthModified	Time when server all zone health was modified is invalid.
IpamApiInvalidServerAndRoleRelation	Server and Server Role are not properly linked.
IpamApiInvalidServerConfigRetrievalFlag	Server Config retrieval flag is invalid.
IpamApiInvalidServerDescription	Server Description is not valid.
IpamApiInvalidServerDistinguishedName	Distinguished name fetched for server from Global catalog is invalid.
IpamApiInvalidServerGuid	Server GUID is invalid.
IpamApiInvalidServerNameAndDomain	Server name and domain is not valid.
IpamApiInvalidServerNewFlag	Server New Flag is invalid.
IpamApiInvalidServerOwner	Server owner is not valid.

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Value	Description
IpamApiInvalidServerRole	Server role is not supported.
IpamApiInvalidServerSamAccountName	SamAccountName of server is invalid.
IpamApiInvalidServersCountAllowedForTask	On-demand retrieval of data exceeds the maximum limit of 10 servers. Select no more than 10 servers at a time to perform this operation.
IpamApiInvalidServerZone	Server zone object is invalid.
IpamApiInvalidServiceStatus	Service role running status on server is invalid.
IpamApiInvalidServiceStatusModifiedTime	Service status modified time is invalid.
IpamApiInvalidStartIPAddress	Invalid value of start IP address specified. Start IP address should lie within the specified Network ID and should be less than the end IP address.
IpamApiInvalidStartIPWithAllZeroes	Specified start IP address has the Host ID as all zeros. This is not allowed for IPv4 ranges.
IpamApiInvalidSubnetDelay	The specified subnet delay is invalid.
IpamApiInvalidSubnetMask	The specified subnet mask is invalid.
IpamApiInvalidTotalNumberOfAddressesInScope	The specified total number of addresses in scope is invalid.
IpamApiInvalidTotalNumberOfExcludedAddressesInScope	The specified total number of excluded addresses in scope is invalid.
IpamApiInvalidUpdate	The update operation is invalid.
IpamApiInvalidUtilizationCalculationType	Invalid value of utilization calculation specified. Supported values are Automatic or User specified.

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Value	Description
IpamApiInvalidUtilizationStatistics	Invalid value of utilized addresses specified. Utilized addresses should be less than or equal to assigned addresses for the range.
IpamApiInvalidZone	Zone object is invalid.
IpamApiInvalidZoneConfiguration	Configuration of zone hosted on DNS server is invalid.
IpamApiInvalidZoneEvent	Zone event is invalid. Check inner exception for more details.
IpamApiInvalidZoneEventHealth	Zone event health is invalid.
IpamApiInvalidZoneEventHealthModified	Time when zone event health was modified is invalid.
IpamApiInvalidZoneName	Zone name is invalid.
IpamApiInvalidZoneOverallHealth	Overall health of this zone is invalid.
IpamApiInvalidZoneOverallHealthModified	Time when zone overall health was modified is invalid.
IpamApiInvalidZoneShortName	Short name for this zone is invalid.
IpamApiInvalidZoneType	Zone type (primary/secondary/stub) hosted on DNS server is invalid.
IpamApiIPAddressExists	IP address already exists.
IpamApiIpAddressOutOfRange	Invalid value of IP address {0} specified for inventory import. The value of IP address should fall within the range {1}.
IpamApiIPAddressOutsideReverseLookupZoneBounds	Invalid value of reverse lookup zone specified. The specified zone is not the right zone to map the IP address.
IpamApiIPBlockOverlapCheckFailed	Failed to do the IP address block overlap check of the current item

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Value	Description
	against existing items.
IpamApiIPv4ReservationFailedToDeleteInRemoteServer	Failed to delete IPv4 reservation on remote server.
IpamApiIPv4ReservationFailedToUpdateInRemoteServer	Failed to update IPv4 reservations on remote server.
IpamApiIPv6ReservationFailedToDeleteInRemoteServer	Failed to delete IPv6 reservations on remote server.
IpamApiIPv6ReservationFailedToUpdateInRemoteServer	Failed to update IPv6 reservations on remote server.
IpamApiISubnetIDSubnetMaskMismatch	Invalid prefix length specified. Prefix length mismatch with specified subnet ID.
IpamApiLogicalFieldInvalidBuiltInUpdate	The name or origin of the built-in logical fields cannot be modified.
IpamApiLogicalGroupCannotContainFreeFormCustomFields	A logical group cannot contain free-form custom fields.
IpamApiLogicalGroupContainsInvalidFields	Invalid values are specified in the logical group fields contained by this logical group.
IpamApiMandatoryCustomFieldsNotSpecified	Mandatory custom fields are not specified.
IpamApiMandatoryFieldNotSpecified	The mandatory fields are not specified.
IpamApiMappingZoneNotFoundForEvent	Could not find any mapping zone for given event. Check inner exception for more details.
IpamApiMaxChildrenReached	Maximum number of children have already been added to the tree.
IpamApiMaxCustomFieldsReached	Maximum number of custom fields have already been added.
IpamApiMonitoredEventsFailedtoFetch	Failed to fetch monitored events from database.

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Value	Description
IpamApiMonitoredEventsFailedtoFetchFromCollection	Failed to fetch monitored events from collection object.
IpamApiNameCollidesWithBuiltInImportableColumnName	The specified custom field name is a reserved, built-in field. Choose a different name.
IpamApiNoDhcpLogFilesAvailable	No DHCP audit log files are available in the DHCP server.
IpamApiNonadjustableConflictingRangesFound	The proposed range {0} conflicts with the following existing ranges {1}. Modify the proposed IP address range so that it does not overlap with the existing range, or ensure that it is uniquely identified by the managed by service and service instance value pair.
IpamApiNoStaticAddressToExport	There are no static IP addresses available to export.
IpamApiNoStaticAddressToImport	There is no static IP address information to import from the specified file.
IpamApInvalidUpdateOriginModified	The field origin cannot be updated.
IpamApInvalidUpdateTypeModified	The field type cannot be modified.
IpamApiObjectNotFound	The object is not found.
IpamApiObjectNotFoundInDatabase	Could not find the object specified for editing in the IPAM database.
IpamApiObjectStateIsInvalid	The object is in an invalid state.
IpamApiOptionAlreadyExists	The specified option already exists.
IpamApiOptionAssociatedOptionDefinitionNotFound	The option definition associated with the specified option is not found.
IpamApiOptionAssociatedUserClassNotFound	The user class associated

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Value	Description
	with the specified option is not found.
IpamApiOptionDefinitionAlreadyExists	The specified option definition already exists.
IpamApiOptionDefinitionArrayTypeChanged	The array specification of the option definition cannot be changed.
IpamApiOptionDefinitionAssociatedVendorClassNotFound	The vendor class associated with the specified option definition is not found.
IpamApiOptionDefinitionDataTypeChanged	The data type of the option definition cannot be changed.
IpamApiOptionDefinitionDoesNotExist	The specified option definition does not exist.
IpamApiOptionDefinitionFailedToAddInIpamDatabase	Failed to add Option Definition in database. Check inner exception for more details.
IpamApiOptionDefinitionFailedToDeleteInIpamDatabase	Failed to delete Option Definition from database. Check inner exception for more details.
IpamApiOptionDefinitionFailedToFetchFromIpamDatabase	Failed to fetch Option Definition from database. Check inner exception for more details.
IpamApiOptionDefinitionFailedToUpdateInIpamDatabase	Failed to update Option Definition in database. Check inner exception for more details.
IpamApiOptionDefinitionsForVendorClassFailedToGetUnionFromCollection	Failed to get union of Option definitions for vendor class from collection object.
IpamApiOptionDoesNotExist	The specified option does not exist.
IpamApiOSNotSupported	Operating system on server is not supported.
IpamApiOwnerStringLengthNotAcceptable	Invalid value of owner specified. Maximum length of owner string can be 255.

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Value	Description
IpamApiPortReconfigurationFailed	Failed to change the IPAM service port. Fix the reported issue and invoke this command again to restore the expected system state.
IpamApiProvisioningAlreadyInProgress	The provisioning of the IPAM server is already in progress. Reconnect after a few minutes for the provisioning to complete and to be able to manage the server.
IpamApiRangeDoesNotExistForScope	The scope has no associated range.
IpamApiReconfigurePortAccessFailure	The user access is denied for configuring the IPAM server configuration. Retry the operation as local administrator on the IPAM server.
IpamApiRefreshScopeFailed	Failed to refresh scope from the database.
IpamApiRegisterPSSessionConfigurationFailed	Register PS session failed.
IpamApiRemapRangeFailed	Failed to remap the IP address range to a parent IP address block.
IpamApiRemapRangeFailedNoParentBlock	Appropriate IP address block to map this IP address range does not exist. Add an IP address block containing this IP address range to have the IP address range automatically map to the IP address block.
IpamApiReverseLookUpDnsServerDoesNotBelongToZone	Invalid value of reverse lookup primary server specified. The specified server is not a primary server for the specified reverse lookup zone.
IpamApiRIRNotSpecifiedForAPublicIPv4Block	RIR is not specified for a public IPv4 address block.
IpamApiRIRReceivedDateSpecifiedForAPrivateIPv4Block	RIR received date is specified for a private IPv4 address block.

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Value	Description
IpamApiRIRSpecifiedForAPrivateIPv4Block	RIR is specified for a private IPv4 address block.
IpamApiScopeNameAndMbeMismatch	The scope name and the Service instance values for the DHCP server range does not match.
IpamApiSearchConfigurationAuditFailed	Failed to search the Configuration-Audit data.
IpamApiSearchIPAuditFailed	Failed to search the IP-Audit data.
IpamApiServerAlreadyInDB	Server already exists in database.
IpamApiServerDoesNotExist	Either the specified server does not exist or it does not support the specified role.
IpamApiServerInfoFailedToAdd	Failed to add server in database. Check inner exception for more details.
IpamApiServerInfoFailedToDelete	Failed to delete server from database. Check inner exception for more details.
IpamApiServerInfoFailedToFetch	Failed to fetch servers from database. Check inner exception for more details.
IpamApiServerInfoFailedToUpdate	Failed to update server in database. Check inner exception for more details.
IpamApiServerNotFoundInDB	Server was not found in database.
IpamApiServerNotFoundInDC	Server is not registered with DC.
IpamApiServerNotFoundInGlobalCatalog	Server not found in global catalog.
IpamApiServerRoleCollectionInvalid	Server role collection is invalid.
IpamApiServerRoleCollectionInvalidParentServer	Server role collection for server has reference to different server as parent

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Value	Description
	server.
IpamApiServerRoleEntryUnavailable	No entry found on server role table.
IpamApiServerRoleFailedToAdd	Failed to add server role in database. Check inner exception for more details.
IpamApiServerRoleFailedToDelete	Failed to delete server role from database. Check inner exception for more details.
IpamApiServerRoleFailedToFetch	Failed to fetch server role from database.
IpamApiServerRoleFailedToUpdate	Failed to update server role in database. Check inner exception for more details.
IpamApiServiceNotFound	Service is not installed on server.
IpamApiSetCustomFieldsValuesFailed	Failed to set the custom field data. Check inner exception for more details.
IpamApiStartIPGreaterThanEndIP	The start IP address should be less than the end IP address.
IpamApiStatelessSettingsFailedToUpdateInIpamDatabase	Failed to update stateless settings for DHCP in database. Please check inner exception for more details.
IpamApiStringLengthNotAcceptable	The length of the input string is not acceptable.
IpamApiTaskActionDoesNotExist	Task action does not exist.
IpamApiTaskDisabled	The task is disabled.
IpamApiTaskDoesNotExist	Task does not exist.
IpamApiTaskError	An error has occurred. The IPAM task may not work properly.
IpamApiTaskTriggerDoesNotExist	Task trigger does not exist.

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Value	Description
IpamApiTaskWriteScopesFailed	Address utilization collection task failed to write the scopes in database.
IpamApiUnabletoProvisionIpam	Provisioning IPAM has failed. Check inner exception for more details.
IpamApiUnableToStopIpamAppPool	The IPAM application pool could not be stopped. Close any active management client sessions and try again.
IpamApiUnableToCloseWCFEndpoints	The IPAM WCF endpoint couldn't be closed.
IpamApiUnregisterPSSessionConfigurationFailed	Unregister PS session failed.
IpamApiUnsupportedDhcpServerVersionForConfigurationAudit	Configuration Audit is not supported in this version of DHCP server.
IpamApiUpdateAddressExpiryStatusFailed	Failed to update address expiry status.
IpamApiUpdateDhcpOptionDefinitionWithNewOptionDefinitionsFailed	Failed to update DHCP Option Definition Collection with new list of DHCP option definitions.
IpamApiUpdateExclusionRangeCollectionWithNewExclusionRangesFailed	Failed to update Exclusion Range Collection with new list of exclusion ranges.
IpamApiUpdateUserClassesWithNewUserClassesFailed	Failed to update User Classes collection with new user classes.
IpamApiUpdateVendorClassCollectionWithNewVendorClassesFailed	Failed to update vendor class collection with new vendor classes.
IpamApiUpdateVendorClassesWithNewVendorClassesFailed	Failed to update Vendor Classes collection with new vendor classes.
IpamApiUpdateWinrmPermissionsFailed	Failed to enable remote access for IPAM security group members.
IpamApiUserClassAlreadyExists	The specified user class already exists.
IpamApiUserClassDoesNotExist	The specified user class

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Value	Description
	does not exist.
IpamApiUserClassesFailedToGetFromCollection	Failed to get User Classes from collection object.
IpamApiUserClassesFailedToGetUnionFromCollection	Failed to get union of User Classes from collection object.
IpamApiUserClassFailedToAddInIpamDatabase	Failed to add User Class in database. Check inner exception for more details.
IpamApiUserClassFailedToDeleteInIpamDatabase	Failed to delete User Class from database. Check inner exception for more details.
IpamApiUserClassFailedToFetchFromIpamDatabase	Failed to fetch User Class from database. Check inner exception for more details.
IpamApiUserClassFailedToUpdateInIpamDatabase	Failed to update User Class in database. Check inner exception for more details.
IpamApiUserClassFailedToUpdateInRemoteServer	Failed to Update User classes on remote server.
IpamApiUtilizationDataNotSpecifiedForStaticRange	Utilization data not specified for a static range.
IpamApiValidationFailure	The following properties are not recognized by the IPAM server: {0}.
IpamApiValueSpecifiedForFreeformCustomField	Values should not be specified for free-form custom fields.
IpamApiVendorClassAlreadyExists	The specified vendor class already exists.
IpamApiVendorClassDoesNotExist	The specified vendor class does not exist.
IpamClientMessageSizeExceeded	The operation was unsuccessful as the data set specified exceeds the maximum supported size. Please retry the operation with a smaller data set.
ConfigureCustomPortInRegistry	Configure Custom Port in

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Value	Description
	Registry
CreateCustomFirewallRules	Create Custom IPAM Firewall Rules
DeleteExistingCustomFirewallRules	Delete Existing Custom Firewall Rules
DisableDefaultFirewallRules	Disable Default IPAM Firewall Rules
EnableDefaultFirewallRules	Enable Default IPAM Firewall Rules
IpamApiAssignedDateIsFuture	The IP address assigned date is in the future.
IpamApiBuiltInFieldNotSupported	Invalid field name {0} specified. This built-in field is not supported for the record type being imported.
IpamApiDataUpdateErrorInServerAuditBookmark	Data update error occurred in Server Audit Bookmark Table.
IpamApiDhcpServerDataNotSpecified	DHCP server data is not specified for the dynamic range.
IpamApiDnsnsQueryFailed	DNS Name Servers Query failed.
IpamApiDuidSpecifiedForIPv4Address	DUID is specified for an IPv4 address.
IpamApiErrorCannotConfigureDataBaseService	The database service cannot be configured.
IpamApiErrorCannotImportMsDhcpRange	The range cannot be imported since the managed by service value of - MS DHCP – is used by IPAM to signify IP address ranges automatically discovered from the managed DHCP servers. If intended specify another value of the managed by service field to import this range.
IpamApiErrorGpoGenericFailure	Unable to access required information for server {3} to modify GPO {0} in domain {1}. Ensure that the computer is domain

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Value	Description
	joined and you are logged in with a domain user account. Edit the GPO manually to {4} this server. Detailed error message – {2}
IpamApiErrorGpoOperationFailed	The attempt to modify GPO {0} in domain {1} for server {3} failed. Ensure that GPOs exist and your user account has permission to edit the GPO. Edit the GPO manually to {4} this server. Detailed error message – {2}
IpamApiErrorInvalidRIR	Invalid value of RIR specified.
IpamApiErrorUpdatingEventLogReaderGroupFailedDetailed	Provisioning IPAM Audit task for access to Event Log Reader group failed with the following error: {0}.
IpamApiFailedToAddServerToIpam	Failed to add server in database. Please see the details.
IpamApiFailedToFetchDhcpServers	Could not fetch List of DHCP Servers.
IpamApiFailedToFetchDnsServerForServerZone	Could not fetch DNS server for server zone.
IpamApiFailedToFetchLogicalGroups	Failure occurred when trying to fetch logical groups.
IpamApiIaidMaxLengthExceeded	Maximum length of Iaid exceeded.
IpamApiIaidSpecifiedForIPv4Address	Iaid is specified for an IPv4 address.
IpamApiImportFailedInvalidColumns	Invalid field name {0} specified. If intended add the new custom field, using the custom field mapper or replace with an equivalent existing field name.
IpamApiImportInvalidAssignmentDate	Invalid format of assignment date specified.

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Value	Description
IpamApiImportInvalidExpiryDate	Invalid format of expiry date specified.
IpamApiImportInvalidReservationDescription	Invalid value of reservation description specified. Maximum length of reservation description string can be 4000.
IpamApiImportInvalidReservationName	Invalid value of reservation name specified. Maximum length of reservation name string can be 255.
IpamApiImportInvalidRIRReceivedDate	Invalid format of RIR date specified.
IpamApiImportMandatoryColumnValueNotSpecified	Value for the mandatory field {0} not specified for the record being imported.
IpamApiImportMandatoryFieldNotSpecified	Mandatory field name {0} not specified.
IpamApiImportNoValidRecords	There are no valid records in the file specified for import. Specify the first row as a comma separated list of field names.
IpamApiImportUnknownDhcpServer	Invalid value of DHCP reservation server specified. The specified server is not being managed by IPAM.
IpamApiInvalidAddressCategory	The address category is invalid.
IpamApiInvalidDhcpRecordId	Dhcp record ID is invalid.
IpamApiInvalidDnsZone	DNS zone object is invalid.
IpamApiInvalidIPUtilizationRequested	The type of IP utilization requested is not supported.
IpamApiInvalidNumberOfScopes	Number of scopes on DHCP server is invalid.
IpamApiInvalidRecordId	Record ID is invalid.
IpamApiInvalidRepetitionInterval	Invalid task repetition

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Value	Description
	interval.
IpamApiInvalidUseRecursion	Setting whether to use recursion or not for DNS server is invalid.
IpamApiInvalidValueForExpiryStatus	Invalid value specified for expiry status.
IpamApiIPAddressImportInvalidDhcpServer	Invalid value of DHCP reservation server {0} specified. The specified server does not have the right scope to map the IP address {1}.
IpamApiIPAddressImportInvalidDnsForwardLookupServer	Invalid value of forward lookup primary server specified. The specified server is not being managed by IPAM.
IpamApiIPAddressImportInvalidDnsReverseLookupServer	Invalid value of reverse lookup primary server specified. The specified server is not being managed by IPAM.
IpamApiIPAddressImportInvalidDnsReverseLookupZone	Invalid value of reverse lookup zone specified. The specified zone is not being managed by IPAM.
IpamApiIPAddressImportInvalidDnsZone	Invalid value of forward lookup zone specified. The specified zone is not being managed by IPAM.
IpamApiLogicalGroupCannotContainFreeformCustomFields	A logical group cannot contain free-form custom fields.
IpamApiLogicalGroupNodeContainsHetrogenousObjects	A logical node must contain objects of same type.
IpamApiNetworkDeviceNotSpecified	The network device value is not specified.
IpamApiReservationTypeSpecifiedForIPv6Address	Reservation type is specified for an IPv6 address.
IpamApiReverseLookupFailed	Failed while trying to resolve host by DNS lookup.
IpamApiReverseLookupZoneAlreadyExists	Reverse lookup zone

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Value	Description
	already exists in database.
IpamApiSavingDynamicRangeIsInvalid	Dynamic Ranges cannot be saved.
IpamApiVendorClassesFailedToGetFromCollection	Failed to get Vendor classes from collection object.
IpamApiVendorClassesFailedToGetUnionFromCollection	Failed to get union of Vendor Classes from collection object.
IpamApiVendorClassFailedToAddInIpamDatabase	Failed to add Vendor Class in database. Please see the details.
IpamApiVendorClassFailedToDeleteInIpamDatabase	Failed to delete Vendor Class from database. Please see the details.
IpamApiVendorClassFailedToFetchFromIpamDatabase	Failed to fetch Vendor Class from database. Please see the details.
IpamApiVendorClassFailedToUpdateInIpamDatabase	Failed to update Vendor Classes in IPAM database.
IpamApiVendorClassFailedToUpdateInRemoteServer	Failed to update Vendor classes on remote server.
IpamAuditPurgeInvalidDate	Selected date should be smaller than the date of the server.
IpamClientCommunicationFailure	Communication failed. Please confirm on connectivity to the server; verify the server firewall rules and retry the operation or reconnect to the IPAM server.
IpamClientInvalidDestinationSpecified	The specified server name or IP address is invalid.
IpamClientNoActiveSession	There is no active session established to the IPAM server. Establish the session and retry the operation.
IpamClientOperationTimedOut	The requested operation took beyond the configured time. This could be because of firewall or network

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Value	Description
	connectivity issues. The operation will continue on the server, in case of any pending updates. Please see the server event log for the status on completion of the operation.
IpamDeleteFailedDueToReferences	This operation has failed for the record, as it has dependencies on other records or does not exist in the system anymore.
IpamDetailedExceptionNoOperationMessage	The operation failed with the following error: '{0}'
IpamDetailedExceptionWithOperationMessage	The intermediate step '{0}' failed with the following error: '{1}'
IpamImportErrorAddressFamilyMismatch	Address family against which the import is attempted does not match with the address family of the record. Attempt to import this record against the correct address family.
IpamImportErrorInvalidCustomFieldValue	Invalid custom field value {0} specified for custom field {1}. If intended, add the new value for this custom field, using the custom field mapper.
IpamImportErrorInvalidManagedByOrManagedByEntity	Invalid managed by service and service instance value is specified.
IpamImportErrorInvalidManagedByValue	Invalid value of managed by service {0} specified for inventory import. The value specified against the record should be {1}.
IpamImportErrorInvalidNetworkIdAndPrefix	Invalid format specified for Network ID. Specify the Network ID in the format "Subnet ID/Prefix Length".
IpamImportErrorInvalidServiceInstanceValue	Invalid value of service instance {0} specified for inventory import. The

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Value	Description
	value specified against the record should be {1}.
IpamImportRecordIsInvalid	The record to be imported is invalid.
IpamLoginErrorAfterUpgrading	Unable to connect to database, machine has been upgraded. To resolve the issue, login with administrator credentials.
IpamLoginErrorWhileMigratingDatabase	Unable to connect to database. Database has been migrated from another machine. To resolve this issue, login with administrator credentials.
IpamMigrationResolvingUserCredentialsFailed	Resolving the mismatch between the logins in the database has failed. Please see the details.
IpamMsmCheckDnsSyncParametersFailed	All mandatory DNS synchronization parameters are not specified.
IpamMsmCheckReservationParametersFailed	All mandatory reservation parameters are not specified.
IpamMsmCreateReservationFailed	Failed to create reservation on the DHCP server.
IpamMsmDeleteReservationFailed	Failed to delete reservation on the DHCP server.
IpamMsmDnsDeregistrationFailed	Failed to de-register on the DNS server.
IpamMsmDnsRegistrationFailed	Failed to register on the DNS server.
IpamMsmGetDnsResourceRecordFailed	Unable to fetch DNS resource records or no records exist.
IpamMsmGetFreeIPAddressFailed	Failed to fetch the free IP addresses from the server.
IpamMsmGetReservationFailed	Failed to get reservation

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Value	Description
	from the DHCP server.
IpamMsmInvalidDnsSyncStatus	Invalid DNS sync status specified.
IpamMsmInvalidReservationSyncStatus	Invalid reservation sync status specified.
IpamMsmLeaseDurationValuesCannotAllZero	You must provide a lease duration.
IpamMsmPreferredLifeTimeCannotExceedValidLifeTime	Preferred Lifetime cannot be greater than Valid Lifetime.
IpamMsmSetReservationFailed	Failed to update reservation on the DHCP server.
IpamSchemaConversionAnotherOperationInProgress	Another schema conversion operation is in progress. Refresh the UI after some time.
IpamSchemaConversionCouldNotBeDoneForThisMigratedDatabase	Could not convert schema; you have migrated database from latest version of IPAM.
IpamSchemaConversionCouldNotBeDoneForThisVersion	IPAM schema conversion for this version of IPAM is not supported.
IpamSchemaConversionFailed	Failed to convert schema. Please see the details.
IpamSchemaConversionNotRequired	Schema conversion is not required.
IpamSchemaForSomeVersionsNotAvailable	IPAM schema for some of the versions are not available.
IpamTimeoutErrorWhileStartingDatabaseService	Unable to perform the operation. Please confirm on the availability of service: Windows Internal Database and retry the operation again.
IpamUnableToEstablishSession	Unable to perform the operation. Please confirm on availability of the server and reachability to the same and try the operation again. Verify the server firewall rules and the server application

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Value	Description
	event log for more details.
IpamUnableToStartDatabaseService	The service Windows Internal Database cannot be started on the server, either because it is disabled or because it has no enabled devices associated with it.
IpamUpgradeAnotherOperationInProgress	Another Upgrade Operation is in progress. Refresh the UI after some time.
IpamUpgradeAttachingDatabaseFailed	Unable to attach IPAM database. Please see the details.
ReconfigureIpamSiteBinding	Reconfigure IPAM Port Binding.
RetrieveCustomPortFromRegistry	Retrieve Custom Port from Registry.
StartIpamAppPool	Start IPAM Application Pool.
StopIpamAppPool	Stop IPAM Application Pool.
IpamApiUpdateWinrmPermissionsFailureReason	Updating WinRM ACLs failed with the following error - {0}
IpamApiUnableToQueryDefaultAddressSpace	Unable to query default IP address space.
IpamApiBuiltinRoleCannotBeManaged	The built-in user role cannot be modified or deleted.
IpamApiInvalidRoleName	The role name must be a valid string and cannot be empty. The maximum length of the role name is 255 characters.
IpamApiRBACProvisioningFailed	Failed to initialize the role-based access control data. Provisioning of the IPAM server has failed.
IpamApiFailedToCreateUserRole	Failed to create the specified user role.
IpamApiOperationNotAvailableForSelection	One or more specified operation is not available

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Value	Description
	for use in custom User Role.
IpamApiTaskCouldNotBeCompletedDueToCommunicationFailure	The specified task could not be completed successfully due to communication failure with the server. It is possible the task has been already completed on the server. Please check to see if the required changes have been applied or not.
IpamApiDhcpScopeFailedToUpdateInRemoteServer	Failed to update DHCP scope in remote DHCP server. Please see the details.
IpamApiDhcpScopeNotFoundInDB	DHCP Scope was not found in database.
IpamApiAddressSpaceTypeCanNotBeChanged	IP address space type cannot be changed.
IpamApiFailedToAddAddressSpace	Failure occurred when trying to add IP address space.
IpamApiFailedToDeleteAddressSpace	Failure occurred when trying to delete IP address space.
IpamApiFailedToFetchAddressSpaces	Failure occurred when trying to fetch IP address spaces.
IpamApiFailedToUpdateAddressSpace	Failure occurred when trying to update IP address space.
IpamApiFailedToAddOrUpdateAddressSpace	Failure occurred when trying to add or update IP address space.
IpamApiAddressSpaceNameNotSpecified	IP address space name is not specified.
IpamApiAddressSpaceTypeNotSpecified	IP address space type is not specified.
IpamApiIsolationMethodNotSpecified	Isolation method is not specified.
IpamApiAddressSpaceNameAlreadyExists	IP address space name already exists.

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Value	Description
IpamApiInvalidProviderAddressSpace	The provider IP address space specified is invalid.
IpamApiDefaultProviderAddressSpaceCannotBeDeleted	Default provider IP address space cannot be deleted.
IpamApiDefaultProviderAddressSpaceCannotBeModified	Default provider IP address space cannot be modified.
IpamApiInvalidConnectionsSpecificDNSSuffix	Invalid connection-specific DNS suffix specified.
IpamApiInvalidDNSSuffixCollection	Invalid suffix specified in the DNS suffix collection list.
IpamApiInvalidAddressSpace	Invalid IP address space specified.
IpamApiReservedIPNotInRange	Reserved IP is not in the range.
IpamApiVIPNotInRange	VIP is not in the range.
IpamApiVirtualizationTypeCanNotBeChanged	Virtualization type cannot be changed.
IpamApiInvalidAddressesInDnsServersCollection	IPAddress has invalid IPAddress family in the DNS Servers list.
IpamApiInvalidAddressesInGatewaysCollection	Gateway IPAddress has invalid IPAddress family or it does not belong to the subnet.
IpamApiInvalidAddressesInReservedIPsCollection	IPAddress has invalid IPAddress family in the Reserved IP Address List or IPAddress does not belong to this range.
IpamApiInvalidAddressesInVIPsCollection	IPAddress has invalid IPAddress family in the Virtual IP Address List or IPAddress does not belong to this range.
IpamApiInvalidAddressesInWinsServersCollection	IPAddress has invalid IPAddress family in the WINS Servers List.
IpamApiInvalidReservedIPRangesCollection	IPAddress in Reserved IP Range has invalid IPAddress family or Reserved IP Range does

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Value	Description
	not belong to this range.
IpamApiInvalidVIPRangesCollection	IPAddress in Virtual IP Range has invalid IPAddress family or Virtual IP Range does not belong to this range.
IpamApiInvalidVirtualizationTypeUpdation	Moving IP range from Virtual to Fabric or Virtual to Non-Virtual or vice-versa is not allowed.
IpamApiInvalidMetricValueInGatewaysCollection	Invalid metric value. Metric should be between 1 and 9999.
IpamApiBuiltinaccessScopeCannotbeManaged	The built-in access scope cannot be modified or deleted.
IpamApiFailedToAddAccessScope	Failed to add the access scope.
IpamApiFailedToDeleteAccessScope	Failed to delete the access scope.
IpamApiFailedToDeleteUserRole	Failed to delete the user role.
IpamApiFailedToUpdateAccessScope	Failed to modify the access scope.
IpamApiFailedToUpdateUserRole	Failed to modify the user role.
IpamApiInvalidAccessScopeLabel	The access scope name must be a valid string and cannot be empty. The maximum length of the access scope name is 255 characters. Also the string cannot contain either '/' or '\'.
IpamApiMaximumAccessScopeLevelReached	The parent access scope has already reached the maximum depth of the hierarchy possible. A new access scope cannot be created under the specified parent access scope.
IpamApiParentAccessScopeNotFound	The specified parent access scope is not present in the system.

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Value	Description
IpamWmiInvalidIPRangeRecordId	Record ID for IP range object is not valid.
IpamWmiInvalidManagedObject	Managed object passed is not valid.
IpamWmiInvalidUnmanagedObject	Unmanaged object passed is not valid.
IpamApiFailedToAddUserAccessPolicy	Failed to add the specified **user access policy**.
IpamApiFailedToDeleteUserAccessPolicy	Failed to delete the specified user access policy.
IpamApiFailedToUpdateUserAccessPolicy	Failed to update the specified user access policy.
IpamApiUnableToResolveUserToSid	The specified user or group name could not be converted to the unique security identifier. This could be because the user or group is not valid or could not be resolved properly. Try specifying the name in the format domain\alias for domain user or groups and just the account name for machine local accounts.
IpamApiAddressSpaceNameStringLengthNotAcceptable	Invalid value of name specified. Maximum length of name string can be 1000.
IpamApiAddressSpaceOwnerStringLengthNotAcceptable	Invalid value of owner specified. Maximum length of owner string can be 1000.
IpamApiSetAccessScopeForObjectsFailed	Failed to set Access Scope for the objects. Please see the details.
IpamApiAccessScopeManagementNotApplicable	Access Scope Management is not applicable for the given object type.
IpamApiFailedToCreateAccessScopeAssociation	Failed to create access scope association.
IpamApiFailedToDeleteAccessScopeAssociation	Failed to delete access scope association.

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Value	Description
IpamApiFailedToValidateAccessScopeAssociationEntries	Failed to validate access scope association table entries.
IpamApiGetAccessScopeForObjectsFailed	Failed to get the Access Scope for objects. Please see the details.
IpamApiInsufficientPrivilege	There is not sufficient privilege to perform the operation. The operation performed is not part of any role associated with the user.
IpamApiInvalidUsedAsParameter	Invalid used as parameter specified.
IpamApiInvalidCustomerAddressSpaceNameParameter	Invalid Customer IP Address Space Name specified.
IpamApiInvalidProviderAddressSpaceNameParameter	Invalid Provider IP Address Space Name specified.
IpamApiFindFreeIPAddressesFailed	Failed to get the free IP address. Please see the details.
IpamApiMethodNotImplemented	The method is not implemented.
IpamApiFailedToAddSubnet	Failure occurred when trying to add IP subnet.
IpamApiFailedToDeleteSubnet	Failure occurred when trying to delete IP subnet.
IpamApiFailedToFetchSubnets	Failure occurred when trying to fetch IP subnets.
IpamApiFailedToUpdateSubnet	Failure occurred when trying to update IP subnet.
IpamApiConflictingSubnet	A subnet already exists on this IP address space with the same network ID and prefix length.
IpamApiInvalidVirtualizationType	The virtualization type is invalid.
IpamApiInvalidVLANIdCollection	One or more VLAN ID in the collection is invalid.
IpamApiInvalidVSId	The specified virtual

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Value	Description
	subnet ID is invalid.
IpamApiRangesDependentOnSubnet	There are ranges associated with this subnet.
IpamApiSubnetDoesNotExistForRange	No subnet exists corresponding to the range.
IpamApiSubnetNameNotSpecified	Name of the subnet is not specified.
IpamApiSubnetNameStringLengthNotAcceptable	Invalid value of name specified. Maximum length of name string can be 512.
IpamApiInvalidAddressFamily	Address family passed is invalid.
IpamWmiInvalidNetworkId	Network ID is invalid.
IpamWmiInvalidInstanceId	Instance ID for CIM object is invalid.
IpamApiInvalidVirtualizationTypeUpdationForSubnet	Moving IP subnet from Virtual to Fabric or Virtual to Non-Virtual or vice-versa is not allowed.
IpamApiErrorDatabaseLocaleMismatch	IPAM server's locale is not same as the locale in which the database '{0}' was provisioned. IPAM server's locale is '{1}' while the locale in which database '{0}' was provisioned is '{2}'. For provisioning using an existing database, please provide a database which was provisioned in '{1}' locale.
IpamApiErrorDatabaseServerVersionNotSupported	The version of SQL Server installed on '{0}' is not supported by IPAM. '{1}' version of SQL Server is installed on '{0}', while IPAM requires at least '{2}' version of SQL Server.
IpamApiErrorInvalidDatabaseConfiguration	Database configuration is not valid.
IpamApiErrorVerifySchemaFailed	Schema verification failed.

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Value	Description
IpamApiErrorConfigureDatabasServerFailed	Failed to configure database server.
IpamApiErrorCreateCredentialFailed	Failed to create credential.
IpamApiErrorCreateDatabasePostProcessingFailed	Failed in post database create steps.
IpamApiErrorCreateDatabasePreProcessingFailed	Failed in pre database create steps.
IpamApiErrorDatabaseCreateFailed	Failed to create database.
IpamApiErrorDatabaseDoesNotExist	Database does not exist.
IpamApiErrorDatabaseIsEmpty	Database is empty.
IpamApiErrorDatabaseSchemaCreateFailed	Failed to create database schema.
IpamApiErrorDatabaseSchemaExists	Database schema already exists.
IpamApiErrorReadCredentialFailed	Failed to read credential.
IpamApiErrorStartDatabaseServiceFailed	Failed to start database services.
IpamApiErrorUpdateCredentialFailed	Failed to update credential.
IpamErrorFailedToConnectToDatabase	Failed to connect to database.
IpamApiDhcpFailoverFailedToAddInIpamDatabase	Failed to add DHCP failover relation in database. Please see the details.
IpamApiDhcpFailoverFailedToAddInRemoteServer	Failed to add DHCP failover relation in remote DHCP server. Please see the details.
IpamApiDhcpFailoverFailedToAddScopesInIpamDatabase	Failed to add scopes to DHCP failover relation in database. Please see the details.
IpamApiDhcpFailoverFailedToAddScopesInRemoteServer	Failed to add scopes to DHCP failover relation in remote DHCP server. Please see the details.
IpamApiDhcpFailoverFailedToDeleteInIpamDatabase	Failed to delete DHCP failover relation in database. Please see the

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Value	Description
	details.
IpamApiDhcpFailoverFailedToDeleteInRemoteServer	Failed to delete DHCP failover relation in remote DHCP server. Please see the details.
IpamApiDhcpFailoverFailedToRemoveScopesFromIpamDatabase	Failed to remove scopes from DHCP failover relation in database. Please see the details.
IpamApiDhcpFailoverFailedToRemoveScopesFromRemoteServer	Failed to remove scopes from DHCP failover relation in remote DHCP server. Please see the details.
IpamApiDhcpFailoverFailedToUpdateInIpamDatabase	Failed to update DHCP failover relation in database. Please see the details.
IpamApiDhcpFailoverFailedToUpdateInRemoteServer	Failed to update DHCP failover relation in remote DHCP server. Please see the details.
IpamApiDhcpFailoverFailedToFetchFromIpamDatabase	Failed to fetch DHCP failover relation from IPAM database. Please see the details.
IpamApiDhcpFailoverFailedToReplicateRelation	Failed to replicate relationship.
IpamApiDhcpFailoverFailedToReplicateScopes	Failed to replicate scopes.
IpamApiDhcpFailoverFailedToReplicateServer	Failed to replicate server.
IpamApiDhcpFailoverFailedToResetConfigSyncStatus	Failed to reset config sync status.
IpamApiDhcpFailoverFailedToRemoveScopeNotPartOfRelationship	Failed to remove scope {0} from failover configuration since it is not part of any failover relationship.
IpamApiFailedToRemapSubnet	Failure occurred when trying to use the subnet for utilization.
IpamErrorIPAMNotProvisioned	The IPAM server is not provisioned.
IpamErrorExpandPath	The database path could not be parsed.

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Value	Description
IpamApiErrorFailedToChangeDatabaseSettings	Failed to change IPAM database settings.
IpamErrorGetConfigurationStatusFailed	Failed to get the IPAM configuration status. Please see the details.
IpamApiDhcpFailedToCreatePolicyInRemoteServer	Failed to create one or more DHCP policies. Please see the details.
IpamApiDhcpFailedToDeletePolicyInRemoteServer	Failed to delete one or more DHCP policies. Please see the details.
IpamApiDhcpFailedToFetchPolicyFromIpamDatabase	Failed to fetch policies from the IPAM database. Please see the details.
IpamApiDhcpFailedToFetchPolicyPropertyFromIpamDatabase	Failed to fetch a policy property from the IPAM database. Please see the details.
IpamApiDhcpFailedToUpdatePolicyInRemoteServer	Failed to update DHCP policy. Please see the details.
IpamApiDhcpScopesNotPartOfSameServer	Unable to perform operation since scopes must belong to same server.
IpamWmiInvalidIpamIPAddressRecordId	Record ID of IPAM IP address object is invalid.
IpamApiErrorDatabaseLoginFailed	Login to database failed.
IpamApiErrorDatabaseLoginFailedInvalidPassword	Login to database failed. Invalid password.
IpamApiErrorDatabaseLoginFailedInvalidUserId	Login to database failed. Invalid user.
IpamApiErrorDatabaseLoginFailedPasswordChangeRequired	Login to database failed. Password must be changed.
IpamApiErrorInvalidSQLDBConfigAuthNotSupported	Authentication type value '{0}' is not supported when provisioning IPAM with MS SQL server.
IpamApiErrorInvalidSQLDBConfigCredentialRequiredForSQLAuth	Database credentials are required when provisioning IPAM with SQL authentication.

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Value	Description
IpamApiErrorInvalidSQLDBConfigDatabaseNameCannotBeEmpty	Database name cannot be empty for MS SQL server-based IPAM deployment.
IpamApiErrorInvalidSQLDBConfigDatabasePathNotSupported	Database path configuration is not supported for MS SQL server-based IPAM deployment.
IpamApiErrorInvalidSQLDBConfigDatabaseServerCannotBeEmpty	Database server name/IP cannot not be empty for MS SQL server-based IPAM deployment.
IpamApiErrorInvalidSQLDBConfigUsernameCannotBeEmptyForSQLAuth	Username cannot be empty for SQL authentication.
IpamApiErrorInvalidWIDDBConfigAuthNotSupported	WID-based IPAM deployment does not support authentication type value '{0}'. Only Windows Authentication is supported.
IpamApiErrorInvalidWIDDBConfigInvalidCredential	Database credentials are given for provisioning. Database credentials are not supported for WID-based IPAM deployment.
IpamApiErrorInvalidWIDDBConfigNameMustBeIPAM	Database name is given as '{0}'. In WID-based IPAM deployment, database name must be '{1}'.
IpamApiErrorInvalidWIDDBConfigPathCannotBeEmpty	Database path cannot be empty for WID database.
IpamApiErrorInvalidWIDDBConfigPortNotAllowed	Database port is given as '{0}'. Database port is not supported for WID-based IPAM deployment.
IpamApiErrorInvalidWIDDBConfigServerNotAllowed	Database server is given as '{0}'. Database server name/IP is not supported for WID-based IPAM deployment.
IpamApiErrorCredentialAlreadyExist	Credential already exists.
IpamAPiErrorCredentialDoesNotExist	Credential does not exist.
IpamApiErrorDatabaseSchemaVersionMismatch	Schema version of the database is different from

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Value	Description
	the schema version expected by IPAM server. Schema version of the database is '{0}' while the version supported by IPAM server is '{1}'.
IpamApiErrorDeleteCredentialFailed	Failed to delete credential.
IpamApiErrorDeleteDBConfigurationFailed	Failed to delete database configuration.
IpamApiErrorFailedToCreateCredentialRootKey	Failed to create credential store.
IpamApiErrorFailedToCreateDBConfigurationRootKey	Failed to create database configuration store.
IpamApiErrorFailedToGetDatabaseSchemaVersion	Failed to get IPAM database schema version.
IpamApiErrorFailedToGetDBServerVersion	Failed to get database server version.
IpamApiErrorFailedToGetSchemaValidationScript	Failed to get schema validation script.
IpamApiErrorFailedToOpenCredentialRootKey	Failed to open credential store.
IpamApiErrorFailedToOpenDBConfigurationRootKey	Failed to open database configuration store.
IpamApiErrorInvalidCredentialIdentifierFormat	Invalid credential identifier format.
IpamApiErrorInvalidCredentialStoreType	Invalid credential store type.
IpamApiErrorInvalidDBConfigurationStoreType	Invalid database configuration store type.
IpamApiErrorReadDBConfigurationFailed	Failed to read database configuration.
IpamApiErrorSaveDBConfigurationFailed	Failed to save database configuration.
IpamApiFailedToConnectToDatabase	Failed to connect to specified database.
IpamApiFailedToRetrieveDatabaseConfiguration	Failed to retrieve active database configuration.
IpamApiErrorInvalidSQLDBConfigInvalidPort	Invalid database port '{0}'. Database port should be in range '{1}' to '{2}'.

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Value	Description
IpamMsmApplyReservationFailed	Failed to apply configuration on reservations on the DHCP server.
IpamApiErrorDatabaseServerEditionNotSupported	IPAM supports only '{2}' edition of SQL Server but '{1}' edition of SQL Server is installed on '{0}'. Please install '{2}' edition of SQL Server.
IpamApiErrorInvalidDBConfigDatabaseTypeNotValid	Invalid database type '{0}'.
IpamApiErrorInvalidSQLDBConfigCredentialNotSupportedForWindowsAuth	Database credentials are not supported when provisioning IPAM with Windows authentication.
IpamApiErrorUsingExistingSchemaNotSupported	Using existing schema is not supported for database type {0}.
IpamApiErrorFailedToConnectToDatabaseServer	Failed to connect to database server. Make sure the name of database server is correct, IPAM server is able to reach the database server and remote connections are enabled on database server.
IpamApiErrorFailedToGetDatabaseLocale	Failed to read the locale in which the IPAM database was provisioned from the database.
IpamApiErrorInvalidWIDDBConfigDirectoryDoesNotExist	The database folder does not exist.
IpamApiErrorInvalidWIDDBConfigPathFormatError	The database folder path is invalid. Please make sure that the path contains valid characters.
IpamApiErrorInvalidWIDDBConfigPathIsNotRooted	The database folder path cannot be relative path.
IpamApiErrorIpamAlreadyProvisioned	IPAM server is already provisioned.
IpamApiMsDhcpRangesDependentOnSubnet	There are MS DHCP ranges associated with this subnet.
IpamApiErrorChangeDatabaseSettingsNotAllowedForDBTypes	IPAM does not support

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Value	Description
	changing database type from {0} to {1}.
IpamApiCannotConnectUntilConfigurationCompleted	IPAM server is currently unavailable. Please contact the IPAM Administrator.
IpamMsmGetDnsResourceRecordNonExistentRecord	Specified DNS Resource Record does not exist on the server.
IpamApiAccessScopeMigrationFailed	Failed to migrate Access Scope associations.
IpamApiFailedToAddOrUpdateAddressSpace	Failure occurred when trying to add or update IP address space.
IpamApiCustomFieldAssociationIntersectionEmpty	The associated custom field values don't exist.
IpamApiDuplicateCustomFieldAssociationValues	The custom field association has duplicate entries.
IpamApiFailedToAddCustomFieldAssociation	Failure occurred when trying to add Custom Field Association.
IpamApiFailedToDeleteCustomFieldAssociation	Failure occurred when trying to delete Custom Field Association.
IpamApiFailedToFetchCustomFieldAssociations	Failure occurred when trying to fetch Custom Field Associations.
IpamApiFailedToUpdateCustomFieldAssociation	Failure occurred when trying to update Custom Field Association.
IpamApiInvalidCustomFieldAssociationValues	The custom field values in the association are invalid.
IpamApiInvalidCustomFieldTypeInAssociation	The custom fields in the association are not multi-valued.
IpamApiSameCustomFieldsInAssociation	A custom field cannot be associated with its own self.
IpamApiCustomFieldAssociationAlreadyExists	Custom field association already exists.
IpamApiDhcpFailedToAddScopesToSuperscope	Failed to add one or more

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Value	Description
	DHCP scopes to superscope. Please see the details.
IpamApiDhcpFailedToDeleteSuperscopes	Failed to delete one or more superscopes. Please see the details.
IpamApiDhcpFailedToRemoveScopesFromSuperscope	Failed to remove one or more DHCP scopes from superscopes. Please see the details.
IpamApiDhcpFailedToRenameSuperscope	Failed to rename superscope. Please see the details.
IpamApiInvalidIPAuditTrackingSetting	Invalid value for IP Audit Tracking feature setting.
IpamApiInvalidClientId	The specified Client ID is invalid.
IpamApiAccessScopeMigrationFailed	Failed to migrate access scope associations.
IpamApiSecretKeyUnavailableOperationDenied	The secret key for IPAM is unavailable. Operations cannot be performed until a new key is provided to IPAM.
IpamApiOperationDeniedDueToAccessScopeTampering	The operation could not be completed because the underlying database tables failed a data consistency check.
IpamApiAccessScopeCannotBeSetOnDefaultProviderAddressSpace	An access scope cannot be set on the default provider IP address space.
IpamApiDhcpFilterFailedToAddInRemoteServer	Failed to add one or more MAC address filters. See details for more information.
IpamApiDhcpFilterFailedToAddInIpamDatabase	Failed to add one or more MAC address filters in the database. See details for more information.
IpamApiDhcpFilterFailedToUpdateInRemoteServer	Failed to update one or more MAC address filters.
IpamApiDhcpFilterFailedToUpdateInIpamDatabase	Failed to update one or more MAC address filters in database.

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Value	Description
IpamApiDhcpFilterFailedToDeleteInRemoteServer	Failed to delete one or more MAC address filters.
IpamApiDhcpFilterFailedToDeleteInIpamDatabase	Failed to delete one or more MAC address filters from database. See details for more information.
IpamApiDhcpFilterFailedToFetchFromIpamDatabase	Failed to fetch one or more MAC address filters from the IPAM database.
IpamApiErrorMoveDBNotAllowedFromCurrentDBType	The Move Database operation is not supported from the current database type.
IpamApiErrorMoveDBAllowedOnlyToMSSQL	The Move Database operation is supported only for the SQL server database.
IpamApiErrorFailedToMoveDatabase	Failed to move the IPAM database.
IpamApiErrorMoveDatabaseFailedInSettingDatabaseConfiguration	Failed to change database settings while moving the database.
IpamApiErrorDatabaseSchemaIsModified	The data consistency check failed on the IPAM database. The IPAM database schema has been modified or tampered.
IpamApiErrorUpgradePathNotAvailable	The schema upgrade path is not available from the schema version of the database to the schema version of the IPAM server.
IpamApiErrorDatabaseIsAtHigherVersion	The schema version of the database is higher than the version supported by this version of the IPAM server.
IpamApiErrorSchemaVersionNumberFormatError	The schema version number format is invalid.
IpamApiSameCustomFieldsInAssociation	A custom field cannot be associated with itself.
IpamApiInvalidCustomFieldAssociationValues	One or more custom field values in the custom field

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Value	Description
	association are invalid.
IpamApiInvalidCustomFieldTypeInAssociation	The custom fields in the association are not multivalued.
IpamApiDuplicateCustomFieldAssociationValues	The custom field association has duplicate entries.
IpamApiCustomFieldAssociationIntersectionEmpty	The associated custom field values do not exist.
IpamApiFailedToAddCustomFieldAssociation	Failed to add custom field association.
IpamApiFailedToDeleteCustomFieldAssociation	Failed to delete custom field association.
IpamApiFailedToUpdateCustomFieldAssociation	Failed to update custom field associations.
IpamApiFailedToFetchCustomFieldAssociations	Failed to fetch custom field associations.
IpamApiCustomFieldAssociationAlreadyExists	The custom field association already exists.
IpamApiInvalidIPAuditTrackingSetting	The value for the IP address tracking feature setting is invalid.
IpamApiInvalidGpoPrefix	Invalid value of GPO prefix specified. Length of GPO prefix should be between 1 to 240 characters.
IpamApiErrorReadSecretKeyFailed	Failed to retrieve the secret key.
IpamApiErrorCreateSecretKeyFailed	Failed to generate a secret key.
IpamApiErrorDeleteSecretKeyFailed	Failed to delete the secret key.
IpamApiErrorUpdateSecretKeyFailed	Failed to update the secret key.
IpamApiErrorSecretKeyIsNotGUID	Failed to update the secret key. The value provided is not a valid GUID. A valid GUID for the secret key is required.
IpamApiErrorDatabaseFileAlreadyExists	Database files already exist in the specified path.

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Value	Description
IpamApiDhcpFailedToRetrieveDataFromIpamDatabase	Failed to perform the operation. The selected set of entities might not be current. Refresh the view to get the valid set of entries.
IpamApiReservationFailedToCreateInDatabase	Failed to add one or more DHCP reservations in the IPAM database.
IpamApiReservationFailedToDeleteInDatabase	Failed to delete one or more DHCP reservations from the IPAM database.
IpamApiReservationFailedToUpdateInDatabase	Failed to update the DHCP reservation in the IPAM database.
IpamApiReservationFailedToGetFromDatabase	Failed to get DHCP reservations from the IPAM database.
IpamApiReservationServerSpecifiedWithoutReservationName	Reservation server is specified without a valid reservation name.
IpamApiReservationServerSpecifiedWithoutReservationType	Reservation server is specified without a valid reservation type.
IpamApiReservationServerSpecifiedWithoutClientId	Reservation server is specified without a valid Client Id.
IpamApiReservationServerSpecifiedWithoutDuid	Reservation server is specified without a valid Duid.
IpamApiReservationServerSpecifiedWithoutIaid	Reservation server is specified without a valid Iaid.
IpamApiForwardLookupSpecifiedWithoutDeviceName	A forward lookup zone is specified without a valid device name.
IpamApiForwardLookupSpecifiedWithoutForwardLookupServer	A forward lookup zone is specified without a valid forward lookup server.
IpamApiReverseLookupSpecifiedWithoutDeviceName	A reverse lookup zone is specified without a valid device name.
IpamApiReverseLookupSpecifiedWithoutReverseLookupServer	A reverse lookup zone is specified without a valid reverse lookup server.

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Value	Description
IpamApiIPAddressDeleteDenied	Failed to delete IP addresses associated with this IP address range. Access denied.
IpamApiDhcpFailedToAddScopesToSuperscopeInDatabase	Failed to add DHCP scopes to superscope in the IPAM database.
IpamApiDhcpFailedToRemoveScopesFromSuperscopeInDatabase	Failed to remove DHCP scopes from superscope in the IPAM database.
IpamApiDhcpFailedToRenameSuperscopeInDatabase	Failed to rename superscope in the IPAM database.
IpamApiDhcpFailedToDeleteSuperscopesInDatabase	Failed to delete one or more superscopes in the IPAM database.
IpamApiDhcpFailedToDeletePolicyInDatabase	Failed to delete one or more DHCP policies in the IPAM database.
IpamApiDhcpFailedToCreatePolicyInDatabase	Failed to create one or more DHCP policies in the IPAM database.
IpamApiDhcpFailedToUpdatePolicyInDatabase	Failed to update one or more DHCP policies in the IPAM database.

2.2.5.62 ipam1: IpamUpgradeValidationRuleDescriptionId

This simple type is an enumeration that specifies the description of a rule applied during validation of an IPAM data store before upgrade.

```
<xs:simpleType name="IpamUpgradeValidationRuleDescriptionId">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="RangeToValidSubnetValidationRuleDesc" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	No rule is to be applied.
RangeToValidSubnetValidationRuleDesc	Ranges do not cross public/private subnet boundaries.

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2.2.5.63 ipam1: IpamUpgradeValidationRuleNameId

This simple type is an enumeration that specifies the identifier for the rules that are applied during validation of the IPAM data store before upgrade.

```
<xs:simpleType name="IpamUpgradeValidationRuleNameId">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="RangeToValidSubnetValidationRuleId" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	No identifier is to be applied.
RangeToValidSubnetValidationRuleId	The rule identifier.

2.2.5.64 ipam1:OverallProgressStatus

This simple type is an enumeration that specifies the progress status of any task or action in the IPAM system.

```
<xs:simpleType name="OverallProgressStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="NotStarted" />
    <xs:enumeration value="InProgress" />
    <xs:enumeration value="CompletedWithSuccess" />
    <xs:enumeration value="CompletedWithFailure" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
NotStarted	The action has not been started yet.
InProgress	The action is in progress.
CompletedWithSuccess	The action has been completed with success.
CompletedWithFailure	The action is completed but failed.

2.2.5.65 IpamDatabaseAuthenticationType

This simple type is an enumeration that specifies the type of authentication for the external MS-SQL database server.

```
<xs:simpleType name="IpamDatabaseAuthenticationType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="AuthenticationNotConfigured" />
```


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```
    <xs:enumeration value="WindowsAuthentication" />
    <xs:enumeration value="SQLAuthentication" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
AuthenticationNotConfigured	No authentication for the external SQL server.
WindowsAuthentication	Windows-based authentication for the external SQL server.
SQLAuthentication	SQL Server User authentication (SQLAUTH) as specified by [MS-TDS], for the external SQL server.

2.2.5.66 IpamDatabaseType

This simple type is an enumeration that specifies the type of database that this instance of IPAM uses.

```
<xs:simpleType name="IpamDatabaseType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="DatabaseTypeNotConfigured" />
    <xs:enumeration value="WindowsInternalDatabase" />
    <xs:enumeration value="MSSQLServer" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
DatabaseTypeNotConfigured	The type of database that this instance of IPAM uses is not configured.
WindowsInternalDatabase	This instance of IPAM uses the Windows Internal Database (WID).
MSSQLServer	This instance of IPAM uses the external MS-SQL-based database.

2.2.5.67 IpamGpoOperation

This simple type is an enumeration that specifies the operations that can be performed on IPAM GPO.

```
<xs:simpleType name="IpamGpoOperation">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Add" />
    <xs:enumeration value="Delete" />
    <xs:enumeration value="NoOperation" />
    <xs:enumeration value="NotApplicable" />
  </xs:restriction>
</xs:simpleType>
```


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The following table describes the various values of this type.

Value	Description
Add	Add an IPAM GPO.
Delete	Delete an IPAM GPO.
NoOperation	No operation.
NotApplicable	Not applicable.

2.2.5.68 IpamObjectType

This simple type is an enumeration that specifies the type of Object.

```
<xs:simpleType name="IpamObjectType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="IPv4AddressSpace" />
    <xs:enumeration value="IPv6AddressSpace" />
    <xs:enumeration value="IPv4Block" />
    <xs:enumeration value="IPv6Block" />
    <xs:enumeration value="IPv4Subnet" />
    <xs:enumeration value="IPv6Subnet" />
    <xs:enumeration value="IPv4Range" />
    <xs:enumeration value="IPv6Range" />
    <xs:enumeration value="IPv4Address" />
    <xs:enumeration value="IPv6Address" />
    <xs:enumeration value="DHCPServerv4" />
    <xs:enumeration value="DHCPServerv6" />
    <xs:enumeration value="DHCPScopev4" />
    <xs:enumeration value="DHCPScopev6" />
    <xs:enumeration value="DHCPReservationv4" />
    <xs:enumeration value="DHCPReservationv6" />
    <xs:enumeration value="DHCPPolicyV4" />
    <xs:enumeration value="DHCPSuperscopeV4" />
    <xs:enumeration value="DHCPFailover" />
    <xs:enumeration value="DHCPFilter" />
    <xs:enumeration value="DNSServer" />
    <xs:enumeration value="DNSForwardLookupZone" />
    <xs:enumeration value="DNSReverseLookupZone" />
    <xs:enumeration value="AccessScope" />
    <xs:enumeration value="UserAccessPolicy" />
    <xs:enumeration value="DHCPSuperscopev4" />
    <xs:enumeration value="Max" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
IPv4AddressSpace	The object is an IPv4-based address space.

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Value	Description
IPv6AddressSpace	The object is an IPv6-based address space.
IPv4Block	The object is an IPv4-based address block.
IPv6Block	The object is an IPv6-based address block.
IPv4Range	The object is an IPv4-based address range.
IPv6Range	The object is an IPv6-based address range.
IPv4Adress	The object is an IPv4 address.
IPv6Address	The object is an IPv6 address.
DHCPServerv4	The object is an IPv4-based DHCP server.
DHCPServerv6	The object is an IPv6-based DHCP server.
DHCPScopev4	The object is an IPv4-based DHCP scope.
DHCPScopev6	The object is an IPv6-based DHCP scope.
DHCPReservationv4	The object is an IPv4-based DHCP reservation.
DHCPReservationv6	The object is an IPv6-based DHCP reservation.
DHCPPolicyV4	The object is an IPv4-based DHCP policy.
DHCPSuperscopeV4	The object is an IPv4-based DHCP superscope.
DHCPFailover	The object is a DHCP failover relationship.
DHCPFilter	The object is a DHCP filter.
DNSServer	The object is a DNS server.
DNSForwardLookupZone	The object is a DNS forward lookup zone.
DNSReverseLookupZone	The object is a DNS reverse lookup zone.
AccessScope	The object denotes the access scope for role-based access control.
UserAccessPolicy	The object specifies the user access policy.
Max	The max value for this enumeration.

2.2.5.69 LogicalGroupOrigin

This simple type is an enumeration that specifies the origin of the logical group.

```
<xs:simpleType name="LogicalGroupOrigin">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="BuiltIn" />
    <xs:enumeration value="External" />
  </xs:restriction>
```


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```
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
BuiltIn	The logical group is a built-in logical group predefined by IPAM.
External	The logical group is a user-created logical group.

2.2.5.70 LogicalGroupType

This simple type is an enumeration that specifies the type of entity that gets enumerated using the logical group.

```
<xs:simpleType name="LogicalGroupType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Range" />
    <xs:enumeration value="IPAddress" />
    <xs:enumeration value="ManagedServer" />
    <xs:enumeration value="Subnet" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Range	The logical group can be used to categorize and enumerate the address ranges.
IPAddress	The logical group can be used to categorize and enumerate the addresses.
ManagedServer	The logical group can be used to categorize and enumerate the managed servers.
Subnet	The logical group can be used to categorize and enumerate the address subnets.

2.2.5.71 LogicalGroupUsers

This simple type is an enumeration that specifies the functional area under which the logical group is created.

```
<xs:simpleType name="LogicalGroupUsers">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None">
          <xs:annotation>
            <xs:appinfo>
```


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```
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="IPAddressSpaceManagement">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="ServerManagement">
          <xs:annotation>
            <xs:appinfo>
              <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
            </xs:appinfo>
          </xs:annotation>
        </xs:enumeration>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
IPAddressSpaceManagement	The logical group is created under the address space management functional area.
ServerManagement	The logical group is created under the server management functional area.

2.2.5.72 PolicyOperations

This simple type is an enumeration that specifies the set of operations that can be performed on a DHCP policy.

```
<xs:simpleType name="PolicyOperations">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="PolicyCreate" />
    <xs:enumeration value="PolicyAddRange" />
    <xs:enumeration value="PolicyAddOptions" />
    <xs:enumeration value="PolicyRemoveRange" />
    <xs:enumeration value="PolicyCoreSet" />
    <xs:enumeration value="PolicyRemove" />
    <xs:enumeration value="PolicySetDnsProperties" />
    <xs:enumeration value="PartnerPolicyCreate" />
    <xs:enumeration value="PartnerPolicyAddRange" />
    <xs:enumeration value="PartnerPolicyAddOptions" />
    <xs:enumeration value="PartnerPolicyRemoveRange" />
    <xs:enumeration value="PartnerPolicyCoreSet" />
    <xs:enumeration value="PartnerPolicyRemove" />
```


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```
    <xs:enumeration value="PartnerPolicySetDnsProperties" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
PolicyCreate	A new policy has to be created.
PolicyAddRange	An address range needs to be added to a policy.
PolicyAddOptions	Options need to be added to a policy.
PolicyRemoveRange	An address range needs to be removed from a policy.
PolicyCoreSet	Policy core properties (for example, policy name) need to be set.
PolicyRemove	A policy needs to be removed.
PolicySetDnsProperties	DNS properties need to be set on a policy.
PartnerPolicyCreate	A new policy for the partner DHCP server has to be created.
PartnerPolicyAddRange	An address range needs to be added to a policy of the partner DHCP server.
PartnerPolicyAddOptions	Options need to be added to a policy of the partner DHCP server.
PartnerPolicyRemoveRange	An address range needs to be removed from a policy of the partner DHCP server.
PartnerPolicyCoreSet	Policy core properties (for example, policy name) need to be set for the partner DHCP server.
PartnerPolicyRemove	A policy of the partner DHCP server needs to be removed.
PartnerPolicySetDnsProperties	DNS properties need to be set on the partner DHCP server policy.

2.2.5.73 PolicyOperator

This simple type is an enumeration that specifies the operator as part of a DHCP policy.

```
<xs:simpleType name="PolicyOperator">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Or" />
    <xs:enumeration value="And" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
Or	Logical OR operation.

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Value	Description
And	Logical AND operation.

2.2.5.74 PolicyProcessingOrderDirection

This simple type is an enumeration that specifies the direction in which the DHCP policies are processed.

```
<xs:simpleType name="PolicyProcessingOrderDirection">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="up" />
    <xs:enumeration value="down" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
up	The direction in which the DHCP policies are processed is from last to first.
down	The direction in which the DHCP policies are processed is from first to last.

2.2.5.75 PolicyState

This simple type is an enumeration that specifies the current state of the DHCP policy.

```
<xs:simpleType name="PolicyState">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="none" />
    <xs:enumeration value="enabled" />
    <xs:enumeration value="disabled" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
none	Unspecified or an invalid value.
enabled	Policy is enabled.
disabled	Policy is disabled.

2.2.5.76 ProvisioningMethod

This simple type is an enumeration that specifies the current provisioning method in use to provision infrastructure servers managed by IPAM.

```
<xs:simpleType name="ProvisioningMethod">
  <xs:restriction base="xsd:string">
```


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```
    <xs:enumeration value="None" />
    <xs:enumeration value="Automatic" />
    <xs:enumeration value="Manual" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
none	IPAM is unprovisioned.
Automatic	Infrastructure servers will be provisioned using Group Policy.
Manual	Infrastructure servers will be provisioned manually.

2.2.5.77 ReservationOperations

This simple type is an enumeration that specifies the set of operations that can be performed for DHCP reservations.

```
<xs:simpleType name="ReservationOperations">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="ReservationPropertyCreate" />
    <xs:enumeration value="ReservationOptionsCreate" />
    <xs:enumeration value="ReservationPropertyUpdate" />
    <xs:enumeration value="ReservationDnsUpdate" />
    <xs:enumeration value="ReservationOptionsUpdate" />
    <xs:enumeration value="ReservationDelete" />
    <xs:enumeration value="ReservationIPAddressDelete" />
    <xs:enumeration value="ReservationDNSRecordDelete" />
    <xs:enumeration value="PartnerReservationPropertyCreate" />
    <xs:enumeration value="PartnerReservationOptionsCreate" />
    <xs:enumeration value="PartnerReservationPropertyUpdate" />
    <xs:enumeration value="PartnerReservationDnsUpdate" />
    <xs:enumeration value="PartnerReservationOptionsUpdate" />
    <xs:enumeration value="PartnerReservationDelete" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Unspecified or an invalid value.
ReservationPropertyCreate	Add new properties to a reservation.
ReservationOptionsCreate	Add new options to a reservation.
ReservationPropertyUpdate	Update the properties of a reservation.
ReservationDnsUpdate	Update the DNS settings for a reservation.

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Value	Description
ReservationOptionsUpdate	Update the options for a reservation.
ReservationDelete	Delete the given reservation.
ReservationIPAddressDelete	Delete the IP address record associated with this reservation, from the IPAM data store.
ReservationDNSRecordDelete	Delete the DNS resource record associated with this reservation from the remote DNS server.
PartnerReservationPropertyCreate	Add new properties to a reservation of the partner DHCP server.
PartnerReservationOptionsCreate	Add new options to a reservation of the partner DHCP server.
PartnerReservationPropertyUpdate	Update the properties of a reservation of the partner DHCP server.
PartnerReservationDnsUpdate	Update the DNS settings for a reservation of the partner DHCP server.
PartnerReservationOptionsUpdate	Update the options for a reservation of the partner DHCP server.
PartnerReservationDelete	Delete the given reservation of the partner DHCP server.

2.2.5.78 ManagementStatus

This simple type is an enumeration that specifies the management status of a specific server instance in IPAM.

```
<xs:simpleType name="ManagementStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Unspecified" />
    <xs:enumeration value="Unmanaged" />
    <xs:enumeration value="Managed" />
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the valid values for this type.

Value	Description
None	Uninitialized or invalid value.
Unspecified	The value has not been specified.
Unmanaged	The server instance is not enabled for management by the IPAM server.
Managed	The server instance is enabled for management by the IPAM server.

2.2.5.79 ser:char

This simple type represents a single Unicode character value.

```
<xs:simpleType name="char">
```


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```
  <xs:restriction base="xsd:int" />
</xs:simpleType>
```

2.2.5.80 ser:duration

The duration simple type represents an interval of time that is specified as a positive or negative number of days, hours, minutes, seconds and fractions of a second.

```
<xs:simpleType name="duration">
  <xs:restriction base="xsd:duration">
    <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?" />
    <xs:minInclusive value="-P10675199DT2H48M5.4775808S" />
    <xs:maxInclusive value="P10675199DT2H48M5.4775807S" />
  </xs:restriction>
</xs:simpleType>
```

2.2.5.81 ser:guid

The guid simple type represents a GUID.

```
<xs:simpleType name="guid">
  <xs:restriction base="xsd:string">
    <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-
F]{12}" />
  </xs:restriction>
</xs:simpleType>
```

2.2.5.82 ServerAuditType

This simple type is an enumeration which specifies the source of an audit information.

```
<xs:simpleType name="ServerAuditType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Ipam" />
    <xs:enumeration value="Dhcp" />
    <xs:enumeration value="Nps" />
    <xs:enumeration value="Dc" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Ipam	The audit information is from an IPAM server.
Dhcp	The audit information is from a DHCP server.
Nps	The audit information is from an NPS server.

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Value	Description
Dc	The audit information is from a domain controller.

2.2.5.83 ServerInfoConfigRetrievalStatus

This simple type is an enumeration which specifies the status of the configuration data retrieval from the managed server.

```
<xs:simpleType name="ServerInfoConfigRetrievalStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="NotStarted" />
    <xs:enumeration value="InProgress" />
    <xs:enumeration value="Completed" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or invalid value.
NotStarted	Configuration data retrieval has not yet started.
InProgress	Configuration data retrieval is in progress.
Completed	Configuration data retrieval has completed.

2.2.5.84 ServerInfoGetServerFilter

This simple type is an enumeration which specifies the various types of filter criteria that can be applied while enumerating the ServerInfo data from the IPAM data store.

```
<xs:simpleType name="ServerInfoGetServerFilter">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="IPSubnet" />
    <xs:enumeration value="RecordId" />
    <xs:enumeration value="Guid" />
    <xs:enumeration value="Role" />
    <xs:enumeration value="ManagementStatus" />
    <xs:enumeration value="Name" />
    <xs:enumeration value="IpType" />
    <xs:enumeration value="MultipleRole" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
IPSubnet	Filter server information based on the specified IP subnet of the network interface addresses of the server.

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Value	Description
RecordId	Filter server information based on the RecordId.
Guid	Filter server information based on the server GUID.
Role	Filter server information based on the server role type.
ManagementStatus	Filter server information based on the specified server manageability status.
Name	Filter server information based on the name of the server.
IpType	Filter server information based on the IpType of the network interface address of the server.
MultipleRole	Filter server information based on if the server has a single server role or multiple server roles running on it.

2.2.5.85 ServerInfoNewFlag

This simple type is an enumeration that summarizes the change of ServerInfo server instance data between two consecutive discovery IPAM task executions.

```
<xs:simpleType name="ServerInfoNewFlag">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Old" />
    <xs:enumeration value="New" />
    <xs:enumeration value="Modified" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Uninitialized or invalid value.
Old	There has been no change to the ServerInfo details.
New	The ServerInfo is a new instance since the last execution of the discovery task.
Modified	There has been some change to an existing instance of the ServerInfo.

2.2.5.86 ServerMultipleRole

This simple type is an enumeration that is used to refer to multiple server roles in a single criteria. For example, the DhcpOrDns can be used to specify the condition of the ServerRoleType being either DHCP or DNS.

```
<xs:simpleType name="ServerMultipleRole">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="DhcpOrDns" />
    <xs:enumeration value="DhcpOrDcOrNps" />
  </xs:restriction>
```


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```
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Uninitialized or invalid value.
DhcpOrDns	The server role type can be either DHCP or DNS.
DhcpOrDcOrNps	The server role type can be either DHCP or DC or NPS.
Modified	There has been some change to an existing instance of the ServerInfo.

2.2.5.87 ServerRoleAuditFileAccess

This simple type is an enumeration that is used to specify the access status the IPAM server has on the DHCP audit log file.

```
<xs:simpleType name="ServerRoleAuditFileAccess">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="NotChecked" />
    <xs:enumeration value="NotApplicable" />
    <xs:enumeration value="Denied" />
    <xs:enumeration value="Success" />

  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
NotChecked	The DHCP audit log file read access status is yet to be checked.
NotApplicable	The DHCP audit log file access status is not applicable for the server role type.
Denied	The DHCP audit log file access is denied permission.
Success	The DHCP audit log file access is successful.

2.2.5.88 ServerRoleEventViewerAccess

This simple type is an enumeration that is used to specify the event viewer access status for the IPAM server on the managed machines.

```
<xs:simpleType name="ServerRoleEventViewerAccess">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="NotChecked" />
    <xs:enumeration value="NotApplicable" />
    <xs:enumeration value="Denied" />
    <xs:enumeration value="Success" />
  </xs:restriction>
```


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```
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
NotChecked	The event viewer read access status is yet to be checked.
NotApplicable	The event viewer read access status is not applicable for the server role type.
Denied	The event viewer read access is denied permission.
Success	The event viewer read access is successful.

2.2.5.89 ServerRoleRpcAccess

This simple type is an enumeration that specifies the RPC access status for performing RPC calls for DHCP or DNS server roles.

```
<xs:simpleType name="ServerRoleRpcAccess">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="NotChecked" />
    <xs:enumeration value="NotApplicable" />
    <xs:enumeration value="NotFound" />
    <xs:enumeration value="Denied" />
    <xs:enumeration value="Success" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
NotChecked	The RPC server access status is yet to be checked.
NotApplicable	The RPC server access status is not applicable for the server role type.
Denied	The RPC server access is denied permission.
Success	The RPC server access is successful.

2.2.5.90 ServerRoleType

This simple type is an enumeration that specifies the various server roles that can be enabled on a specific server.

```
<xs:simpleType name="ServerRoleType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Dc" />
    <xs:enumeration value="Dns" />
    <xs:enumeration value="Dhcp" />
    <xs:enumeration value="Nps" />
  </xs:restriction>
```


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```
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
Dc	The server is a domain controller.
Dns	The server is a domain name server.
Dhcp	The server is a DHCP server.
Nps	The server is a NPS server.

2.2.5.91 ServiceRunningStatus

This simple type is an enumeration specifying the **service** status.

```
<xs:simpleType name="ServiceRunningStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="NotChecked" />
    <xs:enumeration value="Stopped" />
    <xs:enumeration value="StartPending" />
    <xs:enumeration value="StopPending" />
    <xs:enumeration value="Running" />
    <xs:enumeration value="ContinuePending" />
    <xs:enumeration value="PausePending" />
    <xs:enumeration value="Paused" />
    <xs:enumeration value="NotApplicable" />
    <xs:enumeration value="NotReachable" />
    <xs:enumeration value="Unknown" />
    <xs:enumeration value="AccessDenied" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
AccessDenied	The caller does not have access to fetch the service status.
NotChecked	The service status is not checked.
Stopped	The service is not running.
StartPending	The service is starting.
StopPending	The service is stopping.
Running	The service is running.
ContinuePending	The service continue is in progress (after a paused state).
PausePending	The service is being paused.
Paused	The service is in paused state.

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Value	Description
NotApplicable	The service status is not applicable.
NotReachable	The server is unreachable or the service status could not be accessed due to insufficient privileges.
Unknown	The service status is unknown.

2.2.5.92 syssock:AddressFamily

This is a simple type that is an enumeration defining the various address family types. This protocol supports only Internet and InternetV6. The other values MUST NOT be used. Internet address family specifies IPv4 address family and InternetV6 specifies IPv6 address family.

```
<xs:simpleType name="AddressFamily">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="Unknown">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue xmlns="http://schemas.microsoft.com/2003/10/Serialization/">-
1</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Unspecified">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Unix">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="InterNetwork">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="ImpLink">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">3</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Pup">
```


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```
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">4</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Chaos">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">5</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="NS">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">6</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Ipx">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">6</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Iso">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">7</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Osi">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">7</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Ecma">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">8</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="DataKit">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">9</EnumerationValue>
```


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```
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Ccitt">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">10</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Sna">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">11</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="DecNet">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">12</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="DataLink">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">13</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Lat">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">14</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="HyperChannel">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">15</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="AppleTalk">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">16</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
```


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```
    <xs:enumeration value="NetBios">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">17</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="VoiceView">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">18</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="FireFox">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">19</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Banyan">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">21</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Atm">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">22</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="InterNetworkV6">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">23</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Cluster">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">24</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Ieee12844">
      <xs:annotation>
        <xs:appinfo>
```


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```
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">25</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Irda">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">26</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="NetworkDesigners">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">28</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="Max">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">29</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>
```

2.2.5.93 UtilizationStatus

This simple type is an enumeration that specifies the utilization status for an entity such as address range or address block.

```
<xs:simpleType name="UtilizationStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Under" />
    <xs:enumeration value="Optimal" />
    <xs:enumeration value="Over" />
    <xs:enumeration value="Max" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Under	The address utilization is below the minimum utilization threshold.
Optimal	The address utilization is optimal and is between the minimum and maximum address utilization

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Value	Description
	threshold.
Over	The address utilization is above the maximum address utilization threshold.

2.2.5.94 SubTaskStatus

This simple type is an enumeration that specifies the progress status of a sub-task of a task or action in the IPAM system.

```
<xs:simpleType name="SubTaskStatus">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="NotStarted" />
    <xs:enumeration value="InProgress" />
    <xs:enumeration value="CompletedWithError" />
    <xs:enumeration value="CompletedWithWarning" />
    <xs:enumeration value="CompletedWithSuccess" />
    <xs:enumeration value="NotApplicable" />
    <xs:enumeration value="NotRun" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
NotStarted	The sub-task has not been started yet.
InProgress	The sub-task is in progress.
CompletedWithError	The sub-task has been completed but resulted in some errors.
CompletedWithWarning	The sub-task has been completed with some warnings.
CompletedWithSuccess	The sub-task has been completed with success.
NotApplicable	Status is not applicable for this sub-task.
NotRun	This sub-task was not run.

2.2.5.95 SuperscopeOperations

This simple type is an enumeration that specifies the operation to be performed on a superscope entity.

```
<xs:simpleType name="SuperscopeOperations">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="AddScopes" />
    <xs:enumeration value="RemoveScopes" />
    <xs:enumeration value="DeleteSuperscope" />
    <xs:enumeration value="AddFailover" />
    <xs:enumeration value="RemoveFailover" />
    <xs:enumeration value="RenameSuperscope" />
  </xs:restriction>
</xs:simpleType>
```


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The following table describes the various values of this type.

Value	Description
AddScopes	One or more scopes need to be added to the superscope.
RemoveScopes	One or more scopes need to be removed from the superscope.
DeleteSuperscope	The superscope needs to be deleted.
AddFailover	Failover configuration needs to be applied to the scopes in the superscope, if not already configured.
RemoveFailover	Failover configuration needs to be removed from the scopes of the superscope, if already configured.
RenameSuperscope	The superscope needs to be renamed.

2.2.5.96 ZoneConfiguration

This simple type is an enumeration that specifies the way the zone data is stored.

```
<xs:simpleType name="ZoneConfiguration">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="ADIntegrated" />
    <xs:enumeration value="FileBacked" />
    <xs:enumeration value="NotApplicable" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
ADIntegrated	DNS zone data is stored in active directory.
FileBacked	DNS zone data is stored in a flat-file.
NotApplicable	The ZoneConfiguration value is not applicable.

2.2.5.97 ZoneHostingDnsServerType

This simple type is an enumeration that specifies the way in which a zone is hosted.

```
<xs:simpleType name="ZoneHostingDnsServerType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="None" />
    <xs:enumeration value="Primary" />
    <xs:enumeration value="Secondary" />
    <xs:enumeration value="Stub" />
```


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```
    </xs:restriction>
  </xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
None	Unspecified or an invalid value.
Primary	A zone for which a master authoritative copy of data is held in persistent local storage or in a locally accessible directory server. A zone stored in a directory server is a primary zone for any DNS server that can retrieve a copy of it from its local directory server.
Secondary	A zone for which an authoritative read-only copy of data is hosted by a particular DNS server. The data for a secondary zone is periodically copied from another DNS server that is authoritative for the zone.
Stub	A specialized version of a secondary zone. A stub zone contains only those resource records that are necessary to identify the authoritative DNS server for that zone.

2.2.5.98 IpamGpoErrorType

This simple type is an enumeration that specifies the error type encountered when applying the GPO operation.

```
<xs:simpleType name="IpamGpoErrorType">
  <xs:restriction base="xsd:string">
    <xs:enumeration value="IpamApiErrorGpoGenericFailure" />
    <xs:enumeration value="IpamApiErrorGpoOperationFailed" />
  </xs:restriction>
</xs:simpleType>
```

The following table describes the various values of this type.

Value	Description
IpamApiErrorGpoGenericFailure	This is returned if the domain name is not valid.
IpamApiErrorGpoOperationFailed	This is returned if a failure was detected other than the previous case while applying the GPO operation.

2.2.6 Attributes

This specification does not define any common XML schema attribute definitions.

2.2.7 Groups

This specification does not define any common XML schema group definitions.

2.2.8 Attribute Groups

This specification does not define any common XML schema attribute group definitions.

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2.2.9 Common Data Structures

This specification does not define any common XML schema data structures.

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3 Protocol Details

3.1 Common Server Details

This section describes protocol details that are common between various WSDL port type implementations on the management server end.

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.1.1.1 ADM_IPAMDataStore

The IPAM management protocol is centered on the IPAM data store. The IPAM data store, which consists of the data pertaining to the address management, DHCP/DNS servers, their configuration, and so on, can be remotely managed using this protocol.

The data model for the IPAM data store consists of a number of tables that hold the information provided by the management protocol in a persistent store. There are also other miscellaneous states, some of which are persistent and others that are not. Each of them will be described in the sections following.

The data model here uses the terms tables, columns, rows, primary key, and foreign key conceptually similar to those defined in [MSDN-Tables].

The tables used to model the IPAM data store will be either simple tables or a collection of two simple tables (referred to here as compound tables). The compound table is used to conceptualize the tables in the data store wherein there are distinct tables to store IPv4-specific information and IPv6-specific information. For example, the IP address range information can be either pertaining to IPv4 address range or IPv6 address range. They will be modeled as a single compound table ADM_IPRangeTable, which will have two tables further -- one for IPv4 address range and another for IPv6 address range. By considering the model to have the compound tables, it makes it easier to have the processing rules on the tables defined irrespective of whether it is for IPv4 or IPv6.

The simple table itself can be modeled around the database tables. In summary, a simple table will have a set of columns that defines the various properties of the entity that it stores. The rows of the table form the various entities the table has information about.

Some columns will be special columns, referred to as a primary key or a foreign key.

A primary key column is a column in the table that uniquely identifies a row in the table, and therefore no two rows in the table will have the same value for the primary key column. A column will be marked as a primary key in the data model below using the term "**<primary key column name>**: **primary key**"

A foreign key column is a column in the table that specifies a relation to a row in another table, along with certain constraints. The following details together form the definition of a foreign key that specifies the relation of the data in the source table to the data in the target table:

1. The column in the source table.

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2. The target table to which the foreign key specifies the relation.

3. The column in the target table to which the foreign key refers; this has to be a primary key in the target table.

4. The constraint on what should happen when the row with the primary key value is deleted in the target table. This can result in one of the following:

   - The column in the source table is reset to mean there is no more relation between the row in the source table to any other row in the target table ("**set null**" constraint).

   - The row in the source table is deleted so that every row in the source table (if it exists) always refers to a valid row in the target table ("**cascade**" constraint).

   - The deletion of the row in the target table is not allowed as long as there are any foreign key associations to that row ("**no action**" constraint).

Note that whenever a column that is a primary key (in a target table) is changed, the reference value of all the foreign keys to this target table from the other source tables of the relation will get updated. This way the relation is still maintained if the primary key column value is changed.

In the data model definitions below, the foreign key definition will be provided as a tuple as given below:

```
<foreign key column name>: foreign key (<target table>, <target column>) on delete <deletion
constraint>
```

where <deletion constraint> can be "**set null**", or "**cascade**", or "**no action**".

Beside these, each table will define a set of procedures that will help to consolidate the interaction with the data model, thereby making the Message Processing and Sequencing Rules sections simple enough to capture the steps involved in arriving at the data.

In the case of compound tables, there are two other aspects which complete the data model.

1. There will be a common set of columns which are present in both the tables

2. There will be a set of columns which are specific to the individual tables defined for each simple table in the common table.

These will be explicitly called out in the sections below.

In addition, consider the case of a foreign key relation from the compound table A to another compound table B. The relation will be between the simple tables of the same kind – for example, a foreign key relation in IPv4-specific simple table in A to compound table B, will be a relation to the IPv4-specific simple table in B. A relation from a compound table A to a simple table B will be like any other relation between two simple tables; the IPv4-specific table of A will have a relation to the simple table B and similarly IPv6-specific table of A will have a relation to the simple table B.

3.1.1.1.1 ADM_IPRangeTable

This is a compound table that has IPv4-specific and IPv6-specific simple tables within it. This models the IP address ranges in the IPAM data store.

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3.1.1.1.1.1 Data Model

The following are the columns that are common to both the tables (IPv4-specific and IPv6-specific).

RecordId:primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of the **IPRange** data structure.

ParentIPBlockRecordId: Foreign key (ADM_IPBlockTable, RecordId); on delete no action, on update no action.

This column specifies the record identifier of an IP address block (in the **ADM_IPBlockTable**) to which the IPRange maps. An address range will map to the most specific address block whose subnet identifier, subnet mask, start IP address, end IP address, and AddressSpace include the range of addresses specified by the address range. This column MUST not be null for an IPRange.

AddressSpaceRecordId: Foreign key (ADM_AddressSpaceTable, RecordId); on update no action, on delete no action.

RangeDetails: This consists of the various columns common to both IPv4-specific and IPv6-specific tables. These columns are modeled on the following properties of IPRange (which is the base type that both IPv4Range and IPv6Range extends).

- AddressAssignment
- AddressCategory
- EndIPAddress
- IsOverlapping
- LastAssignedDate
- LastChangeDate
- LastReclaimRuntime
- NumberOfChildAddresses
- Owner
- PrefixLength
- StartIPAddress
- UtilizationCalculationType
- UtilizationEventLogStatus
- UtilizationStatistics
- UseForUtilization
- ConnectionSpecificDNSSuffix
- VirtualizationType

ScopeRecordId: foreign key (ADM_DHCPScopesTable, RecordId) on delete cascade

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If the IP address range is a dynamic address range (**AddressAssignment** is **Dynamic**), this specifies the **RecordId** in the ADM_DHCPScopesTable for the scope corresponding to this IP address range. This forms the **ScopeRecordId** of the IPRange.

ManagedByValue: This is a computed value for each row of this table. This is computed by looking up the **ADM_CustomFieldValuesAssociationTable** for the row with **UsedById** to be **RecordId** value of the address range, **ObjectType** to be **EnumerationObjectType.IPRange**, **Af** is Internet for an IPv4Range, InternetV6 for an IPv6Range, and the **CustomFieldId** to be of value **ADM_ManagedByCustomFieldId.**

ManagedByEntityValue: This is a computed value for each row of this table. This is computed by looking up the **ADM_CustomFieldValuesAssociationTable** for the row with the **UsedById** to be the **RecordId** value of the address range, **ObjectType** to be **EnumerationObjectType.IPRange**, **Af** is Internet for an IPv4Range, InternetV6 for an IPv6Range, and the **CustomFieldId** to be of value **ADM_ManagedByEntityCustomFieldId**.

For the IPv4-specific table, the following additional properties of **IPv4Range** are associated with the range.

- WINSServers

3.1.1.1.1.2 Procedures

3.1.1.1.1.2.1 GetIPRangeFromTable

This procedure can be used to retrieve the address range information in the form of either IPv4Range or the IPv6Range, based on whether it is being invoked against the IPv4-specific table or IPv6-specific table respectively.

This procedure takes the following as input parameters:

Param_id: A 64-bit unsigned integer specifying the record identifier of the IP address range for which the IPRange is being requested.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

This procedure returns the following value as output parameter.

result: This is of type IPRange. If the **Param_addressfamily** is Internet, this will be IPv4Range, and if the addressfamily is InternetV6, this will be IPv6Range.

The following steps are the processing done by this procedure against the data store.

1. Look-up the row in the ADM_IPRangeTable with RecordId equal to Param_id. If the row is not present, set result to null and return.

2. If the addressfamily is Internet, initialize result to IPv4Range. The rest of the processing rules will be performed on IPv4-specific tables of any compound table referenced. If the addressfamily is InternetV6, initialize result to IPv6Range. The rest of the processing rules will be performed on IPv6-specific tables of any compound table referenced.

    1. Set the Param_id to IPRange.RecordId of the result.

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2. Copy the RangeDetails of the row into result.
3. If IPRange.ScopeRecordId is not 0,
    1. Call GetScopeInformationForRange of ADM_DHCPScopeTable with the following parameters.
    2. Param_range is initialized with result.
    3. Call GetCustomFieldValues procedure of ADM_CustomFieldValuesAssociationTable passing the following parameters:
        - Param_ObjectType is set to EnumerationObjectType.IPRange.
        - Param_addressfamily is passed as-is.
        - Param_ObjectRecordId is set to Param_id.
    4. Assign Result_CustomFieldValueList to result.CustomFieldValues.
    5. Assign Result_CustomFieldPartialValueList to result.PartialCustomFieldValues.
4. Call GetMultivaluedPropertiesForRange of ADM_IPRangeMultivaluedPropertiesTable with Param_rangeId set to Param_id.
5. Process the output Param_resultRangeMultiValuedProperties to set values for the following IPRange properties:

3. DNSServers
4. WINSServers (populated only if *Param_addressfamily* is equal to **AddressFamily.Internetwork**).
5. Gateways
6. VIPs
7. VIPRanges
8. DNSSuffixes
9. ReservedIPs
10. ReservedIPRanges
    - Call GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:

11. Param_objectId is set to Param_id.
12. Param_objectType is set to IpamObjectType.IPv4Range if addressfamily is Internet or IpamObjectType.IPv6Range if addressfamily is Internetv6.
13. Param_accessScopeId.
14. Param_objectInheritanceStatus.
15. Param_inheritanceID.

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1. Assign Param_accessScopeId to result.AccessScopeId.

2. Assign Param_objectInheritanceStatus to result.IsInheritedAccessScope

3. Call GetAddressSpaceById procedure of ADM_AddressSpaceTable assigning AddressSpaceRecordId to Param_AddressSpaceId. Process the output Result_AddressSpace from the procedure as mentioned below:

16. If Result_AddressSpace.AddressSpaceType is CustomerAddressSpace, then assign Result_AddressSpace.Name to result.CustomerAddressSpaceName and assign Result_AddressSpace.ProviderAddressSpaceName to result.ProviderAddressSpaceName.

17. If Result_AddressSpace.AddressSpaceType is ProviderAddressSpace, then assign Result_AddressSpace.Name to result.ProviderAddressSpaceName.

- Return result as output of the procedure.

3.1.1.1.1.2.2 GetOverlappingRanges

This procedure can be used to query the list of existing ranges in the table that overlap with the specified start IP address and end IP address.

The following are the input parameters for this procedure.

Param_StartIPAddress: This is of type IPAddress wherein the IP address is represented as an array of bytes specifying the starting IP address of the range for which the potential overlapping ranges have to be listed.

Param_EndIPAddress: This is of type IPAddress wherein the IP address is represented as an array of bytes specifying the ending IP address of the range for which the potential overlapping ranges have to be listed.

Param_AddressSpaceRecordId: This is a 64-bit signed integer that specifies the RecordId of the AddressSpace in which the overlapping ranges need to be looked for**.**

Param_ExclusionRanges: This is a list of DhcpExclusionRange specifying the StartAddress and EndAddress of the subset of addresses that have to be excluded from the address range specified by **Param_StartIPAddress** and **Param_EndIPAddress**.

Param_RecordIdToExclude: This is a 64-bit unsigned integer that specifies the **RecordId** of the row that has to be excluded while calculating the overlapping ranges. This is useful when the overlapping ranges for an existing range is computed and the range (for which the overlap is being computed) itself has to be excluded from the list of address ranges.

The following are the output parameters for this procedure.

Result_OverlappingRows: This is the set of rows that are potential overlapping ranges with the input address range specified using the **start IP address** and **end IP address**.

The following are the processing steps involved with this procedure:

1. The address family of the **Param_StartIPAddress** and **Param_EndIPAddress** determines the simple table against which the processing steps are done.

2. Enumerate the list of rows that have either their StartIPAddress or EndIPAddress lying between the specified **Param_StartIPAddress** and **Param_EndIPAddress,** and have the same

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AddressSpaceRecordId as **Param_AddressSpaceRecordId**. If the **Param_RecordIdToExclude** is specified, exclude the row if it is present.

3. Compute the ApplicableAddressRangesForGivenRange to be a collection of address ranges (having a start IP address and an end IP address) that have the valid address ranges obtained by removing the **Param_ExclusionRanges** from the address range specified by **Param_StartIPAddress** and **Param_EndIPAddress**. For example, if the Param_StartIPAddress is 10.1.1.0 and Param_EndIPAddress is 10.1.1.255 and the exclusion ranges are 10.1.1.10-10.1.1.20 and 10.1.1.30-10.1.1.40, the ApplicableAddressRangesForGivenRange will be (10.1.1.0-10.1.1.9, 10.1.1.21-10.1.1.29, 10.1.1.41-10.1.1.255).

4. For each row of possible overlapping ranges that was computed above, perform the following steps to determine whether a range forms a valid overlap or not.

    1. For the address range specified by StartIPAddress and EndIPAddress of the range and having the exclusion ranges for the range specified using ExclusionRanges field, compute the ApplicableAddressRanges for the row as it was computed for the given range above in step 3.

    2. If the entries in the ApplicableAddressRanges and ApplicableAddressRangesForGivenRange have overlapping ranges (i.e. start IP address and end IP address of the two pairs of entries overlap), then the address range is a valid overlap. Call the GetIPRangeFromTable with the Record Identifier of the address range row as **Param_id** parameter and the **Param_addressfamily** being the address family specific to the simple table being currently processed (of the compound table) and add the returned **result** to the **Result_OverlappingRows** collection.

5. Return the **Result_OverlappingRows** collection.

3.1.1.1.1.2.3 MapIPRangeToBlock

This procedure can be used to identify the specific address block that an IPRange can map to.

The input parameters of this procedure are as follows.

Param_range: The range which needs to be mapped to a block.

There are no output parameters but on completion of the procedure, the range.IPBlockId will be set to the record identifier of the block that a range maps to. If the range does not map to a block, the range.IPBlockId will be set to zero.

1. Get the address block mapping for the range by the following steps.

2. Call the **GetParentBlockIdForRange** of ADM_IPBlocksTable with the following parameters:

3. **Param_StartIPAddress** is assigned the value of the SaveRange.range.StartIPAddress

4. **Param_EndIPAddress** is assigned the value of the SaveRange.range.EndIPAddress

5. **Param_PrefixLength** is assigned the value of the SaveRange.range.PrefixLength

6. **Param_AddressSpaceId** is assigned the value of SaveRange.range.AddressSpaceId.

7. **Param_BlockRecordIdToExclude** to be excluded is set to 0.

8. Assign the resulting **Result_MappingBlockRecordId** to **Param_range.IPBlockId**.

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3.1.1.1.1.2.4 ResetCurrentIPRangeMapping

This procedure performs two activities. First, it recalculates the IsOverlapping of the ranges that are already overlapping with the specified range. IsOverlapping is set to false for those ranges if the specified range is the only range they overlap with or they are set to true if there are other ranges outside of the specified range with which they overlap. Second, it resets the **ParentIPRangeRecordId** to 0 of the IP address instances in the **ADM_IPAddressTable** that currently have the value to be the **RecordId** of the specified range.

The following are the input parameters of this procedure:

Param_range: The range whose address mapping and associated overlapping ranges have to be updated.

There are no output parameters for this procedure. The steps involved are as follows:

1. The address family of Param_range determines the simple table within the ADM_IPRangeTable compound table against which the processing steps have to be done.
2. Calculate the list of ranges that are already overlapping with the Param_range as given below and recompute their IsOverlapping if they are overlapping with at least one other range other than Param_range. For this, the following sequence of steps is to be followed.
    1. The set of overlapping ranges which overlap with Param_range is calculated as specified below and this is stored in a temporary collection CurrentOverlappingRanges
        1. Get the list of overlapping address ranges with the specified range.StartIPAddress, range.EndIPAddress, range.AddressSpaceRecordId, and range.ExclusionRanges by invoking the procedure GetOverlappingRanges of the ADM_IPRangeTable. This is done by setting the following input parameters:
            - Param_StartIPAddress is assigned the value range.StartIPAddress.
            - Param_EndIPAddress is assigned the value range.EndIPAddress.
            - Param_AddressSpaceRecordId is assigned the value range.AddressSpaceRecordId.
            - Param_ExclusionRanges is set to the range.ExclusionRanges.
            - Param_RecordIdToExclude is set to range.RecordId.
        2. Assign the Result_OverlappingRows returned to CurrentOverlappingRanges.
    2. For each row in the CurrentOverlappingRanges, calculate the overlapping ranges similar to the above. If there is another range whose record identifier is not the same as range.RecordId in the overlapping set of ranges, their IsOverlapping will be set to true. Otherwise update their IsOverlapping to false and UseForUtilization to true as Param_range is the only overlapping range and it is getting changed and the mapping has to be recomputed.
3. Reset the addresses in ADM_IPAddressTable that are already mapped to the range to 0. This is done by invoking the AdjustIPAddressRangeMapping procedure of ADM_IPAddressTable by passing the following input parameters.
    - Assign null to Param_rangeId.
    - Assign range.StartIPAddress to Param_StartIPAddress.
    - Assign range.EndIPAddress to Param_EndIPAddress.

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- Assign the ManagedByValue of the range to Param_ManagedByValue
- Assign the ManagedByEntityValue of the range to Param_ManagedByEntityValue.
- Assign the AddressSpaceRecordId of the range to Param_AddressSpaceRecordId.

3.1.1.1.1.2.5 AdjustChildRangesForBlock

This procedure can be used to identify the ranges appropriate for the specified block and change their ParentIPBlockRecordId to the RecordId of the block for which the mapping is being calculated. The block information for which the range mapping is to be calculated is specified using the following input parameters.

Param_BlockRecordId: The RecordId of the block for which the children ranges are to be calculated.

Param_ParentBlockRecordId: The ParentIPBlockRecordId of the block for which the children ranges are to be calculated.

Param_StartIPAddress: The StartIPAddress of the block for which the children ranges are to be calculated.

Param_EndIPAddress: The EndIPAddress of the block for which the children ranges are to be calculated.

Param_AddressSpaceRecordId: This is a 64-bit signed integer that specifies the RecordId of the AddressSpace of the IPBlock.

Param_PrefixLength: The PrefixLength of the block for which the children ranges are to be calculated.

Param_AddressCategory: The AddressCategory of the block for which the children ranges are to be calculated.

There is no output value for this procedure. It updates the eligible child ranges for the specified block and updates their ParentIPBlockRecordId to the specified Param_BlockRecordId value.

The following are the steps involved. If the address family of the Param_StartIPAddress and Param_EndIPAddress is Internet, the rest of the processing has to be done against the IPv4-specific table. Otherwise the rest of the processing has to be done against the IPv6-specific table.

If Param_ParentBlockRecordId is not specified, call the procedure **MapUnmappedRangesToBlock** in ADM_IPRangeTable passing Param_BlockRecordId, Param_StartIPAddress, Param_EndIPAddress, Param_AddressSpaceRecordId, Param_PrefixLength, and Param_AddressCategory as parameters.

If the Param_ParentBlockRecordId is specified, update the ParentIPBlockRecordId of the rows in ADM_IPRangeTable that meet the following conditions:

IPBlockId of the row is equal to Param_ParentBlockRecordId.

StartIPAddress of the row is greater than or equal to Param_StartIPAddress.

EndIPAddress of the row is greater than or equal to the Param_EndIPAddress.

AddressSpaceRecordId of the row is equal to the Param_AddressSpaceRecordId..

PrefixLength of the row is greater than or equal to the Param_PrefixLength.

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AddressCategory of the row is greater than or equal to the Param_AddressCategory.

3.1.1.1.1.2.6 MapUnmappedRangesToBlock

This procedure is used to map the appropriate ranges that are not mapped to any address block to the specified block by calculating the overlapping ranges and having only one range out of the overlapping ranges to be mapped. The block to which the ranges have to be mapped are specified by using the following input parameters.

Param_BlockRecordId: The RecordId of the block for which the children ranges are to be calculated.

Param_StartIPAddress: The StartIPAddress of the block for which the children ranges are to be calculated.

Param_EndIPAddress: The EndIPAddress of the block for which the children ranges are to be calculated.

Param_AddressSpaceRecordId: This is a 64-bit signed integer that specifies the RecordId of the AddressSpace of the IPBlock.

Param_PrefixLength: The PrefixLength of the block for which the children ranges are to be calculated.

Param_AddressCategory: The AddressCategory of the block for which the children ranges are to be calculated.

There is no output value for this procedure. It updates the eligible child ranges for the specified block and updates their ParentIPBlockRecordId to the specified Param_BlockRecordId value.

The following are the steps involved. If the address family of the Param_StartIPAddress and Param_EndIPAddress is Internet, the rest of the processing has to be done against the IPv4-specific table. Otherwise the rest of the processing has to be done against the IPv6-specific table.

1. For all the address ranges that do not have overlapping range and that are not mapped to a block, set the ParentIPBlockRecordId to Param_BlockRecordId and set UseForUtilization to 1. The rows that meet this requirement are calculated as those that meet the following criteria:
   - StartIPAddress of the row >= Param_StartIPAddress.
   - EndIPAddress of the row >= Param_EndIPAddress.
   - AddressSpaceRecordId of the row == Param_AddressSpaceRecordId.
   - PrefixLength of the row >= Param_PrefixLength.
   - AddressCategory of the row >= Param_AddressCategory.
   - Assuming the row being evaluated is CurrentRow, Count of the rows that meet the following condition is 0 (indicating they have no overlapping ranges)
     - CurrentRow.EndIPAddress >= StartIPAddress and CurrentRow.StartIPAddress < EndIPAddress
     - CurrentRow.RecordId != RecordId
2. The following are the processing steps involved in determining the address range to be mapped to the block when there are overlapping ranges.

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1. Enumerate the rows in ADM_IPRangeTable that meet the following criteria and store them in a collection PotentialOverlapRanges. This gives the list of rows that can potentially map to the address block but are having overlap.
    - StartIPAddress of the row >= Param_StartIPAddress.
    - EndIPAddress of the row >= Param_EndIPAddress.
    - AddressSpaceRecordId of the row == Param_AddressSpaceRecordId.
    - PrefixLength of the row >= Param_PrefixLength.
    - AddressCategory of the row >= Param_AddressCategory.
    - Assuming the row being evaluated is CurrentRow, Count of the rows that meet the following condition is not 0 (indicating they have no overlapping ranges)
        - CurrentRow.EndIPAddress >= StartIPAddress and CurrentRow.StartIPAddress < EndIPAddress
        - CurrentRow.RecordId != RecordId
2. Enumerate the rows in ADM_IPRangeTable which meet the following criteria and store them in a collection BlockOverlapRanges. This gives the list of rows which overlap with the given address block itself.
    - EndIPAddress >= Param_StartIPAddress and Param_EndIPAddress >= StartIPAddress
3. For each row in the PotentialOverlapRanges and BlockOverlapRanges, if the ScopeRecordId is set, get the ExclusionRanges from ADM_DHCPScopesTable and associate with the corresponding range entry in the PotentialOverlapRanges list.
4. For each PotentialOverlapRow in PotentialOverlapRanges
    - For each BlockOverlapRow in BlockOverlapRanges
        - If BlockOverlapRow.RecordId != PotentialOverlapRow.RecordId, perform the following checks
            1. Check if the following conditions are being met to see if the PotentialOverlapRow and BlockOverlapRow form potential overlap.
                - PotentialOverlapRow.EndIPAddress < BlockOverlapRow.StartIPAddress or BlockOverlapRow.EndIPAddress < PotentialOverlapRow.StartIPAddress
            2. If the BlockOverlapRow and PotentialOverlapRow have the exclusion ranges associated, remove the exclusion ranges from the address ranges and recompute if the ranges overlap. If they do not overlap, the two ranges do not form an overlap. If they do overlap or if one of them doesn't have exclusion ranges associated with them, they do form a valid overlap.
            3. If the ranges form a valid overlap as computed above, if BlockOverlapRow. IPBlockId is set and BlockOverlapRow.UserForUtilization is 1, that means another range is already mapped and PotentialOverlapRow cannot be used for a utilization calculation of the block. Update the IPBlockId of the PotentialOverlapRow to the Param_BlockRecordId. If the range can be used for the block utilization calculation, set UseForUtilization of PotentialOverlapRow to 1.

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3.1.1.1.1.2.7 GetUtilizationForLogicalGroup

This procedure can be used to retrieve the address range utilization for the logical group specified. The following are the input parameters to this procedure.

Param_logicalGroup: The LogicalGroup for which the address range utilization is being requested.

Param_addressfamily: The AddressFamily of the address range for which the utilization information for the logical group is being requested.

The following is the output parameter of this procedure.

Result_utilization: This will be of type IPv4Utilization if the Param_addressfamily is Internet and IPv6Utilization if the Param_addressfamily is InternetV6.

The following are the processing steps involved.

1. Call the procedure GetObjectIdsForLogicalGroup, passing the following parameters:
    1. Param_logicalGroup.
    2. Param_objectType is assigned the value of EnumerationObjectType.IPRange.
    3. Param_addressfamily.
2. If Param_addressfamily is Internet, initialize Result_utilization to IPv4Utilization, otherwise initialize Result_utilization to IPv6Utilization.
3. For each id in Result_ObjectIds:
    1. Call the procedure GetIPRangeFromTable passing id as Param_Id and Param_addressfamily.
    2. Add result.UtilizationStatistics to Result_utilization.
4. Return Result_utilization as the output parameter of this procedure.

3.1.1.1.1.2.8 GetUtilizationForLogicalGroupNode

This procedure can be used to retrieve the address range utilization for the logical group node specified. The following are the input parameters to this procedure:

Param_logicalGroupNode: The LogicalGroupNode for which the address range utilization is being requested.

Param_addressfamily: The AddressFamily of the address range for which the utilization information for the logical group node is being requested.

The following is the output parameter of this procedure.

Result_utilization: This will be of type IPv4Utilization if the Param_addressfamily is Internet and IPv6Utilization if the Param_addressfamily is InternetV6.

The following are the processing steps involved.

1. Call the procedure GetObjectIdsForLogicalGroupNode passing the following parameters:
    - Param_logicalGroupNode
    - Param_objectType is assigned the value of EnumerationObjectType.IPRange.

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- Param_addressfamily.

2. If Param_addressfamily is Internet, initialize Result_utilization to IPv4Utilization, otherwise initialize Result_utilization to IPv6Utilization.
3. For each id in Result_ObjectIds:
    1. Call the procedure GetIPRangeFromTable passing id as Param_Id and Param_addressfamily.
    2. Add result.UtilizationStatistics to Result_utilization.
4. Return Result_utilization as the output parameter of this procedure.

3.1.1.1.1.2.9 GetUtilizationTrendForLogicalGroupNode

This procedure can be used to retrieve the address range utilization trend for the logical group node specified. The following are the input parameters to this procedure:

Param_logicalGroupNode: The LogicalGroupNode for which the address range utilization is being requested.

Param_addressfamily: The AddressFamily of the address range for which the utilization information for the logical group node is being requested.

Param_utilizationType: This is of type IPUtilizationType, specifying the type of utilization data that is being requested.

Param_startDate: This is the start date of the duration for which the utilization trend is being requested.

Param_endDate: This is the end date of the duration for which the utilization trend is being requested.

The following is the output parameter of this procedure.

Result_utilization: This will be of type IPCumulativeUtilization having IpUtilization to be a collection of IPUtilization. If the Param_addressfamily is Internet, the IPv4Utilization is returned and IPv6Utilization if the Param_addressfamily is InternetV6.

The following are the processing steps involved.

1. Call the procedure GetObjectIdsForLogicalGroupNode passing the following parameters:
    - Param_logicalGroupNode
    - Param_objectType is assigned the value of EnumerationObjectType.IPRange.
    - Param_addressfamily.
2. If Param_addressfamily is Internet, initialize Result_utilization to IPv4Utilization, otherwise initialize Result_utilization to IPv6Utilization.
3. For each id in Result_ObjectIds:
    1. Call the procedure GetIPRangeFromTable passing id as Param_Id and Param_addressfamily.
    2. If Param_utilizationType is Current:

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- Add result.UtilizationStatistics to Result_utilization.

3. Otherwise, if Param_addressFamily is InternetV6 or Param_utilizationType is not Current,

    1. Call the procedure GetRangeUtilization passing the following parameters:

        - Param_id is set to id.
        - Param_addressfamily
        - Param_utilizationType
        - Param_startDate
        - Param_endDate

    2. Add the corresponding members of IPCumulativeUtilization with Result_utilization.

Return Result_utilization as the output parameter of this procedure.

3.1.1.1.1.2.10 GetChildRangesForBlock

This procedure is used to retrieve the IP address range information in the form of IPv4Range or IPv6Range. The type of the data returned being IPv4Range or IPv6Range is based on the simple table within the ADM_IPRangeTable compound table against which the processing steps are performed.

The following are the input parameters to this procedure.

Param_blockId: This is a 64-bit signed integer that identifies the block for which the information is being retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure.

Result_childRanges: This is a collection of the address range information in the form of IPv4Range or IPv6Range corresponding to the Param_addressfamily specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns the collection of IPv4Range instances; if it is InternetV6, the procedure returns the collection of IPv6Range instances.

The following are the processing steps involved.

1. Lookup the **ADM_IPRangeTable** for all the rows with the **ParentIPBlockRecordId** value of **Param_blockId**.

2. If the rows are not found, return null. Otherwise initialize **Result_childRanges** to the collection of IPv4Range if the Param_addressfamily is Internet and IPv6Range if the Param_addressfamily is InternetV6.

3. For each row that has been found, call the GetIPRangeFromTable procedure of **ADM_IPRangeTable,** passing the following parameters:

4. RecordId is assigned to Param_ id.

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5. Param_addressfamily is assigned to Param_addressfamily.

6. Process the output result and add it to the collection **Result_childRanges**.

7. Return **Result_childRanges** as the output of the procedure.

3.1.1.1.1.2.11 GetRangesForAddressSpace

This procedure is used to retrieve the IP address range information in the form of IPv4Range or IPv6Range, which belong to a specific AddressSpace. Whether the type of the data returned is IPv4Range or IPv6Range is based on the simple table within the ADM_IPRangeTable compound table against which the processing steps are performed.

The following are the input parameters to this procedure.

Param_addressSpaceId: This is a 64-bit signed integer that identifies the AddressSpace for which the information is being retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on the IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure.

Result_Ranges: This is a collection of the address range information in the form of IPv4Range or IPv6Range corresponding to the Param_addressfamily specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns collection of IPv4Range instances, and if it is InternetV6, the procedure returns collection of IPv6Range instances.

The following are the processing steps involved.

1. Lookup the **ADM_IPRangeTabl**e for all the rows with the **AddressSpaceRecordId** value equal to **Param_addressSpaceId**.

2. If the rows are not found, return null. Otherwise initialize **Result_Ranges** to the collection of IPv4Range if the Param_addressfamily is Internet and IPv6Range if the Param_addressfamily is InternetV6.

3. For each row that has been found, call GetIPRangeFromTable procedure of ADM_IPRangeTable passing the following parameters:

4. RecordId is assigned to Param_id.

5. Param_addressfamily is assigned to Param_addressfamily.

6. Process the output result and add it to the collection **Result_Ranges**.

7. Return **Result_Ranges** as the output of the procedure.

3.1.1.1.2 ADM_CustomFieldValuesAssociationTable

This is a sample table that consists of the custom field values associated with various objects in the IPAM data store.

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3.1.1.1.2.1 Data Model

RecordId : primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a new value when a new row is being inserted into the table. This forms the RecordId of CustomFieldValue.

ObjectType: This is of type EnumerationObjectType specifying the type of object to which the row in the table specifies a single custom field value. The supported values are ServerInfo, IPAddress, IPRange, IPBlock, IPSubnet, and AddressSpace.

Af: This is of type AddressFamily specifying the address family of the object of type ObjectType and having the RecordId value specified by UsedById for which the row specifies a custom field value. If the ObjectType properties are not dependent on address family (ServerInfo for example), the Af for the row will be Unspecified. Otherwise it will be either Internet or InternetV6 based on the address family of the object type for which the row specifies a custom field value.

UsedById: This is the record identifier of the object of type ObjectType with which the custom field value row is associated.

CustomFieldId: foreign key (ADM_CustomFieldsTable, RecordId) on delete cascade

This specifies the RecordId of the custom field for which the row is specifying the value for.

CustomFieldValueId: foreign key (ADM_CustomFieldValuesTable, RecordId) on delete cascade

This specifies the RecordId of the custom field value for a Multivalued custom field that is present in the ADM_CustomFieldValuesTable.

Value: This is a string type value used to specify the value when the custom field represented by CustomFieldId is a freeform custom field.

3.1.1.1.2.2 Procedures

3.1.1.1.2.2.1 GetCustomFieldValues

This procedure can be used to retrieve the custom field values for an object of specified type identified by its record identifier. The following are the input parameters for the procedure:

Param_ObjectRecordId: This is a 64-bit signed integer specifying the RecordId of the object of type Param_ObjectType for which the custom field values are being retrieved.

Param_ObjectType: This is of type EnumerationObjectType specifying the type of the object for which the custom field values are being requested for.

Param_addressFamily: This is of type AddressFamily specifying the address family of the object for which the custom field values are being requested.

The procedure returns two collections:

- A collection of CustomFieldValue objects,
- A collection of CustomFieldPartialValue

Both are two different ways of representing the custom field values.

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Param_CustomFieldValueList: This consists of the of CustomFieldValue collection and specifies the custom field values associated with the object.

Param_CustomFieldPartialValueList: This consists of the collection of CustomFieldPartialValue to specify the custom field values associated with the object.

The following are the steps involved.

1. Initialize the collections Param_CustomFieldValueList and Param_CustomFieldPartialValueList.
2. Enumerate the rows that have ObjectType equal to Param_ObjectType, UsedById equal to Param_ObjectRecordId, and Af equal to Param_addressFamily.
3. For each row enumerated, perform the following steps:
    1. Create a new instance of CustomFieldValue and CustomFieldPartialValue to be added to their respective collections.
    2. Lookup the custom field row in ADM_CustomFieldsTable using the CustomFieldId field value.
    3. If the type of the custom field that is retrieved above is Multivalued, the following steps need to be performed:
        - Lookup the custom field value row in ADM_CustomFieldValuesTable having the RecordId value being CustomFieldValueId.
            1. Assign the BuiltInCustomFieldValueId to CustomFieldValue. BuiltInCustomFieldValueId.
            2. Assign RecordId to CustomFieldValue.RecordId field.
            3. Assign Value to CustomFieldValue.Value field.
            4. Assign RecordId to CustomFieldPartialValue.ValueId.
    4. If the type of the custom field that is retrieved above is Freeform, the following steps need to be performed.
        1. Assign Value to CustomFieldValue.Value field.
        2. Assign Value to CustomFieldPartialValue.Value field.
    5. Assign the custom field details as given below:
        1. Assign RecordId of the entry in ADM_CustomFieldsTable to CustomFieldValue.ParentCustomFieldRecordId.
        2. Assign RecordId of the entry in ADM_CustomFieldsTable to CustomFieldPartialValue.ParentCustomFieldId.
        3. Assign Type of the entry in ADM_CustomFieldsTable to CustomFieldPartialValue.ParentCustomFieldType.
4. Assign CustomFieldDetails.BuiltinCustomFieldNumber to CustomFieldValue.ParentCustomFieldNumber.

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3.1.1.1.2.2.2 SetCustomFieldValues

This procedure is used to add the custom field values associated with an object into the IPAM data store. The following are the input parameters for this procedure.

Param_ObjectType: This is of type EnumerationObjectType, specifying the type of the object for which the custom field values are being added.

Param_addressFamily: This is of type AddressFamily, specifying the address family of the object for which the custom field values are being added.

Param_ObjectRecordId: This is a 64-bit signed integer specifying the RecordId of the object of type Param_ObjectType for which the custom field values are being added.

Param_CustomFieldValuesCollection: This is a collection of CustomFieldValue providing the custom field values to be added to the IPAM data store.

There is no output associated with the parameter other than updating the IPAM data store with the values specified.

The following are the steps involved:

1. Delete the existing custom field values in the table for the specified Param_ObjectType, Param_addressFamily and Param_ObjectRecordId.
2. For each row in the Param_CustomFieldValuesCollection, add an entry in the ADM_CustomFieldValuesTable:
    1. Assign Param_ObjectType to ObjectType.
    2. Assign Param_addressFamily to Af.
    3. Assign Param_ObjectRecordId to UsedById.
    4. Assign CustomFieldValue.ParentCustomFieldRecordId to CustomFieldId.
    5. Assign CustomFieldValue.RecordId to CustomFieldValueId.
3. Assign CustomFieldValue.Value to Value.

3.1.1.1.2.2.3 DeleteCustomFieldValuesForObject

This procedure can be used to delete custom field values associated with an object from the ADM_CustomFieldValuesTable. The following are the input parameters to the procedure.

Param_ObjectType: This is of type EnumerationObjectType, specifying the type of the object for which the custom field values are being deleted.

Param_addressFamily: This is of type AddressFamily, specifying the address family of the object for which the custom field values are being deleted.

Param_ObjectRecordId: This is a 64-bit signed integer, specifying the RecordId of the object of type Param_ObjectType for which the custom field values are being deleted.

There are no output values for this procedure. The values associated with the specified object are removed from the IPAM data store.

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- Delete the rows in the ADM_CustomFieldValuesAssociationTable which meet the following conditions:
  - ObjectType is equal to Param_ObjectType.
  - Af is equal to Param_addressFamily.
  - UsedById is equal to Param_ObjectRecordId.

3.1.1.1.2.2.4 GetObjectIdsForLogicalGroupNode

This procedure can be used to retrieve the set of object record identifiers that meet the condition represented by the LogicalGroupNode.

The following is the input parameter to this procedure.

Param_logicalGroupNode: The LogicalGroupNode for which the matching record identifiers of the specified object type is being requested.

Param_objectType: This is the EnumerationObjectType specifying the object type for which the logical group node membership is being requested.

Param_addressFamily: This specifies the address family of the object type for which the logical group node membership is being requested.

The following is the output parameter of this procedure.

Result_objectIds: This is a collection of object record identifiers that meet the criteria of a specified logical group.

The following are the processing steps involved with this.

1. Get the CustomFieldValueId of Param_logicalGroupNode.NodeValue by performing the following lookup and store it in logicalGroupCustomFieldValueId.
   1. Enumerate the row in ADM_CustomFieldValues which meet the following criteria:
      1. CustomFieldRecordId is equal to Param_logicalGroupNode.CustomFieldRecordId.
      2. CustomFieldValueDetails.Value is equal to Param_logicalGroupNode.NodeValue.
   2. Store the RecordId in logicalGroupCustomFieldValueId.
2. Initialize Result_objectIds with the list of UsedById that meet the following condition:
   1. ObjectType is equal to Param_objectType.
   2. Af is equal to Param_addressFamily.
   3. CustomFieldId is equal to Param_logicalGroupNode.CustomFieldRecordId.
   4. CustomFieldValueId is equal to logicalGroupCustomFieldValueId.
3. If Param_logicalGroupNode.AncestorNodes contains a list of LogicalGroupNode data, for each ancestorNode in Param_logicalGroupNode.AncestorNodes, perform the following steps:
   1. Get the CustomFieldValueId of ancestorNode.NodeValue by following the steps in 1. Let this value be stored in logicalGroupCustomFieldValueId.

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2. Enumerate the rows in ADM_CustomFieldValues whose RecordId is present in Result_objectIds as well as it meets the following conditions:

    1. ObjectType is equal to Param_objectType.

    2. Af is equal to Param_addressFamily.

    3. CustomFieldId is equal to ancestorNode.CustomFieldRecordId.

    4. CustomFieldValueId is equal to logicalGroupCustomFieldValueId.

3. Assign the list of RecordIds to Result_objectIds to be used for processing with the next level of ancestors.

4. The Result_objectIds which are left at the end of processing all the ancestors will be the final output parameter of this procedure.

3.1.1.1.2.2.5 GetObjectIdsForLogicalGroup

This procedure can be used to retrieve the list of object record identifiers that map to the specified logical group. The objects will be mapping to the logical group if they have the custom field value that forms the first level of the logical group hierarchy.

The following is the input parameter to this procedure.

Param_logicalGroup: The LogicalGroup for which the mapping object identifiers is being requested.

Param_objectType: The EnumerationObjectType used to specify the object for which the logical group membership is being requested.

Param_addressFamily: This specifies the address family of the object type for which the logical group mapping is being requested.

The following is the output parameter of this procedure.

Result_ObjectIds: The list of object record identifiers that are mapped to the specified logical group.

The following are the processing steps involved.

1. Enumerate the rows in ADM_CustomFieldValuesAssociationTable that meet the following criteria:

    1. ObjectType is equal to Param_objectType.

    2. Af is equal to Param_addressFamily.

    3. CustomFieldId is equal to Param_logicalGroup.Fields[0].CustomFieldRecordId.

2. For each of the row enumerated, add the UsedById to Result_ObjectIds.

3. Return Result_ObjectIds as the output parameter of this procedure.

3.1.1.1.2.2.6 GetUnmappedObjectIdsForLogicalGroup

This procedure can be used to retrieve the list of object record identifiers that do not map to the specified logical group. The objects will not map to the logical group if they do not have the custom field value that forms the first level of the logical group hierarchy.

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The following is the input parameter to this procedure.

- **Param_logicalGroup**: The LogicalGroup for which the object identifiers that do not map is being requested.
- **Param_objectType**: The EnumerationObjectType used to specify the object for which the logical group non-membership is being requested.
- **Param_addressFamily**: This specifies the address family of the object type for which the logical group non-mapping is being requested.

The following is the output parameter of this procedure.

- **Result_ObjectIds**: The list of object record identifiers that do not map to the specified logical group.

The following are the processing steps involved.

1. Enumerate the rows in ADM_CustomFieldValuesAssociationTable that meet the following criteria:
    1. ObjectType is equal to Param_objectType.
    2. Af is equal to Param_addressFamily.
    3. The count of the number of rows which meet the following condition is 0.
        1. CustomFieldId is equal to Param_logicalGroup.Fields[0].CustomFieldRecordId.
        2. UsedById is equal to the UsedById of the row enumerated.
        3. Af is equal to the Param_addressFamily.
        4. ObjectType is equal to the Param_objectType.
2. For each of the row enumerated, add the UsedById to Result_ObjectIds.
3. Return Result_ObjectIds as the output parameter of this procedure.

3.1.1.1.2.2.7 GetObjectForLogicalGroupObjectId

This procedure can be used to retrieve an object that is being enumerated for a logical group or logical group node. The following are the input parameters to this procedure.

Param_objectType: This specifies the type of object for which the object record identifier has been specified.

Param_addressFamily: This specifies the AddressFamily for the object type that is being requested.

Param_Id: This specifies the record identifier of the object being requested.

Param_filter: This specifies any additional filter to be applied for getting the object. This is applicable only for Param_objectType being ServerInfo.

The following is the output parameter of this procedure.

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Result_object: This specifies the object that has been requested based on the specified input parameters for logical group mapping. The following table summarizes the various input parameters and the kind of output parameter generated.

Param_addressFamily	Param_objectType(EnumerationObjectType)	Param_filter	Result_object Type
Internet	IPRange	N/A	IPv4Range
InternetV6	IPRange	N/A	IPv6Range
Internet	IPAddress	N/A	IpamIPv4Address
InternetV6	IPAddress	N/A	IpamIPv6Address
Internet	ServerInfo	No Filter	ServerInfo
		ServerInfoGetServerFilter.Role == ServerRoleType.Dhcp	DhcpServerV4
		ServerInfoGetServerFilter.Role == ServerRoleType.Dns	DnsServer
		ServerInfoGetServerFilter.MultipleRole == ServerMultipleRole.DhcpOrDns	ServerInfo
InternetV6	ServerInfo	No Filter	ServerInfo
		ServerInfoGetServerFilter.Role == ServerRoleType.Dhcp	DhcpServerV6
		ServerInfoGetServerFilter.Role == ServerRoleType.Dns	DnsServer
		ServerInfoGetServerFilter.MultipleRole == ServerMultipleRole.DhcpOrDns	ServerInfo

The following are the steps involved.

1. If Param_objectType is EnumerationObjectType.IPRange, call the procedure GetIPRangeFromTable by passing Param_Id and Param_addressFamily. Set the returned **result** to Result_object.

2. If Param_objectType is EnumerationObjectType.IPAddress, call the procedure GetIPAddressFromTable by passing Param_Id and Param_addressfamily. Add the returned **result** to Result_object.

3. If Param_objectType is EnumerationObjectType.ServerInfo, the following additional processing is required to get the objects for the logical group node.

    1. If Param_filter is null or no filter condition is specified or a filter with key value pair (ServerInfoGetServerFilter.MultipleRole,ServerMultipleRole.DhcpOrDns) is specified, call the

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procedure GetServerInfoFromTable by passing Param_id and storing the **Result_serverInfo** into Result_object.

2. If Param_filter contains the key value pair (ServerInfoGetServerFilter.Role, ServerRoleType.Dhcp), the following steps are performed:

    1. Enumerate the row in ADM_ServerRolesTable that has ServerRecordID to be of value Param_Id and ServerRoleDetails.ServerRoleType being ServerRoleType.Dhcp.

    2. Let the RecordId of the row be serverRoleRecordId.

    3. Lookup the ADM_DHCPServersTable whose ServerRoleRecordId is having the value serverRoleRecordId. Call the procedure GetDHCPServerFromTable passing the Param_addressfamily and Param_Id set to RecordId of the row selected in ADM_DHCPServersTable. Set Result_server to Result_object.

3. If LogicalGroupDataForLogicalGroupNodeEnumerationParameters.Filter contains the key value pair (ServerInfoGetServerFilter.Role, ServerRoleType.Dns), the following steps are performed:

    1. Enumerate the row in ADM_ServerRolesTable that has ServerRecordID to be of value Param_Id and ServerRoleDetails.ServerRoleType being ServerRoleType.Dns.

    2. Let the RecordId of the row be serverRoleRecordId.

    3. Lookup the ADM_DnsServersTable whose RecordId is having the value serverRoleRecordId. Call the procedure GetDnsServerFromTable passing the Param_Id set to serverRoleRecordId. Set Result_DnsServer to Result_object.

Return Result_object as the output parameter of this procedure.

3.1.1.1.3 ADM_IPAddressTable

This is a compound table having IPv4-specific and IPv6-specific simple tables within it. This table models the IP address entries in the IPAM data store.

3.1.1.1.3.1 Data Model

RecordId: A 64-bit unsigned integer which is unique for each row in the table. The store should assign a unique value when a new row is inserted into the table. This forms the RecordId of IpamIPAddress.

RangeRecordId: foreign key (ADM_DHCPScopesTable, RecordId) on delete cascade.

If the IP address is associated with an address range, this specifies the RecordId in the ADM_IPRangeTable for the range corresponding to this IP address. This forms the **ParentIPRangeRecordId** of the IpamIPAddress.

AddressSpaceRecordId: foreign key (ADM_AddressSpaceTable, RecordId) on update no action, on delete no action.

Specifies the AddressSpace to which this IPAddress maps.

AddressDetails: This forms the common set of properties associated with the address.

- AddressAssignment
- AddressCategory

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- AssignedDate
- ChangedDate
- ExpiryDate
- ExpiryAlertStatus
- AssetTag
- IpAddress
- IsDuplicate
- MacAddress
- Notes
- OSName
- OSVersion
- Owner
- SerialNumber
- DeviceName
- VirtualizationType

For the IPv4-specific table, the following additional properties of IpamIPv4Address are associated with the address.

ReservationType

For the IPv6-specific table, the following additional properties of IpamIPv6Address are associated with the address.

- Duid
- Iaid

3.1.1.1.3.2 Procedures

3.1.1.1.3.2.1 AdjustIPAddressRangeMapping

This procedure can be used to adjust the IP address to IP address range mapping.

The following are the input parameters to this procedure.

Param_rangeId: A 64-bit unsigned value specifying the record identifier of the address range to which the IP address rows have to be mapped onto. This can be 0 to specify the addresses have to be unmapped from existing association.

Param_StartIPAddress: This is of type IPAddress specifying the starting address of the range to which the addresses have to be remapped.

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Param_EndIPAddress: This is of type IPAddress specifying the ending address of the range to which the addresses have to be remapped.

Param_AddressSpaceRecordId: This is a 64-bit signed integer that specifies the RecordId of the AddressSpace to which the IPRange specified by Param_rangeId belongs.

Param_ManagedByValue: This is the string value of the predefined custom field of the address range having the **CustomFieldRecordId** to be **ManagedByCustomFieldRecordId**.

Param_ManagedByEntityValue: This is the string value of the predefined custom field of the address range having the **CustomFieldRecordId** to be **ManagedByEntityCustomFieldRecordId**.

This procedure has no return value.

The steps involved in this procedure are as follows.

1. The address family of the Param_StartIPAddress and Param_EndIPAddress passed as parameter to the procedure determines the simple table of the ADM_IPAddressTable compound table to be used for performing the processing steps.

2. Enumerate the rows in the ADM_IPAddressTable having their address within the specified Param_StartIPAddress and Param_EndIPAddress, and AddressSpaceRecordId equal to Param_AddressSpaceRecordId..

3. For each row enumerated from the step above, compute the **ManagedByValue** and **ManagedByEntityValue** fields. If these field values are the same as the **Param_ManagedByValue** and **Param_ManagedByEntityValue** passed in as parameters, set their **ParentIPRangeRecordId** to the specified **Param_rangeId** value and update the table.

3.1.1.1.3.2.2 GetIPAddressFromTable

This procedure is used to retrieve the IP address information in the form of IpamIPv4Address or IpamIPv6Address. The type of the data returned being IpamIPv4Address or IpamIPv6Address is based on the simple table within the ADM_IPAddressTable compound table against which the processing steps are performed.

The following are the input parameters to this procedure.

Param_Id: This is a 64-bit signed integer that identifies the address for which the information is being retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure.

result: This is the address information in the form of IpamIPv4Address or IpamIPv6Address, corresponding to the Param_Id specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns IpamIPv4Address, and if it is InternetV6, the procedure returns IpamIPv6Address.

The following are the processing steps involved.

1. Fetch the row with RecordId equal to Param_Id from the ADM_IPAddressTable.

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2. If no valid row is present, assign null to **result** and return the same.
3. Initialize **result** with IpamIPv4Address if Param_addressfamily is Internet or with IpamIPv6Address if Param_addressfamily is InternetV6.
4. Assign RecordId to result.RecordId.
5. Assign RangeRecordId to result.ParentIPRangeRecordId.
6. Copy AddressDetails to result.
7. If RangeRecordId is not 0, the address is mapped to an address range. Perform the following additional processing:
    1. Retrieve the range row from ADM_IPRangeTable having RecordId being RangeRecordId.
    2. Copy the StartIPAddress and EndIPAddress of the range row into result.ParentIPRangeStartIP and result.ParentIPRangeEndIP respectively.
    3. If the AddressAssignment is Dynamic for the range row, the details pertaining to the DHCP configuration related to the address are retrieved as given below.
        - The scope related details are retrieved as given below.
            1. Lookup the ADM_DHCPScopesTable for the row having RecordId value being the ScopeRecordId in the range row.
            2. Copy the ScopeRecordId into result.DhcpScopeId.
            3. Copy Description into result.DhcpScopeDescription.
            4. Copy the ScopeName into result.DhcpScopeName.
            5. Copy the ScopeId into result.DhcpScopeId.
        - If there is an associated reservation, the reservation details are retrieved as given below.
            1. Lookup ADM_DHCPReservationTable having ScopeRecordId being result.DhcpScopeId and IPAddressRecordId being result.RecordId.
            2. If an entry is found, retrieve the following values:
                1. Copy ReservationDescription to result.ReservationDescription.
                2. Copy RecordId to result.ReservationId.
                3. Copy ReservationName to result.ReservationName.
                4. Copy ReservationSyncStatus to result.ReservationSyncStatus.
                5. Retrieve the DHCP server information by invoking the GetDHCPServerFromTable by passing the DhcpServerRecordId as Param_Id and Param_addressfamily. Let the result returned be Result_DhcpServer. Copy Result_DhcpServer.ServerRoleInfo.ServerInfo.Name to result.ReservationServerName.
        - If there is an associated forward lookup DNS zone registration, the registration details are retrieved as follows:

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1. Lookup ADM_AddressDNSForwardLookupTable for a row with AddressRecordId being result.RecordId.

2. If an entry is found, retrieve the following values:

    1. Copy RecordId as result.DnsForwardLookupZoneRecordId.

    2. Copy DNSZoneRecordId as result.DnsZoneId.

    3. Copy DNSForwardLookupRegistrationDetails to result.

    4. Lookup the DNS zone information from ADM_DNSForwardLookupTable having RecordId equal to result.DnsZoneId and copy Name to result.DnsZoneName.

    5. Copy DNSServerRecordId to result.DnsForwardLookupZoneDnsServerId.

    6. Retrieve DNS server information by invoking the GetDNSServerFromTable by passing the result.DnsForwardLookupZoneDnsServerId as Param_Id and Param_addressfamily. Let the result returned be Result_DnsServer. Copy Result_DnsServer.ServerRoleInfo.ServerInfo.Name to result.DnsForwardLookupZoneServerName.

- If there is an associated reverse lookup DNS zone registration, the registration details are retrieved as follows:

    1. Lookup ADM_AddressDNSReverseLookupTable for a row with AddressRecordId being result.RecordId.

    2. If an entry is found retrieve the following values:

        1. Copy RecordId to result.DnsReverseLookupZoneRecordId.

        2. Copy DNSZoneRecordId to result.DnsReverseLookupZoneId.

        3. Copy DNSServerRecordId to result.DnsReverseLookupZoneServerId.

        4. Copy DNSReverseLookupRegistrationDetails to result.

        5. Lookup the DNS zone information from ADM_DNSReverseLookupTable having RecordId equal to result.DnsReverseLookupZoneId and copy the following values:

            Copy Name to result.DnsReverseLookupZoneName
            Copy ZoneDetails.Prefix to result.DnsReverseLookupZonePrefix.

        1. Retrieve the DNS server information by invoking the GetDNSServerFromTable by passing the result.DnsReverseLookupZoneDnsServerId as Param_Id and Param_addressfamily. Let the result returned be Result_DnsServer. Copy Result_DnsServer.ServerRoleInfo.Name to result.DnsReverseLookupZoneServerName.

4. If result.ExpiryDate is set and is already past when compared to the current date, set result.IsExpired to TRUE. Otherwise set result.IsExpired to FALSE.

5. If result.ExpiryDate is set result.IsExpired is FALSE and the difference between current date and result.ExpiryDate is < ADM_CommonProperties.ExpiryAlertThreshold, set result.InWarningPeriod to TRUE. Otherwise set result.InWarningPeriod to FALSE.

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6. Retrieve the custom field values for the address object by calling the GetCustomFieldValues procedure of ADM_CustomFieldValuesAssociationTable passing the following parameters:

    1. Param_ObjectType is set to EnumerationObjectTypes.IPAddress.

    2. Param_addressFamily is passed as is.

    3. Result.RecordId is passed as Param_ObjectRecordId.

7. Assign the Result_CustomFieldValueList to result.CustomFieldValues.

8. Assign the Result_CustomFieldPartialList to result.PartialCustomFieldValues.

8. Return **result** as the output of the procedure.

3.1.1.1.3.2.3 GetAllMappingIPAddressesForRange

The following are the input parameters to this procedure.

Param_Id: This is a 64-bit signed integer that identifies the RecordId for IPRange for which the mapping addresses information is being retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure.

Result_mappingAddresses: This is the collection of address information in the form of IpamIPv4Address or IpamIPv6Address, corresponding to the Param_Id specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns IpamIPv4Address, and if it is InternetV6, the procedure returns IpamIPv6Address.

The following are the processing steps involved.

1. Lookup the ADM_IPAddressTable for all the rows with the RangeRecordId value being Param_Id.

2. If the rows are not found, return null. Otherwise initialize Result_mappingAddresses to collection of IpamIPv4Address if the Param_addressfamily is Internet and IpamIPv6Address if the Param_addressfamily is InternetV6.

3. For each row that has been found, call GetIPAddressFromTable procedure of ADM_IPAddressTable passing the following parameters:

4. RecordId is assigned to Param_id.

5. Param_addressfamily is assigned to Param_addressfamily.

6. Process the output result and add it to the collection Result_mappingAddresses.

7. Return Result_mappingAddresses as the output of the procedure.

3.1.1.1.4 ADM_IPBlocksTable

This is a compound table having IPv4-specific and IPv6-specific simple tables within it. This table models the IP address blocks in the IPAM data store.

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3.1.1.1.4.1 Data Model

RecordId: primary key: A 64-bit unique signed integer which is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of the **IPBlock** data structure.

IsSubnet: This column value is set to 1 if the row represents a Subnet or to 0 if the row represents an IPBlock.

AddressSpaceRecordId: foreign key (ADM_AddressSpaceTable, RecordId) on update no action, on delete no action:

This column is used only if the row represents a Subnet. It specifies the AddressSpace to which the subnet belongs.

BlockDetails: This consists of the columns common to both IPv4-specific and IPv6-specific tables. These columns are modeled on the following properties of IPBlock (which is the base type that both IPv4Block and IPv6Block extend).

- AddressCategory
- Description
- EndIPAddress
- LastAssignedDate
- LastModifiedDate
- NetworkId
- NumberOfChildBlocks
- Owner
- PrefixLength
- RIRReceivedDate
- StartIPAddress
- SubnetMask
- UtilizationStatistics

ParentBlockRecordId: foreign key (ADM_IPBlocksTable, RecordId) on delete no action: This specifies the **RecordId** of the IP address block that forms the parent IP address block. This forms the ParentIPBlockRecordId of the IPBlock data structure.

There are no additional columns specific to the IPv4-specific or IPv6-specific tables.

3.1.1.1.4.2 Procedures

3.1.1.1.4.2.1 GetParentBlockIdForRange

This procedure is used to compute the appropriate IP address block that can be used to compute the IP address block that an address range specified by start IP address, end IP address, and prefix length can map onto. It takes the following input parameters.

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Param_StartIPAddress: The start IP address of the address range for which the block mapping is to be computed.

Param_EndIPAddress: The end IP address of the address range for which the block mapping is to be computed.

Param_PrefixLength: The prefix length of the address range for which the block mapping is to be computed.

Param_AddressSpaceRecordId: The Address Space RecordId of the address range for which the block mapping is to be computed. If this parameter is not specified while calling this procedure, the default value that is considered is 1, which maps to Default Provider Address Space.

Param_RecordIdToExclude: This is the block record identifier that should be excluded from the possible list of blocks that can be used to map the address range. This is useful to get the new address block for a range when the existing address block that maps the range is to be deleted.

This procedure returns the following as output.

Result_MappingBlockRecordId: The record identifier of the block that will be a more appropriate mapping for the range information specified.

The following are the steps involved in computing this:

1. The address family of the Param_StartIPAddress and Param_EndIPAddress, specified as parameters, determines the simple table within the ADM_IPBlocksTable compound table on which further processing steps are applied.

2. Enumerate the list of blocks whose StartIPAddress and EndIPAddress encompasses the given Param_StartIPAddress and Param_EndIPAddress completely and which have the prefix length lesser than or equal to the given **Param_PrefixLength,** and the AddressSpaceRecordId is equal to the Param_AddressSpaceRecordId.

3. If the **Param_RecordIdToExclude** is specified and in the resulting set of rows has an entry with **RecordId** being the given value, exclude the same.

4. Arrange the resulting set of address block rows in descending order of StartIPAddress, EndIPAddress and PrefixLength of the address block rows.

5. The first row in the above resulting list will be the most appropriate block to match. Set the **Result_MappingBlockRecordId** to the record identifier of the appropriate block selected.

6. If there are no rows that meet the specified conditions available, **Result_MappingBlockRecordId** will be set to 0.

7. Return the **Result_MappingBlockRecordId**.

3.1.1.1.4.2.2 GetIPBlockFromTable

This procedure is used to retrieve the IP address block information in the form of IPv4Block or IPv6Block. The type of the data returned being IPv4Block or IPv6Block is based on the simple table within the ADM_IPBlocksTable compound table against which the processing steps are performed.

The following are the input parameters to this procedure.

Param_blockId: This is a 64-bit signed integer that identifies the block for which the information is being retrieved.

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Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure.

result: This is the address block information in the form of IPv4Block or IPv6Block corresponding to the Param_blockId specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns IPv4Block and if it is InternetV6, the procedure returns IPv6Block.

The following are the processing steps involved.

1. Lookup the **ADM_IPBlocksTable** for the row with the **RecordId** value being **Param_blockId**.
2. If the row is not found, return null. Otherwise, initialize result to IPv4Block if the Param_addressfamily is Internet and IPv6Block if the Param_addressfamily is InternetV6.
3. Copy the **BlockDetails** to result.
4. Retrieve the custom field values for the address block object by calling the GetCustomFieldValues procedure of ADM_CustomFieldValuesAssociationTable passing the following parameters:
   - Param_ObjectType is set to EnumerationObjectTypes.IPBlock.
   - Param_addressFamily is passed as is.
   - Result.RecordId is passed as Param_ObjectRecordId.
   - Assign the Result_CustomFieldValueList to result.CustomFieldValues.
   - Assign the Result_CustomFieldPartialList to result.PartialCustomFieldValues.
5. Call GetMultivaluedPropertiesForBlock of ADM_IPBlockMultivaluedPropertiesTable with Param_blockId set to Param_blockId.
6. Process the output Param_resultBlockMultiValuedProperties to set values for following IPBlock properties:
7. VLAN.
8. Call GetAssociationEntryByObjectTypeAndId of ADM_AccessScopeAssociationTable passing the following parameters:
9. Param_objectId is set to Param_blockId.
10. Param_objectType is set to IpamObjectType.IPv4Block if addressfamily is Internet or IpamObjectType.IPv6Block if addressfamily is Internetv6.
11. Param_accessScopeId.
12. Param_objectInheritanceStatus.
13. Param_inheritanceId.
14. Assign Param_accessScopeId to result.AccessScopeId.
15. Assign Param_objectInheritanceStatus to result.IsInheritedAccessScope.

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16.Return **result** as the output of the procedure.

- Param_inheritanceId.
- Assign Param_accessScopeId to result.AccessScopeId.
- Assign Param_objectInheritanceStatus to result.IsInheritedAccessScope.
- Return **result** as the output of the procedure.

3.1.1.1.4.2.3 GetIPBlockParentAndChildDepth

This procedure can be used to calculate the length of the address block hierarchy given the StartIPAddress and EndIPAddress of the address block. The following are the input parameters.

Param_StartIPAddress: This is of type IPAddress specifying the StartIPAddress of the block for which the length of the parent and child hierarchy length is to be calculated.

Param_EndIPAddress: This is of type IPAddress specifying the EndIPAddress of the block for which the length of the parent and child hierarchy length is to be calculated.

Param_AddressSpaceRecordId: The Address Space RecordId of the address block for which the block depth is to be computed. If this parameter is not specified while calling this procedure, the default value that is considered is 1, which maps to Default Provider Address Space.

Param_RecordIdToExclude: This specifies the RecordId of the address block that has to be excluded while calculating the length of the parent-child hierarchy.

The output parameter is the length of the parent-child hierarchy of the block whose start address and end address are given. This will be returned in variable **result**.

The following are the steps involved. If the address family of the Param_StartIPAddress and Param_EndIPAddress is Internet, the remainder of the processing has to be done against the IPv4-specific table. Otherwise the remainder of the processing has to be done against the IPv6-specific table.

- Enumerate the rows in the ADM_IPBlocksTable that have either of the conditions true:
  - StartIPAddress <= Param_StartIPAddress and EndIPAddress >= Param_EndIPAddress
  - StartIPAddress >= Param_StartIPAddress and EndIPAddress <= Param_EndIPAddress

And have Param_AddressSpaceRecordId equal to the AddressSpaceRecordId of the block entry in the table.

1. If Param_RecordIdToExclude is specified, exclude the row from the enumerated rows.
2. Set **result** to 0.
3. Set RecordIdToSearch to 0.
4. In the enumerated rows, lookup the row that has RecordId to be RecordIdToSearch.
5. If the row is found:
   - Increment result by 1.
   - Set RecordIdToSearch to the ParentIPBlockRecordId of the row.

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- Go to step 5.

6. If the row is not found, the chain has been found.

7. Return **result** as the length of the hierarchy.

3.1.1.1.4.2.4 GetOverlappingBlocks

This procedure can be used to determine the list of blocks that overlap with a given block information. The block information for which the overlap is computed is specified using the following information passed as input parameter.

Param_StartIPAddress: This is of type IPAddress specifying the StartIPAddress of the address block for which the overlap is to be calculated.

Param_EndIPAddress: This is of type IPAddress specifying the EndIPAddress of the address block for which the overlap is to be calculated.

Param_PrefixLength: This is an integer specifying the PrefixLength of the address block for which the overlap is to be calculated.

Param_AddressSpaceRecordId: The AddressSpaceRecordId of the IPBlock for which the overlapping blocks are to be computed. If this parameter is not specified while calling this procedure, the default value that is considered is 1, which maps to Default Provider Address Space.

Param_RecordIdToExclude: This specifies the RecordId of the block for which the overlapping blocks are being calculated so that it is filtered from the resulting set.

The result is a collection of IPBlock, which are overlapping with the specified block information. This output parameter will be named **Result_OverlappingBlocks**.

The following are the steps involved. If the address family of the Param_StartIPAddress and Param_EndIPAddress is Internet, the remainder of the processing has to be done against the IPv4-specific table. Otherwise the remainder of the processing has to be done against the IPv6-specific table.

The set of overlapping address blocks are those entries that do not fall into either of the following categories:

- Lying completely outside the specified block
  - Both StartIPAddress and EndIPAddress of the block are less than Param_StartIPAddress
  - Both StartIPAddress and EndIPAddress of the block are greater than Param_EndIPAddress
- Potential parent/child blocks of the incoming block
  - Child Blocks will meet the following condition:
    - Param_StartIPAddress is less than or equal to StartIPAddress of the block entry in the table
    - Param_EndIPAddress is greater than or equal to StartIPAddress of the block entry in the table
    - Param_AddressSpaceRecordId is equal to AddressSpaceRecordId of the block entry in the table
    - Param_PrefixLength is less than or equal to PrefixLength of the entry

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- Parent Blocks will meet the following condition:
  - Param_StartIPAddress is greater than or equal to StartIPAddress of the entry
  - Param_EndIPAddress is less than or equal to StartIPAddress of the entry
  - Param_AddressSpaceRecordId is equal to AddressSpaceRecordId of the block entry in the table
  - Param_PrefixLength is greater than or equal to PrefixLength of the entry
- If Param_RecordIdToExclude is specified, exclude the row with RecordId equal to Param_RecordIdToExclude and return the final collection as Result_OverlappingBlocks.

3.1.1.1.4.2.5 CalculateParentForIPBlock

This procedure can be used to calculate the parent IP Block for a given address block. The address block for which the parent has to be calculated is specified using the following input parameters.

Param_StartIPAddress: This is of type IPAddress specifying the StartIPAddress of the address block for which the parent block is to be determined.

Param_EndIPAddress: This is of type IPAddress specifying the EndIPAddress of the address block for which the parent block is to be determined.

Param_AddressSpaceRecordId: The AddressSpaceRecordId of the block for which the parent block is to be computed. If this parameter is not specified while calling this procedure, the default value that is considered is 1, which maps to Default Provider Address Space.

Param_PrefixLength: This is an integer specifying the PrefixLength of the address block for which the parent block is to be determined.

Param_RecordIdToExclude: This specifies the RecordId of the block for which the parent block is being calculated so that it is filtered from the resulting set.

Param_AddressCategory: This specifies the AddressCategory of the block for which the parent block is being calculated.

The result of the procedure is the RecordId of the parent block determined. If there is no applicable parent block, a value of 0 is returned. This is returned as **result** variable.

The following are the steps involved. If the address family of the Param_StartIPAddress and Param_EndIPAddress is Internet, the remainder of the processing has to be done against the IPv4-specific table. Otherwise the remainder of the processing has to be done against the IPv6-specific table.

1. Initialize **result** to 0.
2. Enumerate the rows from the ADM_IPBlocksTable that meet the following conditions:
   - Param_StartIPAddress is greater than or equal to StartIPAddress of the row.
   - Param_EndIPAddress is less than or equal to the EndIPAddress of the row.
   - Param_AddressSpaceRecordId is equal to AddressSpaceRecordId of the block entry in the table.
   - Param_PrefixLength is greater than or equal to the PrefixLength of the row.

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- RecordId of the row is not equal to Param_RecordIdToExclude.

3. Order the enumerated set of rows in the descending order of StartIPAddress, EndIPAddress, and PrefixLength. The first row of the ordered set will be the appropriate parent.

4. If the AddressCategory of the first row of the ordered set is the same as Param_AddressCategory, assign RecordId of the row as **result**.

5. Return **result** as the output of the procedure.

3.1.1.1.4.2.6 AdjustChildIPBlocks

This procedure can be used to update the child blocks for a given IP address block. The address block for which the child blocks are to be calculated and updated are specified using the following input parameters.

Param_BlockRecordId: The RecordId of the block for which the child blocks are to be calculated.

Param_ParentBlockRecordId: The ParentIPBlockRecordId of the block for which the child blocks are to be calculated.

Param_StartIPAddress: The StartIPAddress of the block for which the child blocks are to be calculated.

Param_EndIPAddress: The EndIPAddress of the block for which the child blocks are to be calculated.

Param_AddressSpaceRecordId: The AddressSpaceRecordId of the block for which the child block need to be adjusted. If this parameter is not specified while calling this procedure, the default value that is considered is 1, which maps to Default Provider Address Space.

Param_PrefixLength: The PrefixLength of the block for which the child blocks are to be calculated.

Param_AddressCategory: The AddressCategory of the block for which the child blocks are to be calculated.

This procedure updates the ParentIPBlockRecordId for the child blocks for the specified block. There is no output from this procedure.

The following are the steps involved. If the address family of the Param_StartIPAddress and Param_EndIPAddress is Internet, the rest of the processing has to be done against the IPv4-specific table. Otherwise the rest of the processing has to be done against the IPv6-specific table.

Enumerate the rows that meet the following conditions and set their ParentIPBlockRecordId to Param_BlockRecordId.

1. If Param_BlockRecordId is specified, the RecordId of the row is not equal to Param_BlockRecordId.

2. ParentIPBlockRecordId of the row is equal to the Param_ParentBlockRecordId.

3. StartIPAddress of the row is greater than or equal to the Param_StartIPAddress.

4. EndIPAddress of the row is greater than or equal to the Param_EndIPAddress.

5. Param_AddressSpaceRecordId is equal to AddressSpaceRecordId of the block entry in the table.

6. PrefixLength of the row is greater than or equal to the Param_PrefixLength.

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7. AddressCategory of the row is equal to Param_AddressCategory.

3.1.1.1.4.2.7 DeleteBlockTree

This procedure can be used to delete a hierarchy of address blocks starting with the block with a particular record identifier. The input parameters for this are as follows:

Param_BlockId: The RecordId of the block whose entire chain of the hierarchy has to be deleted.

Param_addressfamily: The address family to specify the table against which the block deletion has to be performed.

There are no output parameters for this procedure. The rows belonging to the entire child block hierarchy is removed.

The following are the steps involved. If the Param_addressfamily is Internet, the following processing is done against the IPv4-specific table. Otherwise the following processing is done against the IPv6-specific table.

1. Delete the rows in ADM_IPBlocksTable whose ParentBlockRecordId is the same as Param_BlockId by calling the DeleteBlockTree and passing the row.RecordId and Param_addressfamily as parameters.

2. Delete the block with the RecordId being Param_BlockId.

3. Delete the AccessScopeAssociation entry for this block using the following steps:

   - Call GetAssociationEntryByObjectTypeAndId of ADM_AccessScopeAssociationTable passing the following parameters:

4. Param_objectId is set to Param_blockId.

5. Param_objectType is set to IpamObjectType.IPv4Block if addressfamily is Internet or IpamObjectType.IPv6Block if addressfamily is Internetv6.

   - Call DeleteAssociationEntry of ADM_AccessScopeAssociationTable by assigning Result_accessScopeAssociation. AssociationId to Param_entryId.

3.1.1.1.4.2.8 GetChildIPBlocksForBlock

This procedure is used to retrieve the IP address block information in the form of IPv4Block or IPv6Block. The type of the data returned being IPv4Block or IPv6Block is based on the simple table within the ADM_IPBlocksTable compound table against which the processing steps are performed.

The following are the input parameters to this procedure.

Param_blockId: This is a 64-bit signed integer that identifies the block for which the information is being retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure.

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Result_childBlocks: This is a collection of the address block information in the form of IPv4Block or IPv6Block corresponding to the Param_blockId and Param_addressfamily specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns collection of IPv4Block instances and if it is InternetV6, the procedure returns a collection of IPv6Block instances.

The following are the processing steps involved.

1. Lookup the **ADM_IPBlocksTable** for all the rows with the **ParentBlockRecordId** of value Param_blockId.

2. If the rows are not found, return null. Otherwise initialize Result_childBlocks to a collection of IPv4Block if the Param_addressfamily is Internet and IPv6Block if the Param_addressfamily is InternetV6.

3. For each row that has been found, call GetIPBlockFromTable procedure of ADM_IPBlocksTable passing the following parameters:

4. RecordId is assigned to Param_blockId.

5. Param_addressfamily is assigned to Param_addressfamily.

Process the output result and add it to the collection Result_childBlocks.

- Return **Result_childBlocks** as the output of the procedure.

3.1.1.1.5 ADM_DHCPReservationTable

This is a compound table containing IPv4-specific and IPv6-specific simple tables. This table models the details of the reservation of the addresses in the DHCP server instances for IP address entries in the IPAM data store.

3.1.1.1.5.1 Data Model

RecordId:primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **ReservationId** of the **IpamIPAddress** data structure.

ScopeRecordId:foreign key (ADM_DHCPScopesTable, RecordId) on delete cascade: The scope under which the reservation is present.

IPAddressRecordId: foreign key (ADM_IPAddressTable, RecordId) on delete no action: The IP address entry corresponding to this reservation.

ReservationDetails: The other miscellaneous details corresponding to the reservation that are modeled on the following properties of IpamIPAddress:

- ReservationDescription
- ReservationName
- ReservationSyncStatus
- ReservationStatus
- DnsNameProtectionStatus
- DiscardDnsRecordOnLeaseDeletionStatus

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- DnsUpdateType
- IPv4 specific:
- DnsDisablePtrUpdate
- ServingClientsType
- ReservationClientId
- DnsNotRequestingClientsUpdateType
- IPv6 specific:
- Iaid
- Duid

3.1.1.1.5.2 Procedures

3.1.1.1.5.2.1 AddOrUpdateReservation

This procedure can be used to add or update a reservation entry in the ADM_DHCPReservationTable. The following are the input parameters to this procedure.

Param_addressfamily: The address family to specify the table against which the reservation processing has to be performed.

Param_reservationId: This is the RecordId of the DHCP reservation to be modified. If this is not specified, a new reservation row will be created.

Param_scopeId: This is the RecordId of the DHCP scope instance in ADM_DHCPScopesTable to which the reservation has to be added.

Param_addressId: This is the RecordId of the IPAM IP address in ADM_IPAddressTable to which the reservation is associated with.

Param_reservationDetails: This specifies ReservationDetails for the reservation being added or updated.

The procedure returns the following as the output parameter.

Result_reservationId: The RecordId of the DHCP reservation row if the row has been added.

The following are the processing steps involved:

1. Use the Param_addressfamily to determine the simple table within the ADM_DHCPReservationTable compound table to perform the rest of the processing.
2. If Param_reservationId is not specified, a new row has to be added. Otherwise lookup the row with Param_reservationId as RecordId.
    1. Set ScopeRecordId of the row to Param_scopeId.
    2. Set IPAddressRecordId of the row to Param_addressId.
    3. Copy Param_reservationDetails to ReservationDetails of the row.

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4. Update/insert the row into the table.

3. If the new row has been added, assign RecordId to Result_reservationId. Otherwise assign Param_reservationId to Result_reservationId.

3.1.1.1.5.2.2 DeleteReservation

This procedure can be used to delete a reservation entry in the ADM_DHCPReservationTable. The following are the input parameters to this procedure.

Param_addressfamily: The address family to specify the table against which the reservation processing has to be performed.

Param_reservationId: This is the RecordId of the DHCP reservation to be deleted.

There is no output parameter from this procedure.

The following are the processing steps involved:

1. Use the Param_addressfamily to determine the simple table within the ADM_DHCPReservationTable compound table to perform the rest of the processing.

2. If Param_reservationId is null, return. Otherwise lookup the row with Param_reservationId as RecordId. Delete this row and return.

3.1.1.1.5.2.3 GetDhcpReservation

This procedure can be used to retrieve a reservation entry in the ADM_DHCPReservationTable for a specific RecordId. The following are the input parameters to this procedure.

Param_addressfamily: The address family to specify the table against which the reservation processing has to be performed.

Param_reservationId: This is the RecordId of the DHCP reservation to be retrieved.

The procedure returns the following as the output parameter.

Result_reservation: This is reservation information in the form of DhcpReservationV4 or DhcpReservationV6, corresponding to the Param_reservationId specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns DhcpReservationV4, and if it is InternetV6, the procedure returns DhcpReservationV6.

The following are the processing steps involved:

1. Use the Param_addressfamily to determine the simple table within the ADM_DHCPReservationTable compound table to perform the rest of the processing.

2. If Param_reservationId is null, return null. Otherwise lookup the row with Param_reservationId as RecordId.

3. Initialize Result_reservation as an instance of type DhcpReservationV4 or DhcpReservationV6, based on Param_addressfamily value being Internet or InternetV6 respectively.

4. Copy RecordId, ScopeId, IPAddressRecordId, ReservationDetails to instance Result_reservation.

5. Return Result_reservation from the procedure.

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3.1.1.1.5.2.4 GetDhcpReservationsForScope

This procedure can be used to retrieve all the reservation entries that exist in the ADM_DHCPReservationTable for a specified DHCP scope. The following are the input parameters to this procedure.

Param_addressfamily: The address family to specify the table against which the reservation processing has to be performed.

Param_scopeId: This is the RecordId of the DHCP scope for which the DHCP Reservations need to be retrieved.

The procedure returns the following as the output parameter.

Result_reservations: This is the collection of reservation information in the form of DhcpReservationV4 or DhcpReservationV6, corresponding to the Param_scopeId specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns a collection of instances of DhcpReservationV4, and if it is InternetV6, the procedure returns a collection of instances of type DhcpReservationV6.

The following are the processing steps involved:

1. Use the Param_addressfamily to determine the simple table within the ADM_DHCPReservationTable compound table to perform the rest of the processing.

2. Initialize Result_reservations as a collection of instances of DhcpReservationV4 or DhcpReservationV6, based on Param_addressfamily value being Internet or InternetV6 respectively.

3. If Param_scopeId is null, return. Otherwise lookup all the rows with ScopeId as Param_scopeId.

4. For each row found in the previous step, create an instance Reservation of type DhcpReservationV4 if Param_addressfamily is Internet or of type DhcpReservationV6 if Param_addressfamily is InternetV6. Copy RecordId, ScopeId, IPAddressRecordId, ReservationDetails to instance Reservation. Add Reservation to Result_reservations.

5. Return Result_reservations from the procedure.

3.1.1.1.6 ADM_AddressDNSForwardLookupTable

This is a compound table containing IPv4-specific and IPv6-specific simple tables. This table is used to track the forward lookup DNS zone registration details for the IP addresses in ADM_IPAddressTable.

3.1.1.1.6.1 Data Model

RecordId : primary key : A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **DnsForwardLookupZoneRecordId** of the **IPBlock** data structure.

AddressRecordId: **foreign key (ADM_IPAddressTable, RecordId)**: **on delete no action:** The RecordId in ADM_IPAddressTable for which the entry specifies the DNS registration details.

DNSZoneRecordId: foreign key (ADM_DNSForwardLookupZoneTable, RecordId) on delete cascade: The RecordId of the forward look-up zone entry under which the address is registered. This forms the **DnsZoneId** of IpamIPAddress.

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DNSServerRecordId: foreign key (ADM_DNSServerForwardLookupZoneTable, RecordId) on delete set null: The RecordId of the DNS server hosting the forward lookup zone specified by DNSZoneRecordId. This forms the **DnsForwardLookupZoneDnsServerId** of IpamIPAddress.

DNSForwardLookupRegistrationDetails: This forms the other miscellaneous properties of the DNS forward lookup registration details of the address. This is modeled on the following properties of IpamIPAddress.

- DnsForwardSyncStatus

3.1.1.1.6.2 Procedures

3.1.1.1.6.2.1 AddOrUpdateAddressDNSForwardLookupTable

This procedure can be used to update the forward lookup DNS zone mapping for an IP address. The following are the input parameters for this procedure.

Param_addressfamily: This specifies the simple table within the ADM_AddressDNSForwardLookupTable against which the processing steps of the procedure have to be performed.

Param_addressId: This is the RecordId of the address object for which the row specifies the forward lookup registration information.

Param_dnsZoneId: The RecordId of the zone under which the forward-lookup registration of the address is done. This is the record identifier of the zone in ADM_DNSForwardLookupTable.

Param_serverDnsZoneId: This is the RecordId of the entry in the ADM_DNSServerForwardLookupTable specifying the server on which the zone with zone record identifier Param_dnsZoneId is present, against which the address is registered.

Param_recordId: This is the RecordId of the row in ADM_AddressDNSForwardLookupTable that has to be updated. This will not be specified if the row is to be newly added.

The output of this procedure is the Result_recordId specifying the RecordId of the newly added row or the RecordId of the row updated.

The following are the steps involved:

1. Select the simple table based on Param_addressfamily for the ADM_AddressDnsForwardLookupTable on which the processing has to be done.
2. If Param_recordId is present, the existing row in the table is to be modified. Otherwise a new row has to be inserted. The following are the data assignments to be performed in either case.
    1. Assign Param_addressId to AddressRecordId.
    2. Assign Param_dnsZoneId to DNSZoneRecordID.
    3. Assign Param_serverDnsZoneId to DNSServerRecordID.
3. If the row has been newly added assign Result_recordId with the RecordId of the newly added row.

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3.1.1.1.7 ADM_AddressDNSReverseLookupTable

This is a compound table containing IPv4-specific and IPv6-specific simple tables This table is used to track the reverse lookup DNS zone registration details for the IP addresses in ADM_IPAddressTable.

3.1.1.1.7.1 Data Model

RecordId : primary key : A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **DnsReverseLookupZoneRecordId** of the **IPBlock** data structure.

AddressRecordId: **foreign key (ADM_IPAddressTable, RecordId)**: **on delete no action**: The RecordId in ADM_IPAddressTable for which the entry specifies the DNS registration details.

DNSZoneRecordId: foreign key (ADM_DNSReverseLookupZoneTable, RecordId) on delete cascade: The RecordId of the reverse lookup zone entry under which the address is registered. This forms the **DnsReverseLookupZoneId** of IpamIPAddress.

DNSServerRecordId: foreign key (ADM_DNSServerForwardLookupZoneTable, RecordId) on delete set null: The RecordId of the DNS server hosting the reverse lookup zone specified by DNSZoneRecordId. This forms the **DnsReverseLookupZoneServerId** of IpamIPAddress.

DNSReverseLookupRegistrationDetails: This forms the other miscellaneous properties of the DNS forward lookup registration details of the address. This is modeled on the following properties of IpamIPAddress.

- DnsReverseSyncStatus

3.1.1.1.7.2 Procedures

3.1.1.1.7.2.1 AddOrUpdateAddressDNSReverseLookup

This procedure can be used to update the forward lookup DNS zone mapping for an IP address. The following are the input parameters for this procedure.

Param_addressfamily: This specifies the simple table within the ADM_AddressDNSReverseLookupTable against which the processing steps of the procedure are to be performed.

Param_addressId: This is the RecordId of the address object for which the row specifies the reverse lookup registration information.

Param_dnsZoneId: The RecordId of the zone under which the reverse-lookup registration of the address is done. This is the record identifier of the zone in ADM_DNSReverseLookupTable.

Param_serverDnsZoneId: This is the RecordId of the entry in the ADM_DNSServerReverseLookupTable specifying the server on which the zone with zone record identifier Param_dnsZoneId is present, against which the address is registered.

Param_recordId: This is the RecordId of the row in ADM_AddressDNSReverseLookupTable that has to be updated. This will not be specified if the row is to be newly added.

The output of this procedure is the Result_recordId specifying the RecordId of the newly added row or the RecordId of the row updated.

The following are the steps involved.

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1. Select the simple table based on Param_addressfamily for the ADM_AddressDnsReverseLookupTable on which the processing has to be done.

2. If Param_recordId is present, the existing row in the table is to be modified. Otherwise a new row has to be inserted. The following are the data assignments to be performed in either case.

    1. Assign Param_addressId to AddressRecordId.

    2. Assign Param_dnsZoneId to DNSZoneRecordID.

    3. Assign Param_serverDnsZoneId to DNSServerRecordID.

3. If the row has been newly added assign Result_recordId with the RecordId of the newly added row.

3.1.1.1.8 ADM_DNSForwardLookupTable

This simple table contains the configuration of the various DNS zones in the IPAM data store.

3.1.1.1.8.1 Data Model

RecordId: primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of the **BaseDnsZone** data structure.

Name: This forms the Name of the BaseDnsZone data structure.

ParentId: foreign key (ADM_DNSForwardLookupTable, RecordId) on delete no action: If the zone is a child zone of another zone, this will be the RecordId of the parent zone hosting it.

ForwardLookupZoneDetails: These are modeled around the following members of the DnsZone.

- ShortName
- ZoneOverallHealth
- ZoneOverallHealthLastUpdateTime

3.1.1.1.8.2 Procedures

3.1.1.1.8.2.1 GetDnsZoneFromTable

This procedure can be used to retrieve the DnsZone for the specified record identifier. The following is the input parameter to this procedure.

Param_Id: The RecordId of the DNS zone for which the DnsZone data is being requested.

The following is the output parameter of this procedure:

Result_zone: This is the DnsZone corresponding to the record identifier specified.

The following are the processing steps involved.

1. Lookup the ADM_DNSForwardLookupTable for the row with the RecordId value equal to Param_Id.

2. Initialize Result_zone to DnsZone and assign the following values.

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1. Assign ParentId to Result_zone.ParentId.
2. Assign Name to Result_zone.Name.
3. Assign RecordId to Result_zone.RecordId.
4. Copy the ForwardLookupZoneDetails to Result_zone.

3. Call GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:
4. Param_objectId is set to Param_Id.
5. Param_objectType is set to IpamObjectType.DNSForwardLookupZone.
6. Param_accessScopeId.
7. Param_objectInheritanceStatus.
8. Param_inheritanceId.

Assign Param_accessScopeId to Result_zone.AccessScopeId.

Assign Param_objectInheritanceStatus to Result_zone. IsInheritedAccessScope.

- Return Result_zone as the output parameter of this procedure.

3.1.1.1.9 ADM_DNSReverseLookupTable

This is a simple table containing the details of the reverse lookup zones in the IPAM data store.

3.1.1.1.9.1 Data Model

RecordId: primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of the **BaseDnsZone** data structure.

Name: This forms the **Name** of the **BaseDnsZone** data structure.

ZoneDetails: This forms the zone information modeled on the following properties of DnsReverseLookupZone:

- StartIP
- EndIP
- Prefix
- IPType

3.1.1.1.9.2 Procedures

3.1.1.1.9.2.1 GetDnsReverseLookupZoneFromTable

This procedure can be used to retrieve the DnsReverseLookupZone with the specified RecordId. The following is the input parameter to this procedure.

Param_recordId: The record identifier for which the DnsReverseLookupZone data is required.

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The following is the output parameter of this procedure:

Result_reverseLookupZone: This is of type DnsReverseLookupZone containing the data for the requested reverse lookup zone from the IPAM data store.

The following are the steps involved.

1. Lookup ADM_DnsReverseLookupTable for the row with RecordId being Param_recordId.
2. If the row is not found, set Result_reverseLookupZone to null and return.
3. Set the following values from the row entry to Result_reverseLookupZone.
   - Result_reverseLookupZone.RecordId is assigned RecordId.
   - Result_reverseLookupZone.Name is assigned Name.
   - Copy ZoneDetails from the row to Result_reverseLookupZone.
4. Call GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:
5. Param_objectId is set to Param_Id.
6. Param_objectType is set to IpamObjectType.DNSReverseLookupZone.
7. Param_accessScopeId.
8. Param_objectInheritanceStatus.
9. Param_inheritanceId.

Assign Param_accessScopeId to Result_reverseLookupZone.AccessScopeId.

Assign Param_objectInheritanceStatus to Result_reverseLookupZone.IsInheritedAccessScope.

- Return Result_reverseLookupZone from the procedure.

3.1.1.1.10 ADM_DNSServerForwardLookupZoneTable

This simple table contains the information of the mapping between the DNS servers and the forward lookup zones they host.

3.1.1.1.10.1 Data Model

RecordId: Primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of the **BaseDnsServerZone** data structure.

ServerRecordId: foreign key (ADM_DNSServerRoleInfo, RecordId) on delete cascade: The RecordId of the DNS server role in ADM_DNSServerRoleInfo table for which the row specifies a zone mapping. This is used to retrieve the DnsServer data for the **Server** member of **BaseDnsServerZone**.

DnsZoneId: foreign key (ADM_DNSForwardLookupTable, RecordId) on delete no action: The DNS zone to DNS server mapping specified by the row. This is used to retrieve the **Zone** member of the **DnsServerZone**.

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ForwardLookupZoneDetails: This contains the other miscellaneous details of the zone. They are modeled around the following members of the DnsServerZone.

- ZoneType
- ZoneConfiguration
- ZoneHealth
- ZoneHealthLastUpdateTime

3.1.1.1.10.2 Procedures

3.1.1.1.10.2.1 GetDnsServerZoneFromTable

This procedure can be used to retrieve the DnsServerZone information for the specified record identifier. The following is the input parameter to this procedure.

Param_Id: This specifies the RecordId of the DnsServerZone which needs to be retrieved.

The following is the output parameter of this procedure.

Result_zone: This specifies the DnsServerZone information for the specified RecordId value.

The following are the steps involved.

1. Lookup the ADM_DNSServerForwardLookupZoneTable for the row with RecordId value equal to Param_Id.
2. If the row is found, set Result_zone to DnsServerZone and initialize it with the following values.
   - RecordId is assigned to Result_zone.RecordId.
   - ForwardLookupZoneDetails are copied to Result_zone.
   - Call the procedure GetDnsServerFromTable in ADM_DnsServersTable passing the ServerRecordId as the Param_Id input parameter. Assign the Result_DnsServer to Result_data.Server.
   - Call the procedure GetDnsZoneFromTable in ADM_DNSForwardLookupTable passing the DnsZoneId as Param_Id parameter and assigning the Result_zone to Result_zone.Zone.
3. Return the Result_zone as the output parameter of this procedure.

3.1.1.1.11 ADM_DNSServerReverseLookupZoneTable

This simple table contains the information of the mapping between the DNS servers and the reverse lookup zones they host.

3.1.1.1.11.1 Data Model

RecordId: Primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of the **BaseDnsServerZone** data structure.

ServerRecordId: foreign key (ADM_DNSServerRoleInfo, RecordId) on delete cascade: The RecordId of the DNS server role in ADM_DNSServerRoleInfo table for which the row specifies a zone

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mapping. This is used to retrieve the DnsServer data for the **Server** member of **BaseDnsServerZone**.

DnsReverseZoneId : foreign key (ADM_DNSReverseLookupTable, RecordId) on delete no action: The RecordId of the reverse lookup DNS zone which is available on the server. This is used to retrieve the **Zone** information of the DnsServerReverseZone.

ReverseLookupZoneDetails: This contains the other miscellaneous information pertaining to the reverse lookup zone hosted on a server which are modeled around the following properties of the DnsServerReverseZone.

ZoneConfiguration

ZoneType

3.1.1.1.11.2 Procedures

3.1.1.1.11.2.1 GetDnsServerReverseLookupZoneFromTable

This procedure can be used to retrieve the DnsServerReverseZone data for the specified row entry in the ADM_DNSServerReverseLookupZoneTable.

The following is the input parameter to this procedure.

Param_Id: The RecordId of the row for which the DnsServerReverseZone object is required.

The following is the output parameter of this procedure.

Result_data: This is of type DnsServerReverseZone, providing the reverse lookup DNS zone hosted on a specific server referenced using Param_Id.

The following are the steps involved.

1. Lookup the row in ADM_DNSServerReverseLookupZoneTable having the RecordId to be the value specified by Param_Id.
2. Initialize the Result_data with the instance of DnsServerReverseZone and assign the following values to the same.
   - RecordId is assigned to Result_data.RecordId.
   - ReverseLookupZoneDetails are copied into Result_data.
   - Call the procedure GetDnsServerFromTable in ADM_DnsServersTable passing the ServerRecordId as the Param_Id input parameter. Assign the Result_DnsServer to Result_data.Server.
   - Call the procedure GetDnsReverseLookupZoneFromTable in ADM_DNSReverseLookupTable with DnsReverseZoneId passed as Param_recordId. Assign the Result_reverseLookupZone to Result_data.Zone.
3. Return Result_data as the output parameter of this procedure.

3.1.1.1.12 ADM_DHCPScopesTable

This is a compound table having both IPv4-specific and IPv6-specific tables. This table models the scope data that are part of various DHCP server instances that are present in the IPAM data store.

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3.1.1.1.12.1 Data Model

RecordId : primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** for the **DhcpScope** data structure.

DHCPServerRecordId: foreign key (ADM_DHCPServersTable, RecordId) on delete cascade: This is the record identifier for the server instance on which the particular DHCP scope entry is present. This forms the **ParentDhcpServerRecordId** of the **DhcpScope** data structure.

ScopeDetails: This consists of the columns common to both IPv4-specific and IPv6-specific tables. These columns are modeled on the following properties of DhcpScope (which is the base type that both DhcpScopeV4 and DhcpScopeV6 extends).

- Description
- DhcpDnsUpdateType
- DiscardDnsRecordOnLeaseDeletionStatus
- DnsNameProtectionStatus
- EndAddress
- NumberOfActiveLeases
- PrefixLength
- ScopeId
- ScopeName
- StartAddress
- Status
- SubnetMask
- TotalNumberOfAddressesInScope
- TotalNumberOfExcludedAddressesInScope
- ExclusionRanges

ScopeDetails (IPv4-specific): For the IPv4-specific table, the following additional columns are defined apart from the common columns listed earlier. They are modeled on the following properties of the DhcpScopeV4.

- BootpLeaseDuration
- BootpLeaseDurationType
- DnsNotRequestingClientsUpdateType
- LeaseDuration
- LeaseDurationType
- ServingClientsType

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- SubnetDelay
- FailoverConfigSyncStatus
- AllowFilterState
- DenyFilterState
- EnablePolicyStatus

SuperscopeId: foreign key (ADM_DhcpSuperscopeTable, RecordId) on update cascade, on delete set null:

ScopeDetails (IPv6-specific): For the IPv6-specific table, the following additional columns are defined apart from the common columns listed earlier. They are modeled on the following properties of DhcpScopeV6.

- PreferredLeaseTime
- ValidLeaseTime
- PurgeInterval
- ScopePreference
- ScopeType
- StatelessClientInventoryLoggingStatus

3.1.1.1.12.2 Procedures

3.1.1.1.12.2.1 GetScopeInformationForRange

This procedure takes the following input parameters.

Param_range: The IPRange having the **IPRange.ScopeRecordId** for which additional scope and DHCP server-specific details are to be retrieved.

When the procedure completes, the scope-specific details are filled in **Param_range** and passed as input parameter.

The following are the steps performed by this procedure.

1. The address family of the address range for which the scope information is requested is used to determine the simple table within the ADM_DHCPScopesTable on which further processing steps are performed.
2. Lookup the ADM_DHCPScopesTable for the row with **RecordId** equal to **IPRange.ScopeRecordId**.
3. If it is found, perform the following processing.
    1. Assign the ScopeName of the scope row entry to **IPRange.DhcpScopeName** of **Param_range**.
    2. Assign the SubnetId of the scope row entry to the **IPRange.SubnetId** of **Param_range**.

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3. Assign the SubnetMask of the scope row entry to the **IPRange.SubnetMask** of **Param_range**.

4. Assign the Description of the scope row entry to the **IPRange.Description** of **Param_range**.

5. Assign ExclusionRanges of the scope row entry to the **IPRange.ExclusionRanges** of **Param_range**.

6. If **IPRange.IsOverlapping** is set to **TRUE**, then lookup the row in the **ADM_DhcpScopeFailoverTable** that has **ScopeId** equal to **IPRange.ScopeRecordId**. If such a row is found, set **IPRange.RangeOverlapState** to **IPRangeOverlap.OverlappingBecauseFailover;** otherwise set it to **IPRangeOverlap.Overlapping**.

7. Lookup the row in the **ADM_ServersTable** that has the server instance information that is hosting the scope row entry. This is done by performing the following sequence of look-ups.

    1. Lookup **ADM_DHCPServersTable** on **RecordId** using the scope row entry's **DHCPServerRecordId**.

    2. Lookup the **ADM_ServerRolesTable** on **RecordId** by using the **ServerRoleRecordId** in the row in the ADM_DHCPServersTable.

    3. Lookup the **ADM_ServersTable** on **record identifier** by using the **ServerRecordId** in the row in the **ADM_ServerRolesTable**.

    4. From the row in the **ADM_ServersTable**, make the following assignments:

        1. Assign **ServerGuid** from the row in the **ADM_ServersTable** to **IPRange.DhcpServerGuid** of **Param_range**.

        2. Assign **Name** from the row in the **ADM_ServersTable** to **IPRange.DhcpServerName** of **Param_range**.

3.1.1.1.12.2.2 GetScopeFromTable

This procedure can be used to retrieve the scope information in the form of DhcpScopeV4 or DhcpScopeV6, based on whether it is being invoked against the IPv4-specific table or the IPv6-specific table. The procedure takes the following input parameters.

Param_Id: A 64-bit signed integer specifying the record identifier of the DHCP scope instance for which the DhcpScope data is being requested.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

This procedure returns the following value as output parameter.

Result_scope: This is of DhcpScope. If the Param_addressfamily is Internet, this will be DhcpScopeV4, and if the Param_addressfamily is InternetV6, this will be DhcpScopeV6 type.

The following are the steps performed against the IPAM data store.

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1. Lookup the row in the ADM_DHCPScopesTable with RecordId equal Param_Id. If the row is not present, set Result_scope to null and return.
2. If the Param_addressfamily is Internet, initialize Result_scope to DhcpScopeV4. If the Param_addressfamily is InternetV6, initialize Result_scope to DhcpScopeV6.
    1. Set Result_scope.RecordId to RecordId.
    2. Set Result_scope.ParentDhcpServerRecordId to DHCPServerRecordId.
    3. Copy ScopeDetails of the row to Result_scope.
    4. Call the procedure GetDhcpOptions of ADM_DhcpOptionsTable with the following parameters:
        - Param_OptionOwnerType is set to DhcpOptionOwnerType.Scope.
        - Param_scopeId is set to Result_scope.RecordId.
        - Param_serverId is set to Result_scope.ParentDhcpServerRecordId.
        - Assign the Result_optionCollection to Result_scope.Options.
    5. Call GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:
3. Param_objectId is set to Param_Id.
4. Param_objectType is set to IpamObjectType.DhcpScopeV4 if addressfamily is Internet or IpamObjectType.DhcpScopeV6 if addressfamily is Internetv6.
5. Param_accessScopeId.
6. Param_objectInheritanceStatus.
7. Param_inheritanceId.

Assign Param_accessScopeId to Result_scope.AccessScopeId.

Assign Param_objectInheritanceStatus to Result_scope. IsInheritedAccessScope.

- Return Result_scope from the procedure.

3.1.1.1.12.2.3 GetScopesForServer

This procedure is used to retrieve all the DHCP scopes that are mapped to a specific DHCP server.

The following are the input parameters to this procedure:

Param_serverId: A 64-bit signed integer specifying the record identifier of the DHCP server instance for which the DhcpScope's data is being requested.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure:

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Result_Scopes: This is a collection of the DHCP scope information in the form of DhcpScopeV4 or DhcpScopeV6 corresponding to the Param_addressfamily specified in the input parameter. If the Param_addressfamily is Internet, the procedure returns a collection of DhcpScopeV4 instances and if it is InternetV6, the procedure returns a collection of DhcpScopeV6 instances.

1. Enumerate all the rows in table of ADM_DhcpScopesTable having DhcpServerRecordId equal to Param_serverId.

2. Initialize Result_Scopes.

3. If the rows are not found, return null. Otherwise initialize Result_Scopes to a collection of DhcpScopeV4 if the Param_addressfamily is Internet and DhcpScopeV6 if the Param_addressfamily is InternetV6.

4. For each row that has been found, call the GetDhcpScopeFromTable procedure of ADM_DhcpScopesTable passing the following parameters:

5. RecordId is assigned to Param_ id.

6. Param_addressfamily is assigned to Param_addressfamily.

7. Process the output Result_scope and add it to the collection Result_Scopes.

8. Return Result_Scopes as the output of the procedure.

3.1.1.1.12.2.4 AddScopesToSuperscope

This procedure can only be applied on IPv4 DhcpScope table. This procedure uses the IIpamOperationWithProgressCallback interface to provide the details of the subtasks, their completion status, and the overall completion status for the operation to the management client.

This procedure is used to add existing IPv4 DHCP scopes to an existing DHCP superscope.

The following are the input parameters to this procedure:

Param_Superscope: Of type DhcpSuperscopeV4

Param_scopes: Collection of elements of type DhcpScopeV4

There is no output from this procedure.

The following are the steps performed against the IPAM data store.

1. For each DhcpScopeV4 item in the Param_scopes collection, perform the below steps:

2. Lookup the row in the ADM_DHCPScopesTable with RecordId equal to DhcpScopeV4.RecordId.

3. If the row is present in the table, modify the row and set SuperscopeId to Param_Superscope.RecordId.

3.1.1.1.12.2.5 RemoveScopesFromSuperscope

This procedure can only be applied on IPv4 DhcpScope table. This procedure uses the IIpamOperationWithProgressCallback interface to provide the details of the subtasks, their completion status, and the overall completion status for the operation to the management client.

This procedure is used to remove existing IPv4 DHCP scopes from the DHCP superscopes to which they are mapped.

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The following are the input parameters to this procedure:

Param_scopes: List of elements of type DhcpScope

There is no output from this procedure.

The following are the steps performed against the IPAM data store.

1. For each DhcpScopeV4 item in the Param_scopes collection, perform the following steps:
2. Lookup the row in the ADM_DHCPScopesTable with RecordId equal to DhcpScopeV4.RecordId.
3. If the row is present in the table, modify the row and set SuperscopeId to 0.

3.1.1.1.12.2.6 GetScopesForSuperscope

This procedure can only be applied on IPv4 DhcpScope table. This procedure is used to retrieve all the IPv4 DHCP scopes that are assigned to a specific DHCP superscope.

The following are the input parameters to this procedure:

Param_superscopeId: Of type DhcpSuperscopeV4

The following is the output parameter from this procedure:

Result_Scopes: Collection of type DhcpScopeV4

1. Enumerate the rows in IPv4 table of ADM_DhcpScopeTable where SuperscopeId is equal to Param_superscopeId.
2. Initialize Result_Scopes.
3. For each row meeting the criteria mentioned in step 1, perform the following steps.

Create an instance of DhcpScopeV4 with the following assignments:

1. Set DhcpScopeV4.RecordId to RecordId.
2. Set DhcpScopeV4.ParentDhcpServerRecordId to DHCPServerRecordId.
3. Copy ScopeDetails of the row to DhcpScopeV4.
4. Call the procedure GetDhcpOptions of ADM_DhcpOptionsTable with the following parameters:

Add the DhcpScopeV4 instance to Result_Scopes collection.

- Return Result_Scopes as the output of the procedure.

3.1.1.1.13 ADM_CustomFieldsTable

This simple table is modeled on the custom fields that are present in the IPAM data store.

3.1.1.1.13.1 Data Model

RecordId: primary key: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** field of the **CustomField** data structure.

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CustomFieldDetails: This specifies the set of properties pertaining to the custom field. This is modeled around the following properties of the **CustomField** data structure.

- BuiltinCustomFieldNumber
- Name
- Origin
- Type

The **Name** property has to be unique in the table.

When the IPAM data store is being provisioned, this table is initialized with the following. The Name field is composed of string values created in the IPAM server language at the time of provisioning.

Name	Origin(CustomFieldOrigin)	Type(CustomFieldType)	BuiltinCustomFieldNumber
RIR	Builtin	Multivalued	1
RegionLegacy	Builtin	Multivalued	2
Country/Region	Builtin	Multivalued	3
Type of networks	Builtin	Multivalued	4
AD site	Builtin	Multivalued	5
Microsoft server role	Builtin	Multivalued	6
Device type	Builtin	Multivalued	7
Managed by	Builtin	Multivalued	8
Managed by entity	Builtin	Multivalued	9
IP Address State	Builtin	Multivalued	10
IP Pool Name	Builtin	Multivalued	11
Logical Network	Builtin	Multivalued	12
DNS Suffix	Builtin	Multivalued	13
Network Site	Builtin	Multivalued	14
VM Network	Builtin	Multivalued	15
Tenant	Builtin	Multivalued	16
Isolation Method	Builtin	Multivalued	17
Region	Builtin	Multivalued	18

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3.1.1.1.13.2 Procedures

3.1.1.1.13.2.1 GetCustomField

This procedure can be used to retrieve the custom field in the form of CustomField for the given record identifier. It takes the following input parameter.

Param_Id: The RecordId of the custom field requested.

The following is the output parameter of this procedure.

Result_customField: This is of type CustomField specifying the custom field instance.

The following are the processing steps involved.

1. Locate the row in the ADM_CustomFieldsTable that has the RecordId to be Param_Id.
2. If the row is found,
    1. Set Result_customField.RecordId to be the RecordId of the row.
    2. Copy CustomFieldDetails of the row to Result_customField.
    3. If Result_customField.Type is Multivalued, call the procedure GetCustomFieldValuesForCustomField passing Param_Id. Store Result_customFieldValues to Result_customField.Values.
3. Return Result_customField as the output value.

3.1.1.1.14 ADM_CustomFieldValuesTable

This simple table is modeled on the custom field values defined to be the valid value set for the multivalued custom fields.

3.1.1.1.14.1 Data Model

RecordId : **primary key**: A 64-bit, unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** for the **CustomFieldValue** data structure.

CustomFieldRecordId: **foreign key (ADM_CustomFieldsTable, RecordId) on delete cascade**: This specifies the custom field to which the specific custom field value belongs to in the possible value set. This forms the **ParentCustomFieldRecordId** of the CustomFieldValue data structure.

CustomFieldValueDetails: This specifies the set of properties pertaining to the custom field value. This is modeled on the following properties of the **CustomFieldValue** data structure.

- Value
- BuiltInCustomFieldValueId

When the IPAM data store is initialized, this table is initialized with the following default values. For convenience, the custom field for which the values are added to the table is represented by its name.

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Custom Field	Value	BuiltInCustomFieldValueId
RIR	AFRINIC	1
	APNIC	2
	ARIN	3
	LACNIC	4
	RIPE	5
RegionLegacy	Asia	1
	Caribbean	2
	Central America	3
	Eastern Europe	4
	European Union	5
	Middle East	6
	North America	7
	Oceania	8
	South America	9
Device type	Firewall	1
	Host	2
	Load balancer	3
	Microsoft Servers	4
	Non-Microsoft servers	5
	Printer	6
	Routers	7
	Switch	8
	Terminal server	9
	VM	10
	VM Manager	11
	VOIP Gateway	12
	WAN optimizer	13
	Wireless AP	14
	Wireless controller	15
Managed by	IPAM	1

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Custom Field	Value	BuiltInCustomFieldValueId
	MS DHCP	2
	Non-MS DHCP	3
	VM Manager	4
	Others	5
Managed by entity	Localhost	1
IP Address State	In-Use	1
	Reserved	2
	Inactive	3
Isolation Method	NVGRE	1
	VLAN	2
	VXLAN	3
	IPRewrite	4

Apart from these, the Country/Region custom field is added the list of country names as listed in [ISO-3166].

3.1.1.1.14.2 Procedures

3.1.1.1.14.2.1 GetCustomFieldValuesForCustomField

This procedure can be used to retrieve the CustomFieldValue instances for the custom field values associated with a multivalued custom field. The following are the input parameters for this procedure.

Param_customField: The custom field whose custom field values are being requested.

The following is the output parameter for this procedure.

Result_customFieldValues: This is a collection of instances of type CustomFieldValue specifying the custom field values associated with the specified custom field.

The following are the processing steps involved.

1. Enumerate the rows in ADM_CustomFieldValues whose CustomFieldRecordId has the value Param_Id.RecordId.
2. For each of the rows enumerated, perform the following steps.
    1. Create a new instance of CustomFieldValue with the following values.
        - CustomFieldValue.RecordId is set to RecordId of the row.
        - Copy the CustomFieldValueDetails of the row to CustomFieldValue instance.
        - Set CustomFieldValue.ParentCustomFieldName to Param_Id.Name.

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- Set CustomFieldValue.ParentCustomFieldNumber to Param_Id.BuiltInCustomFieldNumber.
- Set CustomFieldValue.ParentCustomFieldRecordId to Param_Id.RecordId.

2. Add the new instance to Result_customFieldValues.

3. Return Result_customFieldValues as output parameter.

3.1.1.1.15 ADM_LogicalGroupsTable

3.1.1.1.15.1 Data Model

RecordId: **primary key**: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of **LogicalGroup** information.

LogicalGroupDetails: This consists of the various columns of the logical group that are modeled on the following properties of LogicalGroup.

- Name
- Users
- BuiltinLogicalGroupNumber
- Origin

Fields: This is a collection of custom fields that form the logical group. Each row in the collection is composed of the RecordId to uniquely identify each field in the collection, the CustomFieldRecordId (which is a foreign key into the ADM_CustomFieldsTable), and the CustomFieldName associated with the CustomFieldRecordId. The order of the custom fields in this collection specifies the hierarchy of the custom field values that will determine the various levels of the logical groups.

When the IPAM data store is being provisioned, this table is initialized with the following default logical groups.

Name	Users(LogicalGroupUsers)	BuiltinLogicalGroupNumber	Origin(LogicalGroupOrigin)	Fields
Network devices	IPAddressSpaceManagement	1	Builtin	Device type
Managed by	IPAddressSpaceManagement	2	Builtin	Managed by Managed by entity
VirtualizedProviderAddressSpace	IPAddressSpaceManagement	3	Builtin	LogicalNetwork NetworkSite

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3.1.1.1.15.2 Procedures

3.1.1.1.15.2.1 GetLogicalGroupFromTable

This procedure can be used to retrieve an instance of LogicalGroup for the specified RecordId. The following is the input parameter to this procedure.

Param_Id: The RecordId of the logical group for which the LogicalGroup data is being requested.

Param_groupType: This is the **LogicalGroupType** that is required to be created.

Param_addressFamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter of this procedure.

Result_logicalGroup: This is of type LogicalGroup specifying the data for the logical group with the requested RecordId.

The following are the steps involved.

1. Lookup the ADM_LogicalGroupsTable for the row with the RecordId equal to Param_Id.
2. If Param_groupType is LogicalGroupType.Range,
    1. If Param_addressFamily is Internet, initialize Result_logicalGroup to IPv4RangeLogicalGroup.
    2. If Param_addressFamily is InternetV6, initialize Result_logicalGroup to IPv6RangeLogicalGroup.
3. If Param_groupType is LogicalGroupType.IPAddress,
    1. If Param_addressFamily is Internet, initialize Result_logicalGroup to IpamIPv4AddressLogicalGroup.
    2. If Param_addressFamily is InternetV6, initialize Result_logicalGroup to IpamIPv6AddressLogicalGroup.
4. If Param_groupType is LogicalGroupType.ActiveServer,
    1. If Param_addressFamily is Internet, initialize Result_logicalGroup to ActiveServerV4LogicalGroup.
    2. If Param_addressFamily is InternetV6, initialize Result_logicalGroup to ActiveServerV6LogicalGroup.
5. If the row is found, initialize Result_logicalGroup with the following values:
    1. Assign RecordId to Result_logicalGroup.RecordId.
    2. Copy LogicalGroupDetails to Result_logicalGroup.
    3. Assign Fields to Result_logicalGroup.Fields.
6. Return the Result_logicalGroup as the output parameter for this procedure.

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3.1.1.1.15.2.2 GetRootLogicalGroupNodesForLogicalGroup

This procedure can be used to create the LogicalGroupNode instances for the root level of the specified logical group. The following are the input parameters to this procedure:

Param_logicalGroup: This is the RecordId of the logical group for which the root-level logical group nodes are being requested.

The following is the output parameter of this procedure.

Result_logicalGroupNodes: This is the collection of LogicalGroupNode instances that form the root-level hierarchy for the logical group.

The following table specifies the logical group type, the object type associated, the type of the logical group nodes, and the address family associated with the logical group type.

LogicalGroup Type	AddressFamily	ObjectTypeEnumerationObjectType	LogicalGroupNode Type
IPv4RangeLogicalGroup	Internet	IPRange	IPv4RangeLogicalGroupNode
IPv6RangeLogicalGroup	InternetV6	IPRange	IPv6RangeLogicalGroupNode
IpamIPv4AddressLogicalGroup	Internet	IPAddress	IpamIPv4AddressLogicalGroupNode
IpamIPv6AddressLogicalGroup	InternetV6	IPAddress	IpamIPv6AddressLogicalGroupNode
ActiveServerV4LogicalGroup	Not Specified	ServerInfo	ActiveServerV4LogicalGroupNode
ActiveServerV6LogicalGroup	Not Specified	ServerInfo	ActiveServerV6LogicalGroupNode
IPv4SubnetLogicalGroup	Internet	IPSubnet	IPv4SubnetLogicalGroupNode
IPv6SubnetLogicalGroup	InternetV6	IPSubnet	IPv6SubnetLogicalGroupNode

The following are the processing steps involved.

1. Enumerate the rows in ADM_CustomFieldValuesAssociationTable that meet the following criteria.
   - CustomFieldId is equal to Param_logicalGroup.Fields[0].CustomFieldRecordId.
   - ObjectType is equal to the ObjectType for the Param_logicalGroup based on the previous table.
   - AddressFamily is equal to the AddressFamily for the Param_logicalGroup based on the previous table.
2. From the earlier set of rows, create a unique list of CustomFieldValueId that will form the basis for creating the LogicalGroupNode.
3. For each unique CustomFieldValueId enumerated from the previous step, perform the following steps.

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1. Create a new instance of logical group node based on the type for the logical group as specified in the previous table. Let this be referred to as logicalGroupNode.

2. Set logicalGroupNode.AncestorNodes to null.

3. Set logicalGroupNode.CustomFieldRecordId to Param_logicalGroup.Fields[0].CustomFieldRecordId.

4. Set logicalGroupNode.NodeLevel to Param_logicalGroup.Fields[0].RecordId.

5. Lookup the ADM_CustomFieldValuesTable with the RecordId equal to CustomFieldValueId being iterated. Assign the CustomFieldValueDetails.Value to logicalGroupNode.NodeValue.

6. If the logicalGroupNode is either IPv4RangeLogicalGroupNode or IPv6RangeLogicalGroupNode, the logicalGroupNode.UtilizationStatistics will be set with the utilization statistics for the ranges that form the part of the logical group. Call the procedure GetUtilizationForLogicalGroupNode passing logicalGroupNode as Param_logicalGroupNode, AddressFamily as Param_addressfamily. Assign Result_utilization to logicalGroupNode.UtilizationStatistics.

7. Add logicalGroupNode to Result_logicalGroupNodes.

4. Return Result_logicalGroupNodes as the output parameter for this procedure.

3.1.1.1.15.2.3 GetNextLevelLogicalGroupNodes

This procedure can be used to determine the collection of LogicalGroupNode instances that will form the next level of logical group nodes for the specified logical group node. The following are the input parameters for this procedure.

Param_logicalGroupNode: The logical group node for which the child nodes are to be enumerated.

The following is the output parameter of this procedure.

Result_logicalGroupNodes: The collection of LogicalGroupNode instances that form the child nodes of in a logical group hierarchy for the specified Param_logicalGroupNode.

The following table specifies the mapping between the LogicalGroupNode type of Param_logicalGroupNode and the LogicalGroupType and AddressFamily for the same.

LogicalGroupNode Type	AddressFamily	LogicalGroupType
IPv4RangeLogicalGroupNode	Internet	Range
IPv6RangeLogicalGroupNode	InternetV6	Range
ActiveServerV4LogicalGroupNode	Internet	ManagedServer
ActiveServerV6LogicalGroupNode	InternetV6	ManagedServer
IpamIPv4AddressLogicalGroupNode	Internet	IPAddress
IpamIPv6AddressLogicalGroupNode	InternetV6	IPAddress
IPv4SubnetLogicalGroupNode	Internet	Subnet
IPv6SubnetLogicalGroupNode	InternetV6	Subnet

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The following are the processing steps involved.

1. Call the procedure GetLogicalGroupFromTable passing the following parameters.
   - Param_logicalGroupNode.LogicalGroupRecordId as Param_Id.
   - Param_groupType is assigned the LogicalGroupType as per the mapping to the LogicalGroupNode type in the previous table.
   - Param_addressFamily is assigned the AddressFamily as per the mapping to the LogicalGroupNode type in the previous table.
2. Store Result_logicalGroup in logicalGroup.
3. Lookup the logicalGroup.Fields for the entry with LogicalGroupField.CustomFieldRecordId having the value Param_logicalGroupNode.CustomFieldRecordId. If this is the last entry in logicalGroup.Fields, there are no further levels. Set Result_logicalGroupNodes to an empty list and return it as output parameter.
4. Let logicalGroupField be initialized with the entry in logicalGroup.Fields, which will form the next level.
5. Enumerate the rows in ADM_CustomFieldValuesAssociationTable that meet the following criteria.
   - CustomFieldId is equal to logicalGroupField.CustomFieldRecordId.
   - ObjectType is equal to the ObjectType for the logicalGroup based on the table present in section 3.1.1.1.15.2.2.
   - AddressFamily is equal to the AddressFamily for the Param_logicalGroup based on the table present in section 3.1.1.1.15.2.2.
6. From the earlier set of rows, create a unique list of CustomFieldValueId, which will form the basis for creating the LogicalGroupNode.
7. For each unique CustomFieldValueId enumerated from the above step, perform the following steps.
   1. Create a new instance of logical group node based on the type for the logical group as specified in the table in section 3.1.1.1.15.2.2. Let this be referred to as logicalGroupNode.
   2. Set logicalGroupNode.AncestorNodes to null.
   3. Set logicalGroupNode.CustomFieldRecordId to logicalGroupField.CustomFieldRecordId.
   4. Set logicalGroupNode.NodeLevel to logicalGroupField.RecordId.
   5. Lookup the ADM_CustomFieldValuesTable with the RecordId equal to CustomFieldValueId being iterated. Assign the CustomFieldValueDetails.Value to logicalGroupNode.NodeValue.
   6. If the logicalGroupNode is either IPv4RangeLogicalGroupNode or IPv6RangeLogicalGroupNode, the logicalGroupNode.UtilizationStatistics will be set with the utilization statistics for the ranges that form the part of the logical group. Call the procedure GetUtilizationForLogicalGroupNode passing logicalGroupNode as Param_logicalGroupNode, AddressFamily as Param_addressfamily. Assign Result_utilization to logicalGroupNode.UtilizationStatistics.
   7. Add logicalGroupNode to Result_logicalGroupNodes.

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8. Return Result_logicalGroupNodes as the output parameter for this procedure.

3.1.1.1.16 ADM_DHCPServersTable

This is a compound table composed of IPv4-specific and IPv6-specific tables. This table models the server-level information for the DHCP server instances in the data store.

3.1.1.1.16.1 Data Model

RecordId – primary key: A 64-bit, unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of **DhcpServer** information.

ServerRoleRecordId: **foreign key (ADM_ServerRolesTable, RecordId) on delete cascade**: This specifies the DHCP server role row entry in the ADM_ServerRolesTable corresponding to the specific DHCP server role instance.

DHCPServerDetails: This consists of the various columns common to both IPv4-specific and IPv6-specific tables. These columns are modeled on the following properties of DhcpServer, which is the base type that both DhcpServerV4 and DhcpServerV6 extends.

- AuditLogginStatus
- BackupPath
- DatabasePath
- DiscardDnsRecordOnLeaseDeletionStatus
- DnsNameProtectionStatus
- DnsRegistrationCredentialDomainName
- DnsRegistrationCredentialUserName
- DnsUpdateType
- NumberOfActiveLeases
- NumberOfAvailableAddresses
- NumberOfScopes
- ServerVersion

DHCPServerDetails (IPv4-specific): For the IPv4-specific table, the following additional columns are present apart from the previously mentioned common columns. These are modeled on the following properties of DhcpServerV4.

- DhcpDnsNotRequestingClientsUpdateType
- DnsDisableDynamicPtsUpdates
- PolicyActivationStatus
- AllowFilterState
- DenyFilterState

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DHCPServerDetails (IPv6-specific): For the IPv6-specific table, the following additional columns are present apart from the previously mentioned common columns. These are modeled on the following properties of DhcpServerV6.

- PurgeInterval
- StatelessStatus

OptionDefinitions: This is the list of option definitions that are associated with the specific row of the DHCP server information. It is modeled on the DhcpOptionDefinition, with each entry in the list having the following values:

- Description
- Name
- OptionCollectionType
- OptionId
- RecordId
- OptionType
- Values

It also consists of VendorClassRecordId, which is an index into the VendorClasses associated with the server specifying the vendor class associated with the option definition. If the VendorClassRecordId is not set, it specifies the option definition for the default vendor class.

VendorClasses: This is a list of vendor classes that are defined on a server. It is modeled around the DhcpVendorClass (DhcpVendorClassV4 for IPv4-specific table and DhcpVendorClassV6 for IPv6-specific table).

UserClasses: This is a list of user classes that are defined on the server. It is modeled around the DhcpUserClass (DhcpUserClassV4 for IPv4-specific table and DhcpUserClassV6 for IPv6-specific table).

3.1.1.1.16.2 Procedures

3.1.1.1.16.2.1 GetDHCPServerFromTable

This procedure can be used to retrieve the DHCP server information in the form of DhcpServerV4 or DhcpServerV6, based on whether it is being invoked against the IPv4-specific table or IPv6-specific table. The procedure takes the following input parameters.

Param_Id: A 64-bit signed integer specifying the record identifier of the DHCP server instance for which the DhcpServer data is being requested for.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

This procedure returns the following value as output parameter.

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Result_server: This is of type DhcpServer. If the Param_addressfamily is Internet, this will be DhcpServerV4 and if the Param_addressfamily is InternetV6, this will be DhcpServerV6 type.

The following are the steps performed against the IPAM data store.

1. Lookup the row in the ADM_DHCPServersTable with RecordId equal Param_Id. If the row is not present, set Result_server to null and return.
2. If the Param_addressfamily is Internet, initialize Result_server to DhcpServerV4. If the Param_addressfamily is InternetV6, initialize Result_server to DhcpServerV6.
    1. Assign RecordId to Result_server.RecordId.
    2. Copy DHCPServerDetails to Result_server.
    3. Copy the OptionDefinitions to Result_server.OptionDefinitions.
    4. Copy the UserClasses to Result_server.UserClasses.
    5. Copy the VendorClasses to Result_server.VendorClasses.
    6. Call the procedure GetDhcpOptions of ADM_DhcpOptionsTable with the following parameters:
        - Param_OptionOwnerType is set to DhcpOptionOwnerType.Server.
        - Param_scopeId is set to null.
        - Param_serverId is set to Param_Id.
    7. Assign the Result_optionCollection to Result_server.Options.
    8. Initialize Result_server.ServerRoleInfo to ServerRoleDhcp and copy the following properties to it:
        - DHCPServerDetails:AuditLoggingStatus to Result_server.ServerRoleInfo.AuditLoggingStatus.
        - DHCPServerDetails.BackupPath to Result_server.ServerRoleInfo.BackupPath.
        - DHCPServerDetails.DatabasePath to Result_server.ServerRoleInfo.DatabasePath.
    9. Call the procedure GetServerRoleInfoFromTable of ADM_ServerRoleInfoTable by passing the following parameters:
        - Param_Id is set to ServerRoleRecordId.
3. Copy the Result_serverRole to Result_server.ServerRoleInfo.
4. Call GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:
5. Param_objectId is set to Param_Id.
6. Param_objectType is set to IpamObjectType.DhcpServerV4 if addressfamily is Internet or IpamObjectType. DhcpServerV6 if addressfamily is Internetv6.
7. Param_accessScopeId.
8. Param_objectInheritanceStatus.

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9. Param_inheritanceId.

Assign Param_accessScopeId to Result_server.AccessScopeId.

Assign Param_objectInheritanceStatus to Result_server. IsInheritedAccessScope.

- Return Result_server from the procedure.

3.1.1.1.16.2.2 GetUserClassFromServer

This procedure can be used to retrieve a specific DhcpUserClass in the form of either DhcpUserClassV4 or DhcpUserClassV6, based on whether the procedure is invoked against the IPv4-specific or IPv6-specific table, respectively.

It takes the following as input parameters.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

Param_serverRecordId: The record identifier of the DHCP Server instance from which the user class information is to be retrieved.

Param_userClassRecordId: The record identifier of the user class instance that is being requested.

The following is the output of this procedure.

Result_userClass: This will be of type DhcpUserClassV4 if the Param_addressfamily is Internet. Otherwise, if the Param_addressfamily is InternetV6, this will be of type DhcpUserClassV6.

The following are the processing steps involved.

1. Lookup the server entry in ADM_DHCPServersTable having RecordId equal to Param_serverRecordId.
2. If the entry is not found, set Result_userClass to null and return.
3. Lookup the UserClasses of the server row for the user class with RecordId value being Param_userClassRecordId.
4. If the entry is not found, set Result_userClass to null and return.
5. If Param_addressfamily is Internet, initialize Result_userClass to DhcpUserClassV4. If Param_addressfamily is InternetV6, initialize Result_userClass to DhcpUserClassV6.
6. Copy the user class details to Result_userClass.
7. Return Result_userClass as the output parameter of the procedure.

3.1.1.1.16.2.3 GetVendorClassFromServer

This procedure can be used to retrieve a specific DhcpVendorClass in the form of either DhcpVendorClassV4 or DhcpVendorClassV6, based on whether the procedure is invoked against the IPv4-specific or IPv6-specific table, respectively.

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It takes the following as input parameters.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

Param_serverRecordId: The record identifier of the DHCP Server instance from which the vendor class information is to be retrieved.

Param_vendorClassRecordId: The record identifier of the vendor class instance that is being requested.

The following is the output of this procedure.

Result_vendorClass: This will be of type DhcpVendorClassV4 if the Param_addressfamily is Internet. Otherwise, if the Param_addressfamily is InternetV6, this will be of type DhcpVendorClassV6.

The following are the processing steps involved.

1. Lookup the server entry in ADM_DHCPServersTable having RecordId equal to Param_serverRecordId.
2. If the entry is not found, set Result_vendorClass to null and return.
3. Lookup the VendorClasses of the server row for the user class with RecordId value being Param_vendorClassRecordId.
4. If the entry is not found, set Result_vendorClass to null and return.
5. If Param_addressfamily is Internet, initialize Result_vendorClass to DhcpVendorClassV4. If Param_addressfamily is InternetV6, initialize Result_vendorClass to DhcpVendorClassV6.
6. Copy the vendor class details to Result_vendorClass.
7. Return Result_vendorClass as the output parameter of the procedure.

3.1.1.1.16.2.4 GetOptionDefinitionFromServer

This procedure can be used to retrieve a specific DhcpOptionDefinition in the form of either DhcpOptionDefinitionV4 or DhcpOptionDefinitionV6, based on whether the procedure is invoked against the IPv4-specific or IPv6-specific table, respectively.

It takes the following as input parameters.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

Param_serverRecordId: The record identifier of the DHCP Server instance from which the vendor class information is to be retrieved.

Param_optionDefinitionId: The record identifier of the option definition instance that is being requested.

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The following is the output of this procedure.

Result_optionDefinition: This will be of type DhcpOptionDefinitionV4 if the Param_addressfamily is Internet. Otherwise, if the Param_addressfamily is InternetV6, this will be of type DhcpOptionDefinitionV6.

The following are the processing steps involved.

1. Lookup the server entry in ADM_DHCPServersTable having RecordId equal to Param_serverRecordId.
2. If the entry is not found, set Result_optionDefinition to null and return.
3. Lookup the OptionDefinitions of the server row for the user class with RecordId value being Param_optionDefinitionId.
4. If the entry is not found, set Result_optionDefinition to null and return.
5. If Param_addressfamily is Internet, initialize Result_optionDefinition to DhcpOptionDefinitionV4. If Param_addressfamily is InternetV6, initialize Result_optionDefinition to DhcpOptionDefinitionV6.
6. Copy the option definition details to Result_optionDefinition.
7. If VendorClassRecordId is also set, call the procedure GetVendorClassFromServer passing the following parameters:
   - Param_addressfamily
   - VendorClassRecordId as Param_vendorClassRecordId
   - Param_serverRecordId
8. Set Result_vendorClass received to Result_optionDefinition.VendorClass.
9. Return Result_optionDefinition as the output parameter of the procedure.

3.1.1.1.17 ADM_DhcpOptionsTable

This is a compound table that has IPv4-specific and IPv6-specific simple tables within it. This table models the DHCP scope-level/server-level options in the IPAM data store.

3.1.1.1.17.1 Data Model

RecordId: **primary key**: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** of the **DhcpOption** data structure.

ServerRecordId: foreign key (ADM_DHCPServersTable, RecordId) on delete cascade: This is the record identifier of the DHCP server in which the option is defined.

ScopeRecordId: foreign key (ADM_DHCPScopesTable, RecordId) on delete cascade: This is the record identifier of the DHCP scope in which the option is defined. This will not be set if the row represents a server-level option.

OptionDefinitionRecordId : foreign key (ADM_DHCPServersTable.OptionDefinitions, RecordId) on delete no action: This is the record identifier of the option definition corresponding to the DHCP option information.

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UserClassRecordId: foreign key (ADM_DHCPServersTable.UserClasses, RecordId) on delete no action: This is the record identifier of the user class for which the row specifies the option value.

OptionReferenceType: This is of type DhcpOptionOwnerType, specifying whether the option is defined at the DHCP server level or at the DHCP scope level.

Values: This is a binary BLOB specifying the value for the option.

ReservationId: This is the record identifier of the DhcpReservation for which the row specifies the option value.

For an IPv4-specific table, the following additional columns are present apart from the previously mentioned common columns:

PolicyId: foreign key (ADM_DhcpPolicyTable, PolicyId) on delete no action, on update no action

This is the record identifier of the DhcpPolicy for which the row specifies the option value.

3.1.1.1.17.2 Procedures

3.1.1.1.17.2.1 GetDhcpOptions

This procedure is used to retrieve the DHCP options defined at either the server level or at the scope level. The following are the input parameters for this procedure.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

Param_ServerRecordId: This specifies the record identifier of the server for which the options are being requested.

Param_ScopeRecordId: This specifies the record identifier of the scope for which the options are being requested. If this is specified, the scope-level options for the scope defined on the server specified by Param_ServerRecordId are returned. Otherwise the server-level options are returned.

The following is the output of this procedure.

Result_options: This is a collection of DhcpOption. Based on the Param_addressfamily, this will be composed of a collection of either DhcpOptionV4 or DhcpOptionV6.

The following are the processing steps involved.

1. Initialize Result_options with a collection of DhcpOption.
2. Enumerate the rows in ADM_DhcpOptionsTable meeting the following criteria:
   - ServerRecordId is equal to Param_ServerRecordId.
   - If Param_ScopeRecordId is specified, ScopeRecordId is equal to Param_ScopeRecordId.
3. For each of the rows, perform the following steps:

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4. If the Param_addressfamily is Internet, create an instance of DhcpOptionV4. Otherwise if the Param_addressfamily is InternetV6, create an instance of DhcpOptionV6. Fill the values as follows:

    1. Assign OptionReferenceType to DhcpOption.OptionOwnerType.

    2. Assign RecordId to DhcpOption.RecordId.

    3. Call the procedure GetUserClassFromServer in ADM_DHCPServersTable passing the following parameters:

        - Param_addressfamily.

        - Param_ServerRecordId is set to ServerRecordId.

        - Param_UserClassRecordId is set to UserClassRecordId.

    4. Assign the Result_userClass to DhcpOption.UserClass.

    5. Call the procedure GetOptionDefinitionFromServer in ADM_DHCPServersTable passing the following parameters:

        - Param_addressfamily.

        - Param_ServerRecordId is set to ServerRecordId.

        - Param_OptionDefinitionId is set to OptionDefinitionRecordId.

    6. Assign the Result_optionDefinition to DhcpOption.OptionDefinition.

    7. Based on DhcpOption.OptionDefinition.OptionType and DhcpOption.OptionDefinition.OptionCollectionType, assign Values to DhcpOption.Values by converting the binary data into the type specified by OptionType. Add the instance to Result_options.

5. Return Result_options as the output of the procedure.

3.1.1.1.17.2.2 GetPolicyOptions

This procedure is specific to usage with IPv4 and is used to retrieve the DHCP options defined at either the server level or at the scope level for a specific DHCP policy. The following are the input parameters for this procedure.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

Param_ServerRecordId: This specifies the record identifier of the server for which the options are being requested.

Param_ScopeRecordId: This specifies the record identifier of the scope for which the options are being requested. If this is specified, the scope-level options for the scope defined on the server specified by Param_ServerRecordId are returned. Otherwise the server-level options are returned.

Param_PolicyRecordId: This specifies the record identifier of the DhcpPolicy for which the options are being requested.

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The following is the output of this procedure.

Result_options: This is a collection of DhcpOption. Based on the Param_addressfamily, this will be composed of a collection of either DhcpOptionV4 or DhcpOptionV6.

The following are the processing steps involved.

1. Initialize Result_options with a collection of DhcpOption.
2. Enumerate the rows in ADM_DhcpOptionsTable meeting the following criteria:
3. ServerRecordId is equal to Param_ServerRecordId.
4. If Param_ScopeRecordId is specified, ScopeRecordId is equal to Param_ScopeRecordId.
5. If Param_PolicyRecordId is specified, PolicyRecordId is equal to Param_PolicyRecordId.
6. For each of the rows, perform the following steps:
7. If the Param_addressfamily is Internet, create an instance of DhcpOptionV4. Otherwise if the Param_addressfamily is InternetV6, create an instance of DhcpOptionV6. Add it to Result_options. Fill the values as follows:
    1. Assign OptionReferenceType to DhcpOption.OptionOwnerType.
    2. Assign RecordId to DhcpOption.RecordId.
    3. Call the procedure GetUserClassFromServer in ADM_DHCPServersTable passing the following parameters:
    4. Param_addressfamily.
    5. Param_ServerRecordId is set to ServerRecordId.
    6. Param_UserClassRecordId is set to UserClassRecordId.
    7. Assign the Result_userClass to DhcpOption.UserClass.
    8. Call the procedure GetOptionDefinitionFromServer in ADM_DHCPServersTable passing the following parameters:
    9. Param_addressfamily.
    10. Param_ServerRecordId is set to ServerRecordId.
    11. Param_OptionDefinitionId is set to OptionDefinitionRecordId.
    12. Assign the Result_optionDefinition to DhcpOption.OptionDefinition.
    13. Based on DhcpOption.OptionDefinition.OptionType and DhcpOption.OptionDefinition.OptionCollectionType, assign Values to DhcpOption.Values by converting the binary data into the type specified by OptionType.
8. Return Result_options as the output of the procedure.

3.1.1.1.18 ADM_DnsServersTable

This is a simple table that consists of the DNS server health information.

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3.1.1.1.18.1 Data Model

RecordId: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the RecordId of the ServerRoleDns.

ServerRoleRecordId: **foreign key (ADM_ServerRolesTable, RecordId) on delete cascade**: This specifies the DNS server role row entry in the ADM_ServerRolesTable which is corresponding to the specific DNS server role instance.

DNSServerHealthDetails: These are the set of properties that are modeled on the following properties of DnsServer.

- ZoneHealthSummary
- ZoneHealthSummaryLastUpdateTime

3.1.1.1.18.2 Procedures

3.1.1.1.18.2.1 GetDnsServerFromTable

This procedure can be used to retrieve the DnsServer instance from the ADM_DnsServersTable. It takes the following input parameter:

Param_Id: The RecordId of the DNS server in ADM_DnsServersTable for which the information is being requested.

The procedure returns the following output parameter:

Result_DnsServer: This is of type DnsServer specifying the DNS server information.

The following are the steps involved:

1. Lookup ADM_DnsServersTable for the row with RecordId being Param_Id.
2. If the row doesn't exist, initialize Result_DnsServer to null and return.
3. Copy the DNSServerHealthDetails to Result_DnsServer.
4. Call the procedure GetServerRoleInfoFromTable in ADM_ServerRoleDetailsTable by passing RecordId as Param_Id. Assign the Result_serverRole to Result_DnsServer.ServerRoleInfo.
5. Return Result_serverRole as the output of the procedure.

3.1.1.1.19 ADM_DnsZoneEventsTable

This simple table contains the DNS zone-related events pertaining to various DNS forward zone and server instances.

3.1.1.1.19.1 Data Model

RecordId:primary key: A 64-bit signed integer that is unique to each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the RecordId of the DnsZoneEvent.

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ServerZoneId:foreign key (ADM_DnsServerForwardLookupZoneTable, RecordId) on delete cascade: This is the entry in the ADM_DnsServerForwardLookupZoneTable that specifies the DNS server and DNS zone mapping, against which the DNS zone-specific event is logged.

EventDetails: This is composed of the various properties of the zone event that are modeled on the following members of the DnsZoneEvent.

- EventId
- EventParametersString
- LoggedEventLevel
- LoggedOn
- TaskCategory

3.1.1.1.19.2 Procedures

3.1.1.1.19.2.1 GetDnsZoneEventFromTable

This procedure provides the DnsZoneEvent data for the row with the specified RecordId parameter. The following are the input parameters to this procedure.

Param_Id: This specifies the RecordId of the row for which the DnsZoneEvent is requested.

The following is the output parameter of this procedure.

Result_event: This is the DnsZoneEvent for the record identifier specified as input parameter.

The following are the steps involved.

1. Lookup the row in ADM_DnsZoneEventsTable with RecordId equal to Param_Id.
2. Initialize Result_event with an instance of DnsZoneEvent.
3. Copy EventDetails from the row to Result_event.
4. Assign RecordId to Result_event.RecordId.
5. Assign ServerZoneId to Result_event.ServerZoneId.
6. Call the procedure GetDnsServerZoneFromTable in ADM_DNSServerForwardLookupZoneTable passing ServerZoneId as parameter and assign Result_zone to Result_event.ServerZone.
7. Return Result_event as the output parameter.

3.1.1.1.20 ADM_ServerRolesTable

This simple table models the various components (such as DHCP, DNS, NPS, DC, and so on) that are available on the various server instances in the IPAM data store.

3.1.1.1.20.1 Data Model

RecordId: **primary key:** A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** field of the **ServerRole** data structure.

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ServerRecordID: **foreign key (ADM_ServersTable, RecordId) on delete cascade**: This specifies the record identifier of the row in the ADM_ServersTable that specifies the server on which the server role is present.

ServerRoleDetails: This specifies the properties pertaining to the specific server role instance. These details are modeled on the following properties of the ServerRole data structure.

- AuditFileAccessStatus
- EventViewerAccessStatus
- LastRefreshTime
- RpcAccessStatus
- ServerRoleFlag
- ServerRoleInclusionStatus
- ServerStatus
- ServiceStatusModifiedTime

The ServerRoleFlag has to be unique for any given **ServerRecordID**, which means that the given combination of Server Record Identifier and the ServerRoleFlag has to be unique in the table.

3.1.1.1.20.2 Procedures

3.1.1.1.20.2.1 GetServerRoleInfoFromTable

This procedure can be used to retrieve the ServerRole information. The following is the input parameter to the procedure.

Param_Id: This is a 64-bit signed integer specifying the record identifier of the ServerRole information to be retrieved.

The following is the output of this procedure.

Result_serverRole: This is of type ServerRole containing the ServerRole of the row with RecordId value being the Param_Id specified.

The following are the steps involved:

- Lookup the row in the ADM_ServerRolesTable with RecordId value being Param_Id.
- Initialize Result_serverRole with ServerRoleInfo.
- Assign Result_serverRole.RecordId with RecordId of the row.
- Copy the ServerRoleDetails into Result_serverRole.
- Call the procedure GetServerInfoFromTable in ADM_ServersTable by passing ServerRecordID as Param_Id. Assign the Result_serverInfo to Result_serverRole.ParentServer.

3.1.1.1.20.2.2 GetServerRolesForServer

This procedure can be used to get the list of server roles that are present on a server. It takes the following input parameter.

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Param_serverInfo: The ServerInfo instance for which the ServerRoles are being queried.

There are no output parameters for this procedure. The Param_serverInfo.ServerRoleCollection is filled with the various server roles for the server instance provided.

The following are the steps involved:

1. Enumerate the rows in ADM_ServerRolesTable having ServerRecordId being Param_serverInfo.RecordId.
2. Initialize Param_serverInfo.ServerRoleCollection.
3. For each row meeting the criteria, perform the following steps.
   - Create an instance of ServerRoleInfo with the following assignments:
     1. Assign RecordId to ServerRoleInfo.RecordId.
     2. Copy ServerRoleDetails into ServerRoleInfo.
     3. Set ServerRoleInfo.ServerInfo to Param_serverInfo.

3.1.1.1.21 ADM_ServersTable

This simple table models the various server instances that are present in the IPAM data store.

3.1.1.1.21.1 Data Model

RecordId: **primary key**: A 64-bit unique signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table. This forms the **RecordId** member of the **ServerInfo** data structure.

ADDomainRecordId : **foreign key(ADM_DiscoveryConfigurationTable, RecordId) on delete cascade**: This specifies the record identifier of the row in the ADM_DiscoveryConfigurationTable which is specifying the domain information for the server.

ServerInfoDetails: A number of server-specific properties that are modeled as the following set of fields in the ServerInfo data structure.

- ADDomain
- ConfigurationRetrievalFlag
- Description
- Domain
- IPAddresses
- LastModified
- ManagementStatus
- Name
- NewFlag
- OSName

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- OSVersion
- Owner
- SamAccountName
- ServerGuid

The ServerGuid for each row has to be unique, which means that for each entry specific to a server instance, the ServerGuid has to be a unique value.

3.1.1.1.21.2 Procedures

3.1.1.1.21.2.1 GetServerInfoFromTable

This procedure can be used to retrieve common details of the server instances in the IPAM data store. It takes the following input parameter.

Param_id: The record identifier of the server information to be retrieved.

The procedure returns the following as the output parameter:

Result_serverInfo: The ServerInfo instance for the server information requested.

The following are the processing steps:

1. Lookup the ADM_ServersTable for the row with RecordId equal to Param_id.
2. If it is no found, set Result_serverInfo to null and return.
3. Initialize Result_serverInfo to ServerInfo.
4. Set Result_serverInfo.RecordId to Param_id.
5. Copy the ServerInfoDetails into Result_serverInfo.
6. Retrieve the custom field values for the server instance by calling the GetCustomFieldValues procedure of ADM_CustomFieldValuesAssociationTable passing the following parameters:
   - Param_ObjectType is set to EnumerationObjectTypes.ServerInfo.
   - Param_addressFamily is not specified, as ServerInfo is address family agnostic.
   - Param_ObjectRecordId is set to Param_id.
7. Assign Result_customFieldValueList to ServerInfo.ServerCustomDataCollection.
8. Call the procedure GetServerRolesForServer in ADM_ServerRolesTable to update the server role list in the ServerInfo.

3.1.1.1.21.2.2 GetFilteredServerInfoFromTable

This procedure can be used to retrieve a filtered set of ServerInfo data from the ADM_ServersTable.

Param_filters: This is a list of key value pairs specifying the various unique filter conditions. The key is one of the ServerInfoGetServerFilter value and the value specifies the corresponding filter value to be applied.

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The following table lists the filter condition and the criteria corresponding to the same.

Key	Value Type	Criteria
IPSubnet	IP Address in String Format	The specified subnet is matched against the ServerInfoDetails.IPAddresses for /16 prefix match for IPv4 address and /48 for IPv6 address.
RecordId	64-bit signed integer	RecordId
Guid	Guid	ServerInfoDetails.ServerGuid
Role	ServerRoleType	Record exists in ADM_ServerRolesTable wherein ServerRecordID is equal to RecordId of the row in ADM_ServersTable and ServerRoleDetails.ServerRoleFlag is equal to the specified Role value.
InclusionStatus	Boolean	ServerInfoDetails.ManagementStatus
Name	String	ServerInfoDetails.Name
IPType	AddressFamily	ServerInfoDetails.IPAddresses contains addresses of the specified address family.
MultipleRole	ServerMultipleRole	ADM_ServerRolesTable wherein ServerRecordID is equal to RecordId of the row in ADM_ServersTable and ServerRoleDetails.ServerRoleFlag is equal to either ServerRoleType.Dhcp or ServerRoleType.Dns.

The following is the output parameter of this procedure:

Result_filteredServerInfoRows: This is a collection of ServerInfo objects that have met the given filter conditions.

The following are the steps involved.

1. Enumerate the rows in the ADM_ServersTable which meet the criteria specified in Param_filters.
2. For each row that meets the specified conditions:
   - Call the procedure GetServerInfoFromTable of ADM_ServersTable passing the RecordId of the row as Param_Id input parameter. Add the returned ServerInfo data to Result_filteredServerInfoRows.
3. Return Result_filteredServerInfoRows as the output parameter of this procedure.

3.1.1.1.22 ADM_IPv4AddressRangeUtilizationTable

This simple table contains the address utilization data for the various address ranges at various times. Each row in the table specifies the address utilization at a particular point in time. This is used to gather the address utilization trend over a period of time. This table contains the data for the **IP address range utilization** specific to IPv4 only.

3.1.1.1.22.1 Data Model

RangeRecordId: **foreign key (ADM_IPRangeTable, RecordId) on delete set null**

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This is the RecordId for the address range for which the row specifies the utilization data at a particular point in time.

StartIPAddress: This is the start address of the address range for which the row specifies the utilization data. This is modeled on the IPRange.StartIPAddress.

EndIPAddress: This is the end address of the address range for which the row specifies the utilization data. This is modeled on the IPRange.EndIPAddress.

PrefixLength: This is the prefix length of the address range for which the row specifies the utilization data. This is modeled on the IPRange.PrefixLength.

ManagedBy: The value of the built-in custom field "Managed By" of the address range. This is of string type.

ManagedByEntity: The value of the built-in custom field "Managed By Entity" of the address range. This is of string type.

Timestamp: This is a datetime value specifying the time stamp at which the utilization data was calculated.

AddressSpaceRecordId: Foreign key (**ADM_AddressSpaceTable, RecordId**) on update no action, on delete no action.

AddressUtilizationData: This specifies the address utilization information. This contains properties that are modeled on the following members of IPUtilization:

- TotalAssignedAddresses
- TotalAvailableAddresses
- TotalUtilizedAddresses

3.1.1.1.22.2 Procedures

3.1.1.1.22.2.1 GetRangeUtilization

This procedure is used to retrieve the address utilization trend information. The following are the input parameters to this procedure.

Param_id: This is a 64-bit unsigned integer specifying the record identifier of the range for which the utilization needs to be computed.

Param_addressfamily: The address family of the range for which the utilization is being requested.

Param_utilizationType: This is of type IPUtilizationType specifying the type of utilization data that is being requested.

Param_startDate: The start date of the period for which the utilization trend is being requested.

Param_endDate: The end date of the period for which the utilization trend is being requested.

The following is the output result of the procedure.

result: This is modeled on the IPCumulativeUtilization to provide a series of data points that specify the utilization data at various points in time.

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The steps involved are as follows.

1. Get the IPRange corresponding to the Param_id specified by invoking the GetIPRangeFromTable procedure of ADM_IPRangeTable by passing the Param_id and Param_addressfamily as input parameters.

2. Based on the Param_utilizationType, adjust the Param_startDate and Param_endDate so that it reflects the duration requested appropriately, so that if the Param_utilizationType is IPUtilizationType.OneDay, choose the Param_startDate and Param_endDate to be that of the last 24 hours. Similarly, if the Param_utilizationType is IPUtilizationType.OneYear, choose the Param_startDate and Param_endDate to be that of the last one-year period. If the Param_utilizationType is IPUtilizationType.Current, the specified Param_startDate and Param_endDate are used appropriately.

3. Enumerate the rows in the ADM_IPv4AddressUtilizationTable that are between the Param_startDate and Param_endDate and have the specified StartIPAddress, EndIPAddress, AddressSpaceRecordId, and PrefixLength.

4. Divide the time between Param_startDate and Param_endDate into 12 time periods and compute the utilization of the address ranges within those time periods in an implementation-specific manner. These 12 time periods will be used to form 12 rows of IPUtilization type and the average utilization is specified in the form of IPUtilization.TotalAvailableAddresses, IPUtilization.TotalAssignedAddresses, and IPUtilization.TotalUtilizedAddresses. Assign the 12 IPUtilization instances to IPCumulativeUtilization.IpUtilization.

5. Return the IPCumulativeUtilization instance created earlier.

3.1.1.1.23 ADM_IPv4AddressBlockUtilizationTable

This simple table contains the address utilization data for the various address blocks at various times. Each row in the table specifies the **IP address block utilization** at a particular point in time. This is used to gather the IP address block utilization trend over a period of time. This table contains the data for the IP address block utilization specific to IPv4 only.

3.1.1.1.23.1 Data Model

BlockRecordId: **foreign key (ADM_IPBlocksTable, RecordId) on delete set null**

This is the RecordId for the address block for which the row specifies the utilization data at a particular point in time.

StartIPAddress: This is the start address of the address block for which the row specifies the utilization data. This is modeled on the IPBlock.StartIPAddress.

EndIPAddress: This is the end address of the address block for which the row specifies the utilization data. This is modeled on the IPBlock.EndIPAddress.

PrefixLength: This is the prefix length of the address block for which the row specifies the utilization data. This is modeled on the IPBlock.PrefixLength.

Timestamp: This is a datetime value specifying the time stamp at which the utilization data was calculated.

AddressSpaceRecordId: foreign key (ADM_AddressSpaceTable, RecordId) on update no action, on delete no action:

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IsSubnet: This column value is set to 1 if the row contains utilization data for a Subnet or to 0 if the row contains utilization data for an IPBlock.

AddressUtilizationData: This specifies the address utilization information. This contains properties that are modeled on the following members of IPUtilization:

- TotalAssignedAddresses
- TotalAvailableAddresses
- TotalUtilizedAddresses

3.1.1.1.23.2 Procedures

3.1.1.1.23.2.1 GetAddressBlockUtilization

This procedure is used to retrieve the address utilization trend information. The following are the input parameters to this procedure.

Param_id: This is a 64-bit unsigned integer specifying the record identifier of the address block for which the utilization needs to be computed.

Param_addressfamily: The address family of the block for which the utilization is being requested.

Param_utilizationType: This is of type IPUtilizationType specifying the type of utilization data that is being requested.

Param_startDate: The start date of the period for which the utilization trend is being requested.

Param_endDate: The end date of the period for which the utilization trend is being requested.

The following is the output result of the procedure.

result: This is modeled on the IPCumulativeUtilization to provide a series of data points that specify the utilization data at various points in time.

The steps involved are as follows.

1. Get the IPBlock corresponding to the Param_id specified by invoking the GetIPBlockFromTable procedure of ADM_IPBlocksTable by passing the Param_id and Param_addressfamily as input parameters.

2. Based on the Param_utilizationType, adjust the Param_startDate and Param_endDate so that it reflects the duration requested appropriately, that is, if the Param_utilizationType is IPUtilizationType.OneDay, choose the Param_startDate and Param_endDate to be that of the last 24 hours. Similarly if the Param_utilizationType is IPUtilizationType.OneYear, choose the Param_startDate and Param_endDate to be that of the last one-year period. If the Param_utilizationType is IPUtilizationType.Current, the specified Param_startDate and Param_endDate are used appropriately.

3. Enumerate the rows in the ADM_IPv4AddressBlockUtilizationTable that are between the Param_startDate and Param_endDate and that have the specified StartIPAddress, EndIPAddress, AddressSpaceRecordId, and PrefixLength.

4. Divide the time between Param_startDate and Param_endDate into 12 time periods and compute the utilization of the address ranges within those time periods in an implementation-specific

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manner. These 12 time periods will be used to form 12 rows of IPUtilization type and the average utilization is specified in the form of IPUtilization.TotalAvailableAddresses, IPUtilization.TotalAssignedAddresses, and IPUtilization.TotalUtilizedAddresses. Assign the 12 IPUtilization instances to IPCumulativeUtilization.IpUtilization.

5. Return the IPCumulativeUtilization instance created earlier.

3.1.1.1.24 ADM_IPAddressAuditTable

This simple table contains the information pertaining to the various address assignment events provided by the DHCP server audit log, event log information for the user logon/logoff events provided by the domain controllers and the NPS servers.

3.1.1.1.24.1 Data Model

RecordId (primary key): This is a 64-bit signed integer that is unique for every row in the ADM_IPAddressAuditTable. This forms the **IPAuditRow.RecordId**.

AuditEventDetails: This consists of the various data pertaining to the IP address audit information. They are modeled on the following properties of IPAuditRow.

- TimeOfEvent
- EventType
- UserName
- ClientId
- IPAddress
- HostName
- DomainName
- SourceServerName
- ServerType

3.1.1.1.24.2 Procedures

3.1.1.1.24.2.1 SearchIPAddressAuditByIPAddress

This procedure can be used to search the ADM_IPAddressAuditTable based on the specified search condition. The following are the input parameters to this procedure.

Param_IPAddress: The IP address for which the audit information is being requested.

Param_StartDate: The Start date from when the events pertaining to the specified IP address is being requested.

Param_EndDate: The End date till when the events pertaining to the specified IP address is being requested.

Param_correlateUserLogon: A Boolean flag indicating whether the IP Address specified has to be correlated to possible user logon/logoff event information that might be in the table.

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The following is the output parameter for this procedure.

Result_searchResult: This is a collection of IPAuditRecord having the result for the specified search criteria.

The following are the steps involved.

1. Enumerate the rows in the table which meet the following criteria:
   - TimeOfEvent >= Param_StartDate
   - TimeOfEvent <= Param_EndDate
   - IPAddress = Param_IPAddress
2. For each matching row,
   1. Create an instance of IPAuditRecord, copy the row details to it and add it to Result_searchResult.
   2. If Param_correlateUserLogon flag is set, perform any additional correlation to the map the IP address to the user logon/logoff event that might have occurred during the time period in an implementation-specific manner.
   3. For each of the rows that have been obtained based on correlation, create the IPAuditRecord, copy the row details to it and add it to Result_searchResult.
3. Return Result_searchResult as the output parameter.

3.1.1.1.24.2.2 SearchIPAddressAuditByMacAddress

This procedure can be used to search the ADM_IPAddressAuditTable based on the specified search condition. The following are the input parameters to this procedure.

Param_MacAddress: The MAC address of the device for which the audit information is being requested.

Param_StartDate: The Start date from when the events pertaining to the specified MAC address is being requested.

Param_EndDate: The End date till when the events pertaining to the specified MAC address is being requested.

Param_correlateUserLogon: A Boolean flag indicating whether the MAC address specified has to be correlated to possible user logon/logoff event information that might be in the table.

The following is the output parameter for this procedure.

Result_searchResult: This is a collection of IPAuditRecord having the result for the specified search criteria.

The following are the steps involved:

1. Enumerate the rows in the table that meet the following criteria:
   - TimeOfEvent >= Param_StartDate
   - TimeOfEvent <= Param_EndDate

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- ClientId = Param_MacAddress

2. For each of the row enumerated above,

    1. Create an instance of IPAuditRecord, copy the row details to it and add it to Result_searchResult.

    2. If Param_correlateUserLogon flag is set, perform any additional correlation to the map the MAC address to the IP addresses and from IP addresses to the user logon/logoff event which might have occurred during the time period in an implementation specific manner.

    3. For each of the rows which have been obtained based on correlation, create the IPAuditRecord, copy the row details to it and add it to Result_searchResult.

3. Return Result_searchResult as the output parameter.

3.1.1.1.24.2.3 SearchIPAddressAuditByUserName

This procedure can be used to search the ADM_IPAddressAuditTable based on the specified search condition. The following are the input parameters to this procedure.

Param_UserName: The user name information for which the audit information is being requested.

Param_StartDate: The Start date from when the events pertaining to the specified user name is being requested.

Param_EndDate: The End date till when the events pertaining to the specified user name is being requested.

Param_correlateUserLogon: A Boolean flag indicating whether the user name specified has to be correlated to possible IP address and device-related event information that might be in the table.

The following is the output parameter for this procedure.

Result_searchResult: This is a collection of IPAuditRecord having the result for the specified search criteria.

The following are the steps involved.

1. Enumerate the rows in the table which meet the following criteria:

    - TimeOfEvent >= Param_StartDate

    - TimeOfEvent <= Param_EndDate

    - UserName = Param_UserName

2. For each of the rows enumerated above,

    1. Create an instance of IPAuditRecord, copy the row details to it, and add it to Result_searchResult.

    2. If Param_correlateUserLogon flag is set, perform any additional correlation to the map the user's logon/logoff event information to IP address and MAC address information in an implementation-specific manner.

    3. For each of the rows that have been obtained based on correlation, create the IPAuditRecord, copy the row details to it, and add it to Result_searchResult.

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3. Return Result_searchResult as the output parameter.

3.1.1.1.24.2.4 SearchIPAddressAuditByHostName

This procedure can be used to search the ADM_IPAddressAuditTable based on the specified search condition. The following are the input parameters to this procedure.

Param_HostName: The host name information for which the audit information is being requested.

Param_StartDate: The Start date from when the events pertaining to the specified host name is being requested.

Param_EndDate: The End date till when the events pertaining to the specified host name is being requested.

Param_correlateUserLogon: A Boolean flag indicating whether the host name specified has to be correlated to possible user, IP address, and device-related event information that might be in the table.

The following is the output parameter for this procedure.

Result_searchResult: This is a collection of IPAuditRecord having the result for the specified search criteria.

The following are the steps involved.

1. Enumerate the rows in the table that meet the following criteria:
   - TimeOfEvent >= Param_StartDate
   - TimeOfEvent <= Param_EndDate
   - HostName = Param_HostName
2. For each of the row enumerated above,
   1. Create an instance of IPAuditRecord, copy the row details to it, and add it to Result_searchResult.
   2. If the Param_correlateUserLogon flag is set, perform any additional correlation to the map the host name to IP address, MAC address and from there correlate to user's logon/logoff event information.
   3. For each of the rows that have been obtained based on correlation, create the IPAuditRecord, copy the row details to it, and add it to Result_searchResult.
3. Return Result_searchResult as the output parameter.

3.1.1.1.25 ADM_ConfigurationAuditTable

This simple table is used to model the configuration audit table in the IPAM data store that has the various configuration change events of DHCP server instances and those generated by IPAM server.

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3.1.1.1.25.1 Data Model

RecordId: primary key: A 64-bit signed integer that uniquely identifies a row in the table. When a new row is added into the table, a unique identifier is automatically generated for this field. This forms the RecordId field of ConfigurationAuditRecord.

EventDetails: This contains the various properties of the events that are modeled on the following members of ConfigurationAuditRecord.

- TimeOfEvent
- EventID
- UserName
- UserDomainName
- ServerName
- ServerVersion
- ServerType
- Keywords
- TaskCategory
- Opcode
- EventParameters

EventDescription: This is the description corresponding to the event with the specified EventID.

3.1.1.1.25.2 Procedures

3.1.1.1.25.2.1 SearchConfigurationAuditTable

This procedure can be used to search the ADM_ConfigurationAuditTable based on certain criteria. It takes the following input parameters.

Param_searchCriteriaXml: This is the filter condition in the form of XML as specified in section 2.2.4.63.

Param_numberOfRows: This specifies the maximum number of rows to be returned as a part of Result_events.

The following is the output parameter of this procedure.

Result_events: This is a collection of configuration change events that meet the specified filter condition.

The following are the processing steps involved.

- Convert the Param_searchCriteriaXml into an implementation-specific filter condition that can be used to query the table above. The EventParameters being an XML string that is composed of the event data, the search will also need to be performed within the XML. The following table specifies the mapping between the fields specified in ConfigurationAuditEnumerationParameters (section 2.2.4.63) and the fields in ConfigurationAuditRecord.

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Name	EventDetails Mapping
IP_ADDRESS	EventParameters
IP_ADDRESS_RANGE_ID	EventParameters
IP_BLOCK_ID	EventParameters
CUSTOM_FIELD_NAME	EventParameters
LOGICAL_GROUP_NAME	EventParameters
SCOPE_NAME	EventParameters
SCOPE_ID	EventParameters
OPTION_ID	EventParameters
OPTION_NAME	EventParameters
RESERVATION_ADDRESS	EventParameters
EVENT_ID	EventID
SERVER_NAME	ServerName

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Name	EventDetails Mapping
KEYWORDS	Keywords
OPCODE	Opcode
TIME_OF_EVENT	TimeOfEvent
USER_NAME	UserName
USER_DOMAIN_NAME	UserDomainName
TASK_CATEGORY	TaskCategory
DESCRIPTION	EventDescription

1. The **Type** specified in the ConfigurationAuditEnumerationParameters.SearchFilterCriteria specifies the ServerType on whether it is for DHCP or IPAM-specific event.
2. Enumerate rows based on the filter criteria constructed above with no more than **Param_numberOfRows** being processed. For each row meeting the specified filter condition,
    1. Create an instance of ConfigurationAuditRecord.
    2. Copy the RecordId and EventDetails.
    3. Add the instance to **Result_events**.
3. Return Result_events as the output parameter of this procedure.

3.1.1.1.26 ADM_DiscoveryConfigurationTable

This simple table is used to store the discovery configuration status for the various domains in the forest the IPAM server is configured for.

RecordId: **primary key**: A 32-bit signed integer that is unique for each entry in the table. The store assigns a unique value when a new row is inserted into the table. This forms the **RecordId** member of the **DiscoveryConfig** data structure.

DiscoveryConfigDetails: This specifies the various details that specify the automatic discovery settings for various domains in the forest. They are modeled around the following members of **DiscoveryConfig**.

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- DiscoveryConfigurationStatus
- DiscoveryDomain
- DiscoverDhcpServers
- DiscoverDnsServers
- DiscoverDomainControllers
- DomainGuid

3.1.1.1.27 ADM_CommonProperties

This simple table is a collection of a number of name value pairs having some global configuration states in the IPAM data store.

The following are the properties that can be get/set out of this. For a description of each of these, see the CommonProperties simple type.

- MaximumUtilizationThreshold
- MinimumUtilizationThreshold
- LastAddressUtilizationCollectionTaskRuntime
- LastDiscoveryTaskRuntime
- ExpiryAlertThreshold
- GpoPrefix
- ProvisioningMode
- IpamExpiryLoggingPeriodicity
- IpamSecurityGroupIpamUsers
- IpamSecurityGroupIpamAdministrators
- IpamSecurityGroupIpamAsmAdministrators
- IpamSecurityGroupIpamMsmAdministrators
- IpamSecurityGroupIpamIPAuditAdministrators
- IpamConfiguredDate
- LastPurgeAuditResult
- IPAuditTrackingFeature

When the IPAM is provisioned, the following values are initialized in the table.

Name	Value
MaximumUtilizationThreshold	80

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Name	Value
MinimumUtilizationThreshold	20
ProvisioningMode	Manual
ExpiryAlertThreshold	10
IpamExpiryLoggingPeriodicity	Once
IpamSecurityGroupIpamUsers	IPAM Users
IpamSecurityGroupIpamAdministrators	IPAM Administrators
IpamSecurityGroupIpamAsmAdministrators	IPAM ASM Administrators
IpamSecurityGroupIpamMsmAdministrators	IPAM MSM Administrators
IpamSecurityGroupIpamIPAuditAdministrators	IPAM IP Audit Administrators
IPAuditTrackingFeature	1

ProvisioningMode is a non-localized string.

The IPAM security groups in the previous table (starting with IpamSecurityGroup) are created with strings of the group object in the IPAM server language at the time of the provisioning.

3.1.1.1.28 ADM_Tasks

This simple table models the persisted information related to the IPAM tasks. The IpamTaskType specifies an identifier for each task supported by the IPAM server. The way the tasks are implemented and controlled is an implementation-specific detail. However, the following information pertaining to the tasks is being tracked. They are modeled on the same properties of TaskInfo.

- LastRunTime
- NextRunTime
- State
- Status
- TaskType
- Triggers

Also, for each task, the RecurrenceDuration is maintained, which specifies the recurrence at which the task executes.

3.1.1.1.29 ADM_DhcpPolicyTable

3.1.1.1.29.1 Data Model

PolicyId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

PolicyDetails: A number of DHCP policy-specific properties that are modeled as the following set of fields in the DhcpPolicyV4 data structure.

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- PolicyName
- PolicyDescription
- ProcessingOrder
- State
- LeaseDurationType
- LeaseDuration
- DnsUpdateType
- DiscardDnsRecordOnLeaseDeletionStatus
- DnsNameProtectionStatus
- DnsNotRequestingClientUpdateType
- DnsUpdateTypeNotRequestingFromClients
- DnsDisablePtrUpdate
- DnsSuffix

Level: This MUST be set to either PolicyLevel.scopeLevel or PolicyLevel.serverLevel.

Scope: foreign key (ADM_DhcpScopesTable, RecordId) on update no action, on delete no action:

This is the DHCP scope to which the policy is related to. If Level is set to PolicyLevel.scopeLevel, then this field MUST be set.

Server: foreign key (ADM_DHCPServersTable, RecordId) on delete cascade, on update cascade:

This is the DHCP server to which the policy is related to. If Level is set to PolicyLevel.serverLevel, then this field MUST be set.

3.1.1.1.29.2 Procedures

3.1.1.1.29.2.1 GetPolicyById

This procedure is used to retrieve the DhcpPolicyV4 instance from **ADM_DhcpPolicyTable**. The following are the input parameters to this procedure:

Param_PolicyId: Of type signed 64-bit integer, which represents a PolicyId for a DhcpPolicyV4.

The following is the output parameter from this procedure:

Result_Policy: This is of type DhcpPolicyv4, which has the same PolicyId of the row as specified by Param_PolicyId.

The following are the processing steps involved:

1. Look up the row in the **ADM_DhcpPolicyTable** with PolicyId value being *Param_PolicyId*.

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2. Initialize **Result_Policy** with **DhcpPolicyV4**.
3. Assign **Result_Policy.PolicyId** with PolicyId of the row.
4. Copy the PolicyDetails into **Result_Policy**.
5. Initialize **Result_Policy.Server** with **DhcpServerV4**.
6. Assign **Result_Policy.Server.RecordId** with the Server of the row.
7. If Scope of row is not null, then initialize **Result_Policy.Scope** with **DhcpScopeV4** and set **Result_Policy.Scope.RecordId** to the Scope of the row.
8. Initialize **Result_Policy.ScopeRecordId** with the Scope of the row.
9. Initialize **Result_Policy.ServerRecordId** with the Server of the row.
10. Return Result_Policy as the output of the procedure.

3.1.1.1.29.2.2 MovePolicyProcessingOrder

This procedure uses the IIpamOperationWithProgressCallback interface to provide the details of subtasks, their completion status and overall completion status for the operation to the management client.

This procedure is used to change the processing order of a policy that can be associated to either a DHCP scope or a DHCP server.

The following are the input parameters to this procedure:

Param_Policy: Policy Object

Param_ProcessingDirection: Of type PolicyProcessingOrderDirection

There is no output from this procedure.

The following are the processing steps involved:

1. Look up the row Policy1 in the ADM_DhcpPolicyTable which has the same PolicyId as Param_Policy.PolicyId.
2. If Param_ProcessingDirection value is PolicyProcessingOrderDirection.up, then lookup the row Policy2 in the ADM_DhcpPolicyTable which meets the following criteria:
    1. Server equal to Param_Policy.Server and
    2. If Param_Policy.Level is PolicyLevel.scopeLevel then Scope equal to Param_Policy.Scope and
    3. ProcessingOrder equal to (Param_Policy.ProcessingOrder – 1)
3. If Param_ProcessingDirection value is PolicyProcessingOrderDirection.down, then lookup the row Policy2 in the ADM_DhcpPolicyTable that meets the following criteria:
    1. Server equal to Param_Policy.Server AND
    2. If Param_Policy.Level is PolicyLevel.scopeLevel then Scope equal to Param_Policy.Scope AND
    3. ProcessingOrder equal to (Param_Policy.ProcessingOrder + 1)

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4. If the row Policy2 is found, then swap the Policy1.ProcessingOrder and Policy2.ProcessingOrder.

3.1.1.1.29.2.3 GetPoliciesForScopeByScopeId

This procedure is used to retrieve all the DHCP policies that are associated to a specific DHCP scope.

The following are the input parameters to this procedure:

Param_scopeId: Of type signed 64-bit integer which represents a RecordId for a DhcpScopev4

The following is the output parameter from this procedure:

Result_scopePolicies: This is a collection of type DhcpPolicyv4 instances which have the same value in the Scope column of the row as specified by Param_scopeId.

The following are the steps involved:

1. Enumerate the rows in **ADM_DhcpPolicyTable** having Scope equal to *Param_scopeId*.
2. Initialize Result_scopePolicies.
3. For each row meeting the criteria mentioned in step 1, perform the following steps.
4. Create an instance of DhcpPolicyV4 with the following assignments and add it to the Result_scopePolicies collection:
    1. Set **DhcpPolicyV4.PolicyId** to the PolicyId of the row.
    2. Copy the PolicyDetails to the **DhcpPolicyV4** instance.
    3. Initialize **DhcpPolicyV4.Server** with **DhcpServerV4** instance.
    4. Set **DhcpPolicyV4.Server.RecordId** to the Server of the row.
    5. Initialize **DhcpPolicyV4.Scope** with the **DhcpScopeV4** instance and set DhcpPolicyV4.Scope.RecordId to the Scope of the row.
    6. Initialize **DhcpPolicyV4.ScopeRecordId** with the Scope of the row.
    7. Initialize **DhcpPolicyV4.ServerRecordId** with the Server of the row.
5. Return Result_scopePolicies as the output of the procedure.

3.1.1.1.29.2.4 GetPoliciesForServerByServerId

This procedure is used to retrieve all the DHCP policies that are associated to a specific DHCP server.

The following are the input parameters to this procedure:

Param_serverId: Of type signed 64-bit integer which represents a RecordId for a DhcpServerv4

The following is the output parameter from this procedure:

Result_serverPolicies: This is a collection of type DhcpPolicyv4 instances which have the same value in Server column of the row as specified by Param_serverId.

The following are the steps involved:

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1. Enumerate the rows in **ADM_DhcpPolicyTable** having Server equal to *Param_serverId* and Level equal to **PolicyLevel.serverLevel**.
2. Initialize Result_serverPolicies.
3. For each row meeting the criteria mentioned in step 1, perform the following steps.
4. Create an instance of **DhcpPolicyV4** with the following assignments:
    1. Se**t DhcpPolicyV4.PolicyId** to the PolicyId of the row.
    2. Copy the PolicyDetails to the **DhcpPolicyV4** instance.
    3. Initialize **DhcpPolicyV4.Server** with **DhcpServerV4**.
    4. Set **DhcpPolicyV4.Server.RecordId** to the Server of the row.
    5. Initialize **DhcpPolicyV4.ServerRecordId** with the Server of the row.
5. Add the DhcpPolicyV4 instance to Result_serverPolicies collection.
6. Return Result_scopePolicies as the output of the procedure.

3.1.1.1.30 ADM_DhcpPolicyConditionTable

3.1.1.1.30.1 Data Model

PolicyConditionId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

PolicyId: **foreign key (ADM_DhcpPolicyTable, RecordId) on update cascade, on delete cascade:**

PolicyConditionDetails: A number of DHCP policy condition-specific properties that are modeled as the following set of fields in the DhcpPolicyConditionV4 data structure.

- VendorClass
- UserClass
- ClientId
- MACAddress
- RelayAgentInfo
- RelayAgentRidInfo
- RelayAgentSidInfo
- RelayAgentCidInfo
- Operator

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3.1.1.1.30.2 Procedures

3.1.1.1.30.2.1 GetPolicyConditionsForPolicyId

This procedure is used to retrieve all the DHCP policy conditions that are associated to a specific DHCP policy.

The following are the input parameters to this procedure:

Param_policyId: of type signed 64-bit integer

The following is the output parameter from this procedure:

Result_PolicyConditions: Collection of type DhcpPolicyConditionV4

The following are the steps involved:

1. Enumerate the rows in ADM_DhcpPolicyConditionTable having PolicyId being Param_policyId.
2. Initialize Result_PolicyConditions.
3. For each row meeting the criteria mentioned in step 1, perform the following steps.
4. Create an instance of DhcpPolicyConditionV4 with the following assignments and add it to the Result_PolicyConditions collection:
    1. Assign DhcpPolicyConditionV4.PolicyId with PolicyId of the row.
    2. Copy the PolicyConditionDetails to DhcpPolicyConditionV4 instance.
5. Return Result_PolicyConditions as the output of the procedure.

3.1.1.1.31 ADM_DhcpPolicySubrangeTable

3.1.1.1.31.1 Data Model

RecordId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

PolicyId: foreign key (ADM_DhcpPolicyTable, RecordId) on update cascade, on delete cascade:

PolicySubrangeDetails: A number of DHCP policy subrange-specific properties that are modeled as the following set of fields in the DhcpPolicyRangeV4 data structure.

- StartIPAddress
- EndIPAddress

3.1.1.1.31.2 Procedures

3.1.1.1.31.2.1 GetPolicySubrangesForPolicyId

This procedure is used to retrieve all the DHCP policy subranges that are associated to a specific DHCP policy.

The following are the input parameters to this procedure:

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Param_policyId: Of type signed 64-bit integer

The following is the output parameter from this procedure:

Result_PolicyRanges: Collection of type DhcpPolicyRangeV4

The following are the steps involved:

1. Enumerate the rows in ADM_DhcpPolicySubrangeTable having PolicyId being Param_policyId.
2. Initialize Result_PolicyRanges.
3. For each row meeting the criteria mentioned in step 1, perform the following steps.
4. Create an instance of DhcpPolicyRangeV4 with the following assignments and add it to the Result_PolicyRanges collection:
    1. Assign DhcpPolicyRangeV4.PolicyId with PolicyId of the row.
    2. Assign DhcpPolicyRangeV4.RecordId with RecordId of the row.
    3. Copy the PolicySubrangeDetails to DhcpPolicyRangeV4 instance.
5. Return Result_PolicyRanges as the output of the procedure.

3.1.1.1.32 ADM_AddressSpaceTable

This is a compound table that has Provider Address Space-specific and Customer Address Space-specific simple tables within it. This models the IP address spaces in the IPAM data store.

3.1.1.1.32.1 Data Model

RecordId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

AddressSpaceType: Of type IPAddressSpaceType which signifies whether the AddressSpace is a ProviderAddressSpace or CustomerAddressSpace.

AddressSpaceDetails: A number of AddressSpace-specific properties that are modeled as the following set of fields in the AddressSpace data structure.

- Name
- Description
- Owner

For Provider Address Space-specific tables, following additional properties are associated with the address space:

- IsDefault: If this is set to 1, it denotes that the row represents the Default Provider Address Space which is populated during the IPAM Datastore provisioning.

For Customer Address Space-specific tables, the following additional properties are associated with the address space:

- ProviderAddressSpaceName

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- **ProviderAddressSpaceRecordId: foreign key (ADM_AddressSpaceTable, RecordId) on update cascade on delete cascade**

This represents the RecordId of the Provider Address Space to which the Customer Address Space belongs.

Tenant: This is a computed value for each row of this table. This is computed by looking up the **ADM_AddressSpaceCustomFieldValuesTable** for the row with **AddressSpaceRecordId** equal to the **RecordId** value of the address space and the **CustomFieldRecordId** value of **ADM_TenantCustomFieldId**.

VMNetwork: This is a computed value for each row of this table. This is computed by looking up the **ADM_AddressSpaceCustomFieldValuesTable** for the row with the **AddressSpaceRecordId** equal to the **RecordId** value of the address space and the **CustomFieldRecordId** value of **ADM_VMNetworkCustomFieldId**.

IsolationMethod: This is a computed value for each row of this table. This is computed by looking up the **ADM_AddressSpaceCustomFieldValuesTable** for the row with the **AddressSpaceRecordId** equal to the **RecordId** value of the address space and the **CustomFieldRecordId** value of **ADM_IsolationMethodCustomFieldId**.

3.1.1.1.32.2 Procedures

3.1.1.1.32.2.1 GetAddressSpaceById

This procedure can be used to retrieve an AddressSpace instance that has the specified RecordId.

The following are the input parameters to this procedure:

Param_AddressSpaceId: This parameter is of type signed 64-bit integer and represents the RecordId of the row that needs to be retrieved from the table.

The following is the output parameter from this procedure:

Result_AddressSpace: This is of complex type AddressSpace and represents an instance of AddressSpace for the specified RecordId.

The following steps are the processing done by this procedure against the data store.

1. Look-up the row in the ADM_AddressSpaceTable with RecordId equal to Param_AddressSpaceId. If the row is not present, set result to null and return.

2. If the AddressSpaceType column of the row is ProviderAddressSpace, initialize Result_AddressSpace to ProviderAddressSpace instance. The rest of the processing rules will be performed on ProviderAddressSpace-specific tables of any compound table referenced. If the AddressSpaceType column of the row is CustomerAddressSpace, initialize Result_AddressSpace to CustomerAddressSpace instance. The rest of the processing rules will be performed on CustomerAddressSpace-specific tables of any compound table referenced.

3. Copy the RecordId to Result_AddressSpace.RecordId.

4. Copy the AddressSpaceDetails of the row into result.

5. Call GetCustomFieldValues procedure of ADM_ CustomFieldValuesAssociationTable passing the following parameters:

6. Param_ObjectType is set to EnumerationObjectType.AddressSpace.

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7. Param_addressfamily is passed as Unspecified.

8. Param_ObjectRecordId is set to Param_AdressSpaceId.

Assign Result_CustomFieldValueList to Result_AddressSpace.CustomFieldValues.

Assign Result_CustomFieldPartialValueList to Result_AddressSpace.PartialCustomFieldValues.

1. Call GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:

2. Param_objectId is set to Param_AddressSpaceId.

3. Param_objectType is set to IpamObjectType.AddressSpace.

4. Param_accessScopeId.

5. Param_objectInheritanceStatus.

6. Param_inheritanceId.

7. Assign Param_accessScopeId to Result_AddressSpace.AccessScopeId.

8. Assign Param_objectInheritanceStatus to Result_AddressSpace.IsInheritedAccessScope.

9. Call GetRangesForAddressSpace of ADM_IPRangeTable passing the following parameters:

10. Param_addressSpaceId is set to Param_AddressSpaceId.

11. Param_addressFamily is set to Internet.

For each range returned in Result_Ranges collection, if range.UseForUtilization is set to true, add range.UtilizationStatistics to Result_AddressSpace.IPv4Utilization.

1. Call GetRangesForAddressSpace of ADM_IPRangeTable passing the following parameters:

2. Param_addressSpaceId is set to Param_AddressSpaceId.

3. Param_addressFamily is set to Internetv6.

For each range returned in Result_Ranges collection, if range.UseForUtilization is set to true, add range.UtilizationStatistics to Result_AddressSpace.IPv6Utilization.

- Return Result_AddressSpace as output of the procedure.

3.1.1.1.32.2.2 GetAddressSpaceByName

This procedure can be used to retrieve an AddressSpace that has the specified Name and AddressSpaceType.

The following are the input parameters to this procedure:

Param_AddressSpaceName: Of type string that represents the name of the AddressSpace which needs to be retrieved.

Param_AddressSpaceType: Of type IPAddressSpaceType that specifies the type of the AddressSpace which needs to be retrieved.

The following is the output parameter from this procedure:

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Result_AddressSpace: Of type AddressSpace

The following steps are the processing done by this procedure against the data store.

1. Look-up the row in the ADM_AddressSpaceTable with Name equal to Param_AddressSpaceName and AddressSpaceType same as Param_AddressSpaceType. If the row is not present, set Result_AddressSpace to null and return.

2. If the row is present, then call GetAddressSpaceById procedure of ADM_AddressSpaceTable with Param_AddressSpaceId set to RecordId of the row.

3. Return the Result_AddressSpace from the procedure.

3.1.1.1.32.2.3 GetAllAddressSpaceNames

This procedure is used to retrieve the names of all the AddressSpace records in the table or of the specified AddressSpaceType.

The following are the input parameters to this procedure:

Param_AddressSpaceType: Of type IPAddressSpaceType. This parameter specifies whether the names are to be retrieved for Provider or Customer Address Spaces. If this parameter is null, then the names of all the AddressSpaces are returned.

The following is the output parameter from this procedure:

Result_AddressSpaceNames: Collection of tuples that contain the following elements:

AddressSpaceRecordId: of type signed integer of 64 bit that represents the RecordId of the AddressSpace.

AddressSpaceName: of type string that represents the Name of the AddressSpace.

ProviderAddressSpaceName: of type string that is set if the AddressSpace is of type CustomerAddressSpace and represents the name of the ProviderAddressSpace to which it maps to.

The following steps are the processing done by this procedure against the data store.

1. Look-up the all the rows in the ADM_AddressSpaceTable with AddressSpaceType same as Param_AddressSpaceType if it is specified or else retrieve all the rows.

2. For each row that is retrieved, perform the following operation:

3. Create a tuple and initialize it with RecordId, Name, ProviderAddressSpaceName (if the row represents a CustomerAddressSpace).

4. Add this tuple to the Result_AddressSpaceNames collection.

5. Return the Result_AddressSpaceNames from the procedure.

3.1.1.1.32.2.4 GetCustomerAddressSpacesByProviderAddressSpaceRecordId

This procedure is used to retrieve all the CustomerAddressSpace records in the table that map to a specific ProviderAddressSpace.

The following are the input parameters to this procedure:

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Param_ProviderAddressSpaceRecordId: This parameter is of type signed 64-bit integer and represents the RecordId of the ProviderAddressSpace for which all the mapping CustomerAddressSpaces need to be retrieved.

The following is the output parameter from this procedure:

Result_CustomerAddressSpaces: Collection of instances of type CustomerAddressSpace

The following steps are the processing done by this procedure against the data store.

1. Look-up the all the rows in the ADM_AddressSpaceTable with AddressSpaceType as CustomerAddressSpace and ProviderAddressSpaceRecordId as Param_ProviderAddressSpaceRecordId. If there are no rows that meet this criteria, return null.
2. For each row that is retrieved, perform the following operation:
3. Call GetAddressSpaceById procedure of ADM_AddressSpaceTable with Param_AddressSpaceId set to RecordId of the row.
4. Add this tuple to the Result_CustomerAddressSpaces collection.
5. Return the Result_CustomerAddressSpaces from the procedure.

3.1.1.1.33 ADM_SubnetTable

This is a compound table that has IPv4-specific and IPv6-specific simple tables within it. This models the IPSubnet in the IPAM data store and extends the type ADM_IPBlocksTable.

3.1.1.1.33.1 Data Model

RecordId: unique: of type signed 64-bit integer. This refers to the record ID of the row that has been added in the ADM_IPBlocksTable for this subnet object.

SubnetDetails: A number of IP subnet-specific properties that are modeled as the following set of fields in the IPSubnet data structure.

- Name
- IsOverlapping
- UseForUtilization
- VSId: this property is required by subnets that map to the Customer address space
- VirtualizationType

If VirtualizationType has value IPVirtualizationType.Virtual, then the following additional properties are also associated with a subnet:

LogicalNetwork: This is a computed value for each row of this table. This is computed by looking up the **ADM_SubnetCustomFieldValuesTable** for the row with **SubnetRecordId** to be the **RecordId** value of the Subnet and the **CustomFieldRecordId** to be of value **ADM_LogicalNetworkCustomFieldId**.

NetworkSite: This is a computed value for each row of this table. This is computed by looking up the **ADM_SubnetCustomFieldValuesTable** for the row with the **SubnetRecordId** to be the **RecordId** value of the subnet and the C**ustomFieldRecordId** to be the value of **ADM_ NetworkSiteCustomFieldId**.

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3.1.1.1.33.2 Procedures

3.1.1.1.33.2.1 GetSubnetById

This procedure can be used to retrieve the IP subnet information in the form of either IPv4Subnet or IPv6Subnet, based on whether it is being invoked against the IPv4- or IPv6-specific table.

The following are the input parameters to this procedure:

Param_SubnetId: of type signed 64-bit integer that represents the RecordId of the subnet for which the information is being requested.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure:

Result_Subnet: Of type IPSubnet

The following steps are the processing done by this procedure against the data store.

1. Look-up the row in the ADM_SubnetTable with RecordId equal to Param_SubnetId. If the row is not present, set result to null and return.
2. If the addressfamily is Internet, initialize result to IPv4Subnet. The rest of the processing rules will be performed on IPv4-specific tables of any compound table referenced. If the addressfamily is InternetV6, initialize result to IPv6Subnet. The rest of the processing rules will be performed on IPv6-specific tables of any compound table referenced.
    1. Initialize the IPBlock related fields by calling the GetIPBlockFromTable procedure of ADM_IPBlocksTable passing Param_SubnetId and Param_addressFamily. Copy result into Result_Subnet. This initializes the IPBlock portion of the IPSubnet object.
    2. Copy the SubnetDetails of the row into result.
    3. Call the GetCustomFieldValues procedure of ADM_ CustomFieldValuesAssociationTable passing the following parameters:
3. Param_ObjectType is set to EnumerationObjectType.IPSubnet.
4. Param_addressfamily is passed as-is.
5. Param_ObjectRecordId is set to Param_SubnetId.

Assign Result_CustomFieldValueList to Result_Subnet.CustomFieldValues.

Assign Result_CustomFieldPartialValueList to Result_Subnet.PartialCustomFieldValues.

1. Call GetChildRangesForBlock of ADM_IPRangeTable passing the following parameters:
2. Param_blockId is set to Param_SubnetId.
3. Param_addressFamily is set to Param_addressFamily.

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For each range returned in Result_Ranges collection, if range.UseForUtilization is set to true, add range.UtilizationStatistics to Result_Subnet.IPUtilization.

1. Call GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:

2. Param_objectId is set to Param_id.

3. Param_objectType is set to IpamObjectType.IPv4Subnet if addressfamily is Internet or IpamObjectType.IPv6Subnet if addressfamily is Internetv6.

4. Param_accessScopeId.

5. Param_objectInheritanceStatus.

6. Param_inheritanceId.

7. Assign Param_accessScopeId to Result_Subnet.AccessScopeId.

8. Assign Param_objectInheritanceStatus to Result_Subnet.IsInheritedAccessScope.

9. Call the GetAddressSpaceById procedure of ADM_AddressSpaceTable assigning AddressSpaceRecordId to Param_AddressSpaceId. Process the output Result_AddressSpace from the procedure as follows:

    1. If Result_AddressSpace.AddressSpaceType is CustomerAddressSpace, then assign Result_AddressSpace.Name to Result_Subnet.CustomerAddressSpaceName and assign Result_AddressSpace.ProviderAddressSpaceName to Result_Subnet.ProviderAddressSpaceName.

    2. If Result_AddressSpace.AddressSpaceType is ProviderAddressSpace, then assign Result_AddressSpace.Name to Result_Subnet.ProviderAddressSpaceName.

10. Return Result_Subnet as output of the procedure.

3.1.1.1.33.2.2 GetSubnetByNetworkIdAndAddressSpace

This procedure can be used to retrieve the IP subnet information on the basis of given NetworkId and AddressSpace in the form of either IPv4Subnet or IPv6Subnet, based on whether it is being invoked against the IPv4- or IPv6-specific table.

The following are the input parameters to this procedure:

Param_NetworkId: of type IPAddress

Param_PrefixLength: of type signed integer

Param_AddressSpaceRecordId: of type signed 64-bit integers

The following is the output parameter from this procedure:

Result_Subnet: Of type IPSubnet

The following steps are the processing done by this procedure against the data store.

1. Calculate the StartIP and EndIP based on the Param_NetworkId and Param_PrefixLength.

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2. Look-up the row in the ADM_IPBlocksTable that has the same StartIP, EndIP, PrefixLength, and AddressSpaceRecordId equal to Param_AddressSpaceRecordId and Is_Subnet is set to 1. If the row is not present, set result to null and return.

3. If the row is present in the ADM_IPBlocksTable, call the GetSubnetById procedure of ADM_SubnetTable passing RecordId as Param_SubnetId and Param_addressFamily set appropriately based on Param_NetworkId representing an Internet or InternetV6 address.

4. Return the Result_Subnet from the procedure.

3.1.1.1.33.2.3 GetAllSubnetsForAddressSpace

This procedure can be used to get all the IP subnets that belong to a specific AddressSpace.

The following are the input parameters to this procedure:

Param_AddressSpaceRecordId: of type signed 64-bit integers

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure:

Result_Subnets: Collection of records of type IPSubnet

The following steps are the processing done by this procedure against the data store.

1. Look-up all the rows in the corresponding simple table of ADM_IPBlocksTable based on the Param_addressFamily that have AddressSpaceRecordId equal to Param_AddressSpaceRecordId and Is_Subnet is set to 1. If no such row is present, set result to null and return.

2. If the rows are present in the ADM_IPBlocksTable, for each row, call the GetSubnetById procedure of ADM_SubnetTable passing RecordId as Param_SubnetId and Param_addressFamily set as Param_addressFamily. Add Result_Subnet to Result_Subnets collection.

3. Return the Result_Subnets from the procedure.

3.1.1.1.33.2.4 Remap

This procedure can be used to mark a subnet to be used for calculating Utilization of the parent block or AddressSpace.

The following are the input parameters to this procedure:

Param_SubnetId: of type signed 64-bit integer

Param_addressFamily: of type AddressFamily

There is no output from this procedure.

The following steps are the processing done by this procedure against the data store.

1. Get the Subnet from datastore by calling the GetSubnetById procedure of ADM_SubnetTable by passing Param_SubnetId and Param_addressFamily as parameters. If Result_Subnet is null then return.

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2. If Result_Subnet.UseForUtilization is 1 then return as this subnet is already being used for utilization calculation of the parent block or AddressSpace.

3. Get all the subnets that are overlapping with the specified subnet. Call the GetOverlappingBlocks procedure of ADM_IPBlocksTable by passing the following parameters:

    1. Param_StartIPAddress is set to Result_Subnet.StartIPAddress.

    2. Param_EndIPAddress is set to Result_Subnet.EndIPAddress.

    3. Param_AddressSpaceRecordId is set to Result_Subnet.AddressSpaceRecordId.

    4. Param_PrefixLength is set to Result_Subnet.PrefixLength.

    5. Param_RecordIdToExclude is set to Result_Subnet.RecordId.

Process the Result_OverlappingBlocks and filter it to find the records that have IsSubnet set to 1. These are the rows that represent the subnets. Move them to the OverlappingSubnets collection.

1. If there are no records in OverlappingSubnets or it is empty, this means that there are no overlapping subnets. Set Result_Subnet.UseForUtilization to 1, update the row and return.

2. For each of the OverlappingSubnet records present in the OverlappingSubnets collection, perform the following operations:

    - If OverlappingSubnet.UseForUtilization is set to 1, perform following steps:

3. Set OverlappingSubnet.UseForUtilization to 0 and update the row in ADM_SubnetTable.

4. Perform the following steps for all the other records in the OverlappingSubnets collection:

    1. Get all the subnets that are overlapping with the specified subnet. Call the GetOverlappingBlocks procedure of ADM_IPBlocksTable. Process the Result_OverlappingBlocks and filter it to find the records that have IsSubnet set to 1 and UseForUtilization set to 1. After filtering, if there are any records present in the collection, then don’t do any further.

    2. If there are no records present, then update the UseForUtilization to 1 for the subnet and update the row in the table.

5. Return from the procedure.

3.1.1.1.33.2.5 GetUnmappedSubnets

This procedure can be used to retrieve a collection of subnets that are not mapped to any parent IPBlock.

The following are the input parameters to this procedure:

Param_VirtualizationType: of type IPVirtualizationType

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure:

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Result_Subnets: Collection of records of type IPSubnet

The following steps are the processing done by this procedure against the data store.

1. Look-up all the rows in the appropriate simple table of ADM_IPBlocksTable corresponding to Param_addressFamily that meets following criteria:

   - Have AddressSpaceRecordId equal to 1 (representing Default Provider Address Space) and Is_Subnet is set to 1. If no such row is present, set result to null and return.

2. If the rows are present in the ADM_IPBlocksTable, for each row, look up the corresponding row in ADM_SubnetTable and if VirtualizationType of row is same as Param_VirtualizationType, call the GetSubnetById procedure of ADM_SubnetTable passing RecordId as Param_SubnetId and Param_addressFamily set as Param_addressFamily. Add Result_Subnet to the Result_Subnets collection.

3. Return the Result_Subnets from the procedure.

3.1.1.1.34 ADM_AdminOperationsTable

This is a simple table containing the details of the operations that can be performed in IPAM. This table is a persistent read-only table in the IPAM data store.

3.1.1.1.34.1 Data Model

The table later in this section has columns that mention the following properties of that operation:

OperationId: This refers to an element of type OperationId and is the identifier for the corresponding operation.

OperationGroupId: This refers to an element of type OperationGroup to which the operation belongs.

IsAdminRoleOnlyOperation: This specifies if the specified operation is allowed only for Admin users. If this is TRUE, then the operation is allowed only for users who are part of security groups specified in the column NonRBACAdminAccessRequirement.

IsNonRBACOperation: If this is set to TRUE, it specifies that the operation is not a **role-based access control** operation and the permission to perform the operation is allowed only for users who are part of security groups specified in the column NonRBACAdminAccessRequirement.

IsAccessScopeAgnosticOperation: If this is set to TRUE, it specifies that while performing the validation checks for performing the operation, AccessScope of the object is not taken into consideration.

NonRBACAdminAccessRequirement: This column specifies the credentials that are required by the user to perform a specific operation. This is a collection of SIDs([MS-DTYP] section 2.4.2). User MUST be member of the appropriate security groups as specified in ADM_IPAMSecurityGroups. Following are special groupings that have been used to simplify the representation:

Local Administrator: This represents the Local Administrator Security Group of the machine hosting IPAM Server.

All Readers: User can be a member of any of the following security groups: IPAM Users, IPAM Administrators, IPAM ASM Administrators, IPAM MSM Administrators, IPAM IP Audit Administrators, Local Administrator.

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All Admins: User can be a member of any of the following security groups: IPAM Administrators, IPAM ASM Administrators, IPAM MSM Administrators, IPAM IP Audit Administrators, Local Administrator.

OperationId	OperationGroupId	IsAdminRoleOnlyOperation	IsNonRBACOperation	IsAccessScopeAgnosticOperation	NonRBACAdminAccessRequirement
GenericRead	GenericOperations	FALSE	TRUE	TRUE	All Readers
IPAddressAudit	AuditOperations	FALSE	TRUE	TRUE	IPAM IP Audit Administrator
ProvisionServer	GlobalConfigurationOperations	FALSE	TRUE	TRUE	Local Administrator
SchemaConversion	GlobalConfigurationOperations	FALSE	TRUE	TRUE	Local Administrator
TaskStart	TaskOperations	FALSE	TRUE	TRUE	All Admins
SetCommonPropertyValue	GlobalConfigurationOperations	FALSE	TRUE	TRUE	All Admins
MsmDhcpEditSuperscope	DhcpSuperscopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpDeleteSuperscope	DhcpSuperscopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpCreateScope	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpDeleteScope	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpEditScope	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpEditServerProperties	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpCreateServerPolicy	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpCreateScopePolicy	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpCreateFailover	DhcpFailoverOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpEditFailover	DhcpFailoverOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpDeleteFailo	DhcpFailoverO	FALSE	FALSE	FALSE	IPAM MSM

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OperationId	OperationGroupId	IsAdminRoleOnlyOperation	IsNonRBACOperation	IsAccessScopeAgnosticOperation	NonRBACAdminAccessRequirement
ver	perations				Administrators
MsmDhcpReplicateOperation	DhcpFailoverOperations	FALSE	FALSE	TRUE	IPAM MSM Administrators
RetrieveDatabaseConfiguration	GenericOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
ConnectToAnotherDatabase	GenericOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
MoveDatabase	GenericOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
MsmDhcpScopeCreateOrEditAddressReservation	DhcpScopeReservationOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
MsmDhcpScopeDeleteAddressReservation	DhcpScopeReservationOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
MsmDhcpCreateEditFilter	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpDeleteFilter	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
ValidateIfUpgradeIsPossible	GenericOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
GenerateUpgradeValidationFailureLog	GenericOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
ReadSecretKey	SecretKeyOperations	FALSE	TRUE	TRUE	IPAM Administrators
AutogenerateSecretKey	SecretKeyOperations	FALSE	TRUE	TRUE	IPAM Administrators
UpdateSecretKey	SecretKeyOperations	FALSE	TRUE	TRUE	IPAM Administrators
RecomputeHashUsin	SecretKeyOper	FALSE	TRUE	TRUE	IPAM

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OperationId	OperationGroupId	IsAdminRoleOnlyOperation	IsNonRBACOperation	IsAccessScopeAgnosticOperation	NonRBACAdminAccessRequirement
gStoredSecretKey	ations				Administrators
SetMsmDhcpServerAccessScope	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM Administrators
SetMsmDhcpScopeAccessScope	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM Administrators
SetMsmDhcpSuperscopeAccessScope	DhcpSuperscopeOperations	FALSE	FALSE	FALSE	IPAM Administrators
MsmDnsResetZoneStatus	DnsZoneOperations	FALSE	FALSE	FALSE	IPAM Administrators, IPAM MSM Administrators
SetMsmDnsZoneAccessScope	DnsZoneOperations	FALSE	FALSE	FALSE	IPAM Administrators
MsmDnsCreateResourceRecord	DnsRecordOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
MsmDnsDeleteResourceRecord	DnsRecordOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
AddressSpaceCreate	AddressSpaceOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
AddressSpaceEdit	AddressSpaceOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
AddressSpaceDelete	AddressSpaceOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
SetAddressSpaceAccessScope	AddressSpaceOperations	FALSE	FALSE	FALSE	IPAM Administrators
AddressSubnetCreate	AddressSubnetOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
AddressSubnetEdit	AddressSubnetOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
AddressSubnetRemapToBlock	AddressSubnetOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
AddressSubnetDelete	AddressSubnetOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
SetAddressSubnetAccessScope	AddressSubnetOperations	FALSE	FALSE	FALSE	IPAM Administrators

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OperationId	OperationGroupId	IsAdminRoleOnlyOperation	IsNonRBACOperation	IsAccessScopeAgnosticOperation	NonRBACAdminAccessRequirement
MACAddressPoolCreate	MACAddressPoolOperations	FALSE	FALSE	TRUE	IPAM ASM Administrators
MACAddressPoolEdit	MACAddressPoolOperations	FALSE	FALSE	TRUE	IPAM ASM Administrators
MACAddressPoolDelete	MACAddressPoolOperations	FALSE	FALSE	TRUE	IPAM ASM Administrators
HostGroupCreate	HostGroupOperations	FALSE	FALSE	TRUE	IPAM ASM Administrators
HostGroupDelete	HostGroupOperations	FALSE	FALSE	TRUE	IPAM ASM Administrators
CreateAddressBlock	AddressBlockOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
UpdateAddressBlock	AddressBlockOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
DeleteAddressBlock	AddressBlockOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
SetAddressBlockAccessScope	AddressBlockOperations	FALSE	FALSE	FALSE	IPAM Administrators
CreateAddressRange	AddressRangeOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
UpdateIPAddressRange	AddressRangeOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
DeleteAddressRange	AddressRangeOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
SetAddressRangeAccessScope	AddressRangeOperations	FALSE	FALSE	FALSE	IPAM Administrators
MapAddressRangeToAddressBlock	AddressRangeOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators, IPAM MSM Administrators
CreateIPAddress	AddressOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
UpdateIPAddress	AddressOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators

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OperationId	OperationGroupId	IsAdminRoleOnlyOperation	IsNonRBACOperation	IsAccessScopeAgnosticOperation	NonRBACAdminAccessRequirement
DeleteIPAddress	AddressOperations	FALSE	FALSE	FALSE	IPAM ASM Administrators
CreateAccessScope	AccessScopeOperations	TRUE	FALSE	FALSE	Local Administrator, IPAM Administrators
UpdateAccessScope	AccessScopeOperations	TRUE	FALSE	FALSE	Local Administrator, IPAM Administrators
DeleteAccessScope	AccessScopeOperations	TRUE	FALSE	FALSE	Local Administrator, IPAM Administrators
CreateAccessPolicy	AccessPolicyOperations	TRUE	FALSE	FALSE	Local Administrator, IPAM Administrators
UpdateAccessPolicy	AccessPolicyOperations	TRUE	FALSE	FALSE	Local Administrator, IPAM Administrators
DeleteAccessPolicy	AccessPolicyOperations	TRUE	FALSE	FALSE	Local Administrator, IPAM Administrators
CreateUserRole	UserRoleOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
UpdateUserRole	UserRoleOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
DeleteUserRole	UserRoleOperations	TRUE	TRUE	TRUE	Local Administrator, IPAM Administrators
AddServer	ServerInventoryOperations	FALSE	TRUE	TRUE	IPAM Administrators, IPAM ASM Administrators, IPAM MSM Administrators

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OperationId	OperationGroupId	IsAdminRoleOnlyOperation	IsNonRBACOperation	IsAccessScopeAgnosticOperation	NonRBACAdminAccessRequirement
UpdateServer	ServerInventoryOperations	FALSE	TRUE	TRUE	IPAM Administrators, IPAM ASM Administrators, IPAM MSM Administrators
DeleteServer	ServerInventoryOperations	FALSE	TRUE	TRUE	IPAM Administrators, IPAM ASM Administrators, IPAM MSM Administrators
SaveDiscoveryConfig	GlobalConfigurationOperations	FALSE	TRUE	TRUE	All Admins
UpdateDiscoveryConfig	GlobalConfigurationOperations	FALSE	TRUE	TRUE	All Admins
DeleteDiscoveryConfig	GlobalConfigurationOperations	FALSE	TRUE	TRUE	All Admins
CreateCustomField	CustomFieldOperations	FALSE	FALSE	TRUE	All Admins
EditCustomField	CustomFieldOperations	FALSE	FALSE	TRUE	All Admins
DeleteCustomField	CustomFieldOperations	FALSE	FALSE	TRUE	All Admins
ManageCustomFieldValues	CustomFieldOperations	FALSE	FALSE	TRUE	All Admins
CreateLogicalGroup	LogicalGroupOperations	FALSE	FALSE	TRUE	All Admins
UpdateLogicalGroup	LogicalGroupOperations	FALSE	FALSE	TRUE	All Admins
DeleteLogicalGroup	LogicalGroupOperations	FALSE	FALSE	TRUE	All Admins
PurgeAuditData	AuditOperations	FALSE	TRUE	TRUE	IPAM Administrators
MsmDhcpEditServerOptions	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpConfigurePredefinedOptions	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators

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OperationId	OperationGroupId	IsAdminRoleOnlyOperation	IsNonRBACOperation	IsAccessScopeAgnosticOperation	NonRBACAdminAccessRequirement
MsmDhcpConfigureUserClass	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpConfigureVendorClass	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpActivateScope	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpEditScopeOptions	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpEditServerPolicy	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpDeleteServerPolicy	DhcpServerOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpEditScopePolicy	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpDeleteScopePolicy	DhcpScopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators
MsmDhcpCreateSuperscope	DhcpSuperscopeOperations	FALSE	FALSE	FALSE	IPAM MSM Administrators

3.1.1.1.34.2 Procedures

3.1.1.1.34.2.1 GetOperationById

This procedure can be used to retrieve all the details related to the specified operation.

The following are the input parameters to this procedure:

Param_operationId: This is of type OperationId which specifies the operation for which the details need to be retrieved.

The following are the output parameters from this procedure:

Param_OperationGroupId: This is of type OperationGroup.

Param_IsAdminRoleOnlyOperation: This is of type bool.

Param_IsNonRBACOperation: This is of type bool.

Param_IsAccessScopeAgnosticOperation: This is of type bool.

Param_NonRBACAdminAccessRequirement: This is a collection of SIDs.

The following are the processing steps involved:

1. Retrieve the rows from the ADM_AdminOperationsTable that have OperationId as Param_operationId.

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2. Assign OperationGroupId to Param_OperationGroupId.
3. Assign IsAdminRoleOnlyOperation to Param_IsAdminRoleOnlyOperation.
4. Assign IsNonRBACOperation to Param_IsNonRBACOperation.
5. Assign IsAccessScopeAgnosticOperation to Param_IsAccessScopeAgnosticOperation.
6. Assign NonRBACAdminAccessRequirement to Param_NonRBACAdminAccessRequirement.
7. Return from the procedure.

3.1.1.1.35 ADM_RoleDefinitionTable

This is a simple table containing the details of the user role definitions in the IPAM data store. An IPAM user role is a container that can be used to group together a set of IPAM operations.

3.1.1.1.35.1 Data Model

RoleId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

RoleDetails: A number of user role-specific properties that are modeled as the following set of fields in the UserRole data structure.

RoleName: unique: This property of the row should be unique in the entire table.

RoleDescription

IsBuiltInRole

Operations: This is a collection of all IpamAdminOperation allowed for the role.

When the IPAM data store is being provisioned, the following tables are initialized.

Built-in User Roles

Role Name	Role Id
DNS Record Administrator	3
IP Address Record Administrator	5
IPAM Administrator	8
IPAM ASM Administrator	6
IPAM DHCP Administrator	4
IPAM DHCP Reservations Administrator	1
IPAM DHCP Scope Administrator	2
IPAM MSM Administrator	7

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3.1.1.1.35.2 Procedures

3.1.1.1.35.2.1 GetUserRoleById

This procedure can be used to retrieve a specific user role definition for the specified record identifier.

The following are the input parameters to this procedure:

Param_roleId: This is a 64-bit signed integer that specifies the RoleId of the user role which is being requested.

The following is the output parameter from this procedure:

Result_role: This is of type UserRole corresponding to the Param_roleId for which the information is being requested.

The following are the processing steps involved:

1. Lookup the row in the ADM_RoleDefinition with RoleId value being Param_roleId.
2. If row is not found then return null. Otherwise initialize Result_role with UserRole.
3. Assign Result_role.RoleId with RoleId of the row.
4. Copy the RoleDetails into Result_role.
5. Call GetAllOperationsForRoleById of ADM_RoleOperationMapTable with Param_roleId initialized to RoleId.
6. Assign Result_role.Operations with Result_Operations output.
7. Return Result_role as the output of the procedure.

3.1.1.1.35.2.2 GetUserRoleByName

This procedure can be used to retrieve a specific user role definition that has the specified RoleName.

The following are the input parameters to this procedure:

Param_roleName: This is of type string which specifies the RoleName of the user role which is being requested.

The following is the output parameter from this procedure:

Result_role: of type UserRole

The following are the processing steps involved:

1. Lookup the row in the ADM_RoleDefinition with RoleName value being Param_roleName.
2. If row is not found then return null. Otherwise initialize Result_role with UserRole.
3. Assign Result_role.RoleId with RoleId of the row.
4. Copy the RoleDetails into Result_role.

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5. Call GetAllOperationsForRoleById of ADM_RoleOperationMapTable with Param_roleId initialized to RoleId.
6. Assign Result_role.Operations with Result_Operations output.
7. Return Result_role as the output of the procedure.

3.1.1.1.35.2.3 GetAllUserRoles

This procedure can be used to retrieve all the user role definitions that are in the table.

There are no input parameters for this function.

The following is the output parameter from this procedure:

Result_userRoles: Collection of type UserRole

The following are the processing steps involved:

1. Retrieve all the rows in the ADM_RoleDefinitionTable.
2. Initialize Result_userRoles as collection of UserRole.
3. For each row that has been retrieved, perform the following steps:
    1. Call the GetUserRoleById procedure of ADM_RoleDefinitionTable by passing RoleId of the row as Param_roleId.
    2. Add the Result_role to the Result_userRoles collection.
4. Return Result_userRoles as the output of the procedure.

3.1.1.1.35.2.4 GetBuiltinUserRoles

This procedure can be used to retrieve all the built-in user role definitions that are in the table.

There are no input parameters for this function.

The following is the output parameter from this procedure:

Result_userRoles: Array of type UserRole

The following are the processing steps involved:

1. Retrieve all the rows in the ADM_RoleDefinitionTable that have IsBuiltInRole set to true.
2. Initialize Result_userRoles as a collection of UserRole.
3. For each row that has been retrieved, perform the following steps:
    1. Call the GetUserRoleById procedure of ADM_RoleDefinitionTable by passing RoleId of the row as Param_roleId.
    2. Add the Result_role to the Result_userRoles collection.
4. Return Result_userRoles as the output of the procedure.

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3.1.1.1.36 ADM_RoleOperationMapTable

This is a simple table containing the details of the operations allowed for specific user role definitions in the IPAM data store.

3.1.1.1.36.1 Data Model

RoleDefinitionId: foreign key (ADM_RoleDefinitionTable, RoleId) on update cascade on delete cascade:

OperationId: This is the operation ID as mentioned in the Operations table of ADM_RoleDefinitionTable.

No row in the table should have the same tuple of RoleDefinitionId and OperationId values. This combination constitutes a unique key in the table.

Built-in Operation Groups

The following table contains the details of the built-in operation groups that are defined in the IPAM server. This list of groups is predefined.

OperationGroupName	Operation Group Description
AccessPolicyOperations	This operation group contains operations related to UserAccessPolicy.
AccessScopeOperations	This operation group contains operations related to AccessScope.
AddressBlockOperations	This operation group contains operations related to IPBlock.
AddressOperations	This operation group contains operations related to IPAddress.
AddressRangeOperations	This operation group contains operations related to IPRange.
AddressSpaceOperations	This operation group contains operations related to AddressSpace.
AddressSubnetOperations	This operation group contains operations related to IPSubnet.
AuditOperations	This operation group contains operations related to Audit.
CustomFieldOperations	This operation group contains operations related to CustomFields and CustomFieldValues.
DhcpFailoverOperations	This operation group contains operations related to DHCP Failover.
DhcpScopeOperations	This operation group contains operations related to DHCP Scopes.
DhcpScopeReservationOperations	This operation group contains operations related to DHCP Scope Reservations.
DhcpServerOperations	This operation group contains operations related to DHCP Servers.
DhcpSuperscopeOperations	This operation group contains operations related to DHCP Superscope.
DnsRecordOperations	This operation group contains operations related to creation and deletion of A and PTR DNS records.
DnsZoneOperations	This operation group contains operations related to DNS Forward and Reverse Lookup zones.

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OperationGroupName	Operation Group Description
GenericOperations	This operation group contains operations which can be performed on the IPAM Server which are not related to any specific object like IPRange or IPAddress etc.
GlobalConfigurationOperations	This operation group contains operations which can be performed on the IPAM Server which are related to various configuration settings on the IPAM Server.
HostGroupOperations	This operation group contains operations related to HostGroups.
LogicalGroupOperations	This operation group contains operations related to LogicalGroup.
MACAddressPoolOperations	This operation group contains operations related to MAC Address Pools.
SecretKeyOperations	This operation group contains operations related to the signing key which IPAM Server uses.
ServerInventoryOperations	This operation group contains operations related to Server objects.
TaskOperations	This operation group contains operations related to Tasks that can be invoked by the user.
UserRoleOperations	This operation group contains operations related to UserRole.

At the time of IPAM Data Store provisioning, Built-in User Roles are mapped to specific operations as per the Operation Group mapping specified in the following table.

Role Name	Role Id	Allowed Operation Groups
DNS Record Administrator	3	OperationGroup.DnsRecordOperations
IP Address Record Administrator	5	OperationGroup.AddressOperations
IPAM Administrator	8	OperationGroup.AccessPolicyOperations OperationGroup.AccessScopeOperations OperationGroup.AddressBlockOperations OperationGroup.AddressOperations OperationGroup.AddressRangeOperations OperationGroup.DhcpScopeOperations OperationGroup.DhcpScopeReservationOperations OperationGroup.DhcpServerOperations OperationGroup.DnsRecordOperations OperationGroup.DnsZoneOperations OperationGroup.LogicalGroupOperations OperationGroup.CustomFieldOperations OperationGroup.AddressSubnetOperations OperationGroup.AddressSpaceOperations OperationGroup.DhcpFailoverOperations OperationGroup.DhcpSuperscopeOperations
IPAM ASM Administrator	6	OperationGroup.AddressBlockOperations

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Role Name	Role Id	Allowed Operation Groups
		OperationGroup.AddressRangeOperations OperationGroup.AddressOperations OperationGroup.CustomFieldOperations OperationGroup.AddressSubnetOperations OperationGroup.AddressSpaceOperations
IPAM DHCP Administrator	4	OperationGroup.DhcpServerOperations OperationGroup.DhcpScopeOperations OperationGroup.DhcpScopeReservationOperations OperationGroup.CustomFieldOperations OperationGroup.DhcpFailoverOperations OperationGroup.DhcpSuperscopeOperations
IPAM DHCP Reservations Administrator	1	OperationGroup.DhcpScopeReservationOperations
IPAM DHCP Scope Administrator	2	OperationGroup.DhcpScopeOperations OperationGroup.DhcpScopeReservationOperations OperationGroup.DhcpSuperscopeOperations
IPAM MSM Administrator	7	OperationGroup.DhcpServerOperations OperationGroup.DhcpScopeOperations OperationGroup.DhcpScopeReservationOperations OperationGroup.DnsZoneOperations OperationGroup.DnsRecordOperations OperationGroup.CustomFieldOperations OperationGroup.DhcpFailoverOperations OperationGroup.DhcpSuperscopeOperations

3.1.1.1.36.2 Procedures

3.1.1.1.36.2.1 GetAllOperationsForRoleById

This procedure can be used to retrieve all the operations associated to a defined UserRole.

The following are the input parameters to this procedure:

Param_roleId: This is a 64-bit signed integer that specifies the RoleId of the user role for which the operations are being requested.

The following is the output parameter from this procedure:

Result_operations: collection of type IpamAdminOperation

The following are the processing steps involved:

- Retrieve all the rows in the ADM_RoleOperationMapTable that have RoleDefinitionId as Param_roleId.
- Initialize Result_operations as Collection of IpamAdminOperation.
- For each row that has been retrieved, perform the following steps:

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- Create an instance adminOperation of type IpamAdminOperation and assign the following values to this:
  - Assign OperationId to adminOperation.OperationId.
  - Look up the Operation table mentioned in ADM_AdminOperationsTable for the OperationId and assign the corresponding Operation Name, Category, and IsAdminRoleOnlyOperation values to adminOperation.OperationName, adminOperation.Category, and adminOperation.IsAdminRoleOnlyOperation properties.
  - Look up the Operation Category table mentioned in ADM_RoleOperationMapTable for the Operation Category Id and assign the corresponding Operation Category Name value to adminOperation.CategoryName property.
- Add the adminOperation to Result_operations collection.

- Return Result_operations as the output of the procedure.

3.1.1.1.36.2.2 AddOperationToRole

This procedure can be used to add a row to ADM_RoleOperationMapTable to relate an operation with the corresponding defined UserRole.

The following are the input parameters to this procedure:

Param_roleId: This is a 64-bit signed integer that specifies the RoleId of the user role for which the operation is being requested.

Param_operationId: of type signed integer that specifies a valid operation mentioned in the Operation table defined in ADM_RoleOperationMapTable.

The following is the output parameter from this procedure:

Result_operationStatus: of type Boolean

The following are the processing steps involved:

- Look up all the rows in the ADM_RoleOperationMapTable that have RoleDefinitionId as Param_roleId and OperationId as Param_operationId. If there is any such row, return false.
- Add the corresponding row in the table with RoleDefinitionId as Param_roleId and OperationId as Param_operationId. Return true.

3.1.1.1.36.2.3 RemoveOperationFromRole

This procedure can be used to delete a row to ADM_RoleOperationMapTable to remove an associated operation with the corresponding defined UserRole.

The following are the input parameters to this procedure:

Param_roleId: This is a 64-bit signed integer that specifies the RoleId of the user role for which the operation is being requested.

Param_operationId: of type signed integer that specifies a valid operation mentioned in the Operation table defined in ADM_RoleOperationMapTable.

The following is the output parameter from this procedure:

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Result_operationStatus: of type Boolean

The following are the processing steps involved:

- Look up the rows in the ADM_RoleOperationMapTable that have RoleDefinitionId as Param_roleId and OperationId as Param_operationId.
- If there is any such row, then remove this row and return true. If there is no such row then return false.

3.1.1.1.37 ADM_AccessScopeTable

This is a simple table containing the details of the AccessScope definitions in the IPAM data store. Access scopes are logical entities that determine whether a user would have access to an IPAM object or not. Specific IPAM objects can be associated with an access scope. The same access scope can be associated with more than one IPAM object but one IPAM object can be associated only with one access scope. IPAM access scopes follow a hierarchical tree structure. An AccessScope can have other AccessScopes as its children and so on.

3.1.1.1.37.1 Data Model

AccessScopeId: Specifies a primary key. A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

ParentAccessScopeId: Specifies a foreign key (ADM_AccessScopeTable, AccessScopeId) on update no action on delete no action:

AccessScopeDetails: A number of AccessScope-specific properties that are modeled as the following set of fields in the AccessScope data structure.

Label

Description

FullScopePath

IsBuiltIn

In the ADM_AccessScopeTable, the combination of ParentAccessScopeId and Label constitute a unique row characteristic and SHOULD NOT be duplicated in any other row.

When the IPAM data store is being provisioned, a default built in AccessScope with following details is created:

AccessScopeId: 1

ParentAccessScopeId: 0

Label: Global

Description: This is the global access scope. All objects in the system will belong to this scope.

FullScopePath: \Global

IsBuiltIn: True

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3.1.1.1.37.2 Procedures

3.1.1.1.37.2.1 GetAccessScopeById

This procedure can be used to retrieve a specific AccessScope for the specified record identifier.

The following are the input parameters to this procedure:

Param_scopeId: This is a 64-bit signed integer that specifies the AccessScopeId of the AccessScope that is being requested.

The following is the output parameter from this procedure:

Result_accessScope: of type AccessScope

The following are the processing steps involved:

- Lookup the row in the ADM_AccessScope with AccessScopeId value being Param_scopeId.
- If row is not found then return null. Otherwise initialize Result_accessScope with AccessScope.
- Assign Result_accessScope.AccessScopeId with AccessScopeId of the row.
- Assign Result_accessScope.ParentAccessScopeId with ParentAccessScopeId of the row.
- Copy the AccessScopeDetails into Result_accessScope.
- Return Result_accessScope as the output of the procedure.

3.1.1.1.37.2.2 GetAllAccessScopes

This procedure can be used to retrieve all the AccessScopes that are in ADM_AccessScopeTable.

There are no input parameters for this procedure.

The following is the output parameter from this procedure:

Result_accessScopes: Collection of type AccessScope

The following are the processing steps involved:

- Retrieve all the rows in the ADM_AccessScopeTable.
- Initialize Result_accessScopes as Collection of AccessScope.
- For each row that has been retrieved, perform the following steps:
  - Call GetAccessScopeById procedure of ADM_AccessScopeTable by passing AccessScopeId of the row as Param_scopeId.
  - Add the Result_accessScope to Result_accessScopes collection.
- Return Result_accessScopes as the output of the procedure.

3.1.1.1.37.2.3 GetAllChildAccessScopesForScope

This procedure can be used to retrieve all the AccessScopes that have the specified AccessScope in their parent hierarchy.

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The following are the input parameters to this procedure:

Param_scopeId: This is a 64-bit signed integer that specifies the AccessScopeId of the AccessScope for which the child AccessScopes are being requested.

The following is the output parameter from this procedure:

Result_childScopes: Collection of type AccessScope

The following are the processing steps involved:

- Retrieve all the rows in the ADM_AccessScopeTable that have ParentAccessScopeId same as Param_scopeId.
- Initialize Result_childScopes as Collection of AccessScope.
- For each row that has been retrieved, perform the following steps:
  - Call GetAllChildAccessScopesForScope procedure of ADM_AccessScopeTable by passing AccessScopeId of the row as Param_scopeId.
  - Add the output of procedure GetAllChildAccessScopesForScope Result_childScopes to Result_childScopes collection.
- Return Result_childScopes as the output of the procedure.

3.1.1.1.37.2.4 SetAccessScopeForObject

The following are the input parameters to this procedure:

Param_objectId: Of type signed 64-bit integer.

Param_objectType: Of type IpamObjectType.

Param_scopeId: Of type signed 64-bit integer.

The following is the output parameter from this procedure:

Result_status: A tuple row contain 2 entries, first one of type signed 64-bit integer, second one of type IpamException.

The following are the processing steps involved:

- Call procedure SetOrResetAssociation of ADM_AccessScopeAssociationTable by assigning the following parameters:
  - Param_objectId is assigned to Param_objectId.
  - Param_objectType is assigned to Param_objectType.
  - Param_accessScopeId is assigned to Param_accessScopeId.
- If there are any exceptions of type IpamException thrown by the called procedure, add them to Result_status by forming a tuple of Param_objectId and the caught exception.
- Return Result_status from the procedure.

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3.1.1.1.38 ADM_UserAccessPolicyTable

This is a simple table containing the details of the UserAccessPolicy definitions in the IPAM data store.

3.1.1.1.38.1 Data Model

PolicyId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store SHOULD assign a unique value when a new row is inserted into the table.

UserAccessPolicyDetails: A number of UserAccessPolicy-specific properties that are modeled as the following set of fields in the UserAccessPolicy data structure.

GroupSid

IsValid

DomainName

GroupName

DisplayName

PolicyDescription

3.1.1.1.38.2 Procedures

3.1.1.1.38.2.1 GetPolicyById

This procedure can be used to retrieve a specific UserAccessPolicy for the specified record identifier.

The following are the input parameters to this procedure:

Param_policyId: This is a 64-bit signed integer that specifies the PolicyId of the UserAccessPolicy that is being requested.

The following is the output parameter from this procedure:

Result_accessPolicy: Of type UserAccessPolicy

The following are the processing steps involved:

- Lookup the row in the ADM_UserAccessPolicyTable with PolicyId value being Param_policyId.
- If row is not found then return null. Otherwise initialize Result_accessPolicy with UserAccessPolicy.
- Assign Result_accessPolicy.PolicyId with PolicyId of the row.
- Copy the UserAccessPolicyDetails into Result_accessPolicy.
- Call GetPolicyMapEntriesForPolicyId procedure of ADM_PolicyMapTable with Param_policyId o as the parameter. Assign the Result_policyEntries to Result_accessPolicy.PolicyDefinition.
- Return Result_accessPolicy as the output of the procedure.

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3.1.1.1.38.2.2 GetPolicyForUserSid

This procedure can be used to retrieve a specific UserAccessPolicy for the specified User SID.

The following are the input parameters to this procedure:

Param_userSid: This is of type string that specifies the User SID for which the policy needs to be retrieved.

The following is the output parameter from this procedure:

Result_accessPolicy: Of type UserAccessPolicy

The following are the processing steps involved:

- Convert the given Param_userSid from string format to byte array format by System.Security.Prinicipal.SecurityIdentifier(Param_userSid).GetBinaryForm() method.
- Lookup the row in the ADM_UserAccessPolicyTable with GroupSid value being Param_userSid.
- If row is not found then return null. Otherwise initialize Result_accessPolicy with UserAccessPolicy.
- Assign Result_accessPolicy.PolicyId with PolicyId of the row.
- Copy the UserAccessPolicyDetails into Result_accessPolicy.
- Call GetPolicyMapEntriesForPolicyId procedure of ADM_PolicyMapTable with PolicyId assigned to Param_policyId as the parameter. Assign the Result_policyEntries to Result_accessPolicy.PolicyDefinition.
- Return Result_accessPolicy as the output of the procedure.

3.1.1.1.39 ADM_PolicyMapTable

This is a simple table containing the details of the mapping of operations (represented by RoleId) that can be performed by a specific user/group (represented by PolicyId) on objects belonging to a specific AccessScope (represented by AccessScopeId) in the IPAM data store.

3.1.1.1.39.1 Data Model

PolicyId: Foreign key (ADM_AccessPolicyTable, PolicyId) on delete cascade.

RoleId: Foreign key (ADM_RoleDefinitionTable, RoleId) on delete cascade.

AccessScopeId: Foreign key (ADM_AccessScopeTable, AccessScopeId) on delete cascade.

These three items together form a unique row in the table**.**

3.1.1.1.39.2 Procedures

3.1.1.1.39.2.1 AddPolicyMapEntry

This procedure can be used to add a row to ADM_PolicyMapTable to relate a User with User Role and AccessScope.

The following are the input parameters to this procedure:

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Param_policyId: This is a 64-bit signed integer that specifies the PolicyId of the UserAccessPolicy for which the operations is being requested.

Param_roleId: This is a 64-bit signed integer that specifies the RoleId of the user role for which the operation is being requested.

Param_accessScopeId: This is a 64-bit signed integer that specifies the AccessScopeId of the AccessScope for which the operation is being requested.

There is no output parameter from this procedure.

The following are the processing steps involved:

- Look up all the rows in the ADM_PolicyMapTable that have RoleId as Param_roleId, PolicyId as Param_policyId, and AccessScopeId as Param_accessScopeId. If there is any such row, then don't do any action and return.
- Add the corresponding row in the table with RoleId as Param_roleId, PolicyId as Param_policyId, and AccessScopeId as Param_accessScopeId.

3.1.1.1.39.2.2 DeletePolicyMapEntry

This procedure can be used to remove a row from ADM_PolicyMapTable that relates a User with User Role and AccessScope.

The following are the input parameters to this procedure:

Param_policyId: This is a 64-bit signed integer that specifies the PolicyId of the UserAccessPolicy for which the operation is being requested.

Param_roleId: This is a 64-bit signed integer that specifies the RoleId of the user role for which the operationis being requested.

Param_accessScopeId: This is a 64-bit signed integer that specifies the AccessScopeId of the AccessScope for which the operation is being requested

There is no output parameter from this procedure.

The following are the processing steps involved:

- Look up all the rows in the ADM_PolicyMapTable that have RoleId as Param_roleId, PolicyId as Param_policyId, and AccessScopeId as Param_accessScopeId.
- If there is any such row, then remove this row and the returned procedure can be used to remove a row from ADMPolicyMapTable which relates a User with User Role and AccessScope.

3.1.1.1.39.2.3 GetPolicyMapEntriesForPolicyId

This procedure can be used to retrieve all the entries mapping UserRole to corresponding AccessScope for a specific PolicyId.

The following are the input parameters to this procedure:

Param_policyId: This is a 64-bit signed integer that specifies the PolicyId of the UserAccessPolicy for which the operation is being requested.

The following is the output parameter from this procedure:

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Result_policyEntries: Collection of type AccessScopeToUserRoleMapping

The following are the processing steps involved:

- Retrieve all the rows in the ADM_PolicyMapTable that have PolicyId as Param_policyId.
- Initialize Result_policyEntries as Collection of AccessScopeToUserRoleMapping.
- For each row that has been retrieved, perform the following steps:
- Create an instance policyEntry of type AccessScopeToUserRoleMapping and assign the following values:

  1. Assign RoleId to policyEntry.UserRoleId.
  2. Call GetUserRoleById of ADM_RoleDefinitionTable by passing the RoleId as Param_roleId. Assign Result_role.Name to policyEntry.UserRoleName.
  3. Assign AccessScopeId to policyEntry.AccessScopeId.
  4. Call GetAccessScopeById of ADM_AccessScopeTable by passing the AccessScopeId as Param_accessScopeId. Assign Result_accessScope.FullScopePath to policyEntry.AccessScopeName.

- Add the policyEntry to Result_policyEntries collection.
- Return Result_policyEntries as the output of the procedure.

3.1.1.1.40 ADM_AccessScopeAssociationTable

This is a compound table that has IPv4 Address Space Management, IPv6 Address Space Management and Multi Server Management-specific simple tables within it. This table is used to model the association entry for a specific object with the corresponding access scope.

IPAM provides support for adding AccessScope associations for following entities:

Address Space Management: AddressSpace, IPBlock, IPSubnet, IPRange.

Multi-Server Management: Dhcp Server, Dhcp Superscope, Dhcp Scope, Dns Forward Lookup Zone, Dns Reverse Lookup Zone.

3.1.1.1.40.1 Data Model

AssociationId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

ObjectId: This is of type signed 64-bit integer that specifies the RecordId of the object for which this association entry is present.

ObjectType: This is of type IpamObjectType that specifies the type of object for which this association entry is present.

AccessScopeId: foreign key (ADM_AccessScopeTable, AccessScopeId) on delete no action

This specifies the AccessScope to which the object is assigned to.

InheritanceId: foreign key (ADM_AccessScopeAssociationTable, AssociationId) on delete no action

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This specifies the AssociationId of the parent object from which this object inherits the AccessScope. If IsInheriting is set to FALSE, then the InheritanceId for the row should be equal to AssociationId of the row.

IsInheriting: This is set to TRUE if the object for which this entry is there inherits the AccessScope from its parent object.

In a table, each row must have a **unique** combination of ObjectId and ObjectType.

3.1.1.1.40.2 Procedures

3.1.1.1.40.2.1 GetParentForObject

This procedure can be used to create an appropriate association entry for the objects on which access scope associations can be done.

The following are the input parameters to this procedure:

Param_objectId: Of type signed 64-bit integer that specifies the RecordId of the corresponding object for which the association entry needs to be done.

Param_objectType: This is of type IpamObjectType and identifies the object type of the entity for which the association entry needs to be done.

The following are the output parameter from this procedure:

Param_ParentObjectId: This is of type signed 64-bit integer that specifies the RecordId of the parent of the specified object.

Param_ParentObjectType: This is of type IpamObjectType and identifies the object type of the parent of the specified object.

The following are the processing steps involved:

- Assign null to Param_ParentObjectId and Param_ParentObjectType.
- If Param_objectType is IpamObjectType.IPv4AddressSpace or IpamObjectType.IPv6AddressSpace, return.
- If Param_objectType is IpamObjectType.DNSForwardLookupZone or IpamObjectType.DnsReverseLookupZone, return.
- If Param_objectType is IpamObjectType.DHCPServerv4 or IpamObjectType.DHCPServerv6, return.
- If Param_objectType is IpamObjectType.IPv4Block, then look up the IPv4-specific simple table of ADM_IPBlocksTable for the row that has RecordId equal to Param_ObjectId. If such a row exists and ParentBlockRecordId for this row is not null, then assign ParentBlockRecordId to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv4Block. Return from the procedure.
- If Param_objectType is IpamObjectType.IPv6Block, then look up the IPv6-specific simple table of ADM_IPBlocksTable for the row that has RecordId equal to Param_ObjectId. If such a row exists and ParentBlockRecordId for this row is not null, then assign ParentBlockRecordId to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv6Block. Return from the procedure.

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- If Param_objectType is IpamObjectType.IPv4Subnet, then look up the IPv4-specific simple table of ADM_IPBlocksTable for the row that has RecordId equal to Param_ObjectId. If such a row exists and ParentBlockRecordId for this row is not null, then assign ParentBlockRecordId to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv4Block. If ParentBlockRecordId for the row is null, then assign AddressSpaceRecordId of the row to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv4AddressSpace. Return from the procedure.
- If Param_objectType is IpamObjectType.IPv6Subnet, then look up the IPv6-specific simple table of ADM_IPBlocksTable for the row that has RecordId equal to Param_ObjectId. If such a row exists and ParentBlockRecordId for this row is not null, then assign ParentBlockRecordId to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv6Block. If ParentBlockRecordId for the row is null, then assign AddressSpaceRecordId of the row to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv6AddressSpace. Return from the procedure.
- If Param_objectType is IpamObjectType.IPv4Range, then look up the IPv4-specific simple table of ADM_IPRangeTable for the row that has RecordId equal to Param_ObjectId. If such a row exists and ParentIPBlockRecordId for this row is not null, then assign ParentIPBlockRecordId to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv4Subnet. Return from the procedure.
- If Param_objectType is IpamObjectType.IPv6Range, then look up the IPv6-specific simple table of ADM_IPRangeTable for the row that has RecordId equal to Param_ObjectId. If such a row exists and ParentIPBlockRecordId for this row is not null, then assign ParentIPBlockRecordId to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.IPv6Subnet. Return from the procedure.
- If Param_objectType is IpamObjectType.DHCPSuperscopev4, then look up the ADM_DhcpSuperScopeTable for the row that has RecordId equal to Param_ObjectId. If such a row exists then assign Server of row to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.DHCPServerv4. Return from the procedure.
- If Param_objectType is IpamObjectType.DHCPScopev4, then look up the IPv4-specific simple table of ADM_DHCPScopesTable for the row that has RecordId equal to Param_ObjectId. If such a row exists and SuperscopeId for this row is not null, then assign SuperscopeId to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.DHCPSuperscopeV4. If SuperscopeId for the row is null, then assign DHCPServerRecordId of row to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.DHCPServerv4. Return from the procedure.
- If Param_objectType is IpamObjectType.DHCPScopev6, then look up the IPv6-specific simple table of ADM_DHCPScopesTable for the row that has RecordId equal to Param_ObjectId. If such a row exists then assign DHCPServerRecordId of row to Param_ParentObjectId and set Param_ParentObjectType to IpamObjectType.DHCPServerv6. Return from the procedure.
- Return from the procedure.

3.1.1.1.40.2.2 GetChildrensForObject

This procedure can be used to create an appropriate association entry for the objects on which access scope associations can be done.

The following are the input parameters to this procedure:

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Param_objectId: Of type signed 64-bit integer that specifies the RecordId of the corresponding object for which the association entry needs to be done.

Param_objectType: This is of type IpamObjectType and identifies the object type of the entity for which the association entry needs to be done.

The following is the output parameter from this procedure:

Result_childObjects: This is a collection of tuples with the following members:

ObjectId: This is of type signed 64-bit integer that specifies the RecordId of the child object.

ObjectType: This is of type IpamObjectType and identifies the object type of the child object.

The following are the processing steps involved:

- Assign null to Result_childObjects.
- If Param_objectType is IpamObjectType.IPv4Range or IpamObjectType.IPv6Range, return Result_childObjects.
- If Param_objectType is IpamObjectType.DNSForwardLookupZone or IpamObjectType.DnsReverseLookupZone, return Result_childObjects.
- If Param_objectType is IpamObjectType.DHCPScopev4 or IpamObjectType.DHCPScopev6, return Result_childObjects.
- Initialize Result_childObjects to Collection<Tuple<long,IpamObjectType>>.
- If Param_objectType is IpamObjectType.IPv4AddressSpace then perform the following steps:
  - Call procedure GetAllSubnetsForAddressSpace by assigning Param_objectId to Param_AddresSpaceRecordId and setting Param_addressFamily to Internet.
  - Process the output from the procedure Result_Subnets. For each entry Subnet in the Result_Subnets collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Subnet.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.IPv4Subnet. Add child to Result_childObjects collection.
- If Param_objectType is IpamObjectType.IPv6AddressSpace then perform the following steps:
  - Call procedure GetAllSubnetsForAddressSpace by assigning Param_objectId to Param_AddresSpaceRecordId and setting Param_addressFamily to InternetV6.
  - Process the output from the procedure Result_Subnets. For each entry Subnet in the Result_Subnets collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Subnet.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.IPv6Subnet. Add child to Result_childObjects collection.
- If Param_objectType is IpamObjectType.IPv4Block then perform the following steps:
  - Call procedure GetChildIPBlocksForBlock by assigning Param_objectId to Param_blockId and setting Param_addressFamily to Internet.
  - Process the output from the procedure Result_childBlocks. For each entry block in the Result_childBlocks collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Block.RecordId to child.ObjectId. If child.IsSubnet is equal to 1 then set

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child.ObjectType to IpamObjectType.IPv4Subnet, else set child.ObjectType to IpamObjectType.IPv4Block. Add child to Result_childObjects collection.

- If Param_objectType is IpamObjectType.IPv6Block then perform the following steps:
  - Call procedure GetChildIPBlocksForBlock by assigning Param_objectId to Param_blockId and setting Param_addressFamily to Internet.
  - Process the output from the procedure Result_childBlocks. For each entry block in the Result_childBlocks collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Block.RecordId to child.ObjectId. If child.IsSubnet is equal to 1 then set child.ObjectType to IpamObjectType.IPv6Subnet else set child.ObjectType to IpamObjectType.IPv6Block. Add child to Result_childObjects collection.
- If Param_objectType is IpamObjectType.IPv4Subnet then perform the following steps:
  - Call procedure GetChildRangesForBlock by assigning Param_objectId to Param_blockId and setting Param_addressFamily to Internet.
  - Process the output from the procedure Result_childRanges. For each entry Range in the Result_childRanges collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Range.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.IPv4Range. Add child to Result_childObjects collection.
- If Param_objectType is IpamObjectType.IPv6Subnet then perform the following steps:
  - Call procedure GetChildRangesForBlock by assigning Param_objectId to Param_blockId and setting Param_addressFamily to InternetV6.
  - Process the output from the procedure Result_childRanges. For each entry Range in the Result_childRanges collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Range.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.IPv6Range. Add child to Result_childObjects collection.
- If Param_objectType is IpamObjectType.DhcpServerv4 then perform the following steps:
  - Call procedure GetSuperscopesForServer of ADM_DhcpSuperscopeTable by assigning Param_objectId to Param_serverId.
  - Process the output from the procedure Result_Superscopes. For each entry Superscope in the Result_Superscopes collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Superscope.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.DHCPSuperscopeV4. Add child to Result_childObjects collection.
  - Call procedure GetScopesForServer of ADM_DHCPScopesTable by assigning Param_objectId to Param_serverId and setting Param_addressFamily to Internet.
  - Process the output from the procedure Result_Scopes. For each entry Scope in the Result_Scopes collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Scope.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.DHCPScopeV4. Add child to Result_childObjects collection.
- If Param_objectType is IpamObjectType.DhcpServerv6 then perform the following steps:
  - Call procedure GetScopesForServer of ADM_DHCPScopesTable by assigning Param_objectId to Param_serverId and setting Param_addressFamily to InternetV6.

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- Process the output from the procedure Result_Scopes. For each entry Scope in the Result_Scopes collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Scope.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.DHCPScopeV6. Add child to Result_childObjects collection.

- If Param_objectType is IpamObjectType.DHCPSuperscopeV4 then perform the following steps:

  - Call procedure GetScopesForSuperscope of ADM_DHCPScopesTable by assigning Param_objectId to Param_superscopeId.

  - Process the output from the procedure Result_Scopes. For each entry Scope in the Result_Scopes collection, initialize an instance child of type Tuple<long,IpamObjectType>. Assign Scope.RecordId to child.ObjectId and set child.ObjectType to IpamObjectType.DHCPScopeV4. Add child to Result_childObjects collection.

- Return Result_childObjects as the output from the procedure.

3.1.1.1.40.2.3 CreateAssociationEntry

This procedure can be used to create an appropriate association entry for the objects on which access scope associations can be done.

The following are the input parameters to this procedure:

Param_objectId: Of type signed 64-bit integer that specifies the RecordId of the corresponding object for which the association entry needs to be done.

Param_objectType: This is of type IpamObjectType and identifies the object type of the entity for which the association entry needs to be done.

The following is the output parameter from this procedure:

Result_recordId: Of type signed 64-bit integer that specifies the AssociationId of the row that has been added to the table for this entry.

The following are the processing steps involved:

- Look up all the rows in the ADM_AccessScopeAssociationTable that have ObjectId as Param_objectId and ObjectType as Param_objectType. If there is any such row, then don't do any action and return null.

- Initialize a Collection<Tuple<Object,ObjectType>> impactedChildObjects. The collection should be empty.

- Compute the ParentObjectId and ParentObjectType for the specified object by calling procedure GetParentForObject of ADM_AccessScopeAssociationTable by passing the following parameters:

  - Param_objectId is set to Param_objectId.

  - Param_objectType is set to Param_objectType.

  - Param_ParentObjectId.

  - Param_ParentObjectType.

    Process the output of the procedure and assign Param_ParentObjectId to ParentObjectId, assign Param_ParentObjectType to ParentObjectType.

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- If ParentObjectId and ParentObjectType is not null, then do following:
  - Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
    - Param_objectId set to ParentObjectId
    - Param_objectType set to ParentObjectType
  - After the return from the procedure, assign the following:
    - Param_inheritanceId to InheritanceId
    - Param_accessScopeId to AccessScopeId
- If ParentObjectId is null, then do following:
  - InheritanceId is set to AssociationId for this row.
  - AccessScopeId is set to 1 which maps to default Global access scope.
  - Compute all the Child Object Id and Object types that map to the current object under processing. Initialize an instance of Collection<Tuple<long ObjectId,IpamObjectType ObjectType>> impactedChildObjects. Call procedure GetChildrensForObject by passing Param_objectId and Param_objectType as parameters. Process the result from the procedure Result_childObjects. Assign Result_childObjects to impactedChildObjects.
- Set IsInheriting to True.
- Add the corresponding row in the table and assign the AssociationId to Result_recordId.
- If impactedChildObjects collection is not empty, then for each of the item impactedChildObject in the collection impactedChildObjects, do the following steps:
  - Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
    - Param_objectId set to impactedChildObject.ObjectId.
    - Param_objectType set to impactedChildObject.ObjectType.
  - After the return from the procedure, validate the following:
    - Param_inheritanceId is equal to InheritanceId.
    - Param_accessScopeId is equal to AccessScopeId.
  - If both the previous conditions are true, then call the UpdateAssociationEntry procedure with the following parameter assignments:
    - Param_objectId set to impactedChildObject.object.RecordId.
    - Param_objectType set to impactedChildObject.ObjectType.
    - Param_inheritanceId set to AssociationId.
    - Param_accessScopeId set to AccessScopeId.
    - Set Param_isInheriting set to True.

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- Return the Result_recordId from the procedure.

3.1.1.1.40.2.4 UpdateAssociationEntry

This procedure can be used to update an association entry appropriately for the objects on which access scope associations can be done.

The following are the input parameters to this procedure:

Param_objectId: Of type signed 64-bit integer that specifies the RecordId of the corresponding object for which the association entry needs to be updated.

Param_objectType: This is of type IpamObjectType and identifies the object type of the entity for which the association entry needs to be updated.

Param_accessScopeId: Of type signed 64-bit integer that specifies the AccessScope.AccessScopeId to which the association must be done.

Param_inheritanceId: Of type signed 64-bit integer that specifies the AssociationId of the parent object of the object which is under consideration.

Param_isInheriting: Of type Boolean which signifies whether the object under consideration inherits the AccessScope of its parent or not.

There is no output parameter from this procedure.

The following are the processing steps involved:

- Look up all the rows in the ADM_AccessScopeAssociationTable that have ObjectId as Param_objectId and ObjectType as Param_objectType. If no such row is found then return.
- If such a row is found then do the following assignments:
- Param_inheritanceId to InheritanceId.
- Param_accessScopeId to AccessScopeId.
- Param_isInheriting to IsInheriting.
- Update the corresponding row in the table.

3.1.1.1.40.2.5 SetOrResetAssociation

The following are the input parameters to this procedure:

Param_objectId: Of type signed 64-bit integer that specifies the RecordId of the corresponding object for which the association entry needs to be updated.

Param_objectType: This is of type IpamObjectType and identifies the object type of the entity for which the association entry needs to be updated.

Param_accessScopeId: Of type signed 64-bit integer that specifies the AccessScope.AccessScopeId to which the association must be done.

Param_inheritanceId: Of type signed 64-bit integer that specifies the AssociationId of the parent object of the object which is under consideration.

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Param_isInheriting: Of type Boolean which signifies whether the object under consideration inherits the AccessScope of its parent or not.

There is no output parameter from this procedure.

The following are the processing steps involved:

- Look up for the row in the ADM_AccessScopeAssociationTable that have ObjectId as Param_objectId and ObjectType as Param_objectType. If there is no such row, then don't do any action and return from the procedure.
- Initialize SetAccessScope to false.
- If Param_accessScopeId is not NULL then this procedure has been called to override with a new AccessScope on the object. Assign true to SetAccessScope.
- Initialize a Collection<Tuple<long ObjectId,IpamObjectType ObjectType>> impactedChildObjects.
- Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
  - Param_objectId set to Param_objectId.
  - Param_objectType set to Param_objectType.

    After the return from the procedure, do the following steps:
  - Assign Param_inheritanceId to oldInheritanceId.
  - Assign Param_accessScopeId to oldAccessScopeId.
- If SetAccessScope is true then perform following actions:
  - Call UpdateAssociationEntry procedure with following parameter assignments:
    - Param_objectId set to Param_objectId.
    - Param_objectType set to Param_objectType.
    - Param_inheritanceId set to AssociationId.
    - Param_accessScopeId set to AccessScopeId.
    - Set Param_isInheriting to False.
  - Compute all the Child Object Id and Object types that map to the current object under processing. Call procedure GetChildrensForObject by passing Param_objectId and Param_objectType as parameters. Process the result from the procedure Result_childObjects. Assign Result_childObjects to impactedChildObjects.
  - If impactedChildObjects collection is not empty, then for each of the item impactedChildObject in the collection impactedChildObjects, do the following steps:
    - Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
      - Param_objectId set to impactedChildObject.Object.RecordId.

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        - Param_objectType set to impactedChildObject.ObjectType.
    - After the return from the procedure, validate the following:
        - Param_inheritanceId is equal to oldInheritanceId.
        - Param_accessScopeId is equal to oldAccessScopeId.
    - If both the previous conditions are true, then call the UpdateAssociationEntry procedure with the following parameter assignments:
        - Param_objectId set to impactedChildObject.object.RecordId.
        - Param_objectType set to impactedChildObject.ObjectType.
        - Param_inheritanceId set to AssociationId.
        - Param_accessScopeId set to AccessScopeId.
        - Set Param_isInheriting set to True.
- If SetAccessScope is false then perform following actions:
- Compute the ParentObjectId and ParentObjectType for the specified object by calling procedure GetParentForObject of ADM_AccessScopeAssociationTable by passing the following parameters:
    - Param_objectId is set to Param_objectId.
    - Param_objectType is set to Param_objectType.
    - Param_ParentObjectId.
    - Param_ParentObjectType.
- Process the output of the procedure and assign Param_ParentObjectId to ParentObjectId, assign Param_ParentObjectType to ParentObjectType.
    - If ParentObjectId and ParentObjectType are not null, then do following:
        - Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
            - Param_objectId set to ParentObjectId.
            - Param_objectType set to ParentObjectType.
        - After the return from the procedure, assign the following:
            - Param_inheritanceId to InheritanceId.
            - Param_accessScopeId to AccessScopeId.
    - If ParentObjectId is null, then do the following:
        - InheritanceId is set to AssociationId for this row.
        - AccessScopeId is set to 1 which maps to default Global access scope.

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- Compute all the Child Object Id and Object types that map to the current object under processing. Call procedure GetChildrensForObject by passing Param_objectId and Param_objectType as parameters. Process the result from the procedure Result_childObjects. Assign Result_childObjects to impactedChildObjects.
- Call UpdateAssociationEntry procedure with the following parameter assignments:
  - Param_objectId set to Param_objectId.
  - Param_objectType set to Param_objectType.
  - Param_inheritanceId set to InheritanceId.
  - Param_accessScopeId set to AccessScopeId.
  - Set Param_isInheriting to True.
- If impactedChildObjects collection is not empty, then for each of the item impactedChildObject in the collection impactedChildObjects, do the following steps:
  - Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
    - Param_objectId set to impactedChildObject.Object.RecordId.
    - Param_objectType set to impactedChildObject.ObjectType.
  - After the return from the procedure, validate the following:
    - Param_inheritanceId is equal to oldInheritanceId.
    - Param_accessScopeId is equal to oldAccessScopeId.
  - If both the previous conditions are true, then call UpdateAssociationEntry procedure with the following parameter assignments:
    - Param_objectId set to impactedChildObject.object.RecordId.
    - Param_objectType set to impactedChildObject.ObjectType.
    - Param_inheritanceId set to AssociationId.
    - Param_accessScopeId set to AccessScopeId.
    - Set Param_isInheriting set to True.
- Return from the procedure.

3.1.1.1.40.2.6 DeleteAssociationEntry

This procedure can be used to delete an association entry appropriately for the objects on which access scope associations can be done.

The following are the input parameters to this procedure:

Param_objectId: Of type signed 64-bit integer that specifies the RecordId of the corresponding object for which the association entry needs to be deleted.

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Param_objectType: This is of type IpamObjectType and identifies the object type of the entity for which the association entry needs to be deleted.

There is no output parameter from this procedure.

The following are the processing steps involved:

- Look up all the rows in the ADM_AccessScopeAssociationTable that have ObjectId as Param_objectId and ObjectType as Param_objectType. If no such row is found then return.
- If such a row is found then perform the following steps else return
  - Initialize a Collection<Tuple<Object,ObjectType>> impactedChildObjects. The collection should be empty.
  - Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
    - Param_objectId set to Param_objectId.
    - Param_objectType set to Param_objectType.
  - After the return from the procedure, do the following steps:
    - Assign Param_inheritanceId to oldInheritanceId.
    - Assign Param_accessScopeId to oldAccessScopeId.
- Compute all the Child Object Id and Object types that map to the current object under processing. Call procedure GetChildrensForObject by passing Param_objectId and Param_objectType as parameters. Process the result from the procedure Result_childObjects. Assign Result_childObjects to impactedChildObjects.
- If impactedChildObjects collection is not empty, then for each of the item impactedChildObject in the collection impactedChildObjects, do the following steps:
- Call the procedure GetAccessScopeForObjectIdAndType with the following parameter assignments:
  - Param_objectId set to impactedChildObject.ObjectId.
  - Param_objectType set to impactedChildObject.ObjectType.
  - After the return from the procedure, validate the following:
    - Param_inheritanceId is equal to oldInheritanceId.
    - Param_accessScopeId is equal to oldAccessScopeId.
  - If both the previous conditions are true, then call UpdateAssociationEntry procedure with the following parameter assignments:
    - Param_objectId set to impactedChildObject.ObjectId.
    - Param_objectType set to impactedChildObject.ObjectType.
    - Param_inheritanceId set to AssociationId.
    - Param_accessScopeId set to AccessScopeId.

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- Set Param_isInheriting set to True.

- Delete the association entry row and return.

3.1.1.1.40.2.7 GetAccessScopeForObjectIdAndType

This procedure can be used to retrieve an association entry appropriately for the objects on which access scope associations can be done.

The following are the input parameters to this procedure:

Param_objectId: Of type signed 64-bit integer that specifies the RecordId of the corresponding object for which the association entry needs to be retrieved.

Param_objectType: This is of type IpamObjectType and identifies the object type of the entity for which the association entry needs to be retrieved.

The procedure returns the following:

Param_accessScopeId: Of type signed 64-bit integer that represents the AccessScopeId to which the object is associated.

Param_objectInheritanceStatus: Of type boolean.

Param_inheritanceId: Of type signed 64-bit integer that specifies the AssociationId for the row that represents the object association entry in the table.

The following are the processing steps involved:

- Look up all the rows in the ADM_AccessScopeAssociationTable that have ObjectId as Param_objectId and ObjectType as Param_objectType. If no such row is found then return.
  - InheritanceId to Param_inheritanceId.
  - AccessScopeId to Param_accessScopeId.
  - IsInheriting to Param_objectInheritanceStatus.
- If such a row is found then do the following assignments:
- Return from the procedure.

3.1.1.1.41 ADM_DhcpFailoverRelationTable

This is a simple table that models the DHCP failover relationship that is associated to DHCPServer and DHCPScopes in the IPAM data store.

3.1.1.1.41.1 Data Model

RecordId: A primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

For any row in the table, the combination of RelationshipName, Server1RecordId and Server2RecordId has to be UNIQUE in the table. Server1RecordId and Server2RecordId can also be NULL.

RelationshipName: Of type string with maximum length as 256 characters

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Server1RecordId: foreign key (ADM_DhcpServerTable, RecordId) on delete no action

Server2RecordId: foreign key (ADM_DhcpServerTable, RecordId) on delete no action

FailoverDetails: A number of DHCP failover-specific properties that are modeled as the following set of fields in the DhcpFailover data structure:

Mode

MCLT

AutoStateTransition

StateSwitchInterval

Server1Percentage

SharedSecretEnabled

SharedSecret

Server1State

Server2State

Server1Name

Server2Name

Server1PSName

Server2PSName

Server1IP

Server2IP

3.1.1.1.41.2 Procedures

3.1.1.1.41.2.1 GetDhcpFailoverById

This procedure is used to retrieve a DhcpFailover instance from ADM_DhcpFailoverRelationTable.

The following are the input parameters to this procedure:

Param_FailoverId: Of type signed 64-bit integer. This represents the RecordId of the DHCP failover relationship that needs to be retrieved.

The following is the output parameter from this procedure:

Result_Failover: Of type DhcpFailover

The following are the processing steps involved:

- Lookup the row in the ADM_DhcpFailoverRelationTable with RecordId value being Param_FailoverId.
- Initialize Result_Failover with DhcpFailover.

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- Assign Result_Failover.RecordId with RecordId of the row.
- If Server1RecordId is not 0, then copy Server1RecordId into Result_Failover.Server1RecordId.
- If Server2RecordId is not 0, then copy Server2RecordId into Result_Failover.Server2RecordId.
- Copy the FailoverDetails into Result_Failover.
- Return Result_Failover as the output of the procedure.

3.1.1.1.41.2.2 GetAllDhcpFailoverByServerId

This procedure is used to retrieve a collection of the entire DhcpFailover instances from ADM_DhcpFailoverRelationTable that are associated to a specific DhcpServer.

The following are the input parameters to this procedure:

Param_DhcpServerId: Of type signed 64-bit integer, which represents a RecordId of type DhcpServer for which the failover relationship records need to be retrieved.

Param_failoverCollection: This is an output parameter that is a collection of instances of type DhcpFailover.

The following are the steps involved in the processing:

- Enumerate the rows in ADM_DhcpFailoverRelationTable having either Server1RecordId or Server2RecordId as Param_DhcpServerId.
- Initialize Param_failoverCollection.
- For each row meeting the criteria mentioned in step 1, perform the following steps:
  - Create an instance of DhcpFailover with the following assignments and add it to the Param_failoverCollection collection:
    - Assign DhcpFailover.RecordId with RecordId of the row.
    - If Server1RecordId is not 0, then copy Server1RecordId into DhcpFailover.Server1RecordId.
    - If Server2RecordId is not 0, then copy Server2RecordId into DhcpFailover.Server2RecordId.
- Return from the procedure.

3.1.1.1.42 ADM_DhcpScopeFailoverTable

This is a simple table that models the DHCP scopes association to a DHCP failover relationship in the IPAM data store.

3.1.1.1.42.1 Data Model

RecordId: A primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

FailoverRelationId: Specifies a foreign key (ADM_DhcpFailoverRelationTable, RecordId) on update cascade on delete cascade.

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ScopeId: Specifies a foreign key (ADM_DhcpScopeTable, RecordId) on update cascade on delete cascade.

3.1.1.1.42.2 Procedures

3.1.1.1.42.2.1 GetDhcpFailoverScopes

This procedure retrieves all the DHCP scopes that participate in the given DHCP failover relationship.

The following are the input parameters to this procedure:

Param_Failover: Of type DhcpFailover

Param_scopeCollection: This is an output parameter that is a collection of type DhcpScope. This collection contains all the DhcpScope instances that are part of a specific DHCP failover relationship.

The following are the steps involved in the processing:

- Enumerate all the rows in ADM_DhcpScopeFailoverTable that have FailoverRelationId as Param_Failover.RecordId.
- Initialize Param_scopeCollection.
- For each row meeting the criteria mentioned in step 1, perform the following steps.
  - Call GetScopeFromTable procedure on ADM_DhcpScopeTable with the following parameters:
    - Param_Id is set to ScopeId.
    - Param_addressFamily is set to AddressFamily.Internet.
  - If Result_scope is not NULL, then add it to Param_scopeCollection.
- Return from the procedure.

3.1.1.1.43 ADM_DhcpSuperscopeTable

This is a simple table that models the DHCP superscope in the IPAM data store.

3.1.1.1.43.1 Data Model

RecordId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

Server: Specifies the foreign key (ADM_DhcpServerTable, RecordId) on delete no action.

SuperscopeDetails: A number of DHCP superscope-specific properties that are modeled as the following set of fields in the DhcpSuperscopeV4 data structure:

Name

PercentageUsed

For any row in the table, the combination of Server and Name MUST be unique in the table.

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3.1.1.1.43.2 Procedures

3.1.1.1.43.2.1 GetSuperscopeById

This procedure is used to retrieve a DhcpSuperscopeV4 instance from **ADM_DhcpSuperscopeTable**.

The following are the input parameters to this procedure:

Param_SuperscopeId: Of type unsigned 64-bit integer

The following is the output parameter from this procedure:

Result_superscope: Of type **DhcpSuperscopeV4**.

The following are the processing steps involved:

- Lookup the row in the **ADM_DhcpSuperscopeTable** with RecordId value being *Param_SuperscopeId*.
- Initialize **Result_superscope** with **DhcpSuperscopeV4**.
- Set **Result_superscope.RecordId** to RecordId.
- Copy the SuperscopeDetails into **Result_superscope**.
- Initialize **Result_superscope.Server** with **DhcpServerV4**.
- Set **Result_superscope.Server.RecordId** to the Server of the row.
- Set **Result_superscope.ParentServerId** to the Server of the row.
- Call GetAccessScopeForObjectIdAndType of **ADM_AccessScopeAssociationTable**, passing the following parameters:
  - *Param_objectId* is set to Param_SuperscopeId.
  - *Param_objectType* is set to IpamObjectType.DhcpSuperscopeV4.
  - *Param_accessScopeId*.
  - *Param_objectInheritanceStatus*.
- Assign *Param_accessScopeId* to **Result_superscope.AccessScopeId**.
- Assign *Param_objectInheritanceStatus* to **Result_superscope.IsInheritedAccessScope**.
- Return Result_superscope as the output of the procedure.

3.1.1.1.43.2.2 RenameSuperscope

This procedure uses the IIpamOperationWithProgressCallback interface to provide the details of subtasks, their completion status, and the overall completion status for the operation to the management client.

This procedure is used to change the name of a DHCP superscope that already exists.

The following are the input parameters to this procedure:

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Param_Superscope: Of type DhcpSuperscopeV4

Param_newName: Of type string

There is no output from this procedure.

The following are the processing steps involved:

- Lookup the row in the ADM_DhcpSuperscopeTable with RecordId value being Param_Superscope.RecordId.
- If the row is found, then modify the row and assign Param_newName to Name.

3.1.1.1.43.2.3 GetSuperscopesForServer

This procedure is used to retrieve all DhcpSuperscopeV4 instances from ADM_DhcpSuperscopeTable that are related to a specific DhcpServer instance.

The following are the input parameters to this procedure:

Param_serverId: Of type signed 64-bit integer that represents a RecordId for type DhcpServerV4.

The following is the output parameter from this procedure:

Result_Superscopes: This is an output parameter that is a collection of type DhcpSuperscopeV4 and represents all the DhcpSuperscopeV4 instances that are related to a specific DhcpServerV4 instance.

The following are the processing steps involved:

- Lookup all the rows in the ADM_DhcpSuperscopeTable with Server value being Param_serverId.
- If no such rows are found, initialize Result_superscopes as null and return from the procedure.
- Initialize Result_superscopes as collection of type DhcpSuperscopeV4.
- For each row in the ADM_DhcpSuperscopeTable that has Server equal to Param_ServerId, perform the following operations:
- Call procedure GetSuperscopeById of ADM_DhcpSuperscopeTable by passing RecordId as Param_superscopeId.
- Process the output from the procedure result_superscope and if it is not null add it to Result_superscopes collection.
- Return Result_superscopes as the output of the procedure.

3.1.1.1.44 ADM_DatabaseConfigurationTable

This is a simple table that models the IpamDatabaseConfiguration which is kept in an implementation-dependent persistent store in the IPAM data store.

3.1.1.1.44.1 Data Model

DatabaseConfigurationDetails: There is only a single record in this table and it is modeled on the IpamDatabaseConfiguration complex type.

DatabaseType

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DatabaseAuthenticationType

DatabaseCredential

DatabaseServerNameOrIP

DatabaseName

DatabasePath

DatabasePort

3.1.1.1.44.2 Procedures

3.1.1.1.44.2.1 GetDatabaseConfiguration

This procedure is used to retrieve the current IpamDatabaseConfiguration from ADM_DatabaseConfigurationTable.

There are no input parameters to this procedure:

The following is the output parameter from this procedure:

Result_databaseConfig: This is of type IpamDatabaseConfiguration

The following are the processing steps involved:

- Lookup the row in the ADM_DatabaseConfigurationTable.
- Initialize Result_databaseConfiguration with an instance of IpamDatabaseConfiguration.
- Copy the DatabaseConfigurationDetails into Result_databaseConfig.
- Return Result_databaseConfig as the output of the procedure.

3.1.1.1.45 ADM_DhcpFilterTable

This is a simple table that models the DHCP filters that are associated to DHCP servers in the IPAM data store.

3.1.1.1.45.1 Data Model

FilterId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

ServerId: Specifies a foreign key (ADM_DhcpServersTable, RecordId) on delete cascade on update cascade.

This field represents the DHCPServer that this filter belongs to. This MUST not be null for any row in the table.

Filter Details: A number of DHCP filter-specific properties that are modeled as the following set of fields in the DhcpFilter data structure.

MacAddress: The Mac Address that needs to be filtered – allowed or denied

FilterType: A Boolean, TRUE if equals to IsAllow, FALSE if equals to IsDeny.

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3.1.1.1.45.2 Procedures

3.1.1.1.45.2.1 GetFilterById

This procedure is used to retrieve a DhcpFilter instance from ADM_DhcpFilterTable.

The following are the input parameters to this procedure:

Param_FilterId: Of type unsigned 64-bit integer

The following is the output parameter from this procedure:

Result_filter: Of type DhcpFilter

The following are the processing steps involved:

- Lookup the row in the ADM_DhcpFilterTable with the FilterId value being Param_FilterId.
- Initialize Result_filter with DhcpFilter.

3.1.1.1.45.2.2 GetFiltersForServer

This procedure is used to retrieve all DhcpFilter instances from ADM_DhcpFilterTable that are related to a specific DhcpServer instance.

The following are the input parameters to this procedure:

Param_serverId: Of type signed 64-bit integer that represents a RecordId for type DhcpServerV4

The following is the output parameter from this procedure:

Result_Filters: This is an output parameter that is a collection of type DhcpFilter and represents all the DhcpFilter instances that are related to a specific DhcpServerV4 instance.

The following are the processing steps involved:

- Lookup all the rows in the ADM_DhcpFilterTable with ServerId value being Param_serverId.
- If no such rows are found, initialize Result_Filters as null and return from the procedure.
- Initialize Result_Filters as a collection of type DhcpFilter.
- Call procedure GetFilterById of ADM_DhcpFilterTable by passing FilterId as Param_filterId.
- Process the output from the procedure result_filter and if it is not null add it to Result_Filters collection.
- Return Result_Filters as the output of the procedure.

3.1.1.1.46 ADM_IPRangeMultivaluedPropertiesTable

This is a compound table having IPv4-specific and IPv6-specific simple tables within it. This table models the Multivalue Properties that are associated to IPRanges in the IPAM data store.

3.1.1.1.46.1 Data Model

RecordId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

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RangeId: Specifies the foreign key (ADM_IPRangeTable, RecordId) on delete cascade on update cascade

MutliValuePropertyDetail: This specifies the details of a specific property associated to the IPRange. It consists of the following elements:

- **PropertyId**: this is of type signed integer and identifies the property for which the value is being specified. It MUST be one of following items specified in the following table:

Property Code	Property
0	None – this is an invalid value
1	DNS Server
2	WINS Server
3	Gateway Address
4	VIP
5	VIP Range
6	DNS Suffix
7	Reserved IP
8	Reserved IP Range

- **PropertyValue**: this is an array of bytes with max size of 900 bytes and specifies the value associated with the property.

3.1.1.1.46.2 Procedures

3.1.1.1.46.2.1 GetMultivaluedPropertiesForRange

This procedure can be used to retrieve all the multi-valued properties that are associated to specified IPRange.

The following are the input parameters to this procedure:

Param_rangeId: of type signed 64-bit integer that represents the RecordId of the IPRange for which the multi-valued properties need to be retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure:

Result_multiValuedProperties: This is a collection of instances of PropertyValueDetails associated with the provided rangeId parameter.

The following are the processing steps involved:

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- Lookup all the rows in the appropriate simple table of ADM_IPRangeMultivaluedPropertiesTable corresponding to Param_addressFamily, with RangeId value being Param_rangeId.
- If no such rows are found, initialize Result_multiValuedProperties as null and return from the procedure.
- Initialize Result_ multiValuedProperties as collection of type PropertyValueDetails.
- Initialize an instance of PropertyValueDetail and assign PropertyId and PropertyValue. Add this instance to Result_multiValuedProperties collection.
- Return Result_ multiValuedProperties as the output of the procedure.

3.1.1.1.46.2.2 GetMultivaluedPropertyForRange

This procedure can be used to retrieve all the values that are associated to specified IPRange and the specified propertyId.

The following are the input parameters to this procedure:

Param_rangeId: of type signed 64-bit integer that represents the RecordId of the IPRange for which the multi-valued properties need to be retrieved.

Param_propertyId: of type signed integer and MUST be a valid property as mentioned in the data model section.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure:

Result_RangeMultiValuedProperties: This is a collection of instances of PropertyValue associated with the provided rangeId parameter and the specified propertyId.

The following are the processing steps involved:

- Lookup all the rows in the appropriate simple table of ADM_IPRangeMultivaluedPropertiesTable corresponding to Param_addressFamily, with RangeId value being Param_rangeId and PropertyId equal to Param_propertyId.
- If no such rows are found, initialize Result_RangeMultiValuedProperties as null and return from the procedure.
- Initialize Result_ RangeMultiValuedProperties as collection of type PropertyValue.
- Initialize an instance of PropertyValue and assign PropertyValue to it. Add this instance to Result_RangeMultiValuedProperties collection.
- Return Result_RangeMultiValuedProperties as the output of the procedure.

3.1.1.1.47 ADM_IPBlockMultivaluedPropertiesTable

This is a compound table having IPv4-specific and IPv6-specific simple tables within it. This table models the Multivalue Properties that are associated to IPBlocks in the IPAM data store.

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3.1.1.1.47.1 Data Model

RecordId: primary key: A 64-bit signed integer that is unique for each entry in the table. The store should assign a unique value when a new row is inserted into the table.

BlockId: Specifies a foreign key (ADM_IPBlocksTable, RecordId) on delete cascade on update cascade

MutliValuePropertyDetail: This specifies the details of a specific property associated to the IPBlock. It consists of the following elements:

- **PropertyId**: this is of type signed integer and identifies the property for which the value is being specified. It MUST be one of items specified in the following table:

Property Code	Property
0	None – this is an invalid value
1	VLAN

- **PropertyValue**: this is an array of bytes with max size of 900 bytes and specifies the value associated with the property.

3.1.1.1.47.2 Procedures

3.1.1.1.47.2.1 GetMultivaluedPropertiesForBlock

This procedure can be used to retrieve all the multivalued properties that are associated to specified IPBlock.

The following are the input parameters to this procedure:

Param_blockId: this is f type signed 64-bit integer that represents the RecordId of the IPBlock for which the multivalued properties need to be retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

The following is the output parameter from this procedure:

Result_multiValuedProperties: This is a collection of instances of PropertyValueDetails associated with the provided blockId parameter.

The following are the processing steps involved:

1. Lookup all the rows in the appropriate simple table of ADM_IPBlockMultivaluedPropertiesTable corresponding to Param_addressFamily, with BlockId value being Param_blockId.

2. If no such rows are found, initialize Result_multiValuedProperties as null and return from the procedure.

3. Initialize Result_ multiValuedProperties as collection of type PropertyValueDetails.

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4. Initialize an instance of PropertyValueDetail and assign PropertyId and PropertyValue. Add this instance to Result_multiValuedProperties collection.

5. Return Result_ multiValuedProperties as the output of the procedure.

3.1.1.1.47.2.2 GetMultivaluedPropertyForBlock

This procedure can be used to retrieve all the values that are associated to specified IPBlock and the specified propertyId.

The following are the input parameters to this procedure:

Param_blockId: of type signed 64-bit integer that represents the RecordId of the IPBlock for which the multivalued properties need to be retrieved.

Param_addressfamily: This is of type AddressFamily and it can be either Internet or InternetV6. The value Internet is used to specify the processing to be done on the IPv4-specific simple tables for any compound table involved during the processing. The value InternetV6 is used to specify the processing to be done on IPv6-specific simple tables for any compound table involved during the processing.

Param_propertyId: of type signed integer and MUST be a valid property as mentioned in the data model section.

The following is the output parameter from this procedure:

Result_BlockMultiValuedProperties: This is a collection of instances of PropertyValue associated with the provided blockId parameter and the specified propertyId.

The following are the processing steps involved.

1. Lookup all the rows in the appropriate simple table of ADM_IPBlockMultivaluedPropertiesTable corresponding to Param_addressFamily, with BlockId value being Param_blockId and PropertyId equal to Param_propertyId.

2. If no such rows are found, initialize Result_BlockMultiValuedProperties as null and return from the procedure.

3. Initialize Result_BlockMultiValuedProperties as collection of type PropertyValue.

4. Initialize an instance of PropertyValue and assign PropertyValue to it. Add this instance to Result_BlockMultiValuedProperties collection.

5. Return Result_BlockMultiValuedProperties as the output of the procedure.

3.1.1.1.48 ADM_MultiValueCustomFieldValueAssociationTable

This is a simple table that models the association that can exist between two multi-value CustomFieldValues in the IPAM data store.

3.1.1.1.48.1 Data Model

CustomFieldValueId1: foreign key (ADM_CustomFieldValuesTable, RecordId) on delete cascade on update cascade.

CustomFieldValueId2: foreign key (ADM_CustomFieldValuesTable, RecordId) on delete cascade on update cascade.

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3.1.1.1.48.2 Procedures

3.1.1.1.48.2.1 GetAllAssociationsForValueId

This procedure can be used to retrieve all the custom field values that are associated to specified Custom Field Value.

The following are the input parameters to this procedure:

Param_valueId: It is of type signed integer which represents a Custom Field Value id for which the associations need to be retrieved.

The following is the output parameter from this procedure:

Result_customFieldValueAssociations: This is a collection of tuples of signed 64-bit integer and signed 64-bit integer in which each entry represents the association mapping for a specific set of custom field values.

The following are the processing steps involved:

- Retrieve all the rows in the ADM_MultiValueCustomFieldValueAssociationTable with CustomFieldValueId1 or CustomFieldValueId2 equal to Param_valueId.
- If no such rows are found, initialize Result_customFieldValueAssociations as null and return from the procedure.
- Initialize Result_customFieldValueAssociations as a collection of tuples as mentioned previously.
- Initialize an instance of Tuple and assign CustomFieldValueId1 and CustomFieldValueId2 to it. Add this instance to Result_ customFieldValueAssociations collection.
- Return Result_ customFieldValueAssociations as the output of the procedure.

3.1.1.1.48.2.2 GetAllAssociations

This procedure can be used to retrieve all the custom field value associations that have been configured in IPAM datastore.

There are no input parameters to this procedure.

The following is the output parameter from this procedure:

Result_customFieldValueAssociations: This is a collection of Tuples<signed 64-bit integer, signed 64-bit integer> in which each entry represents the association mapping for a specific set of custom field values.

The following are the processing steps involved:

- Retrieve all the rows in the ADM_MultiValueCustomFieldValueAssociationTable.
- If no such rows are found, initialize Result_customFieldValueAssociations as null and return from the procedure.
- Initialize Result_customFieldValueAssociations as collection of tuples as mentioned previously.
- Initialize an instance of Tuple and assign CustomFieldValueId1 and CustomFieldValueId2 to it. Add this instance to Result_ customFieldValueAssociations collection.

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- Return Result_ customFieldValueAssociations as the output of the procedure.

3.1.1.2 ADM_IPAMSecurityGroups

The following are the group object(1) entries that are used for role-based user authorization for the various operations. Each of the entries below has a SID ([MS-DTYP] section 2.4.2) associated with it, which is used for computing the user authorization data as specified in section 3.1.4.3.

- IPAM Users
- IPAM Administrators
- IPAM ASM Administrators
- IPAM MSM Administrators
- IPAM IP Audit Administrators

3.1.1.3 Miscellaneous Global States

ADM_IsIPAMConfigured: This is a Boolean type state that stores the current configuration state of the management server. If the value is TRUE, that means **ADM_IPAMDataStore** and **ADM_IPAMSecurityGroups** are already configured. Otherwise the IPAM server is yet to be provisioned for management purpose.

ADM_IsIPAMProvisioningInProgress: This is a Boolean type state that stores the information on whether the IPAM data store provisioning is currently underway or not. There can be only one session active at any given time that is performing schema conversion. This will be initialized to FALSE.

ADM_IsSchemaConversionRequired: This is a Boolean type state that stores the information on whether the IPAM data store requires a schema conversion or not. If the value is TRUE, it means the schema conversion is required before the management operations can be performed. If the value is FALSE and the **ADM_IsIPAMConfigured** is TRUE, the management server is ready to service the management operation requests from the management client.

ADM_IsSchemaConversionInProgress: This is a Boolean type state that stores the information on whether the schema conversion activity is currently underway or not. There can be only one session active at any given time that is performing the schema conversion. This will be initialized to FALSE.

ADM_IsAuditPurgeInProgress: This is a Boolean type state that stores the information on whether the audit purge operation is currently in progress or not. This will be initialized to FALSE.

ADM_KeepaliveGraceCountInitialValue: This is an integer value specifying the initial value of the **ADM_KeepaliveGraceCount**. This will also be the value the ADM_KeepaliveGraceCount will be reset to when there is a message received during the duration between two consecutive expiry of the **InactivityTimer**. The default value of this is 3<2>.

ADM_ManagedByCustomFieldId: This is a 64-bit record identifier of the built-in custom field **BuiltinCustomField.ManagedBy**. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CustomFieldsTable** during initialization.

ADM_ManagedByEntityCustomFieldId: This is a 64-bit record identifier of the built-in custom field **BuiltinCustomField.ManagedByEntity**. This is initialized during the management server

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initialization. This is not a persisted value but is computed from the **ADM_CustomFieldsTable** during initialization.

ADM_TenantCustomFieldId: This is a 64-bit record identifier of the built-in custom field **BuiltinCustomField.Tenant**. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CustomFieldsTable** during initialization.

ADM_VMNetworkCustomFieldId: This is a 64-bit record identifier of the built-in custom field **BuiltinCustomField.VmNetwork**. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CustomFieldsTable** during initialization.

ADM_IsolationMethodCustomFieldId: This is a 64-bit record identifier of the built-in custom field **BuiltinCustomField.IsolationMethod**. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CustomFieldsTable** during initialization.

ADM_LogicalNetworkCustomFieldId: This is a 64-bit record identifier of the built-in custom field **BuiltinCustomField.LogicalNetwork**. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CustomFieldsTable** during initialization.

ADM_NetworkSiteCustomFieldId: This is a 64-bit record identifier of the built-in custom field **BuiltinCustomField.NetworkSite**. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CustomFieldsTable** during initialization.

ADM_IPAMDeploymentType: This is a string that represents the mode in which the IPAM Server has been provisioned. This can have values NONE, MANUAL, AUTOMATIC. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CommonPropertiesTable.ProvisioningMode** during initialization.

ADM_IPAMGpoPrefix: This is a string that represents the GPO prefix that was specified while provisioning the IPAM Server in Automatic mode. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CommonPropertiesTable.GpoPrefix** during initialization.

ADM_IPAMServerVersion: This is a string that represents the schema version that the IPAM Server can work with. The string follows the format of "a.b.c.d" where a,b,c,d are integers. This is a persisted value.

ADM_IPAMSchemaVersion: This is a string that represents the schema version that the IPAM Server can work with. The string follows the format of "a.b.c.d" where a,b,c,d are integers. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_CommonPropertiesTable.DatabaseSchemaVersion** during initialization.

ADM_IPAMTargetSchemaVersion: This is a string that represents the schema version that the IPAM Server can work with. The string follows the format of "a.b.c.d" where a,b,c,d are integers. This is initialized during the management server initialization. This is not a persisted value but is computed from the **ADM_IPAMServerVersion** during initialization only if **ADM_IsSchemaConversionRequired** is set to TRUE.

3.1.1.4 Miscellaneous Per-Session States

ADM_UserAuthorizationData: This is a collection of Boolean values, as listed below and a collection of all the PolicyIds of UserAccessPolicy entries that are available for the user, specifying

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the authorization states of the user establishing the protocol session. If a particular value is TRUE, that means the user is authorized with the permissions bestowed on the corresponding role. Otherwise the user is not authorized to plan the corresponding role.

- **IsAdministrator**: If the value is TRUE, the user has the administrator permissions on the IPAM server.
- **IsIpamUser**: If the value is TRUE, the user has the permissions of an 'IPAM Users' role.
- **IsIpamAdministrator**: If the value is TRUE, the user has the permissions of the 'IPAM Administrators' role.
- **IsIpamAsmAdministrator**: If the value is TRUE, the user has permissions as an 'IPAM ASM Administrators' role.
- **IsIpamMsmAdministrator**: If the value is TRUE, the user has permissions as an 'IPAM MSM Administrators' role.
- IsIpamIPAuditAdministrator: If the value is TRUE, the user has permissions as an 'IPAM IP Audit Administrators' role.

MappingPolicyIds: This is a collection of 64-bit signed integers and each entry in the collection specifies a valid PolicyId for a row in **ADM_UserAccessPolicyTable**.**ADM_MessageReceivedSinceLastTimerTick**: This is a Boolean type used to track whether any message has been received since the last time the **InactivityTimer** expired. The default value is FALSE.

ADM_KeepaliveGraceCount: This is a signed integer value. This keeps track of the pending number of consecutive **InactivityTimer** expiry with the **ADM_MessageReceivedSinceLastTimerTick** being FALSE after which the session will be closed. This is initialized with the value of ADM_KeepaliveGraceCountInitialValue.

3.1.2 Timers

InactivityTimer: This is a periodic timer used to detect the inactivity of the session. The timer needs to trigger every 15 seconds. This timer is created for each session of this protocol. The timer is stopped when the session is closed or aborted.

3.1.3 Initialization

The lower layer of the protocol initializes the management server when there is a request received over the URI of interest. As a part of the initialization, the following steps are used to initialize the states.

1. Check if the **ADM_IPAMDataStore** and **ADM_IPAMSecurityGroups** are initialized and provisioned. The mechanism to perform this check will be implementation-dependent. If the ADM_IPAMDataStore and ADM_IPAMSecurityGroups are initialized, set **ADM_IsIPAMConfigured** to TRUE. Otherwise set ADM_IsIPAMConfigured to FALSE.
2. If **ADM_IsIPAMConfigured** is TRUE, check whether the IPAM data store requires a schema conversion. This check will be implementation dependent. If the schema conversion is required, set **ADM_IsSchemaConversionRequired** to TRUE. Otherwise set **ADM_IsSchemaConversionRequired** to FALSE.

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3.1.4 Message Processing Events and Sequencing Rules

This section lists certain message processing events, and is applicable to multiple operations and across different WSDL port type implementations of this protocol.

3.1.4.1 Session Established

This event will be triggered by the lower layer when a new session is received from a client and the client user has been authenticated. The following are the processing steps involved when this event is triggered:

1. The **ADM_UserAuthorizationData** is computed as specified in section 3.1.4.3.
2. Start the **InactivityTimer** timer.

3.1.4.2 Pre-Operation Processing

This is the set of sequencing rules on the management server that need to be processed before the commencement of the actual processing rules for any operation of the protocol event. The OperationName and PortType are available to perform additional processing.

1. Check if the user is authorized to perform the operation. The authorization requirements for the various operations are specified under the "User Authorization" sections under the specific port type implemented by the management server (section 3.3.6.1, section 3.5.6.1, section 3.7.6.1, section 3.9.6.1, section 3.11.6.1, section 3.13.6.1, section 3.15.6.1, section 3.17.6.1,section 3.19.6.1, section 3.21.6.1). If the user is not authorized an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.
2. Set **ADM_MessageReceivedSinceLastTimerTick** to TRUE.
3. If **ADM_IsIPAMConfigured** is FALSE, at least one of the following conditions MUST be TRUE for the operation to be executed. Otherwise an appropriate SOAP fault as specified in section 2.2.2.1 is sent as the response message.
   - The PortType of the operation being requested is IIpamAsyncProvision.
   - The PortType of the operation being requested is IIpamServer and the OperationName is IsIpamConfigured.
4. If ADM_IsIPAMConfigured is TRUE and **ADM_IsSchemaConversionRequired** is TRUE, at least one of the following conditions MUST be TRUE for the operation to be executed. Otherwise an appropriate SOAP fault as specified in section 2.2.2.1 is sent as the response message.
   - The PortType of the operation being requested is IIpamAsyncSchemaConversion.
   - The OperationName is IsSchemaConversionInProgress.
   - The OperationName is IsSchemaConversionRequired.
   - The OperationName is IsIpamConfigured.
5. Proceed to perform the processing steps for the operation requested by the management client.

3.1.4.3 User Authorization Data Computation

When the session is established for the protocol, the user authentication occurs. After the authentication, the **Token/Authorization Context (**[MS-DTYP] section 2.5.2) is available, which is

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used to compute the authorization data for the user for the specific session. The user authorization data is computed as follows:

- **ADM_UserAuthorizationData.IsAdministrator**: This is set to TRUE only if the BUILTIN_ADMINISTRATORS SID ([MS-DTYP] section 2.4.2.4) is present in the **Token/Authorization Context**.
- **ADM_UserAuthorizationData.IsIpamUser**: This is set to TRUE only if the SID of the **IPAM Users** group object(1) is present in the **Token/Authorization Context.**
- **ADM_UserAuthorizationData.IsIpamAdministrator**: This is set to TRUE only if the SID of the **IPAM Administrators** group object is present in the **Token/Authorization Context.** If this is computed to be TRUE, the IsIPAMAsmAdministrator, IsIPAMMsmAdministrator, IsIPAMIPAuditAdministrator, and IsIPAMUser members of **ADM_UserAuthorizationData** are set to TRUE without the need for further computation.
- **ADM_UserAuthorizationData.IsIPAMAsmAdministrator**: This is set to TRUE if the SID of the **IPAM ASM Administrators** group object is present in the **Token/Authorization Context.** If this is TRUE, the ADM_UserAuthorizationData.IsIpamUser is computed to be TRUE as well.
- **ADM_UserAuthorizationData.IsIPAMMsmAdministrator**: This is set to TRUE if the SID of the **IPAM MSM Administrators** group object is present in the **Token/Authorization Context.** If this is TRUE, the ADM_UserAuthorizationData.IsIpamUser is computed to be TRUE as well.
- **ADM_UserAuthorizationData.IsIPAMIPAuditAdministrator**: This is set to TRUE if the SID of the **IPAM IP Audit Administrators** group object is present in the **Token/Authorization Context.** If this is TRUE, the ADM_UserAuthorizationData.IsIpamUser is computed to be TRUE as well.
- **ADM_UserAuthorizationData.MappingPolicyIds**: This collection is populated in the following steps:
  - Initialize **ADM_UserAuthorizationData.MappingPolicyIds** collection.
  - Call GetPolicyForUserSid procedure of **ADM_UserAccessPolicyTable** by passing Param_userSid initialized to SID of the user present in the **Token/Authorization Context**. If the Result_accessPolicy is not null then add Result_accessPolicy.PolicyId to **ADM_UserAuthorizationData.MappingPolicyIds** collection.
  - Then process all the Groups that are present in the user's **Token/Authorization Context**. For each of the group objects in the user's **Token/Authorization** Context, perform the next step.
  - Call GetPolicyForUserSid procedure of **ADM_UserAccessPolicyTable** by passing Param_userSid initialized to SID of the group. If the Result_accessPolicy is not null then add Result_accessPolicy.PolicyId to the **ADM_UserAuthorizationData.MappingPolicyIds** collection.
  - If the collection **ADM_UserAuthorizationData.MappingPolicyIds** is not empty, then the **ADM_UserAuthorizationData.IsIpamUser** is computed to be TRUE as well.

In all the previous computation checks, the SID of a particular group object is checked for its presence against the Token/Authorization Context. This is done by calling **SidInToken** ([MS-DTYP] section 2.5.3.1.1) by passing the Token/Authorization Context as the Token parameter and SID to check as the SidToTestParameter and having PrincipalSelfSubstitute as null.

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3.1.4.4 ValidateIPBlock

This section describes the common validation rules for an IPBlock, which can be either IPv4Block or IPv6Block. This will be used in IPBlock operations such as UpdateBlock, SaveBlock to validate the client specified IPBlock data. In the following descriptions, Param_IPBlock indicates the IPBlock to validate.

- If the Param_IPBlock is IPv4Block, Param_IPBlock.PrefixLength MUST be at least 1 and no more than 30. If the Param_IPBlock is IPv6Block, Param_IPBlock.PrefixLength MUST be at least 1 and no more than 127.
- The following mandatory fields MUST be specified.
  - NetworkId
  - StartIPAddress
  - EndIPAddress
- Performing bitwise AND operation between NetworkId and SubnetMask MUST yield the NetworkId itself.
- StartIPAddress MUST be lesser than or equal to EndIPAddress.
- Compute MinimumPossibleIPAddress to be the NetworkId itself.
- Compute MaximumPossibleIPAddress by performing bitwise OR operation of NetworkId and SubnetMask.
- StartIPAddress and EndIPAddress MUST be within the range of MinimumPossibleIPAddress and MaximumPossibleIPAddress.
- Initialize ComputedAddressCategory to be AddressCategory.None.
- If the Param_IPBlock is IPv4Block, calculate ComputedAddressCategory as given below.
  - If the StartIPAddress and EndIPAddress completely lies within the public address space as specified in [IANA-IPV4], ComputedAddressCategory is set to AddressCategory.Public.
  - If the StartIPAddress and EndIPAddress completely lie within the private address space as specified in [RFC1918], ComputedAddressCategory is set to AddressCategory.Private.
- If the Param_IPBlock is IPv6Block, calculate ComputedAddressCategory to be AddressCategory.GlobalIPv6Unicast if the range falls within the global unicast range as specified in [RFC4291].
- The ComputedAddressCategory MUST NOT be AddressCategory.None and the ComputedAddressCategory MUST be the same as the AddressCategory in **range**.

3.1.4.5 ValidateIPRange

This section captures the common validation rules for the IPRange data. The rest of the section assumes the IPRange to be validated is passed as a parameter with the name **Param_range**.

The following validations MUST pass for **Param_range** to be valid.

- The **Param_range** MUST be a valid IPv4Range or IPv6Range data.

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- The following fields are mandatory and MUST be specified and valid.
  - PrefixLength MUST NOT be 0.
  - StartIPAddress, EndIPAddress, SubnetId MUST NOT be null.
  - AddressAssignment MUST NOT be None.
  - CustomFieldValues MUST have the mandatory custom field values having the following ParentCustomFieldRecordId.
    - ManagedByCustomFieldRecordId
    - ManagedByEntityCustomFieldRecordId
- Store the CustomFieldValue having ParentCustomFieldRecordId as **ManagedByCustomFieldRecordId** to ManagedByCustomFieldValue.
- Store the CustomFieldValue having ParentCustomFieldRecordId as ManagedByEntityCustomFieldRecordId to ManagedByEntityCustomFieldValue.
- If ManagedByCustomFieldValue.BuiltInCustomFieldValueId is BuiltInManagedByValues.MSDHCP, the following checks MUST succeed.
  - ScopeRecordId MUST be specified and it MUST be nonzero.
  - DhcpServerName MUST be the same value as ManagedByEntityCustomFieldValue.Value.
  - UtilizationType MUST be IPUtilizationCalculationType.Auto.
- If ManagedByCustomFieldValue.BuiltInCustomFieldValueId is not BuiltInManagedByValues.MSDHCP, the following checks MUST succeed.
  - DhcpScopeName, DhcpServerGuid and ScopeRecordId MUST NOT be specified.
- Performing bitwise AND operation between SubnetId and SubnetMask MUST yield the SubnetId itself.
- StartIPAddress MUST NOT be greater than EndIPAddress.
- Compute MinimumPossibleIPAddress to be the SubnetId itself.
- Compute MaximumPossibleIPAddress by performing bitwise OR operation of SubnetId and SubnetMask.
- StartIPAddress and EndIPAddress MUST be within the range of MinimumPossibleIPAddress and MaximumPossibleIPAddress.
- If the UtilizationCalculationType is IPUtilizationCalculationType.Static, the UtilizationStatistics MUST be specified.
- Initialize ComputedAddressCategory to be AddressCategory.None.
- If the **Param_range** is IPv4Range, calculate ComputedAddressCategory as follows:
  - If the StartIPAddress and EndIPAddress fall within the public address space as specified in [IANA-IPV4], ComputedAddressCategory is set to AddressCategory.Public.

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- If the StartIPAddress and EndIPAddress fall within the private address space as specified in [RFC1918], ComputedAddressCategory is set to AddressCategory.Private.
- If the **Param_range** is IPv6Range, calculate ComputedAddressCategory to be AddressCategory.GlobalIPv6Unicast if the range falls within the global unicast range as specified in [RFC4291].

- The ComputedAddressCategory MUST NOT be AddressCategory.None and the ComputedAddressCategory MUST be the same as the AddressCategory in **Param_range**.

3.1.4.6 ValidateCustomFieldValues

This section captures the common validation rules for a collection of CustomFieldValue data. The rest of the section assumes the custom field values to be validated are passed in as a parameter **values**, which is a collection of data in the form of CustomFieldValue.

For each CustomFieldValue in the values collection, the following requirements have to be satisfied for the data to be valid.

1. CustomFieldValue.ParentCustomFieldId MUST NOT be 0.
2. Lookup the **ADM_CustomFieldsTable** to validate that a row exists with record identifier value equal to **CustomFieldValue.ParentCustomFieldId**. A row MUST exist.
3. If the **Type** of the custom field entry retrieved above is Multivalued, lookup the **ADM_CustomFieldValuesTable** for an entry with the specified custom field record identifier having **CustomFieldValue.ParentCustomFieldId** and **Value** of **CustomFieldValueDetails** having the **CustomFieldValue.Value**. A matching row MUST exist.

3.1.4.7 SetIPRangeMapping

This section captures the common processing rules for performing the following common activities for an address range.

- Recalculate the IsOverlapping and UseForUtilization setting for the specified range and the ranges that overlap with the specified range.
- Identify the subnet that this has to be mapped to. This would also create a parent subnet if none is found, and the parameter (defined later) createSubnetIfDoesNotExist set to the value true.
- Map the appropriate set of rows in the ADM_IPAddressTable to the specified range.

In the following processing steps, currentRange indicates the address range for which the previous activities are to be performed, and createSubnetIfDoesNotExist indicates whether a parent subnet is to be automatically created if none is found.

1. Get the list of overlapping address ranges with the StartIPAddress, EndIPAddress, ExclusionRanges by invoking the procedure GetOverlappingRanges of the ADM_IPRangeTable. This is done by setting the following input parameters:
   - Param_StartIPAddress is assigned the value currentRange.range.StartIPAddress.
   - Param_EndIPAddress is assigned the value currentRange.range.EndIPAddress.
   - Param_ExclusionRanges is set to the currentRange.range.ExclusionRanges.
   - Param_RecordIdToExclude is set to currentRange.RecordId.

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- Param_AddressSpaceId is set to currentRange.AddressSpaceId.

2. For each overlappingRange in Result_OverlappingRows, perform the following:

   - Calculate the ManagedBy value to be the custom field value whose custom field identifier is the same value as ADM_ManagedByCustomFieldId.

   - Calculate the ManagedByEntity value to be the custom field value whose custom field identifier is the same as the ADM_ManagedByEntityCustomFieldId.

   - If the ManagedBy and ManagedByEntity values of the row are the same as currentRange.ManagedByValue and currentRange.ManagedByEntityValue respectively, and currentRange.ManagedByValue is not same as MSDHCP, this overlap is not allowed and an appropriate SOAP fault MUST be raised.

3. For each range in Result_OverlappingRanges, if any of the ranges has UseForUtilization set as True, set UseForUtilization for the currentRange as False. Else set it to true.

4. If the array Result_OverlappingRanges is not empty, set the IsOverlapping property of the currentRange to true. Else set it to False.

5. Get the parent subnet that currentRange range maps to, by calling MapIPRangeToBlock of ADM_IPRangeTable with following parameter:

   - Param_range is assigned the value of currentRange.

6. If currentRange.IPBlockId is set to a non-zero number, set flag ParentSubnetExists as true. Else set ParentSubnetExists to False.

7. Fault if ParentSubnetExists is False and createSubnetIfDoesNotExist is False or not specified.

8. If ParentSubnetExists is False and createSubnetIfDoesNotExist is true, create a new subnet for this range by inserting a new row in ADM_Subnet table and copying relevant properties from currentRange.

9. Set the property ParentIPBlockRecordId of the currentRange to the RecordID of the newly created subnet.

10. If the currentRange.RecordId is 0, add the currentRange to the ADM_IPRangeTable and set the currentRange.RecordId to the value of record identifier. Insert a row in ADM_ IPRangeMultivaluedPropertiesTable with corresponding values from currentRange.

11. If the currentRange.RecordId is not 0, update the existing row in the ADM_IPAddressTable specified with the values from the currentRange.ModifiedProperties. Update the corresponding row in ADM_IPRangeMultivaluedPropertiesTable with corresponding values from currentRange.

12. If the Result_OverlappingRanges in step 3 is a nonempty set of rows, update the IsOverlapping flag of those rows in ADM_IPRangeTable to true.

13. Call the AdjustIPAddressRangeMapping procedure of ADM_IPAddressTable with the following values to map the addresses as applicable to the new address range added.

    1. Assign the value of currentRange.RecordId to Param_rangeId.

    2. Assign the value of currentRange.StartIPAddress to Param_StartIPAddress.

    3. Assign the value of currentRange.EndIPAddress to Param_EndIPAddress.

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4. Assign the value of ManagedByValue of the currentRange to the Param_ManagedByValue parameter.

5. Assign the value of the ManagedByEntityValue of the currentRange to the Param_ManagedByEntityValue parameter.

6. Assign the value of the AddressSpaceRecordId of the currentRange to the Param_AddressSpaceId parameter.

3.1.4.8 ValidateIpamIPAddress

This section captures the common processing rules involved in validating an IpamIPAddress specified in the form of IpamIPv4Address or IpamIPv6Address. The address data that needs to be validated is assumed to be present as a variable **Param_address**.

1. The following are the mandatory properties of IpamIPAddress and MUST be specified with valid values.

   - IPAddress
   - MacAddress
   - CustomFieldValues

2. The Param_address MUST contain the following mandatory custom fields.

   - DeviceType
   - ManagedBy
   - ManagedByEntity
   - IPAddressState

   This is checked by ensuring that the Param_address contains the CustomFieldValue entries in CustomFieldValues, which contain the ParentCustomFieldNumber to be the values of the following enumeration respectively:

   - BuiltinCustomField.DeviceType
   - BuiltinCustomField.ManagedBy
   - BuiltinCustomField.ManagedByEntity
   - BuiltinCustomField.IPAddressState

3. If Param_address.DnsForwardLookupZoneDnsServerId is specified, Param_address.DnsZoneId MUST NOT be null.

4. If Param_address.DnsReverseLookupZoneDnsServerId != null, Param_address.DnsReverseLookupZoneId MUST NOT be null.

5. If both DnsZoneId and DnsForwardLookupZoneDnsServerId are specified in Param_address, a row MUST exist in ADM_DNSServerForwardLookupZoneTable that meets the following conditions.

   - ServerRecordId equals Param_address.DnsForwardLookupZoneDnsServerId.
   - DnsZoneId equals Param_address.DnsZoneId.

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6. If both DnsReverseLookupZoneId and DnsReverseLookupZoneDnsServerId are specified in Param_address, a row MUST exist in ADM_DNSServerReverseLookupZoneTable that meets the following conditions:

   - ServerRecordId equals Param_address.DnsReverseLookupZoneDnsServerId.
   - DnsReverseZoneId equals Param_address.DnsReverseLookupZoneId.

7. If Param_address.DnsReverseLookupZoneId is specified, validate if the specified zone can host the reverse lookup zone for the address by performing the following checks. The following MUST be met for the reverse lookup zone information to be valid.

   - Call the procedure GetDnsReverseLookupZoneFromTable in ADM_DNSReverseLookupTable passing Param_address.DnsReverseLookupZoneId as Param_recordId.
   - Result_reverseLookupZone.IPType MUST be equal to address family of Param_address.
   - Param_address.IPAddress MUST lie between Result_reverseLookupZone.StartIP and Result_reverseLookupZone.EndIP.

8. If Param_address.AssignedDate is specified as well as the Param_address.ExpiryDate, Param_address.AssignedDate MUST be less than or equal to Param_address.ExpiryDate.

9. The Ipv4 address MUST NOT fall within the following subnets. This is ascertained by checking the individual address octets of the Ipv4 IP address. These are specialized address blocks – see [RFC3330] for details about the same.

10. 0/8 – First octet of the address MUST not be 0.

11. 127/8 – First octet of the address MUST not be 127.

12. 169.254/16 – First and second octet of the address MUST not be 169 and 254 respectively.

13. 255.255.255.255 – All octet of the address MUST not be 255.

14. The Ipv6 address MUST NOT be one of the following. For details on these special address types, see [RFC3513].

15. ::0

16. ::1

17. Ipv6 Link local address

18. Ipv6 Site local address

19. Ipv6 Multicast address

3.1.4.9 ValidateDhcpScope

This section captures the common validation rules for the DhcpScope data. The rest of the section assumes the DhcpScope to be validated is passed as a parameter with the name Param_dhcpScope.

1. Param_dhcpScope MUST be a valid DhcpScopeV4 or DhcpScopeV6 object as specified in section 2.2.4.142 or section 2.2.4.144 respectively.

2. Bit-wise AND operation between Param_dhcpScope.StartAddress and Param_dhcpScope.SubnetMask MUST yield Param_dhcpScope.ScopeId.

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3. Similarly, Bit-wise AND operation between Param_dhcpScope.EndAddress and Param_dhcpScope.SubnetMask MUST yield Param_dhcpScope.ScopeId.

4. Param_dhcpScope.StartAddress MUST be less than Param_dhcpScope.EndAddress.

3.1.4.10 ValidateDhcpServer

This section captures the common validation rules for the DhcpServer instance. The rest of the section assumes the DhcpServer instance to be validated is passed as a parameter with the name Param_dhcpServer.

The following validations MUST pass for the DhcpServer instance to be valid.

- Param_dhcpServer MUST be an instance of either DhcpServerV4 or DhcpServerV6.
- Param_dhcpServer.ServerName MUST NOT be null.

3.1.4.11 ValidateCustomField

This section captures the common validation rules for the CustomField data. The rest of the section assumes the CustomField to be validated is passed as a parameter with the name customField.

The following validations MUST pass for customField to be valid:

1. The customField.customFieldName MUST NOT be NULL.

2. The values of customField.customFieldOrigin and customField.customFieldType MUST NOT be 0.

3. If the value of customField.customFieldType field is equal to CustomFieldType.Freeform, then the number of entries in the collection customField.CustomFieldValues MUST be 0.

4. If the record identifier of the customField object, meaning that customField.customFieldId is not NULL, then:

   - For each entry customFieldValue in the collection customField.CustomFieldValues, the customFieldValue.ParentCustomFieldId MUST either be NULL or its value MUST be equal to customField.customFieldId.

3.1.4.12 ValidateServerInfo

This section captures the common validation requirements for a ServerInfo data. For the rest of the section, the ServerInfo data to be validated is assumed to be present as a parameter with the name Param_serverInfo.

1. If Param_serverInfo.Name is specified as a Fully Qualified Domain Name (FQDN), split it into server name and domain name. Store the server name portion into Param_serverInfo.Name and store the domain name portion into Param_serverInfo.Domain.

2. Param_serverInfo.Name MUST NOT be null or empty.

3. Param_serverInfo.Name MUST NOT be of length greater than 63.

4. Param_serverInfo.Domain MUST NOT be null and it MUST NOT be of length greater than 255.

5. If Param_serverInfo.Description is specified, it MUST NOT be of size greater than 1024.

6. If Param_serverInfo.Owner is specified, its length MUST NOT exceed 255.

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7. Param_serverInfo.ServerRoleCollection MUST NOT be null and MUST contain at least one ServerRole instance in it.

8. If Param_serverInfo.ServerRoleCollection contains an array of ServerRole at least one of the ServerRole instances MUST have ServerRoleInclusionStatus set to TRUE.

9. For each ServerRole instance in Param_serverInfo.ServerRoleCollection, ServerRole.ParentServer MUST be the same as Param_serverInfo.

10. ServerGuid MUST NOT be null or empty and it MUST NOT exceed length of 38.

11. Param_serverInfo.OSVersion MUST be at least the minimum OS version<3> supported by the implementation.

12. Param_serverInfo.IPAddresses MUST NOT be empty.

13. The IP addresses in Param_serverInfo MUST meet the following conditions:

    - The IPv4 address MUST NOT fall within the following subnets. This is ascertained by checking the individual address octets of the IPv4 IP address:
        - 0/8 – First octet of the address MUST not be 0.
        - 127/8 – First octet of the address MUST not be 127.
        - 169.254/16 – First and second octet of the address MUST not be 169 and 254 respectively.
        - 255.255.255.255 – All octets of the address MUST not be 255.
    - The IPv6 address MUST NOT be one of the following:
        - ::0
        - ::1
        - IPv6 Link local address
        - IPv6 Site local address
        - IPv6 Multicast address

3.1.4.13 ValidateLogicalGroup

This section specifies the common validation logic for the LogicalGroup data. The rest of this section assumes the logical group to be validated is available as an input parameter Param_logicalGroup.

The following conditions MUST be met for the logical group to be valid.

- Param_logicalGroup.Name MUST NOT be null.
- Param_logicalGroup.Users MUST NOT be LogicalGroupUsers.None.
- Param_logicalGroup.Origin MUST NOT be LogicalGroupOrigin.None.
- For each LogicalGroupField in Fields, the following conditions MUST be met.
    - CustomFieldId MUST NOT be null and MUST be a value > 0.

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3.1.4.14 ValidateDhcpPolicy

This section captures the common validation rules for the DhcpPolicyV4 instance. The rest of the section assumes the DhcpPolicyV4 instance to be validated is passed as a parameter with the name Param_dhcpPolicyV4.

The following validations MUST pass for the DhcpPolicyV4 instance to be valid:

- Param_dhcpPolicyV4.PolicyName is not NULL.
- Param_dhcpPolicyV4.PolicyName is not empty.
- Param_dhcpPolicyV4.Condition is not NULL.
- If Param_dhcpPolicyV4.Level is PolicyLevel.scopeLevel then Param_dhcpPolicyV4.Ranges MUST NOT be NULL.
- Param_dhcpPolicyV4.Server is not NULL.
- Param_dhcpPolicyV4.Server.RecordId is > 0.
- If Param_dhcpPolicyV4.Scope is not NULL then Param_dhcpPolicyV4.Scope.RecordId MUST be > 0.
- If this is not a create scenario (not called from CreateServerPolicyDelegate or CreateScopePolicyDelegate) then:
  - Param_dhcpPolicyV4.PolicyId MUST be > 0.
  - Param_dhcpPolicyV4.ProcessingOrder MUST be > 0.

3.1.4.15 ValidateDhcpReservation

This section captures the common validation rules for the DhcpReservation instance. The rest of the section assumes the DhcpReservation instance to be validated is passed as a parameter with the name Param_dhcpReservation.

The following validations MUST pass for the DhcpReservation instance to be valid:

- Param_dhcpReservation is not NULL.
- Param_dhcpReservation.address is not NULL.
- Param_dhcpReservation.address is valid.
- Param_dhcpReservation.parentScope.SubnetMask is valid.
- Param_dhcpReservation.parentScope.ScopeId is valid.
- Param_dhcpReservation.name is not NULL.
- Param_dhcpReservation.name is not whitespace.
- Param_dhcpReservation.parentScope is not NULL.
- Param_dhcpReservation.parentScope.RecordId is not 0.
- Param_dhcpReservation.parentScope.ServerName is not Null or a whitespace.

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- If this is an IPv4 reservation then check the following:
  - Param_dhcpReservation.MacAddress is not NULL or a whitespace.
  - Param_dhcpReservation.MacAddress is hex and its length is less than or equal to 130 bytes.
  - Param_dhcpReservation.servingClientsType is DhcpServingClientsType.Dhcp or DhcpServingClientsType.Bootp or DhcpServingClientsType.Both.
- If this is an IPv6 reservation then check the following:
  - Param_dhcpReservation.Duid is not NULL or a whitespace.
  - Param_dhcpReservation.Duid is hex and its length is less than or equal to 130 bytes.

3.1.4.16 ValidateDhcpFailover

This section captures the common validation rules for the DhcpFailover instance. The rest of the section assumes the DhcpFailover instance to be validated is passed as a parameter with the name Param_dhcpFailover.

The following validations MUST pass for the DhcpFailover instance to be valid:

- Param_dhcpFailover.RelationshipName is not NULL.
- Param_dhcpFailover.RelationshipName is not whitespace.
- Param_dhcpFailover.Mode is not DhcpFailoverMode.None.
- Param_dhcpFailover.Server1Percentage is less than or equal to 100.

3.1.4.17 ValidateDhcpSuperscope

This section captures the common validation rules for the DhcpSuperscope instance. The rest of the section assumes the DhcpSuperscope instance to be validated is passed as a parameter with the name Param_dhcpSuperscope.

The following validations MUST pass for the DhcpSuperscope instance to be valid:

- Param_dhcpSuperscope.name is not NULL.
- Param_dhcpSuperscope.name is not whitespace.
- Param_dhcpSuperscope.Server is not NULL.
- Param_dhcpSuperscope.Server.RecordId is not 0.
- Param_dhcpSuperscope.Server.ServerName is not NULL or empty.

3.1.4.18 ValidateAddressSpace

This section captures the common validation rules for the AddressSpace instance. The rest of the section assumes the AddressSpace instance to be validated is passed as a parameter with the name Param_addressSpace.

The following validations MUST pass for the AddressSpace instance to be valid:

- Param_addressSpace.name is not NULL.

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- Param_addressSpace.name is not a whitespace.
- Param_addressSpace.name is less than or equal to 1000.
- Param_addressSpace.description is not NULL and its length is less than or equal to 4000.
- Param_addressSpace.owner is not NULL and its length is less than or equal to 1000.
- Param_addressSpace.addressSpaceType is either IPAddressSpaceType.Provider or IPAddressSpaceType.Customer.
- Validate Param_addressSpace.CustomFieldValue with ValidateCustomFieldValues.

3.1.4.19 ValidateSubnet

This section captures the common validation rules for the IPSubnet instance. The rest of the section assumes the IPSubnet instance to be validated is passed as a parameter with the name Param_IPSubnet.

The following validations MUST pass for the IPSubnet instance to be valid:

- ValidateIPBlock MUST succeed, since IPSubnet is derived from IPBlock.
- Param_IPSubnet.name is not NULL or a whitespace. Its length is less than or equal to 512.
- Param_IPSubnet.startIPAddress is equal to the Param_IPSubnet.networkID.
- Param_IPSubnet.endIPAddress is equal to (Param_IPSubnet.networkID | ~Param_IPSubnet.subnetMask).
- Param_IPSubnet.addressSpaceRecordId is not 0.
- Param_IPSubnet.vlanId list MUST NOT contain any duplicates or any vlanId whose value is < 1 or > 4095.
- Param_IPSubnet.virtualizationType equals either IPVirtualizationType.NonVirtualized or IPVirtualizationType.Fabric or IPVirtualizationType.Virtual.
- Param_IPSubnet.virtualizationType and the IPAddressSpaceType associated with Param_IPSubnet.addressSpaceRecordId MUST satisfy the following conditions:
  - If virtualizationType is IPVirtualizationType.Virtual then addressSpaceType is IPAddressSpaceType.Customer.
  - If virtualizationType is IPVirtualizationType.Fabric then addressSpaceType is not IPAddressSpaceType.Provider.
  - If virtualizationType is IPVirtualizationType.NonVirtualized then Param_IPSubnet.addressSpaceRecordId is ProviderAddressSpace.DefaultProviderAddressSpaceRecordId.
- Param_IPSubnet.vsId is >= 0 and < 16777215.

3.1.4.20 ValidateAccessScope

This section captures the common validation rules for the AccessScope instance. The rest of the section assumes the AccessScope instance to be validated is passed as a parameter with the name Param_accessScope.

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The following validations MUST pass for the AccessScope instance to be valid:

- Param_accessScope.IsBuiltIn is false.
- Param_accessScope.description is not NULL and its length is less than or equal to 4000.
- Param_accessScope.accessScopeLabel is not NULL or a whitespace.
- Param_accessScope.accessScopeLabel is less than or equal to 255.
- Param_accessScope.accessScopeLabel MUST NOT contain "/" or "\".

3.1.4.21 ValidateUserRole

This section captures the common validation rules for the UserRole instance. The rest of the section assumes the UserRole instance to be validated is passed as a parameter with the name Param_userRole.

The following validations MUST pass for the UserRole instance to be valid:

- If this method is not called during creating of a user role then Param_userRole.RoleId is not NULL.
- Param_userRole.operationsList.Count is not 0.
- Param_userRole.name is not NULL or whitespace. Its length is less than or equal to 255.
- Param_userRole.operationsList MUST contain valid operationId and the operations MUST NOT be AdminRoleOnlyOperations.
- If Param_userRole.description is set then its value MUST NOT be NULL and its length MUST be less than or equal to 4000.

3.1.4.22 ValidateUserAccessPolicy

This section captures the common validation rules for the UserAccessPolicy instance. The rest of the section assumes the UserAccessPolicy instance to be validated is passed as a parameter with the name Param_userAccessPolicy.

The following validations MUST pass for the UserAccessPolicy instance to be valid:

- If Param_userAccessPolicy.description is set then it MUST NOT be NULL and its length MUST be less than or equal to 4000.
- Param_userAccessPolicy.userAlias is not NULL or whitespace.
- In the Param_userAccessPolicy.policyDefinitionList elements up to Param_userAccessPolicy.policyDefinitionList.Count, none of the UserRoleId or AccessScopeId is NULL.
- If this method is not called for a create then Param_userAccessPolicy.policyId MUST NOT be NULL and Param_userAccessPolicy.userGroupId MUST NOT be NULL.
- Param_userAccessPolicy.userAlias is a valid account name, that is, it has an associated security identifier.

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3.1.4.23 ValidateDatabaseConfiguration

This section captures the common validation rules for the IpamDatabaseConfiguration instance. The rest of the section assumes the IpamDatabaseConfiguration instance to be validated is passed as a parameter with the name Param_ipamDatabaseConfiguration.

The following validations MUST pass for the IpamDatabaseConfiguration instance to be valid:

- Param_ipamDatabaseConfiguration is not NULL.
- Database associated with Param_ipamDatabaseConfiguration passes the following validations:
  - DatabaseType is supported.
  - Database server version is supported.
  - Database exists.
  - Database is non-empty.
  - Database schema is valid.
  - Database locale is supported.
  - Database schema version is supported.

3.1.5 Timer Events

InactivityTimer: When the timer expires, the following processing steps are performed:

1. If ADM_MessageReceivedSinceLastTimerTick is TRUE,
   1. Set ADM_KeepaliveGraceCount to ADM_KeepaliveGraceCountInitialValue.
   2. Set ADM_MessageReceivedSinceLastTimerTick to FALSE.
2. If ADM_MessageReceivedSinceLastTimerTick is FALSE,
   1. Decrement ADM_KeepaliveGraceCount by 1.
   2. If ADM_KeepaliveGraceCount becomes lesser than 0, notify the lower layer to abort the session.

3.1.6 Other Local Events

None.

3.2 Common Client Details

This section describes protocol details that are common between multiple port types on the management client.

3.2.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations

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adhere to this model as long as their external behavior is consistent with that described in this document.

ADM_MessageSentSinceLastTimerTick: This is a per-session state of type Boolean value. This will be set to TRUE if there are any message sent from the management client between two consecutive expiry of the **InactivityTimer**.

3.2.2 Timers

InactivityTimer: This is a period timer used to detect the inactivity of the session. The timer needs to trigger every 15 seconds. This timer is created for each session of this protocol. The timer is stopped when the session is closed or aborted.

3.2.3 Initialization

None.

3.2.4 Message Processing Events and Sequencing Rules

3.2.4.1 Session Established

This is a notification from the lower layer when the management client has successfully established a session to the management server. The following steps have to be performed:

- Set **ADM_MessageSentSinceLastTimerTick** to FALSE.
- Start the **InactivityTimer**.

3.2.4.2 Message Sent

This is an event triggered whenever a request message is sent by the management client to the management server. When this event is received, set **ADM_MessageSentSinceLastTimerTick** to TRUE.

3.2.5 Timer Events

InactivityTimer: When this timer expires, the following processing steps are performed:

- If **ADM_MessageSentSinceLastTick** is FALSE, send the Keepalive message (section 2.2.2.2).
- Otherwise, reset **ADM_MessageSentSinceLastTick** to FALSE.

3.2.6 Other Local Events

None.

3.3 IIpamServer Server Details

This port type provides the common management operations for retrieve, add, modify, and delete of various IPAM objects. This also provides the operations for querying the configuration status of the IPAM data store, specifically concerning the version, provisioning status, and schema conversion requirement status.

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3.3.1 Abstract Data Model

See section 3.1.1.

3.3.2 Timers

See section 3.1.2.

3.3.3 Initialization

See section 3.1.3.

3.3.4 Message Processing Events and Sequencing Rules

3.3.4.1 BulkUpdateAddressSpaces

This operation is used to update multiple address spaces.

```
<wsdl:operation name="BulkUpdateAddressSpaces">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateAddressSpaces"
message="ipam:IIpamServer_BulkUpdateAddressSpaces_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateAddressSpacesResponse"
message="ipam:IIpamServer_BulkUpdateAddressSpaces_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_ BulkUpdateAddressSpaces_InputMessage request message, the server performs the following processing steps. Upon successful completion of the following steps, the server MUST respond with the IIpamServer_ BulkUpdateAddressSpaces_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **BulkUpdateAddressSpaces.addressesSpacesToUpdate** is null an appropriate SOAP fault MUST be raised. If **BulkUpdateAddressSpaces.addressesSpacesToUpdate** is empty, set **BulkUpdateBlocksResponse.BulkUpdateBlocksResult** to null and send the response message.

2. Initialize the **BulkUpdateAddressSpacesResponse. BulkUpdateAddressSpacesResult** to ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3.

3. For each AddressSpace specified as a part of **BulkUpdateAddressSpaces.addressesSpacesToUpdate** perform the following steps:

    1. Follow the steps in UpdateAddressSpace (section 3.3.4.135) for the previous AddressSpace.

    2. If the processing steps in UpdateAddressSpace result in a fault, add an entry into **BulkUpdateAddressSpacesResponse.BulkUpdateAddressSpacesResult** having the **AddressSpace.RecordId** as key and the value being IpamException detailing the reason for the fault.

3.3.4.1.1 Messages

3.3.4.1.1.1 IIpamServer_BulkUpdateAddressSpaces_InputMessage

This is the request for the BulkUpdateAddressSpaces operation.

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```
<wsdl:message name="IIpamServer_BulkUpdateAddressSpaces_InputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateAddressSpaces" />
</wsdl:message>
```

This message MUST be sent with the following **SOAP action**:

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateAddressSpaces
```

The body of the SOAP message MUST contain the BulkUpdateAddressSpaces element.

3.3.4.1.1.2 IIpamServer_BulkUpdateAddressSpaces_OutputMessage

This is the response for the BulkUpdateAddressSpaces operation.

```
<wsdl:message name="IIpamServer_BulkUpdateAddressSpaces_OutputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateAddressSpacesResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action:

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateAddressSpacesResponse
```

The body of the SOAP message MUST contain the BulkUpdateAddressSpacesResponse element.

3.3.4.1.2 Elements

3.3.4.1.2.1 BulkUpdateAddressSpaces

This element specifies the input values for the BulkUpdateAddressSpaces operation.

```
<xs:element name="BulkUpdateAddressSpaces" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressesSpacesToUpdate" nillable="true"
type="ipam:ArrayOfAddressSpace" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

addressesSpacesToUpdate: An array of AddressSpace instances that can be of type Provider or Customer.

3.3.4.1.2.2 BulkUpdateAddressSpacesResponse

This element specifies the output values for the BulkUpdateAddressSpaces operation.

```
<xs:element name="BulkUpdateAddressSpacesResponse"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" name="BulkUpdateAddressSpacesResult" nillable="true"
type="sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BulkUpdateAddressSpacesResult: An array of KeyValuePair with the key of type long and the value being the IpamException. Each entry in this specifies the fault (in the form of IpamException) generated when the update to the address space with the RecordId specified in key is applied.

3.3.4.2 BulkUpdateBlocks

This operation is used to update multiple address blocks.

```
<wsdl:operation name="BulkUpdateBlocks">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateBlocks"
message="ipam:IIpamServer_BulkUpdateBlocks_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateBlocksResponse"
message="ipam:IIpamServer_BulkUpdateBlocks_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_BulkUpdateBlocks_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_BulkUpdateBlocks_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **BulkUpdateBlocks.blocksToUpdate** is either null or empty, set **BulkUpdateBlocksResponse.BulkUpdateBlocksResult** to null and send the response message.
2. Initialize the **BulkUpdateBlocksResponse.BulkUpdateBlocksResult** to a collection of *ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3.*
3. For each of the IPBlock specified as a part of **BulkUpdateBlocks.blocksToUpdate** perform the following steps:
    1. Call the processing steps in UpdateBlock by passing the IPBlock data.
    2. If the processing steps in UpdateBlock result in a fault, add an entry into **BulkUpdateBlocksResponse.BulkUpdateBlocksResult** having the IPBlock.RecordId as key and the value being IpamException detailing the reason for the fault.

3.3.4.2.1 Messages

3.3.4.2.1.1 IIpamServer_BulkUpdateBlocks_InputMessage

This is the request for the BulkUpdateBlocks operation.

```
<wsdl:message name="IIpamServer_BulkUpdateBlocks_InputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateBlocks" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateBlocks
```

The body of the SOAP message MUST contain the BulkUpdateBlocks element.

3.3.4.2.1.2 IIpamServer_BulkUpdateBlocks_OutputMessage

This is the response for the BulkUpdateBlocks operation.

```
<wsdl:message name="IIpamServer_BulkUpdateBlocks_OutputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateBlocksResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateBlocksResponse
```

The body of the SOAP message MUST contain the BulkUpdateBlocksResponse element.

3.3.4.2.2 Elements

3.3.4.2.2.1 BulkUpdateBlocks

This element specifies the input values for the BulkUpdateBlocks operation.

```
<xs:element name="BulkUpdateBlocks">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="blocksToUpdate" nillable="true"
type="ipam:ArrayOfIPBlock" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

blocksToUpdate: An array of IPBlock instances that can be either IPv4Block or IPv6Block, based on the addressFamily being either Internet or InternetV6 respectively.

addressFamily: The address family of the block data in blocksToUpdate.

3.3.4.2.2.2 BulkUpdateBlocksResponse

This element specifies the output values for the BulkUpdateBlocks operation.

```
<xs:element name="BulkUpdateBlocksResponse">
  <xs:complexType>
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" name="BulkUpdateBlocksResult" nillable="true"
type="sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BulkUpdateBlocksResult: An array of KeyValuePair with the key of type long and the value being the IpamException. Each entry in this specifies the fault (in the form of IpamException) generated when the update to the block with the RecordId specified in key is updated.

3.3.4.3 BulkUpdateIPAddresses

This operation provides the ability to modify multiple IP addresses with a single operation in the IPAM data store.

<wsdl:operation name="BulkUpdateIPAddresses">

```
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateIPAddresses"
message="ipam:IIpamServer_BulkUpdateIPAddresses_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateIPAddressesResponse"
message="ipam:IIpamServer_BulkUpdateIPAddresses_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_BulkUpdateIPAddresses_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_BulkUpdateIPAddresses_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **BulkUpdateIPAddresses.addressfamily** is Internet, the rest of the processing is done with the IPv4-specific tables. Otherwise IPv6-specific tables are used for further processing.
2. If the **BulkUpdateIPAddresses.addressesToUpdate** is null or there are no elements in the collection, set the BulkUpdateIPAddressesResponse. BulkUpdateIPAddressesResult to null and return.
3. Initialize **BulkUpdateIPAddressesResponse. BulkUpdateIPAddressesResult** to a collection of key value pairs.
4. For each IpamIPAddress in the BulkUpdateIPAddresses.addressesToUpdate:
    1. Set the **updateIpAddress** to the **ipamIpAddress** entry.
    2. Perform the address update as specified under operation UpdateIpamIPAddressDelegate.
    3. If the above step generates any SOAP fault, add the failure information of the SOAP fault to the BulkUpdateIPAddressesResponse. BulkUpdateIPAddressesResult with the key having the **updateIpAddress.RecordId** and the value having the IpamException having the fault information.

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3.3.4.3.1 Messages

3.3.4.3.1.1 IIpamServer_BulkUpdateIPAddresses_InputMessage

This is the request for the BulkUpdateIPAddresses operation.

```
<wsdl:message name="IIpamServer_BulkUpdateIPAddresses_InputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateIPAddresses" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateIPAddresses
```

The body of the SOAP message MUST contain the BulkUpdateIPAddresses element.

3.3.4.3.1.2 IIpamServer_BulkUpdateIPAddresses_OutputMessage

This is the response for the BulkUpdateIPAddresses operation.

```
<wsdl:message name="IIpamServer_BulkUpdateIPAddresses_OutputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateIPAddressesResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateIPAddressesResponse
```

The body of the SOAP message MUST contain the BulkUpdateIPAddressesResponse element.

3.3.4.3.2 Elements

3.3.4.3.2.1 BulkUpdateIPAddresses

This element specifies the input values for the BulkUpdateIPAddresses operation.

```
<xs:element name="BulkUpdateIPAddresses">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressesToUpdate" nillable="true"
type="ipam:ArrayOfIpamIPAddress" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.3.2.2 BulkUpdateIPAddressesResponse

This element specifies the output values for the BulkUpdateIPAddresses operation.

```
<xs:element name="BulkUpdateIPAddressesResponse">
```


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```
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="BulkUpdateIPAddressesResult" nillable="true"
type="sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.4 BulkUpdateRanges

This operation provides the ability to modify multiple ranges with a single operation.

```
<wsdl:operation name="BulkUpdateRanges">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateRanges"
message="ipam:IIpamServer_BulkUpdateRanges_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateRangesResponse"
message="ipam:IIpamServer_BulkUpdateRanges_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_BulkUpdateRanges_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_BulkUpdateRanges_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **BulkUpdateRanges.rangesToUpdate** is null or there are no elements in the collection, set the **BulkUpdateRangesResponse.BulkUpdateRangesResult** to null and return.
2. Initialize **BulkUpdateRangesResponse.BulkUpdateRangesResult** to a collection of key value pairs.
3. If **BulkUpdateRanges.addressFamily** is Internet, then IPv4 specific operations are used in further processing. Otherwise, IPv6 based operations are used.
4. For each IPRange in the **BulkUpdateRanges.rangesToUpdate**:
    1. Set the **updatedRange** to the range entry.
    2. Perform the range update as specified in section 3.2.4.2.
    3. If the above step generates any SOAP fault, add the failure information of the SOAP fault to the **BulkUpdateRangesResponse.BulkUpdateRangesResult** with the key having the **updatedRange.RecordId** and the value having the IpamException having the fault information.

3.3.4.4.1 Messages

3.3.4.4.1.1 IIpamServer_BulkUpdateRanges_InputMessage

This is the request for the BulkUpdateRanges operation.

```
<wsdl:message name="IIpamServer_BulkUpdateRanges_InputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateRanges" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateRanges
```

The body of the SOAP message MUST contain the BulkUpdateRanges element.

3.3.4.4.1.2 IIpamServer_BulkUpdateRanges_OutputMessage

This is the response for the BulkUpdateRanges operation.

```
<wsdl:message name="IIpamServer_BulkUpdateRanges_OutputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateRangesResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateRangesResponse
```

The body of the SOAP message MUST contain the BulkUpdateRangesResponse element.

3.3.4.4.2 Elements

3.3.4.4.2.1 BulkUpdateRanges

This element specifies the input values for the BulkUpdateRanges operation.

```
<xs:element name="BulkUpdateRanges">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="rangesToUpdate" nillable="true"
type="ipam:ArrayOfIPRange" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

rangesToUpdate: This is of type ipam:ArrayOfIPRange and specifies the IP ranges which are to be updated

addressFamily: Address family of the ranges to be updated

createSubnetIfDoesNotExist: If this is set to true, this operation automatically creates a parent subnet for the updated range, if such a parent subnet doesn't already exist.

3.3.4.4.2.2 BulkUpdateRangesResponse

This element specifies the output values for the BulkUpdateRanges operation.

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```
<xs:element name="BulkUpdateRangesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="BulkUpdateRangesResult" nillable="true"
type="sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BulkUpdateRangesResult: Element of type sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3 that specifies the list of errors encountered while updating the ranges.

3.3.4.5 BulkUpdateSubnets

This operation is used to update multiple subnets.

```
<wsdl:operation name="BulkUpdateSubnets">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateSubnets"
message="ipam:IIpamServer_BulkUpdateSubnets_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateSubnetsResponse"
message="ipam:IIpamServer_BulkUpdateSubnets_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_BulkUpdateSubnets_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_BulkUpdateSubnets_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **BulkUpdateSubnets.subnetsToUpdate** is either NULL or empty, set **BulkUpdateSubnetsResponse.BulkUpdateSubnetsResult** to NULL and send the response message.
2. If the **BulkUpdateSubnets.addressfamily** is Internet, the rest of the processing is done with the IPv4-specific tables. Otherwise, IPv6-specific tables are used for further processing.
3. Initialize the **BulkUpdateSubnetsResponse.BulkUpdateSubnetsResult** to a collection of *ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3*.
4. For each of the IPSubnet specified as a part of **BulkUpdateSubnets.subnetsToUpdate** perform the following steps:
    1. Get the subnet "oldSubnet" corresponding to the **recordId:IPSubnet.RecordId**.
    2. Fault if no subnet is found with recordId.
    3. Call UpdateSubnet to update the attributes for oldSubnet from the current selected IPSubnet from **BulkUpdateSubnets.subnetsToUpdate**.
    4. If the processing steps in UpdateSubnet result in a fault, add an entry into **BulkUpdateSubnetsResponse.BulkUpdateSubnetsResult** that has the **IPSubnet.RecordId** as key and the value being IpamException detailing the reason for the fault.

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3.3.4.5.1 Messages

3.3.4.5.1.1 IIpamServer_BulkUpdateSubnets_InputMessage

This is the request for the BulkUpdateSubnets operation.

```
<wsdl:message name="IIpamServer_BulkUpdateSubnets_InputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateSubnets" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateSubnets
```

The body of the SOAP message MUST contain the BulkUpdateSubnets element.

3.3.4.5.1.2 IIpamServer_BulkUpdateSubnets_OutputMessage

This is the response for the BulkUpdateSubnets operation.

```
<wsdl:message name="IIpamServer_BulkUpdateSubnets_OutputMessage">
  <wsdl:part name="parameters" element="ipam:BulkUpdateSubnetsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateSubnetsResponse
```

The body of the SOAP message MUST contain the BulkUpdateSubnetsResponse element.

3.3.4.5.2 Elements

3.3.4.5.2.1 BulkUpdateSubnets

This element specifies the input values for the BulkUpdateSubnets operation.

```
<xs:element name="BulkUpdateSubnets">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subnetsToUpdate" nillable="true"
type="ipam:ArrayOfIPSubnet" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

subnetsToUpdate: An array of IPSubnet instances that can either be of type Ipv4Subnet or IPv6Subnet, based on the addressFamily parameter being either Internet or InternetV6 respectively.

addressFamily: The address family of the subnet data in subnetsToUpdate.

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3.3.4.5.2.2 BulkUpdateSubnetsResponse

This element specifies the output values for the BulkUpdateSubnets operation.

```
<xs:element name="BulkUpdateSubnetsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="BulkUpdateSubnetsResult" nillable="true"
type="sysgen:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BulkUpdateSubnetsResult: An array of KeyValuePair with the key of type long and the value being the IpamException. Each entry in this specifies the fault (in the form of IpamException) generated when the update to the subnet with the RecordId specified in key is updated.

3.3.4.6 CheckIfDnsServerReverseZoneHostedOnServer

This operation is used to check whether a reverse lookup DNS zone is hosted on a server.

```
<wsdl:operation name="CheckIfDnsServerReverseZoneHostedOnServer">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerReverseZoneHostedOnSer
ver" message="ipam:IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerReverseZoneHostedOnSer
verResponse"
message="ipam:IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If either of the following conditions is not satisfied, an appropriate SOAP fault MUST be generated.

    1. **CheckIfDnsServerReverseZoneHostedOnServer.reverseZoneId** > 0

    2. **CheckIfDnsServerReverseZoneHostedOnServer.dnsServerId** > 0

2. Lookup the **ADM_DNSServerReverseLookupZoneTable** for the row that has ServerRecordId equal to **CheckIfDnsServerReverseZoneHostedOnServer.dnsServerId** and DnsReverseZoneId equal to **CheckIfDnsServerReverseZoneHostedOnServer.reverseZoneId**.

3. If a row exists set the value of **CheckIfDnsServerReverseZoneHostedOnServerResponse.CheckIfDnsServerReverseZoneHostedOnServerResult** to TRUE. Otherwise set it to FALSE.

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3.3.4.6.1 Messages

3.3.4.6.1.1 IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_InputMessage

This is the request for the CheckIfDnsServerReverseZoneHostedOnServer operation.

```
<wsdl:message name="IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_InputMessage">
  <wsdl:part name="parameters" element="ipam:CheckIfDnsServerReverseZoneHostedOnServer" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerReverseZoneHostedOnServer
```

The body of the SOAP message MUST contain the CheckIfDnsServerReverseZoneHostedOnServer element.

3.3.4.6.1.2 IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_OutputMessage

This is the response for the CheckIfDnsServerReverseZoneHostedOnServer operation.

```
<wsdl:message name="IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_OutputMessage">
  <wsdl:part name="parameters"
element="ipam:CheckIfDnsServerReverseZoneHostedOnServerResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerReverseZoneHostedOnServerResponse
```

The body of the SOAP message MUST contain the CheckIfDnsServerReverseZoneHostedOnServerResponse element.

3.3.4.6.2 Elements

3.3.4.6.2.1 CheckIfDnsServerReverseZoneHostedOnServer

This element specifies the input values for the CheckIfDnsServerReverseZoneHostedOnServer operation.

```
<xs:element name="CheckIfDnsServerReverseZoneHostedOnServer">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="reverseZoneId" type="xsd:long" />
      <xs:element minOccurs="0" name="dnsServerId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.6.2.2 CheckIfDnsServerReverseZoneHostedOnServerResponse

This element specifies the output values for the CheckIfDnsServerReverseZoneHostedOnServer operation.

```
<xs:element name="CheckIfDnsServerReverseZoneHostedOnServerResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="CheckIfDnsServerReverseZoneHostedOnServerResult"
type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.7 CheckIfDnsServerZoneHostedOnServer

This operation is used to check whether a DNS Zone is hosted on a specified DNS server.

```
<wsdl:operation name="CheckIfDnsServerZoneHostedOnServer">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerZoneHostedOnServer"
message="ipam:IIpamServer_CheckIfDnsServerZoneHostedOnServer_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerZoneHostedOnServerResp
onse" message="ipam:IIpamServer_CheckIfDnsServerZoneHostedOnServer_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_CheckIfDnsServerZoneHostedOnServer_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_CheckIfDnsServerZoneHostedOnServer_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If either of the following conditions is not satisfied, an appropriate SOAP fault MUST be generated.
    1. **CheckIfDnsServerZoneHostedOnServer.zoneId** > 0
    2. **CheckIfDnsServerZoneHostedOnServer.dnsServerId** > 0
2. Lookup the **ADM_DNSServerForwardLookupZoneTable** for the row which has ServerRecordId equal to **CheckIfDnsServerZoneHostedOnServer.dnsServerId** and DnsZoneId equal to **CheckIfDnsServerZoneHostedOnServer.zoneId**.
3. If a row exists set the value of **CheckIfDnsServerZoneHostedOnServerResponse. CheckIfDnsServerZoneHostedOnServerResult** to TRUE. Otherwise set it to FALSE.

3.3.4.7.1 Messages

3.3.4.7.1.1 IIpamServer_CheckIfDnsServerZoneHostedOnServer_InputMessage

This is the request for the CheckIfDnsServerZoneHostedOnServer operation.

```
<wsdl:message name="IIpamServer_CheckIfDnsServerZoneHostedOnServer_InputMessage">
  <wsdl:part name="parameters" element="ipam:CheckIfDnsServerZoneHostedOnServer" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerZoneHostedOnServer
```

The body of the SOAP message MUST contain the CheckIfDnsServerZoneHostedOnServer element.

3.3.4.7.1.2 IIpamServer_CheckIfDnsServerZoneHostedOnServer_OutputMessage

This is the response for the CheckIfDnsServerZoneHostedOnServer operation.

```
<wsdl:message name="IIpamServer_CheckIfDnsServerZoneHostedOnServer_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CheckIfDnsServerZoneHostedOnServerResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerZoneHostedOnServerResponse
```

The body of the SOAP message MUST contain the CheckIfDnsServerZoneHostedOnServerResponse element.

3.3.4.7.2 Elements

3.3.4.7.2.1 CheckIfDnsServerZoneHostedOnServer

This element specifies the input values for the CheckIfDnsServerZoneHostedOnServer operation.

```
<xs:element name="CheckIfDnsServerZoneHostedOnServer">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="zoneId" type="xsd:long" />
      <xs:element minOccurs="0" name="dnsServerId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.7.2.2 CheckIfDnsServerZoneHostedOnServerResponse

This element specifies the output values for the CheckIfDnsServerZoneHostedOnServer operation.

```
<xs:element name="CheckIfDnsServerZoneHostedOnServerResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="CheckIfDnsServerZoneHostedOnServerResult"
type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.8 CreateAccessScope

This operation is used to create an access scope entry in the IPAM data store.

```
<wsdl:operation name="CreateAccessScope">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateAccessScope"
message="ipam:IIpamServer_CreateAccessScope_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateAccessScopeResponse"
message="ipam:IIpamServer_CreateAccessScope_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_CreateAccessScope_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_CreateAccessScope_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If either of the following conditions is not met, an appropriate SOAP fault MUST be generated as specified in section 2.2.2.1:
    1. **CreateAccessScope.accessScope** is not NULL.
    2. **CreateAccessScope.parentPath** is not NULL.
2. The method **ValidateAccessScope** is used to validate the **CreateAccessScope.accessScope**.
3. The level of the parent access scope is determined by splitting the **CreateAccessScope.parentPath** at the "\" symbol and identifying the total number of tokens. The level should be less than 8 to proceed further, else an appropriate Fault MUST be generated as specified in section 2.2.2.1.
4. Call method **GetAllAccessScope** from the **ADM_AccessScopeTable** to get the collection of all **AccessScope** objects in the IPAM data store. From this collection find the object whose **FullScopePath** matches **CreateAccessScope.parentPath**. If no matching object is found, a fault MUST be generated as specified in section 2.2.2.1.
5. A new row is created in **ADM_AccessScopeTable** for **CreateAccessScope.accessScope**, with the **FullScopePath** created by appending "**\CreateAccessScope.accessScope.Label>**" to **CreateAccessScope.parentPath**. The recordId of the created record is returned in the output message.

3.3.4.8.1 Messages

3.3.4.8.1.1 IIpamServer_CreateAccessScope_InputMessage

The IIpamServer_CreateAccessScope_InputMessage message initiates the CreateAccessScope WSDL operation.

```
<wsdl:message name="IIpamServer_CreateAccessScope_InputMessage">
  <wsdl:part name="parameters" element="ipam:CreateAccessScope" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

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```
http://Microsoft.Windows.Ipam/IIpamServer/CreateAccessScope
```

The body of the SOAP message MUST contain the CreateAccessScope element.

3.3.4.8.1.2 IIpamServer_CreateAccessScope_OutputMessage

The IIpamServer_CreateAccessScope_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_CreateAccessScope_InputMessage message.

```
<wsdl:message name="IIpamServer_CreateAccessScope_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CreateAccessScopeResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateAccessScopeResponse
```

The body of the SOAP message MUST contain the CreateAccessScopeResponse element.

3.3.4.8.2 Elements

3.3.4.8.2.1 CreateAccessScope

The CreateAccessScope element contains the input data for the CreateAccessScope operation.

```
<xs:element name="CreateAccessScope">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="accessScope" nillable="true" type="ipam:AccessScope" />
      <xs:element minOccurs="0" name="parentFullScopePath" nillable="true" type="xsd:string"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.8.2.2 CreateAccessScopeResponse

The CreateAccessScopeResponse element contains the output data for the CreateAccessScope operation.

```
<xs:element name="CreateAccessScopeResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="CreateAccessScopeResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>.
```


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3.3.4.9 CreateDNSHostRecord

This operation is used to create a host record in the DNS server and also update the IPAM data store to reflect this.

```
<wsdl:operation name="CreateDNSHostRecord">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSHostRecord"
message="ipam:IIpamServer_CreateDNSHostRecord_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSHostRecordResponse"
message="ipam:IIpamServer_CreateDNSHostRecord_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_CreateDNSHostRecord_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_CreateDNSHostRecord_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not met, an appropriate SOAP fault MUST be generated.
    1. **CreateDNSHostRecord.address** should not be NULL.
    2. **CreateDNSHostRecord.address.Address** should not be NULL.
    3. **CreateDNSHostRecord.address.DeviceName** should not be empty or NULL.
    4. **CreateDNSHostRecord.address.DnsZoneName** should not be empty or NULL.
    5. **CreateDNSHostRecord.address.DnsForwardLookupZoneServerName** should not be empty or NULL.
2. The **CreateDNSHostRecord.address.DnsForwardSyncStatus** is updated based on the success or failure of the registration on the remote DNS server (which is done in an implementation dependent manner).
3. Call the procedure **AddOrUpdateAddressDNSForwardLookupTable** in **ADM_AddressDNSForwardLookupTable** with parameters as addressfamily (as determined from the instance type of **CreateDNSHostRecord.address**), **CreateDNSHostRecord.address.RecordId**, **CreateDNSHostRecord.address.DnsZoneID**, **CreateDNSHostRecord.address.DnsForwardLookupZoneDnsServerId**, and **CreateDNSHostRecord.address.DnsForwardLookupZoneRecordId**. This procedure returns the recordID of the newly added row in **ADM_AddressDNSForwardLookupTable**.
4. The modified **CreateDNSHostRecord.address** is passed in the output message.

3.3.4.9.1 Messages

3.3.4.9.1.1 IIpamServer_CreateDNSHostRecord_InputMessage

The IIpamServer_CreateDNSHostRecord_InputMessage message initiates the CreateDNSHostRecord WSDL operation.

```
<wsdl:message name="IIpamServer_CreateDNSHostRecord_InputMessage">
  <wsdl:part name="parameters" element="ipam:CreateDNSHostRecord" />
```


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```
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSHostRecord
```

The body of the SOAP message MUST contain the CreateDNSHostRecord element.

3.3.4.9.1.2 IIpamServer_CreateDNSHostRecord_OutputMessage

The IIpamServer_CreateDNSHostRecord_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_CreateDNSHostRecord_InputMessage message.

```
<wsdl:message name="IIpamServer_CreateDNSHostRecord_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CreateDNSHostRecordResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSHostRecordResponse
```

The body of the SOAP message MUST contain the CreateDNSHostRecordResponse element.

3.3.4.9.2 Elements

3.3.4.9.2.1 CreateDNSHostRecord

The CreateDNSHostRecord element contains the input data for the CreateDNSHostRecord operation.

```
<xs:element name="CreateDNSHostRecord">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.9.2.2 CreateDNSHostRecordResponse

The CreateDNSHostRecordResponse element contains the output data for the CreateDNSHostRecord operation.

```
<xs:element name="CreateDNSHostRecordResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.10 CreateDNSPTRRecord

This operation is used to create a PTR record in the specified DNS server and also update the IPAM data store accordingly.

```
<wsdl:operation name="CreateDNSPTRRecord">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSPTRRecord"
message="ipam:IIpamServer_CreateDNSPTRRecord_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSPTRRecordResponse"
message="ipam:IIpamServer_CreateDNSPTRRecord_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_CreateDNSPTRRecord_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_CreateDNSPTRRecord_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not met, an appropriate SOAP fault MUST be generated.
    1. **CreateDNSPTRRecord.address** is not NULL.
    2. **CreateDNSPTRRecord.address.Address** is not NULL.
    3. **CreateDNSPTRRecord.address.DeviceName** is not empty or NULL.
    4. **CreateDNSPTRRecord.address.DnsReverseLookupZoneName** is not empty or NULL.
    5. **CreateDNSPTRRecord.address.DnsReverseLookupZonePrefix** is not NULL.
    6. **CreateDNSPTRRecord.address.DnsForwardLookupZoneServerName** is not empty or NULL.
2. The **CreateDNSPTRRecord.address.DnsReverseSyncStatus** is updated based on the success or failure of the registration on the remote DNS server.
3. Call the procedure **AddOrUpdateAddressDNSReverseLookup** in **ADM_AddressDNSReverseLookupTable** with parameters as addressfamily as determined from the instance type of **CreateDNSPTRRecord.address**), **CreateDNSPTRRecord.address.RecordId**, **CreateDNSPTRRecord.address.DnsZoneID**, **CreateDNSPTRRecord.address.DnsReverseLookupZoneDnsServerId,** and **CreateDNSPTRRecord.address.DnsReverseLookupZoneId**. This procedure returns the recordID of the newly added row in **ADM_AddressDNSReverseLookupTable**.
4. The modified **CreateDNSPTRRecord.address** is passed in the output message.

3.3.4.10.1 Messages

3.3.4.10.1.1 IIpamServer_CreateDNSPTRRecord_InputMessage

The IIpamServer_CreateDNSPTRRecord_InputMessage message initiates the CreateDNSPTRRecord WSDL operation.

```
<wsdl:message name="IIpamServer_CreateDNSPTRRecord_InputMessage">
  <wsdl:part name="parameters" element="ipam:CreateDNSPTRRecord" />
```


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```
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSPTRRecord
```

The body of the SOAP message MUST contain the CreateDNSPTRRecord element.

3.3.4.10.1.2 IIpamServer_CreateDNSPTRRecord_OutputMessage

The IIpamServer_CreateDNSPTRRecord_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_CreateDNSPTRRecord_InputMessage message.

```
<wsdl:message name="IIpamServer_CreateDNSPTRRecord_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CreateDNSPTRRecordResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSPTRRecordResponse
```

The body of the SOAP message MUST contain the CreateDNSPTRRecordResponse element.

3.3.4.10.2 Elements

3.3.4.10.2.1 CreateDNSPTRRecord

The CreateDNSPTRRecord element contains the input data for the CreateDNSPTRRecord operation.

```
<xs:element name="CreateDNSPTRRecord">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>.
```

3.3.4.10.2.2 CreateDNSPTRRecordResponse

The CreateDNSPTRRecordResponse element contains the output data for the CreateDNSPTRRecord operation.

```
<xs:element name="CreateDNSPTRRecordResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.11 CreateOrUpdateIPv4Reservation

This operation is used to create a new IPv4 reservation or if the reservation corresponding to the given IPv4 address exists already, to update it.

```
<wsdl:operation name="CreateOrUpdateIPv4Reservation"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPv4Reservation"
message="ipam:IIpamServer_CreateOrUpdateIPv4Reservation_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPv4ReservationResponse"
message="ipam:IIpamServer_CreateOrUpdateIPv4Reservation_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
</wsdl:operation>
```

Upon receiving the IIpamServer_CreateOrUpdateIPv4Reservation_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_CreateOrUpdateIPv4Reservation_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not satisfied, an appropriate SOAP fault MUST be generated.
    1. **CreateOrUpdateIPv4Reservation.ipAddress** = NULL.
    2. **CreateOrUpdateIPv4Reservation.ipAddress.DhcpScopeSubnetId** = NULL.
    3. **CreateOrUpdateIPv4Reservation.ipAddress.Address** = NULL.
    4. **CreateOrUpdateIPv4Reservation.ipAddress.MacAddress** = NULL.
    5. **CreateOrUpdateIPv4Reservation.ipAddress.ReservationServer** = NULL or empty string.
2. If **CreateOrUpdateIPv4Reservation.ipAddress.ReservationName** = NULL or empty string2, check the ReservationSyncStatus if the reservation specified in ipam:IpamIpAddress element in the input message is marked to be an existing reservation or not.
3. If the reservation exists, call the procedure AddOrUpdateReservation in **ADM_DHCPReservationTable** with the following parameters:
    1. IPv4 as *Param_addressfamily*.
    2. **CreateOrUpdateIPv4Reservation.ipAddress.ReservationRecordId** as *Param_reservationId*.
    3. **CreateOrUpdateIPv4Reservation.ipAddress.DhcpScopeId** as *Param_scopeId*.
    4. **CreateOrUpdateIPv4Reservation.ipAddress.RecordId** as *Param_addressId*.
    5. **CreateOrUpdateIPv4Reservation.ipAddress.ReservationDetails** as *Param_reservationDetails*.
4. If the procedure updated the reservation successfully, return the IpamIpAddress in the CreateOrUpdateIPv4ReservationResponse element.

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5. If the reservation does not exist, call the procedure AddOrUpdateReservation in **ADM_DHCPReservationTable** passing the address family, Scope ID, Address ID and reservation details from the input message and the reservationId as NULL. If the procedure added the reservation successfully, update the returned reservationId in IpamIpAddress and populate that in CreateOrUpdateIPv4ReservationResponse element.

6. Compute the ManagedByValue for the **CreateOrUpdateIPv6Reservation.ipAddress** as the value of the custom field in **CreateOrUpdateIPv6Reservation.ipAddress.CustomFieldValues** that has the record identifier **ADM_ManagedByCustomFieldId**.

7. Compute the ManagedByEntity for the **CreateOrUpdateIPv6Reservation.ipAddress** as the value of the custom field in **CreateOrUpdateIPv4Reservation.ipAddress.CustomFieldValues** that has the record identifier **ADM_ManagedByEntityCustomFieldId**.

8. If the ManagedByEntity field computed previously is the same as **CreateOrUpdateIPv4Reservation.ipAddress.ReservationServer**, then set **CreateOrUpdateIPv4Reservation.ipAddress.ReservationSyncStatus** as **ipam::DhcpReservationSyncStatus.Exists**. Else set the **CreateOrUpdateIPv4Reservation.ipAddress.ReservationSyncStatus** as **ipam::DhcpReservationSyncStatus.CreateSuccess**.

9. In case of any error while updating the reservation in step 4, set **CreateOrUpdateIPv4Reservation.ipAddress.ReservationSyncStatus** as **ipam::DhcpReservationSyncStatus.CreateFailure**.

10. Update the ReservationSyncStatus in **ADM_IPAddressTable** in the row corresponding to **CreateOrUpdateIPv4Reservation.ipAddress.RecordId**.

11. In case of any error while updating the reservation in step 4, an appropriate SOAP fault must be raised.

3.3.4.11.1 Messages

3.3.4.11.1.1 IIpamServer_CreateOrUpdateIPv4Reservation_InputMessage

The IIpamServer_CreateOrUpdateIPv4Reservation_InputMessage message initiates the CreateOrUpdateIPv4Reservation WSDL operation.

```
<wsdl:message name="IIpamServer_CreateOrUpdateIPv4Reservation_InputMessage">
  <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPv4Reservation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPv4Reservation
```

The body of the SOAP message MUST contain the CreateOrUpdateIPv4Reservation element.

3.3.4.11.1.2 IIpamServer_CreateOrUpdateIPv4Reservation_OutputMessage

This is the response for the CreateOrUpdateIPv4Reservation operation.

```
<wsdl:message name="IIpamServer_CreateOrUpdateIPv4Reservation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPv4ReservationResponse" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPv4ReservationResponse
```

The body of the SOAP message MUST contain the CreateOrUpdateIPv4ReservationResponse element.

3.3.4.11.2 Elements

3.3.4.11.2.1 CreateOrUpdateIPv4Reservation

The CreateOrUpdateIPv4Reservation element contains the input data for the CreateOrUpdateIPv4Reservation operation.

```
<xs:element name="CreateOrUpdateIPv4Reservation" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.11.2.2 CreateOrUpdateIPv4ReservationResponse

The CreateOrUpdateIPv4ReservationResponse element contains the output data for the CreateOrUpdateIPv4Reservation operation.

```
<xs:element name="CreateOrUpdateIPv4ReservationResponse"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.12 CreateOrUpdateIPV6Reservation

This operation is used to create a new IPv6 reservation or if the reservation corresponding to the given IPv6 address exists already, to update it.

```
<wsdl:operation name="CreateOrUpdateIPV6Reservation"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPV6Reservation"
message="ipam:IIpamServer_CreateOrUpdateIPV6Reservation_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPV6ReservationResponse"
message="ipam:IIpamServer_CreateOrUpdateIPV6Reservation_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
```


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```
</wsdl:operation>
```

Upon receiving the IIpamServer_CreateOrUpdateIPv6Reservation_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_CreateOrUpdateIPv6Reservation_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not satisfied, an appropriate SOAP fault MUST be generated.
    1. **CreateOrUpdateIPv6Reservation.ipAddress** = NULL.
    2. **CreateOrUpdateIPv6Reservation.ipAddress.DhcpScopeSubnetId** = 0.
    3. **CreateOrUpdateIPv6Reservation.ipAddress.Address** = NULL.
    4. **CreateOrUpdateIPv6Reservation.ipAddress.Duid** = NULL.
    5. **CreateOrUpdateIPv6Reservation.ipAddress.ReservationServer** = NULL or empty string.
    6. **CreateOrUpdateIPv6Reservation.ipAddress.ReservationName** = NULL or empty string.
2. Check the ReservationSyncStatus property to see if the reservation specified in ipam:IpamIpAddress element in the input message is marked to be an existing reservation or not.
3. If the reservation exists, call the procedure AddOrUpdateReservation in **ADM_DHCPReservationTable** passing the address family, Scope ID, Address ID, and reservation details from the input message and the reservationId found in the previous step. If the procedure updated the reservation successfully, return the IpamIpAddress in the CreateOrUpdateIPv6ReservationResponse element.
4. If the reservation does not exist, call the procedure AddOrUpdateReservation in **ADM_DHCPReservationTable** passing the address family, Scope ID, Address ID, and reservation details from the input message and the reservationId as NULL. If the procedure added the reservation successfully, update the returned reservationId in IpamIpAddress and populate that in the CreateOrUpdateIPv6ReservationResponse element.
5. Compute the ManagedByValue for the **CreateOrUpdateIPv6Reservation.ipAddress** as the value of the custom field in **CreateOrUpdateIPv6Reservation.ipAddress**.CustomFieldValues that has the record identifier **ADM_ManagedByCustomFieldId.**
6. Compute the ManagedByEntity for the **CreateOrUpdateIPv6Reservation.ipAddress** as the value of the custom field in CreateOrUpdateIPv6Reservation.ipAddress.CustomFieldValues that has the record identifier **ADM_ManagedByEntityCustomFieldId.**
7. If the ManagedByEntity field computed previously is the same as **CreateOrUpdateIPv6Reservation.ipAddress.ReservationServer**, then set **CreateOrUpdateIPv6Reservation.ipAddress.ReservationSyncStatus** as **ipam::DhcpReservationSyncStatus.Exists**. Else set the **CreateOrUpdateIPv6Reservation.ipAddress.ReservationSyncStatus** as **ipam::DhcpReservationSyncStatus.CreateSuccess**.
8. In case of any error while updating the reservation in step 4, set **CreateOrUpdateIPv6Reservation.ipAddress.ReservationSyncStatus** as **ipam::DhcpReservationSyncStatus.CreateFailure**.

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9. Update the ReservationSyncStatus in **ADM_IPAddressTable** in the row corresponding to **CreateOrUpdateIPv6Reservation.ipAddress.RecordId**.

10. In case of any error while updating the reservation in step 4, an appropriate SOAP fault must be raised.

3.3.4.12.1 Messages

3.3.4.12.1.1 IIpamServer_CreateOrUpdateIPV6Reservation_InputMessage

The IIpamServer_CreateOrUpdateIPv6Reservation_InputMessage message initiates the CreateOrUpdateIPv6Reservation WSDL operation.

```
<wsdl:message name="IIpamServer_CreateOrUpdateIPV6Reservation_InputMessage">
  <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPV6Reservation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPV6Reservation
```

The body of the SOAP message MUST contain the CreateOrUpdateIPv6Reservation element.

3.3.4.12.1.2 IIpamServer_CreateOrUpdateIPV6Reservation_OutputMessage

This is the response for the CreateOrUpdateIPv6Reservation operation.

```
<wsdl:message name="IIpamServer_CreateOrUpdateIPV6Reservation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPV6ReservationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPV6ReservationResponse
```

The body of the SOAP message MUST contain the CreateOrUpdateIPv6ReservationResponse element.

3.3.4.12.2 Elements

3.3.4.12.2.1 CreateOrUpdateIPV6Reservation

The CreateOrUpdateIPv6Reservation element contains the input data for the CreateOrUpdateIPv6Reservation operation.

```
<xs:element name="CreateOrUpdateIPV6Reservation" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.12.2.2 CreateOrUpdateIPV6ReservationResponse

The CreateOrUpdateIPv6ReservationResponse element contains the output data for the CreateOrUpdateIPv6Reservation operation.

```
<xs:element name="CreateOrUpdateIPV6ReservationResponse"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.13 CreateUserAccessPolicy

This operation is used to create a new access policy in the IPAM data store.

```
<wsdl:operation name="CreateUserAccessPolicy">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserAccessPolicy"
message="ipam:IIpamServer_CreateUserAccessPolicy_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserAccessPolicyResponse"
message="ipam:IIpamServer_CreateUserAccessPolicy_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_CreateUserAccessPolicy_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_CreateUserAccessPolicy_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **CreateUserAccessPolicy.policy** is NULL then an appropriate SOAP fault MUST be generated as specified in section 2.2.2.1.
2. The method **ValidateUserAccessPolicy** is used to validate **CreateUserAccessPolicy.policy**.
3. A new row is added to **ADM_UserAccessPolicyTable** for **CreateUserAccessPolicy.policy**. **CreateUserAccessPolicy.policy.policyId** and **CreateUserAccessPolicy.policy.UserGroupId** is updated and passed in the output message.

3.3.4.13.1 Messages

3.3.4.13.1.1 IIpamServer_CreateUserAccessPolicy_InputMessage

The IIpamServer_CreateUserAccessPolicy_InputMessage message initiates the CreateUserAccessPolicy WSDL operation.

```
<wsdl:message name="IIpamServer_CreateUserAccessPolicy_InputMessage">
  <wsdl:part name="parameters" element="ipam:CreateUserAccessPolicy" />
```


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```
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateUserAccessPolicy
```

The body of the SOAP message MUST contain the CreateUserAccessPolicy element.

3.3.4.13.1.2 IIpamServer_CreateUserAccessPolicy_OutputMessage

The IIpamServer_CreateUserAccessPolicy_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_CreateUserAccessPolicy_InputMessage message.

```
<wsdl:message name="IIpamServer_CreateUserAccessPolicy_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CreateUserAccessPolicyResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateUserAccessPolicyResponse
```

The body of the SOAP message MUST contain the CreateUserAccessPolicyResponse element.

3.3.4.13.2 Elements

3.3.4.13.2.1 CreateUserAccessPolicy

The CreateUserAccessPolicy element contains the input data for the CreateUserAccessPolicy operation.

```
<xs:element name="CreateUserAccessPolicy">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policy" nillable="true" type="ipam:UserAccessPolicy" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.13.2.2 CreateUserAccessPolicyResponse

The CreateUserAccessPolicyResponse element contains the output data for the CreateUserAccessPolicy operation.

```
<xs:element name="CreateUserAccessPolicyResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="CreateUserAccessPolicyResult" nillable="true"
type="ipam:UserAccessPolicy" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.14 CreateUserRole

This operation is used to create a new user role in the IPAM data store.

```
<wsdl:operation name="CreateUserRole">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserRole"
message="ipam:IIpamServer_CreateUserRole_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserRoleResponse"
message="ipam:IIpamServer_CreateUserRole_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_CreateUserRole_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_CreateUserRole_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **CreateUserRole.role** is NULL then a SOAP fault MUST be generated as specified in section 2.2.2.1.
2. The method **ValidateUserRole** is used to validate **CreateUserRole.role**.
3. A new row is added to **ADM_RoleDefinitionTable** for **CreateUserRole.role**. The recordId of this row is passed in the output message.

3.3.4.14.1 Messages

3.3.4.14.1.1 IIpamServer_CreateUserRole_InputMessage

The IIpamServer_CreateUserRole_InputMessage message initiates the CreateUserRole WSDL operation.

```
<wsdl:message name="IIpamServer_CreateUserRole_InputMessage">
  <wsdl:part name="parameters" element="ipam:CreateUserRole" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateUserRole
```

The body of the SOAP message MUST contain the CreateUserRole element.

3.3.4.14.1.2 IIpamServer_CreateUserRole_OutputMessage

The IIpamServer_CreateUserRole_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_CreateUserRole_InputMessage message.

```
<wsdl:message name="IIpamServer_CreateUserRole_OutputMessage">
  <wsdl:part name="parameters" element="ipam:CreateUserRoleResponse" />
</wsdl:message>
```


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The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/CreateUserRoleResponse
```

The body of the SOAP message MUST contain the CreateUserRoleResponse element.

3.3.4.14.2 Elements

3.3.4.14.2.1 CreateUserRole

The CreateUserRole element contains the input data for the CreateUserRole operation.

```
<xs:element name="CreateUserRole">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="role" nillable="true" type="ipam:UserRole" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.14.2.2 CreateUserRoleResponse

The CreateUserRoleResponse element contains the output data for the CreateUserRole operation.

```
<xs:element name="CreateUserRoleResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="CreateUserRoleResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.15 DBGetDhcpServerFromRecordId

This operation can be used to retrieve the DhcpServer instance for the specified RecordId value.

```
<wsdl:operation name="DBGetDhcpServerFromRecordId">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromRecordId"
message="ipam:IIpamServer_DBGetDhcpServerFromRecordId_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromRecordIdResponse"
message="ipam:IIpamServer_DBGetDhcpServerFromRecordId_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DBGetDhcpServerFromRecordId_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DBGetDhcpServerFromRecordId_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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1. Validate **DBGetDhcpServerFromRecordId.recordId** is greater than 0 and **DBGetDhcpServerFromRecordId.addressFamily** is either Internet or InternetV6. If these conditions are not satisfied, generate an appropriate SOAP fault.

2. Call the procedure GetDhcpServerFromTable passing **DBGetDhcpServerFromRecordId.recordId** as *Param_Id* and **DBGetDhcpServerFromRecordId.addressFamily** as *Param_addressfamily*.

3. Set **DBGetDhcpServerFromRecordIdResponse.DBGetDhcpServerFromRecordIdResult** to Result_server.

3.3.4.15.1 Messages

3.3.4.15.1.1 IIpamServer_DBGetDhcpServerFromRecordId_InputMessage

This is the request for the DBGetDhcpServerFromRecordId operation.

```
<wsdl:message name="IIpamServer_DBGetDhcpServerFromRecordId_InputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromRecordId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromRecordId
```

The body of the SOAP message MUST contain the DBGetDhcpServerFromRecordId element.

3.3.4.15.1.2 IIpamServer_DBGetDhcpServerFromRecordId_OutputMessage

This is the response for the DBGetDhcpServerFromRecordId operation.

```
<wsdl:message name="IIpamServer_DBGetDhcpServerFromRecordId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromRecordIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromRecordIdResponse
```

The body of the SOAP message MUST contain the DBGetDhcpServerFromRecordIdResponse element.

3.3.4.15.2 Elements

3.3.4.15.2.1 DBGetDhcpServerFromRecordId

This element specifies the input values for the DBGetDhcpServerFromRecordId operation.

```
<xs:element name="DBGetDhcpServerFromRecordId">
  <xs:complexType>
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" name="recordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.15.2.2 DBGetDhcpServerFromRecordIdResponse

This element specifies the output values for the DBGetDhcpServerFromRecordId operation.

```
<xs:element name="DBGetDhcpServerFromRecordIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DBGetDhcpServerFromRecordIdResult" nillable="true"
type="ipam:DhcpServer" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.16 DBGetDhcpServerFromServerInfoRecordId

This operation can be used to retrieve the DhcpServer instance for the specified ServerInfo RecordId.

```
<wsdl:operation name="DBGetDhcpServerFromServerInfoRecordId">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromServerInfoRecordId"
message="ipam:IIpamServer_DBGetDhcpServerFromServerInfoRecordId_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromServerInfoRecordIdR
esponse" message="ipam:IIpamServer_DBGetDhcpServerFromServerInfoRecordId_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DBGetDhcpServerFromServerInfoRecordId_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DBGetDhcpServerFromServerInfoRecordId_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate **DBGetDhcpServerFromServerInfoRecordId.serverInfoRecordId** is not 0 and **DBGetDhcpServerFromServerInfoRecordId.addressFamily** is either Internet or InternetV6. If either of the conditions is not met, an appropriate SOAP fault MUST be returned.

2. Look up in the **ADM_ServerRolesTable** the row with ServerRecordID equal to **DBGetDhcpServerFromServerInfoRecordId.serverInfoRecordId** and **ServerRoleDetails.ServerRoleFlag** equal to **ServerRoleType.Dhcp**.

3. If the row is found, look up **ADM_DHCPServersTable** for the row that has the ServerRoleRecordId to be the RecordId of the row found in ADM_ServerRolesTable. The DBGetDhcpServerFromServerInfoRecordId.addressFamily is used to select the simple table within the **ADM_DHCPServersTable** against which the lookup is being done.

4. Use the RecordId of the row as *Param_Id* and **DBGetDhcpServerFromServerInfoRecordId.addressFamily** as *Param_addressfamily* and

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call the procedure GetDHCPServerFromTable in **ADM_DHCPServersTable**. Assign the Result_server to **DBGetDhcpServerFromServerInfoRecordIdResponse.DBGetDhcpServerFromServerInfoRecordIdResult**.

3.3.4.16.1 Messages

3.3.4.16.1.1 IIpamServer_DBGetDhcpServerFromServerInfoRecordId_InputMessage

This is the request for the DBGetDhcpServerFromServerInfoRecordId operation.

```
<wsdl:message name="IIpamServer_DBGetDhcpServerFromServerInfoRecordId_InputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromServerInfoRecordId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromServerInfoRecordId
```

The body of the SOAP message MUST contain the DBGetDhcpServerFromServerInfoRecordId element.

3.3.4.16.1.2 IIpamServer_DBGetDhcpServerFromServerInfoRecordId_OutputMessage

This is the response for the DBGetDhcpServerFromServerInfoRecordId operation.

```
<wsdl:message name="IIpamServer_DBGetDhcpServerFromServerInfoRecordId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromServerInfoRecordIdResponse"
/>
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromServerInfoRecordIdResponse
```

The body of the SOAP message MUST contain the DBGetDhcpServerFromServerInfoRecordIdResponse element.

3.3.4.16.2 Elements

3.3.4.16.2.1 DBGetDhcpServerFromServerInfoRecordId

This element specifies the input values for the DBGetDhcpServerFromServerInfoRecordId operation.

```
<xs:element name="DBGetDhcpServerFromServerInfoRecordId">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="serverInfoRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
```


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```
  </xs:complexType>
</xs:element>
```

3.3.4.16.2.2 DBGetDhcpServerFromServerInfoRecordIdResponse

This element specifies the output values for the DBGetDhcpServerFromServerInfoRecordId operation.

```
<xs:element name="DBGetDhcpServerFromServerInfoRecordIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DBGetDhcpServerFromServerInfoRecordIdResult"
nillable="true" type="ipam:DhcpServer" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.17 DBGetScopeFromNetworkIDAndServer

This operation can be used to retrieve the DHCP scope instance with the specified scope and on the specified server.

```
<wsdl:operation name="DBGetScopeFromNetworkIDAndServer">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromNetworkIDAndServer"
message="ipam:IIpamServer_DBGetScopeFromNetworkIDAndServer_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromNetworkIDAndServerRespon
se" message="ipam:IIpamServer_DBGetScopeFromNetworkIDAndServer_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DBGetScopeFromNetworkIDAndServer_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DBGetScopeFromNetworkIDAndServer_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the following are TRUE. If any of the conditions is FALSE, an appropriate SOAP fault MUST be generated.
    1. **DBGetScopeFromNetworkIDAndServer.dhcpServerRecordId** MUST NOT be 0.
    2. **DBGetScopeFromNetworkIDAndServer.addressFamily** MUST be either Internet or InternetV6.
2. Lookup the **ADM_DHCPScopesTable** for the row which meets the following condition. The **DBGetScopeFromNetworkIDAndServer.addressFamily** is used to determine the simple table within **ADM_DHCPScopesTable** on which the processing has to be done.
    1. DHCPServerRecordId is equal to **DBGetScopeFromNetworkIDAndServer.dhcpServerRecordId**.
    2. **ScopeDetails.ScopeId** equals **DBGetScopeFromNetworkIDAndServer.scopeId**.

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3. If a row is found, call the procedure GetDhcpScopeFromTable passing RecordId of the row as *Param_Id* and **DBGetScopeFromNetworkIDAndServer.addressFamily** as *Param_addressfamily*.

4. Assign Result_scope to **DBGetScopeFromNetworkIDAndServerResponse. DBGetScopeFromNetworkIDAndServerResult**.

3.3.4.17.1 Messages

3.3.4.17.1.1 IIpamServer_DBGetScopeFromNetworkIDAndServer_InputMessage

This is the request for the DBGetScopeFromNetworkIDAndServer operation.

```
<wsdl:message name="IIpamServer_DBGetScopeFromNetworkIDAndServer_InputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetScopeFromNetworkIDAndServer" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromNetworkIDAndServer
```

The body of the SOAP message MUST contain the DBGetScopeFromNetworkIDAndServer element.

3.3.4.17.1.2 IIpamServer_DBGetScopeFromNetworkIDAndServer_OutputMessage

This is the response for the DBGetScopeFromNetworkIDAndServer operation.

```
<wsdl:message name="IIpamServer_DBGetScopeFromNetworkIDAndServer_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetScopeFromNetworkIDAndServerResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromNetworkIDAndServerResponse
```

The body of the SOAP message MUST contain the DBGetScopeFromNetworkIDAndServerResponse element.

3.3.4.17.2 Elements

3.3.4.17.2.1 DBGetScopeFromNetworkIDAndServer

This element specifies the input values for the DBGetScopeFromNetworkIDAndServer operation.

```
<xs:element name="DBGetScopeFromNetworkIDAndServer">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="scopeId" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="dhcpServerRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
```


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```
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.17.2.2 DBGetScopeFromNetworkIDAndServerResponse

This element specifies the output values for the DBGetScopeFromNetworkIDAndServer operation.

```
<xs:element name="DBGetScopeFromNetworkIDAndServerResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DBGetScopeFromNetworkIDAndServerResult" nillable="true"
type="ipam:DhcpScope" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.18 DBGetScopeFromRecordId

This operation can be used to retrieve the DhcpScope instance for the specified record identifier.

```
<wsdl:operation name="DBGetScopeFromRecordId">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromRecordId"
message="ipam:IIpamServer_DBGetScopeFromRecordId_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromRecordIdResponse"
message="ipam:IIpamServer_DBGetScopeFromRecordId_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DBGetScopeFromRecordId_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DBGetScopeFromRecordId_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the following are TRUE. If any of the conditions are FALSE, an appropriate SOAP fault MUST be generated.
    1. **DBGetScopeFromRecordId.recordId** MUST NOT be 0.
    2. **DBGetScopeFromRecordId.addressFamily** MUST be either Internet or InternetV6.
2. Call the procedure **ADM_GetDhcpScopeFromTable** passing **DBGetScopeFromRecordId.recordId** as *Param_Id* and **DBGetScopeFromRecordId.addressFamily** as *Param_addressfamily*.
3. Assign Result_scope to **DBGetScopeFromRecordIdResponse.DBGetScopeFromRecordIdResult**.

3.3.4.18.1 Messages

3.3.4.18.1.1 IIpamServer_DBGetScopeFromRecordId_InputMessage

This is the request for the DBGetScopeFromRecordId operation.

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```
<wsdl:message name="IIpamServer_DBGetScopeFromRecordId_InputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetScopeFromRecordId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromRecordId
```

The body of the SOAP message MUST contain the DBGetScopeFromRecordId element.

3.3.4.18.1.2 IIpamServer_DBGetScopeFromRecordId_OutputMessage

This is the response for the DBGetScopeFromRecordId operation.

```
<wsdl:message name="IIpamServer_DBGetScopeFromRecordId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DBGetScopeFromRecordIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromRecordIdResponse
```

The body of the SOAP message MUST contain the DBGetScopeFromRecordIdResponse element.

3.3.4.18.2 Elements

3.3.4.18.2.1 DBGetScopeFromRecordId

This element specifies the input values for the DBGetScopeFromRecordId operation.

```
<xs:element name="DBGetScopeFromRecordId">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="recordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.18.2.2 DBGetScopeFromRecordIdResponse

This element specifies the output values for the DBGetScopeFromRecordId operation.

```
<xs:element name="DBGetScopeFromRecordIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DBGetScopeFromRecordIdResult" nillable="true"
type="ipam:DhcpScope" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.19 DeleteAccessScope

This operation is used to delete a specific access scope from the IPAM data store.

```
<wsdl:operation name="DeleteAccessScope">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAccessScope"
message="ipam:IIpamServer_DeleteAccessScope_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAccessScopeResponse"
message="ipam:IIpamServer_DeleteAccessScope_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_DeleteAccessScope_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_DeleteAccessScope_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. The method GetAccessScopeById from **ADM_AccessScopeTable** is passed the **DeleteAccessScope.accessScopeId** and the corresponding AccessScope object is returned.
2. Assign the returned AccessScope object to **tempVar.currentAccessScope**.
3. If **tempVar.currentAccessScope** is NULL or if **tempVar.currentAccessScope.IsBuiltIn** is true then a SOAP fault MUST be generated as specified in section 2.2.2.1.
4. Call method GetAllChildAccessScopesForScope of **ADM_AccessScopeTable** with parameter **tempVar.currentAccessScope.AccessScopeId**. The returned collection of AccessScope is assigned to **tempVar.CollectionOfChildAccessScope**.
5. If **tempVar.CollectionOfChildAccessScope** is null, then the record corresponding to **tempVar.currentAccessScope.AccessScopeId** is deleted from **ADM_AccessScopeTable**.
6. If **tempVar.CollectionOfChildAccessScope** is not null, then iterate through the collection and repeat step 2 -5 by changing the context to the AccessScope object in the current iteration. After the iteration is complete, then the record corresponding to **tempVar.currentAccessScope.AccessScopeId** is deleted from **ADM_AccessScopeTable**.
7. The total number of records deleted from the **ADM_AccessScopeTable** is returned in the output message.

3.3.4.19.1 Messages

3.3.4.19.1.1 IIpamServer_DeleteAccessScope_InputMessage

The IIpamServer_DeleteAccessScope_InputMessage message initiates the DeleteAccessScope WSDL operation.

```
<wsdl:message name="IIpamServer_DeleteAccessScope_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteAccessScope" />
</wsdl:message>
```


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The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteAccessScope
```

The body of the SOAP message MUST contain the DeleteAccessScope element.

3.3.4.19.1.2 IIpamServer_DeleteAccessScope_OutputMessage

The IIpamServer_DeleteAccessScope_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_DeleteAccessScope_InputMessage message.

```
<wsdl:message name="IIpamServer_DeleteAccessScope_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteAccessScopeResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteAccessScopeResponse
```

The body of the SOAP message MUST contain the DeleteAccessScopeResponse element.

3.3.4.19.2 Elements

3.3.4.19.2.1 DeleteAccessScope

The DeleteAccessScope element contains the input data for the DeleteAccessScope operation.

```
<xs:element name="DeleteAccessScope">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="accessScopeId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.19.2.2 DeleteAccessScopeResponse

The DeleteAccessScopeResponse element contains the output data for the DeleteAccessScope operation.

```
<xs:element name="DeleteAccessScopeResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DeleteAccessScopeResult" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.20 DeleteAddressSpace

This operation is used to delete a specified address space from the IPAM data store.

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```
<wsdl:operation name="DeleteAddressSpace">
```

<wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAddressSpace" message="ipam:IIpamServer_DeleteAddressSpace_InputMessage" />

```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAddressSpaceResponse"
message="ipam:IIpamServer_DeleteAddressSpace_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteAddressSpace_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_DeleteAddressSpace_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Assign **DeleteAddressSpace.addressSpace** to addressSpaceToBeDeleted, a temporary datastore.
2. If addressSpaceToBeDeleted is NULL, an appropriate SOAP fault MUST be raised.
3. Call GetAddressSpaceById procedure of **ADM_AddressSpace** with following parameters:
   - **addressSpaceToBeDeleted.RecordId** as *Param_AddressSpaceId*.
4. If Result_AddressSpace is null, an appropriate SOAP fault must be generated.
5. Remove the row from **ADM_AddressSpaceTable** where RecordId is same as **addressSpaceToBeDeleted.RecordId**.
6. Delete the corresponding scope associations for this block by calling the DeleteAssociationEntry procedure of **ADM_AccessScopeAssociationTable** by passing following parameters:
   1. **addressSpaceToBeDeleted.RecordId** as *Param_objectId*.
   2. **IpamObjectType.AddressSpace** as *Param_objectType*.

3.3.4.20.1 Messages

3.3.4.20.2 IIpamServer_DeleteAddressSpace_InputMessage

This is the request for the DeleteAddressSpace operation.

```
<wsdl:message name="IIpamServer_DeleteAddressSpace_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteAddressSpace" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteAddressSpace
```

The body of the SOAP message MUST contain the DeleteAddressSpace element.

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3.3.4.20.3 IIpamServer_DeleteAddressSpace_OutputMessage

This is the response message for the DeleteAddressSpace operation.

```
<wsdl:message name="IIpamServer_DeleteAddressSpace_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteAddressSpaceResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteAddressSpaceResponse
```

The body of the SOAP message MUST contain the DeleteAddressSpaceResponse element.

3.3.4.20.4 Elements

3.3.4.20.4.1 DeleteAddressSpace

This element specifies the input values for the DeleteAddressSpace operation.

```
<xs:element name="DeleteAddressSpace">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressSpace" nillable="true" type="ipam:AddressSpace"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

addressSpace: This specifies the AddressSpace object that is to be deleted.

3.3.4.20.4.2 DeleteAddressSpaceResponse

This element specifies the output values for the DeleteAddressSpace operation.

```
<xs:element name="DeleteAddressSpaceResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.21 DeleteBlock

This operation is used to delete a specified address block from the IPAM data store.

```
<wsdl:operation name="DeleteBlock">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteBlock"
message="ipam:IIpamServer_DeleteBlock_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteBlockResponse"
message="ipam:IIpamServer_DeleteBlock_OutputMessage" />
</wsdl:operation>
```


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Upon receiving the IIpamServer_DeleteBlock_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DeleteBlock_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the IPBlock corresponding to **DeleteBlock.blockRecordId** by calling the procedure GetIPBlockFromTable in **ADM_IPBlocksTable**. Let the **result** be stored as **BlockToDelete** variable.

2. If the current IPAM user doesn't have permissions to delete childBlock (see Pre-Operation Processing, section 3.1.4.2) and **DeleteBlock.deleteChildBlocks** is TRUE, the authorization methods SHOULD return error. Assign the exception from authorization method to **DeleteBlockResponse.DeleteBlockResult**.

3. If **DeleteBlock.deleteChildBlocks** is TRUE, perform the following steps:

   - Call the DeleteBlockTree procedure with **DeleteBlock.blockRecordId** as *Param_blockId* and **DeleteBlock.addressFamily** as *Param_addressfamily*.

4. **If DeleteBlock.deleteChildBlocks** is FALSE, perform the following steps:

   - Update the ParentBlockRecordId of rows in **ADM_IPBlocksTable** whose ParentBlockRecordId is **DeleteBlock.blockRecordId** to the value of **BlockToDelete.ParentBlockRecordId**.

5. Delete the address block BlockToDelete from **ADM_IPBlocksTable**. Also delete the corresponding row from **ADM_ IPBlockMultivaluedPropertiesTable**.

6. Delete the corresponding scope associations for this block by calling DeleteAssociationEntry procedure of **ADM_AccessScopeAssociationTable** by passing following parameters

   1. **BlockToDelete.RecordId** as *Param_objectId*

   2. **If DeleteBlock.addressFamily** is Internet, then pass **IpamObjectType.IPv4Block** as *Param_objectType*. Otherwise. set the parameter to **IpamObjectType.IPv6Block**.

3.3.4.21.1 Messages

3.3.4.21.1.1 IIpamServer_DeleteBlock_InputMessage

This is the request for the DeleteBlock operation.

```
<wsdl:message name="IIpamServer_DeleteBlock_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteBlock" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteBlock
```

The body of the SOAP message MUST contain the DeleteBlock element.

3.3.4.21.1.2 IIpamServer_DeleteBlock_OutputMessage

This is the response for the DeleteBlock operation.

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```
<wsdl:message name="IIpamServer_DeleteBlock_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteBlockResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteBlockResponse
```

The body of the SOAP message MUST contain the DeleteBlockResponse element.

3.3.4.21.2 Elements

3.3.4.21.2.1 DeleteBlock

This element specifies the input values for the DeleteBlock operation.

```
<xs:element name="DeleteBlock">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="blockRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="deleteChildBlocks" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

blockRecordId: The RecordId of the block to be deleted.

addressFamily: The addressFamily of the block to be deleted.

deleteChildBlocks: A Boolean value specifying whether the child blocks for this particular block are to be deleted or not.

3.3.4.21.2.2 DeleteBlockResponse

This element specifies the output values for the DeleteBlock operation.

```
<xs:element name="DeleteBlockResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.22 DeleteCustomField

This operation is used to delete a **CustomField** object from the IPAM data store.

```
<wsdl:operation name="DeleteCustomField">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomField"
message="ipam:IIpamServer_DeleteCustomField_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldResponse"
message="ipam:IIpamServer_DeleteCustomField_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteCustomField_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DeleteCustomField_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Set the **deleteCustomField** to **DeleteCustomField.customField**.
2. If **deleteCustomField** is NULL, an appropriate SOAP fault MUST be returned.
3. Validate the **deleteCustomField** by performing the processing rules as specified in the procedure **ValidateCustomField**.
4. If **deleteCustomField.customFieldorigin** is equal to enum value **CustomFieldOrigin.BuiltIn**, an appropriate SOAP fault MUST be returned as it is not allowed to delete a built-in custom field.
5. Delete the row from **ADM_CustomFieldsTable** whose RecordId is same as **deleteCustomField.customFieldId**.

3.3.4.22.1 Messages

3.3.4.22.1.1 IIpamServer_DeleteCustomField_InputMessage

This is the request for the DeleteCustomField operation.

```
<wsdl:message name="IIpamServer_DeleteCustomField_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteCustomField" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomField
```

The body of the SOAP message MUST contain the DeleteCustomField element.

3.3.4.22.1.2 IIpamServer_DeleteCustomField_OutputMessage

This is the response for the DeleteCustomField operation.

```
<wsdl:message name="IIpamServer_DeleteCustomField_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteCustomFieldResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldResponse
```


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The body of the SOAP message MUST contain the DeleteCustomFieldResponse element.

3.3.4.22.2 Elements

3.3.4.22.2.1 DeleteCustomField

This element specifies the input values for the DeleteCustomField operation.

```
<xs:element name="DeleteCustomField">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="customField" nillable="true" type="ipam:CustomField" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.22.2.2 DeleteCustomFieldResponse

This element specifies the output values for the DeleteCustomField operation.

```
<xs:element name="DeleteCustomFieldResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.23 DeleteCustomFieldAssociation

This operation is used to delete an association between two custom fields from the IPAM data store. This operation however, does NOT delete the custom fields themselves.

```
<wsdl:operation name="DeleteCustomFieldAssociation">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldAssociation"
message="ipam:IIpamServer_DeleteCustomFieldAssociation_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldAssociationResponse"
message="ipam:IIpamServer_DeleteCustomFieldAssociation_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteCustomFieldAssociation_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_DeleteCustomFieldAssociation_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **DeleteCustomFieldAssociation.customFieldAssociation** is null OR **DeleteCustomFieldAssociation.customFieldAssociation.CustomField1** is null OR **DeleteCustomFieldAssociation.customFieldAssociation.CustomField2** is null, an appropriate SOAP fault MUST be raised.

2. For each valueAssociation in **DeleteCustomFieldAssociation.customFieldAssociation. CustomFieldValueAssociations**:

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- Delete the row from **ADM_MultiValueCustomFieldValueAssociationTable** with values as **valueAssociation.m_item1.RecordId**, **valueAssociation.m_item2.RecordId**. If no rows were found with matching values, the appropriate SOAP fault must be raised.

3.3.4.23.1 Messages

3.3.4.23.1.1 IIpamServer_DeleteCustomFieldAssociation_InputMessage

This is the request for the DeleteCustomFieldAssociation operation.

```
<wsdl:message name="IIpamServer_DeleteCustomFieldAssociation_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteCustomFieldAssociation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldAssociation
```

The body of the SOAP message MUST contain the DeleteCustomFieldAssociation element.

3.3.4.23.1.2 IIpamServer_DeleteCustomFieldAssociation_OutputMessage

This is the response for the DeleteCustomFieldAssociation operation.

```
<wsdl:message name="IIpamServer_DeleteCustomFieldAssociation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteCustomFieldAssociationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldAssociationResponse
```

The body of the SOAP message MUST contain the DeleteCustomFieldAssociationResponse element.

3.3.4.23.2 Elements

3.3.4.23.2.1 DeleteCustomFieldAssociation

This element specifies the input values for the DeleteCustomFieldAssociation operation.

```
<xs:element name="DeleteCustomFieldAssociation">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="customFieldAssociation" nillable="true"
type="ipam:CustomFieldAssociation" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

customFieldAssociation: Object of type ipam:CustomFieldAssociation representing association to be deleted.

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3.3.4.23.2.2 DeleteCustomFieldAssociationResponse

This element specifies the output values for the DeleteCustomFieldAssociation operation.

```
<xs:element name="DeleteCustomFieldAssociationResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.24 DeleteDiscoveryConfig

This operation can be used to delete the discovery configuration for a particular domain in the IPAM data store.

```
<wsdl:operation name="DeleteDiscoveryConfig">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDiscoveryConfig"
message="ipam:IIpamServer_DeleteDiscoveryConfig_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDiscoveryConfigResponse"
message="ipam:IIpamServer_DeleteDiscoveryConfig_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteDiscoveryConfig_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DeleteDiscoveryConfig_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the **DeleteDiscoveryConfig.discConfig.DiscoveryDomain** to meet the following conditions. If any of the conditions is not satisfied, an appropriate SOAP fault MUST be generated.
    1. MUST NOT be null.
    2. Length MUST be greater than 0.
    3. Length MUST NOT be greater than 255.
2. Delete the row from **ADM_DiscoveryConfigurationTable** whose DiscoveryDomain is equal to **DeleteDiscoveryConfig.discConfig.DiscoveryDomain**.

3.3.4.24.1 Messages

3.3.4.24.1.1 IIpamServer_DeleteDiscoveryConfig_InputMessage

This is the request for the DeleteDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_DeleteDiscoveryConfig_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDiscoveryConfig" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteDiscoveryConfig
```

The body of the SOAP message MUST contain the DeleteDiscoveryConfig element.

3.3.4.24.1.2 IIpamServer_DeleteDiscoveryConfig_OutputMessage

This is the response for the DeleteDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_DeleteDiscoveryConfig_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDiscoveryConfigResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteDiscoveryConfigResponse
```

The body of the SOAP message MUST contain the DeleteDiscoveryConfigResponse element.

3.3.4.24.2 Elements

3.3.4.24.2.1 DeleteDiscoveryConfig

This element specifies the input values for the DeleteDiscoveryConfig operation.

```
<xs:element name="DeleteDiscoveryConfig">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="discConfig" nillable="true" type="ipam:DiscoveryConfig"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.24.2.2 DeleteDiscoveryConfigResponse

This element specifies the output values for the DeleteDiscoveryConfig operation.

```
<xs:element name="DeleteDiscoveryConfigResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.25 DeleteDNSHostRecord

This operation is used to delete the host record from the DNS server and also reflect the update in the IPAM data store accordingly.

```
  <wsdl:operation name="deletednshostrecord">
  <wsdl:input wsaw:action="http://microsoft.windows.ipam/iipamserver/deletednshostrecord"
message="ipam:iipamserver_deletednshostrecord_inputmessage" />
```


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```
  <wsdl:output
wsaw:action="http://microsoft.windows.ipam/iipamserver/deletednshostrecordresponse"
message="ipam:iipamserver_deletednshostrecord_outputmessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_DeleteDNSHostRecord_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_DeleteDNSHostRecord_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not met, an appropriate SOAP Fault MUST be generated as specified in section 2.2.2.1.
    1. **DeleteDNSHostRecord.address** is not NULL.
    2. **DeleteDNSHostRecord.address.Address** is not NULL.
    3. **DeleteDNSHostRecord.address.DeviceName** is not empty or NULL.
    4. **DeleteDNSHostRecord.address.DnsZoneName** is not empty or NULL.
    5. **DeleteDNSHostRecord.address.DnsForwardLookupZoneServerName** is not empty or NULL.
2. The **DeleteDNSHostRecord.address.DnsForwardSyncStatus** is updated based on the success or failure of the de-registration on the remote DNS server in an implementation dependent manner.
3. Call the procedure AddOrUpdateAddressDNSForwardLookupTable in **ADM_AddressDNSForwardLookupTable** with parameters as addressfamily (as determined from the instance type of DeleteDNSHostRecord.address), **DeleteDNSHostRecord.address.RecordId**, **DeleteDNSHostRecord.address.DnsZoneID**, **DeleteDNSHostRecord.address.DnsForwardLookupZoneDnsServerId** and **DeleteDNSHostRecord.address.DnsForwardLookupZoneRecordId**. This procedure returns the recordID of the updated row in **ADM_AddressDNSForwardLookupTable**.
4. The modified **DeleteDNSHostRecord.address** is passed in the output message.

3.3.4.25.1 Messages

3.3.4.25.1.1 IIpamServer_DeleteDNSHostRecord_InputMessage

The IIpamServer_DeleteDNSHostRecord_InputMessage message initiates the DeleteDNSHostRecord WSDL operation.

```
<wsdl:message name="IIpamServer_DeleteDNSHostRecord_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSHostRecord" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSHostRecord
```


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The body of the SOAP message MUST contain the DeleteDNSHostRecord element.

3.3.4.25.1.2 IIpamServer_DeleteDNSHostRecord_OutputMessage

The IIpamServer_DeleteDNSHostRecord_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_DeleteDNSHostRecord_InputMessage message.

```
<wsdl:message name="IIpamServer_DeleteDNSHostRecord_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSHostRecordResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSHostRecordResponse
```

The body of the SOAP message MUST contain the DeleteDNSHostRecordResponse element.

3.3.4.25.2 Elements

3.3.4.25.2.1 DeleteDNSHostRecord

The DeleteDNSHostRecord element contains the input data for the DeleteDNSHostRecord operation.

```
<xs:element name="DeleteDNSHostRecord">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.25.2.2 DeleteDNSHostRecordResponse

The DeleteDNSHostRecordResponse element contains the output data for the DeleteDNSHostRecord operation.

```
<xs:element name="DeleteDNSHostRecordResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.26 DeleteDNSPTRRecord

This operation is used to delete the DNS PTR record from the DNS server and update the IPAM data store accordingly.

```
<wsdl:operation name="DeleteDNSPTRRecord">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSPTRRecord"
message="ipam:IIpamServer_DeleteDNSPTRRecord_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSPTRRecordResponse"
message="ipam:IIpamServer_DeleteDNSPTRRecord_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_DeleteDNSPTRRecord_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_DeleteDNSPTRRecord_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not met, an appropriate SOAP fault MUST be generated as specified in section 2.2.2.1.
    1. **DeleteDNSPTRRecord.address** is not NULL.
    2. **DeleteDNSPTRRecord.address.Address** is not NULL.
    3. **DeleteDNSPTRRecord.address.DnsReverseLookupZoneName** is not empty or NULL.
    4. **DeleteDNSPTRRecord.address.DnsReverseLookupZonePrefix** is not NULL.
    5. **DeleteDNSPTRRecord.address.DnsForwardLookupZoneServerName** is not empty or NULL.
2. **DeleteDNSPTRRecord.address.DnsReverseSyncStatus** is updated based on the success or failure of the registration on the remote DNS server.
3. Call the procedure **AddOrUpdateAddressDNSReverseLookup** in **ADM_ AddressDNSReverseLookupTable** with parameters as addressfamily (as determined from the instance type of **DeleteDNSPTRRecord.address**), **DeleteDNSPTRRecord.address.RecordId**, **DeleteDNSPTRRecord.address.DnsZoneID**, **DeleteDNSPTRRecord.address.DnsReverseLookupZoneDnsServerId,** and **DeleteDNSPTRRecord.address.DnsReverseLookupZoneId**. This procedure returns the recordID of the newly updated row in **ADM_ AddressDNSReverseLookupTable**.
4. The modified **DeleteDNSPTRRecord.address** is sent in the output message.

3.3.4.26.1 Messages

3.3.4.26.1.1 IIpamServer_DeleteDNSPTRRecord_InputMessage

The IIpamServer_DeleteDNSPTRRecord_InputMessage message initiates the DeleteDNSPTRRecord WSDL operation.

```
<wsdl:message name="IIpamServer_DeleteDNSPTRRecord_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSPTRRecord" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSPTRRecord
```

The body of the SOAP message MUST contain the DeleteDNSPTRRecord element.

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3.3.4.26.1.2 IIpamServer_DeleteDNSPTRRecord_OutputMessage

The IIpamServer_DeleteDNSPTRRecord_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_DeleteDNSPTRRecord_InputMessage message.

```
<wsdl:message name="IIpamServer_DeleteDNSPTRRecord_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSPTRRecordResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSPTRRecordResponse
```

The body of the SOAP message MUST contain the DeleteDNSPTRRecordResponse element.

3.3.4.26.2 Elements

3.3.4.26.2.1 DeleteDNSPTRRecord

The DeleteDNSPTRRecord element contains the input data for the DeleteDNSPTRRecord operation.

```
<xs:element name="DeleteDNSPTRRecord">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.26.2.2 DeleteDNSPTRRecordResponse

The DeleteDNSPTRRecordResponse element contains the output data for the DeleteDNSPTRRecord operation.

```
<xs:element name="DeleteDNSPTRRecordResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.27 DeleteIpamIPAddress

This operation is used to delete the specified IP addresses from the IPAM data store.

```
<wsdl:operation name="DeleteIpamIPAddress">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIpamIPAddress"
message="ipam:IIpamServer_DeleteIpamIPAddress_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIpamIPAddressResponse"
message="ipam:IIpamServer_DeleteIpamIPAddress_OutputMessage" />
```


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```
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteIpamIPAddress_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DeleteIpamIPAddress_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the DeleteIpamIPAddress.addressFamily is Internet, the rest of the processing is done with the IPv4-specific tables. Otherwise IPv6-specific tables are used for further processing.
2. Get the IpamIPAddress corresponding to the **DeleteIpamIPAddress.ipAddressRecordId** by calling the GetIPAddressFromTable procedure of the **ADM_IPAddressTable** passing the **DeleteIpamIPAddress.ipAddressRecordId** as *Param_id* input parameter and **DeleteIpamIPAddress.addressFamily** as the *Param_addressfamily* input parameter. Assign the address retrieved in result to **addressToBeDeleted**.
3. If **addressToBeDeleted** is null, return an appropriate SOAP fault to the client.
4. If **addressToBeDeleted.ReservationId** is set, remove the row having a RecordId value equal to **addressToBeDeleted.ReservationId** from the **ADM_DHCPReservationTable**.
5. If **addressToBeDeleted.DnsForwardLookupZoneRecordId** is set, remove the row in **ADM_AddressDnsForwardLookupTable** having RecordId equal to **addressToBeDeleted.DnsForwardLookupZoneRecordId**.
6. If **addressToBeDeleted.DnsReverseLookupZoneRecordId** is set, remove the row in **ADM_AddressDnsReverseLookupTable** having RecordId equal to **addressToBeDeleted.DnsReverseLookupZoneRecordId**.
7. Call the procedure DeleteCustomFieldValuesForObject in **ADM_CustomFieldValuesAssociationTable** by passing the following parameters:
   - *Param_ObjectType* is set to **EnumerationObjectType.IPAddress**.
   - *Param_addressFamily* is set to **DeleteIpamIPAddress.addressFamily**.
   - *Param_ObjectRecordId* is set to **DeleteIpamIPAddress.ipAddressRecordId**.
8. Delete the row with record identifier as **DeleteIpamIPAddress.ipAddressRecordId** from the IP address table.
9. Enumerate all rows in **ADM_IPAddressTable**, where value of IPAddress is same as **addressToBeDeleted.IPAddress**, to find the duplicate addresses of the address that was deleted. If the number of rows found is 1, then there is only one duplicate address, and hence its duplicate status MUST be reset. Update the IsDuplicate field of the only IpamIPAddress found thus as 0.

3.3.4.27.1 Messages

3.3.4.27.1.1 IIpamServer_DeleteIpamIPAddress_InputMessage

This is the request for the DeleteIpamIPAddress operation.

```
<wsdl:message name="IIpamServer_DeleteIpamIPAddress_InputMessage">
```


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```
  <wsdl:part name="parameters" element="ipam:DeleteIpamIPAddress" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteIpamIPAddress
```

The body of the SOAP message MUST contain the DeleteIpamIPAddress element.

3.3.4.27.1.2 IIpamServer_DeleteIpamIPAddress_OutputMessage

This is the response for the DeleteIpamIPAddress operation.

```
<wsdl:message name="IIpamServer_DeleteIpamIPAddress_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIpamIPAddressResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteIpamIPAddressResponse
```

The body of the SOAP message MUST contain the DeleteIpamIPAddressResponse element.

3.3.4.27.2 Elements

3.3.4.27.2.1 DeleteIpamIPAddress

This element specifies the input values for the DeleteIpamIPAddress operation.

```
<xs:element name="DeleteIpamIPAddress">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddressRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.27.2.2 DeleteIpamIPAddressResponse

This element specifies the output values for the DeleteIpamIPAddress operation.

```
<xs:element name="DeleteIpamIPAddressResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```


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3.3.4.28 DeleteIPV4Reservation

This operation is used to delete an existing IPv4 reservation.

```
<wsdl:operation name="DeleteIPV4Reservation" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV4Reservation"
message="ipam:IIpamServer_DeleteIPV4Reservation_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV4ReservationResponse"
message="ipam:IIpamServer_DeleteIPV4Reservation_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteIPv4Reservation_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_DeleteIPv4Reservation_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not satisfied, an appropriate SOAP fault MUST be generated:
    1. **DeleteIPv4Reservation.ipAddress** = NULL.
    2. **DeleteIPv4Reservation.ipAddress.Address** = NULL.
    3. **DeleteIPv4Reservation.ipAddress.ReservationServerName** = NULL.
2. Call the procedure DeleteReservation in **ADM_DHCPReservationTable** passing the reservation details from the input message. If the procedure deleted the reservation successfully, return the IpamIpAddress in the DeleteIPv4ReservationResponse element. Else a SOAP fault MUST be raised.
3. Set **DeleteIPv4Reservation.ipAddress.ReservationSyncStatus** to **ipam:DhcpReservationSyncStatus** as DeleteSuccess and update the corresponding row in **ADM_IPAddressTable**.
4. If step 2 resulted in an error, set **DeleteIPv4Reservation.ipAddress.ReservationSyncStatus** to **ipam:DhcpReservationSyncStatus** as DeleteFailure and update the corresponding row in **ADM_IPAddressTable**.

3.3.4.28.1 Messages

3.3.4.28.1.1 IIpamServer_DeleteIPV4Reservation_InputMessage

The IIpamServer_DeleteIPV4Reservation_InputMessage message initiates the DeleteIPV4Reservation WSDL operation.

```
<wsdl:message name="IIpamServer_DeleteIPV4Reservation_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV4Reservation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV4Reservation
```


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The body of the SOAP message MUST contain the DeleteIPv4Reservation element.

3.3.4.28.1.2 IIpamServer_DeleteIPV4Reservation_OutputMessage

This is the response for the DeleteIPV4Reservation operation.

```
<wsdl:message name="IIpamServer_DeleteIPV4Reservation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV4ReservationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV4ReservationResponse
```

The body of the SOAP message MUST contain the DeleteIPv4ReservationResponse element.

3.3.4.28.2 Elements

3.3.4.28.2.1 DeleteIPV4Reservation

The DeleteIPv4Reservation element contains the input data for the DeleteIPv4Reservation operation.

```
<xs:element name="DeleteIPV4Reservation" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.28.2.2 DeleteIPV4ReservationResponse

The DeleteIPV4ReservationResponse element contains the output data for the DeleteIPV4Reservation operation.

```
<xs:element name="DeleteIPV4ReservationResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.29 DeleteIPV6Reservation

This operation is used to delete an existing IPv6 reservation.

```
<wsdl:operation name="DeleteIPV6Reservation" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV6Reservation"
message="ipam:IIpamServer_DeleteIPV6Reservation_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV6ReservationResponse"
message="ipam:IIpamServer_DeleteIPV6Reservation_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteIPv6Reservation_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_DeleteIPv6Reservation_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not satisfied, an appropriate SOAP fault MUST be generated.
    1. **DeleteIPv6Reservation.ipAddress** = NULL.
    2. **DeleteIPv6Reservation.ipAddress. Address** = NULL.
    3. **DeleteIPv6Reservation.ipAddress.ReservationServerName** = NULL.
2. Call the procedure DeleteReservation in **ADM_DHCPReservationTable** passing the reservation details from the input message. If the procedure deleted the reservation successfully, return the IpamIpAddress in the DeleteIPv6ReservationResponse element. Else a SOAP fault MUST be raised.
3. Set **DeleteIPv6Reservation.ipAddress.ReservationSyncStatus** to **ipam:DhcpReservationSyncStatus** as DeleteSuccess and update the corresponding row in **ADM_IPAddressTable**.
4. If step 2 resulted in an error, set **DeleteIPv6Reservation.ipAddress.ReservationSyncStatus** to **ipam:DhcpReservationSyncStatus** as DeleteFailure and update the corresponding row in **ADM_IPAddressTable**.

3.3.4.29.1 Messages

3.3.4.29.1.1 IIpamServer_DeleteIPV6Reservation_InputMessage

The IIpamServer_DeleteIPV6Reservation_InputMessage message initiates the DeleteIPV6Reservation WSDL operation.

```
<wsdl:message name="IIpamServer_DeleteIPV6Reservation_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV6Reservation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV6Reservation
```

The body of the SOAP message MUST contain the DeleteIPv6Reservation element.

3.3.4.29.1.2 IIpamServer_DeleteIPV6Reservation_OutputMessage

This is the response for the DeleteIPV6Reservation operation.

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```
<wsdl:message name="IIpamServer_DeleteIPV6Reservation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV6ReservationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV6ReservationResponse
```

The body of the SOAP message MUST contain the DeleteIPv6ReservationResponse element.

3.3.4.29.2 Elements

3.3.4.29.2.1 DeleteIPV6Reservation

The DeleteIPv6Reservation element contains the input data for the DeleteIPv6Reservation operation.

```
<xs:element name="DeleteIPV6Reservation" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.29.2.2 DeleteIPV6ReservationResponse

The DeleteIPV6ReservationResponse element contains the output data for the DeleteIPV4Reservation operation.

```
<xs:element name="DeleteIPV6ReservationResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.30 DeleteLogicalGroup

This procedure can be used to delete a specific logical group.

```
<wsdl:operation name="DeleteLogicalGroup">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteLogicalGroup"
message="ipam:IIpamServer_DeleteLogicalGroup_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteLogicalGroupResponse"
message="ipam:IIpamServer_DeleteLogicalGroup_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteLogicalGroup_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below,

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the server MUST respond with the IIpamServer_DeleteLogicalGroup_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate that DeleteLogicalGroup.logicalGroup is not null. If it is null, an appropriate SOAP fault MUST be generated.
2. Delete the row from ADM_LogicalGroupsTable whose RecordId value is equal to DeleteLogicalGroup.logicalGroup.RecordId.

3.3.4.30.1 Messages

3.3.4.30.1.1 IIpamServer_DeleteLogicalGroup_InputMessage

This is the request for the DeleteLogicalGroup operation.

```
<wsdl:message name="IIpamServer_DeleteLogicalGroup_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteLogicalGroup" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteLogicalGroup
```

The body of the SOAP message MUST contain the DeleteLogicalGroup element.

3.3.4.30.1.2 IIpamServer_DeleteLogicalGroup_OutputMessage

This is the response for the DeleteLogicalGroup operation.

```
<wsdl:message name="IIpamServer_DeleteLogicalGroup_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteLogicalGroupResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteLogicalGroupResponse
```

The body of the SOAP message MUST contain the DeleteLogicalGroupResponse element.

3.3.4.30.2 Elements

3.3.4.30.2.1 DeleteLogicalGroup

This element specifies the input values for the DeleteLogicalGroup operation.

```
<xs:element name="DeleteLogicalGroup">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="logicalgroup" nillable="true" type="ipam:LogicalGroup"
/>
    </xs:sequence>
```


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```
  </xs:complexType>
</xs:element>
```

3.3.4.30.2.2 DeleteLogicalGroupResponse

This element specifies the output values for the DeleteLogicalGroup operation.

```
<xs:element name="DeleteLogicalGroupResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.31 DeleteRange

This operation is used to delete the specified address range from the IPAM data store.

```
<wsdl:operation name="DeleteRange">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteRange"
message="ipam:IIpamServer_DeleteRange_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteRangeResponse"
message="ipam:IIpamServer_DeleteRange_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteRange_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DeleteRange_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the range information corresponding to the specified DeleteRange.rangeRecordId by calling the **GetIPRangeFromTable** of the **ADM_IPRangeTable** by passing the **Param_id** parameter with **DeleteRange.rangeRecordId** and the **Param_addressfamily** parameter with **DeleteRange.addressFamily**. Assign the range retrieved in result to **rangeToBeDeleted**.
2. If **rangeToBeDeleted** is null, return as appropriate SOAP fault to the client as specified in section 2.2.2.1.
3. Get the list of ranges overlapping with the **rangeToBeDeleted** and store them to PossibleOverlappingRanges. This is done by following the following steps:
    1. Call the **GetOverlappingRanges** procedure in ADM_IPRangeTable with the following input parameters.
        - **Param_StartIPAddress** is assigned the value of rangeToBeDeleted.StartIPAddress.
        - **Param_EndIPAddress** is assigned the value of rangeToBeDeleted.EndIPAddress.
        - **Param_ExclusionRanges** is assigned the value of rangeToBeDeleted.ExclusionRanges.
        - **Param_AddressSpaceRecordId** is assigned the value of rangeToBeDeleted.AddressSpaceRecordId.
        - **Param_RecordIdToExclude** is assigned the value of the rangeToBeDeleted.RecordId.

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2. The **Result_OverlappingRows** having the overlapping ranges are assigned to PossibleOverlappingRanges.

4. If **DeleteRange.deleteMappedAddresses** is set to true, delete the rows from **ADM_IPAddressTable** which have the **ParentIPRangeRecordId** to be the **rangeToBeDeleted.RecordId**.

5. Compute the ManagedByValue for the address range as the value of the custom field in rangeToBeDeleted.CustomFieldValues which have the record identifier to be **ADM_ManagedByCustomFieldId**.

6. If the ManagedByValue of the address range is MSDHCP, delete the corresponding scope in the ADM_DHCPScopesTable. To perform this, lookup the row in the ADM_DHCPScopesTable which has the record identifier to be the **rangeToBeDeleted.ScopeRecordId** and delete the same.

7. If the ManagedByValue of the address range is not MSDHCP, delete the address range from the **ADM_IPRangeTable**.

8. Also delete the corresponding row from **ADM_ IPRangeMultivaluedPropertiesTable**.

9. The deletion of the range will result in change to the IsOverlapping flag of the set of ranges which were earlier overlapping with the rangeToBeDeleted. If the rangeToBeDeleted is already mapped to an IP address block; that is, rangeToBeDeleted.UserForUtilization is set to TRUE, a new range from the overlapping set of ranges has to be chosen to be mapped to the corresponding IP address block. For this, the following steps are performed.

   - For each range named **overlappingRange** in **PossibleOverlappingRanges**,

     1. Get the list of overlapping ranges for **overlappingRange** by calling the **GetOverlappingRanges** procedure of **ADM_IPRangeTable** with the following parameters.

        1. Pass **overlappingRange.StartIPAddress** as **Param_StartIPAddress**.

        2. Pass **overlappingRange.EndAddress** as **Param_EndIPAddress**.

        3. Pass **overlappingRange.AddressSpaceRecordId** as **Param_AddressSpaceRecordId**.

        4. Pass **overlappingRange.ExclusionRange** as **Param_ExclusionRange**.

        5. Pass **overlappingRange.RecordId** as **Param_RecordIdToExclude**.

     2. If there are overlapping ranges still present, leave the IsOverlapping flag of **overlappingRange** to TRUE.

     3. If there are no overlapping ranges present, set the IsOverlapping flag of **overlappingRange** to FALSE.

     4. If there are any ranges still present that have **UseForUtilization** as TRUE, then leave UseForUtilization of overlappingRange as FALSE. Else set it to TRUE.

     5. If either overlapping flag or UseForUtilization flag of the overlapping range has changed, then update the **ADM_IPRangeTable**.

10. Delete the access scope associations related to **rangeToBeDeleted** by calling **DeleteAssociationEntry** of **ADM_AccessScopeAssociationTable** with following parameters:

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1. Pass **rangeToBeDeleted.RecordId** as **Param_objectId**.
2. Pass **EnumerationObjectType.IPRange** as **Param_objectType**.

3.3.4.31.1 Messages

3.3.4.31.1.1 IIpamServer_DeleteRange_InputMessage

This is the request for the DeleteRange operation.

```
<wsdl:message name="IIpamServer_DeleteRange_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteRange" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteRange
```

The body of the SOAP message MUST contain the DeleteRange element.

3.3.4.31.1.2 IIpamServer_DeleteRange_OutputMessage

This is the response for the DeleteRange operation.

```
<wsdl:message name="IIpamServer_DeleteRange_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteRangeResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteRangeResponse
```

The body of the SOAP message MUST contain the DeleteRangeResponse element.

3.3.4.31.2 Elements

3.3.4.31.2.1 DeleteRange

This element specifies the input values for the DeleteRange operation.

```
<xs:element name="DeleteRange">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="rangeRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="deleteMappedAddresses" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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rangeRecordId: Record identifier for the range to be deleted.

addressFamily: AddressFamily of the range to be deleted.

deleteMappedAddresses: If this parameter is TRUE, IP addresses mapping to this range are deleted as well.

3.3.4.31.2.2 DeleteRangeResponse

This element specifies the output values for the DeleteRange operation.

```
<xs:element name="DeleteRangeResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.32 DeleteServer

This operation can be used to delete a specific server instance from the IPAM data store.

```
<wsdl:operation name="DeleteServer">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteServer"
message="ipam:IIpamServer_DeleteServer_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteServerResponse"
message="ipam:IIpamServer_DeleteServer_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteServer_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_DeleteServer_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Enumerate the row in **ADM_ServersTable** whose RecordId is the same as **DeleteServer.serverInfoRecordId**.
2. If there is no such row that meets the specified criteria, an appropriate SOAP fault MUST be generated.
3. Delete the row in **ADM_ServersTable** whose RecordId is the same as the **DeleteServer.serverInfoRecordId**.
4. Call the procedure DeleteCustomFieldValuesForObject with the following parameters to delete the custom field values associated with the server instance deleted.
    1. *Param_ObjectType* is set to **EnumerationObjectType.ServerInfo**.
    2. *Param_addressFamily* is set to null.
    3. *Param_ObjectRecordId* is set to **DeleteServer.serverInfoRecordId**.

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3.3.4.32.1 Messages

3.3.4.32.1.1 IIpamServer_DeleteServer_InputMessage

This is the request for the DeleteServer operation.

```
<wsdl:message name="IIpamServer_DeleteServer_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteServer" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteServer
```

The body of the SOAP message MUST contain the DeleteServer element.

3.3.4.32.1.2 IIpamServer_DeleteServer_OutputMessage

This is the response for the DeleteServer operation.

```
<wsdl:message name="IIpamServer_DeleteServer_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteServerResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteServerResponse
```

The body of the SOAP message MUST contain the DeleteServerResponse element.

3.3.4.32.2 Elements

3.3.4.32.2.1 DeleteServer

This element specifies the input values for the DeleteServer operation.

```
<xs:element name="DeleteServer">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="serverInfoRecordId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.32.2.2 DeleteServerResponse

This element specifies the output values for the DeleteServer operation.

```
<xs:element name="DeleteServerResponse">
  <xs:complexType>
```


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```
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.33 DeleteSubnet

This operation is used to delete the specified IP subnet from the IPAM data store.

```
<wsdl:operation name="DeleteSubnet">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteSubnet"
message="ipam:IIpamServer_DeleteSubnet_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteSubnetResponse"
message="ipam:IIpamServer_DeleteSubnet_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DeleteSubnet_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_DeleteSubnet_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **addressFamily:DeleteSubnet.addressFamily** is neither IPv4 or IPv6, an appropriate SOAP fault MUST be raised. If the addressFamily is Internet, IPv4 tables are used for further processing, otherwise, IPv6 tables are used.
2. Get the subnet information corresponding to the specified DeleteSubnet.id by calling the **GetSubnetById** procedure of the **ADM_SubnetTable** by passing the *Param_id* parameter as DeleteSubnet.id.
3. Assign the subnet retrieved in result to **subnetToBeDeleted**.
4. If **subnetToBeDeleted** is NULL, raise an appropriate SOAP fault and stop further processing.
5. Get the list of ranges mapping to **subnetToBeDeleted** by calling GetChildRangesForBlock of **ADM_SubnetTable** by passing the following parameters:
    1. Pass subnetToBeDeleted.RecordId as Param_blockId.
    2. Pass **addressFamily:DeleteSubnet.addressFamily** as Param_AddressFamily.
6. Store the result **Result_Ranges** in a temporary store **childRanges**.
7. Child ranges must be deleted if the subnet is getting deleted. Thus, a SOAP fault MUST be raised if any of the following conditions is TRUE:
    1. **DeleteSubnet.deleteChildRanges** is FALSE and **childRanges** is not NULL or empty.
    2. **DeleteSubnet.deleteChildRanges** is TRUE and there are ranges in **childRanges** that are ManagedBy DHCP. Compute the ManagedBy value for the address range as the value of the custom field in **childRanges.CustomFieldValues** that has the record identifier set to be **ADM_ManagedByCustomFieldId**.
8. For each r**angeToBeDeleted** of the childRanges, do the following:
    - Delete the range with **RecordId** as **rangeToBeDeleted.RecordId** by following the steps in **DeleteRange**. Use **DeleteSubnet.deleteChildAddresses** and **DeleteSubnet.addressFamily** as other inputs to steps in **DeleteRange**.

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9. Update the i**sOverlapping** and **UseForUtilization** properties for each of the subnets that is conflicting with s**ubnetToBeDeleted**.

    1. Get the subnets overlapping with subnetToBeDeleted by calling **GetOverlappingBlocks** for **ADM_IPBlocksTable** with the following params:

        1. Assign **subnetToBeDeleted.startIPAddress** to **Param_StartIPAddress**.

        2. Assign **subnetToBeDeleted.EndIPAddress** to **Param_EndIPAddress**.

        3. Assign **subnetToBeDeleted.PrefixLength** to **Param_PrefixLength**.

        4. Assign **subnetToBeDeleted.AddressSpaceId** to **Param_AddressSpaceId**.

        5. Assign **subnetToBeDeleted.RecordId** to **Param_RecordIdToExclude**.

    2. For each of the conflictingSubnet subnets in **Result_OverlappingBlocks**, get all subnets conflicting with this subnet by calling **GetOverlappingBlocks** of **ADM_IPBlocksTable**.

        1. Assign **conflictingSubnet.startIPAddress** to **Param_StartIPAddress**.

        2. Assign **conflictingSubnet.EndIPAddress** to **Param_EndIPAddress**.

        3. Assign **conflictingSubnet.PrefixLength** to **Param_PrefixLength**.

        4. Assign **conflictingSubnet.AddressSpaceId** to **Param_AddressSpaceId**.

        5. Assign recordIds of all subnets in **Result_OverlappingBlocks** to **Param_RecordIdToExclude**.

    3. Store the resulting conflicting subnets **Result_OverlappingBlocks** in **subnetsConflictingWithConflictingSubnet**.

    4. If any of the subnets in **subnetsConflictingWithConflictingSubnet** has U**seForUtilization** as TRUE, set **UseForUtilization** of the **conflictingSubnet** as FALSE. Otherwise, set **UseForUtilization** of **conflictingSubnet** to TRUE.

    5. If **subnetsConflictingWithConflictingSubnet** is empty, set the **isOverlapping** property of **conflictingSubnet** to FALSE. Else set the **isOverlapping** property of **conflictingSubnet** to TRUE.

    6. Store the changes to the row corresponding to **conflictingSubnet** in **ADM_Subnet**.

10. Remove the row corresponding to **subnetToBeDeleted** from **ADM_SubnetTable**.

11. If the subnetToBeDeleted.AddressSpaceRecordId matches the record Id of DefaultProviderAddressSpace, delete any access scopes that were associated with this subnet. Call DeleteAssociationEntry procedure of **ADM_AccessScopeAssociationTable** with the following parameters to adjust the access scope associations:

    1. **Param_ObjectType** is set to **EnumerationObjectType.IPSubnet**.

    2. **Param_ObjectId** is assigned the value of **subnetToBeDeleted.RecordId**.

12. If the subnetToBeDeleted.AddressSpaceRecordId doesn't match the record Id of DefaultProviderAddressSpace, delete any access scopes that were associated with this subnet. Call **DeleteAssociationEntry** procedure of **ADM_AccessScopeAssociationTable** with the following parameters to adjust the access scope associations:

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1. **Param_ObjectType** is set to **EnumerationObjectType.AddressSpace**.
2. **Param_ObjectId** is assigned the value of **subnetToBeDeleted.AddressSpaceRecordId**.

13. Any exceptions encountered are collected and reported in the response message along with the associated IPRangeDataFormatter.

3.3.4.33.1 Messages

3.3.4.33.1.1 IIpamServer_DeleteSubnet_InputMessage

This is the request for the DeleteSubnet operation.

```
<wsdl:message name="IIpamServer_DeleteSubnet_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteSubnet" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteSubnet
```

The body of the SOAP message MUST contain the DeleteSubnet element.

3.3.4.33.1.2 IIpamServer_DeleteSubnet_OutputMessage

This is the response for the DeleteSubnet operation.

```
<wsdl:message name="IIpamServer_DeleteSubnet_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteSubnetResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteSubnetResponse
```

The body of the SOAP message MUST contain the DeleteSubnetResponse element.

3.3.4.33.2 Elements

3.3.4.33.2.1 DeleteSubnet

This element specifies the input values for the DeleteSubnet operation.

```
<xs:element name="DeleteSubnet">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="deleteChildRanges" type="xsd:boolean" />
      <xs:element minOccurs="0" name="deleteChildAddresses" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

id: The RecordId of the subnet to be deleted.

addressFamily: The addressFamily of the subnet to be deleted.

deleteChildRanges: When true, this flag specifies that the ranges that map to the subnet MUST be deleted as well.

deleteChildAddresses: When true, this flag specifies that the IP addresses that map to the subnet, through IP ranges, MUST be deleted as well.

3.3.4.33.2.2 DeleteSubnetResponse

This element specifies the output values for the DeleteSubnet operation.

```
<xs:element name="DeleteSubnetResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DeleteSubnetResult" nillable="true"
type="serarr:ArrayOfKeyValueOfIPRangeDataFormatterIpamException0cupfWA8" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

DeleteSubnetResult: This is a collection of ipam:IPRangeDataFormatter and associated ipam:IpamException if any.

3.3.4.34 DeleteUserAccessPolicy

This operation is used to delete the access policy from IPAM data store.

```
<wsdl:operation name="DeleteUserAccessPolicy">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserAccessPolicy"
message="ipam:IIpamServer_DeleteUserAccessPolicy_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserAccessPolicyResponse"
message="ipam:IIpamServer_DeleteUserAccessPolicy_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_DeleteUserAccessPolicy_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_DeleteUserAccessPolicy_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. The method GetPolicyById from **ADM_UserAccessPolicyTable** is called using **DeleteUserAccessPolicy.policyId**. The method returns the UserAccessPolicy associated with it. Assume it is stored in **tempVar.userAccessPolicy**.

2. If the **tempVar.userAccessPolicy** object is NULL, a SOAP fault MUST be thrown as specified in section 2.2.2.1.

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3. The rows associated with **tempVar.userAccessPolicy.PolicyId** are deleted from **ADM_UserAccessPolicyTable**.

4. The rows associated with **tempVar.userAccessPolicy.UserGroupId** are deleted from **ADM_PolicyMapTable**.

5. The total number of rows deleted as a result of this operation is returned in the output message.

3.3.4.34.1 Messages

3.3.4.34.1.1 IIpamServer_DeleteUserAccessPolicy_InputMessage

The IIpamServer_DeleteUserAccessPolicy_InputMessage message initiates the DeleteUserAccessPolicy WSDL operation.

```
<wsdl:message name="IIpamServer_DeleteUserAccessPolicy_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteUserAccessPolicy" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserAccessPolicy
```

The body of the SOAP message MUST contain the DeleteUserAccessPolicy element.

3.3.4.34.1.2 IIpamServer_DeleteUserAccessPolicy_OutputMessage

The IIpamServer_DeleteUserAccessPolicy_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_DeleteUserAccessPolicy_InputMessage message.

```
<wsdl:message name="IIpamServer_DeleteUserAccessPolicy_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteUserAccessPolicyResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserAccessPolicyResponse
```

The body of the SOAP message MUST contain the DeleteUserAccessPolicyResponse element.

3.3.4.34.2 Elements

3.3.4.34.2.1 DeleteUserAccessPolicy

The DeleteUserAccessPolicy element contains the input data for the DeleteUserAccessPolicy operation.

```
<xs:element name="DeleteUserAccessPolicy">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policyId" type="xsd:long" />
```


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```
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.34.2.2 DeleteUserAccessPolicyResponse

The DeleteUserAccessPolicyResponse element contains the output data for the DeleteUserAccessPolicy operation.

```
<xs:element name="DeleteUserAccessPolicyResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DeleteUserAccessPolicyResult" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.35 DeleteUserRole

This operation is used to delete the user role from the IPAM data store.

```
<wsdl:operation name="DeleteUserRole">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserRole"
message="ipam:IIpamServer_DeleteUserRole_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserRoleResponse"
message="ipam:IIpamServer_DeleteUserRole_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_DeleteUserRole_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_DeleteUserRole_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Call GetUserRoleById of **ADM_RoleDefinitionTable** by passing **DeleteUserRole.roleRecordId** as a parameter. Store the returned UserRole object into **tempVar.userRole**.
2. If **tempVar.userRole** is null or **tempVar.userRole.IsBuiltinRole** is true then a SOAP fault MUST be generated as specified in section 2.2.2.1.
3. The record associated with the **DeleteUserRole.roleRecordId** is deleted from **ADM_RoleDefinitionTable**. A value of 1 is returned if the delete was successful else a value of 0 is returned in the output message.

3.3.4.35.1 Messages

3.3.4.35.1.1 IIpamServer_DeleteUserRole_InputMessage

The IIpamServer_DeleteUserRole_InputMessage message initiates the DeleteUserRole WSDL operation.

```
<wsdl:message name="IIpamServer_DeleteUserRole_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteUserRole" />
```


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```
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserRole
```

The body of the SOAP message MUST contain the DeleteUserRole element.

3.3.4.35.1.2 IIpamServer_DeleteUserRole_OutputMessage

The IIpamServer_DeleteUserRole_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_DeleteUserRole_InputMessage message.

```
<wsdl:message name="IIpamServer_DeleteUserRole_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteUserRoleResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserRoleResponse
```

The body of the SOAP message MUST contain the DeleteUserRoleResponse element.

3.3.4.35.2 Elements

3.3.4.35.2.1 DeleteUserRole

The DeleteUserRole element contains the input data for the DeleteUserRole operation.

```
<xs:element name="DeleteUserRole">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="roleRecordId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.35.2.2 DeleteUserRoleResponse

The DeleteUserRoleResponse element contains the output data for the DeleteUserRole operation.

```
<xs:element name="DeleteUserRoleResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="DeleteUserRoleResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.36 DoProvisioningWithEnumerator

This operation is used to provision the IPAM server with the settings chosen by the user.

```
<wsdl:operation name="DoProvisioningWithEnumerator">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DoProvisioningWithEnumerator"
message="ipam:IIpamServer_DoProvisioningWithEnumerator_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DoProvisioningWithEnumeratorResponse"
message="ipam:IIpamServer_DoProvisioningWithEnumerator_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_DoProvisioningWithEnumerator_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_DoProvisioningWithEnumerator_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **DoProvisioningWithEnumerator.parametersInput** is null or if **DoProvisioningWithEnumerator.parametersInput** is not of type **IpamProvisioningEnumerationParameters**, an appropriate SOAP fault MUST be raised.
2. Store **DoProvisioningWithEnumerator.parametersInput.IpamProvisioningSetting** in a temp data store **ipamProvisioningSettings**.
3. Provisioning includes creating and populating the IPAM datastore and configuring appropriate permissions that IPAM needs on system resources.
    1. Configure IPAM datastore using **ipamProvisioningSettings.DatabaseConfiguration**. Create a fresh schema if **ipamProvisioningSettings.CreateNewSchema** is specified as true.
    2. Set the properties **ADM_IPAMDeploymentType** defined in section 3.1.1.3 to Automatic if **ipamProvisioningSettings.ProvisioningMethod** is defined to be Automatic, else if **ipamProvisioningSettings.ProvisioningMethod** is defined as Manual, set the value of **ADM_IPAMDeploymentType** as Manual as well.
    3. Set the value of **ADM_IPAMGpoPrefix** defined in section 3.1.1.3 to the value specified in **ipamProvisioningSettings.GpoPrefix**.

3.3.4.36.1 Messages

3.3.4.36.1.1 IIpamServer_DoProvisioningWithEnumerator_InputMessage

This is the request for the DoProvisioningWithEnumerator operation.

```
<wsdl:message name="IIpamServer_DoProvisioningWithEnumerator_InputMessage">
  <wsdl:part name="parameters" element="ipam:DoProvisioningWithEnumerator" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DoProvisioningWithEnumerator
```


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The body of the SOAP message MUST contain the DoProvisioningWithEnumerator element.

3.3.4.36.1.2 IIpamServer_DoProvisioningWithEnumerator_OutputMessage

This is the response for the DoProvisioningWithEnumerator operation.

```
<wsdl:message name="IIpamServer_DoProvisioningWithEnumerator_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DoProvisioningWithEnumeratorResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/DoProvisioningWithEnumeratorResponse
```

The body of the SOAP message MUST contain the DoProvisioningWithEnumeratorResponse element.

3.3.4.36.2 Elements

3.3.4.36.2.1 DoProvisioningWithEnumerator

This element specifies the input values for the DoProvisioningWithEnumerator operation.

```
<xs:element name="DoProvisioningWithEnumerator">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parametersInput" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

parametersInput: element of type ipam:EnumerationParametersBase that encapsulates various provisioning settings.

3.3.4.36.2.2 DoProvisioningWithEnumeratorResponse

This element specifies the output values for the DoProvisioningWithEnumerator operation.

```
<xs:element name="DoProvisioningWithEnumeratorResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.37 EnumerateCustomFieldAssociations

This operation is used to enumerate all associations between custom fields from the IPAM data store.

```
<wsdl:operation name="EnumerateCustomFieldAssociations">
```


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```
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldAssociations"
message="ipam:IIpamServer_EnumerateCustomFieldAssociations_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldAssociationsRespon
se" message="ipam:IIpamServer_EnumerateCustomFieldAssociations_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_EnumerateCustomFieldAssociations_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_EnumerateCustomFieldAssociations_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **EnumerateCustomFieldAssociations.parametersInput** is null or **EnumerateCustomFieldAssociations.parametersInput** is not of type CustomFieldAssociationEnumerationParameters, an appropriate SOAP fault MUST be raised.
2. Call GetAllAssociations procedure of **ADM_CustomFieldValuesAssociationTable** to list all custom field associations.
3. Assign the Result_customFieldValueAssociations to **EnumerateCustomFieldAssociationsResponse.EnumerateCustomFieldAssociationsResult**.

3.3.4.37.1 Messages

3.3.4.37.1.1 IIpamServer_EnumerateCustomFieldAssociations_InputMessage

This is the request for the EnumerateCustomFieldAssociations operation.

```
<wsdl:message name="IIpamServer_EnumerateCustomFieldAssociations_InputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateCustomFieldAssociations" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldAssociations
```

The body of the SOAP message MUST contain the EnumerateCustomFieldAssociations element.

3.3.4.37.1.2 IIpamServer_EnumerateCustomFieldAssociations_OutputMessage

This is the response for the EnumerateCustomFieldAssociations operation.

```
<wsdl:message name="IIpamServer_EnumerateCustomFieldAssociations_OutputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateCustomFieldAssociationsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldAssociationsResponse
```

The body of the SOAP message MUST contain the EnumerateCustomFieldAssociationsResponse element.

3.3.4.37.2 Elements

3.3.4.37.2.1 EnumerateCustomFieldAssociations

This element specifies the input values for the EnumerateCustomFieldAssociations operation.

```
<xs:element name="EnumerateCustomFieldAssociations">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parametersInput" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

parametersInput: This specifies the filter criterion on which custom field associations are to be enumerated.

3.3.4.37.2.2 EnumerateCustomFieldAssociationsResponse

This element specifies the output values for the EnumerateCustomFieldAssociations operation.

```
<xs:element name="EnumerateCustomFieldAssociationsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="EnumerateCustomFieldAssociationsResult" nillable="true"
type="ipam:ArrayOfCustomFieldAssociation" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

EnumerateCustomFieldAssociationsResult: List of enumerated custom field associations.

3.3.4.38 EnumerateCustomFields

This operation is used to enumerate custom fields from the IPAM data store.

```
<wsdl:operation name="EnumerateCustomFields">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFields"
message="ipam:IIpamServer_EnumerateCustomFields_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldsResponse"
message="ipam:IIpamServer_EnumerateCustomFields_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_EnumerateCustomFields_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_EnumerateCustomFields_OutputMessage message. In

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the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **EnumerateCustomFields.parametersInput** is null or **EnumerateCustomFields.parametersInput** is not of type **CustomFieldEnumerationParameters**, an appropriate SOAP fault MUST be raised.
2. Assign **EnumerateCustomFields.parametersInput.CustomFieldName** to a temp data store **customFieldToFetch**.
3. If **customFieldToFetch** is not null, fetch all the rows from **ADM_CustomFieldsTable** where name is same as **customFieldToFetch**. Else fetch all rows. Store the rows in a temp data store **customFieldsRows.**
4. For each of the rows in **customFieldRows:**

3.3.4.38.1 Messages

3.3.4.38.1.1 IIpamServer_EnumerateCustomFields_InputMessage

This is the request for the EnumerateCustomFields operation.

```
<wsdl:message name="IIpamServer_EnumerateCustomFields_InputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateCustomFields" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFields
```

The body of the SOAP message MUST contain the EnumerateCustomFields element.

3.3.4.38.1.2 IIpamServer_EnumerateCustomFields_OutputMessage

This is the response for the EnumerateCustomFields operation.

```
<wsdl:message name="IIpamServer_EnumerateCustomFields_OutputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateCustomFieldsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldsResponse
```

The body of the SOAP message MUST contain the EnumerateCustomFieldsResponse element.

3.3.4.38.2 Elements

3.3.4.38.2.1 EnumerateCustomFields

This element specifies the input values for the EnumerateCustomFields operation.

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```
<xs:element name="EnumerateCustomFields">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parametersInput" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

parametersInput: This specifies the filter criteria on which custom fields are to be enumerated.

3.3.4.38.2.2 EnumerateCustomFieldsResponse

This element specifies the output values for the EnumerateCustomFields operation.

```
<xs:element name="EnumerateCustomFieldsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="EnumerateCustomFieldsResult" nillable="true"
type="ipam:ArrayOfCustomField" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

EnumerateCustomFieldsResult: List of enumerated custom fields.

3.3.4.39 EnumerateIpamIPBlock

This operation is used to enumerate custom fields from the IPAM data store.

```
<wsdl:operation name="EnumerateIpamIPBlock">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateIpamIPBlock"
message="ipam:IIpamServer_EnumerateIpamIPBlock_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateIpamIPBlockResponse"
message="ipam:IIpamServer_EnumerateIpamIPBlock_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_EnumerateIpamIPBlock_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_EnumerateIpamIPBlock_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. 0.1.If **EnumerateIpamIPBlock.parametersInput** is null or **EnumerateIpamIPBlock.parametersInput** is not of type **IPBlockRootEnumerationParameters** or **IPBlockChildBlockEnumerationParameters** or **IPBlockGetAllBlocksEnumerationParameters**, an appropriate SOAP fault MUST be raised.

2. If **EnumerateIpamIPBlock.parametersInput** is of type **IPBlockRootEnumerationParameters:**

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3.3.4.39.1 Messages

3.3.4.39.1.1 IIpamServer_EnumerateIpamIPBlock_InputMessage

This is the request for the EnumerateIpamIPBlock operation.

```
<wsdl:message name="IIpamServer_EnumerateIpamIPBlock_InputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateIpamIPBlock" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateIpamIPBlock
```

The body of the SOAP message MUST contain the EnumerateIpamIPBlock element.

3.3.4.39.1.2 IIpamServer_EnumerateIpamIPBlock_OutputMessage

This is the response for the EnumerateIpamIPBlock operation.

```
<wsdl:message name="IIpamServer_EnumerateIpamIPBlock_OutputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateIpamIPBlockResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateIpamIPBlockResponse
```

The body of the SOAP message MUST contain the EnumerateIpamIPBlockResponse element.

3.3.4.39.2 Elements

3.3.4.39.2.1 EnumerateIpamIPBlock

This element specifies the input values for the EnumerateIpamIPBlock operation.

```
<xs:element name="EnumerateIpamIPBlock">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parametersInput" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

parametersInput: This specifies the filter criteria on which IP blocks are to be enumerated.

3.3.4.39.2.2 EnumerateIpamIPBlockResponse

This element specifies the output values for the EnumerateIpamIPBlock operation.

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```
<xs:element name="EnumerateIpamIPBlockResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="EnumerateIpamIPBlockResult" nillable="true"
type="ipam:ArrayOfIPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

EnumerateIpamIPBlockResult: List of enumerated IP blocks.

3.3.4.40 EnumerateServerInfo

This operation is used to retrieve the details of a server instance in the IPAM data store.

```
<wsdl:operation name="EnumerateServerInfo">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateServerInfo"
message="ipam:IIpamServer_EnumerateServerInfo_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateServerInfoResponse"
message="ipam:IIpamServer_EnumerateServerInfo_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_EnumerateServerInfo_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_EnumerateServerInfo_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. The **EnumerateServerInfo.parametersInput** must not be NULL, if it is, then a SOAP fault MUST be generated as specified in section 2.2.2.1.
2. The **EnumerateServerInfo.parametersInput** is cast as **ipam:ServerInfoEnumerationParameters**. If it has **FilterInfo**, then that value is passed as a parameter, else default filter is passed to **GetFilteredServerInfoFromTable** in **ADM_ServersTable**. The returned array of **ipam:ServerInfo** is passed in the output message.

3.3.4.40.1 Messages

3.3.4.40.1.1 IIpamServer_EnumerateServerInfo_InputMessage

The IIpamServer_ EnumerateServerInfo_InputMessage message initiates the EnumerateServerInfo WSDL operation.

```
<wsdl:message name="IIpamServer_EnumerateServerInfo_InputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateServerInfo" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateServerInfo
```

The body of the SOAP message MUST contain the DeleteUserRole element.

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3.3.4.40.1.2 IIpamServer_EnumerateServerInfo_OutputMessage

The IIpamServer_ EnumerateServerInfo_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_ EnumerateServerInfo_InputMessage message.

```
<wsdl:message name="IIpamServer_EnumerateServerInfo_OutputMessage">
  <wsdl:part name="parameters" element="ipam:EnumerateServerInfoResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/EnumerateServerInfoResponse
```

The body of the SOAP message MUST contain the EnumerateServerInfoResponse element.

3.3.4.40.2 Elements

3.3.4.40.2.1 EnumerateServerInfo

The EnumerateServerInfo element contains the input data for the EnumerateServerInfo operation.

```
<xs:element name="EnumerateServerInfo">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parametersInput" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.40.2.2 EnumerateServerInfoResponse

The EnumerateServerInfoResponse element contains the output data for the EnumerateServerInfo operation.

```
<xs:element name="EnumerateServerInfoResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="EnumerateServerInfoResult" nillable="true"
type="ipam:ArrayOfServerInfo" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.41 FetchDnsReverseLookupZonesByIds

```
<wsdl:operation name="FetchDnsReverseLookupZonesByIds">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsReverseLookupZonesByIds"
message="ipam:IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsReverseLookupZonesByIdsRespons
e" message="ipam:IIpamServer_FetchDnsReverseLookupZonesByIds_OutputMessage" />
```


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```
</wsdl:operation>
```

The protocol client sends an IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_FetchDnsReverseLookupZonesByIds_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- The procedure GetDnsReverseLookupZoneFromTable of **ADM_DNSReverseLookupTable** is called iteratively for each id in **FetchDnsReverseLookupZonesByIds.ids**. The returned **ipam:DnsReverseLookupZone** is collected and passed in the response message.

3.3.4.41.1 Messages

3.3.4.41.1.1 IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage

The IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage message initiates the FetchDnsReverseLookupZonesByIds WSDL operation.

```
<wsdl:message name="IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsReverseLookupZonesByIds" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsReverseLookupZonesByIds
```

The body of the SOAP message MUST contain the FetchDnsReverseLookupZonesByIds element.

3.3.4.41.1.2 IIpamServer_FetchDnsReverseLookupZonesByIds_OutputMessage

The IIpamServer_FetchDnsReverseLookupZonesByIds_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage message.

```
<wsdl:message name="IIpamServer_FetchDnsReverseLookupZonesByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsReverseLookupZonesByIdsResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsReverseLookupZonesByIdsResponse
```

The body of the SOAP message MUST contain the FetchDnsReverseLookupZonesByIdsResponse element.

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3.3.4.41.2 Elements

3.3.4.41.2.1 FetchDnsReverseLookupZonesByIds

The FetchDnsReverseLookupZonesByIds element contains the input data for the FetchDnsReverseLookupZonesByIds operation.

```
<xs:element name="FetchDnsReverseLookupZonesByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.41.2.2 FetchDnsReverseLookupZonesByIdsResponse

The FetchDnsReverseLookupZonesByIdsResponse element contains the output data for the FetchDnsReverseLookupZonesByIds operation.

```
<xs:element name="FetchDnsReverseLookupZonesByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FetchDnsReverseLookupZonesByIdsResult" nillable="true"
type="ipam:ArrayOfDnsReverseLookupZone" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.42 FetchDnsServerReverseZoneById

This operation can be used to retrieve the DnsServerReverseZone information for a specified record identifier.

```
<wsdl:operation name="FetchDnsServerReverseZoneById">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerReverseZoneById"
message="ipam:IIpamServer_FetchDnsServerReverseZoneById_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerReverseZoneByIdResponse"
message="ipam:IIpamServer_FetchDnsServerReverseZoneById_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_FetchDnsServerReverseZoneById_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_FetchDnsServerReverseZoneById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **FetchDnsServerReverseZoneById.id** is less than or equal to 0, an appropriate SOAP fault MUST be generated.

2. Call the procedure GetDnsServerReverseLookupZoneFromTable in **ADM_DNSServerReverseLookupZoneTable** with *Param_Id* set to

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FetchDnsServerReverseZoneById.id. Set the Result_data to **FetchDnsServerReverseZoneByIdResponse.FetchDnsServerReverseZoneByIdResult**.

3.3.4.42.1 Messages

3.3.4.42.1.1 IIpamServer_FetchDnsServerReverseZoneById_InputMessage

This is the request for the FetchDnsServerReverseZoneById operation.

```
<wsdl:message name="IIpamServer_FetchDnsServerReverseZoneById_InputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsServerReverseZoneById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerReverseZoneById
```

The body of the SOAP message MUST contain the FetchDnsServerReverseZoneById element.

3.3.4.42.1.2 IIpamServer_FetchDnsServerReverseZoneById_OutputMessage

This is the response for the FetchDnsServerReverseZoneById operation.

```
<wsdl:message name="IIpamServer_FetchDnsServerReverseZoneById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsServerReverseZoneByIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerReverseZoneByIdResponse
```

The body of the SOAP message MUST contain the FetchDnsServerReverseZoneByIdResponse element.

3.3.4.42.2 Elements

3.3.4.42.2.1 FetchDnsServerReverseZoneById

This element specifies the input values for the FetchDnsServerReverseZoneById operation.

```
<xs:element name="FetchDnsServerReverseZoneById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.42.2.2 FetchDnsServerReverseZoneByIdResponse

This element specifies the output values for the FetchDnsServerReverseZoneById operation.

```
<xs:element name="FetchDnsServerReverseZoneByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FetchDnsServerReverseZoneByIdResult" nillable="true"
type="ipam:DnsServerReverseZone" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.43 FetchDnsServerZoneById

This operation can be used to retrieve the DnsServerZone for the specified RecordId value.

```
<wsdl:operation name="FetchDnsServerZoneById">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerZoneById"
message="ipam:IIpamServer_FetchDnsServerZoneById_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerZoneByIdResponse"
message="ipam:IIpamServer_FetchDnsServerZoneById_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_FetchDnsServerZoneById_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_FetchDnsServerZoneById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **FetchDnsServerZoneById.id** is less than or equal to 0, an appropriate SOAP fault MUST be generated.
2. Call the procedure GetDnsServerZoneFromTable in **ADM_DNSServerForwardLookupZoneTable** with *Param_Id* set to **FetchDnsServerZoneById.id**.
3. Set the Result_data to **FetchDnsServerZoneByIdResponse.FetchDnsServerZoneByIdResult**.

3.3.4.43.1 Messages

3.3.4.43.1.1 IIpamServer_FetchDnsServerZoneById_InputMessage

This is the request for the FetchDnsServerZoneById operation.

```
<wsdl:message name="IIpamServer_FetchDnsServerZoneById_InputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsServerZoneById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerZoneById
```

The body of the SOAP message MUST contain the FetchDnsServerZoneById element.

3.3.4.43.1.2 IIpamServer_FetchDnsServerZoneById_OutputMessage

This is the response for the FetchDnsServerZoneById operation.

```
<wsdl:message name="IIpamServer_FetchDnsServerZoneById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsServerZoneByIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerZoneByIdResponse
```

The body of the SOAP message MUST contain the FetchDnsServerZoneByIdResponse element.

3.3.4.43.2 Elements

3.3.4.43.2.1 FetchDnsServerZoneById

This element specifies the input values for the FetchDnsServerZoneById operation.

```
<xs:element name="FetchDnsServerZoneById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.43.2.2 FetchDnsServerZoneByIdResponse

This element specifies the output values for the FetchDnsServerZoneById operation.

```
<xs:element name="FetchDnsServerZoneByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FetchDnsServerZoneByIdResult" nillable="true"
type="ipam:DnsServerZone" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.44 FetchDnsZonesByIds

```
<wsdl:operation name="FetchDnsZonesByIds">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsZonesByIds"
message="ipam:IIpamServer_FetchDnsZonesByIds_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsZonesByIdsResponse"
message="ipam:IIpamServer_FetchDnsZonesByIds_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_FetchDnsZonesByIds_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_FetchDnsZonesByIds_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- The procedure GetDnsZoneFromTable of **ADM_DNSForwardLookupTable** is called iteratively for each id in **FetchDnsZonesByIds.ids**. The returned **ipam:DnsZone** is collected and passed in the response message.

3.3.4.44.1 Messages

3.3.4.44.1.1 IIpamServer_FetchDnsZonesByIds_InputMessage

The IIpamServer_FetchDnsZonesByIds_InputMessage message initiates the FetchDnsZonesByIds WSDL operation.

```
<wsdl:message name="IIpamServer_FetchDnsZonesByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsZonesByIds" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsZonesByIds
```

The body of the SOAP message MUST contain the FetchDnsZonesByIds element.

3.3.4.44.1.2 IIpamServer_FetchDnsZonesByIds_OutputMessage

The IIpamServer_FetchDnsZonesByIds_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_FetchDnsZonesByIds_InputMessage message.

```
<wsdl:message name="IIpamServer_FetchDnsZonesByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:FetchDnsZonesByIdsResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsZonesByIdsResponse
```

The body of the SOAP message MUST contain the FetchDnsZonesByIdsResponse element.

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3.3.4.44.2 Elements

3.3.4.44.2.1 FetchDnsZonesByIds

The FetchDnsZonesByIds element contains the input data for the FetchDnsZonesByIds operation.

```
<xs:element name="FetchDnsZonesByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.44.2.2 FetchDnsZonesByIdsResponse

The FetchDnsZonesByIdsResponse element contains the output data for the FetchDnsZonesByIds operation.

```
<xs:element name="FetchDnsZonesByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FetchDnsZonesByIdsResult" nillable="true"
type="ipam:ArrayOfDnsZone" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.45 FetchIpamIPAddress

This operation is used to get the IpamIPAddress data having the specified record identifier from IPAM data store.

```
<wsdl:operation name="FetchIpamIPAddress">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddress"
message="ipam:IIpamServer_FetchIpamIPAddress_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressResponse"
message="ipam:IIpamServer_FetchIpamIPAddress_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_FetchIpamIPAddress_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_FetchIpamIPAddress_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **FetchIpamIPAddress.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **FetchIpamIPAddressResponse. FetchIpamIPAddressResult** will be composed of a collection of **IpamIPv4Address**. Otherwise IPv6-specific tables are used for further processing. The **FetchIpamIPAddressResponse.FetchIpamIPAddressResult** will be composed of a collection of **IpamIPv6Address**.

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2. Initialize the **FetchIpamIPAddressResponse.FetchIpamIPAddressResult** to an empty collection.

3. Validate that the input **FetchIpamIPAddress.address** is usable, as follows. Otherwise an appropriate SOAP fault MUST be returned.

    1. The **FetchIpamIPAddress.address** MUST a valid IPv4 or IPv6 address

    2. The IPv4 address MUST NOT fall within the following subnets. This is ascertained by checking the individual address octets of the IPv4 IP address:

        - 0/8 – First octet of the address MUST NOT be 0
        - 127/8 – First octet of the address MUST NOT be 127
        - 169.254/16 – First and second octet of the address MUST not be 169 and 254 respectively
        - 255.255.255.255 – All octet of the address MUST not be 255

    3. The IPv6 address MUST NOT be one of the following:

        - ::0
        - ::1
        - IPv6 Link local address
        - IPv6 Site local address
        - IPv6 Multicast address

4. If the addressfamily of **FetchIpamIPAddress.address** is not equal to **FetchIpamIPAddress.addressFamily**, an appropriate SOAP fault MUST be returned.

5. Enumerate the rows in ADM_IPAddressTable where IPAddress is same as **FetchIpamIPAddress.address**.

6. For each row found above:

    1. Call the **GetIPAddressFromTable** procedure of **ADM_IPAddressTable** passing the recordId value as *Param_id* input parameter and **FetchIpamIPAddress.addressFamily** as the *Param_addressfamily* input parameter.

    2. If the **result** addresses is obtained, add it to the **FetchIpamIPAddressResponse.FetchIpamIPAddressResult**.

3.3.4.45.1 Messages

3.3.4.45.1.1 IIpamServer_FetchIpamIPAddress_InputMessage

This is the request for the FetchIpamIPAddress operation.

```
<wsdl:message name="IIpamServer_FetchIpamIPAddress_InputMessage">
  <wsdl:part name="parameters" element="ipam:FetchIpamIPAddress" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddress
```

The body of the SOAP message MUST contain the FetchIpamIPAddress element.

3.3.4.45.1.2 IIpamServer_FetchIpamIPAddress_OutputMessage

This is the response for the FetchIpamIPAddress operation.

```
<wsdl:message name="IIpamServer_FetchIpamIPAddress_OutputMessage">
  <wsdl:part name="parameters" element="ipam:FetchIpamIPAddressResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressResponse
```

The body of the SOAP message MUST contain the FetchIpamIPAddressResponse element.

3.3.4.45.2 Elements

3.3.4.45.2.1 FetchIpamIPAddress

This element specifies the input values for the FetchIpamIPAddress operation.

```
<xs:element name="FetchIpamIPAddress">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="address" nillable="true" type="sysnet:IPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.45.2.2 FetchIpamIPAddressResponse

This element specifies the output values for the FetchIpamIPAddress operation.

```
<xs:element name="FetchIpamIPAddressResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FetchIpamIPAddressResult" nillable="true"
type="ipam:ArrayOfIpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.46 FetchIpamIPAddressByManagedByAndManagedByEntity

This operation is used to retrieve the IpamIPAddress given the specified IP address and the values for the ManagedBy and ManagedByEntity built-in custom field values.

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```
<wsdl:operation name="FetchIpamIPAddressByManagedByAndManagedByEntity">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntity"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntityResponse"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **FetchIpamIPAddressByManagedByAndManagedByEntity.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **FetchIpamIPAddressByManagedByAndManagedByEntityResponse.FetchIpamIPAddressByManagedByAndManagedByEntityResult** will consist of an **IpamIPv4Address**. Otherwise IPv6-specific tables are used for further processing. The **FetchIpamIPAddressByManagedByAndManagedByEntityResponse.FetchIpamIPAddressByManagedByAndManagedByEntityResult** will consist of an **IpamIPv6Address**.

2. If the addressfamily of **FetchIpamIPAddressByManagedByAndManagedByEntity.address** is NULL, or **FetchIpamIPAddressByManagedByAndManagedByEntity.managedBy** is NULL, or **FetchIpamIPAddressByManagedByAndManagedByEntity.managedByEntity** is NULL, an appropriate SOAP fault MUST be returned.

3. Validate the input **FetchIpamIPAddressByManagedByAndManagedByEntity.address** is usable, as follows. Else, an appropriate SOAP fault MUST be sent as specified in section 2.2.2.1.

    1. The address MUST be a valid IPv4 or Ipv6 address.

    2. The Ipv4 address MUST NOT fall within the following subnets. This is ascertained by checking the individual address octets of the Ipv4 IP address. These are specialized address blocks – see [RFC3330] for details about the same.

        - 0/8 – First octet of the address MUST not be 0
        - 127/8 – First octet of the address MUST not be 127
        - 169.254/16 – First and second octet of the address MUST not be 169 and 254 respectively
        - 255.255.255.255 – All octet of the address MUST not be 255

    3. The Ipv6 address MUST NOT be one of the following. For details on these special address types, see [RFC3513].

        - ::0
        - ::1

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- Ipv6 Link local address
- Ipv6 Site local address
- Ipv6 Multicast address

4. Enumerate the rows in IP address table where IPAddress is same as **FetchIpamIPAddressByManagedByAndManagedByEntity.address**.
5. For each row:
   1. Calculate the ManagedBy value to be the custom field value whose custom field identifier is the same value as **ADM_ManagedByCustomFieldId**.
   2. Calculate the ManagedByEntity value to be the custom field value whose custom field identifier is the same as the **ADM_ManagedByEntityCustomFieldId**.
6. If the **FetchIpamIPAddressByManagedByAndManagedByEntity.managedBy** is the same as the ManagedBy computed above and **FetchIpamIPAddressByManagedByAndManagedByEntity.managedByEntity** is the same as the ManagedByValue computed above, the row has to be added to **FetchIpamIPAddressByManagedByAndManagedByEntityResponse. FetchIpamIPAddressByManagedByAndManagedByEntityResult**. This is done by calling the procedure GetIPAddressFromTable passing RecordId of the row as the *Param_id* input parameter and **FetchIpamIPAddressByManagedByAndManagedByEntity.addressFamily** as *Param_addressfamily* parameters. The **result** returned is added to **FetchIpamIPAddressByManagedByAndManagedByEntityResponse. FetchIpamIPAddressByManagedByAndManagedByEntityResult**.

3.3.4.46.1 Messages

3.3.4.46.1.1 IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_InputMessage

This is the request for the FetchIpamIPAddressByManagedByAndManagedByEntity operation.

```
<wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_InputMessage">
  <wsdl:part name="parameters" element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntity"
/>
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManagedByEntity
```

The body of the SOAP message MUST contain the FetchIpamIPAddressByManagedByAndManagedByEntity element.

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3.3.4.46.1.2 IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_OutputMessage

This is the response for the FetchIpamIPAddressByManagedByAndManagedByEntity operation.

```
<wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_OutputMessage">
  <wsdl:part name="parameters"
element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntityResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManagedByEntityResp
onse
```

The body of the SOAP message MUST contain the FetchIpamIPAddressByManagedByAndManagedByEntityResponse element.

3.3.4.46.2 Elements

3.3.4.46.2.1 FetchIpamIPAddressByManagedByAndManagedByEntity

This element specifies the input values for the FetchIpamIPAddressByManagedByAndManagedByEntity operation.

```
<xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntity">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="address" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="managedBy" nillable="true" type="xsd:string" />
      <xs:element minOccurs="0" name="managedByEntity" nillable="true" type="xsd:string" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.46.2.2 FetchIpamIPAddressByManagedByAndManagedByEntityResponse

This element specifies the output values for the FetchIpamIPAddressByManagedByAndManagedByEntity operation.

```
<xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntityResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FetchIpamIPAddressByManagedByAndManagedByEntityResult"
nillable="true" type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.47 FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace

This operation is used to retrieve the IpamIPAddress given the specified IP address and the values for the ManagedBy and ManagedByEntity built-in custom field values and an AddressSpace.

```
<wsdl:operation name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntityAndAddressSpace"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_Inpu
tMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntityAndAddressSpaceResponse"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_Outp
utMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse.FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResult** will consist of an IpamIPv4Address. Otherwise IPv6-specific tables are used for further processing. The **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse.FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResult** will consist of an **IpamIPv6Address**.

2. If the addressfamily of **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.address** is NULL, or **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.managedBy** is NULL, or **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.managedByEntity** is NULL, an appropriate SOAP fault MUST be returned.

3. Validate the input **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.address** is usable by calling ValidateIPamIPAddress. Else, an appropriate SOAP fault MUST be sent as specified in section 2.2.2.1.

4. Enumerate the rows in **ADM_IPAddressTable** where IPAddress is same as **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.address**.

5. For each row:

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1. Calculate the ManagedBy value to be the custom field value whose custom field identifier is the same value as **ADM_ManagedByCustomFieldId**.

2. Calculate the ManagedByEntity value to be the custom field value whose custom field identifier is the same as the **ADM_ManagedByEntityCustomFieldId**.

6. If the **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.addressSpaceId** is same as the AddressSpaceRecordId for the row in **ADM_IPAddressTable**, and **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.managedBy** is the same as the ManagedBy computed previously and **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.managedByEntity** is the same as the ManagedByValue computed previously, the row has to be added to **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse.FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResult**. This is done by calling the procedure GetIPAddressFromTable passing RecordId of the row as *Param_id* input parameter and **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace.addressFamily** as *Param_addressfamily* parameters. The result returned is added to **FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse.FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResult**.

3.3.4.47.1 Messages

3.3.4.47.1.1 IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_InputMessage

This is the request for the FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace operation.

```
<wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_InputMessage
">
  <wsdl:part name="parameters"
element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManagedByEntityAndA
ddressSpace
```

The body of the SOAP message MUST contain the FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace element.

3.3.4.47.1.2 IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_OutputMessage

This is the response for the FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace operation.

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```
<wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_OutputMessag
e">
  <wsdl:part name="parameters"
element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManagedByEntityAndA
ddressSpaceResponse
```

The body of the SOAP message MUST contain the FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse element.

3.3.4.47.2 Elements

3.3.4.47.2.1 FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace

This element specifies the input values for the FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace operation.

```
<xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="address" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="managedBy" nillable="true" type="xsd:string" />
      <xs:element minOccurs="0" name="managedByEntity" nillable="true" type="xsd:string" />
      <xs:element minOccurs="0" name="addressSpaceId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

addressFamily: The address family of the IP addresses that need to be fetched.

address: The IP address for which the corresponding address element in the IPAM data store needs to be fetched.

managedBy: The value of managed by service custom field for which the addresses need to be fetched.

managedByEntity: The value of service instance custom field for which the addresses need to be fetched.

addressSpaceId: An Identifier of the address space that contains the IPAM address to be fetched.

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3.3.4.47.2.2 FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse

This element specifies the output values for the FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace operation.

```
<xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0"
name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResult" nillable="true"
type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResult: A complex type representing an IP address in IPAM.

3.3.4.48 FindAvailableDhcpServersForReservation

This operation can be used to retrieve the list of DHCP server instances where an address reservation can be created.

```
<wsdl:operation name="FindAvailableDhcpServersForReservation">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableDhcpServersForReservation
" message="ipam:IipamServer_FindAvailableDhcpServersForReservation_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableDhcpServersForReservation
Response" message="ipam:IipamServer_FindAvailableDhcpServersForReservation_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IipamServer_FindAvailableDhcpServersForReservation_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IipamServer_FindAvailableDhcpServersForReservation_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **FindAvailableDhcpServersForReservation.addressFamily** is Internet, the rest of the processing is done with the Ipv4-specific tables. The **FindAvailableDhcpServersForReservationResponse.FindAvailableDhcpServersForReservationResult** will consist of a collection of **DhcpServerV4**. Otherwise IPv6-specific tables are used for further processing. The **FindAvailableDhcpServersForReservationResponse.FindAvailableDhcpServersForReservationResult** will consist of a collection of **DhcpServerV6**.

2. Initialize the **FindAvailableDhcpServersForReservationResponse.FindAvailableDhcpServersForReservationResult** to an empty collection.

3. Enumerate the rows in **ADM_DHCPScopesTable** which meet the following conditions:

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- StartAddress is lesser than or equal to **FindAvailableDhcpServersForReservation.address**.
- EndAddress is greater than or equal to **FindAvailableDhcpServersForReservation.address**.

4. For each row enumerated earlier:
   - Get the DHCPServerRecordId. If the server instance corresponding to DHCPServerRecordId is not already found in **FindAvailableDhcpServersForReservationResponse. FindAvailableDhcpServersForReservationResult**:
     1. Call the procedure GetDHCPServerFromTable passing DHCPServerRecordId as *Param_Id* and **FindAvailableDhcpServersForReservation.addressFamily** as *Param_addressFamily*.
     2. Add Result_server to **FindAvailableDhcpServersForReservationResponse. FindAvailableDhcpServersForReservationResult**.

3.3.4.48.1 Messages

3.3.4.48.1.1 IIpamServer_FindAvailableDhcpServersForReservation_InputMessage

This is the request for the FindAvailableDhcpServersForReservation operation.

```
<wsdl:message name="IIpamServer_FindAvailableDhcpServersForReservation_InputMessage">
  <wsdl:part name="parameters" element="ipam:FindAvailableDhcpServersForReservation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableDhcpServersForReservation
```

The body of the SOAP message MUST contain the FindAvailableDhcpServersForReservation element.

3.3.4.48.1.2 IIpamServer_FindAvailableDhcpServersForReservation_OutputMessage

This is the response for the FindAvailableDhcpServersForReservation operation.

```
<wsdl:message name="IIpamServer_FindAvailableDhcpServersForReservation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:FindAvailableDhcpServersForReservationResponse"
/>
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableDhcpServersForReservationResponse
```

The body of the SOAP message MUST contain the FindAvailableDhcpServersForReservationResponse element.

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3.3.4.48.2 Elements

3.3.4.48.2.1 FindAvailableDhcpServersForReservation

This element specifies the input values for the FindAvailableDhcpServersForReservation operation.

```
<xs:element name="FindAvailableDhcpServersForReservation">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="sysnet:IPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.48.2.2 FindAvailableDhcpServersForReservationResponse

This element specifies the output values for the FindAvailableDhcpServersForReservation operation.

```
<xs:element name="FindAvailableDhcpServersForReservationResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FindAvailableDhcpServersForReservationResult"
nillable="true" type="ipam:ArrayOfDhcpServer" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.49 FindAvailableScopeForReservationInDhcpServer

This operation can be used to query the scope instance associated with a particular DHCP server instance on which a reservation can be created for a specified IP address.

```
<wsdl:operation name="FindAvailableScopeForReservationInDhcpServer">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableScopeForReservationInDhcp
Server" message="ipam:IIpamServer_FindAvailableScopeForReservationInDhcpServer_InputMessage"
/>
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableScopeForReservationInDhcp
ServerResponse"
message="ipam:IIpamServer_FindAvailableScopeForReservationInDhcpServer_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_FindAvailableScopeForReservationInDhcpServer_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_FindAvailableScopeForReservationInDhcpServer_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **FindAvailableScopeForReservationInDhcpServer.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **FindAvailableScopeForReservationInDhcpServerResponse.FindAvailableScopeForReservationInDhcpServerResult** will consist of **DhcpScopeV4** data. Otherwise IPv6-specific tables

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are used for further processing. The **FindAvailableScopeForReservationInDhcpServerResponse.FindAvailableScopeForReservationInDhcpServerResult** will consist of **DhcpScopeV6** data.

2. Enumerate the rows in **ADM_DHCPScopesTable** which meet the following conditions:

   - DHCPServerRecordId of the row is equal to **FindAvailableScopeForReservationInDhcpServer.dhcpServerRecordId**.
   - StartAddress is lesser than or equal to **FindAvailableScopeForReservationInDhcpServer.address**.
   - EndAddress is greater than or equal to **FindAvailableScopeForReservationInDhcpServer.address**.

3. If a row is found meeting the conditions above, call the procedure GetScopeFromTable in **ADM_DHCPScopesTable** passing the RecordId of the row as *Param_Id* and the **FindAvailableScopeForReservationInDhcpServer.addressFamily** as *Param_addressfamily*.

4. Assign the Result_scope to **FindAvailableScopeForReservationInDhcpServerResponse. FindAvailableScopeForReservationInDhcpServerResult**.

3.3.4.49.1 Messages

3.3.4.49.1.1 IIpamServer_FindAvailableScopeForReservationInDhcpServer_InputMessage

This is the request for the FindAvailableScopeForReservationInDhcpServer operation.

```
<wsdl:message name="IIpamServer_FindAvailableScopeForReservationInDhcpServer_InputMessage">
  <wsdl:part name="parameters" element="ipam:FindAvailableScopeForReservationInDhcpServer" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableScopeForReservationInDhcpServer
```

The body of the SOAP message MUST contain the FindAvailableScopeForReservationInDhcpServer element.

3.3.4.49.1.2 IIpamServer_FindAvailableScopeForReservationInDhcpServer_OutputMessage

This is the response for the FindAvailableScopeForReservationInDhcpServer operation.

```
<wsdl:message name="IIpamServer_FindAvailableScopeForReservationInDhcpServer_OutputMessage">
  <wsdl:part name="parameters"
element="ipam:FindAvailableScopeForReservationInDhcpServerResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableScopeForReservationInDhcpServerRespons
e
```

The body of the SOAP message MUST contain the FindAvailableScopeForReservationInDhcpServerResponse element.

3.3.4.49.2 Elements

3.3.4.49.2.1 FindAvailableScopeForReservationInDhcpServer

This element specifies the input values for the FindAvailableScopeForReservationInDhcpServer operation.

```
<xs:element name="FindAvailableScopeForReservationInDhcpServer">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="dhcpServerRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="ipAddress" nillable="true" type="sysnet:IPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.49.2.2 FindAvailableScopeForReservationInDhcpServerResponse

This element specifies the output values for the FindAvailableScopeForReservationInDhcpServer operation.

```
<xs:element name="FindAvailableScopeForReservationInDhcpServerResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="FindAvailableScopeForReservationInDhcpServerResult"
nillable="true" type="ipam:DhcpScope" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.50 GenerateUpgradeValidationFailureLog

This operation is used to generate a log of all the entities in the IPAM data store that failed the system check before the IPAM system update. This check is performed to ensure that the existing IPAM system can be updated.

```
<wsdl:operation name="GenerateUpgradeValidationFailureLog">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLog"
message="ipam:IIpamServer_GenerateUpgradeValidationFailureLog_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLogRes
ponse" message="ipam:IIpamServer_GenerateUpgradeValidationFailureLog_OutputMessage" />
</wsdl:operation>
```


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Upon receiving the IIpamServer_GenerateUpgradeValidationFailureLog_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GenerateUpgradeValidationFailureLog_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the current IPAM data store version and the current OS version by reading the **ADM_IPAMSchemaVersion** and **ADM_IPAMServerVersion** properties to check whether schema conversion of IPAM data store is needed. An appropriate SOAP fault MUST be raised if schema conversion is not required.
2. Get all the entities from the IPAM data store that failed during schema conversion of IPAM.
3. Write the previous entities to a log file indicating which rule failed.

3.3.4.50.1 Messages

3.3.4.50.1.1 IIpamServer_GenerateUpgradeValidationFailureLog_InputMessage

This is the request for the GenerateUpgradeValidationFailureLog operation.

```
<wsdl:operation name="GenerateUpgradeValidationFailureLog">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLog"
message="ipam:IIpamServer_GenerateUpgradeValidationFailureLog_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLogRes
ponse" message="ipam:IIpamServer_GenerateUpgradeValidationFailureLog_OutputMessage" />
</wsdl:operation>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLog
```

The body of the SOAP message MUST contain the GenerateUpgradeValidationFailureLog element.

3.3.4.50.1.2 IIpamServer_GenerateUpgradeValidationFailureLog_OutputMessage

This is the response for the GenerateUpgradeValidationFailureLog operation.

```
<wsdl:message name="IIpamServer_GenerateUpgradeValidationFailureLog_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GenerateUpgradeValidationFailureLogResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLogResponse
```

The body of the SOAP message MUST contain the GenerateUpgradeValidationFailureLogResponse element.

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3.3.4.50.2 Elements

3.3.4.50.2.1 GenerateUpgradeValidationFailureLog

This element specifies the input values for the GenerateUpgradeValidationFailureLog operation.

```
<xs:element name="GenerateUpgradeValidationFailureLog">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.50.2.2 GenerateUpgradeValidationFailureLogResponse

This element specifies the output values for the GenerateUpgradeValidationFailureLog operation.

```
<xs:element name="GenerateUpgradeValidationFailureLogResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.51 GetAccessScope

This operation is used to get the access scope given the scope ID.

```
<wsdl:operation name="GetAccessScope">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAccessScope"
message="ipam:IIpamServer_GetAccessScope_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAccessScopeResponse"
message="ipam:IIpamServer_GetAccessScope_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetAccessScope_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetAccessScope_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- The **GetAccessScope.accessScopeId** is passed to the method **GetAccessScopeById** of **ADM_AccessScopeTable**. The **AccessScope** object is returned in the output message.

3.3.4.51.1 Messages

3.3.4.51.1.1 IIpamServer_GetAccessScope_InputMessage

The IIpamServer_GetAccessScope_InputMessage message initiates the GetAccessScope WSDL operation.

```
<wsdl:message name="IIpamServer_GetAccessScope_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetAccessScope" />
</wsdl:message>
```


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The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAccessScope
```

The body of the SOAP message MUST contain the GetAccessScope element.

3.3.4.51.1.2 IIpamServer_GetAccessScope_OutputMessage

The IIpamServer_GetAccessScope_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetAccessScope_InputMessage message.

```
<wsdl:message name="IIpamServer_GetAccessScope_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetAccessScopeResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAccessScopeResponse
```

The body of the SOAP message MUST contain the GetAccessScopeResponse element.

3.3.4.51.2 Elements

3.3.4.51.2.1 GetAccessScope

The GetAccessScope element contains the input data for the GetAccessScope operation.

```
<xs:element name="GetAccessScope">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="accessScopeId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.51.2.2 GetAccessScopeResponse

The GetAccessScopeResponse element contains the output data for the GetAccessScope operation.

```
<xs:element name="GetAccessScopeResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetAccessScopeResult" nillable="true"
type="ipam:AccessScope" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.52 GetAddressSpaceById

This operation is used to retrieve the address space with the specified RecordId from the IPAM data store.

```
<wsdl:operation name="GetAddressSpaceById">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceById"
message="ipam:IIpamServer_GetAddressSpaceById_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByIdResponse"
message="ipam:IIpamServer_GetAddressSpaceById_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetAddressSpaceById_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetAddressSpaceById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **GetAddressSpaceById.addressSpaceType** is of type Provider, the rest of the processing is done with ProviderAddressSpace specific tables. If **GetAddressSpaceById.addressSpaceType** is of type Customer, then the rest of the processing is done with CustomerAddressSpace-specific tables. If **GetAddressSpaceById.addressSpaceType** is neither Provider or Customer, generic AddressSpace table is used for further processing.

2. Fetch the address space for the specified **GetAddressSpaceById.id** by invoking the procedure GetAddressSpaceById of **ADM_AddressSpaceTable** by passing **GetAddressSpaceById.id** as *Param_AddressSpaceId*.

3. Assign the returned result to **GetAddressSpaceByIdResponse.GetAddressSpaceByIdResult**.

3.3.4.52.1 Messages

3.3.4.52.1.1 IIpamServer_GetAddressSpaceById_InputMessage

This is the request for the GetAddressSpaceById operation.

```
<wsdl:message name="IIpamServer_GetAddressSpaceById_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetAddressSpaceById" />
</wsdl:message
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceById
```

The body of the SOAP message MUST contain the GetAddressSpaceById element.

3.3.4.52.1.2 IIpamServer_GetAddressSpaceById_OutputMessage

This is the response for the GetAddressSpaceById operation.

```
<wsdl:message name="IIpamServer_GetAddressSpaceById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetAddressSpaceByIdResponse" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByIdResponse
```

The body of the SOAP message MUST contain the GetAddressSpaceByIdResponse element.

3.3.4.52.2 Elements

3.3.4.52.2.1 GetAddressSpaceById

This element specifies the input values for the GetAddressSpaceById operation.

```
<xs:element name="GetAddressSpaceById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

id: The RecordId of the address space to be fetched.

addressSpaceType: The type of address space to be fetched.

3.3.4.52.2.2 GetAddressSpaceByIdResponse

This element specifies the output values for the GetAddressSpaceById operation.

```
<xs:element name="GetAddressSpaceByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetAddressSpaceByIdResult" nillable="true"
type="ipam:AddressSpace" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetAddressSpaceByIdResult: The result address space fetched.

3.3.4.53 GetAddressSpaceByName

This operation is used to retrieve the address space with the specified name from the IPAM data store.

```
<wsdl:operation name="GetAddressSpaceByName">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByName"
message="ipam:IIpamServer_GetAddressSpaceByName_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByNameResponse"
message="ipam:IIpamServer_GetAddressSpaceByName_OutputMessage" />
</wsdl:operation
```

Upon receiving the IIpamServer_GetAddressSpaceByName_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetAddressSpaceByName_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Call the procedure **GetAddressSpaceByName** of **ADM_AddressSpaceTable** with *Param_AddressSpaceName* set to **GetAddressSpaceByName.name** and *Param_AddressSpaceType* set to **GetAddressSpaceByName.addressSpaceType**.

2. Assign the returned result to **GetAddressSpaceByNameResponse.GetAddressSpaceByNameResult**.

3.3.4.53.1 Messages

3.3.4.53.1.1 IIpamServer_GetAddressSpaceByName_InputMessage

This is the request for the GetAddressSpaceByName operation.

```
<wsdl:message name="IIpamServer_GetAddressSpaceByName_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetAddressSpaceByName" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByName
```

The body of the SOAP message MUST contain the GetAddressSpaceByName element.

3.3.4.53.1.2 IIpamServer_GetAddressSpaceByName_OutputMessage

This is the response for the GetAddressSpaceByName operation.

```
<wsdl:message name="IIpamServer_GetAddressSpaceByName_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetAddressSpaceByNameResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByNameResponse
```

The body of the SOAP message MUST contain the GetAddressSpaceByNameResponse element.

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3.3.4.53.2 Elements

3.3.4.53.2.1 GetAddressSpaceByName

This element specifies the input values for the GetAddressSpaceByName operation.

```
<xs:element name="GetAddressSpaceByName">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="name" nillable="true" type="xsd:string" />
      <xs:element minOccurs="0" name="addressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

name: The name of the address space to be fetched.

addressSpaceType: The type of address space to be fetched. If no type is specified, the default address space is fetched.

3.3.4.53.2.2 GetAddressSpaceByNameResponse

This element specifies the output values for the GetAddressSpaceByName operation.

```
<xs:element name="GetAddressSpaceByNameResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetAddressSpaceByNameResult" nillable="true"
type="ipam:AddressSpace" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetAddressSpaceByNameResult: The complex type ipam:AddressSpace specifying the address space fetched corresponding to the name and addressSpaceType specified in input.

3.3.4.54 GetAddressSpacesByIds

This operation retrieves the address space elements with the specified RecordIds from the IPAM data store.

```
<wsdl:operation name="GetAddressSpacesByIds">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpacesByIds"
message="ipam:IIpamServer_GetAddressSpacesByIds_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpacesByIdsResponse"
message="ipam:IIpamServer_GetAddressSpacesByIds_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetAddressSpacesByIds_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetAddressSpacesByIds_OutputMessage message. In

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the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. For each addressSpaceId in **GetAddressSpacesByIds.ids**, call the procedure GetAddressSpaceById of **ADM_AddressSpaceTabl**e with *Param_AddressSpaceId* set to addressSpaceId.

2. Assign the returned result to **GetAddressSpacesByIdsResponse.GetAddressSpacesByIdsResult**.

3.3.4.54.1 Messages

3.3.4.54.1.1 IIpamServer_GetAddressSpacesByIds_InputMessage

This is the request for the GetAddressSpacesByIds operation.

```
<wsdl:message name="IIpamServer_GetAddressSpacesByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetAddressSpacesByIds" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpacesByIds
```

The body of the SOAP message MUST contain the GetAddressSpacesByIds element.

3.3.4.54.1.2 IIpamServer_GetAddressSpacesByIds_OutputMessage

This is the response for the GetAddressSpacesByIds operation.

```
<wsdl:message name="IIpamServer_GetAddressSpacesByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetAddressSpacesByIdsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpacesByIdsResponse
```

The body of the SOAP message MUST contain the GetAddressSpacesByIdsResponse element.

3.3.4.54.2 Elements

3.3.4.54.2.1 GetAddressSpacesByIds

This element specifies the input values for the GetAddressSpacesByIds operation.

```
<xs:element name="GetAddressSpacesByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="addressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
```


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```
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

ids: An array of RecordIds of the address spaces to be fetched.

addressSpaceType: The type of address spaces to be fetched. If no type is specified, then the address space **ids** are assumed to belong to the default address space.

3.3.4.54.2.2 GetAddressSpacesByIdsResponse

This element specifies the output values for the GetAddressSpacesByIds operation.

```
<xs:element name="GetAddressSpacesByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetAddressSpacesByIdsResult" nillable="true"
type="sysgen:ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetAddressSpacesByIdsResult: An array of key value pairs where the key is the address space id and the value is the corresponding address space.

3.3.4.55 GetAllAddressSpaceNames

This operation is used to retrieve names of all address spaces of a given type from the IPAM data store. If no type is specified, then all address spaces configured in IPAM are retrieved.

```
<wsdl:operation name="GetAllAddressSpaceNames">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllAddressSpaceNames"
message="ipam:IIpamServer_GetAllAddressSpaceNames_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllAddressSpaceNamesResponse"
message="ipam:IIpamServer_GetAllAddressSpaceNames_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetAllAddressSpaceNames_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetAllAddressSpaceNames_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Call the procedure GetAllAddressSpaceNames of ADM_AddressSpaceTable with Param_AddressSpaceType set to GetAllAddressSpaceNames.addressSpaceType.

2. Assign the returned result to GetAllAddressSpaceNamesResponse.GetAllAddressSpaceNamesResult.

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3.3.4.55.1 Messages

3.3.4.55.1.1 IIpamServer_GetAllAddressSpaceNames_InputMessage

This is the request for the GetAllAddressSpaceNames operation.

```
<wsdl:message name="IIpamServer_GetAllAddressSpaceNames_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetAllAddressSpaceNames" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAllAddressSpaceNames
```

The body of the SOAP message MUST contain the GetAllAddressSpaceNames element.

3.3.4.55.1.2 IIpamServer_GetAllAddressSpaceNames_OutputMessage

This is the response for the GetAllAddressSpaceNames operation.

```
<wsdl:message name="IIpamServer_GetAllAddressSpaceNames_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetAllAddressSpaceNamesResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAllAddressSpaceNamesResponse
```

The body of the SOAP message MUST contain the GetAllAddressSpaceNamesResponse element.

3.3.4.55.2 Elements

3.3.4.55.2.1 GetAllAddressSpaceNames

This element specifies the input values for the GetAllAddressSpaceNames operation.

```
<xs:element name="GetAllAddressSpaceNames">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

addressSpaceType: The type of addressSpace for which all the address space names are to be queried. All addressSpaces configured in IPAM are retrieved if this parameter is set to null.

3.3.4.55.2.2 GetAllAddressSpaceNamesResponse

This element specifies the output values for the GetAllAddressSpaceNames operation.

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```
<xs:element name="GetAllAddressSpaceNamesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetAllAddressSpaceNamesResult" nillable="true"
type="sys:ArrayOfTupleOflongstringstring" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetAllAddressSpaceNamesResult: An array of tuples each of which contains the record id of the address space, its name, and the associated provider address space name in case the address space is of type CustomerAddressSpace.

3.3.4.56 GetAllPoliciesFromDB

This operation is used to get a list of DhcpPolicyV4 from a list of policyIDs.

```
<wsdl:operation name="GetAllPoliciesFromDB">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllPoliciesFromDB"
message="ipam:IIpamServer_GetAllPoliciesFromDB_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllPoliciesFromDBResponse"
message="ipam:IIpamServer_GetAllPoliciesFromDB_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetAllPoliciesFromDB_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetAllPoliciesFromDB_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If either of the following conditions is not met, an appropriate SOAP fault MUST be generated as specified in section 2.2.2.1:
    1. **GetAllPoliciesFromDB.policyIds** is not NULL.
    2. **GetAllPoliciesFromDB.policyIds.Count** >= 1.
2. The procedure GetPolicyById in **ADM_DhcpPolicyTable** is called for each policyId in **GetPolicyById.policyIds**. The returned **ipam:DhcpPolicyv4** from each call is collected and passed in the output message.

3.3.4.56.1 Messages

3.3.4.56.1.1 IIpamServer_GetAllPoliciesFromDB_InputMessage

The IIpamServer_GetAllPoliciesFromDB_InputMessage message initiates the GetAllPoliciesFromDB WSDL operation.

```
<wsdl:message name="IIpamServer_GetAllPoliciesFromDB_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetAllPoliciesFromDB" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

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```
http://Microsoft.Windows.Ipam/IIpamServer/GetAllPoliciesFromDB
```

The body of the SOAP message MUST contain the GetAllPoliciesFromDB element.

3.3.4.56.1.2 IIpamServer_GetAllPoliciesFromDB_OutputMessage

The IIpamServer_GetAllPoliciesFromDB_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetAllPoliciesFromDB_InputMessage message.

```
<wsdl:message name="IIpamServer_GetAllPoliciesFromDB_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetAllPoliciesFromDBResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetAllPoliciesFromDBResponse
```

The body of the SOAP message MUST contain the GetAllPoliciesFromDBResponse element.

3.3.4.56.2 Elements

3.3.4.56.2.1 GetAllPoliciesFromDB

The GetAllPoliciesFromDB element contains the input data for the GetAllPoliciesFromDB operation.

```
<xs:element name="GetAllPoliciesFromDB">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policyIds" nillable="true" type="serarr:ArrayOflong" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.56.2.2 GetAllPoliciesFromDBResponse

The GetAllPoliciesFromDBResponse element contains the output data for the GetAllPoliciesFromDB operation.

```
<xs:element name="GetAllPoliciesFromDBResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetAllPoliciesFromDBResult" nillable="true"
type="ipam:ArrayOfDhcpPolicyV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.57 GetBlockById

This operation is used to retrieve the address block with the specified RecordId from the IPAM data store.

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```
<wsdl:operation name="GetBlockById">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockById"
message="ipam:IIpamServer_GetBlockById_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIdResponse"
message="ipam:IIpamServer_GetBlockById_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBlockById_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetBlockById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Fetch the IPBlock for the specified RecordId by invoking the procedure GetIPBlockFromTable of ADM_IPBlocksTable by passing GetBlockById.id as Param_blockId and GetBlockById.addressFamily as Param_addressfamily.
2. Assign the returned result to GetBlockByIdResponse.GetBlockByIdResult.

3.3.4.57.1 Messages

3.3.4.57.1.1 IIpamServer_GetBlockById_InputMessage

This is the request for the GetBlockById operation.

```
<wsdl:message name="IIpamServer_GetBlockById_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockById
```

The body of the SOAP message MUST contain the GetBlockById element.

3.3.4.57.1.2 IIpamServer_GetBlockById_OutputMessage

This is the response for the GetBlockById operation.

```
<wsdl:message name="IIpamServer_GetBlockById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockByIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIdResponse
```

The body of the SOAP message MUST contain the GetBlockByIdResponse element.

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3.3.4.57.2 Elements

3.3.4.57.2.1 GetBlockById

This element specifies the input values for the GetBlockById operation.

```
<xs:element name="GetBlockById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

id: The RecordId of the address block to retrieve.

addressFamily: The address family of the address block being requested.

3.3.4.57.2.2 GetBlockByIdResponse

This element specifies the output values for the GetBlockById operation.

```
<xs:element name="GetBlockByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBlockByIdResult" nillable="true" type="ipam:IPBlock"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetBlockByIdResult: The address block corresponding to the RecordId specified in **GetBlockById.id** belonging to the address family specified in **GetBlockById.addressFamily**.

3.3.4.58 GetBlockByIPAddressAndPrefixLength

This operation can be used to retrieve the address block given its StartIPAddress, EndIPAddress, and PrefixLength.

```
<wsdl:operation name="GetBlockByIPAddressAndPrefixLength">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIPAddressAndPrefixLength"
message="ipam:IIpamServer_GetBlockByIPAddressAndPrefixLength_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIPAddressAndPrefixLengthResp
onse" message="ipam:IIpamServer_GetBlockByIPAddressAndPrefixLength_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBlockByIPAddressAndPrefixLength_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetBlockByIPAddressAndPrefixLength_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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1. **GetBlockByIPAddressAndPrefixLength.addressFamily** specifies the simple table within the **ADM_IPBlocksTable** compound table on which the processing has to be done.
2. Enumerate the rows in **ADM_IPBlocksTable** which meet the following conditions:
   - StartIPAddress equals **GetBlockByIPAddressAndPrefixLength.startIPAddress**.
   - EndIPAddress equals **GetBlockByIPAddressAndPrefixLength.endIPAddress**.
   - PrefixLength equals **GetBlockByIPAddressAndPrefixLength.prefixLength**.
3. If such a row is found, call the procedure GetIPBlockFromTable passing the following parameters:
   - **GetBlockByIPAddressAndPrefixLength.addressFamily** is passed to *Param_addressfamily*.
   - RecordId is passed to *Param_blockId*.
4. Set the output parameter **result** to **GetBlockByIPAddressAndPrefixLengthResponse. GetBlockByIPAddressAndPrefixLengthResult**.

3.3.4.58.1 Messages

3.3.4.58.1.1 IIpamServer_GetBlockByIPAddressAndPrefixLength_InputMessage

This is the request for the GetBlockByIPAddressAndPrefixLength operation.

```
<wsdl:message name="IIpamServer_GetBlockByIPAddressAndPrefixLength_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockByIPAddressAndPrefixLength" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIPAddressAndPrefixLength
```

The body of the SOAP message MUST contain the GetBlockByIPAddressAndPrefixLength element.

3.3.4.58.1.2 IIpamServer_GetBlockByIPAddressAndPrefixLength_OutputMessage

This is the response for the GetBlockByIPAddressAndPrefixLength operation.

```
<wsdl:message name="IIpamServer_GetBlockByIPAddressAndPrefixLength_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockByIPAddressAndPrefixLengthResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIPAddressAndPrefixLengthResponse
```

The body of the SOAP message MUST contain the GetBlockByIPAddressAndPrefixLengthResponse element.

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3.3.4.58.2 Elements

3.3.4.58.2.1 GetBlockByIPAddressAndPrefixLength

This element specifies the input values for the GetBlockByIPAddressAndPrefixLength operation.

```
<xs:element name="GetBlockByIPAddressAndPrefixLength">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="startIPAddress" nillable="true" type="sysnet:IPAddress"
/>
      <xs:element minOccurs="0" name="endIPAddress" nillable="true" type="sysnet:IPAddress"
/>
      <xs:element minOccurs="0" name="prefixLength" type="xsd:int" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.58.2.2 GetBlockByIPAddressAndPrefixLengthResponse

This element specifies the output values for the GetBlockByIPAddressAndPrefixLength operation.

```
<xs:element name="GetBlockByIPAddressAndPrefixLengthResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBlockByIPAddressAndPrefixLengthResult"
nillable="true" type="ipam:IPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.59 GetBlockHierarchy

This operation can be used to retrieve the address block hierarchy for a specified address block.

```
<wsdl:operation name="GetBlockHierarchy">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchy"
message="ipam:IIpamServer_GetBlockHierarchy_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyResponse"
message="ipam:IIpamServer_GetBlockHierarchy_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBlockHierarchy_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetBlockHierarchy_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. 0.1.Initialize **GetBlockHierarchyResponse.GetBlockHierarchyResult** to a collection of IPBlock data specifying the hierarchy of the requested address block.

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2. The **GetBlockHierarchy.addressFamily** is used to determine the simple table within the **ADM_IPBlocksTable** compound table against which further processing is to be done.

3. Call the procedure GetIPBlockFromTable in **ADM_IPBlocksTable** passing the following parameters:

    1. *Param_blockId* is set the value of **GetBlockHierarchy.blockId**.

    2. *Param_addressfamily* is set the value of **GetBlockHierarchy.addressFamily**.

    3. If **result** is not null, perform the following steps:

        1. Enumerate the rows in **ADM_IPBlocksTable** which meet all the following conditions:

            - StartIPAddress <= **result.StartIPAddress**.
            - EndIPAddress >= **result.EndIPAddress**.
            - PrefixLength <= **result.PrefixLength**.

        2. Arrange the resulting rows in ascending order of StartIPAddress, EndIPAddress and PrefixLength.

        3. Retrieve the IPBlock data for all the rows using their RecordId and using the GetIPBlockFromTable procedure of **ADM_IPBlocksTable**.

        4. The collection of IPBlock data hence obtained will become the block hierarchy for the address block represented by **result.RecordId**. Add the collection to **GetBlockHierarchyResponse.GetBlockHierarchyResult**.

3.3.4.59.1 Messages

3.3.4.59.1.1 IIpamServer_GetBlockHierarchy_InputMessage

This is the request for the GetBlockHierarchy operation.

```
<wsdl:message name="IIpamServer_GetBlockHierarchy_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockHierarchy" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchy
```

The body of the SOAP message MUST contain the GetBlockHierarchy element.

3.3.4.59.1.2 IIpamServer_GetBlockHierarchy_OutputMessage

This is the response for the GetBlockHierarchy operation.

```
<wsdl:message name="IIpamServer_GetBlockHierarchy_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockHierarchyResponse" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyResponse
```

The body of the SOAP message MUST contain the GetBlockHierarchyResponse element.

3.3.4.59.2 Elements

3.3.4.59.2.1 GetBlockHierarchy

This element specifies the input values for the GetBlockHierarchy operation.

```
<xs:element name="GetBlockHierarchy">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="blockId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.59.2.2 GetBlockHierarchyResponse

This element specifies the output values for the GetBlockHierarchy operation.

```
<xs:element name="GetBlockHierarchyResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBlockHierarchyResult" nillable="true"
type="ipam:ArrayOfIPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.60 GetBlockHierarchyForRangeId

This operation can be used to retrieve the address block hierarchy for an address block to which a specified range maps to.

```
<wsdl:operation name="GetBlockHierarchyForRangeId">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForRangeId"
message="ipam:IIpamServer_GetBlockHierarchyForRangeId_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForRangeIdResponse"
message="ipam:IIpamServer_GetBlockHierarchyForRangeId_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBlockHierarchyForRangeId_InputMessage request message, the server performs the following processing steps. Upon successful completion of the following steps, the server MUST respond with the IIpamServer_GetBlockHierarchyForRangeId_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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1. Get the address range corresponding to the GetBlockHierarchyForRangeId.rangeId by calling the procedure **GetIPRangeFromTable** passing the following parameters:

    1. Set *Param_id* to **GetBlockHierarchyForRangeId.rangeId**.

    2. Set *Param_addressfamily* to **GetBlockHierarchyForRangeId.addressFamily**.

2. Initialize **GetBlockHierarchyForRangeIdResponse.GetBlockHierarchyForRangeIdResult** to NULL.

3. If **result.ParentIPBlockId** is not 0, call the procedure GetIPBlockFromTable by passing the following values as input parameters:

    1. *Param_blockId* is set to **result.ParentIPBlockId**.

    2. *Param_addressfamily* is set to **GetBlockHierarchyForRangeId.addressFamily**.

4. If the result is not null, it represents the subnet that the range **GetBlockHierarchyForRangeId.rangeId** maps to. If **result.ParentIPBlockRecordId** is not 0, call GetIPBlockFromTable with following parameters:

    1. *Param_blockId* is set to result. **ParentIPBlockRecordId**.

    2. Param_addressfamily is set to **GetBlockHierarchyForRangeId.addressFamily**.

5. If **result** is not null, perform the following steps:

    1. Enumerate the rows in **ADM_IPBlocksTable** which meet all the following condition:

        1. StartIPAddress <= **result.StartIPAddress**.

        2. EndIPAddress >= **result.EndIPAddress**.

        3. refixLength <= **result.PrefixLength**.

    2. Arrange the resulting rows in ascending order of StartIPAddress, EndIPAddress and PrefixLength.

    3. Retrieve the IPBlock data for all the rows using their RecordId and using the GetIPBlockFromTable procedure of **ADM_IPBlocksTable**.

3.3.4.60.1 Messages

3.3.4.60.1.1 IIpamServer_GetBlockHierarchyForRangeId_InputMessage

This is the request for the GetBlockHierarchyForRangeId operation.

```
<wsdl:message name="IIpamServer_GetBlockHierarchyForRangeId_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForRangeId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForRangeId
```

The body of the SOAP message MUST contain the GetBlockHierarchyForRangeId element.

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3.3.4.60.1.2 IIpamServer_GetBlockHierarchyForRangeId_OutputMessage

This is the response for the GetBlockHierarchyForRangeId operation.

```
<wsdl:message name="IIpamServer_GetBlockHierarchyForRangeId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForRangeIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForRangeIdResponse
```

The body of the SOAP message MUST contain the GetBlockHierarchyForRangeIdResponse element.

3.3.4.60.2 Elements

3.3.4.60.2.1 GetBlockHierarchyForRangeId

This element specifies the input values for the GetBlockHierarchyForRangeId operation.

```
<xs:element name="GetBlockHierarchyForRangeId">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="rangeId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.60.2.2 GetBlockHierarchyForRangeIdResponse

This element specifies the output values for the GetBlockHierarchyForRangeId operation.

```
<xs:element name="GetBlockHierarchyForRangeIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBlockHierarchyForRangeIdResult" nillable="true"
type="ipam:ArrayOfIPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.61 GetBlockHierarchyForSubnetId

This operation retrieves the address block hierarchy for an address block to which a specified subnet maps.

```
<wsdl:operation name="GetBlockHierarchyForSubnetId">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForSubnetId"
message="ipam:IIpamServer_GetBlockHierarchyForSubnetId_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForSubnetIdResponse"
message="ipam:IIpamServer_GetBlockHierarchyForSubnetId_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBlockHierarchyForSubnetId_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetBlockHierarchyForSubnetId_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the subnet corresponding to the **GetBlockHierarchyForSubnetId.subnetId** by calling the procedure GetSubnetById for **ADM_SubnetTable**, passing the following parameters:
    1. Set *Param_SubnetId* to **GetBlockHierarchyForSubnetId.subnetId**.
    2. Assign output Result_Subnets to result.
2. Initialize **GetBlockHierarchyForSubnetIdResponse.GetBlockHierarchyForSubnetIdResult** to NULL.
3. If **result.ParentIPBlockRecordId** is not 0, call the procedure GetIPBlockFromTable by passing the following values as input parameters:
    1. *Param_blockId* is set to **result.ParentIPBlockId**.
    2. **Param_addressfamily** is set to **GetBlockHierarchyForSubnetId.addressFamily**.
    3. Assign output result to result.
4. If the result is not NULL, perform the following steps:
    1. Enumerate the rows in **ADM_IPBlocksTable** that meet all the following conditions:
        - StartIPAddress <= **result.StartIPAddress**.
        - EndIPAddress >= **result.EndIPAddress**.
        - PrefixLength <= **result.PrefixLength**.
    2. Arrange the resulting rows in ascending order of StartIPAddress, EndIPAddress, and PrefixLength.
    3. Retrieve the IPBlock data for all the rows using their RecordId and using the **GetIPBlockFromTable** procedure of **ADM_IPBlocksTable**.
    4. The collection of IPBlock data hence obtained will become the block hierarchy for the address block that the specified address range maps to. Assign this collection of IPBlock data to **GetBlockHierarchyForSubnetIdResponse.GetBlockHierarchyForSubnetIdResult**.

3.3.4.61.1 Messages

3.3.4.61.1.1 IIpamServer_GetBlockHierarchyForSubnetId_InputMessage

This is the request for the GetBlockHierarchyForRangeId operation.

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```
<wsdl:message name="IIpamServer_GetBlockHierarchyForSubnetId_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForSubnetId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForSubnetId
```

The body of the SOAP message MUST contain the GetBlockHierarchyForSubnetId element.

3.3.4.61.1.2 IIpamServer_GetBlockHierarchyForSubnetId_OutputMessage

This is the response for the GetBlockHierarchyForSubnetId operation.

```
<wsdl:message name="IIpamServer_GetBlockHierarchyForSubnetId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForSubnetIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForSubnetIdResponse
```

The body of the SOAP message MUST contain the GetBlockHierarchyForSubnetIdResponse element.

3.3.4.61.2 Elements

3.3.4.61.2.1 GetBlockHierarchyForSubnetId

This element specifies the input values for the GetBlockHierarchyForSubnetId operation.

```
<xs:element name="GetBlockHierarchyForSubnetId">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subnetId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

subnetId: The RecordId for the subnet corresponding to which the block hierarchy is to be retrieved.

addressFamily: The address family of the IP blocks that form the hierarchy.

3.3.4.61.2.2 GetBlockHierarchyForSubnetIdResponse

This element specifies the output values for the GetBlockHierarchyForSubnetId operation.

```
<xs:element name="GetBlockHierarchyForSubnetIdResponse">
  <xs:complexType>
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" name="GetBlockHierarchyForSubnetIdResult" nillable="true"
type="ipam:ArrayOfIPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetBlockHierarchyForSubnetIdResult: An array of IP blocks that specifies the block hierarchy for this subnet. This is null in case there is no parent block for the given subnet.

3.3.4.62 GetBlocksByIds

This operation can be used to retrieve the address block data for a specified set of record identifiers.

```
<wsdl:operation name="GetBlocksByIds">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlocksByIds"
message="ipam:IIpamServer_GetBlocksByIds_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlocksByIdsResponse"
message="ipam:IIpamServer_GetBlocksByIds_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBlocksByIds_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetBlocksByIds_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Initialize **GetBlocksByIdsResponse.GetBlocksByIdsResult**.
2. For each of the recordId specified in **GetBlocksByIds.ids**, perform the following:
    1. Call the procedure GetIPBlockFromTable of **ADM_IPBlocksTable** by passing the following parameters:
        - *Param_blockId* is set to recordId.
        - *Param_addressfamily* is set to **GetBlocksByIds.addressFamily**.
    2. If the **result** is not null, add it to **GetBlocksByIdsResponse.GetBlocksByIdsResult**.

3.3.4.62.1 Messages

3.3.4.62.1.1 IIpamServer_GetBlocksByIds_InputMessage

This is the request for the GetBlocksByIds operation.

```
<wsdl:message name="IIpamServer_GetBlocksByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlocksByIds" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlocksByIds
```


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The body of the SOAP message MUST contain the GetBlocksByIds element.

3.3.4.62.1.2 IIpamServer_GetBlocksByIds_OutputMessage

This is the response for the GetBlocksByIds operation.

```
<wsdl:message name="IIpamServer_GetBlocksByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlocksByIdsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlocksByIdsResponse
```

The body of the SOAP message MUST contain the GetBlocksByIdsResponse element.

3.3.4.62.2 Elements

3.3.4.62.2.1 GetBlocksByIds

This element specifies the input values for the GetBlocksByIds operation.

```
<xs:element name="GetBlocksByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.62.2.2 GetBlocksByIdsResponse

This element specifies the output values for the GetBlocksByIds operation.

```
<xs:element name="GetBlocksByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBlocksByIdsResult" nillable="true"
type="ipam:ArrayOfIPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.63 GetBlockUtilization

This operation can be used to retrieve the address block utilization.

```
<wsdl:operation name="GetBlockUtilization">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockUtilization"
message="ipam:IIpamServer_GetBlockUtilization_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockUtilizationResponse"
message="ipam:IIpamServer_GetBlockUtilization_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBlockUtilization_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetBlockUtilization_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **GetBlockUtilization.addressFamily** is InternetV6, **GetBlockUtilization.requestedIPUtilizationType** MUST be **IPUtilizationType.Current**. Otherwise return an appropriate SOAP fault.
2. Call GetIPBlockFromTable procedure in **ADM_IPBlocksTable** passing the following parameters:
   - **GetBlockUtilization.blockRecordId** is passed as *Param_blockId*.
   - **GetBlockUtilization.addressFamily** is passed as *Param_addressfamily*.
3. Initialize **GetBlockUtilizationResponse.GetBlockUtilizationResult** with IPCumulativeUtilization.
4. If **GetBlockUtilization.requestedIPUtilizationType** is **IPUtilizationType.Current**, copy **result.UtilizationStatistics** to **GetBlockUtilizationResponse.GetBlockUtilizationResult.IPUtilization**.
5. Call the procedure GetBlockUtilization in **ADM_IPv4AddressBlockUtilizationTable** by passing the following parameters:
   - *Param_id* is set to **GetBlockUtilization.blockRecordId**.
   - *Param_addressfamily* is set to **GetBlockUtilization.addressFamily**.
   - *Param_utilizationType* is set to the value of **GetBlockUtilization.requestedIPUtilizationType**.
   - *Param_startDate* is set to the value of **GetBlockUtilization.startDate**.
   - *Param_endDate* is set to the value of **GetBlockUtilization.endDate**.
6. Assign **result.IPUtilization** to **GetBlockUtilizationResponse.GetBlockUtilizationResult.IPUtilization**.

3.3.4.63.1 Messages

3.3.4.63.1.1 IIpamServer_GetBlockUtilization_InputMessage

This is the request for the GetBlockUtilization operation.

```
<wsdl:message name="IIpamServer_GetBlockUtilization_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockUtilization" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockUtilization
```

The body of the SOAP message MUST contain the GetBlockUtilization element.

3.3.4.63.1.2 IIpamServer_GetBlockUtilization_OutputMessage

This is the response for the GetBlockUtilization operation.

```
<wsdl:message name="IIpamServer_GetBlockUtilization_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBlockUtilizationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBlockUtilizationResponse
```

The body of the SOAP message MUST contain the GetBlockUtilizationResponse element.

3.3.4.63.2 Elements

3.3.4.63.2.1 GetBlockUtilization

This element specifies the input values for the GetBlockUtilization operation.

```
<xs:element name="GetBlockUtilization">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="blockRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="requestedIPUtilizationType"
type="ipam:IPUtilizationType" />
      <xs:element minOccurs="0" name="startDate" nillable="true" type="xsd:dateTime" />
      <xs:element minOccurs="0" name="endDate" nillable="true" type="xsd:dateTime" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.63.2.2 GetBlockUtilizationResponse

This element specifies the output values for the GetBlockUtilization operation.

```
<xs:element name="GetBlockUtilizationResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBlockUtilizationResult" nillable="true"
type="ipam:IPCumulativeUtilization" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.64 GetBuiltInCustomField

This operation is used to get the **CustomField** data corresponding to the specified enum value of the **BuiltInCustomField** from the IPAM data store.

```
<wsdl:operation name="GetBuiltInCustomField">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInCustomField"
message="ipam:IIpamServer_GetBuiltInCustomField_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInCustomFieldResponse"
message="ipam:IIpamServer_GetBuiltInCustomField_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBuiltInCustomField_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetBuiltInCustomField_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate that the value of **GetBuiltInCustomField.builtInCustomField** is within the valid values for this enumeration **BuiltInCustomField**, else an appropriate SOAP fault MUST be returned.

2. Enumerate the row in the **ADM_CustomFieldsTable** to whose **CustomFieldDetails.BuiltinCustomFieldNumber** is same as the value of **GetBuiltInCustomField.builtInCustomField** enum specified in the input parameter.

3. Call the GetCustomField procedure of **ADM_CustomFieldsTable** by passing the RecordId of the row as parameter *Param_Id*. Assign Result_customField to **GetBuiltInCustomFieldResponse.GetBuiltInCustomFieldResult**.

3.3.4.64.1 Messages

3.3.4.64.1.1 IIpamServer_GetBuiltInCustomField_InputMessage

This is the request for the GetBuiltInCustomField operation.

```
<wsdl:message name="IIpamServer_GetBuiltInCustomField_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBuiltInCustomField" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInCustomField
```

The body of the SOAP message MUST contain the GetBuiltInCustomField element.

3.3.4.64.1.2 IIpamServer_GetBuiltInCustomField_OutputMessage

This is the response for the GetBuiltInCustomField operation.

```
<wsdl:message name="IIpamServer_GetBuiltInCustomField_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBuiltInCustomFieldResponse" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInCustomFieldResponse
```

The body of the SOAP message MUST contain the GetBuiltInCustomFieldResponse element.

3.3.4.64.2 Elements

3.3.4.64.2.1 GetBuiltInCustomField

This element specifies the input values for the GetBuiltInCustomField operation.

```
<xs:element name="GetBuiltInCustomField">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="builtInCustomField" type="ipam:BuiltInCustomField" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.64.2.2 GetBuiltInCustomFieldResponse

This element specifies the output values for the GetBuiltInCustomField operation.

```
<xs:element name="GetBuiltInCustomFieldResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBuiltInCustomFieldResult" nillable="true"
type="ipam:CustomField" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.65 GetBuiltInLogicalGroup

This operation can be used to retrieve a built-in logical group.

```
<wsdl:operation name="GetBuiltInLogicalGroup">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInLogicalGroup"
message="ipam:IIpamServer_GetBuiltInLogicalGroup_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInLogicalGroupResponse"
message="ipam:IIpamServer_GetBuiltInLogicalGroup_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetBuiltInLogicalGroup_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetBuiltInLogicalGroup_OutputMessage message.

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In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Enumerate the row in **ADM_LogicalGroupsTable** that meets the following criteria:
   - **LogicalGroupDetails.BuiltinLogicalGroupNumber** is equal to **GetBuiltInLogicalGroup.builtInLogicalGroup**.
2. Call the procedure GetLogicalGroupFromTable with the following parameters:
   - *Param_Id* is assigned the value of RecordId of the enumerated row.
   - *Param_groupType* is assigned the value of **GetBuiltInLogicalGroup.groupType**.
   - *Param_addressFamily* is assigned the value of **GetBuiltInLogicalGroup.addressFamily**.
3. Copy the LogicalGroup present in Result_logicalGroup to **GetBuiltInLogicalGroupResponse.GetBuiltInLogicalGroupResult**.
4. If the **GetBuiltinLogicalGroup.groupType** is **LogicalGroupType.Range**, call the procedure GetUtilizationForLogicalGroup passing **GetBuiltInLogicalGroupResponse.GetBuiltInLogicalGroupResult** as *Param_logicalGroup* and **GetBuiltInLogicalGroup.addressFamily** as *Param_addressfamily*. Assign Result_utilization to **GetBuiltInLogicalGroupResponse.GetBuiltInLogicalGroupResult.UtilizationStatistics**.

3.3.4.65.1 Messages

3.3.4.65.1.1 IIpamServer_GetBuiltInLogicalGroup_InputMessage

This is the request for the GetBuiltInLogicalGroup operation.

```
<wsdl:message name="IIpamServer_GetBuiltInLogicalGroup_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetBuiltInLogicalGroup" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInLogicalGroup
```

The body of the SOAP message MUST contain the GetBuiltInLogicalGroup element.

3.3.4.65.1.2 IIpamServer_GetBuiltInLogicalGroup_OutputMessage

This is the response for the GetBuiltInLogicalGroup operation.

```
<wsdl:message name="IIpamServer_GetBuiltInLogicalGroup_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetBuiltInLogicalGroupResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInLogicalGroupResponse
```


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The body of the SOAP message MUST contain the GetBuiltInLogicalGroupResponse element.

3.3.4.65.2 Elements

3.3.4.65.2.1 GetBuiltInLogicalGroup

This element specifies the input values for the GetBuiltInLogicalGroup operation.

```
<xs:element name="GetBuiltInLogicalGroup">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="builtInLogicalGroup" type="ipam:BuiltInLogicalGroup" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="groupType" type="ipam:LogicalGroupType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.65.2.2 GetBuiltInLogicalGroupResponse

This element specifies the output values for the GetBuiltInLogicalGroup operation.

```
<xs:element name="GetBuiltInLogicalGroupResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetBuiltInLogicalGroupResult" nillable="true"
type="ipam:LogicalGroup" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.66 GetCommonPropertyValue

This operation can be used to retrieve the global property being requested.

```
<wsdl:operation name="GetCommonPropertyValue">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValue"
message="ipam:IIpamServer_GetCommonPropertyValue_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValueResponse"
message="ipam:IIpamServer_GetCommonPropertyValue_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetCommonPropertyValue_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetCommonPropertyValue_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Retrieve the value corresponding to the property specified as **GetCommonPropertyValue.property** from **ADM_CommonProperties** and assign it to **GetCommonPropertyValueResponse.GetCommonPropertyValueResult**.

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3.3.4.66.1 Messages

3.3.4.66.1.1 IIpamServer_GetCommonPropertyValue_InputMessage

This is the request for the GetCommonPropertyValue operation.

```
<wsdl:message name="IIpamServer_GetCommonPropertyValue_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetCommonPropertyValue" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValue
```

The body of the SOAP message MUST contain the GetCommonPropertyValue element.

3.3.4.66.1.2 IIpamServer_GetCommonPropertyValue_OutputMessage

This is the response for the GetCommonPropertyValue operation.

```
<wsdl:message name="IIpamServer_GetCommonPropertyValue_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetCommonPropertyValueResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValueResponse
```

The body of the SOAP message MUST contain the GetCommonPropertyValueResponse element.

3.3.4.66.2 Elements

3.3.4.66.2.1 GetCommonPropertyValue

This element specifies the input values for the GetCommonPropertyValue operation.

```
<xs:element name="GetCommonPropertyValue">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="commonProperty" type="ipam:CommonProperties" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.66.2.2 GetCommonPropertyValueResponse

This element specifies the output values for the GetCommonPropertyValue operation.

```
<xs:element name="GetCommonPropertyValueResponse">
  <xs:complexType>
```


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```
    <xs:sequence>
      <xs:element minOccurs="0" name="GetCommonPropertyValueResult" nillable="true"
type="xsd:string" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.67 GetCurrentDatabaseConfiguration

This operation is used to retrieve the configuration details of the currently provisioned database for the IPAM deployment.

```
<wsdl:operation name="GetCurrentDatabaseConfiguration">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCurrentDatabaseConfiguration"
message="ipam:IIpamServer_GetCurrentDatabaseConfiguration_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCurrentDatabaseConfigurationRespons
e" message="ipam:IIpamServer_GetCurrentDatabaseConfiguration_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetCurrentDatabaseConfiguration_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetCurrentDatabaseConfiguration_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Call GetDatabaseConfiguration method of **ADM_IPAMDatabaseConfiguration**. The returned ipam:IpamDatabaseConfiguration object is passed in the response message.

3.3.4.67.1 Messages

3.3.4.67.1.1 IIpamServer_GetCurrentDatabaseConfiguration_InputMessage

The IIpamServer_GetCurrentDatabaseConfiguration_InputMessage message initiates the GetCurrentDatabaseConfiguration WSDL operation.

```
<wsdl:message name="IIpamServer_GetCurrentDatabaseConfiguration_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetCurrentDatabaseConfiguration" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetCurrentDatabaseConfiguration
```

The body of the SOAP message MUST contain the GetCurrentDatabaseConfiguration element.

3.3.4.67.1.2 IIpamServer_GetCurrentDatabaseConfiguration_OutputMessage

The IIpamServer_GetCurrentDatabaseConfiguration_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetCurrentDatabaseConfiguration_InputMessage message.

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```
<wsdl:message name="IIpamServer_GetCurrentDatabaseConfiguration_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetCurrentDatabaseConfigurationResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetCurrentDatabaseConfigurationResponse
```

The body of the SOAP message MUST contain the GetCurrentDatabaseConfigurationResponse element.

3.3.4.67.2 Elements

3.3.4.67.2.1 GetCurrentDatabaseConfiguration

The GetCurrentDatabaseConfiguration element contains the input data for the GetCurrentDatabaseConfiguration operation.

```
<xs:element name="GetCurrentDatabaseConfiguration">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

This element is empty.

3.3.4.67.2.2 GetCurrentDatabaseConfigurationResponse

The GetCurrentDatabaseConfigurationResponse element contains the output data for the GetCurrentDatabaseConfiguration operation.

```
<xs:element name="GetCurrentDatabaseConfigurationResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetCurrentDatabaseConfigurationResult" nillable="true"
type="ipam:IpamDatabaseConfiguration" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.68 GetCustomFieldById

This operation is used to get the **CustomField** object corresponding to the specified **Record Identifier**.

```
<wsdl:operation name="GetCustomFieldById">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCustomFieldById"
message="ipam:IIpamServer_GetCustomFieldById_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCustomFieldByIdResponse"
message="ipam:IIpamServer_GetCustomFieldById_OutputMessage" />
```


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```
</wsdl:operation>
```

Upon receiving the IIpamServer_GetCustomFieldById_InputMessage request message, the server performs the following processing steps. Upon successful completion of these step, the server MUST respond with the IIpamServer_GetCustomFieldById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate that the value of **GetCustomFieldById.id** is not equal to 0, else an appropriate SOAP fault MUST be returned.
2. Call the GetCustomField procedure of **ADM_CustomFieldsTable** where the input parameter *Param_id* is assigned the value of **GetCustomFieldById.id**.
3. Assign the Result_customField returned by the previous procedure call to **GetCustomFieldByIdResponse.GetCustomFieldByIdResult**.

3.3.4.68.1 Messages

3.3.4.68.1.1 IIpamServer_GetCustomFieldById_InputMessage

This is the request for the GetCustomFieldById operation.

```
<wsdl:message name="IIpamServer_GetCustomFieldById_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetCustomFieldById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetCustomFieldById
```

The body of the SOAP message MUST contain the GetCustomFieldById element.

3.3.4.68.1.2 IIpamServer_GetCustomFieldById_OutputMessage

This is the response for the GetCustomFieldById operation.

```
<wsdl:message name="IIpamServer_GetCustomFieldById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetCustomFieldByIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetCustomFieldByIdResponse
```

The body of the SOAP message MUST contain the GetCustomFieldByIdResponse element.

3.3.4.68.2 Elements

3.3.4.68.2.1 GetCustomFieldById

This element specifies the input values for the GetCustomFieldById operation.

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```
<xs:element name="GetCustomFieldById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.68.2.2 GetCustomFieldByIdResponse

This element specifies the output values for the GetCustomFieldById operation.

```
<xs:element name="GetCustomFieldByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetCustomFieldByIdResult" nillable="true"
type="ipam:CustomField" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.69 GetDefaultProviderAddressSpaceRecordId

This operation is used to retrieve the utilization data for a specified address range.

```
<wsdl:operation name="GetDefaultProviderAddressSpaceRecordId">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDefaultProviderAddressSpaceRecordId
" message="ipam:IIpamServer_GetDefaultProviderAddressSpaceRecordId_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDefaultProviderAddressSpaceRecordId
Response" message="ipam:IIpamServer_GetDefaultProviderAddressSpaceRecordId_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetDefaultProviderAddressSpaceRecordId_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetDefaultProviderAddressSpaceRecordId_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get all the rows from the Provider address space-specific table from **ADM_AddressSpaceTable**.
2. If IsDefault is set to true, set this RecordId to **GetDefaultProviderAddressSpaceRecordIdResponse.GetDefaultProviderAddressSpaceRecordIdResult**.

3.3.4.69.1 Messages

3.3.4.69.1.1 IIpamServer_GetDefaultProviderAddressSpaceRecordId_InputMessage

This is the request for the GetDefaultProviderAddressSpaceRecordId operation.

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```
<wsdl:message name="IIpamServer_GetDefaultProviderAddressSpaceRecordId_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetDefaultProviderAddressSpaceRecordId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetDefaultProviderAddressSpaceRecordId
```

The body of the SOAP message MUST contain the GetDefaultProviderAddressSpaceRecordId element.

3.3.4.69.1.2 IIpamServer_GetDefaultProviderAddressSpaceRecordId_OutputMessage

This is the response for the GetDefaultProviderAddressSpaceRecordId operation.

```
<wsdl:message name="IIpamServer_GetDefaultProviderAddressSpaceRecordId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetDefaultProviderAddressSpaceRecordIdResponse"
/>
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetDefaultProviderAddressSpaceRecordIdResponse
```

The body of the SOAP message MUST contain the GetDefaultProviderAddressSpaceRecordIdResponse element.

3.3.4.69.2 Elements

3.3.4.69.2.1 GetDefaultProviderAddressSpaceRecordId

This element specifies the input values for the GetDefaultProviderAddressSpaceRecordId operation.

```
<xs:element name="GetDefaultProviderAddressSpaceRecordId">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

This element is empty.

3.3.4.69.2.2 GetDefaultProviderAddressSpaceRecordIdResponse

This element specifies the output values for the GetDefaultProviderAddressSpaceRecordId operation.

```
<xs:element name="GetDefaultProviderAddressSpaceRecordIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetDefaultProviderAddressSpaceRecordIdResult"
nillable="true" type="xsd:long" />
```


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```
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.70 GetDhcpReservationOptions

This operation is used to retrieve the option definition and value configured corresponding to a given IPv4 or IPv6 reservation.

```
<wsdl:operation name="GetDhcpReservationOptions"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDhcpReservationOptions"
message="ipam:IIpamServer_GetDhcpReservationOptions_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDhcpReservationOptionsResponse"
message="ipam:IIpamServer_GetDhcpReservationOptions_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetDhcpReservationOptions_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetDhcpReservationOptions_OutputMessage message. In the event of a failure, a SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the following condition is not satisfied, an appropriate SOAP fault MUST be generated:
   - **GetDhcpReservationOptions.Reservation** = NULL.
2. Initialize temp data store Result_options with a collection of **DhcpOption**.
3. Enumerate the rows in **ADM_DhcpOptionsTable** meeting the following criteria:
   - ReservationId is equal to **GetDhcpReservationOptions.Reservation.RecordId**.
4. For each of the rows, perform the following steps:
   - If the **GetDhcpReservationOptions.Reservation.addressfamily** is Internet, create an instance of **DhcpOptionV4**. Otherwise, if the *Param_addressfamily* is InternetV6, create an instance of **DhcpOptionV6**, and add it to Result_options. Fill the values as follows:
     1. Assign OptionReferenceType to **DhcpOption.OptionOwnerType**.
     2. Assign RecordId to **DhcpOption.RecordId**.
     3. Call the procedure GetUserClassFromServer in **ADM_DHCPServersTable** passing the following parameters:
        1. *Param_addressfamily*.
        2. *Param_ServerRecordId* is set to ServerRecordId.
        3. *Param_UserClassRecordId* is set to UserClassRecordId.
     4. Assign the Result_userClass to **DhcpOption.UserClass**.

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5. Call the procedure GetOptionDefinitionFromServer in **ADM_DHCPServersTable** passing the following parameters:

    1. *Param_addressfamily*.

    2. *Param_ServerRecordId* is set to ServerRecordId.

    3. *Param_OptionDefinitionId* is set to OptionDefinitionRecordId.

6. Assign the Result_optionDefinition to **DhcpOption.OptionDefinition**.

7. Based on **DhcpOption.OptionDefinition.OptionType** and **DhcpOption.OptionDefinition.OptionCollectionType**, assign Values to **DhcpOption.Values** by converting the binary data into the type specified by OptionType.

5. Set **GetDhcpReservationOptionsResponse.GetDhcpReservationOptionsResult** as Result_Options.

3.3.4.70.1 Messages

3.3.4.70.1.1 IIpamServer_GetDhcpReservationOptions_InputMessage

The IIpamServer_GetDhcpReservationOptions_InputMessage message initiates the GetDhcpReservationOptions WSDL operation.

```
<wsdl:message name="IIpamServer_GetDhcpReservationOptions_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetDhcpReservationOptions" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetDhcpReservationOptions
```

The body of the SOAP message MUST contain the GetDhcpReservationOptions element.

3.3.4.70.1.2 IIpamServer_GetDhcpReservationOptions_OutputMessage

This is the response for the GetDhcpReservationOptions operation.

```
<wsdl:message name="IIpamServer_GetDhcpReservationOptions_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetDhcpReservationOptionsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetDhcpReservationOptionsResponse
```

The body of the SOAP message MUST contain the GetDhcpReservationOptionsResponse element.

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3.3.4.70.2 Elements

3.3.4.70.2.1 GetDhcpReservationOptions

The GetDhcpReservationOptions element contains the input data for the DeleteIPv4Reservation operation.

```
<xs:element name="GetDhcpReservationOptions" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="Reservation" nillable="true"
type="ipam:DhcpReservation" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.70.2.2 GetDhcpReservationOptionsResponse

The GetDhcpReservationOptionsResponse element contains the output data for the GetDhcpReservationOptions operation.

```
<xs:element name="GetDhcpReservationOptionsResponse"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetDhcpReservationOptionsResult" nillable="true"
type="ipam:DhcpOptionCollection" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.71 GetDiscoveryConfig

This operation can be used to retrieve the discovery configuration information from the IPAM data store.

```
<wsdl:operation name="GetDiscoveryConfig">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDiscoveryConfig"
message="ipam:IIpamServer_GetDiscoveryConfig_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDiscoveryConfigResponse"
message="ipam:IIpamServer_GetDiscoveryConfig_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetDiscoveryConfig_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetDiscoveryConfig_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. The **GetDiscoveryConfig.filter** specifies a collection of unique filter conditions that is used to retrieve the DiscoveryConfig rows. If **GetDiscoveryConfig.filter** is NULL, all the rows are returned. The key specifies the field on which the condition is applied and the value specifies the value to look for, while enumerating the rows in the table.

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1. If the key is **GetDiscoveryConfigFilter.ConfigurationStatus**, the value MUST specify the ADDomainConfigurationStatus enumeration. The supported values of ADDomainConfigurationStatus for filtering are Configured and NotConfigured. The filter condition specifies the value of the ADDomainConfigurationStatus that is used to filter the rows in **ADM_DiscoveryConfigurationTable**.
2. If the key is **GetDiscoveryConfigFilter.ADDomainName**, the value MUST specify a string specifying the domain name for which the DiscoveryConfig data is requested. The filter condition specifies the value of DiscoveryDomain that is used to filter the rows in **ADM_DiscoveryConfigurationTable**.
3. If the key is **GetDiscoveryConfigFilter.ADDomainGuid**, the value MUST specify the domain GUID in the form of string for which the DiscoveryConfig data is requested. The filter condition specifies the value of DomainGuid that is used to filter the rows in the **ADM_DiscoveryConfigurationTable**.

2. Enumerate the rows in **ADM_DiscoveryConfigurationTable** which meet the filter condition as specified in **GetDiscoveryConfig.filter**. For each row in the table, perform the following steps.
   1. Create a new instance of DiscoveryConfig and assign the following values from the row.
      - RecordId
      - DomainGuid
      - ADDomainConfigurationStatus
      - DiscoveryDomain
      - DiscoverDhcpServers
      - DiscoverDnsServers
      - DiscoverDomainControllers.
   2. Add the DiscoveryConfig instance to **GetDiscoveryConfigResponse.GetDiscoveryConfigResult**.

3.3.4.71.1 Messages

3.3.4.71.1.1 IIpamServer_GetDiscoveryConfig_InputMessage

This is the request for the GetDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_GetDiscoveryConfig_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetDiscoveryConfig" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetDiscoveryConfig
```

The body of the SOAP message MUST contain the GetDiscoveryConfig element.

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3.3.4.71.1.2 IIpamServer_GetDiscoveryConfig_OutputMessage

This is the response for the GetDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_GetDiscoveryConfig_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetDiscoveryConfigResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetDiscoveryConfigResponse
```

The body of the SOAP message MUST contain the GetDiscoveryConfigResponse element.

3.3.4.71.2 Elements

3.3.4.71.2.1 GetDiscoveryConfig

This element specifies the input values for the GetDiscoveryConfig operation.

```
<xs:element name="GetDiscoveryConfig">
  <xs:complexType>
    <xs:element minOccurs="0" name="filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
  </xs:complexType>
</xs:element>
```

3.3.4.71.2.2 GetDiscoveryConfigResponse

This element specifies the output values for the GetDiscoveryConfig operation.

```
<xs:element name="GetDiscoveryConfigResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetDiscoveryConfigResult" nillable="true"
type="ipam:ArrayOfDiscoveryConfig" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.72 GetFilters

This operation is used to get data for a collection of ipam:DhcpFilter from the IPAM data store.

```
<wsdl:operation name="GetFilters">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFilters"
message="ipam:IIpamServer_GetFilters_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFiltersResponse"
message="ipam:IIpamServer_GetFilters_OutputMessage" />
</wsdl:operation>
```


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The protocol client sends an IIpamServer_GetFilters_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetFilters_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Iteratively go through each object **GetFilters.filters** and store the object into **tempVar.filter**. Call procedure **GetFilterById** of **ADM_DhcpFilterTable** with parameter as **tempVar.filter.RecordId**. The returned **ipam:DhcpFilter** object is collected and passed in the output message.

3.3.4.72.1 Messages

3.3.4.72.1.1 IIpamServer_GetFilters_InputMessage

The IIpamServer_GetFilters_InputMessage message initiates the GetFilters WSDL operation.

```
<wsdl:message name="IIpamServer_GetFilters_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetFilters" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetFilters
```

The body of the SOAP message MUST contain the GetFilters element.

3.3.4.72.1.2 IIpamServer_GetFilters_OutputMessage

The IIpamServer_GetFilters_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetFilters_InputMessage message.

```
<wsdl:message name="IIpamServer_GetFilters_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetFiltersResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetFiltersResponse
```

The body of the SOAP message MUST contain the GetFiltersResponse element.

3.3.4.72.2 Elements

3.3.4.72.2.1 GetFilters

The GetFilters element contains the input data for the GetFilters operation.

```
<xs:element name="GetFilters">
  <xs:complexType>
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" name="filters" nillable="true" type="ipam:ArrayOfDhcpFilter"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.72.2.2 GetFiltersResponse

The GetFiltersResponse element contains the output data for the GetFilters operation.

```
<xs:element name="GetFiltersResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetFiltersResult" nillable="true"
type="ipam:ArrayOfDhcpFilter" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.73 GetFreeIPAddresses

This operation can be used to retrieve the IP addresses that are not present in the IPAM data store and that can potentially map to the specified IP range.

```
<wsdl:operation name="GetFreeIPAddresses">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddresses"
message="ipam:IIpamServer_GetFreeIPAddresses_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesResponse"
message="ipam:IIpamServer_GetFreeIPAddresses_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetFreeIPAddresses_InputMessage request message, the server performs the following processing steps. Upon successful completion of the following steps, the server MUST respond with the IIpamServer_GetFreeIPAddresses_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **GetFreeIPAddresses.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. Otherwise IPv6-specific tables are used for further processing.
2. Lookup the **ADM_IPRangeTable** for the row whose RecordId is equal to **GetFreeIPAddresses.rangeRecordId**.
3. Call the procedure GetIPRangeFromTable passing the RecordId of the row found as *Param_id* and addressfamily as *Param_addressfamily*. Store the result into **parentRange**.
4. If **parentRange.ManagedByValue** is MS DHCP, return NULL.
5. Lookup the **ADM_IPAddressTable** for the rows whose RangeRecordId is the same as **GetFreeIPAddresses. rangeRecordId**. Store these results in mappedIPAddresses.
6. If mappedIPAddresses exist, then iterate from **GetFreeIPAddresses.startIPAddress** to **GetFreeIPAddresses.endIPAddress** and check whether the IP Address is not in

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mappedIPAddresses. If it is not, add it to the GetFreeIPAddressesResponse.**GetFreeIPAddressesResult**. Continue the iteration until the number of IP Addresses in the result set is equal to **GetFreeIPAddresses.numFreeIPAddresses** or **GetFreeIPAddresses.endIPAddress** is reached.

7. If mappedIPAddresses do not exist, iterate from **GetFreeIPAddresses.startIPAddress** to **GetFreeIPAddresses.endIPAddress** and add the IP Address to the **GetFreeIPAddressesResponse.GetFreeIPAddressesResult** until the number of IP Addresses in the result set is equal to **GetFreeIPAddresses.numFreeIPAddresses** or until **GetFreeIPAddresses.endIPAddress** is reached.

3.3.4.73.1 Messages

3.3.4.73.1.1 IIpamServer_GetFreeIPAddresses_InputMessage

This is the request for the GetFreeIPAddresses operation.

```
<wsdl:message name="IIpamServer_GetFreeIPAddresses_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetFreeIPAddresses" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddresses
```

The body of the SOAP message MUST contain the GetFreeIpAddresses element.

3.3.4.73.1.2 IIpamServer_GetFreeIPAddresses_OutputMessage

This is the response for the GetFreeIPAddresses operation.

```
<wsdl:message name="IIpamServer_GetFreeIPAddresses_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetFreeIPAddressesResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesResponse
```

The body of the SOAP message MUST contain the GetFreeIPAddressesResponse element.

3.3.4.73.2 Elements

3.3.4.73.2.1 GetFreeIPAddresses

This element specifies the input values for the GetFreeIPAddresses operation.

```
<xs:element name="GetFreeIPAddresses">
  <xs:complexType>
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" name="rangeRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="startIPAddress" nillable="true" type="sysnet:IPAddress"
/>
      <xs:element minOccurs="0" name="endIPAddress" nillable="true" type="sysnet:IPAddress"
/>
      <xs:element minOccurs="0" name="numFreeIPAddresses" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.73.2.2 GetFreeIPAddressesResponse

This element specifies the output values for the GetFreeIPAddresses operation.

```
<xs:element name="GetFreeIPAddressesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetFreeIPAddressesResult" nillable="true"
type="sysnet:ArrayOfIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.74 GetFreeIPAddressesFromScope

This operation is used to get the list of the specified number of free IP Addresses in a specified scope.

```
<wsdl:operation name="GetFreeIPAddressesFromScope">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesFromScope"
message="ipam:IIpamServer_GetFreeIPAddressesFromScope_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesFromScopeResponse"
message="ipam:IIpamServer_GetFreeIPAddressesFromScope_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetFreeIPAddressesFromScope_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetFreeIPAddressesFromScope_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If any of the following conditions is not met, an appropriate SOAP fault MUST be generated as specified in section 2.2.2.1.
    1. **GetFreeIPAddressesFromScope.scope** is not NULL.
    2. **GetFreeIPAddressesFromScope.startIPAddress** is not NULL.
    3. **GetFreeIPAddressesFromScope.endIPAddress** is not NULL.
2. The List of IPAddresses is generated using **GetFreeIPAddressesFromScope.scope**, **GetFreeIPAddressesFromScope.startIPAddress** ,

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GetFreeIPAddressesFromScope.endIPAddress and **GetFreeIPAddressesFromScope.numAddresses**. The logic used to compile the list of free IP addresses in a scope is implementation-specific and outside the scope of this documentation.

3.3.4.74.1 Messages

3.3.4.74.1.1 IIpamServer_GetFreeIPAddressesFromScope_InputMessage

The IIpamServer_GetFreeIPAddressesFromScope_InputMessage message initiates the GetFreeIPAddressesFromScope WSDL operation.

```
<wsdl:message name="IIpamServer_GetFreeIPAddressesFromScope_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetFreeIPAddressesFromScope" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesFromScope
```

The body of the SOAP message MUST contain the GetFreeIPAddressesFromScope element.

3.3.4.74.1.2 IIpamServer_GetFreeIPAddressesFromScope_OutputMessage

The IIpamServer_GetFreeIPAddressesFromScope_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetFreeIPAddressesFromScope_InputMessage message.

```
<wsdl:message name="IIpamServer_GetFreeIPAddressesFromScope_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetFreeIPAddressesFromScopeResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesFromScopeResponse
```

The body of the SOAP message MUST contain the GetFreeIPAddressesFromScopeResponse element.

3.3.4.74.2 Elements

3.3.4.74.2.1 GetFreeIPAddressesFromScope

The GetFreeIPAddressesFromScope element contains the input data for the GetFreeIPAddressesFromScope operation.

```
<xs:element name="GetFreeIPAddressesFromScope">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="scope" nillable="true" type="ipam:DhcpScope" />
      <xs:element minOccurs="0" name="numAddresses" type="xsd:int" />
      <xs:element minOccurs="0" name="startIPAddress" nillable="true" type="sysnet:IPAddress"
/>
```


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```
      <xs:element minOccurs="0" name="endIPAddress" nillable="true" type="sysnet:IPAddress"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.74.2.2 GetFreeIPAddressesFromScopeResponse

The GetFreeIPAddressesFromScopeResponse element contains the output data for the GetFreeIPAddressesFromScope operation.

```
<xs:element name="GetFreeIPAddressesFromScopeResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetFreeIPAddressesFromScopeResult" nillable="true"
type="sysnet:ArrayOfIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.75 GetIPAddressById

This operation is used to get the IP address, having the specified record identifier from the IPAM data store.

```
<wsdl:operation name="GetIPAddressById">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressById"
message="ipam:IIpamServer_GetIPAddressById_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressByIdResponse"
message="ipam:IIpamServer_GetIPAddressById_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetIPAddressById_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetIPAddressById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **GetIPAddressById.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **GetIPAddressByIdResponse.GetIPAddressByIdResult** will consist of an **IpamIPv4Address**. Otherwise IPv6-specific tables are used for further processing. The **GetIPAddressByIdResponse.GetIPAddressByIdResult** will consist of an **IpamIPv6Address**.

2. If the **GetIPAddressById.Id** is not NULL and **GetIPAddressById.Id** is 0, return NULL.

3. Get the **IpamIPAddress** corresponding to the **GetIPAddressById.id** by calling the GetIPAddressFromTable procedure of the **ADM_IPAddressTable** passing the **GetIPAddressById.id** as *Param_id* input parameter and **GetIPAddressById.addressFamily** as the *Param_addressfamily* input parameter.

4. Add the returned address information in **result** to **GetIPAddressByIdResponse. GetIPAddressByIdResult**.

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3.3.4.75.1 Messages

3.3.4.75.1.1 IIpamServer_GetIPAddressById_InputMessage

This is the request for the GetIPAddressById operation.

```
<wsdl:message name="IIpamServer_GetIPAddressById_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPAddressById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressById
```

The body of the SOAP message MUST contain the GetIPAddressById element.

3.3.4.75.1.2 IIpamServer_GetIPAddressById_OutputMessage

This is the response for the GetIPAddressById operation.

```
<wsdl:message name="IIpamServer_GetIPAddressById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPAddressByIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressByIdResponse
```

The body of the SOAP message MUST contain the GetIPAddressByIdResponse element.

3.3.4.75.2 Elements

3.3.4.75.2.1 GetIPAddressById

This element specifies the input values for the GetIPAddressById operation.

```
<xs:element name="GetIPAddressById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="id" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.75.2.2 GetIPAddressByIdResponse

This element specifies the output values for the GetIPAddressById operation.

```
<xs:element name="GetIPAddressByIdResponse">
```


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```
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetIPAddressByIdResult" nillable="true"
type="ipam:IpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.76 GetIPAddressesByIds

This operation is used to retrieve the specified collection of IP address objects from the IPAM data store.

```
<wsdl:operation name="GetIPAddressesByIds">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressesByIds"
message="ipam:IIpamServer_GetIPAddressesByIds_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressesByIdsResponse"
message="ipam:IIpamServer_GetIPAddressesByIds_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetIPAddressesByIds_InputMessage request message, the server performs the following processing steps. Upon successful completion of the processing, the server MUST respond with an IIpamServer_GetIPAddressesByIds_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **GetIPAddressesByIds.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **GetIPAddressesByIdsResponse.GetIPAddressesByIdsResult** will consist of a collection of **IpamIPv4Address**. Otherwise IPv6-specific tables are used for further processing. The **GetIPAddressesByIdsResponse.GetIPAddressesByIdsResult** will consist of a collection of **IpamIPv6Address**.
2. If **GetIPAddressesByIds.Ids** is NULL, an appropriate SOAP fault MUST be returned.
3. If number of entries in **GetIPAddressesByIds.Ids** is 0, then return NULL.
4. Initialize the **GetIPAddressesByIdsResponse.GetIPAddressesByIdsResult** to an empty collection.
5. For each record identifier recordId in the **GetIPAddressesByIds.ids**:
    1. Get the IpamIPAddress corresponding to the recordId by calling the GetIPAddressFromTable procedure of the **ADM_IPAddressTable** passing the recordId as *Param_id* input parameter and **GetIPAddressesByIds.addressFamily** as the *Param_addressfamily* input parameter
    2. If the result address is obtained, add it to the **GetIPAddressesByIdsResponse.GetIPAddressesByIdsResult** collection.

3.3.4.76.1 Messages

3.3.4.76.1.1 IIpamServer_GetIPAddressesByIds_InputMessage

This is the request for the GetIPAddressesByIds operation.

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```
<wsdl:message name="IIpamServer_GetIPAddressesByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPAddressesByIds" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressesByIds
```

The body of the SOAP message MUST contain the GetIPAddressesByIds element.

3.3.4.76.1.2 IIpamServer_GetIPAddressesByIds_OutputMessage

This is the response for the GetIPAddressesByIds operation.

```
<wsdl:message name="IIpamServer_GetIPAddressesByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPAddressesByIdsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressesByIdsResponse
```

The body of the SOAP message MUST contain the GetIPAddressesByIdsResponse element.

3.3.4.76.2 Elements

3.3.4.76.2.1 GetIPAddressesByIds

This element specifies the input values for the GetIPAddressesByIds operation.

```
<xs:element name="GetIPAddressesByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.76.2.2 GetIPAddressesByIdsResponse

This element specifies the output values for the GetIPAddressesByIds operation.

```
<xs:element name="GetIPAddressesByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetIPAddressesByIdsResult" nillable="true"
type="ipam:ArrayOfIpamIPAddress" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.77 GetIpamTasksInfo

This operation can be used to enumerate the various IPAM tasks and their status.

```
<wsdl:operation name="GetIpamTasksInfo">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamTasksInfo"
message="ipam:IIpamServer_GetIpamTasksInfo_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamTasksInfoResponse"
message="ipam:IIpamServer_GetIpamTasksInfo_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetIpamTasksInfo_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetIpamTasksInfo_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. For each type of IPAM task specified by the IpamTaskType, create an instance of TaskInfo and copy the details of the specific task from **ADM_Tasks**.
2. Add the created instance to **GetIpamTasksInfoResponse.GetIpamTasksInfoResult**.

3.3.4.77.1 Messages

3.3.4.77.1.1 IIpamServer_GetIpamTasksInfo_InputMessage

This is the request for the GetIpamTasksInfo operation.

```
<wsdl:message name="IIpamServer_GetIpamTasksInfo_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetIpamTasksInfo" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIpamTasksInfo
```

The body of the SOAP message MUST contain the GetIpamTasksInfo element.

3.3.4.77.1.2 IIpamServer_GetIpamTasksInfo_OutputMessage

This is the response for the GetIpamTasksInfo operation.

```
<wsdl:message name="IIpamServer_GetIpamTasksInfo_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetIpamTasksInfoResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/GetIpamTasksInfoResponse
```

The body of the SOAP message MUST contain the GetIpamTasksInfoResponse element.

3.3.4.77.2 Elements

3.3.4.77.2.1 GetIpamTasksInfo

This element specifies the input values for the GetIpamTasksInfo operation.

```
<xs:element name="GetIpamTasksInfo">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.77.2.2 GetIpamTasksInfoResponse

This element specifies the output values for the GetIpamTasksInfo operation.

```
<xs:element name="GetIpamTasksInfoResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetIpamTasksInfoResult" nillable="true"
type="ipam:ArrayOfTaskInfo" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.78 GetIpamVersion

This operation can be used to retrieve the IPAM server version.

```
<wsdl:operation name="GetIpamVersion">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamVersion"
message="ipam:IIpamServer_GetIpamVersion_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamVersionResponse"
message="ipam:IIpamServer_GetIpamVersion_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServerIIpamConfigurationStatus_GetIpamVersion_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServerIIpamConfigurationStatus_GetIpamVersion_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

Set GetIpamVersionResponse.GetIpamVersionResult to the version of the IPAM server<4>

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3.3.4.78.1 Messages

3.3.4.78.1.1 IIpamServer_GetIpamVersion_InputMessage

This is the request for the GetIpamVersion operation.

```
<wsdl:message name="IIpamServer_GetIpamVersion_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetIpamVersion" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIpamVersion
```

The body of the SOAP message MUST contain the GetIpamVersion element.

3.3.4.78.1.2 IIpamServer_GetIpamVersion_OutputMessage

This is the response for the GetIpamVersion operation.

```
<wsdl:message name="IIpamServer_GetIpamVersion_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetIpamVersionResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIpamVersionResponse
```

The body of the SOAP message MUST contain the GetIpamVersionResponse element.

3.3.4.78.2 Elements

3.3.4.78.2.1 GetIpamVersion

This element specifies the input values for the GetIpamVersion operation.

```
<xs:element name="GetIpamVersion">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.78.2.2 GetIpamVersionResponse

This element specifies the output values for the GetIpamVersion operation.

```
<xs:element name="GetIpamVersionResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetIpamVersionResult" nillable="true"
type="sys:Version" />
```


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```
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.79 GetIPRangeById

This operation is used to retrieve the IPRange data having the specified record identifier.

```
<wsdl:operation name="GetIPRangeById">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangeById"
message="ipam:IIpamServer_GetIPRangeById_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangeByIdResponse"
message="ipam:IIpamServer_GetIPRangeById_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetIPRangeById_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetIPRangeById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the IPRange corresponding to the GetIPRangeById.id by calling the **GetIPRangeFromTable** procedure of the **ADM_IPRangeTable** passing the **GetIPRangeById.id** as **Param_id** input parameter and **GetIPRangeById.addressFamily** as the **Param_addressfamily** input parameter.
2. Assign the **result** returned by the above procedure call to **GetIPRangeByIdResponse.GetIPRangeByIdResult**.

3.3.4.79.1 Messages

3.3.4.79.1.1 IIpamServer_GetIPRangeById_InputMessage

This is the request for the GetIPRangeById operation.

```
<wsdl:message name="IIpamServer_GetIPRangeById_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPRangeById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangeById
```

The body of the SOAP message MUST contain the GetIPRangeById element.

3.3.4.79.1.2 IIpamServer_GetIPRangeById_OutputMessage

This is the response for the GetIPRangeById operation.

```
<wsdl:message name="IIpamServer_GetIPRangeById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPRangeByIdResponse" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangeByIdResponse
```

The body of the SOAP message MUST contain the GetIPRangeByIdResponse element.

3.3.4.79.2 Elements

3.3.4.79.2.1 GetIPRangeById

This element specifies the input values for the GetIPRangeById operation.

```
<xs:element name="GetIPRangeById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.79.2.2 GetIPRangeByIdResponse

This element specifies the output values for the GetIPRangeById operation.

```
<xs:element name="GetIPRangeByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetIPRangeByIdResult" nillable="true"
type="ipam:IPRange" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.80 GetIPRangesByIds

This operation is used to retrieve a set of range data specified by the collection of range record identifiers passed as input data for the message.

```
<wsdl:operation name="GetIPRangesByIds">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangesByIds"
message="ipam:IIpamServer_GetIPRangesByIds_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangesByIdsResponse"
message="ipam:IIpamServer_GetIPRangesByIds_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetIPRangesByIds_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetIPRangesByIds_OutputMessage message. In the

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event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Initialize the GetIPRangesByIdsResponse.GetIPRangesByIdsResult to an empty collection of key value pairs.
2. For each record identifier recordId in the GetIPRangesByIds.ids,
    1. Call the **GetIPRangeFromTable** procedure of **ADM_IPRangeTable** passing the recordId value as *Param_id* input parameter and **GetIPRangesByIds.addressFamily** as the *Param_addressfamily* input parameter.
    2. If the **result** address range is obtained, add it to the **GetIPRangesByIdsResponse.GetIPRangesByIdsResult** with the key being the **result.RecordId** and the value being the result itself.

3.3.4.80.1 Messages

3.3.4.80.1.1 IIpamServer_GetIPRangesByIds_InputMessage

This is the request for the GetIPRangesByIds operation.

```
<wsdl:message name="IIpamServer_GetIPRangesByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPRangesByIds" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangesByIds
```

The body of the SOAP message MUST contain the GetIPRangesByIds element.

3.3.4.80.1.2 IIpamServer_GetIPRangesByIds_OutputMessage

This is the response for the GetIPRangesByIds operation.

```
<wsdl:message name="IIpamServer_GetIPRangesByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetIPRangesByIdsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangesByIdsResponse
```

The body of the SOAP message MUST contain the GetIPRangesByIdsResponse element.

3.3.4.80.2 Elements

3.3.4.80.2.1 GetIPRangesByIds

This element specifies the input values for the GetIPRangesByIds operation.

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```
<xs:element name="GetIPRangesByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.80.2.2 GetIPRangesByIdsResponse

This element specifies the output values for the GetIPRangesByIds operation.

```
<xs:element name="GetIPRangesByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetIPRangesByIdsResult" nillable="true"
type="ipam:ArrayOfIPRange" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.81 GetLogicalGroupById

This operation can be used to query a logical group based on its RecordId.

```
<wsdl:operation name="GetLogicalGroupById">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupById"
message="ipam:IIpamServer_GetLogicalGroupById_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupByIdResponse"
message="ipam:IIpamServer_GetLogicalGroupById_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetLogicalGroupById_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetLogicalGroupById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If **GetLogicalGroupById.groupType** is **LogicalGroupType.Range**,

   - If **GetLogicalGroupById.addressFamily** is Internet, initialize **GetLogicalGroupByIdResponse.GetLogicalGroupByIdResult** to **IPv4RangeLogicalGroup**.
   - **If GetLogicalGroupById.addressFamily** is **InternetV6**, initialize **GetLogicalGroupByIdResponse.GetLogicalGroupByIdResult** to **IPv6RangeLogicalGroup**.

2. If **GetLogicalGroupById.groupType** is **LogicalGroupType.IPAddress**,

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- If **GetLogicalGroupById.addressFamily** is Internet, initialize **GetLogicalGroupByIdResponse.GetLogicalGroupByIdResult** to **IpamIPv4AddressLogicalGroup**.
- If **GetLogicalGroupById.addressFamily** is InternetV6, initialize **GetLogicalGroupByIdResponse.GetLogicalGroupByIdResult** to **IpamIPv6AddressLogicalGroup**.

3. If **GetLogicalGroupById.groupType** is **LogicalGroupType.ActiveServer**,
   - If **GetLogicalGroupById.addressFamily** is Internet, initialize **GetLogicalGroupByIdResponse.GetLogicalGroupByIdResult** to **ActiveServerV4LogicalGroup**.
   - If **GetLogicalGroupById.addressFamily** is InternetV6, initialize **GetLogicalGroupByIdResponse.GetLogicalGroupByIdResult** to **ActiveServerV6LogicalGroup**.
4. Call the procedure GetLogicalGroupFromTable with the following input parameters:
   - *Param_Id* is assigned the value of GetLogicalGroupById.id.
   - *Param_addressFamily* is assigned the value of GetLogicalGroupById.addressFamily.
   - *Param_groupType* is assigned the value of GetLogicalGroupById.addressFamily.
5. Copy the Result_logicalGroup into **GetLogicalGroupByIdResponse.GetLogicalGroupByIdResult**.

3.3.4.81.1 Messages

3.3.4.81.1.1 IIpamServer_GetLogicalGroupById_InputMessage

This is the request for the GetLogicalGroupById operation.

```
<wsdl:message name="IIpamServer_GetLogicalGroupById_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetLogicalGroupById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupById
```

The body of the SOAP message MUST contain the GetLogicalGroupById element.

3.3.4.81.1.2 IIpamServer_GetLogicalGroupById_OutputMessage

This is the response for the GetLogicalGroupById operation.

```
<wsdl:message name="IIpamServer_GetLogicalGroupById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetLogicalGroupByIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupByIdResponse
```

The body of the SOAP message MUST contain the GetLogicalGroupByIdResponse element.

3.3.4.81.2 Elements

3.3.4.81.2.1 GetLogicalGroupById

This element specifies the input values for the GetLogicalGroupById operation.

```
<xs:element name="GetLogicalGroupById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="groupType" type="ipam:LogicalGroupType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.81.2.2 GetLogicalGroupByIdResponse

This element specifies the output values for the GetLogicalGroupById operation.

```
<xs:element name="GetLogicalGroupByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetLogicalGroupByIdResult" nillable="true"
type="ipam:LogicalGroup" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.82 GetLogicalGroupUtilizationByPeriod

This operation can be used to get the utilization for a specified logical group node and during the given time period.

```
<wsdl:operation name="GetLogicalGroupUtilizationByPeriod">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByPeriod"
message="ipam:IIpamServer_GetLogicalGroupUtilizationByPeriod_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByPeriodResp
onse" message="ipam:IIpamServer_GetLogicalGroupUtilizationByPeriod_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetLogicalGroupUtilizationByPeriod_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetLogicalGroupUtilizationByPeriod_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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1. If **GetLogicalGroupUtilizationByPeriod.groupNode** is null or **GetLogicalGroupUtilizationByPeriod.groupType** is not **LogicalGroupType.Range**, an appropriate SOAP fault MUST be generated.

2. Call the procedure GetUtilizationTrendForLogicalGroupNode in **ADM_IPRangeTable** passing the following parameters:

   - *Param_logicalGroupNode* is assigned the value of **GetLogicalGroupUtilizationByPeriod.groupNode**.
   - *Param_addressfamily* is assigned the value of **GetLogicalGroupUtilizationByPeriod.addressFamily**.
   - *Param_utilizationType* is set to **IPUtilizationType.None**.
   - *Param_startDate* is assigned the value of **GetLogicalGroupUtilizationByPeriod.startDate**.
   - *Param_endDate* is assigned the value of **GetLogicalGroupUtilizationByPeriod.endDate**.

3. Assign Result_utilization to **GetLogicalGroupUtilizationByPeriodResponse.GetLogicalGroupUtilizationByPeriodResult**.

3.3.4.82.1 Messages

3.3.4.82.1.1 IIpamServer_GetLogicalGroupUtilizationByPeriod_InputMessage

This is the request for the GetLogicalGroupUtilizationByPeriod operation.

```
<wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByPeriod_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByPeriod" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByPeriod
```

The body of the SOAP message MUST contain the GetLogicalGroupUtilizationByPeriod element.

3.3.4.82.1.2 IIpamServer_GetLogicalGroupUtilizationByPeriod_OutputMessage

This is the response for the GetLogicalGroupUtilizationByPeriod operation.

```
<wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByPeriod_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByPeriodResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByPeriodResponse
```

The body of the SOAP message MUST contain the GetLogicalGroupUtilizationByPeriodResponse element.

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3.3.4.82.2 Elements

3.3.4.82.2.1 GetLogicalGroupUtilizationByPeriod

This element specifies the input values for the GetLogicalGroupUtilizationByPeriod operation.

```
<xs:element name="GetLogicalGroupUtilizationByPeriod">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="startDate" nillable="true" type="xsd:dateTime" />
      <xs:element minOccurs="0" name="endDate" nillable="true" type="xsd:dateTime" />
      <xs:element minOccurs="0" name="groupNode" nillable="true" type="ipam:LogicalGroupNode"
/>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="groupType" type="ipam:LogicalGroupType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.82.2.2 GetLogicalGroupUtilizationByPeriodResponse

This element specifies the output values for the GetLogicalGroupUtilizationByPeriod operation.

```
<xs:element name="GetLogicalGroupUtilizationByPeriodResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetLogicalGroupUtilizationByPeriodResult"
nillable="true" type="ipam:IPCumulativeUtilization" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.83 GetLogicalGroupUtilizationByType

This operation can be used to retrieve the logical group utilization based on the trend type requested.

```
<wsdl:operation name="GetLogicalGroupUtilizationByType">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByType"
message="ipam:IIpamServer_GetLogicalGroupUtilizationByType_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByTypeRespon
se" message="ipam:IIpamServer_GetLogicalGroupUtilizationByType_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetLogicalGroupUtilizationByType_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetLogicalGroupUtilizationByType_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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1. If **GetLogicalGroupUtilizationByType.groupNode** is null or **GetLogicalGroupUtilizationByType.groupType** is not **LogicalGroupType.Range**, an appropriate SOAP fault MUST be generated.
2. Call the procedure GetUtilizationTrendForLogicalGroupNode in **ADM_IPRangeTable** passing the following parameters:
   - *Param_logicalGroupNode* is assigned the value of **GetLogicalGroupUtilizationByType.groupNode**.
   - *Param_addressfamily* is assigned the value of **GetLogicalGroupUtilizationByType.addressFamily**.
   - *Param_utilizationType* is set to **GetLogicalGroupUtilizationByType.ipUtilizationType**.
   - *Param_startDate* is assigned the value of null.
   - *Param_endDate* is assigned the value of null.
3. Assign Result_utilization to **GetLogicalGroupUtilizationByPeriodResponse.GetLogicalGroupUtilizationByPeriodResult**.

3.3.4.83.1 Messages

3.3.4.83.1.1 IIpamServer_GetLogicalGroupUtilizationByType_InputMessage

This is the request for the GetLogicalGroupUtilizationByType operation.

```
<wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByType_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByType" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByType
```

The body of the SOAP message MUST contain the GetLogicalGroupUtilizationByType element.

3.3.4.83.1.2 IIpamServer_GetLogicalGroupUtilizationByType_OutputMessage

This is the response for the GetLogicalGroupUtilizationByType operation.

```
<wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByType_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByTypeResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByTypeResponse
```

The body of the SOAP message MUST contain the GetLogicalGroupUtilizationByTypeResponse element.

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3.3.4.83.2 Elements

3.3.4.83.2.1 GetLogicalGroupUtilizationByType

This element specifies the input values for the GetLogicalGroupUtilizationByType operation.

```
<xs:element name="GetLogicalGroupUtilizationByType">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipUtilizationType" type="ipam:IPUtilizationType" />
      <xs:element minOccurs="0" name="groupNode" nillable="true" type="ipam:LogicalGroupNode"
/>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="groupType" type="ipam:LogicalGroupType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.83.2.2 GetLogicalGroupUtilizationByTypeResponse

This element specifies the output values for the GetLogicalGroupUtilizationByType operation.

```
<xs:element name="GetLogicalGroupUtilizationByTypeResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetLogicalGroupUtilizationByTypeResult" nillable="true"
type="ipam:IPCumulativeUtilization" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.84 GetNumberOfForwardLookupZonesForServers

This operation can be used to determine the number of configured forward lookup zones hosted on the list of specified servers.

```
<wsdl:operation name="GetNumberOfForwardLookupZonesForServers">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetNumberOfForwardLookupZonesForServer
s" message="ipam:IIpamServer_GetNumberOfForwardLookupZonesForServers_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetNumberOfForwardLookupZonesForServer
sResponse" message="ipam:IIpamServer_GetNumberOfForwardLookupZonesForServers_OutputMessage"
/>
</wsdl:operation>
```

Upon receiving the IIpamServer_GetNumberOfForwardLookupZonesForServers_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_GetNumberOfForwardLookupZonesForServers_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Initialize **GetNumberOfForwardLookupZonesForServersResponse.GetNumberOfForwardLookupZ**

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onesForServersResult to an empty collection of key value pairs where the key specifies the RecordId of the DNS server and the value specifies the number of DNS zones hosted on the specified server.

2. If the **GetNumberOfForwardLookupZonesForServers.dnsServers** is null or the number of elements in it is 0, return the **GetNumberOfForwardLookupZonesForServerResponse.GetNumberOfForwardLookupZonesForServersResult**.

3. Enumerate the unique ServerRecordId in **ADM_DnsServerForwardLookupZoneTable**. For each ServerRecordId, count the number of rows specifying the server to zone mapping.

4. Add the ServerRecordId as the key and the count of the number of zone mappings as the value to **GetNumberOfForwardLookupZonesForServersResponse.GetNumberOfForwardLookupZonesForServer**.

3.3.4.84.1 Messages

3.3.4.84.1.1 IIpamServer_GetNumberOfForwardLookupZonesForServers_InputMessage

This is the request for the GetNumberOfForwardLookupZonesForServers operation.

```
<wsdl:message name="IIpamServer_GetNumberOfForwardLookupZonesForServers_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetNumberOfForwardLookupZonesForServers" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetNumberOfForwardLookupZonesForServers
```

The body of the SOAP message MUST contain the GetNumberOfForwardLookupZonesForServers element.

3.3.4.84.1.2 IIpamServer_GetNumberOfForwardLookupZonesForServers_OutputMessage

This is the response for the GetNumberOfForwardLookupZonesForServers operation.

```
<wsdl:message name="IIpamServer_GetNumberOfForwardLookupZonesForServers_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetNumberOfForwardLookupZonesForServersResponse"
/>
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetNumberOfForwardLookupZonesForServersResponse
```

The body of the SOAP message MUST contain the GetNumberOfForwardLookupZonesForServersResponse element.

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3.3.4.84.2 Elements

3.3.4.84.2.1 GetNumberOfForwardLookupZonesForServers

This element specifies the input values for the GetNumberOfForwardLookupZonesForServers operation.

```
<xs:element name="GetNumberOfForwardLookupZonesForServers">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="dnsServers" nillable="true" type="serarr:ArrayOflong"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.84.2.2 GetNumberOfForwardLookupZonesForServersResponse

This element specifies the output values for the GetNumberOfForwardLookupZonesForServers operation.

```
<xs:element name="GetNumberOfForwardLookupZonesForServersResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetNumberOfForwardLookupZonesForServersResult"
nillable="true" type="sysgen:ArrayOfKeyValuePairOflongint" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.85 GetPolicyConditionFromDB

This operation is used to get the ipam:DhcpPolicyConditionV4 for an ipam:DhcpPolicyv4.

```
<wsdl:operation name="GetPolicyConditionFromDB">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyConditionFromDB"
message="ipam:IIpamServer_GetPolicyConditionFromDB_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyConditionFromDBResponse"
message="ipam:IIpamServer_GetPolicyConditionFromDB_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetPolicyConditionFromDB_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetPolicyConditionFromDB_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Call the procedure **GetPolicyConditionsForPolicyId** in **ADM_DhcpPolicyConditionTable** with parameter **GetPolicyConditionFromDB.policyId**. This procedure returns a collection of **ipam:DhcpPolicyConditionV4** objects. Assign the returned objects to **tempVar.collectionOfPolicyCondition**.

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2. Create a new **DhcpPolicyConditionV4** object called **tempVar.combinedPolicyCondition** and initialize it.

3. Iterate through the objects in **tempVar.collectionOfPolicyCondition** and combine their data member values into the data member of **tempVar.combinedPolicyCondition**.

4. **tempVar.combinedPolicyCondition** is passed in the output message.

3.3.4.85.1 Messages

3.3.4.85.1.1 IIpamServer_GetPolicyConditionFromDB_InputMessage

The IIpamServer_GetPolicyConditionFromDB_InputMessage message initiates the GetPolicyConditionFromDB WSDL operation.

```
<wsdl:message name="IIpamServer_GetPolicyConditionFromDB_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyConditionFromDB" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyConditionFromDB
```

The body of the SOAP message MUST contain the GetPolicyConditionFromDB element.

3.3.4.85.1.2 IIpamServer_GetPolicyConditionFromDB_OutputMessage

The IIpamServer_GetPolicyConditionFromDB_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetPolicyConditionFromDB_InputMessage message.

```
<wsdl:message name="IIpamServer_GetPolicyConditionFromDB_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyConditionFromDBResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyConditionFromDBResponse
```

The body of the SOAP message MUST contain the GetPolicyConditionFromDBResponse element.

3.3.4.85.2 Elements

3.3.4.85.2.1 GetPolicyConditionFromDB

The GetPolicyConditionFromDB element contains the input data for the GetPolicyConditionFromDB operation.

```
<xs:element name="GetPolicyConditionFromDB">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policyId" type="xsd:long" />
```


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```
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.85.2.2 GetPolicyConditionFromDBResponse

The GetPolicyConditionFromDBResponse element contains the output data for the GetPolicyConditionFromDB operation.

```
<xs:element name="GetPolicyConditionFromDBResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetPolicyConditionFromDBResult" nillable="true"
type="ipam:DhcpPolicyConditionV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.86 GetPolicyFromDB

This operation is used to get an ipam:DhcpPolicyV4 associated with a policyId.

```
<wsdl:operation name="GetPolicyFromDB">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyFromDB"
message="ipam:IIpamServer_GetPolicyFromDB_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyFromDBResponse"
message="ipam:IIpamServer_GetPolicyFromDB_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetPolicyFromDB_InputMessage request. The server then performs the processing steps listed below. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetPolicyFromDB_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- The procedure **GetPolicyById** in **ADM_DhcpPolicyTable** is passed **GetPolicyFromDB.policyId** from the input message. This procedure returns the associated **DhcpPolicyv4** which is passed in the output message.

3.3.4.86.1 Messages

3.3.4.86.1.1 IIpamServer_GetPolicyFromDB_InputMessage

The IIpamServer_GetPolicyFromDB_InputMessage message initiates the GetPolicyFromDB WSDL operation.

```
<wsdl:message name="IIpamServer_GetPolicyFromDB_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyFromDB" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

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```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyFromDB
```

The body of the SOAP message MUST contain the GetPolicyFromDB element.

3.3.4.86.1.2 IIpamServer_GetPolicyFromDB_OutputMessage

The IIpamServer_GetPolicyFromDB_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetPolicyFromDB_InputMessage message.

```
<wsdl:message name="IIpamServer_GetPolicyFromDB_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyFromDBResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyFromDBResponse
```

The body of the SOAP message MUST contain the GetPolicyFromDBResponse element.

3.3.4.86.2 Elements

3.3.4.86.2.1 GetPolicyFromDB

The GetPolicyFromDB element contains the input data for the GetPolicyFromDB operation.

```
<xs:element name="GetPolicyFromDB">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policyId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.86.2.2 GetPolicyFromDBResponse

The GetPolicyFromDBResponse element contains the output data for the GetPolicyFromDB operation.

```
<xs:element name="GetPolicyFromDBResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetPolicyFromDBResult" nillable="true"
type="ipam:DhcpPolicyV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.87 GetPolicyOptionsFromDB

This operation is used to get the ipam:DhcpOptionCollection associated with an ipam:DhcpPolicyV4 object.

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```
<wsdl:operation name="GetPolicyOptionsFromDB">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyOptionsFromDB"
message="ipam:IIpamServer_GetPolicyOptionsFromDB_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyOptionsFromDBResponse"
message="ipam:IIpamServer_GetPolicyOptionsFromDB_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetPolicyOptionsFromDB_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetPolicyOptionsFromDB_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Call the procedure GetPolicyOptions in **ADM_DhcpOptionsTable** with the following parameters: addressFamily as Internet, **GetPolicyOptionsFromDB.policy.Server.RecordId**, **GetPolicyOptionsFromDB.policy.PolicyId**. This procedure returns the associated collection of **ipam:DhcpOptionV4** which are passed in the output message.

3.3.4.87.1 Messages

3.3.4.87.1.1 IIpamServer_GetPolicyOptionsFromDB_InputMessage

The IIpamServer_GetPolicyOptionsFromDB_InputMessage message initiates the GetPolicyOptionsFromDB WSDL operation.

```
<wsdl:message name="IIpamServer_GetPolicyOptionsFromDB_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyOptionsFromDB" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyOptionsFromDB
```

The body of the SOAP message MUST contain the GetPolicyOptionsFromDB element.

3.3.4.87.1.2 IIpamServer_GetPolicyOptionsFromDB_OutputMessage

The IIpamServer_GetPolicyOptionsFromDB_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetPolicyOptionsFromDB_InputMessage message.

```
<wsdl:message name="IIpamServer_GetPolicyOptionsFromDB_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyOptionsFromDBResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyOptionsFromDBResponse
```

The body of the SOAP message MUST contain the GetPolicyOptionsFromDBResponse element.

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3.3.4.87.2 Elements

3.3.4.87.2.1 GetPolicyOptionsFromDB

The GetPolicyOptionsFromDB element contains the input data for the GetPolicyOptionsFromDB operation.

```
<xs:element name="GetPolicyOptionsFromDB">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policy" nillable="true" type="ipam:DhcpPolicyV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.87.2.2 GetPolicyOptionsFromDBResponse

The GetPolicyOptionsFromDBResponse element contains the output data for the GetPolicyOptionsFromDB operation.

```
<xs:element name="GetPolicyOptionsFromDBResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetPolicyOptionsFromDBResult" nillable="true"
type="ipam:DhcpOptionCollection" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.88 GetPolicyRangesFromDB

This operation is used to get a collection of ipam:DhcpPolicyRangeV4 associated with an ipam:DhcpPolicyv4.

```
<wsdl:operation name="GetPolicyRangesFromDB">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyRangesFromDB"
message="ipam:IIpamServer_GetPolicyRangesFromDB_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyRangesFromDBResponse"
message="ipam:IIpamServer_GetPolicyRangesFromDB_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetPolicyRangesFromDB_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetPolicyRangesFromDB_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- The procedure GetPolicySubrangesForPolicyId in **ADM_DhcpPolicySubrangeTable** is called with parameter **GetPolicyRangesFromDB.policyId**. This procedure returns the associated collection of **ipam:DhcpPolicyRangev4**, which is passed in the output message.

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3.3.4.88.1 Messages

3.3.4.88.1.1 IIpamServer_GetPolicyRangesFromDB_InputMessage

The IIpamServer_GetPolicyRangesFromDB_InputMessage message initiates the GetPolicyRangesFromDB WSDL operation.

```
<wsdl:message name="IIpamServer_GetPolicyRangesFromDB_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyRangesFromDB" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyRangesFromDB
```

The body of the SOAP message MUST contain the GetPolicyRangesFromDB element.

3.3.4.88.1.2 IIpamServer_GetPolicyRangesFromDB_OutputMessage

The IIpamServer_GetPolicyRangesFromDB_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetPolicyRangesFromDB_InputMessage message.

```
<wsdl:message name="IIpamServer_GetPolicyRangesFromDB_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetPolicyRangesFromDBResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyRangesFromDBResponse
```

The body of the SOAP message MUST contain the GetPolicyRangesFromDBResponse element.

3.3.4.88.2 Elements

3.3.4.88.2.1 GetPolicyRangesFromDB

The GetPolicyRangesFromDB element contains the input data for the GetPolicyRangesFromDB operation.

```
<xs:element name="GetPolicyRangesFromDB">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policyId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.88.2.2 GetPolicyRangesFromDBResponse

The GetPolicyRangesFromDBResponse element contains the output data for the GetPolicyRangesFromDB operation.

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```
<xs:element name="GetPolicyRangesFromDBResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetPolicyRangesFromDBResult" nillable="true"
type="ipam:ArrayOfDhcpPolicyRangeV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.89 GetRangeByAddressSpaceIdAndManagedByManagedByEntity

This operation is used to retrieve the address ranges that lie within the specified address space and also have the specified values for ManagedBy and ManagementByEntity custom field values.

```
<wsdl:operation name="GetRangeByAddressSpaceIdAndManagedByManagedByEntity">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByAddressSpaceIdAndManagedByMa
nagedByEntity"
message="ipam:IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_InputMessage"
/>
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByAddressSpaceIdAndManagedByMa
nagedByEntityResponse"
message="ipam:IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_OutputMessage"
/>
</wsdl:operation>
```

Upon receiving the IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_InputMessage request message, the server performs the following processing steps. Upon successful completion of these step, the server MUST respond with the IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **GetRangeByAddressSpaceIdAndManagedByManagedByEntity.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse.GetRangeByAddressSpaceIdAndManagedByManagedByEntityResult** will consist of **IPv4Range**. Otherwise IPv6-specific tables are used for further processing. The **GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse.GetRangeByAddressSpaceIdAndManagedByManagedByEntityResult** will consist of **IPv6Range**.

2. Enumerate the rows in the **ADM_IPRangeTable** that have the StartIPAddress and EndIPAddress equal to the **GetRangeByAddressSpaceIdAndManagedByManagedByEntity.startIP** and **GetRangeByAddressSpaceIdAndManagedByManagedByEntity.endIP** address range.

3. For each row,

    1. Calculate the ManagedBy value to be the custom field value whose custom field identifier is the same value as **ADM_ManagedByCustomFieldId**.

    2. Calculate the ManagedByEntity value to be the custom field value whose custom field identifier is the same as the **ADM_ManagedByEntityCustomFieldId**.

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4. If the **GetRangeByAddressSpaceIdAndManagedByManagedByEntity.addressSpaceId** is the same as the AddressSpaceRecordId above, **GetRangeByAddressSpaceIdAndManagedByManagedByEntity.managedBy** is the same as the ManagedBy computed above and **GetRangeByAddressSpaceIdAndManagedByManagedByEntity.managedByEntity** is the same as the ManagedByValue computed above, the row MUST be added to the result data. For this, call the procedure GetIPRangeFromTable by passing the record identifier of the row as *Param_id* input parameter and **GetRangeByAddressSpaceIdAndManagedByManagedByEntity.addressFamily** as *Param_addressfamily* input parameter. Add the returned range information in result to **GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse.GetRangeByAddressSpaceIdAndManagedByManagedByEntityResult**.

3.3.4.89.1 Messages

3.3.4.89.1.1 IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_InputMessage

This is the request for the GetRangeByAddressSpaceIdAndManagedByManagedByEntity operation.

```
<wsdl:message
name="IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_InputMessage">
  <wsdl:part name="parameters"
element="ipam:GetRangeByAddressSpaceIdAndManagedByManagedByEntity" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByAddressSpaceIdAndManagedByManagedByEntity
```

The body of the SOAP message MUST contain the GetRangeByAddressSpaceIdAndManagedByManagedByEntity element.

3.3.4.89.1.2 IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_OutputMessage

This is the response for the GetRangeByAddressSpaceIdAndManagedByManagedByEntity operation.

```
<wsdl:message
name="IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_OutputMessage">
  <wsdl:part name="parameters"
element="ipam:GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByAddressSpaceIdAndManagedByManagedByEntity
Response
```


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The body of the SOAP message MUST contain the GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse element.

3.3.4.89.2 Elements

3.3.4.89.2.1 GetRangeByAddressSpaceIdAndManagedByManagedByEntity

This element specifies the input values for the GetRangeByAddressSpaceIdAndManagedByManagedByEntity operation.

```
<xs:element name="GetRangeByAddressSpaceIdAndManagedByManagedByEntity">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="startIP" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="endIP" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="managedBy" nillable="true" type="xsd:string" />
      <xs:element minOccurs="0" name="managedByEntity" nillable="true" type="xsd:string" />
      <xs:element minOccurs="0" name="addressSpaceId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

startIP: A start IP address of the range that is to be fetched.

endIP: An end IP address of the range that is to be fetched.

managedBy: A value of ManagedBy custom field which MUST present on the resulting range.

managedByEntity: A value of ManagedByEntity custom field which MUST present on the resulting range.

addressSpaceId: The RecordId of the address space to which the range MUST map to.

addressFamily: The address family of the queried range.

3.3.4.89.2.2 GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse

This element specifies the output values for the GetRangeByAddressSpaceIdAndManagedByManagedByEntity operation.

```
<xs:element name="GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0"
name="GetRangeByAddressSpaceIdAndManagedByManagedByEntityResult" nillable="true"
type="ipam:IPRange" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetRangeByAddressSpaceIdAndManagedByManagedByEntityResult: The resulting IP address range.

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3.3.4.90 GetRangeByIPAddress

This operation is used to retrieve the address ranges whose start address and end address are within the specified address range.

```
<wsdl:operation name="GetRangeByIPAddress">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByIPAddress"
message="ipam:IIpamServer_GetRangeByIPAddress_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByIPAddressResponse"
message="ipam:IIpamServer_GetRangeByIPAddress_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetRangeByIPAddress_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetRangeByIPAddress_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the **GetRangeByIPAddress.addressFamily** is Internet, the rest of the processing is done with the IPv4-specific tables. The **GetRangeByIPAddressResponse.GetRangeByIPAddressResult** will consist of **IPv4Range**. Otherwise IPv6-specific tables are used for further processing. The **GetRangeByIPAddressResponse.GetRangeByIPAddressResult** will consist of **IPv6Range**.

2. Enumerate the rows in the **ADM_IPRangeTable** that have the StartIPAddress and EndIPAddress between the **GetRangeByIPAddress.startIP** and **GetRangeByIPAddress.endIP** address range and also have PrefixLength greater than or equal to **GetRangeByIPAddress.prefixLength**.

3. For each row, call the procedure GetIPRangeFromTable by passing the record identifier of the row as *Param_id* input parameter and **GetRangeByIPAddress.addressFamily** as *Param_addressfamily* input parameter. Add the returned range information in **result** to **GetRangeByIPAddressResponse.GetRangeByIPAddressResult**.

3.3.4.90.1 Messages

3.3.4.90.1.1 IIpamServer_GetRangeByIPAddress_InputMessage

This is the request for the GetRangeByIPAddress operation.

```
<wsdl:message name="IIpamServer_GetRangeByIPAddress_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetRangeByIPAddress" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByIPAddress
```

The body of the SOAP message MUST contain the GetRangeByIPAddress element.

3.3.4.90.1.2 IIpamServer_GetRangeByIPAddress_OutputMessage

This is the response for the GetRangeByIPAddress operation.

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```
<wsdl:message name="IIpamServer_GetRangeByIPAddress_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetRangeByIPAddressResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByIPAddressResponse
```

The body of the SOAP message MUST contain the GetRangeByIPAddressResponse element.

3.3.4.90.2 Elements

3.3.4.90.2.1 GetRangeByIPAddress

This element specifies the input values for the GetRangeByIPAddress operation.

```
<xs:element name="GetRangeByIPAddress">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="startIP" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="endIP" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="prefixLength" type="xsd:int" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.90.2.2 GetRangeByIPAddressResponse

This element specifies the output values for the GetRangeByIPAddress operation.

```
<xs:element name="GetRangeByIPAddressResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetRangeByIPAddressResult" nillable="true"
type="ipam:ArrayOfIPRange" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.91 GetRangeByScopeRecordId

This operation is used to retrieve the address range, which is mapped to a DHCP scope having the specified record identifier.

```
<wsdl:operation name="GetRangeByScopeRecordId">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByScopeRecordId"
message="ipam:IIpamServer_GetRangeByScopeRecordId_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByScopeRecordIdResponse"
message="ipam:IIpamServer_GetRangeByScopeRecordId_OutputMessage" />
</wsdl:operation>
```


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Upon receiving the IIpamServer_GetRangeByScopeRecordId_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetRangeByScopeRecordId_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Lookup the ADM_IPRangeTable for the row that has **ScopeRecordId** value to be **GetRangeByScopeRecordId.scopeId**.
2. If the row is found, get the record identifier of the row and get the address range by calling the GetIPRangeFromTable procedure of ADM_IPRangeTable by passing the RecordId of the row as **Param_id** input parameter and **GetRangeByScopeRecordId.addressFamily** as the **Param_addressfamily** input parameter.
3. Assign the address range present in the **result** to **GetRangeByScopeRecordIdResponse.GetRangeByScopeRecordIdResult**.

3.3.4.91.1 Messages

3.3.4.91.1.1 IIpamServer_GetRangeByScopeRecordId_InputMessage

This is the request for the GetRangeByScopeRecordId operation.

```
<wsdl:message name="IIpamServer_GetRangeByScopeRecordId_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetRangeByScopeRecordId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByScopeRecordId
```

The body of the SOAP message MUST contain the GetRangeByScopeRecordId element.

3.3.4.91.1.2 IIpamServer_GetRangeByScopeRecordId_OutputMessage

This is the response for the GetRangeByScopeRecordId operation.

```
<wsdl:message name="IIpamServer_GetRangeByScopeRecordId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetRangeByScopeRecordIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByScopeRecordIdResponse
```

The body of the SOAP message MUST contain the GetRangeByScopeRecordIdResponse element.

3.3.4.91.2 Elements

3.3.4.91.2.1 GetRangeByScopeRecordId

This element specifies the input values for the GetRangeByScopeRecordId operation.

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```
<xs:element name="GetRangeByScopeRecordId">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="scopeId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.91.2.2 GetRangeByScopeRecordIdResponse

This element specifies the output values for the GetRangeByScopeRecordId operation.

```
<xs:element name="GetRangeByScopeRecordIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetRangeByScopeRecordIdResult" nillable="true"
type="ipam:IPRange" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.92 GetRangeUtilization

This operation is used to retrieve the utilization data for a specified address range.

```
<wsdl:operation name="GetRangeUtilization">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeUtilization"
message="ipam:IIpamServer_GetRangeUtilization_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeUtilizationResponse"
message="ipam:IIpamServer_GetRangeUtilization_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetRangeUtilization_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetRangeUtilization_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the address range for which the address utilization is requested by calling the **GetIPRangeFromTable** procedure of **ADM_IPRangeTable** with **Param_id** input parameter set to **GetRangeUtilization.ipRangeRecordId** and **Param_addressfamily** input parameter set to **GetRangeUtilization.addressFamily**. Store the **result** to requestedRange.

2. If the requestedRange is null, an appropriate SOAP fault MUST be returned.

3. Initialize **GetRangeUtilizationResponse.GetRangeUtilizationResult** to IPCumulativeUtilization.

4. If the **GetRangeUtilization.addressFamily** is InternetV6, the **GetRangeUtilization.requestedIPUtilizationType** MUST be IPUtilizationType.Current. Otherwise an appropriate SOAP fault MUST be returned.

5. If **GetRangeUtilization.requestedIPUtilizationType** is **IPUtilizationType.Current**

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1. Set **GetRangeUtilizationResponse.GetRangeUtilizationResult. IPUtilizationType** to **IPUtilizationType.Current**.

2. Add **requestedRange.UtilizationStatistics** to **GetRangeUtilizationResponse.GetRangeUtilizationResult.IPUtilization**.

3. Return the **GetRangeUtilizationResponse** element as a part of the output message.

6. The **GetRangeUtilization.startDate** and **GetRangeUtilization.endDate** MUST be specified according to the IPUtilizationType requested. For example, if **GetRangeUtilization.requestedIPUtilizationType** is IPUtilizationTyp.OneMonth, the **GetRangeUtilization.startDate** and **GetRangeUtilization.endDate** MUST be one month apart.

7. Compute the ManagedBy of the requestedRange to be the custom field value whose custom field record identifier is **ADM_ManagedByCustomFieldId**.

8. Compute the ManagedByEntity of the requestedRange to be the custom field value whose custom field record identifier is **ADM_ManagedByEntityCustomFieldId**.

9. Enumerate the rows in the ADM_IPv4AddressUtilizationTable having the following condition ordered by Timestamp in ascending order.

   - **StartIPAddress** is equal to requestedRange.StartIPAddress.
   - **EndIPAddress** is equal to requestedRange.EndIPAddress.
   - **PrefixLength** is equal to requestedRange.PrefixLength.
   - **ManagedBy** is ManagedBy value of requestedRange.
   - **ManagedByValue** is ManagedByEntity value of requestedRange.
   - **Timestamp** is greater than or equal to GetRangeUtilization.startDate and TimeStamp is lesser than or equal to GetRangeUtilization.endDate.

10. If there are no rows meeting the previous criteria, return the current utilization as the **GetRangeUtilizationResponse.GetRangeUtilizationResult** by following step 5.

11. Divide the duration between **GetRangeUtilization.startDate** and **GetRangeUtilization.endDate** into 12 durations. For each duration, sum the AddressUtilizationData of the rows and add the IPUtilization to **GetRangeUtilizationResponse.GetRangeUtilizationResult.IpUtilization**. There can be multiple rows that match the conditions listed in step 9. This could mean the range is configured on multiple servers for dynamic address assignment and they are configured with exclusion ranges so that the addresses assigned by either of the servers do not overlap though they might belong to the same range. The other possibility is that for the given duration, the utilization data for the range was collected multiple times. The utilization data under this circumstance can be averaged in an implementation-specific manner to give the utilization for an address range, representative of a time period.

12. Set the **GetRangeUtilizationResponse.GetRangeUtilizationResult.IPUtilizationType** to **GetRangeUtilization.requestedIPUtilizationType**.

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3.3.4.92.1 Messages

3.3.4.92.1.1 IIpamServer_GetRangeUtilization_InputMessage

This is the request for the GetRangeUtilization operation.

```
<wsdl:message name="IIpamServer_GetRangeUtilization_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetRangeUtilization" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeUtilization
```

The body of the SOAP message MUST contain the GetRangeUtilization element.

3.3.4.92.1.2 IIpamServer_GetRangeUtilization_OutputMessage

This is the response for the GetRangeUtilization operation.

```
<wsdl:message name="IIpamServer_GetRangeUtilization_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetRangeUtilizationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetRangeUtilizationResponse
```

The body of the SOAP message MUST contain the GetRangeUtilizationResponse element.

3.3.4.92.2 Elements

3.3.4.92.2.1 GetRangeUtilization

This element specifies the input values for the GetRangeUtilization operation.

```
<xs:element name="GetRangeUtilization">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ipRangeRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="requestedIPUtilizationType"
type="ipam:IPUtilizationType" />
      <xs:element minOccurs="0" name="startDate" nillable="true" type="xsd:dateTime" />
      <xs:element minOccurs="0" name="endDate" nillable="true" type="xsd:dateTime" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.92.2.2 GetRangeUtilizationResponse

This element specifies the output values for the GetRangeUtilization operation.

```
<xs:element name="GetRangeUtilizationResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetRangeUtilizationResult" nillable="true"
type="ipam:IPCumulativeUtilization" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.93 GetReservations

This operation is used to retrieve the reservation objects corresponding to given reservation IDs.

```
<wsdl:operation name="GetReservations" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetReservations"
message="ipam:IIpamServer_GetReservations_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetReservationsResponse"
message="ipam:IIpamServer_GetReservations_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetReservations_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetReservations_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If either of the following conditions is not satisfied, an appropriate SOAP fault MUST be generated.
    1. **GetReservations.reservationRecordIds** = NULL.
    2. **GetReservations.addressFamily** is neither Internet or Internetv6.
2. For each of the reservationId in GetReservations.reservationRecordIds, call the GetDhcpReservation procedure for **ADM_DHCPReservationTable** with the following parameters:
    1. **GetReservations.addressFamily** as *Param_addressfamily*.
    2. **reservationId** as *Param_reservationId*.
3. Add the Result_reservation to **GetReservationsResponse.GetReservationsResult**.

3.3.4.93.1 Messages

3.3.4.93.1.1 IIpamServer_GetReservations_InputMessage

The IIpamServer_GetReservations_InputMessage message initiates the GetReservations WSDL operation.

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```
<wsdl:message name="IIpamServer_GetReservations_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetReservations" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetReservations
```

The body of the SOAP message MUST contain the GetReservations element.

3.3.4.93.1.2 IIpamServer_GetReservations_OutputMessage

This is the response for the GetReservations operation.

```
<wsdl:message name="IIpamServer_GetReservations_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetReservationsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetReservationsResponse
```

The body of the SOAP message MUST contain the GetReservationsResponse element.

3.3.4.93.2 Elements

3.3.4.93.2.1 GetReservations

The GetReservations element contains the input data for the GetReservations operation.

```
<xs:element name="GetReservations" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="reservationRecordIds" nillable="true"
type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.93.2.2 GetReservationsResponse

The GetReservationsResponse element contains the output data for the GetReservations operation.

```
<xs:element name="GetReservationsResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetReservationsResult" nillable="true"
type="ipam:ArrayOfDhcpReservation" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.94 GetSchemaConversionInfo

This operation is used to check whether a conversion of IPAM Datastore's schema is required. This check is performed before the IPAM system update.

```
<wsdl:operation name="GetSchemaConversionInfo">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSchemaConversionInfo"
message="ipam:IIpamServer_GetSchemaConversionInfo_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSchemaConversionInfoResponse"
message="ipam:IIpamServer_GetSchemaConversionInfo_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetSchemaConversionInfo_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetSchemaConversionInfo_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the current IPAM data store version and the current OS version and the schema version to which IPAM can be upgraded to by reading the properties **ADM_IPAMSchemaVersion**, **ADM_IPAMServerVersion**, and **ADM_IPAMTargetSchemaVersion** respectively.
2. Assign these to GetSchemaConversionInfoResponse.configuredVersion, GetSchemaConversionInfoResponse.installedVersion, and GetSchemaConversionInfoResponse.nextVersion respectively.
3. If GetSchemaConversionInfoResponse.configuredVersion is not the same as GetSchemaConversionInfoResponse.installedVersion then conversion of IPAM data schema would be required. Set GetSchemaConversionInfoResponse.GetSchemaConversionInfoResult to true. Else, set it to false.

3.3.4.94.1 Messages

3.3.4.94.1.1 IIpamServer_GetSchemaConversionInfo_InputMessage

This is the request for the GetSchemaConversionInfo operation.

```
<wsdl:message name="IIpamServer_GetSchemaConversionInfo_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetSchemaConversionInfo" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSchemaConversionInfo
```

The body of the SOAP message MUST contain the GetSchemaConversionInfo element.

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3.3.4.94.1.2 IIpamServer_GetSchemaConversionInfo_OutputMessage

This is the response for the GetSchemaConversionInfo operation.

```
<wsdl:message name="IIpamServer_GetSchemaConversionInfo_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetSchemaConversionInfoResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSchemaConversionInfoResponse
```

The body of the SOAP message MUST contain the GetSchemaConversionInfoResponse element.

3.3.4.94.2 Elements

3.3.4.94.2.1 GetSchemaConversionInfo

This element specifies the input values for the GetSchemaConversionInfo operation.

```
<xs:element name="GetSchemaConversionInfo">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.94.2.2 GetSchemaConversionInfoResponse

This element specifies the output values for the GetSchemaConversionInfo operation.

```
<xs:element name="GetSchemaConversionInfoResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetSchemaConversionInfoResult" type="xsd:boolean" />
      <xs:element minOccurs="0" name="configuredVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
      <xs:element minOccurs="0" name="nextVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
      <xs:element minOccurs="0" name="installedVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetSchemaConversionInfoResult: Specifies whether conversion of IPAM schema is required or not.

configuredVersion: The current version of the IPAM Datastore schema.

nextVersion: The version to which the update logic will update the IPAM schema to.

installedVersion: The currently installed OS version.

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3.3.4.95 GetScopesByIds

This operation can be used to retrieve the DhcpScope data for the multiple record identifiers specified in the IPAM data store.

```
<wsdl:operation name="GetScopesByIds">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesByIds"
message="ipam:IIpamServer_GetScopesByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesByIdsResponse"
message="ipam:IIpamServer_GetScopesByIds_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetScopesByIds_InputMessage request message, the server performs the following processing steps.

- For each id in GetScopesByIds.ids:
  - Call the procedure GetScopeFromTable in ADM_DHCPScopesTable passing id as Param_id and GetScopesByIds.addressFamily as Param_addressfamily. If the Result_scope is returned, add it to GetScopesByIdsResponse.GetScopesByIdsResult with the key being the id and the Result_scope being the value.

Upon successful completion of the steps specified above, the server MUST respond with the IIpamServer_GetScopesByIds_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

3.3.4.95.1 Messages

3.3.4.95.1.1 IIpamServer_GetScopesByIds_InputMessage

This is the request for the GetScopesByIds operation.

```
<wsdl:message name="IIpamServer_GetScopesByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetScopesByIds" />
</wsdl:message>
```

The message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetScopesByIds
```

The body of the SOAP message MUST contain the GetScopesByIds element.

3.3.4.95.1.2 IIpamServer_GetScopesByIds_OutputMessage

This is the response for the GetScopesByIds operation.

```
<wsdl:message name="IIpamServer_GetScopesByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetScopesByIdsResponse" />
</wsdl:message>
```

The message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/GetScopesByIdsResponse
```

The body of the SOAP message MUST contain the GetScopesByIdsResponse element.

3.3.4.95.2 Elements

3.3.4.95.2.1 GetScopesByIds

This element specifies the input values for the GetScopesByIds operation.

```
<xs:element name="GetScopesByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.95.2.2 GetScopesByIdsResponse

This element specifies the output values for the GetScopesByIds operation.

```
<xs:element name="GetScopesByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetScopesByIdsResult" nillable="true"
type="serarr:ArrayOfKeyValueOflongDhcpScopem1ahUJFx" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.96 GetScopesForSuperscope

This operation is used to get a list of ipam:DhcpScopeV4 objects associated with an ipam:DhcpSupescopeV4 in the IPAM data store.

```
<wsdl:operation name="GetScopesForSuperscope">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesForSuperscope"
message="ipam:IIpamServer_GetScopesForSuperscope_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesForSuperscopeResponse"
message="ipam:IIpamServer_GetScopesForSuperscope_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetScopesForSuperscope_InputMessage request. The server then performs the processing steps listed below. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetScopesForSuperscope_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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Call procedure GetScopesForSuperscope of ADM_DHCPScopesTable with parameter GetScopesForSuperscope.superscope.RecordId. The returned list of ipam:DhcpScopeV4 is passed in the output message.

3.3.4.96.1 Messages

3.3.4.96.1.1 IIpamServer_GetScopesForSuperscope_InputMessage

The IIpamServer_GetScopesForSuperscope_InputMessage message initiates the GetScopesForSuperscope WSDL operation.

```
<wsdl:message name="IIpamServer_GetScopesForSuperscope_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetScopesForSuperscope" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetScopesForSuperscope
```

The body of the SOAP message MUST contain the GetScopesForSuperscope element.

3.3.4.96.1.2 IIpamServer_GetScopesForSuperscope_OutputMessage

The IIpamServer_GetScopesForSuperscope_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetScopesForSuperscope_InputMessage message.

```
<wsdl:message name="IIpamServer_GetScopesForSuperscope_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetScopesForSuperscopeResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetScopesForSuperscopeResponse
```

The body of the SOAP message MUST contain the GetScopesForSuperscopeResponse element.

3.3.4.96.2 Elements

3.3.4.96.2.1 GetScopesForSuperscope

The GetScopesForSuperscope element contains the input data for the GetScopesForSuperscope operation.

```
<xs:element name="GetScopesForSuperscope">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="superscope" nillable="true"
type="ipam:DhcpSuperscopeV4" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.96.2.2 GetScopesForSuperscopeResponse

The GetScopesForSuperscopeResponse element contains the output data for the GetScopesForSuperscope operation.

```
<xs:element name="GetScopesForSuperscopeResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetScopesForSuperscopeResult" nillable="true"
type="ipam:ArrayOfDhcpScopeV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.97 GetServersForMultipleId

This operation can be used to retrieve ServerInfo data for the multiple record identifiers specified, from the IPAM data store.

```
<wsdl:operation name="GetServersForMultipleId">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetServersForMultipleId"
message="ipam:IIpamServer_GetServersForMultipleId_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetServersForMultipleIdResponse"
message="ipam:IIpamServer_GetServersForMultipleId_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetServersForMultipleId_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetServersForMultipleId_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- For each id in GetServersForMultipleId.serverIds:
  - Call the procedure GetServerInfoFromTable passing id as Param_id. If the Result_serverInfo is returned, add it to GetServersForMultipleIdResponse.GetServersForMultipleIdResult.

3.3.4.97.1 Messages

3.3.4.97.1.1 IIpamServer_GetServersForMultipleId_InputMessage

This is the request for the GetServersForMultipleId operation.

```
<wsdl:message name="IIpamServer_GetServersForMultipleId_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetServersForMultipleId" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/GetServersForMultipleId
```

The body of the SOAP message MUST contain the GetServersForMultipleId element.

3.3.4.97.1.2 IIpamServer_GetServersForMultipleId_OutputMessage

This is the response for the GetServersForMultipleId operation.

```
<wsdl:message name="IIpamServer_GetServersForMultipleId_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetServersForMultipleIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetServersForMultipleIdResponse
```

The body of the SOAP message MUST contain the GetServersForMultipleIdResponse element.

3.3.4.97.2 Elements

3.3.4.97.2.1 GetServersForMultipleId

This element specifies the input values for the GetServersForMultipleId operation.

```
<xs:element name="GetServersForMultipleId">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="serverIds" nillable="true" type="serarr:ArrayOflong" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.97.2.2 GetServersForMultipleIdResponse

This element specifies the output values for the GetServersForMultipleId operation.

```
<xs:element name="GetServersForMultipleIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetServersForMultipleIdResult" nillable="true"
type="ipam:ArrayOfServerInfo" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.98 GetSubnetById

This operation is used to retrieve the IP subnet data having the specified record identifier.

```
<wsdl:operation name="GetSubnetById" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
```


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```
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetById"
message="ipam:IIpamServer_GetSubnetById_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByIdResponse"
message="ipam:IIpamServer_GetSubnetById_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetSubnetById_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetSubnetById_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. A SOAP fault is sent if GetSubnetById.addressFamily is neither Internet nor Internetv6. If GetSubnetById.addressFamily is Internet, then IPv4-specific tables will be used for further processing. Else IPv6-specific tables will be used for processing.
2. Get the IP subnet corresponding to the GetSubnetById.id by calling the GetSubnetById procedure of the **ADM_IPSubnetTable** passing the GetSubnetById.id as Param_SubnetId.
3. Assign the Result_Subnets returned by the previous procedure call to GetSubnetByIdResponse.GetSubnetByIdResult.

3.3.4.98.1 Messages

3.3.4.98.1.1 IIpamServer_GetSubnetById_InputMessage

This is the request for the GetSubnetById operation.

```
<wsdl:message name="IIpamServer_GetSubnetById_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetById" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetById
```

The body of the SOAP message MUST contain the GetSubnetById element.

3.3.4.98.1.2 IIpamServer_GetSubnetById_OutputMessage

This is the response for the GetSubnetById operation.

```
<wsdl:message name="IIpamServer_GetSubnetById_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetByIdResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByIdResponse
```

The body of the SOAP message MUST contain the GetSubnetByIdResponse element.

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3.3.4.98.2 Elements

3.3.4.98.2.1 GetSubnetById

This element specifies the input values for the GetSubnetById operation.

```
<xs:element name="GetSubnetById">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

id: The RecordId of the subnet that needs to be fetched.

addressFamily: The AddressFamily of the subnet with the given **id**.

3.3.4.98.2.2 GetSubnetByIdResponse

This element specifies the output values for the GetSubnetById operation.

```
<xs:element name="GetSubnetByIdResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetSubnetByIdResult" nillable="true"
type="ipam:IPSubnet" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.99 GetSubnetByNetworkIdAndAddressSpace

This operation is used to retrieve the IP subnet data having the specified record identifier.

```
<wsdl:operation name="GetSubnetByNetworkIdAndAddressSpace">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByNetworkIdAndAddressSpace"
message="ipam:IIpamServer_GetSubnetByNetworkIdAndAddressSpace_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByNetworkIdAndAddressSpaceRes
ponse" message="ipam:IIpamServer_GetSubnetByNetworkIdAndAddressSpace_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetSubnetByNetworkIdAndAddressSpace_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetSubnetByNetworkIdAndAddressSpace_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. A SOAP fault is sent if GetSubnetByNetworkIdAndAddressSpace.networkId.addressFamily is null or is neither Internet nor Internetv6. If

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GetSubnetByNetworkIdAndAddressSpace.networkId.addressFamily is Internet, then IPv4-specific tables will be used for further processing. Else IPv6-specific tables will be used for processing.

2. Get the IP subnet by calling the GetSubnetByNetworkIdAndAddressSpace procedure of the **ADM_IPSubnetTable** passing the GetSubnetByNetworkIdAndAddressSpace.networkId as Param_NetworkId, GetSubnetByNetworkIdAndAddressSpace.prefixLength as Param_PrefixLength and GetSubnetByNetworkIdAndAddressSpace.addressSpaceRecordId as Param_AddressSpaceRecordId.

3. Assign the Result_Subnet returned by the previous procedure call to GetSubnetByNetworkIdAndAddressSpaceResponse.GetSubnetByNetworkIdAndAddressSpaceResult.

3.3.4.99.1 Messages

3.3.4.99.1.1 IIpamServer_GetSubnetByNetworkIdAndAddressSpace_InputMessage

This is the request for the GetSubnetByNetworkIdAndAddressSpace operation.

```
<wsdl:message name="IIpamServer_GetSubnetByNetworkIdAndAddressSpace_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetByNetworkIdAndAddressSpace" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByNetworkIdAndAddressSpace
```

The body of the SOAP message MUST contain the GetIPRangeById element.

3.3.4.99.1.2 IIpamServer_GetSubnetByNetworkIdAndAddressSpace_OutputMessage

This is the response for the GetSubnetByNetworkIdAndAddressSpace operation.

```
<wsdl:message name="IIpamServer_GetSubnetByNetworkIdAndAddressSpace_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetByNetworkIdAndAddressSpaceResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByNetworkIdAndAddressSpaceResponse
```

The body of the SOAP message MUST contain the GetSubnetByNetworkIdAndAddressSpaceResponse element.

3.3.4.99.2 Elements

3.3.4.99.2.1 GetSubnetByNetworkIdAndAddressSpace

This element specifies the input values for the GetSubnetByNetworkIdAndAddressSpace operation.

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```
<xs:element name="GetSubnetByNetworkIdAndAddressSpace">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="networkId" nillable="true" type="sysnet:IPAddress" />
      <xs:element minOccurs="0" name="prefixLength" type="xsd:int" />
      <xs:element minOccurs="0" name="addressSpaceRecordId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

networkId: A networkId corresponding to the subnet that is to be retrieved.

prefixLength: The length of network prefix to be used to calculate the subnet mask.

addressSpaceRecordId: The RecordId of the address space to which the subnet belongs to.

3.3.4.99.2.2 GetSubnetByNetworkIdAndAddressSpaceResponse

This element specifies the output values for the GetSubnetByNetworkIdAndAddressSpace operation.

```
<xs:element name="GetSubnetByNetworkIdAndAddressSpaceResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetSubnetByNetworkIdAndAddressSpaceResult"
nillable="true" type="ipam:IPSubnet" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.100 GetSubnetsByIds

This operation is used to retrieve a set of range data specified by the collection of range record identifiers passed as input data for the message.

```
<wsdl:operation name="GetSubnetsByIds">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetsByIds"
message="ipam:IIpamServer_GetSubnetsByIds_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetsByIdsResponse"
message="ipam:IIpamServer_GetSubnetsByIds_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetSubnetsByIds_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetSubnetsByIds_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. A SOAP fault is sent if GetSubnetsByIds.addressFamily is null or is neither Internet nor Internetv6. If GetSubnetsByIds.addressFamily is Internet, then IPv4-specific tables will be used for further processing. Else IPv6-specific tables will be used for processing.
2. Initialize the GetSubnetsByIdsResponse.GetSubnetsByIdsResult to an empty collection of key value pairs.
3. For each record identifier recordId in the GetSubnetsByIds.ids:

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4. Call the GetSubnetsById procedure of ADM_SubnetTable passing the recordId value as Param_SubnetIds input parameter.

5. If the result address range is obtained, add it to the GetSubnetsByIdsResponse.GetSubnetsByIdsResult with the key being the result.RecordId and the value being the result itself.

3.3.4.100.1 Messages

3.3.4.100.1.1 IIpamServer_GetSubnetsByIds_InputMessage

This is the request for the GetSubnetsByIds operation.

```
<wsdl:message name="IIpamServer_GetSubnetsByIds_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetsByIds" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ GetSubnetsByIds
```

The body of the SOAP message MUST contain the GetSubnetsByIds element.

3.3.4.100.1.2 IIpamServer_GetSubnetsByIds_OutputMessage

This is the response for the GetSubnetsByIds operation.

```
<wsdl:message name="IIpamServer_GetSubnetsByIds_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetsByIdsResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetsByIdsResponse
```

The body of the SOAP message MUST contain the GetSubnetsByIdsResponse element.

3.3.4.100.2 Elements

3.3.4.100.2.1 GetSubnetsByIds

This element specifies the input values for the GetSubnetsByIds operation.

```
<xs:element name="GetSubnetsByIds">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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ids: An array of record identifiers for subnets that are to be fetched.

addressFamily: The address family of the subnets that are to be fetched.

3.3.4.100.2.2 GetSubnetsByIdsResponse

This element specifies the output values for the GetSubnetsByIds operation.

```
<xs:element name="GetSubnetsByIdsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetSubnetsByIdsResult" nillable="true"
type="ipam:ArrayOfIPSubnet" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.101 GetSubnetUtilization

This operation is used to retrieve the address block utilization.

```
<wsdl:operation name="GetSubnetUtilization">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetUtilization"
message="ipam:IIpamServer_GetSubnetUtilization_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetUtilizationResponse"
message="ipam:IIpamServer_GetSubnetUtilization_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetSubnetUtilization_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetSubnetUtilization_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Fault if GetSubnetUtilization.addressFamily is neither Internet nor InternetV6.
2. If GetSubnetUtilization.addressFamily is InternetV6, GetSubnetUtilization.requestedIPUtilizationType MUST be IPUtilizationType.Current. Otherwise, return an appropriate SOAP fault.
3. Call GetSubnetById procedure in **ADM_SubnetTable** passing the following parameters:
   - GetSubnetUtilization.id is passed as Param_SubnetId.
4. Initialize GetSubnetUtilizationResponse.GetSubnetUtilizationResult with IPCumulativeUtilization.
5. If GetSubnetUtilization.requestedIPUtilizationType is IPUtilizationType.Current, copy result.UtilizationStatistics to GetSubnetUtilizationResponse.GetSubnetUtilizationResult.IPUtilization.
6. Call the procedure GetAddressBlockUtilization in **ADM_IPv4AddressBlockUtilizationTable** by passing the following parameters:
   1. Param_id is set to GetSubnetUtilization.id.
   2. Param_addressfamily is set to GetSubnetUtilization.addressFamily.

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3. Param_utilizationType is set to the value of GetSubnetUtilization.requestedIPUtilizationType.
4. Param_startDate is set to the value of GetSubnetUtilization.startDate.
5. Param_endDate is set to the value of GetSubnetUtilization.endDate.

7. Assign result.IPUtilization to GetSubnetUtilizationResponse.GetSubnetUtilizationResult.IPUtilization.

3.3.4.101.1 Messages

3.3.4.101.1.1 IIpamServer_GetSubnetUtilization_InputMessage

This is the request for the GetSubnetUtilization operation.

```
<wsdl:message name="IIpamServer_GetSubnetUtilization_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetUtilization" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetUtilization
```

The body of the SOAP message MUST contain the GetSubnetUtilization element.

3.3.4.101.1.2 IIpamServer_GetSubnetUtilization_OutputMessage

This is the response for the GetSubnetUtilization operation.

```
<wsdl:message name="IIpamServer_GetSubnetUtilization_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetSubnetUtilizationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetUtilizationResponse
```

The body of the SOAP message MUST contain the GetSubnetUtilizationResponse element.

3.3.4.101.2 Elements

3.3.4.101.2.1 GetSubnetUtilization

This element specifies the input values for the GetSubnetUtilization operation.

```
<xs:element name="GetSubnetUtilization">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="requestedIPUtilizationType"
type="ipam:IPUtilizationType" />
```


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```
      <xs:element minOccurs="0" name="startDate" nillable="true" type="xsd:dateTime" />
      <xs:element minOccurs="0" name="endDate" nillable="true" type="xsd:dateTime" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

id: The RecordId of the subnet for which the utilization statistics are to be retrieved.

addressFamily: The address family of the subnet for which the utilization statistics are to be retrieved.

requestedIPUtilizationType: The type of IP address utilization data requested. For IPv6, this value MUST be IPUtilizationType.Current.

startDate: The start date from which the utilization data is to be retrieved.

endDate: The end date until which the utilization data is to be retrieved.

3.3.4.101.2.2 GetSubnetUtilizationResponse

This element specifies the output values for the GetBlockUtilization operation.

```
<xs:element name="GetSubnetUtilizationResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetSubnetUtilizationResult" nillable="true"
type="ipam:IPCumulativeUtilization" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.102 GetSuperscopes

This operation is used to get updated information for a list of ipam:DhcpSuperscopeV4 objects.

```
<wsdl:operation name="GetSuperscopes">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSuperscopes"
message="ipam:IIpamServer_GetSuperscopes_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSuperscopesResponse"
message="ipam:IIpamServer_GetSuperscopes_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_ GetSuperscopes_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_ GetSuperscopes_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- For each ipam:DhcpSuperscopeV4 object in GetSuperscopes.superscopes, its RecordId is passed to GetSuperscopeById of ADM_DhcpSuperscopeTable. The returned ipam:DhcpSuperscopeV4 objects are collected and passed in the output message.

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3.3.4.102.1 Messages

3.3.4.102.1.1 IIpamServer_GetSuperscopes_InputMessage

The IIpamServer_ GetSuperscopes_InputMessage message initiates the GetSuperscopes WSDL operation.

```
<wsdl:message name="IIpamServer_GetSuperscopes_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetSuperscopes" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSuperscopes
```

The body of the SOAP message MUST contain the GetSuperscopes element.

3.3.4.102.1.2 IIpamServer_GetSuperscopes_OutputMessage

The IIpamServer_ GetSuperscopes_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_ GetSuperscopes_InputMessage message.

```
<wsdl:message name="IIpamServer_GetSuperscopes_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetSuperscopesResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetSuperscopesResponse
```

The body of the SOAP message MUST contain the GetSuperscopes element.

3.3.4.102.2 Elements

3.3.4.102.2.1 GetSuperscopes

The GetSuperscopes element contains the input data for the GetSuperscopes operation.

```
<xs:element name="GetSuperscopes">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="superscopes" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.102.2.2 GetSuperscopesResponse

The GetSuperscopesResponse element contains the output data for the GetSuperscopes operation.

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```
<xs:element name="GetSuperscopesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetSuperscopesResult" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.103 GetTotalUnmappedRanges

This operation can be used to get the number of address ranges that are not mapped to any address block.

```
<wsdl:operation name="GetTotalUnmappedRanges">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetTotalUnmappedRanges"
message="ipam:IIpamServer_GetTotalUnmappedRanges_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetTotalUnmappedRangesResponse"
message="ipam:IIpamServer_GetTotalUnmappedRanges_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_GetTotalUnmappedRanges_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_GetTotalUnmappedRanges_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Set a temp data store, count to 0.
2. For each row in the **ADM_IPRangeTable** where AddressSpaceId is equal to default address space Id:
    1. Get the IPBlock that the range in this row maps to, by calling GetIPBlockFromTable of **ADM_IPBlocksTable** passing the following parameters:
        1. Assign the **ParentIPBlockRecordId** of the current row to **Param_blockId.**
        2. Assign **GetTotalUnmappedRange.addressFamily** to **Param_addressFamily.**
    2. If the block has its ParentBlockRecordId set to null, then increase the count by 1.
3. Set the count computed above to GetTotalUnmappedRangesResponse.GetTotalUnmappedRangesResult.

3.3.4.103.1 Messages

3.3.4.103.1.1 IIpamServer_GetTotalUnmappedRanges_InputMessage

This is the request for the GetTotalUnmappedRanges operation.

```
<wsdl:message name="IIpamServer_GetTotalUnmappedRanges_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetTotalUnmappedRanges" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetTotalUnmappedRanges
```

The body of the SOAP message MUST contain the GetTotalUnmappedRanges element.

3.3.4.103.1.2 IIpamServer_GetTotalUnmappedRanges_OutputMessage

This is the response for the GetTotalUnmappedRanges operation.

```
<wsdl:message name="IIpamServer_GetTotalUnmappedRanges_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetTotalUnmappedRangesResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/GetTotalUnmappedRangesResponse
```

The body of the SOAP message MUST contain the GetTotalUnmappedRangesResponse element.

3.3.4.103.2 Elements

3.3.4.103.2.1 GetTotalUnmappedRanges

This element specifies the input values for the GetTotalUnmappedRanges operation.

```
<xs:element name="GetTotalUnmappedRanges">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.103.2.2 GetTotalUnmappedRangesResponse

This element specifies the output values for the GetTotalUnmappedRanges operation.

```
<xs:element name="GetTotalUnmappedRangesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetTotalUnmappedRangesResult" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.104 GetUserAccessPolicy

This operation is used to get the ipam::UserAccessPolicy associated with an access policy ID.

```
<wsdl:operation name="GetUserAccessPolicy">
```


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```
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserAccessPolicy"
message="ipam:IIpamServer_GetUserAccessPolicy_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserAccessPolicyResponse"
message="ipam:IIpamServer_GetUserAccessPolicy_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetUserAccessPolicy_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetUserAccessPolicy_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Call method GetPolicyById of ADM_UserAccessPolicyTable and pass parameter GetUserAccessPolicy.policyId to it. The UserAccessPolicy returned is passed in the output message.

3.3.4.104.1 Messages

3.3.4.104.1.1 IIpamServer_GetUserAccessPolicy_InputMessage

The IIpamServer_GetUserAccessPolicy_InputMessage message initiates the GetUserAccessPolicy WSDL operation.

```
<wsdl:message name="IIpamServer_GetUserAccessPolicy_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetUserAccessPolicy" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetUserAccessPolicy
```

The body of the SOAP message MUST contain the GetUserAccessPolicy element.

3.3.4.104.1.2 IIpamServer_GetUserAccessPolicy_OutputMessage

The IIpamServer_GetUserAccessPolicy_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetUserAccessPolicy_InputMessage message.

```
<wsdl:message name="IIpamServer_GetUserAccessPolicy_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetUserAccessPolicyResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetUserAccessPolicyResponse
```

The body of the SOAP message MUST contain the GetUserAccessPolicyResponse element.

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3.3.4.104.2 Elements

3.3.4.104.2.1 GetUserAccessPolicy

The GetUserAccessPolicy element contains the input data for the GetUserAccessPolicy operation.

```
<xs:element name="GetUserAccessPolicy">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policyId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.104.2.2 GetUserAccessPolicyResponse

The GetUserAccessPolicyResponse element contains the output data for the GetUserAccessPolicy operation.

```
<xs:element name="GetUserAccessPolicyResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetUserAccessPolicyResult" nillable="true"
type="ipam:UserAccessPolicy" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.105 GetUserRole

This operation is used to get the ipam::UserRole associated with a user role record ID.

```
<wsdl:operation name="GetUserRole">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserRole"
message="ipam:IIpamServer_GetUserRole_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserRoleResponse"
message="ipam:IIpamServer_GetUserRole_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_GetUserRole_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_GetUserRole_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Call GetUserRoleById method of ADM_RoleDefinitionTable and pass GetUserRole.roleRecordId as its parameter. The returned UserRole is passed in the output message.

3.3.4.105.1 Messages

3.3.4.105.1.1 IIpamServer_GetUserRole_InputMessage

The IIpamServer_GetUserRole_InputMessage message initiates the GetUserRole WSDL operation.

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```
<wsdl:message name="IIpamServer_GetUserRole_InputMessage">
  <wsdl:part name="parameters" element="ipam:GetUserRole" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetUserRole
```

The body of the SOAP message MUST contain the GetUserRole element.

3.3.4.105.1.2 IIpamServer_GetUserRole_OutputMessage

The IIpamServer_GetUserRole_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_GetUserRole_InputMessage message.

```
<wsdl:message name="IIpamServer_GetUserRole_OutputMessage">
  <wsdl:part name="parameters" element="ipam:GetUserRoleResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/GetUserRoleResponse
```

The body of the SOAP message MUST contain the GetUserRoleResponse element.

3.3.4.105.2 Elements

3.3.4.105.2.1 GetUserRole

The GetUserRole element contains the input data for the GetUserRole operation.

```
<xs:element name="GetUserRole">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="roleRecordId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.105.2.2 GetUserRoleResponse

The GetUserRoleResponse element contains the output data for the GetUserRole operation.

```
<xs:element name="GetUserRoleResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetUserRoleResult" nillable="true" type="ipam:UserRole"
/>
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.106 IsIPAddressMapped

This operation can be used to query whether an IP address is mapped to an IP range in the IPAM data store.

```
<wsdl:operation name="IsIPAddressMapped">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIPAddressMapped"
message="ipam:IIpamServer_IsIPAddressMapped_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIPAddressMappedResponse"
message="ipam:IIpamServer_IsIPAddressMapped_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_IsIPAddressMapped_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_IsIPAddressMapped_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the IsIPAddressMapped.addressFamily is Internet, the rest of the processing is done with the IPv4-specific tables. Otherwise, IPv6-specific tables are used for further processing.

2. Look up the ADM_IPAddressTable for the rows whose RangeRecordId is equal to IsIPAddressMapped.rangeRecordId and AddressDetails.IpAddress is equal to IsIPAddressMapped.ipaddress. If any such rows exist, set IsIPAddressMappedResponse.IsIPAddressMappedResult to TRUE. Otherwise, set IsIPAddressMappedResponse.IsIPAddressMappedResult to FALSE.

3.3.4.106.1 Messages

3.3.4.106.1.1 IIpamServer_IsIPAddressMapped_InputMessage

This is the request for the IsIPAddressMapped operation.

```
<wsdl:message name="IIpamServer_IsIPAddressMapped_InputMessage">
  <wsdl:part name="parameters" element="ipam:IsIPAddressMapped" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsIPAddressMapped
```

The body of the SOAP message MUST contain the IsIPAddressMapped element.

3.3.4.106.1.2 IIpamServer_IsIPAddressMapped_OutputMessage

This is the response for the IsIPAddressMapped operation.

```
<wsdl:message name="IIpamServer_IsIPAddressMapped_OutputMessage">
  <wsdl:part name="parameters" element="ipam:IsIPAddressMappedResponse" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsIPAddressMappedResponse
```

The body of the SOAP message MUST contain the IsIPAddressMappedResponse element.

3.3.4.106.2 Elements

3.3.4.106.2.1 IsIPAddressMapped

This element specifies the input values for the IsIPAddressMapped operation.

```
<xs:element name="IsIPAddressMapped">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="rangeRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      <xs:element minOccurs="0" name="ipaddress" nillable="true" type="sysnet:IPAddress" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.106.2.2 IsIPAddressMappedResponse

This element specifies the output values for the IsIPAddressMapped operation.

```
<xs:element name="IsIPAddressMappedResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="IsIPAddressMappedResult" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.107 IsIpamConfigured

This operation can be used to query whether the IPAM data store is in a provisioned state or not.

```
<wsdl:operation name="IsIpamConfigured">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIpamConfigured"
message="ipam: IIpamServer_IsIpamConfigured_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIpamConfiguredResponse"
message="ipam: IIpamServer_IsIpamConfigured_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_IsIpamConfigured_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server

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MUST respond with the IIpamServer_IsIpamConfigured_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1

- Set the value of IsIpamConfiguredResponse.IsIpamConfiguredResult to ADM_IsIPAMConfigured.

3.3.4.107.1 Messages

3.3.4.107.1.1 IIpamServer_IsIpamConfigured_InputMessage

This is the request for the IsIpamConfigured operation.

```
<wsdl:message name="IIpamServer_IsIpamConfigured_InputMessage">
  <wsdl:part name="parameters" element="ipam:IsIpamConfigured" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsIpamConfigured
```

The body of the SOAP message MUST contain the IsIpamConfigured element.

3.3.4.107.1.2 IIpamServer_IsIpamConfigured_OutputMessage

This is the response for the IsIpamConfigured operation.

```
<wsdl:message name="IIpamServer_IsIpamConfigured_OutputMessage">
  <wsdl:part name="parameters" element="ipam:IsIpamConfiguredResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

http://Microsoft.Windows.Ipam/IIpamServer/IsIpamConfiguredResponse

3.3.4.107.2 Elements

3.3.4.107.2.1 IsIpamConfigured

This element specifies the input values for the IsIpamConfigured operation.

```
<xs:element name="IsIpamConfigured">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.107.2.2 IsIpamConfiguredResponse

This element specifies the output values for the IsIpamConfigured operation.

```
<xs:element name="IsIpamConfiguredResponse">
  <xs:complexType>
```


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```
    <xs:sequence>
      <xs:element minOccurs="0" name="IsIpamConfiguredResult" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.108 IsPurgeTaskRunning

This operation can be used to query whether the audit purge activity is currently in progress on the management server or not.

```
<wsdl:operation name="IsPurgeTaskRunning">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsPurgeTaskRunning"
message="ipam:IIpamServer_IsPurgeTaskRunning_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsPurgeTaskRunningResponse"
message="ipam:IIpamServer_IsPurgeTaskRunning_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_IsPurgeTaskRunning_InputMessage request message, the server performs the following processing steps. Upon successful completion of the following steps, the server MUST respond with the IIpamServer_IsPurgeTaskRunning_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Assign the value of ADM_IsAuditPurgeInProgress to IsPurgeTaskRunningResponse.IsPurgeTaskRunningResult.

3.3.4.108.1 Messages

3.3.4.108.1.1 IIpamServer_IsPurgeTaskRunning_InputMessage

This is the request for the IsPurgeTaskRunning operation.

```
<wsdl:message name="IIpamServer_IsPurgeTaskRunning_InputMessage">
  <wsdl:part name="parameters" element="ipam:IsPurgeTaskRunning" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsPurgeTaskRunning
```

The body of the SOAP message MUST contain the IsPurgeTaskRunning element.

3.3.4.108.1.2 IIpamServer_IsPurgeTaskRunning_OutputMessage

This is the response for the IsPurgeTaskRunning operation.

```
<wsdl:message name="IIpamServer_IsPurgeTaskRunning_OutputMessage">
  <wsdl:part name="parameters" element="ipam:IsPurgeTaskRunningResponse" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsPurgeTaskRunningResponse
```

The body of the SOAP message MUST contain the IsPurgeTaskRunningResponse element.

3.3.4.108.2 Elements

3.3.4.108.2.1 IsPurgeTaskRunning

This element specifies the input values for the IsPurgeTaskRunning operation.

```
<xs:element name="IsPurgeTaskRunning">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.108.2.2 IsPurgeTaskRunningResponse

This element specifies the output values for the IsPurgeTaskRunning operation.

```
<xs:element name="IsPurgeTaskRunningResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="IsPurgeTaskRunningResult" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.109 IsSchemaConversionInProgress

This operation can be used to query whether or not the schema conversion of the IPAM data store is currently in progress.

```
<wsdl:operation name="IsSchemaConversionInProgress">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionInProgress"
message="ipam: IIpamServer_IsSchemaConversionInProgress_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionInProgressResponse"
message="ipam: IIpamServer_IsSchemaConversionInProgress_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_IsSchemaConversionInProgress_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_IsSchemaConversionInProgress_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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Set the value of IsSchemaConversionInProgressResponse.IsSchemaConversionInProgressResult to the value of ADM_IsSchemaConversionInProgress.

3.3.4.109.1 Messages

3.3.4.109.1.1 IIpamServer_IsSchemaConversionInProgress_InputMessage

This is the request for the IsSchemaConversionInProgress operation.

```
<wsdl:message name="IIpamServer_IsSchemaConversionInProgress_InputMessage">
  <wsdl:part name="parameters" element="ipam:IsSchemaConversionInProgress" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionInProgress
```

The body of the SOAP message MUST contain the IsSchemaConversionInProgress element.

3.3.4.109.1.2 IIpamServer_IsSchemaConversionInProgress_OutputMessage

This is the response for the IsSchemaConversionInProgress operation.

```
<wsdl:message name="IIpamServer_IsSchemaConversionInProgress_OutputMessage">
  <wsdl:part name="parameters" element="ipam:IsSchemaConversionInProgressResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionInProgressResponse
```

The body of the SOAP message MUST contain the IsSchemaConversionInProgressResponse element.

3.3.4.109.2 Elements

3.3.4.109.2.1 IsSchemaConversionInProgress

This element specifies the input values for the IsSchemaConversionInProgress operation.

```
<xs:element name="IsSchemaConversionInProgress">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.109.2.2 IsSchemaConversionInProgressResponse

This element specifies the output values for the IsSchemaConversionInProgress operation.

```
<xs:element name="IsSchemaConversionInProgressResponse">
```


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```
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="IsSchemaConversionInProgressResult" type="xsd:boolean"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.110 IsSchemaConversionRequired

This operation can be used to query whether the schema conversion is required for the IPAM data store or not.

```
<wsdl:operation name="IsSchemaConversionRequired">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionRequired"
message="ipam: IIpamServer_IsSchemaConversionRequired_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionRequiredResponse"
message="ipam: IIpamServer_IsSchemaConversionRequired_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_IsSchemaConversionRequired_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_IsSchemaConversionRequired_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Set the value of IsSchemaConversionRequiredResponse.IsSchemaConversionRequiredResult to ADM_IsSchemaConversionRequired.

3.3.4.110.1 Messages

3.3.4.110.1.1 IIpamServer_IsSchemaConversionRequired_InputMessage

This is the request for the IsSchemaConversionRequired operation.

```
<wsdl:message name=" IIpamServer _IsSchemaConversionRequired_InputMessage">
  <wsdl:part name="parameters" element="ipam:IsSchemaConversionRequired" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/ IIpamServer /IsSchemaConversionRequired
```

The body of the SOAP message MUST contain the IsSchemaConversionRequired element.

3.3.4.110.1.2 IIpamServer_IsSchemaConversionRequired_OutputMessage

This is the response for the IsSchemaConversionRequired operation.

```
<wsdl:message name=" IIpamServer _IsSchemaConversionRequired_OutputMessage">
```


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```
  <wsdl:part name="parameters" element="ipam:IsSchemaConversionRequiredResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/ IIpamServer /IsSchemaConversionRequiredResponse
```

The body of the SOAP message MUST contain the IsSchemaConversionRequiredResponse element.

3.3.4.110.2 Elements

3.3.4.110.2.1 IsSchemaConversionRequired

This element specifies the input values for the IsSchemaConversionRequired operation.

```
<xs:element name="IsSchemaConversionRequired">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.110.2.2 IsSchemaConversionRequiredResponse

This element specifies the output values for the IsSchemaConversionRequired operation.

```
<xs:element name="IsSchemaConversionRequiredResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="IsSchemaConversionRequiredResult" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.111 IsTaskRunning

This operation can be used to query whether a particular IPAM task is running or not.

```
<wsdl:operation name="IsTaskRunning">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsTaskRunning"
message="ipam:IIpamServer_IsTaskRunning_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsTaskRunningResponse"
message="ipam:IIpamServer_IsTaskRunning_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_IsTaskRunning_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_IsTaskRunning_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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1. Validate that IsTaskRunning.task is not null. Otherwise an appropriate SOAP fault MUST be generated.

2. Enumerate the row in ADM_Tasks whose TaskType is specified in IsTaskRunning.taskType.

3. If Status of the task is Running, set IsTaskRunningResponse.IsTaskRunningResult to TRUE. Otherwise set it to FALSE.

3.3.4.111.1 Messages

3.3.4.111.1.1 IIpamServer_IsTaskRunning_InputMessage

This is the request for the IsTaskRunning operation.

```
<wsdl:message name="IIpamServer_IsTaskRunning_InputMessage">
  <wsdl:part name="parameters" element="ipam:IsTaskRunning" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsTaskRunning
```

The body of the SOAP message MUST contain the IsTaskRunning element.

3.3.4.111.1.2 IIpamServer_IsTaskRunning_OutputMessage

This is the response for the IsTaskRunning operation.

```
<wsdl:message name="IIpamServer_IsTaskRunning_OutputMessage">
  <wsdl:part name="parameters" element="ipam:IsTaskRunningResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/IsTaskRunningResponse
```

The body of the SOAP message MUST contain the IsTaskRunningResponse element.

3.3.4.111.2 Elements

3.3.4.111.2.1 IsTaskRunning

This element specifies the input values for the IsTaskRunning operation.

```
<xs:element name="IsTaskRunning">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.111.2.2 IsTaskRunningResponse

This element specifies the output values for the IsTaskRunning operation.

```
<xs:element name="IsTaskRunningResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="IsTaskRunningResult" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.112 ManuallyAddServer

This operation can be used to manually add a server instance information into the IPAM data store.

```
<wsdl:operation name="ManuallyAddServer">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyAddServer"
message="ipam:IIpamServer_ManuallyAddServer_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyAddServerResponse"
message="ipam:IIpamServer_ManuallyAddServer_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_ManuallyAddServer_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_ManuallyAddServer_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If ManuallyAddServer.serverInfo is null, an appropriate SOAP fault MUST be generated.
2. Validate the ManuallyAddServer.serverInfo using the steps listed under ValidateServerInfo section passing ManuallyAddServer.serverInfo as Param_serverInfo. If one or more validations fail, an appropriate SOAP fault MUST be generated.
3. If ManuallyAddServer.serverInfo.ServerGuid is not specified or empty, an appropriate SOAP fault MUST be generated.
4. Lookup the row in ADM_ServersTable whose ServerGuid is same as ManuallyAddServer.serverInfo.ServerGuid. If they are the same, since an attempt is being done to add a server which is already existing, an appropriate SOAP fault MUST be generated.
5. Insert a new row into ADM_ServersTable using the ManuallyAddServer.serverInfo data. Assign the RecordId generated to ManuallyAddServerResponse.ManuallyAddServerResult.
6. For each ServerRole in ManuallyAddServer.serverInfo.ServerRoleCollection, add an entry into the ADM_ServerRolesTable.
7. If ManuallyAddServer.serverInfo.ServerCustomDataCollection is specified, validate them by performing the processing rules listed under the section ValidateCustomFieldValues by passing ManuallyAddServer.serverInfo.ServerCustomDataCollection. If it is valid, call the procedure SetCustomFieldValues in ADM_CustomFieldValuesAssociationTable by passing the following parameters:

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1. Param_ObjectType is set to EnumerationObjectType.ServerInfo.
2. Param_addressFamily is not set to any value as ServerInfo is address family agnostic information.
3. Param_ObjectRecordId is set to ManuallyAddServerResponse.ManuallyAddServerResult.
4. Param_CustomFieldValuesCollection is assigned the value of ManuallyAddServer.serverInfo.ServerCustomDataCollection.

3.3.4.112.1 Messages

3.3.4.112.1.1 IIpamServer_ManuallyAddServer_InputMessage

This is the request for the ManuallyAddServer operation.

```
<wsdl:message name="IIpamServer_ManuallyAddServer_InputMessage">
  <wsdl:part name="parameters" element="ipam:ManuallyAddServer" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ManuallyAddServer
```

The body of the SOAP message MUST contain the ManuallyAddServer element.

3.3.4.112.1.2 IIpamServer_ManuallyAddServer_OutputMessage

This is the response for the ManuallyAddServer operation.

```
<wsdl:message name="IIpamServer_ManuallyAddServer_OutputMessage">
  <wsdl:part name="parameters" element="ipam:ManuallyAddServerResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ManuallyAddServerResponse
```

The body of the SOAP message MUST contain the ManuallyAddServerResponse element.

3.3.4.112.2 Elements

3.3.4.112.2.1 ManuallyAddServer

This element specifies the input values for the ManuallyAddServer operation.

```
<xs:element name="ManuallyAddServer">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="serverInfo" nillable="true" type="ipam:ServerInfo" />
    </xs:sequence>
  </xs:complexType>
```


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```
</xs:element>
```

3.3.4.112.2.2 ManuallyAddServerResponse

This element specifies the output values for the ManuallyAddServer operation.

```
<xs:element name="ManuallyAddServerResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ManuallyAddServerResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.113 ManuallyUpdateServer

This operation can be used to manually update a specified ServerInfo data.

```
<wsdl:operation name="ManuallyUpdateServer">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyUpdateServer"
message="ipam:IIpamServer_ManuallyUpdateServer_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyUpdateServerResponse"
message="ipam:IIpamServer_ManuallyUpdateServer_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_ManuallyUpdateServer_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_ManuallyUpdateServer_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If ManuallyUpdateServer.serverInfo is null, an appropriate SOAP fault MUST be generated.
2. Validate the ManuallyUpdateServer.serverInfo using the steps listed under ValidateServerInfo section passing ManuallyUpdateServer.serverInfo as Param_serverInfo. If one or more validations fail, an appropriate SOAP fault MUST be generated.
3. If ManuallyUpdateServer.serverInfo.ModifiedProperties contains the ServerRoleCollection, set ManuallyUpdateServer.serverInfo.NewFlag to ServerInfoNewFlag.Modified.
4. Update the list of properties in ManuallyUpdateServer.serverInfo.ModifiedProperties to the existing row of the ServerInfo data in ADM_ServersTable.
5. Remove the list of ServerRole for the ServerInfo from ADM_ServerRolesTable by looking up the rows with ServerRecordId being ServerInfo.RecordId.
6. For each ServerRole in ManuallyAddServer.serverInfo.ServerRoleCollection, add an entry into the ADM_ServerRolesTable.
7. If ManuallyUpdateServer.serverInfo.ServerCustomDataCollection is specified, validate them by performing the processing rules listed under the section ValidateCustomFieldValues by passing ManuallyUpdateServer.serverInfo.ServerCustomDataCollection. If it is valid, call the procedure

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SetCustomFieldValues in ADM_CustomFieldValuesAssociationTable by passing the following parameters:

1. Param_ObjectType is set to EnumerationObjectType.ServerInfo.
2. Param_addressFamily is not set to any value as ServerInfo is address family agnostic information.
3. Param_ObjectRecordId is set to ManuallyUpdateServerResponse.ManuallyUpdateServerResult.
4. Param_CustomFieldValuesCollection is assigned the value of ManuallyAddServer.serverInfo.ServerCustomDataCollection.

3.3.4.113.1 Messages

3.3.4.113.1.1 IIpamServer_ManuallyUpdateServer_InputMessage

This is the request for the ManuallyUpdateServer operation.

```
<wsdl:message name="IIpamServer_ManuallyUpdateServer_InputMessage">
  <wsdl:part name="parameters" element="ipam:ManuallyUpdateServer" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ManuallyUpdateServer
```

The body of the SOAP message MUST contain the ManuallyUpdateServer element.

3.3.4.113.1.2 IIpamServer_ManuallyUpdateServer_OutputMessage

This is the response for the ManuallyUpdateServer operation.

```
<wsdl:message name="IIpamServer_ManuallyUpdateServer_OutputMessage">
  <wsdl:part name="parameters" element="ipam:ManuallyUpdateServerResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ManuallyUpdateServerResponse
```

The body of the SOAP message MUST contain the ManuallyUpdateServerResponse element.

3.3.4.113.2 Elements

3.3.4.113.2.1 ManuallyUpdateServer

This element specifies the input values for the ManuallyUpdateServer operation.

```
<xs:element name="ManuallyUpdateServer">
  <xs:complexType>
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" name="serverInfo" nillable="true" type="ipam:ServerInfo" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.113.2.2 ManuallyUpdateServerResponse

This element specifies the output values for the ManuallyUpdateServer operation.

```
<xs:element name="ManuallyUpdateServerResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.114 PurgeAuditData

This operation can be used to initiate the purge of the rows in the various audit tables in the IPAM data store.

```
<wsdl:operation name="PurgeAuditData">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/PurgeAuditData"
message="ipam:IIpamServer_PurgeAuditData_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/PurgeAuditDataResponse"
message="ipam:IIpamServer_PurgeAuditData_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_PurgeAuditData_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_PurgeAuditData_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

If PurgeAuditData.auditPurge is not null, and EndDate is specified and is greater than the current date and time, and at least one of the following settings is set to TRUE, perform the following steps:

- PurgeDhcpConfigurationAudit
- PurgeIPAddressAudit
- PurgeIpamConfigurationAudit
- EndDate MUST be specified and MUST NOT be greater than current date and time.
- The following steps are performed in an asynchronous manner once the response message is also sent out.

  1. Set ADM_IsAuditPurgeInProgress to TRUE.
  2. Set ADM_CommonProperties.LastPurgeAuditResult to "".
  3. If PurgeAuditData.auditPurge.PurgeDhcpConfigurationAudit is TRUE,

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- Delete rows from ADM_ConfigurationAuditTable whose TimeOfEvent is lesser than or equal to EndDate specified and ServerType is DHCP.

4. If PurgeAuditData.auditPurge.PurgeIPAddressAudit is TRUE,

   - Delete rows from ADM_IPAddressAuditTable whose TimeOfEvent is lesser than or equal to EndDate specified.

5. If PurgeAuditData.auditPurge.PurgeIpamConfigurationAudit is TRUE,

   - Delete rows from ADM_ConfigurationAuditTable whose TimeOfEvent is lesser than or equal to EndDate specified and ServerType is IPAM.

- Set ADM_IsAuditPurgeInProgress to FALSE.
- If during the processing of the audit purge, any SOAP fault was generated, set ADM_CommonProperties.LastPurgeAuditResult to the fault information.

3.3.4.114.1 Messages

3.3.4.114.1.1 IIpamServer_PurgeAuditData_InputMessage

This is the request for the PurgeAuditData operation.

```
<wsdl:message name="IIpamServer_PurgeAuditData_InputMessage">
  <wsdl:part name="parameters" element="ipam:PurgeAuditData" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/PurgeAuditData
```

The body of the SOAP message MUST contain the PurgeAuditData element.

3.3.4.114.1.2 IIpamServer_PurgeAuditData_OutputMessage

This is the response for the PurgeAuditData operation.

```
<wsdl:message name="IIpamServer_PurgeAuditData_OutputMessage">
  <wsdl:part name="parameters" element="ipam:PurgeAuditDataResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/PurgeAuditDataResponse
```

The body of the SOAP message MUST contain the PurgeAuditDataResponse element.

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3.3.4.114.2 Elements

3.3.4.114.2.1 PurgeAuditData

This element specifies the input values for the PurgeAuditData operation.

```
<xs:element name="PurgeAuditData">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="auditPurgeObject" nillable="true"
type="ipam:AuditPurgeSettings" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.114.2.2 PurgeAuditDataResponse

This element specifies the output values for the PurgeAuditData operation.

```
<xs:element name="PurgeAuditDataResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.115 RemapRange

This operation is used to specifically map a particular range from a list of possible overlapping ranges to an address block.

```
<wsdl:operation name="RemapRange">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapRange"
message="ipam:IIpamServer_RemapRange_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapRangeResponse"
message="ipam:IIpamServer_RemapRange_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_RemapRange_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_RemapRange_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the IPRange corresponding to the **RemapRange.rangeRecordId** by calling the **GetIPRangeFromTable** procedure of the **ADM_IPRangeTable** passing the **RemapRange.rangeRecordId** as **Param_id** input parameter and **RemapRange.addressFamily** as the **Param_addressfamily** input parameter. Store the result output parameter as **rangeToRemap**.
2. If the **rangeToRemap** is null, return an appropriate SOAP fault to the client.
3. If the **rangeToRemap.IPBlockId** is already set, the **rangeToRemap** is already mapped to an address block and no further processing is required.

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4. Get the IP address block which can map this range by calling the **GetParentBlockIdForAddressRange** with the following input parameters.
   - **Param_StartIPAddress** is assigned the value of **rangeToRemap.StartIPAddress**.
   - **Param_EndIPAddress** is assigned the value of **rangeToRemap.EndIPAddress**.
   - **Param_PrefixLength** is assigned the value of **rangeToRemap.PrefixLengt**h
   - **Param_RecordIdToExclude** is set to 0.
5. The **Result_MappingBlockRecordId** returned by the above procedure is stored as ParentIPBlockId.
6. If ParentIPBlockId is 0, there are no valid blocks to remap the range to. Return an appropriate SOAP fault to the client.
7. Get the list of overlapping ranges for the **rangeToRemap** by calling the **GetOverlappingRanges** procedure of the **ADM_IPRangeTable** with the following input parameters.
   - **Param_StartIPAddress** input parameter is assigned the value of **rangeToRemap.StartIPAddress**.
   - **Param_EndIPAddress** input parameter is assigned the value of **rangeToRemap.EndIPAddress**.
   - **Param_ExclusionRanges** input parameter is assigned the value of **rangeToRemap.ExclusionRanges**.
   - **Param_RecordIdToExclude** is assigned the value of **rangeToRemap.RecordId**.
8. The **Result_OverlappingRows** returned by the above procedure is stored in PossibleOverlappingRanges.
9. For each of the rows in the PossibleOverlappingRanges, set the IPBlockId to 0 and update the rows in the **ADM_IPRangeTable**.
10. Set the **rangeToRemap.IPBlockId** to ParentIPBlockId and update the row in the **ADM_IPRangeTable**.

3.3.4.115.1 Messages

3.3.4.115.1.1 IIpamServer_RemapRange_InputMessage

This is the request for the RemapRange operation.

```
<wsdl:message name="IIpamServer_RemapRange_InputMessage">
  <wsdl:part name="parameters" element="ipam:RemapRange" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/RemapRange
```


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The body of the SOAP message MUST contain the RemapRange element.

3.3.4.115.1.2 IIpamServer_RemapRange_OutputMessage

This is the response for the RemapRange operation.

```
<wsdl:message name="IIpamServer_RemapRange_OutputMessage">
  <wsdl:part name="parameters" element="ipam:RemapRangeResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/RemapRangeResponse
```

The body of the SOAP message MUST contain the RemapRangeResponse element.

3.3.4.115.2 Elements

3.3.4.115.2.1 RemapRange

This element specifies the input values for the RemapRange operation.

```
<xs:element name="RemapRange">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="rangeRecordId" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.115.2.2 RemapRangeResponse

This element specifies the output values for the RemapRange operation.

```
<xs:element name="RemapRangeResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.116 RemapSubnet

This operation is used to specifically map a particular subnet from a list of possible overlapping subnets to an address block.

```
<wsdl:operation name="RemapSubnet">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapSubnet"
message="ipam:IIpamServer_RemapSubnet_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapSubnetResponse"
message="ipam:IIpamServer_RemapSubnet_OutputMessage" />
```


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```
</wsdl:operation>
```

Upon receiving the IIpamServer_RemapSubnet_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_RemapSubnet_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Fault if RemapSubnet.addressFamily is neither Internet nor InternetV6.
2. Get the subnet corresponding to the RemapSubnet.id by calling the **GetSubnetById** procedure of the **ADM_SubnetTable** passing the **RemapSubnet.id** as **Param_ SubnetId**. Store the resulting output parameter as **subnetToRemap**.
3. If the subnetToRemap is NULL, return an appropriate SOAP fault to the client.
4. Call the **Remap** procedure on **ADM_SubnetTable** with following parameters:
    1. **Param_SubnetId** is assigned the value of **subnetToRemap.id**.
    2. **Param_addressFamily** is assigned the value of **rangeToRemap.addressFamily.**

3.3.4.116.1 Messages

3.3.4.116.1.1 IIpamServer_RemapSubnet_InputMessage

This is the request for the RemapSubnet operation.

```
<wsdl:message name="IIpamServer_RemapSubnet_InputMessage">
  <wsdl:part name="parameters" element="ipam:RemapSubnet" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/RemapSubnet
```

The body of the SOAP message MUST contain the RemapSubnet element.

3.3.4.116.1.2 IIpamServer_RemapSubnet_OutputMessage

This is the response for the RemapSubnet operation.

```
<wsdl:message name="IIpamServer_RemapSubnet_OutputMessage">
  <wsdl:part name="parameters" element="ipam:RemapSubnetResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/RemapSubnetResponse
```

The body of the SOAP message MUST contain the RemapSubnetResponse element.

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3.3.4.116.2 Elements

3.3.4.116.2.1 RemapSubnet

This element specifies the input values for the RemapSubnet operation.

```
<xs:element name="RemapSubnet">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="id" type="xsd:long" />
      <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

id: RecordId of the subnet that is to be remapped.

addressFamily: The address family of the subnet that is to be remapped.

3.3.4.116.2.2 RemapSubnetResponse

This element specifies the output values for the RemapSubnet operation.

```
<xs:element name="RemapSubnetResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

This element is empty.

3.3.4.117 ResetZoneHealth

This operation can be used to insert the zone health status reset event for zones hosted on dns servers.

```
<wsdl:operation name="ResetZoneHealth">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ResetZoneHealth"
message="ipam:IIpamServer_ResetZoneHealth_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ResetZoneHealthResponse"
message="ipam:IIpamServer_ResetZoneHealth_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_ResetZoneHealth_InputMessage request message, the server performs the following processing steps. Upon successful completion of the following steps, the server MUST respond with the IIpamServer_ResetZoneHealth_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If neither ResetZoneHealth.zoneId nor ResetZoneHealth.dnsServerId is greater than 0, an appropriate SOAP fault MUST be generated.

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2. Initialize serverZoneRecordIds to be a list of 64-bit signed integers to hold the RecordId of rows in ADM_DNSServerForwardLookupZoneTable for which the zone health reset event has to be added.

3. If the ResetZoneHealth.zoneId value is greater than 0 and the ResetZoneHealth.dnsServerId value is lesser than or equal to 0:

    1. Enumerate the rows in ADM_DNSServerForwardLookupZoneTable whose DnsZoneId is equal to ResetZoneHealth.zoneId.

    2. For each row enumerated in the above step, add the RecordId to serverZoneRecordIds.

4. If ResetZoneHealth.dnsServerId value is greater than 0 and ResetZoneHealth.zoneId is lesser than or equal to 0:

    1. Enumerate the rows in ADM_DNSServerForwardLookupZoneTable whose ServerRecordId is equal to ResetZoneHealth.dnsServerId.

    2. For each row enumerated in the above step, add the RecordId to serverZoneRecordIds.

5. If both ResetZoneHealth.dnsServerId value and ResetZoneHealth.zoneId are greater than 0:

    1. Lookup the ADM_DNSServerForwardLookupZoneTable for the row whose ServerRecordId is equal to ResetZoneHealth.dnsServerId and DnsZoneId is equal to ResetZoneHealth.zoneId.

    2. Add the RecordId of the row meeting the criteria above to serverZoneRecordIds.

6. For each record identifier recordId present in serverZoneRecordIds:

    - Insert a row in the ADM_DnsZoneEventsTable with the following values.

        1. ServerZoneId is set to the recordId for which the zone health reset event is to be inserted.

        2. EventId is set to 0.

        3. LoggedEventLevel is set to Informational.

        4. TaskCategory is set to 0.

        5. LoggedOn is set to the current time in UTC.

3.3.4.117.1 Messages

3.3.4.117.1.1 IIpamServer_ResetZoneHealth_InputMessage

This is the request for the ResetZoneHealth operation.

```
<wsdl:message name="IIpamServer_ResetZoneHealth_InputMessage">
  <wsdl:part name="parameters" element="ipam:ResetZoneHealth" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ResetZoneHealth
```

The body of the SOAP message MUST contain the ResetZoneHealth element.

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3.3.4.117.1.2 IIpamServer_ResetZoneHealth_OutputMessage

This is the response for the ResetZoneHealth operation.

```
<wsdl:message name="IIpamServer_ResetZoneHealth_OutputMessage">
  <wsdl:part name="parameters" element="ipam:ResetZoneHealthResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ResetZoneHealthResponse
```

The body of the SOAP message MUST contain the ResetZoneHealthResponse element.

3.3.4.117.2 Elements

3.3.4.117.2.1 ResetZoneHealth

This element specifies the input values for the ResetZoneHealth operation.

```
<xs:element name="ResetZoneHealth">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="zoneId" type="xsd:long" />
      <xs:element minOccurs="0" name="dnsServerId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.117.2.2 ResetZoneHealthResponse

This element specifies the output values for the ResetZoneHealth operation.

```
<xs:element name="ResetZoneHealthResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.118 SaveAddressSpace

This operation is used to create a new address space in the IPAM data store.

```
<wsdl:operation name="SaveAddressSpace">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveAddressSpace"
message="ipam:IIpamServer_SaveAddressSpace_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveAddressSpaceResponse"
message="ipam:IIpamServer_SaveAddressSpace_OutputMessage" />
</wsdl:operation>
```


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Upon receiving the IIpamServer_SaveAddressSpace_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_SaveAddressSpace_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the AddressSpace in SaveAddressSpace.addressSpace by invoking the ValidateAddressSpace passing the SaveAddressSpace.addressSpace as Param_AddressSpace.
2. If all the validation requirements are not met, an appropriate SOAP fault MUST be generated.
3. Assign SaveAddressSpace.addressSpace to addressSpaceToSave, a temporary data store.
4. Names of address spaces in IPAM MUST be unique. Check that there isn't already an address space by the addressSpaceToSave.Name.
    1. Call the procedure GetAddressSpaceByName of **ADM_AddressSpaceTable** with the following parameters:
        1. Pass addressSpaceToSave.Name as Param_AddressSpaceName.
        2. Pass addressSpaceToSave.AddressSpaceType as Param_AddressSpaceType.
    2. If Result_AddressSpace is not NULL or empty, an appropriate SOAP fault MUST be generated.
5. Add a new row in the **ADM_AddressSpaceTable** with the values from addressSpaceToSave properties.
6. Assign the RecordId:Result_addressSpaceId of the new record to SaveAddressSpaceResponse.SaveAddressSpaceResult.
7. If the CustomFieldValues is also part of the properties of the addressSpaceToSave, call the procedure SetCustomFieldValues in **ADM_CustomFieldValuesAssociationTable** by passing the following parameters:
    1. Param_ObjectType is set to EnumerationObjectType.AddressSpace.
    2. Param_addressFamily is set to Internet if the UpdateBlock.ipBlock is IPv4Block. It is set to InternetV6 if the UpdateBlock.ipBlock is IPv6Block.
    3. Param_ObjectRecordId is assigned the value of updatedAddressSpace.RecordId.
    4. Param_CustomFieldValuesCollection is assigned the value of updatedAddressSpace.CustomFieldValues.

3.3.4.118.1 Messages

3.3.4.118.1.1 IIpamServer_SaveAddressSpace_InputMessage

This is the request for the SaveAddressSpace operation.

```
<wsdl:message name="IIpamServer_SaveAddressSpace_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveAddressSpace" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/SaveAddressSpace
```

The body of the SOAP message MUST contain the SaveAddressSpace element.

3.3.4.118.1.2 IIpamServer_SaveAddressSpace_OutputMessage

This is the response for the SaveAddressSpaceoperation.

```
<wsdl:message name="IIpamServer_SaveAddressSpace_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveAddressSpaceResponse" />
</wsdl:message
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveAddressSpaceResponse
```

The body of the SOAP message MUST contain the SaveAddressSpaceResponse element.

3.3.4.118.2 Elements

3.3.4.118.2.1 SaveAddressSpace

This element specifies the input values for the SaveAddressSpace operation.

```
<xs:element name="SaveAddressSpace">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressSpace" nillable="true" type="ipam:AddressSpace"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

addressSpace: The address space of type IPAM:AddressSpace that is to be saved in the IPAM datastore.

3.3.4.118.2.2 SaveAddressSpaceResponse

This element specifies the output values for the SaveAddressSpace operation.

```
<xs:element name="SaveAddressSpaceResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="SaveAddressSpaceResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

SaveAddressSpaceResult: The RecordId of the new AddressSpace record that is added to the IPAM datastore.

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3.3.4.119 SaveBlock

This operation can be used to create a new address block in the IPAM data store.

```
<wsdl:operation name="SaveBlock">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveBlock"
message="ipam:IIpamServer_SaveBlock_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveBlockResponse"
message="ipam:IIpamServer_SaveBlock_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_SaveBlock_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_SaveBlock_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If the SaveBlock.ipBlock is IPv4Block, the address family for the simple table selection within the ADM_IPBlocksTable compound table is Internet. If it is IPv6Block, the address family InternetV6 is used for the table selection.

2. Validate the IPBlock in SaveBlock.ipBlock by invoking the ValidateIPBlock passing the SaveBlock.ipBlock as Param_IPBlock.

3. If not all the validation requirements are met, an appropriate SOAP fault MUST be generated.

4. Call GetIPBlockParentAndChildDepth procedure of ADM_IPBlocksTable by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress and RecordId as Param_RecordIdToExclude. If the **result** is greater than or equal to 9, an appropriate SOAP fault MUST be generated.

5. Call GetOverlappingBlocks procedure of ADM_IPBlocksTable by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress, RecordId as Param_RecordIdToExclude and PrefixLength as Param_PrefixLength. If the Result_OverlappingBlocks is a non-empty list, an appropriate SOAP fault MUST be generated.

6. Add the new row into the ADM_IPBlocksTable by using the values from SaveBlock.ipBlock. Assign the RecordId of the new row added to SaveBlockResponse.SaveBlockResult.

7. Call the procedure CalculateParentForIPBlock in ADM_IPBlocksTable by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress, RecordId as Param_RecordIdToExclude, AddressCategory as Param_AddressCategory and PrefixLength as Param_PrefixLength. Assign the **result** to IPBlock.ParentIPBlockRecordId and update the row in ADM_IPBlocksTable.

8. Add the new row into the **ADM_IPBlocksTable** by using the values from **SaveBlock.ipBlock**. Assign the **RecordId** of the new row added to **SaveBlockResponse.SaveBlockResult**. Insert a row in **ADM_IPBlockMultivaluedPropertiesTable** with corresponding values from **SaveBlock.ipBlock**. The applicable properties are described in ADM_IPBlockMultivaluedPropertiesTable.

9. Call the procedure AdjustChildIPBlocks by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress, RecordId as Param_RecordIdToExclude, AddressCategory as Param_AddressCategory and PrefixLength as Param_PrefixLength to calculate the existing blocks which might get mapped into the block being modified.

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10. Validate the SaveBlock.block.CustomFieldValues by performing the processing rules listed in ValidateCustomFieldValues.If the CustomFieldValues are valid, call the procedure SetCustomFieldValues in ADM_CustomFieldValuesAssociationTable by passing the following parameters:

    - Param_ObjectType is set to EnumerationObjectType.IPBlock.
    - Param_addressFamily is set to Internet if the SaveBlock.ipBlock is IPv4Block. It is set to InternetV6 if the SaveBlock.ipBlock is IPv6Block.
    - Param_ObjectRecordId is assigned the value of SaveBlockResponse.SaveBlockResult.
    - Param_CustomFieldValuesCollection is assigned the value of SaveBlock.ipBlock.CustomFieldValues.

11. Call CreateAssociationEntry procedure of ADM_AccessScopeAssociationTable to add access scopes for the new Block. Pass the following parameters:

    1. Param_ObjectType is set to EnumerationObjectType.IPBlock.
    2. Param_ObjectId is assigned the value of SaveBlock. ipBlock.RecordId.

3.3.4.119.1 Messages

3.3.4.119.1.1 IIpamServer_SaveBlock_InputMessage

This is the request for the SaveBlock operation.

```
<wsdl:message name="IIpamServer_SaveBlock_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveBlock" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveBlock
```

The body of the SOAP message MUST contain the SaveBlock element.

3.3.4.119.1.2 IIpamServer_SaveBlock_OutputMessage

This is the response for the SaveBlock operation.

```
<wsdl:message name="IIpamServer_SaveBlock_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveBlockResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveBlockResponse
```

The body of the SOAP message MUST contain the SaveBlockResponse element.

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3.3.4.119.2 Elements

3.3.4.119.2.1 SaveBlock

This element specifies the input values for the SaveBlock operation.

```
<xs:element name="SaveBlock">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="block" nillable="true" type="ipam:IPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.119.2.2 SaveBlockResponse

This element specifies the output values for the SaveBlock operation.

```
<xs:element name="SaveBlockResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="SaveBlockResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.120 SaveCustomField

This operation is used to create a new object or update an existing **CustomField** object in the IPAM data store.

```
<wsdl:operation name="SaveCustomField">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomField"
message="ipam:IIpamServer_SaveCustomField_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldResponse"
message="ipam:IIpamServer_SaveCustomField_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_SaveCustomField_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_SaveCustomField_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Set the **saveCustomField** to **SaveCustomField.customField**.
2. If **saveCustomField** is NULL, an appropriate SOAP fault MUST be returned.
3. Validate the **saveCustomField** by performing the processing rules listed under the procedure **ValidateCustomField**.
4. If the record identifier of the custom field object indicated by **saveCustomField.customFieldId** is NULL then add the object **saveCustomField** to Custom fields as follows:

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1. If **saveCustomField.customFieldorigin** is equal to enum value **CustomFieldOrigin.BuiltIn**, an appropriate SOAP fault MUST be returned.

2. Find the number of existing rows in the **ADM_CustomFieldsTable** where **CustomFieldDetails.Origin** field is not equal to **CustomFieldOrigin.BuiltIn**.

3. If the number of non-built-in custom fields in the table is greater than or equal to 128, an appropriate SOAP fault MUST be returned.

4. Add **saveCustomField** to the **ADM_CustomFieldsTable** by setting the corresponding values of **CustomFieldDetails**. While adding set the Origin property of the row as **CustomFieldOrigin.External** and clear the value of **BuiltinCustomFieldNumber** property of the row.

5. Set the **saveCustomField.customFieldId** to the value of **RecordId** of the newly added row.

6. If **saveCustomField.Type** object is equal to **CustomFieldType.Multivalued** then for each **customFieldValue** object in the collection of custom field values **saveCustomField.CustomFieldValues**:

   - Add **customFieldValue** to the **ADM_CustomFieldValuesTable**. While adding set the **CustomFieldRecordId** of the row as **saveCustomField.customFieldId** and set the Value field of **CustomFieldValueDetails** as **customFieldValue.Value**.

7. Return the **RecordId** of the newly created **CustomField** entry i.e. **saveCustomField.customFieldId** as **SaveCustomFieldResponse.SaveCustomFieldResult**.

5. Else, if the record identifier of the custom field object indicated by **saveCustomField.customFieldId** is not NULL then:

   1. Perform the steps listed in the operation **UpdateCustomField** below to update the entry in IPAM data store, with **udpateCustomField** data set as **saveCustomField**.

   2. Return 0 as **SaveCustomFieldResponse.SaveCustomFieldResult**.

3.3.4.120.1 Messages

3.3.4.120.1.1 IIpamServer_SaveCustomField_InputMessage

This is the request for the SaveCustomField operation.

```
<wsdl:message name="IIpamServer_SaveCustomField_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveCustomField" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomField
```

The body of the SOAP message MUST contain the SaveCustomField element.

3.3.4.120.1.2 IIpamServer_SaveCustomField_OutputMessage

This is the response for the SaveCustomField operation.

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```
<wsdl:message name="IIpamServer_SaveCustomField_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveCustomFieldResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldResponse
```

The body of the SOAP message MUST contain the SaveCustomFieldResponse element.

3.3.4.120.2 Elements

3.3.4.120.2.1 SaveCustomField

This element specifies the input values for the SaveCustomField operation.

```
<xs:element name="SaveCustomField">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="customField" nillable="true" type="ipam:CustomField" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.120.2.2 SaveCustomFieldResponse

This element specifies the output values for the SaveCustomField operation.

```
<xs:element name="SaveCustomFieldResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="SaveCustomFieldResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.121 SaveCustomFieldAssociation

This operation is used to save an association between two custom fields to the IPAM data store.

```
<wsdl:operation name="SaveCustomFieldAssociation">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociation"
message="ipam:IIpamServer_SaveCustomFieldAssociation_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociationResponse"
message="ipam:IIpamServer_SaveCustomFieldAssociation_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_SaveCustomFieldAssociation_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_SaveCustomFieldAssociation_OutputMessage message.

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In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If SaveCustomFieldAssociation.customFieldAssociation is null OR SaveCustomFieldAssociation.customFieldAssociation.CustomField1 is null OR SaveCustomFieldAssociation.customFieldAssociation.CustomField2 is null, an appropriate SOAP fault MUST be raised.

2. Check if SaveCustomFieldAssociation.customFieldAssociation.CustomField1.RecordId exists in ADM_CustomFieldsTable. Appropriate SOAP fault MUST be raised if no such record exists or if the CustomField Type is not Multivalued.

3. Check if SaveCustomFieldAssociation.customFieldAssociation.CustomField2.RecordId exists in ADM_CustomFieldsTable. An appropriate SOAP fault MUST be raised if no such record exists or if the CustomField Type is not Multivalued.

4. For each pair customValueAssociation <customFieldValue1, customFieldValue2> in SaveCustomFieldAssociation.customFieldAssociation.CustomFieldValueAssociations:

    1. Get the row from ADM_CustomFieldValues table that has the same record Id as customValueAssociation.m_Item1. An appropriate SOAP fault MUST be raised if no such record exists.

    2. Get the row from ADM_CustomFieldValues table that has the same record Id as customValueAssociation.m_Item2. An appropriate SOAP fault MUST be raised if no such record exists.

    3. Insert a row in ADM_MultiValueCustomFieldValueAssociationTable with values customValueAssociation.m_Item1.RecordId and customValueAssociation.m_Item2.RecordId.

3.3.4.121.1 Messages

3.3.4.121.1.1 IIpamServer_SaveCustomFieldAssociation_InputMessage

This is the request for the SaveCustomFieldAssociation operation.

```
<wsdl:message name="IIpamServer_SaveCustomFieldAssociation_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveCustomFieldAssociation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociation
```

The body of the SOAP message MUST contain the SaveCustomFieldAssociation element.

3.3.4.121.1.2 IIpamServer_SaveCustomFieldAssociation_OutputMessage

This is the response for the SaveCustomFieldAssociation operation.

```
<wsdl:message name="IIpamServer_SaveCustomFieldAssociation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveCustomFieldAssociationResponse" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociationResponse

3.3.4.121.2 Elements

3.3.4.121.2.1 SaveCustomFieldAssociation

This element specifies the input values for the SaveCustomFieldAssociation operation.

```
<xs:element name="SaveCustomFieldAssociation">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="customFieldAssociation" nillable="true"
type="ipam:CustomFieldAssociation" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

customFieldAssociation: Object of type ipam:CustomFieldAssociation representing the association that is to be saved.

3.3.4.121.2.2 SaveCustomFieldAssociationResponse

This element specifies the output values for the SaveCustomFieldAssociation operation.

```
<xs:element name="SaveCustomFieldAssociationResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.122 SaveDiscoveryConfig

This operation can be used to store the discovery configuration setting for a given domain into the IPAM data store.

```
<wsdl:operation name="SaveDiscoveryConfig">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveDiscoveryConfig"
message="ipam:IIpamServer_SaveDiscoveryConfig_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveDiscoveryConfigResponse"
message="ipam:IIpamServer_SaveDiscoveryConfig_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_SaveDiscoveryConfig_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_SaveDiscoveryConfig_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If SaveDiscoveryConfig.discConfig is null, an appropriate SOAP fault MUST be generated.

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2. SaveDiscoveryConfig.discConfig.DiscoveryDomain MUST meet the following validation requirements. Otherwise an appropriate SOAP fault MUST be generated.

    1. MUST NOT be null.

    2. Length MUST be greater than 0

    3. Length MUST NOT be greater than 255.

3. Insert a row into the ADM_DiscoveryConfigurationTable for the row specified in SaveDiscoveryConfig.discConfig. Assign the RecordId of the newly generated row to SaveDiscoveryConfigResponse.SaveDiscoveryConfigResult to be returned in the output message of the operation.

3.3.4.122.1 Messages

3.3.4.122.1.1 IIpamServer_SaveDiscoveryConfig_InputMessage

This is the request for the SaveDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_SaveDiscoveryConfig_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveDiscoveryConfig" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveDiscoveryConfig
```

The body of the SOAP message MUST contain the SaveDiscoveryConfig element.

3.3.4.122.1.2 IIpamServer_SaveDiscoveryConfig_OutputMessage

This is the response for the SaveDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_SaveDiscoveryConfig_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveDiscoveryConfigResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveDiscoveryConfigResponse
```

The body of the SOAP message MUST contain the SaveDiscoveryConfigResponse element.

3.3.4.122.2 Elements

3.3.4.122.2.1 SaveDiscoveryConfig

This element specifies the input values for the SaveDiscoveryConfig operation.

```
<xs:element name="SaveDiscoveryConfig">
  <xs:complexType>
```


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```
    <xs:sequence>
      <xs:element minOccurs="0" name="discConfig" nillable="true" type="ipam:DiscoveryConfig"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.122.2.2 SaveDiscoveryConfigResponse

This element specifies the output values for the SaveDiscoveryConfig operation.

```
<xs:element name="SaveDiscoveryConfigResponse">
  <xs:complexType>

<xs:sequence>
      <xs:element minOccurs="0" name="SaveDiscoveryConfigResult" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.123 SaveLogicalGroup

This operation can be used to create new logical group in the IPAM data store.

```
<wsdl:operation name="SaveLogicalGroup">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveLogicalGroup"
message="ipam:IIpamServer_SaveLogicalGroup_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveLogicalGroupResponse"
message="ipam:IIpamServer_SaveLogicalGroup_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_SaveLogicalGroup_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_SaveLogicalGroup_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If SaveLogicalGroup.logicalGroup is null, an appropriate SOAP fault MUST be generated.
2. Perform the validation steps listed under ValidateLogicalGroup passing SaveLogicalGroup.logicalGroup as Param_logicalGroup. If any of the validation steps is not being met an appropriate SOAP fault MUST be generated.
3. If SaveLogicalGroup.logicalGroup.Origin is LogicalGroupOrigin.BuiltIn, an appropriate SOAP fault MUST be generated as the built-in logical groups cannot be added.
4. Add a row into ADM_LogicalGroupsTable with the information from SaveLogicalGroup.logicalGroup. Assign the RecordId value for the newly added row to SaveLogicalGroupResponse.SaveLogicalGroupResult.

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3.3.4.123.1 Messages

3.3.4.123.1.1 IIpamServer_SaveLogicalGroup_InputMessage

This is the request for the SaveLogicalGroup operation.

```
<wsdl:message name="IIpamServer_SaveLogicalGroup_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveLogicalGroup" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveLogicalGroup
```

The body of the SOAP message MUST contain the SaveLogicalGroup element.

3.3.4.123.1.2 IIpamServer_SaveLogicalGroup_OutputMessage

This is the response for the SaveLogicalGroup operation.

```
<wsdl:message name="IIpamServer_SaveLogicalGroup_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveLogicalGroupResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveLogicalGroupResponse
```

The body of the SOAP message MUST contain the SaveLogicalGroupResponse element.

3.3.4.123.2 Elements

3.3.4.123.2.1 SaveLogicalGroup

This element specifies the input values for the SaveLogicalGroup operation.

```
<xs:element name="SaveLogicalGroup">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="logicalgroup" nillable="true" type="ipam:LogicalGroup"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.123.2.2 SaveLogicalGroupResponse

This element specifies the output values for the SaveLogicalGroup operation.

```
<xs:element name="SaveLogicalGroupResponse">
  <xs:complexType>
```


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```
    <xs:sequence>
      <xs:element minOccurs="0" name="SaveLogicalGroupResult" nillable="true" type="xsd:long"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.124 SaveRange

This operation is used to create a new range object in the IPAM data store.

```
<wsdl:operation name="SaveRange">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveRange"
message="ipam:IIpamServer_SaveRange_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveRangeResponse"
message="ipam:IIpamServer_SaveRange_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_SaveRange_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_SaveRange_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the SaveRange.range by calling ValidateIPRange by passing SaveRange.range as Param_range.
2. If any of the rules in the above procedure fails, raise an appropriate SOAP fault.
3. Perform the processing rules listed in SetIPRangeMapping to calculate the **IsOverlapping** field of the ranges, and mapping the addresses by passing the SaveRange.range as the currentRange parameter. Assign the currentRange.RecordId to SaveRangeResponse.SaveRangeResult.
4. Validate the SaveRange.range.CustomFieldValues by performing the processing rules listed in ValidateCustomFieldValues. If the custom field values are valid, store the custom field values by calling the SetCustomFieldValues procedure of **ADM_CustomFieldValuesAssociationTable** with the following parameters:
    1. Param_ObjectType is set to EnumeratedObjectType.IPRange.
    2. Param_ObjectRecordId is set to currentRange.RecordId.
    3. Param_addressFamily is set to Internet if the SaveRange.range is IPv4Range. If SaveRange.range is IPv6Range, Param_addressFamily is set to InternetV6.
    4. Param_CustomFieldValuesCollection is assigned SaveRange.range.CustomFieldValues.
5. CreateAccessScopeAssociations for currentRange by calling CreateAssociationEntry for **ADM_AccessScopeAssociationTable** by passing following parameters:
6. Param_objectType is set to EnumeratedObjectType.IPRange.
7. Param_objectId is set to currentRange.RecordId.

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3.3.4.124.1 Messages

3.3.4.124.1.1 IIpamServer_SaveRange_InputMessage

This is the request for the SaveRange operation.

```
<wsdl:message name="IIpamServer_SaveRange_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveRange" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveRange
```

The body of the SOAP message MUST contain the SaveRange element.

3.3.4.124.1.2 IIpamServer_SaveRange_OutputMessage

This is the response for the SaveRange operation.

```
<wsdl:message name="IIpamServer_SaveRange_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveRangeResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveRangeResponse
```

The body of the SOAP message MUST contain the SaveRangeResponse element.

3.3.4.124.2 Elements

3.3.4.124.2.1 SaveRange

This element specifies the input values for the SaveRange operation.

```
<xs:element name="SaveRange">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="range" nillable="true" type="ipam:IPRange" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.124.2.2 SaveRangeResponse

This element specifies the output values for the SaveRange operation.

```
<xs:element name="SaveRangeResponse">
  <xs:complexType>
```


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```
    <xs:sequence>
      <xs:element minOccurs="0" name="SaveRangeResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.125 SaveSubnet

This operation is used to create a new range object in the IPAM data store.

```
<wsdl:operation name="SaveSubnet">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveSubnet"
message="ipam:IIpamServer_SaveSubnet_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveSubnetResponse"
message="ipam:IIpamServer_SaveSubnet_OutputMessage" />
</wsdl:operation
```

Upon receiving the IIpamServer_SaveRange_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_SaveRange_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the SaveSubnet.subnet by calling ValidateSubnet passing SaveSubnet.subnet as Param_subnet.
2. If any of the rules in the previous validation fails, an appropriate SOAP fault MUST be raised.
3. Assign SaveSubnet.subnet to subnetToBeSaved.
4. Check if a subnet already exists with the same startIP and EndIP in the same address space as subnetToBeSaved. Raise an appropriate SOAP fault if such a subnet already exists in the IPAM data store. Follow these steps for this:
    1. Call the procedure GetAllSubnetsForAddressCategory of **ADM_SubnetTable** with the following parameters for the call:
        1. Assign subnetToBeSaved.AddressCategory to Param_AddressCategory.
        2. Assign the Result_Subnets to a temporary data store possibleConflictingSubnets.
    2. For each of the currentSubnet subnets in possibleConflictingSubnets, check if currentSubnet.startIPAddress = subnetToBeSaved.startIPAddress and currentSubnet.EndIPAddress = subnetToBeSaved.EndIPAddress and currentSubnet.AddressSpaceId = subnetToBeSaved.AddressSpaceId. Raise a fault f the subnet already exists in the IPAM data store.
5. Calculate the IsOverlapping and UseForUtilization properties of the subnetToBeSaved by using the following steps:
    1. Get all the subnets that overlap with subnetToBeSaved by calling the procedure GetOverlappingSubnets for ADM_SubnetTable with the following params:
        1. Assign subnetToBeSaved.startIPAddress to Param_StartIPAddress.
        2. Assign subnetToBeSaved.EndIPAddress to Param_EndIPAddress.

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3. Assign subnetToBeSaved.PrefixLength to Param_PrefixLength.

4. Assign subnetToBeSaved.AddressSpaceId to Param_AddressSpaceId.

5. Assign subnetToBeSaved.RecordId to Param_RecordIdToExclude.

2. For each of the subnets in Result_OverlappingBlocks, check if the UseForUtilization property is set. If none of these subnets have the UseForUtilization set to TRUE or if the Result_OverlappingBlocks is empty, set UseForUtilization property subnetToBeSaved to TRUE.

3. If Result_OverlappingBlocks is empty, set isOverlapping property for subnetToBeSaved to FALSE. Otherwise, set the isOverlapping property of subnetToBeSaved to TRUE.

6. If the subnetToBeSaved.addressSpaceRecordId points to the default address space, do the following to compute the parent IP block to which it maps. Only subnets that belong to the default address space map to a block. Call CalculateParentForIPBlock for **ADM_IPBlocksTable** with the following parameters:

   1. Assign subnetToBeSaved.startIPAddress to Param_StartIPAddress.

   2. Assign subnetToBeSaved.EndIPAddress to Param_EndIPAddress.

   3. Assign subnetToBeSaved.PrefixLength to Param_ PrefixLength.

   4. Assign subnetToBeSaved.RecordId to Param_RecordIdToExclude.

   5. Assign subnetToBeSaved.AddressCategory to Param_AddressCategory.

7. Set the ParentIPBlockRecordID of subnetToBeSaved to RecordId returned in the previous result.

8. Add a new row into the **ADM_IPBlocksTable** by using the values from subnetToBeSaved.

9. Add a new row into the **ADM_SubnetTable** by using the values from subnetToBeSaved. Assign the RecordId of the new row added to subnetToBeSaved.

10. Add a new row into the **ADM_IPBlockMultivaluedPropertiesTable** by using the values from subnetToBeSaved. Values applicable are listed in **ADM_IPBlockMultivaluedPropertiesTable**.

11. Update the isOverlapping property of all the subnets that overlap with subnetToBeSaved. For all the rows of **ADM_SubnetTable** corresponding to Result_OverlappingBlocks calculated in step 6b, set IsOverlapping to true.

12. Validate the subnetToBeSaved.CustomFieldValues by performing the processing rules listed in ValidateCustomFieldValues. If the custom field values are valid, store the custom field values by calling the SetCustomFieldValues procedure of **ADM_CustomFieldValuesAssociationTable** with the following parameters:

13. **Param_ObjectType** is set to **EnumeratedObjectType.Subnet**.

14. **Param_ObjectRecordId** is set to **subnetToBeSaved.RecordId**.

15. **Param_addressFamily** is set to Internet if the **subnetToBeSaved** is IPv4Range. If **subnetToBeSaved** is IPv6Range, **Param_addressFamily** is set to InternetV6.

16. **Param_CustomFieldValuesCollection** is assigned **subnetToBeSaved.CustomFieldValues**.

17. Call CreateAssociationEntry procedure of **ADM_AccessScopeAssociationTable** with the following parameters:

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1. Assign subnetToBeSaved.RecordId to **Param_objectId**.
2. Assign subnetToBeSaved.ObjectType to **Param_objectType**.

3.3.4.125.1 Messages

3.3.4.125.1.1 IIpamServer_SaveSubnet_InputMessage

This is the request for the SaveSubnet operation.

```
<wsdl:message name="IIpamServer_SaveSubnet_InputMessage">
  <wsdl:part name="parameters" element="ipam:SaveSubnet" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveSubnet
```

The body of the SOAP message MUST contain the SaveSubnet element.

3.3.4.125.1.2 IIpamServer_SaveSubnet_OutputMessage

This is the response for the SaveSubnet operation.

```
<wsdl:message name="IIpamServer_SaveSubnet_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SaveSubnetResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

http://Microsoft.Windows.Ipam/IIpamServer/SaveSubnetResponse

3.3.4.125.2 Elements

3.3.4.125.2.1 SaveSubnet

The SaveSubnet element specifies the input data for the SaveSubnet operation.

```
<xs:element name="SaveSubnet">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subnet" nillable="true" type="ipam:IPSubnet" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

subnet: the IPAMSubnet object that is to be saved to IPAM datastore.

3.3.4.125.2.2 SaveSubnetResponse

The SaveSubnetResponse element specifies the output data for the SaveSubnet operation.

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```
<xs:element name="SaveSubnetResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="SaveSubnetResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

SaveSubnetResult: The RecordId of the new row saved in the IPAM datastore.

3.3.4.126 SetAccessScopeForObjects

This operation is used to associate an access scope to IPAM objects.

```
<wsdl:operation name="SetAccessScopeForObjects">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetAccessScopeForObjects"
message="ipam:IIpamServer_SetAccessScopeForObjects_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetAccessScopeForObjectsResponse"
message="ipam:IIpamServer_SetAccessScopeForObjects_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_ SetAccessScopeForObjects_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_ SetAccessScopeForObjects_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If SetAccessScopeForObjects.objects is NULL or SetAccessScopeForObjects.objects.Count is 0, then a SOAP fault MUST be generated as specified in section 2.2.2.1.
2. Iteratively go through each element in SetAccessScopeForObjects.objects, assigning the currently accessed object to tempVar.object. The procedure SetAccessScopeForObject in ADM_AccessScopeTable is called with parameters tempVar.object.objectId, SetAccessScopeForObjects.objectType and SetAccessScopeForObjects.accessScopeId. The procedure is used to associate the SetAccessScopeForObjects.accessScopeId to tempVar.object based on SetAccessScopeForObjects.objectType.
3. The exceptions resulting from these calls are collected and passed in the output message.

3.3.4.126.1 Messages

3.3.4.126.1.1 IIpamServer_SetAccessScopeForObjects_InputMessage

The IIpamServer_SetAccessScopeForObjects_InputMessage message initiates the SetAccessScopeForObjects WSDL operation.

```
<wsdl:message name="IIpamServer_SetAccessScopeForObjects_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetAccessScopeForObjects" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

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```
http://Microsoft.Windows.Ipam/IIpamServer/SetAccessScopeForObjects
```

The body of the SOAP message MUST contain the SetAccessScopeForObjects element.

3.3.4.126.1.2 IIpamServer_SetAccessScopeForObjects_OutputMessage

The IIpamServer_SetAccessScopeForObjects_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_SetAccessScopeForObjects_InputMessage message.

```
<wsdl:message name="IIpamServer_SetAccessScopeForObjects_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SetAccessScopeForObjectsResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/SetAccessScopeForObjectsResponse
```

The body of the SOAP message MUST contain the SetAccessScopeForObjectsResponse element.

3.3.4.126.2 Elements

3.3.4.126.2.1 SetAccessScopeForObjects

The SetAccessScopeForObjects element contains the input data for the SetAccessScopeForObjects operation.

```
<xs:element name="SetAccessScopeForObjects">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="objects" nillable="true" type="serarr:ArrayOflong" />
      <xs:element minOccurs="0" name="accessScopeId" nillable="true" type="xsd:long" />
      <xs:element minOccurs="0" name="objectType" type="ipam:IpamObjectType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.126.2.2 SetAccessScopeForObjectsResponse

The SetAccessScopeForObjectsResponse element contains the output data for the SetAccessScopeForObjects operation.

```
<xs:element name="SetAccessScopeForObjectsResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="SetAccessScopeForObjectsResult" nillable="true"
type="serarr:ArrayOfKeyValueOflongIpamExceptionmhTjmZB3" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.127 SetCommonPropertyValue

This operation can be used to set the value into the ADM_CommonProperties table in the IPAM data store.

```
<wsdl:operation name="SetCommonPropertyValue">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetCommonPropertyValue"
message="ipam:IIpamServer_SetCommonPropertyValue_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetCommonPropertyValueResponse"
message="ipam:IIpamServer_SetCommonPropertyValue_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_SetCommonPropertyValue_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_SetCommonPropertyValue_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- Update the ADM_CommonProperties table for the row with the key specified in SetCommonPropertyValue.property and assign it with the SetCommonPropertyValue.value.

3.3.4.127.1 Messages

3.3.4.127.1.1 IIpamServer_SetCommonPropertyValue_InputMessage

This is the request for the SetCommonPropertyValue operation.

```
<wsdl:message name="IIpamServer_SetCommonPropertyValue_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetCommonPropertyValue" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SetCommonPropertyValue
```

The body of the SOAP message MUST contain the SetCommonPropertyValue element.

3.3.4.127.1.2 IIpamServer_SetCommonPropertyValue_OutputMessage

This is the response for the SetCommonPropertyValue operation.

```
<wsdl:message name="IIpamServer_SetCommonPropertyValue_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SetCommonPropertyValueResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SetCommonPropertyValueResponse
```

The body of the SOAP message MUST contain the SetCommonPropertyValueResponse element.

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3.3.4.127.2 Elements

3.3.4.127.2.1 SetCommonPropertyValue

This element specifies the input values for the SetCommonPropertyValue operation.

```
<xs:element name="SetCommonPropertyValue">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="commonProperty" type="ipam:CommonProperties" />
      <xs:element minOccurs="0" name="value" nillable="true" type="xsd:string" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.127.2.2 SetCommonPropertyValueResponse

This element specifies the output values for the SetCommonPropertyValue operation.

```
<xs:element name="SetCommonPropertyValueResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.128 SetDatabaseConfiguration

This operation is used to set the database config for the provisioned IPAM database.

```
<wsdl:operation name="SetDatabaseConfiguration">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetDatabaseConfiguration"
message="ipam:IIpamServer_SetDatabaseConfiguration_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetDatabaseConfigurationResponse"
message="ipam:IIpamServer_SetDatabaseConfiguration_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_SetDatabaseConfiguration_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_SetDatabaseConfiguration_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If IPAM is not provisioned then an appropriate SOAP fault MUST be generated as specified in section 2.2.2.1.
2. Call ValidateDatabaseConfiguration with SetDatabaseConfiguration.newDBConfig as the parameter.
3. Modify ADM_IPAMDatabaseConfiguration based on SetDatabaseConfiguration.newDBConfig data member values.
4. Send a response message to indicate the completion of the process.

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3.3.4.128.1 Messages

3.3.4.128.1.1 IIpamServer_SetDatabaseConfiguration_InputMessage

The IIpamServer_SetDatabaseConfiguration_InputMessage message initiates the SetDatabaseConfiguration WSDL operation.

```
<wsdl:message name="IIpamServer_SetDatabaseConfiguration_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetDatabaseConfiguration" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/SetDatabaseConfiguration
```

The body of the SOAP message MUST contain the SetDatabaseConfiguration element.

3.3.4.128.1.2 IIpamServer_SetDatabaseConfiguration_OutputMessage

The IIpamServer_SetDatabaseConfiguration_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_SetDatabaseConfiguration_InputMessage message.

```
<wsdl:message name="IIpamServer_SetDatabaseConfiguration_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SetDatabaseConfigurationResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/SetDatabaseConfigurationResponse
```

The body of the SOAP message MUST contain the SetDatabaseConfigurationResponse element.

3.3.4.128.2 Elements

3.3.4.128.2.1 SetDatabaseConfiguration

The SetDatabaseConfiguration element contains the input data for the SetDatabaseConfiguration operation.

```
<xs:element name="SetDatabaseConfiguration">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="newDBConfig" nillable="true"
type="ipam:IpamDatabaseConfiguration" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.128.2.2 SetDatabaseConfigurationResponse

The SetDatabaseConfigurationResponse element contains the output data for the SetDatabaseConfiguration operation.

```
<xs:element name="SetDatabaseConfigurationResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

This element is empty.

3.3.4.129 StartTask

This operation can be used to signal the interest of the management client to trigger the specified IPAM task on the IPAM server.

```
<wsdl:operation name="StartTask">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/StartTask"
message="ipam:IIpamServer_StartTask_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/StartTaskResponse"
message="ipam:IIpamServer_StartTask_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_StartTask_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_StartTask_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If StartTask.taskType is either IpamTaskType.None or specifies an invalid enumeration value, an appropriate SOAP fault MUST be generated.
2. Retrieve the task corresponding to StartTask.taskType from ADM_Tasks table.
3. If StartTask.server is passed as parameter, trigger the starting of the task with the StartTask.server as parameter. Otherwise trigger the starting of the task without the initial parameter.

3.3.4.129.1 Messages

3.3.4.129.1.1 IIpamServer_StartTask_InputMessage

This is the request for the StartTask operation.

```
<wsdl:message name="IIpamServer_StartTask_InputMessage">
  <wsdl:part name="parameters" element="ipam:StartTask" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/StartTask
```


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The body of the SOAP message MUST contain the StartTask element.

3.3.4.129.1.2 IIpamServer_StartTask_OutputMessage

This is the response for the StartTask operation.

```
<wsdl:message name="IIpamServer_StartTask_OutputMessage">
  <wsdl:part name="parameters" element="ipam:StartTaskResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/StartTaskResponse
```

The body of the SOAP message MUST contain the StartTaskResponse element.

3.3.4.129.2 Elements

3.3.4.129.2.1 StartTask

This element specifies the input values for the StartTask operation.

```
<xs:element name="StartTask">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
      <xs:element minOccurs="0" name="server" nillable="true" type="xsd:string" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.129.2.2 StartTaskResponse

This element specifies the output values for the StartTask operation.

```
<xs:element name="StartTaskResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.130 TaskLastRunResult

This operation can be used to query the last completion status of a specific task.

```
<wsdl:operation name="TaskLastRunResult">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRunResult"
message="ipam:IIpamServer_TaskLastRunResult_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRunResultResponse"
message="ipam:IIpamServer_TaskLastRunResult_OutputMessage" />
```


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```
</wsdl:operation>
```

Upon receiving the IIpamServer_TaskLastRunResult_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_TaskLastRunResult_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate TaskLastRunResult.taskType is valid and not IpamTaskType.None. Otherwise an appropriate SOAP fault MUST be generated.
2. Enumerate the row in ADM_Tasks whose TaskType value is specified as TaskLastRunResult.taskType.
3. If an entry is not found, an appropriate SOAP fault MUST be returned.
4. If an entry is found, assign Status of the task entry to TaskLastRunResultResponse.TaskLastRunResultResult.

3.3.4.130.1 Messages

3.3.4.130.1.1 IIpamServer_TaskLastRunResult_InputMessage

This is the request for the TaskLastRunResult operation.

```
<wsdl:message name="IIpamServer_TaskLastRunResult_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRunResult" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRunResult
```

The body of the SOAP message MUST contain the TaskLastRunResult element.

3.3.4.130.1.2 IIpamServer_TaskLastRunResult_OutputMessage

This is the response for the TaskLastRunResult operation.

```
<wsdl:message name="IIpamServer_TaskLastRunResult_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRunResultResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRunResultResponse
```

The body of the SOAP message MUST contain the TaskLastRunResultResponse element.

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3.3.4.130.2 Elements

3.3.4.130.2.1 TaskLastRunResult

This element specifies the input values for the TaskLastRunResult operation.

```
<xs:element name="TaskLastRunResult">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.130.2.2 TaskLastRunResultResponse

This element specifies the output values for the TaskLastRunResult operation.

```
<xs:element name="TaskLastRunResultResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="TaskLastRunResultResult" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.131 TaskLastRuntime

This operation can be used to retrieve the last run completion time of the specified task.

```
<wsdl:operation name="TaskLastRuntime">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRuntime"
message="ipam:IIpamServer_TaskLastRuntime_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRuntimeResponse"
message="ipam:IIpamServer_TaskLastRuntime_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_TaskLastRuntime_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_TaskLastRuntime_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate TaskLastRuntime.taskType is not IpamTaskType.None. Otherwise an appropriate SOAP fault MUST be generated.
2. Enumerate the row in ADM_Tasks whose TaskType value is specified as TaskLastRuntime.taskType.
3. If an entry is not found, an appropriate SOAP fault MUST be returned.
4. If an entry is found, assign LastRunTime of the task entry to TaskLastRuntimeResponse.TaskLastRuntimeResult.

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3.3.4.131.1 Messages

3.3.4.131.1.1 IIpamServer_TaskLastRuntime_InputMessage

This is the request for the TaskLastRuntime operation.

```
<wsdl:message name="IIpamServer_TaskLastRuntime_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRuntime" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRuntime
```

The body of the SOAP message MUST contain the TaskLastRuntime element.

3.3.4.131.1.2 IIpamServer_TaskLastRuntime_OutputMessage

This is the response for the TaskLastRuntime operation.

```
<wsdl:message name="IIpamServer_TaskLastRuntime_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRuntimeResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRuntimeResponse
```

The body of the SOAP message MUST contain the TaskLastRuntimeResponse element.

3.3.4.131.2 Elements

3.3.4.131.2.1 TaskLastRuntime

This element specifies the input values for the TaskLastRuntime operation.

```
<xs:element name="TaskLastRuntime">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.131.2.2 TaskLastRuntimeResponse

This element specifies the output values for the TaskLastRuntime operation.

```
<xs:element name="TaskLastRuntimeResponse">
  <xs:complexType>
```


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```
    <xs:sequence>
      <xs:element minOccurs="0" name="TaskLastRuntimeResult" type="xsd:dateTime" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.132 TaskNextRuntime

This operation can be used to retrieve the next runtime of the specific task.

```
<wsdl:operation name="TaskNextRuntime">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskNextRuntime"
message="ipam:IIpamServer_TaskNextRuntime_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskNextRuntimeResponse"
message="ipam:IIpamServer_TaskNextRuntime_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_TaskNextRuntime_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_TaskNextRuntime_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate TaskNextRuntime.taskType is not IpamTaskType.None. Otherwise an appropriate SOAP fault MUST be generated.
2. Enumerate the row in ADM_Tasks whose TaskType value is specified as TaskNextRuntime.taskType.
3. If an entry is not found, an appropriate SOAP fault MUST be returned.
4. If an entry is found, assign NextRuntime of the task entry to TaskNextRuntimeResponse. TaskNextRuntimeResult.

3.3.4.132.1 Messages

3.3.4.132.1.1 IIpamServer_TaskNextRuntime_InputMessage

This is the request for the TaskNextRuntime operation.

```
<wsdl:message name="IIpamServer_TaskNextRuntime_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskNextRuntime" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskNextRuntime
```

The body of the SOAP message MUST contain the TaskNextRuntime element.

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3.3.4.132.1.2 IIpamServer_TaskNextRuntime_OutputMessage

This is the response for the TaskNextRuntime operation.

```
<wsdl:message name="IIpamServer_TaskNextRuntime_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskNextRuntimeResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskNextRuntimeResponse
```

The body of the SOAP message MUST contain the TaskNextRuntimeResponse element.

3.3.4.132.2 Elements

3.3.4.132.2.1 TaskNextRuntime

This element specifies the input values for the TaskNextRuntime operation.

```
<xs:element name="TaskNextRuntime">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.132.2.2 TaskNextRuntimeResponse

This element specifies the output values for the TaskNextRuntime operation.

```
<xs:element name="TaskNextRuntimeResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="TaskNextRuntimeResult" type="xsd:dateTime" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.133 TaskRecurrenceDuration

This operation can be used to determine the recurrence duration of the specific IPAM task.

```
<wsdl:operation name="TaskRecurrenceDuration">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskRecurrenceDuration"
message="ipam:IIpamServer_TaskRecurrenceDuration_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskRecurrenceDurationResponse"
message="ipam:IIpamServer_TaskRecurrenceDuration_OutputMessage" />
</wsdl:operation>
```


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Upon receiving the IIpamServer_TaskRecurrenceDuration_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_TaskRecurrenceDuration_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate TaskRecurrenceDuration.taskType is not IpamTaskType.None. Otherwise an appropriate SOAP fault MUST be generated.
2. Enumerate the row in ADM_Tasks whose TaskType value is specified as TaskRecurrenceDuration.taskType.
3. If an entry is not found, an appropriate SOAP fault MUST be returned.
4. If an entry is found, assign TaskRecurrence of the task entry to TaskRecurrenceDurationResponse.TaskRecurrenceDuration Result.

3.3.4.133.1 Messages

3.3.4.133.1.1 IIpamServer_TaskRecurrenceDuration_InputMessage

This is the request for the TaskRecurrenceDuration operation.

```
<wsdl:message name="IIpamServer_TaskRecurrenceDuration_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskRecurrenceDuration" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskRecurrenceDuration
```

The body of the SOAP message MUST contain the TaskRecurrenceDuration element.

3.3.4.133.1.2 IIpamServer_TaskRecurrenceDuration_OutputMessage

This is the response for the TaskRecurrenceDuration operation.

```
<wsdl:message name="IIpamServer_TaskRecurrenceDuration_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskRecurrenceDurationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/TaskRecurrenceDurationResponse
```

The body of the SOAP message MUST contain the TaskRecurrenceDurationResponse element.

3.3.4.133.2 Elements

3.3.4.133.2.1 TaskRecurrenceDuration

This element specifies the input values for the TaskRecurrenceDuration operation.

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```
<xs:element name="TaskRecurrenceDuration">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.133.2.2 TaskRecurrenceDurationResponse

This element specifies the output values for the TaskRecurrenceDuration operation.

```
<xs:element name="TaskRecurrenceDurationResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="TaskRecurrenceDurationResult" type="ser:duration" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.134 UpdateAccessScope

This operation is used to update a given AccessScope object in the IPAM data store.

```
<wsdl:operation name="UpdateAccessScope">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAccessScope"
message="ipam:IIpamServer_UpdateAccessScope_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAccessScopeResponse"
message="ipam:IIpamServer_UpdateAccessScope_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_UpdateAccessScope_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_UpdateAccessScope_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Assign UpdateAccessScope.accessScope to tempVar.accessScope.
2. If tempVar.accessScope is NULL or if tempVar.accessScope.IsBuiltIn is true then a SOAP fault MUST be generated as specified in section 2.2.2.1.
3. Call ValidateAccessScope with tempVar.accessScope as parameter.
4. The tempVar.accessScope.AccessScopeID is used to identify the row in ADM_AccessScopeTable that is to be updated. The fields that have undergone updation are then modified in the table.
5. If the AccessScope object's label has undergone a change then its child object's path is also updated appropriately. To do this call the GetAllChildAccessScopesForScope method in ADM_AccessScopeTable with parameter tempVar.accessScope.AccessScopeID; this will return the AccessScope objects that are children of tempVar.accessScope. The label of the child objects is updated and then steps 1 to 4 are repeated for each of the child objects.

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3.3.4.134.1 Messages

3.3.4.134.1.1 IIpamServer_UpdateAccessScope_InputMessage

The IIpamServer_UpdateAccessScope_InputMessage message initiates the UpdateAccessScope WSDL operation.

```
<wsdl:message name="IIpamServer_UpdateAccessScope_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAccessScope" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateAccessScope
```

The body of the SOAP message MUST contain the UpdateAccessScope element.

3.3.4.134.1.2 IIpamServer_UpdateAccessScope_OutputMessage

The IIpamServer_UpdateAccessScope_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_UpdateAccessScope_InputMessage message.

```
<wsdl:message name="IIpamServer_UpdateAccessScope_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAccessScopeResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateAccessScopeResponse
```

The body of the SOAP message MUST contain the UpdateAccessScopeResponse element.

3.3.4.134.2 Elements

3.3.4.134.2.1 UpdateAccessScope

The UpdateAccessScope element contains the input data for the UpdateAccessScope operation.

```
<xs:element name="UpdateAccessScope">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="accessScope" nillable="true" type="ipam:AccessScope" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.134.2.2 UpdateAccessScopeResponse

The UpdateAccessScopeResponse element contains the output data for the UpdateAccessScope operation.

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```
<xs:element name="UpdateAccessScopeResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

This element is empty.

3.3.4.135 UpdateAddressSpace

This operation can be used to edit the settings of an existing address space in the IPAM data store.

```
<wsdl:operation name="UpdateAddressSpace">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAddressSpace"
message="ipam:IIpamServer_UpdateAddressSpace_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAddressSpaceResponse"
message="ipam:IIpamServer_UpdateAddressSpace_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_UpdateAddressSpace_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_UpdateAddressSpace_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Store UpdateAddressSpace.addressSpace in a temporary data store updatedAddressSpace.
2. Validate the updatedAddressSpace is a valid entry by invoking the GetAddressSpaceById procedure of ADM_AddressSpaceTable by passing the updatedAddressSpace as the Param_AddressSpaceId.
3. If the Result_AddressSpace is null, the address space specified is not present and is not processed further. An appropriate SOAP fault is thrown. Otherwise store result as the oldAddressSpace temp data store.
4. If updatedAddressSpace.ModifiedProperties is empty, there are no updates to be performed and the block is not processed further.
5. Validate the updatedAddressSpace by invoking the ValidateAddressSpace passing the ValidateAddressSpace as Param_AddressSpace.
6. If not all the validation requirements are met, an appropriate SOAP fault MUST be generated.
7. IPAM doesn't allow modification of an AddressSpaceType. Thus, if updatedAddressSpace.AddressSpaceType is not the same as oldAddressSpace.AddressSpaceType, an appropriate SOAP fault MUST be generated.
8. Names of address spaces in IPAM MUST be unique. If the Name property of updatedAddressSpace is modified, that is, if updatedAddressSpace.Name is not the same as oldAddressSpace.Name, then do the following to check that there isn't already an address space by the updated name:

    - Call procedure GetAddressSpaceByName of ADM_AddressSpaceTable with the following parameters:

        1. 0.1.Pass updatedAddressSpace.Name as Param_AddressSpaceName.

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2. Pass null as Param_AddressSpaceType.

3. If Result_AddressSpace is not null or empty, an appropriate SOAP fault MUST be generated.

9. Update the row in the ADM_AddressSpaceTable with the values for the modified properties.

10. If the CustomFieldValues is also part of the ModifiedProperties of the updatedAddressSpace, call the procedure SetCustomFieldValues in ADM_CustomFieldValuesAssociationTable by passing the following parameters:

    1. Param_ObjectType is set to EnumerationObjectType.AddressSpace.

    2. Param_addressFamily is set to Internet if the UpdateBlock.ipBlock is IPv4Block. It is set to InternetV6 if the UpdateBlock.ipBlock is IPv6Block.

    3. Param_ObjectRecordId is assigned the value of updatedAddressSpace.RecordId.

3.3.4.135.1 Messages

3.3.4.135.1.1 IIpamServer_UpdateAddressSpace_InputMessage

This is the response for the UpdateAddressSpace operation.

```
<wsdl:message name="IIpamServer_UpdateAddressSpace_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAddressSpace" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateAddressSpace
```

The body of the SOAP message MUST contain the UpdateAddressSpaceResponse element.

3.3.4.135.1.2 IIpamServer_UpdateAddressSpace_OutputMessage

This is the response for the UpdateAddressSpace operation.

```
<wsdl:message name="IIpamServer_UpdateAddressSpace_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAddressSpaceResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateAddressSpaceResponse
```

The body of the SOAP message MUST contain the UpdateAddressSpaceResponse element.

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3.3.4.135.2 Elements

3.3.4.135.2.1 UpdateAddressSpace

This element specifies the input values for the UpdateAddressSpace operation.

```
<xs:element name="UpdateAddressSpace">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="addressSpace" nillable="true" type="ipam:AddressSpace"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.135.2.2 UpdateAddressSpaceResponse

This element specifies the output values for the UpdateAddressSpace.

```
<xs:element name="UpdateAddressSpaceResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.136 UpdateBlock

This operation can be used to edit the settings of an existing address block in the IPAM data store.

```
<wsdl:operation name="UpdateBlock">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateBlock"
message="ipam:IIpamServer_UpdateBlock_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateBlockResponse"
message="ipam:IIpamServer_UpdateBlock_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_UpdateBlock_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_UpdateBlock_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the IPBlock.RecordId is a valid entry by invoking the GetIPBlockFromTable procedure of ADM_IPBlocksTable by passing the IPBlock.RecordId as the Param_blockId and UpdateBlock.addressFamily as Param_addressfamily.
2. If the result is null, the block specified is not present and is not processed further. Otherwise store result as the OldIPBlockData variable.
3. If IPBlock.ModifiedProperties is empty, there are no updates to be performed and the block is not processed further.
4. Validate the IPBlock by invoking the ValidateIPBlock passing the IPBlock as Param_IPBlock.
5. If not all the validation requirements are met, an appropriate SOAP fault MUST be generated.

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6. If any of the following fields are modified, the block hierarchy can potentially change.
    - NetworkId
    - PrefixLength
    - StartIPAddress
    - EndIPAddress
7. If the block hierarchy can change as computed in step 6. the following processing has to be done.
    1. Call GetIPBlockParentAndChildDepth procedure of ADM_IPBlocksTable by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress and RecordId as Param_RecordIdToExclude. If the result is greater than or equal to 9, an appropriate SOAP fault MUST be generated.
    2. Call GetOverlappingBlocks procedure of ADM_IPBlocksTable by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress, RecordId as Param_RecordIdToExclude and PrefixLength as Param_PrefixLength. If the Result_OverlappingBlocks is a non-empty list, an appropriate SOAP fault MUST be generated.
    3. Update the ParentIPBlockRecordId of IPBlock entries in the ADM_IPBlocksTable which are the children blocks of OldIPBlockData to the value of OldIPBlockData.ParentIPBlockRecordId.
8. Update the row in the **ADM_IPBlocksTable** with the values for the modified properties. Also update the modified properties in the corresponding row in **ADM_ IPBlockMultivaluedPropertiesTable**.
9. If the block hierarchy can change as computed in step 6. the following processing has to be done.
    1. Call the procedure CalculateParentForIPBlock in ADM_IPBlocksTable by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress, RecordId as Param_RecordIdToExclude, AddressCategory as Param_AddressCategory and PrefixLength as Param_PrefixLength. Assign the result to IPBlock.ParentIPBlockRecordId and update the row in ADM_IPBlocksTable.
    2. Call the procedure AdjustChildIPBlocks by passing the StartIPAddress as Param_StartIPAddress, EndIPAddress as Param_EndIPAddress, RecordId as Param_RecordIdToExclude, AddressCategory as Param_AddressCategory and PrefixLength as Param_PrefixLength to calculate the existing blocks which might get mapped into the block being modified.
10. If the CustomFieldValues is also part of the ModifiedProperties of the IPBlock, call the procedure SetCustomFieldValues in ADM_CustomFieldValuesAssociationTable by passing the following parameters:
    1. Param_ObjectType is set to EnumerationObjectType.IPBlock.
    2. Param_addressFamily is set to Internet if the UpdateBlock.ipBlock is IPv4Block. It is set to InternetV6 if the UpdateBlock.ipBlock is IPv6Block.
    3. Param_ObjectRecordId is assigned the value of UpdateBlock.ipBlock.RecordId.
    4. Param_CustomFieldValuesCollection is assigned the value of UpdateBlock.ipBlock.CustomFieldValues.

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11. If the block hierarchy can change as computed in step 6, call CreateAssociationEntry procedure of **ADM_AccessScopeAssociationTable** with following parameters to adjust the access scope associations.

    1. Param_ObjectType is set to EnumerationObjectType.IPBlock.

    2. Param_ObjectId is assigned the value of UpdateBlock.ipBlock.RecordId.

3.3.4.136.1 Messages

3.3.4.136.1.1 IIpamServer_UpdateBlock_InputMessage

This is the request for the UpdateBlock operation.

```
<wsdl:message name="IIpamServer_UpdateBlock_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateBlock" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateBlock
```

The body of the SOAP message MUST contain the UpdateBlock element.

3.3.4.136.1.2 IIpamServer_UpdateBlock_OutputMessage

This is the response for the UpdateBlock operation.

```
<wsdl:message name="IIpamServer_UpdateBlock_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateBlockResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateBlockResponse
```

The body of the SOAP message MUST contain the UpdateBlockResponse element.

3.3.4.136.2 Elements

3.3.4.136.2.1 UpdateBlock

This element specifies the input values for the UpdateBlock operation.

```
<xs:element name="UpdateBlock">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="block" nillable="true" type="ipam:IPBlock" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.136.2.2 UpdateBlockResponse

This element specifies the output values for the UpdateBlock operation.

```
<xs:element name="UpdateBlockResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.137 UpdateCustomField

This operation is used to update an existing **CustomField** object in the IPAM data store.

```
<wsdl:operation name="UpdateCustomField">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomField"
message="ipam:IIpamServer_UpdateCustomField_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldResponse"
message="ipam:IIpamServer_UpdateCustomField_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_UpdateCustomField_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_UpdateCustomField_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Set **updatedCustomField** variable as **UpdateCustomField.customField**.
2. If **updatedCustomField** is null, an appropriate SOAP fault MUST be returned.
3. Validate the **updatedCustomField** by performing the processing rules as listed in the procedure **ValidateCustomField**.
4. Identify the list of modified properties in the **updatedCustomField** by seeing the number of properties modified in **updatedCustomField.ModifiedProperties**. If there are no property modifications, no further processing is required and return success.
5. If the list of modified properties of object **updatedCustomField** also includes **CustomFieldOrigin** and/or **CustomFieldType** field, an appropriate SOAP fault MUST be returned.
6. If the value of **CustomFieldOrigin** field is equal to **CustomFieldOrigin.BuiltIn** and the list of modified properties of object **updatedCustomField** includes one or more of the **CustomFieldName**, **CustomFieldOrigin** or **CustomFieldType** fields, an appropriate SOAP fault MUST be returned.
7. Fetch the existing CustomField data by invoking **GetCustomField** procedure of ADM_CustomFieldsTable by passing the **updatedCustomField.RecordId** as the **Param_id** input parameter.
8. Store the **Result_customField** in **currentCustomField** which is a temporary store.

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9. For each of the modified properties of object updatedCustomField, if the **property** is not **CustomFieldOrigin**, **CustomFieldType** or **CustomFieldValues** fields then:

    1. Get the **oldValue** of the property from **currentCustomField**.

    2. Get the **newValue** of the property from **updatedCustomField**.

    3. If **oldValue** is equal to NULL, or if **newValu**e is equal to NULL, or if **oldValue** is not equal to **newValue** then:

        - Update the value of the **property** to **newValue** in the appropriate row in the **ADM_CustomFieldsValuesTable**, where record identifier of the row is equal to **updatedCustomField.customFieldId**.

10. If the list of modified properties of object **updatedCustomField** includes **CustomFieldValues** field the following processing steps are performed:

    1. For each CustomFieldValue currentValue in currentCustomField.CustomFieldValues

        1. If there is an entry newValue in updatedCustomField.CustomFieldValues having Id equal to currentValue.Id,

            - If currentValue.Value is not equal to newValue.Value

                1. If updatedCustomField.Origin = CustomFieldOrigin.Builtin this is a value of a built-in custom field and it MUST NOT be modified. Generate and return an appropriate SOAP fault.

                2. Update the newValue.Value in ADM_CustomFieldValuesTable.

                3. Remove the newValue entry from the updatedCustomField.CustomFieldValues collection.

        2. If there is no entry in updatedCustomFields.CustomFieldValues having Id equal to currentValue.Id.

            1. If currentValue.BuiltInCustomFieldValueId is not set, remove the entry.

            2. If currentValue.BuiltInCustomFieldValueId is set, generate and return an appropriate SOAP fault as the build-in custom field values MUST NOT be removed.

    2. For each CustomFieldValue newValue in updatedCustomField.CustomFieldValues,

        - If newValue.RecordId is not set,

            - Add a new row into ADM_CustomFieldValuesTable having CustomFieldRecordId to be updatedCustomField.RecordId and the Value being newValue.Value.

3.3.4.137.1 Messages

3.3.4.137.1.1 IIpamServer_UpdateCustomField_InputMessage

This is the request for the UpdateCustomField operation.

```
<wsdl:message name="IIpamServer_UpdateCustomField_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateCustomField" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomField
```

The body of the SOAP message MUST contain the UpdateCustomField element.

3.3.4.137.1.2 IIpamServer_UpdateCustomField_OutputMessage

This is the response for the UpdateCustomField operation.

```
<wsdl:message name="IIpamServer_UpdateCustomField_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateCustomFieldResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldResponse
```

The body of the SOAP message MUST contain the UpdateCustomFieldResponse element.

3.3.4.137.2 Elements

3.3.4.137.2.1 UpdateCustomField

This element specifies the input values for the UpdateCustomField operation.

```
<xs:element name="UpdateCustomField">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="customField" nillable="true" type="ipam:CustomField" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.137.2.2 UpdateCustomFieldResponse

This element specifies the output values for the UpdateCustomField operation.

```
<xs:element name="UpdateCustomFieldResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.138 UpdateCustomFieldAssociation

This operation is used to update an association between two custom fields to the IPAM data store.

<wsdl:operation name="UpdateCustomFieldAssociation">

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```
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldAssociation"
message="ipam:IIpamServer_UpdateCustomFieldAssociation_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldAssociationResponse"
message="ipam:IIpamServer_UpdateCustomFieldAssociation_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_UpdateCustomFieldAssociation_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_UpdateCustomFieldAssociation_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If UpdateCustomFieldAssociation.customFieldAssociation is NULL or UpdateCustomFieldAssociation.customFieldAssociation.CustomField1 is NULL or UpdateCustomFieldAssociation.customFieldAssociation.CustomField2 is NULL, an appropriate SOAP fault MUST be raised.

2. Check if UpdateCustomFieldAssociation.customFieldAssociation.CustomField1.RecordId exists in **ADM_CustomFieldsTable**. Appropriate SOAP fault MUST be raised if no such record exists or if the CustomField Type is not Multivalued.

3. Check if UpdateCustomFieldAssociation.customFieldAssociation.CustomField2.RecordId exists in **ADM_CustomFieldsTable**. Appropriate SOAP fault MUST be raised if no such record exists or if the CustomField Type is not Multivalued.

4. Assign UpdateCustomFieldAssociation.customFieldAssociation.CustomField1 and UpdateCustomFieldAssociation.customFieldAssociation.CustomField2 to customField1 and customField2 temp data stores respectively.

5. Delete all rows in **ADM_MultiValueCustomFieldAssociationTable** where CustomFieldValueId1 is in the set of values customField1.values and CustomFieldValueId2 is in the set of values customField2.values or vice versa.

6. For each pair customValueAssociation <customFieldValue1, customFieldValue2> in UpdateCustomFieldAssociation.customFieldAssociation.CustomFieldValueAssociations:

    1. Get the row from **ADM_CustomFieldValues** table which has the same record Id as customValueAssociation.m_Item1. An appropriate SOAP fault MUST be raised if no such record exists.

    2. Get the row from **ADM_CustomFieldValues** table that has the same record Id as customValueAssociation.m_Item2. An appropriate SOAP fault MUST be raised if no such record exists.

7. For each pair customValueAssociation <customFieldValue1, customFieldValue2> in UpdateCustomFieldAssociation.customFieldAssociation.CustomFieldValueAssociations:

    - Insert a row in **ADM_MutiValueCustomFieldValueAssociationTable** with values customValueAssociation.m_Item1.RecordId and customValueAssociation.m_Item2.RecordId.

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3.3.4.138.1 Messages

3.3.4.138.1.1 IIpamServer_UpdateCustomFieldAssociation_InputMessage

This is the request for the UpdateCustomFieldAssociation operation.

```
<wsdl:message name="IIpamServer_UpdateCustomFieldAssociation_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateCustomFieldAssociation" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldAssociation
```

The body of the SOAP message MUST contain the UpdateCustomFieldAssociation.

3.3.4.138.1.2 IIpamServer_UpdateCustomFieldAssociation_OutputMessage

This is the response for the UpdateCustomFieldAssociation operation.

```
<wsdl:message name="IIpamServer_UpdateCustomFieldAssociation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateCustomFieldAssociationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociationResponse
```

The body of the SOAP message MUST contain the UpdateCustomFieldAssociationResponse element.

3.3.4.138.2 Elements

3.3.4.138.2.1 UpdateCustomFieldAssociation

This element specifies the input values for the UpdateCustomFieldAssociation operation.

```
<xs:element name="UpdateCustomFieldAssociation">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="customFieldAssociation" nillable="true"
type="ipam:CustomFieldAssociation" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

customFieldAssociation: Object of type ipam:CustomFieldAssociation representing the association that is to be updated.

3.3.4.138.2.2 UpdateCustomFieldAssociationResponse

This element specifies the output values for the UpdateCustomFieldAssociation operation.

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```
<xs:element name="UpdateCustomFieldAssociationResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.139 UpdateDiscoveryConfig

This operation can be used to modify the discovery configuration for a specified domain.

```
<wsdl:operation name="UpdateDiscoveryConfig">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateDiscoveryConfig"
message="ipam:IIpamServer_UpdateDiscoveryConfig_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateDiscoveryConfigResponse"
message="ipam:IIpamServer_UpdateDiscoveryConfig_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_UpdateDiscoveryConfig_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_UpdateDiscoveryConfig_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If UpdateDiscoveryConfig.discConfig is null, an appropriate SOAP fault MUST be generated.
2. UpdateDiscoveryConfig.discConfig.DiscoveryDomain MUST meet the following validation requirements. Otherwise an appropriate SOAP fault MUST be generated.
    1. MUST NOT be null.
    2. Length MUST be greater than 0
    3. Length MUST NOT be greater than 255.
3. Update the row in the ADM_DiscoveryConfigurationTable for the DiscoveryDomain specified in UpdateDiscoveryConfig.discConfig.
4. Set the RecordId of the row updated to UpdateDiscoveryConfigResponse.UpdateDiscoveryConfigResult, which is sent as a part of the output message.

3.3.4.139.1 Messages

3.3.4.139.1.1 IIpamServer_UpdateDiscoveryConfig_InputMessage

This is the request for the UpdateDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_UpdateDiscoveryConfig_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateDiscoveryConfig" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

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```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateDiscoveryConfig
```

The body of the SOAP message MUST contain the UpdateDiscoveryConfig element.

3.3.4.139.1.2 IIpamServer_UpdateDiscoveryConfig_OutputMessage

This is the response for the UpdateDiscoveryConfig operation.

```
<wsdl:message name="IIpamServer_UpdateDiscoveryConfig_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateDiscoveryConfigResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateDiscoveryConfigResponse
```

The body of the SOAP message MUST contain the UpdateDiscoveryConfigResponse element.

3.3.4.139.2 Elements

3.3.4.139.2.1 UpdateDiscoveryConfig

This element specifies the input values for the UpdateDiscoveryConfig operation.

```
<xs:element name="UpdateDiscoveryConfig">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="discConfig" nillable="true" type="ipam:DiscoveryConfig"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.139.2.2 UpdateDiscoveryConfigResponse

This element specifies the output values for the UpdateDiscoveryConfig operation.

```
<xs:element name="UpdateDiscoveryConfigResponse">
  <xs:complexType>

<xs:sequence>
      <xs:element minOccurs="0" name="UpdateDiscoveryConfigResult" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.140 UpdateGpoForMultipleServers

This operation is used to update the GPOs that IPAM uses to provision various infrastructure servers. This procedure takes a list containing the old state of servers and another list containing the new

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state of each of these servers. On the basis of what change has been introduced, the procedure decides the appropriate GPO of the appropriate domain that needs to be updated.

```
<wsdl:operation name="UpdateGpoForMultipleServers">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateGpoForMultipleServers"
message="ipam:IIpamServer_UpdateGpoForMultipleServers_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateGpoForMultipleServersResponse"
message="ipam:IIpamServer_UpdateGpoForMultipleServers_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_UpdateGpoForMultipleServers_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_UpdateGpoForMultipleServers_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

- For each of the server oldServer in UpdateGpoForMultipleServers.oldServerInfoCollection:

  1. Get the corresponding server newServer from the list UpdateGpoForMultipleServers.newServerInfoCollection that has same GUID as oldServer.

  2. Get the newDomain for this newServer. Get the oldDomain from oldServer.

  3. If newDomain and oldDomain are not the same:

     1. For each server role present on oldServer, delete the server from the appropriate GPO from oldDomain.

     2. Add any errors to UpdateGpoForMultipleServersResponse.ArrayOfIpamGpoError.

     3. For each role present on newServer, add the server to appropriate GPO on newDomain.

     4. Add any errors to UpdateGpoForMultipleServersResponse.ArrayOfIpamGpoError.

3.3.4.140.1 Messages

3.3.4.140.1.1 IIpamServer_UpdateGpoForMultipleServers_InputMessage

This is the request for the UpdateGpoForMultipleServers operation.

```
<wsdl:message name="IIpamServer_UpdateGpoForMultipleServers_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateGpoForMultipleServers" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateGpoForMultipleServers
```

The body of the SOAP message MUST contain the UpdateGpoForMultipleServers.

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3.3.4.140.1.2 IIpamServer_UpdateGpoForMultipleServers_OutputMessage

This is the response for the UpdateGpoForMultipleServers operation.

```
<wsdl:message name="IIpamServer_UpdateGpoForMultipleServers_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateGpoForMultipleServersResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldAssociationResponse
```

The body of the SOAP message MUST contain the UpdateCustomFieldAssociationResponse element.

3.3.4.140.2 Elements

3.3.4.140.2.1 UpdateGpoForMultipleServers

This element specifies the input values for the UpdateGpoForMultipleServers operation.

```
<xs:element name="UpdateGpoForMultipleServers">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="oldServerInfoCollection" nillable="true"
type="ipam:ArrayOfServerInfo" />
      <xs:element minOccurs="0" name="newServerInfoCollection" nillable="true"
type="ipam:ArrayOfServerInfo" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

oldServerInfoCollection: Object of type ipam:ArrayOfServerInfo representing the old state of servers.

newServerInfoCollection: Object of type ipam:ArrayOfServerInfo representing the new state of servers.

3.3.4.140.2.2 UpdateGpoForMultipleServersResponse

This element specifies the output values for the UpdateGpoForMultipleServers operation.

```
<xs:element name="UpdateGpoForMultipleServersResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="UpdateGpoForMultipleServersResult" nillable="true"
type="ipam:ArrayOfIpamGpoError" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

UpdateGpoForMultipleServersResult: Object of type ipam:ArrayOfIpamGpoError representing the association that is to be updated.

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3.3.4.141 UpdateLogicalGroup

This operation can be used to modify an existing logical group.

```
<wsdl:operation name="UpdateLogicalGroup">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateLogicalGroup"
message="ipam:IIpamServer_UpdateLogicalGroup_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateLogicalGroupResponse"
message="ipam:IIpamServer_UpdateLogicalGroup_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_UpdateLogicalGroup_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamServer_UpdateLogicalGroup_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. If UpdateLogicalGroup.logicalgroup is null, an appropriate SOAP fault MUST be generated.
2. Validate the UpdateLogicalGroup.logicalgroup as specified under the section ValidateLogicalGroup. If any of the validation steps fails, an appropriate SOAP fault MUST be generated.
3. If UpdateLogicalGroup.logicalgroup.ModifiedProperties is an empty list, there are no properties to modify and the operation is completed successfully.
4. The LogicalGroupOrigin cannot be modified after the logical group has been created. If LogicalGroupOrigin is part of UpdateLogicalGroup.logicalgroup.ModifiedProperties, an appropriate SOAP fault MUST be generated.
5. If the UpdateLogicalGroup.logicalgroup.Origin is LogicalGroupOrigin, the UpdateLogicalGroup.logicalgroup.ModifiedProperties MUST NOT contain LogicalGroupName, LogicalGroupOrigin.
6. Update the logical group information in ADM_LogicalGroupsTable with the values for the logical group specified in UpdateLogicalGroup.logicalgroup.

3.3.4.141.1 Messages

3.3.4.141.1.1 IIpamServer_UpdateLogicalGroup_InputMessage

This is the request for the UpdateLogicalGroup operation.

```
<wsdl:message name="IIpamServer_UpdateLogicalGroup_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateLogicalGroup" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateLogicalGroup
```

The body of the SOAP message MUST contain the UpdateLogicalGroup element.

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3.3.4.141.1.2 IIpamServer_UpdateLogicalGroup_OutputMessage

This is the response for the UpdateLogicalGroup operation.

```
<wsdl:message name="IIpamServer_UpdateLogicalGroup_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateLogicalGroupResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateLogicalGroupResponse
```

The body of the SOAP message MUST contain the UpdateLogicalGroupResponse element.

3.3.4.141.2 Elements

3.3.4.141.2.1 UpdateLogicalGroup

This element specifies the input values for the UpdateLogicalGroup operation.

```
<xs:element name="UpdateLogicalGroup">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="logicalgroup" nillable="true" type="ipam:LogicalGroup"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.141.2.2 UpdateLogicalGroupResponse

This element specifies the output values for the UpdateLogicalGroup operation.

```
<xs:element name="UpdateLogicalGroupResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.142 UpdateRange

This operation is used to modify an existing IP address range in the IPAM data store.

```
<wsdl:operation name="UpdateRange">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateRange"
message="ipam:IIpamServer_UpdateRange_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateRangeResponse"
message="ipam:IIpamServer_UpdateRange_OutputMessage" />
</wsdl:operation>
```


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Upon receiving the IIpamServer_UpdateRange_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_UpdateRange_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Set the **updatedRange** to **UpdateRange.range**.
2. Identify the list of modified properties in the **updatedRange** by seeing the number of properties modified in **updatedRange.ModifiedProperties**. If there are no property modifications, no further processing is required.
3. Validate the **updatedRange** by performing the processing rules listed under the section ValidateIPRange.
4. Fetch the existing range data by invoking GetIPRangeFromTable procedure of **ADM_IPRangeTable** by passing the **updatedRange.RecordId** as the **Param_id** field. The **Param_addressfamily** is set to the Internet if the **updatedRange** is IPv4Range and InternetV6 if the **updatedRange** is IPv6Range.
5. Store the result in currentRange, which is a temporary store.
6. Compare the values of the properties listed in **updatedRange.ModifiedProperties** to their corresponding values in currentRange. Only those values that have changed will be used to update the values in the data store.
7. Identify if any of the following properties is modified.
   - SubnetId
   - PrefixLength
   - StartIPAddress
   - EndIPAddress
   - AddressSpaceRecordId
   - ManagedByValue – This is a computed field of the **updatedRange**. This is the value of the custom field whose record identifier is **ADM_ManagedByCustomFieldId** retrieved from **updatedRange.CustomFieldValues**.
   - ManagedByEntityValue – This is a computed field of the **updatedRange**. This is the value of the custom field whose record identifier is **ADM_ManagedByEntityCustomFieldId** retrieved from **updatedRange.CustomFieldValues**.
8. If any of the previous fields has changed and are different from the values in currentRange, the following additional processing has to be done.
   1. If the AddressSpaceRecordId has changed, remap to the modified range all the addresses that currently map to currentRange. For this, perform the following:
      1. Get all addresses mapping to current range by calling GetIPAddressForRange of ADM_IPAddress by passing currentRange.RecordId as param_RangeId. Assign these to a temp store currentMappedAddresses
      2. For each mappedAddress from currentMappedAddresses:

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1. Calculate the custom fields ManagedByValue and ManagedByEntityValue for this IP Address as custom field whose record identifier is ADM_ManagedByCustomFieldId and ADM_ManagedByEntityCustomFIeldId respectively from mappedAddress.CustomFieldValues.

2. If the IPAddress lies between updatedRange.StartIPAddress and updatedRange.EndIPAddress and the custom fields ManagedByEntity and ManagedByEntityValue set on mappedAddress is the same as that on updatedRange, set the AddressSpaceRecordId and VirtualizationType of the mappedAddress to updatedRange.AddressSpaceRecordId and updatedRange.VirtualizationType.

2. The IsOverlapping field and the IP address mapping to the range will need to be reset. This is done by invoking the ResetCurrentIPRangeMapping procedure of the **ADM_IPRangeTable** with the **Param_range** parameter set to currentRange.

3. The IsOverlapping field has to be recalculated for the address ranges based on the new address range. Also the addresses in **ADM_IPAddressTable** have to be recalculated based on the new range. This is done by performing the steps listed under SetIPRangeMapping by passing the **updatedRange** as the currentRange parameter.

9. If none of the properties listed in step 7 are being modified, update the modified fields of the address range to the **ADM_IPRangeTable** by looking up the row with the record identifier being **updatedRange.RecordId**. Also update the corresponding modified properties in **ADM_ IPRangeMultivaluedPropertiesTable** with corresponding values from **updatedRange**.

10. Validate the **updatedRange.CustomFieldValues** as specified in the section ValidateCustomFieldValues. If the custom field values are valid, call the SetCustomFieldValues procedure of **ADM_CustomFieldValuesAssociationTable** with the following parameters.

    - **Param_ObjectRecordId** is assigned the value of **updatedRange.RecordId**.
    - **Param_CustomFieldValuesCollection** is assigned the **updatedRange.CustomFieldValues**.
    - **Param_ObjectType** is assigned the value of **EnumeratedObjectType.IPRange**.
    - **Param_addressFamily** is assigned Internet if **UpdateRange.range** is IPv4Range. Otherwise it is assigned the value of InternetV6.

11. If the Range/Address mapping can change as computed in step 7. Call CreateAssociationEntry procedure of ADM_AccessScopeAssociationTable with the following parameters to adjust the access scope associations.

    - **Param_ObjectType** is set to EnumerationObjectType.IPRange.
    - **Param_ObjectId** is assigned the value of **UpdateRange.range.RecordId**.

3.3.4.142.1 Messages

3.3.4.142.1.1 IIpamServer_UpdateRange_InputMessage

This is the request for the UpdateRange operation.

```
<wsdl:message name="IIpamServer_UpdateRange_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateRange" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateRange
```

The body of the SOAP message MUST contain the UpdateRange element.

3.3.4.142.1.2 IIpamServer_UpdateRange_OutputMessage

This is the response for the UpdateRange operation.

```
<wsdl:message name="IIpamServer_UpdateRange_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateRangeResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateRangeResponse
```

The body of the SOAP message MUST contain the UpdateRangeResponse element.

3.3.4.142.2 Elements

3.3.4.142.2.1 UpdateRange

This element specifies the input values for the UpdateRange operation.

```
<xs:element name="UpdateRange">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="range" nillable="true" type="ipam:IPRange" />
<xs:element minOccurs="0" name="createSubnetIfDoesNotExist" type="xsd:boolean" />

    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.142.2.2 UpdateRangeResponse

This element specifies the output values for the UpdateRange operation.

```
<xs:element name="UpdateRangeResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.143 UpdateSubnet

This operation can be used to edit the settings of an existing address subnet in the IPAM data store.

```
<wsdl:operation name="UpdateSubnet">
```


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```
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateSubnet"
message="ipam:IIpamServer_UpdateSubnet_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateSubnetResponse"
message="ipam:IIpamServer_UpdateSubnet_OutputMessage" />
</wsdl:operation
```

Upon receiving the IIpamServer_UpdateSubnet_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamServer_UpdateSubnet_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Validate the **UpdateSubnet.subnet.RecordId** is a valid entry by invoking the **GetSubnetById** procedure of **ADM_SubnetTable** by passing the **UpdateSubnet.subnet.RecordId** as the **Param_SubnetId**.
2. If the **Result_Subnet** is null, the subnet specified is not present and is not processed further. Otherwise store result as the **OldSubnetData** variable.
3. Assign **UpdateSubnet.subnet** to a temporary data store **updatedSubnet**.
4. If **updatedSubnet.ModifiedProperties** is empty, there are no updates to be performed and the block is not processed further.
5. Validate the **updatedSubnet** by invoking the **ValidateSubnet** passing the **updatedSubnet** as **Param_Subnet**.
6. If not all the validation requirements are met, an appropriate SOAP fault MUST be generated.
7. If any of the following fields are modified, the block hierarchy can potentially change. Set a temporary store, **keyPropertiesChanged** to TRUE.
    1. NetworkId
    2. PrefixLength
    3. StartIPAddress
8. If **OldSubnetData.addressSpaceId** is not same as **updatedSubnet.AddressSpaceId** set a temporary data store, **addressSpaceChanged**, to TRUE.
9. If either **keyPropertiesChanged** or **addressSpaceChanged** is TRUE, do the following:
10. If key properties of the subnet have changed and oldSubnet had child ranges mapping to it, an appropriate SOAP fault MUST be raised. Use the following tasks to achieve this:
    1. Get the child ranges for **oldSubnet** by calling the procedure GetChildRanges of ADM_SubnetTable with NULL assigned to Param_addressAssignmentType.
    2. If Result_Ranges is not empty and **keyPropertiesChanged** is TRUE, raise a fault since there are dependent child ranges, and the networkId/prefix cannot be changed.
11. If either **keyPropertiesChanged** or addressSpaceChanged is TRUE, check if a duplicate subnet already exists. A SOAP fault MUST be raised if a duplicate subnet is found.
    - Call the procedure **GetAllSubnetsForAddressCategory** of **ADM_SubnetTable** with the following parameters for the call:

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1. Assign **updatedSubnet.AddressCategory** to **Param_AddressCategory**.

2. Assign the **Result_Subnets** to a temporary data store **possibleDuplicateSubnets**.

3. For each of the **currentSubnet** subnets in **possibleDuplicateSubnets**, if **currentSubnet.startIPAddress** = **updatedSubnet.startIPAddress** and **currentSubnet.EndIPAddress** = **updatedSubnet.EndIPAddress** and **currentSubnet.AddressSpaceId** = **updatedSubnet.AddressSpaceId**, raise a fault since the subnet already exists in the IPAM data store.

12. If either of **keyPropertiesChanged** and **addressSpaceChanged** is TRUE, calculate the **isOverlapping** and **UseForUtilization** for **updatedSubnet**. For this, get all the subnets **overlapping with updatedSubnet by calling the procedure GetOverlappingSubnets for ADM**_SubnetTable with the following parameters:

    1. Assign **updatedSubnet.startIPAddress** to **Param_StartIPAddress**.

    2. Assign **updatedSubnet.EndIPAddress** to **Param_EndIPAddress**.

    3. Assign **updatedSubnet.PrefixLength** to **Param_ PrefixLength**.

    4. Assign **updatedSubnet.AddressSpaceId** to **Param_AddressSpaceId**.

    5. Assign **updatedSubnet.RecordId** to **Param_RecordIdToExclude**.

13. For each of the subnets in **Result_OverlappingBlocks**, check if **UseForUtilization** property is set. If none of these subnets have the **useForUtilization** set to TRUE or if the **Result_OverlappingBlocks** is empty, set **UseForUtilization** property for **updatedSubnet** to TRUE.

14. If **Result_OverlappingBlocks** is empty, set the **isOverlapping** property to FALSE. Otherwise, set the **isOverlapping** property of **updatedSubnet** to TRUE.

15. Update the **isOverlapping** property for all the rows in set **Result_OverlappingBlocks** in **ADM_IPBlock**.

16. If address space has changed and the subnet now maps to default address space, then set the parent block for the **updatedSubnet**. Only subnets that belong to the default address space map to a block. Call **CalculateParentForIPBlock** for **ADM_IPBlocksTable** with the following parameters:

    1. Assign **updatedSubnet.startIPAddress** to **Param_StartIPAddress**.

    2. Assign **updatedSubnet.EndIPAddress** to **Param_EndIPAddress**.

    3. Assign **updatedSubnet.PrefixLength** to **Param_ PrefixLength**.

    4. Assign **updatedSubnet.RecordId** to **Param_RecordIdToExclude**.

    5. Assign **updatedSubnet.AddressCategory** to **Param_AddressCategory**.

17. Set the ParentIPBlockRecordID of **updatedSubnet** to RecordId returned in the previous result.

18. Update the properties inherited from **ADM_IPBlock** table using the properties set in upatedSubnet.

19. Update the subnet properties from **upatedSubnet** into **ADM_Subnet**.

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20. If **addressSpaceChanged** is TRUE and Result_Ranges in step 8(b) is not empty, the address space change needs to be reflected to the child ranges that can still map to the modified subnet as well. Perform the following:

    1. For each row in **ADM_IPRangeTable** that corresponds to each element in **Result_Ranges** from step 8(b).

        1. Set the **AddressSpaceId** of the row in **ADM_IPRangeTable** to **addressSpaceId** of **updatedSubnet**.

        2. Set the **VirtualizationType** of the row in **ADM_IPRangeTable** to **VirtualizationType** of updatedSubnet.

    2. Get all the child addresses that mapped to the oldSubnet by calling GetAllIPAddresses procedure of **ADM_SubnetTable**.

    3. For each row in **ADM_IPAddressTable** that corresponds to each element in Result_Addresses:

        1. Set the **AddressSpaceId** of the row in **ADM_IPAddressTable** to addressSpaceId of UpdateSubnet.subnet.

        2. Set the **VirtualizationType** of the row in **ADM_IPAddressTable** to **VirtualizationType** of UpdateSubnet.subnet.

21. If the **CustomFieldValues** is also part of the **ModifiedProperties** of the **IPBlock**, call the procedure **SetCustomFieldValues** in **ADM_CustomFieldValuesAssociationTable** by passing the following parameters:

    1. **Param_ObjectType** is set to EnumerationObjectType.IPBlock.

    2. **Param_addressFamily** is set to Internet if the **updatedSubnet** is IPv4Subnet. It is set to InternetV6 if the **updatedSubnet** is IPv6Subnet.

    3. **Param_ObjectRecordId** is assigned the value of **updatedSubnet.RecordId**.

    4. **Param_CustomFieldValuesCollection** is assigned the value of **updatedSubnet.CustomFieldValues**.

22. Update the isOverlapping and UseForUtilization properties of all the subnets that used to conflict with this subnet before the modification. To accomplish this, get all overlapping subnets for the oldSubnet. For each of the overlapping subnets, recompute the isOverlapping and UseForUtilization properties.

    1. Call the procedure **GetOverlappingSubnets** for **ADM_SubnetTable** with the following parameters:

        1. Assign **OldSubnet.startIPAddress** to **Param_StartIPAddress**.

        2. Assign **OldSubnet.EndIPAddress** to **Param_EndIPAddress**.

        3. Assign **OldSubnet.PrefixLength** to **Param_PrefixLength**.

        4. Assign **OldSubnet.AddressSpaceId** to **Param_AddressSpaceId**.

        5. Assign **OldSubnet.RecordId** to **Param_RecordIdToExclude**.

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2. For each of the subnets **currentOverlappingSubnet** in **Result_OverlappingBlocks**, get all overlapping subnets by calling **GetOverlappingSubnets** for **ADM_SubnetTable** with these parameters:

    1. Assign **currentOverlappingSubnet.startIPAddress** to **Param_StartIPAddress**.

    2. Assign **currentOverlappingSubnet.EndIPAddress** to **Param_EndIPAddress**.

    3. Assign **currentOverlappingSubnet.PrefixLength** to **Param_PrefixLength**.

    4. Assign currentOverlappingSubnet.AddressSpaceId to **Param_AddressSpaceId**.

    5. Assign **currentOverlappingSubnet.RecordId** to **Param_RecordIdToExclude**.

3. For each of the subnets in **Result_OverlappingBlocks** for **currentOverlappingSubnet**, check if UseForUtilization property is set. If none of these subnets have the **useForUtilization** set to TRUE or if the Result_OverlappingBlocks is empty, set **UseForUtilization** property for **currentOverlappingSubnet** to TRUE.

4. If Result_OverlappingBlocks is empty, set **isOverlapping** property to FALSE. Else set the **isOverlapping** property of currentOverlappingSubnet to TRUE.

23. If the block hierarchy can change as computed in step 6. Call the **CreateAssociationEntry** procedure of **ADM_AccessScopeAssociationTable** with the following parameters in order to adjust the access scope associations:

    1. **Param_ObjectType** is set to **EnumerationObjectType.IPSubnet**.

    2. **Param_ObjectId** is assigned the value of **updatedSubnet.RecordId.**

3.3.4.143.1 Messages

3.3.4.143.1.1 IIpamServer_UpdateSubnet_InputMessage

This is the request for the UpdateSubnet operation.

```
<wsdl:message name="IIpamServer_UpdateSubnet_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateSubnet" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateSubnet
```

The body of the SOAP message MUST contain the UpdateSubnet element.

3.3.4.143.1.2 IIpamServer_UpdateSubnet_OutputMessage

This is the response for the UpdateSubnet operation.

```
<wsdl:message name="IIpamServer_UpdateSubnet_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateSubnetResponse" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateSubnetResponse
```

The body of the SOAP message MUST contain the UpdateSubnetResponse element.

3.3.4.143.2 Elements

3.3.4.143.2.1 UpdateSubnet

This element specifies the input values for the UpdateSubnet operation.

```
<xs:element name="UpdateSubnet">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subnet" nillable="true" type="ipam:IPSubnet" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.143.2.2 UpdateSubnetResponse

This element specifies the output values for the UpdateSubnet operation.

```
<xs:element name="UpdateSubnetResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

This element is empty.

3.3.4.144 UpdateUserAccessPolicy

This operation is used to update a UserAccessPolicy in the IPAM data store.

```
<wsdl:operation name="UpdateUserAccessPolicy">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserAccessPolicy"
message="ipam:IIpamServer_UpdateUserAccessPolicy_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserAccessPolicyResponse"
message="ipam:IIpamServer_UpdateUserAccessPolicy_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_UpdateUserAccessPolicy_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_UpdateUserAccessPolicy_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Call method **ValidateUserAccessPolicy** to validate **UpdateUserAccessPolicy.policy**.

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2. **UpdateUserAccessPolicy.policy.PolicyId** is used to identify the row in in **ADM_UserAccessPolicyTable** to be modified. Thereupon the modification is done on that row.

3.3.4.144.1 Messages

3.3.4.144.1.1 IIpamServer_UpdateUserAccessPolicy_InputMessage

The IIpamServer_UpdateUserAccessPolicy_InputMessage message initiates the UpdateUserAccessPolicy WSDL operation.

```
<wsdl:message name="IIpamServer_UpdateUserAccessPolicy_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateUserAccessPolicy" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserAccessPolicy
```

The body of the SOAP message MUST contain the UpdateUserAccessPolicy element.

3.3.4.144.1.2 IIpamServer_UpdateUserAccessPolicy_OutputMessage

The IIpamServer_UpdateUserAccessPolicy_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_UpdateUserAccessPolicy_InputMessage message.

```
<wsdl:message name="IIpamServer_UpdateUserAccessPolicy_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateUserAccessPolicyResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserAccessPolicyResponse
```

The body of the SOAP message MUST contain the UpdateUserAccessPolicyResponse element.

3.3.4.144.2 Elements

3.3.4.144.2.1 UpdateUserAccessPolicy

The UpdateUserAccessPolicy element contains the input data for the UpdateUserAccessPolicy operation.

```
<xs:element name="UpdateUserAccessPolicy">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="policy" nillable="true" type="ipam:UserAccessPolicy" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.3.4.144.2.2 UpdateUserAccessPolicyResponse

The UpdateUserAccessPolicyResponse element contains the output data for the UpdateUserAccessPolicy operation.

```
<xs:element name="UpdateUserAccessPolicyResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

This element is empty.

3.3.4.145 UpdateUserRole

This operation is used to update an ipam:UserRole in the IPAM data store.

```
<wsdl:operation name="UpdateUserRole">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserRole"
message="ipam:IIpamServer_UpdateUserRole_InputMessage" />
  <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserRoleResponse"
message="ipam:IIpamServer_UpdateUserRole_OutputMessage" />
</wsdl:operation>
```

The protocol client sends an IIpamServer_UpdateUserRole_InputMessage request. The server then performs the following processing steps. When the operation completes successfully, the protocol server MUST respond with the IIpamServer_UpdateUserRole_OutputMessage response. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Call method **ValidateUserRole** to validate **UpdateUserRole.role**.
2. If **UpdateUserRole.role** is NULL or if **UpdateUserRole.role.IsBuiltinRole** is true then a SOAP fault MUST be generated as specified in section 2.2.2.1.
3. **UpdateUserRole.role.UserRoleID** is used to identify the row in ADM_RoleDefinitionTable to be updated. After the updation is done, the number of rows modified are returned in the response message to indicate if the update was successful or not.

3.3.4.145.1 Messages

3.3.4.145.1.1 IIpamServer_UpdateUserRole_InputMessage

The IIpamServer_UpdateUserRole_InputMessage message initiates the UpdateUserRole WSDL operation.

```
<wsdl:message name="IIpamServer_UpdateUserRole_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateUserRole" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserRole
```


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The body of the SOAP message MUST contain the UpdateUserRole element.

3.3.4.145.1.2 IIpamServer_UpdateUserRole_OutputMessage

The IIpamServer_UpdateUserRole_OutputMessage message is sent in reply to the request that is initiated by the IIpamServer_UpdateUserRole_InputMessage message.

```
<wsdl:message name="IIpamServer_UpdateUserRole_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateUserRoleResponse" />
</wsdl:message>
```

The SOAP action value of the message MUST be as follows:

```
http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserRoleResponse
```

The body of the SOAP message MUST contain the UpdateUserRoleResponse element.

3.3.4.145.2 Elements

3.3.4.145.2.1 UpdateUserRole

The UpdateUserRole element contains the input data for the UpdateUserRole operation.

```
<xs:element name="UpdateUserRole">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="role" nillable="true" type="ipam:UserRole" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.145.2.2 UpdateUserRoleResponse

The UpdateUserRoleResponse element contains the output data for the UpdateUserRole operation.

```
<xs:element name="UpdateUserRoleResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="UpdateUserRoleResult" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.3.4.146 ValidateIfUpgradeIsPossible

This operation is used to update the GPOs that IPAM uses to provision various infrastructure servers. This procedure takes a list containing the old state of servers and another list containing the new state of each of these servers. On the basis of what change has been introduced, the procedure decides the appropriate GPO of the appropriate domain that needs to be updated.

```
<wsdl:operation name="ValidateIfUpgradeIsPossible">
```


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```
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ValidateIfUpgradeIsPossible"
message="ipam:IIpamServer_ValidateIfUpgradeIsPossible_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ValidateIfUpgradeIsPossibleResponse"
message="ipam:IIpamServer_ValidateIfUpgradeIsPossible_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamServer_ValidateIfUpgradeIsPossible_InputMessage request message, the server performs the following processing steps. Upon successful completion of the following steps, the server MUST respond with the IIpamServer_ValidateIfUpgradeIsPossible_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Get the current IPAM data store version and the current OS version and the schema version to which IPAM can be upgraded to by reading the properties ADM_IPAMSchemaVersion, ADM_IPAMSeverVersion and ADM_IPAMTargetSchemaVersion respectively.
2. Assign these to GetSchemaConversionInfoResponse.configuredVersion, GetSchemaConversionInfoResponse.installedVersion, GetSchemaConversionInfoResponse.nextVersion respectively.
3. If GetSchemaConversionInfoResponse.configuredVersion is not the same as GetSchemaConversionInfoResponse.installedVersion then conversion of IPAM data schema would be required. Else an appropriate SOAP fault MUST be raised.
4. For each entity in IPAM data store, validate if it is possible to upgrade from the current version to the next version (as calculated in step 1). If some validations failed and if the upgrade is possible after applying the default fix for those validations, then ValidateIfUpgradeIsPossibleResponse.ValidateIfUpgradeIsPossibleResult is set to false and the rules that failed are returned in ValidateIfUpgradeIsPossibleResponse.rules.

3.3.4.146.1 Messages

3.3.4.146.1.1 IIpamServer_ValidateIfUpgradeIsPossible_InputMessage

This is the request for the ValidateIfUpgradeIsPossible operation.

```
<wsdl:message name="IIpamServer_ValidateIfUpgradeIsPossible_InputMessage">
  <wsdl:part name="parameters" element="ipam:ValidateIfUpgradeIsPossible" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ValidateIfUpgradeIsPossible
```

The body of the SOAP message MUST contain the ValidateIfUpgradeIsPossible.

3.3.4.146.1.2 IIpamServer_ValidateIfUpgradeIsPossible_OutputMessage

This is the response for the ValidateIfUpgradeIsPossible operation.

```
<wsdl:message name="IIpamServer_ValidateIfUpgradeIsPossible_OutputMessage">
```


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```
  <wsdl:part name="parameters" element="ipam:ValidateIfUpgradeIsPossibleResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamServer/ValidateIfUpgradeIsPossibleResponse
```

The body of the SOAP message MUST contain the ValidateIfUpgradeIsPossibleResponse element.

3.3.4.146.2 Elements

3.3.4.146.2.1 ValidateIfUpgradeIsPossible

This element specifies the input values for the ValidateIfUpgradeIsPossible operation.

```
<xs:element name="ValidateIfUpgradeIsPossible">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.3.4.146.2.2 ValidateIfUpgradeIsPossibleResponse

This element specifies the output values for the ValidateIfUpgradeIsPossible operation.

```
<xs:element name="ValidateIfUpgradeIsPossibleResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="ValidateIfUpgradeIsPossibleResult"
type="ipam:IpamUpgradeValidationStatus" />
      <xs:element minOccurs="0" name="rules" nillable="true"
type="ipam:ArrayOfIpamUpgradeValidationRuleStatus" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

ValidateIfUpgradeIsPossibleResult: Object of type ipam:ArrayOfIpamGpoError representing the association that is to be updated.

rules: Object of type ipam:ArrayOfIpamGpoError representing the association that is to be updated.

3.3.5 Timer Events

See section 3.1.5.

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3.3.6 Other Local Events

3.3.6.1 User Authorization

This section lists the user authorization requirements for the various operations defined in this port type. After the user authentication is complete, the user MUST be authorized for the operation that is being requested. If the required authorization is not present, the user MUST be denied access to perform the operation by returning an appropriate SOAP fault as specified in section 2.2.2.1.

The following steps are used to determine if the user is authorized for the operation or not. This check is done after the steps listed in section 3.1.4.3 are complete.

1. Determine the mapping OperationId of the operation with the help of the table mentioned later in this section. Call GetOperationById procedure of **ADM_AdminOperationsTable** by passing OperationId as Param_operationId. Process the results from the procedure by doing the following steps:
    1. Assign **Param_OperationGroupId** to OperationGroupId.
    2. Assign **Param_IsAdminRoleOnlyOperation** to AdminRoleOnlyOperation.
    3. Assign **Param_IsNonRBACOperation** to IsNonRBACOperation.
    4. Assign **Param_IsAccessScopeAgnosticOperation** to IsAccessScopeAgnosticOperation.
    5. Assign **Param_NonRBACAdminAccessRequirement** to NonRBACAdminAccessRequirement.
2. If either AdminRoleOnlyOperation or IsNonRBACOperation is set to TRUE, then based on the requirements of the security group mentioned in NonRBACAdminAccessRequirement, evaluate the **ADM_UserAuthorizationData** has the appropriate role value set to TRUE. If the appropriate role value is set to TRUE, the operation is allowed else the access to perform operation is denied.
3. If both AdminRoleOnlyOperation and IsNonRBACOperation are set to FALSE, then based on the requirements of the security groups mentioned in NonRBACAdminAccessRequirement, evaluate whether **ADM_UserAuthorizationData** has the appropriate role value set to TRUE. If the appropriate role value is set to TRUE, the operation is allowed.
4. If IsAccessScopeAgnosticOperation set to FALSE, then determine the AccessScope association of the object by calling procedure GetAccessScopeForObjectIdAndType of **ADM_AccessScopeAssociationTable** passing the following parameters:
    1. **Param_objectId** is set to appropriate RecordId.
    2. **Param_objectType** is set to appropriate Object Type.
    3. **Param_accessScopeId**.
    4. **Param_objectInheritanceStatus**.
    5. **Param_inheritanceId**.
    6. Assign **Param_accessScopeId** to ObjectAccessScopeId, which is a 64-bit signed integer to represent the AccessScopeId associated to a specific object.
5. Initialize a collection UserAccessPolicies of type AccessScopeToUserRoleMapping.

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6. For each entry in the **ADM_UserAuthorizationData.MappingPolicyId** collection, call procedure GetPolicyMapEntriesForPolicyId by assigning Param_policyId, value of entry in MappingPolicyIds. Add the entries in Result_policyEntries to collection UserAccessPolicies.

7. For each entry UserAccessPolicy in the UserAccessPolicies, call procedure GetAllOperationsForRoleById of **ADM_RoleOperationMapTable** by assigning UserAccessPolicy.UserRoleId to Param_RoleId.

8. If Result_operations collection contains an entry of OperationId, do the following:

    1. If IsAccessScopeAgnosticOperation set to TRUE, the operation is allowed for the user.

    2. If the UserAccessPolicy.AccessScopeId is the same as ObjectAccessScopeId, the operation is allowed for the user.

9. The operation is not allowed for the user.

The following table specifies the operations and the corresponding OperationId mapping as mentioned in Builtin Operations section of ADM_RoleDefinitionTable. For operations which operate on multiple objects of the same type (like BulkUpdateRanges), the validations for operation being allowed is performed on each individual object.

Operation	Mapping OperationId	ObjectForAccessScope Determination
AddressBlockSetAccessScope	SetAddressBlockAccessScope	IPBlock
AddressRangeSetAccessScope	SetAddressRangeAccessScope	IPRange
AddressSpaceSetAccessScope	SetAddressSpaceAccessScope	AddressSpace
BulkUpdateAddressSpaces	AddressSpaceEdit	AddressSpace
BulkUpdateBlocks	UpdateAddressBlock	IPBlock
BulkUpdateIPAddresses	UpdateIPAddress	IPRange
BulkUpdateRanges	UpdateIPAddressRange	IPRange
BulkUpdateServers	UpdateServer	Server
BulkUpdateSubnets	AddressSubnetEdit	IPSubnet
CheckIfDnsServerReverseZoneHostedOnServer	GenericRead	
CheckIfDnsServerZoneHostedOnServer	GenericRead	
CreateAccessScope	CreateAccessScope	Admin only operation
CreateDNSHostRecord	MsmDnsCreateResourceRecord	DnsZone
CreateDNSPTRRecord	MsmDnsCreateResourceRecord	DnsZone
CreateOrUpdateIPv4Reservation	MsmDhcpScopeCreateOrEditAddressReservation	DhcpScope
CreateOrUpdateIPV6Reservation	MsmDhcpScopeCreateOrEditAddressReservation	DhcpScope

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Operation	Mapping OperationId	ObjectForAccessScope Determination
CreateUserAccessPolicy	CreateAccessPolicy	Admin only operation
CreateUserRole	CreateUserRole	Admin only operation
DBGetDhcpServerFromRecordId	GenericRead	
DBGetDhcpServerFromServerInfoRecordId	GenericRead	
DBGetScopeFromNetworkIDAndServer	GenericRead	
DBGetScopeFromRecordId	GenericRead	
DeleteAccessScope	DeleteAccessScope	Admin only operation
DeleteAddressSpace	AddressSpaceDelete	AddressSpace
DeleteBlock	DeleteAddressBlock	IPBlock
DeleteCustomField	DeleteCustomField	AccessScope agnostic operation
DeleteCustomFieldAssociation	ManageCustomFieldValues	AccessScope agnostic operation
DeleteDiscoveryConfig	DeleteDiscoveryConfig	AccessScope agnostic operation
DeleteDNSHostRecord	MsmDnsDeleteResourceRecord	DnsZone
DeleteDNSPTRRecord	MsmDnsDeleteResourceRecord	DnsZone
DeleteIpamIPAddress		
DeleteIPV4Reservation	MsmDhcpScopeDeleteAddress Reservation	DhcpScope
DeleteIPV6Reservation	MsmDhcpScopeDeleteAddress Reservation	DhcpScope
DeleteLogicalGroup	DeleteLogicalGroup	AccessScope agnostic operation
DeleteRange	DeleteAddressRange	IPRange
DeleteServer	DeleteServer	AccessScope agnostic operation
DeleteSubnet	AddressSubnetDelete	IPSubnet
DeleteUserAccessPolicy	DeleteAccessPolicy	Admin only operation
DeleteUserRole	DeleteUserRole	Admin only operation
DhcpScopeSetAccessScope	SetMsmDhcpScopeAccessScop e	DhcpScope
DhcpServerSetAccessScope	SetMsmDhcpServerAccessSco	DhcpServer

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Operation	Mapping OperationId	ObjectForAccessScope Determination
	pe	
DhcpSuperscopeSetAccessScope	SetMsmDhcpSuperscopeAccessScope	DhcpSuperscopeV4
DnsZoneSetAccessScope	SetMsmDnsZoneAccessScope	DnsZone
DoProvisioningWithEnumerator	GenericRead	
EnumerateCustomFieldAssociations	GenericRead	
EnumerateCustomFields	GenericRead	
EnumerateIpamIPBlock	GenericRead	
EnumerateServerInfo	GenericRead	
FetchDnsReverseLookupZonesByIds	GenericRead	
FetchDnsServerReverseZoneById	GenericRead	
FetchDnsServerZoneById	GenericRead	
FetchDnsZonesByIds	GenericRead	
FetchIpamIPAddress	GenericRead	
FetchIpamIPAddressByManagedByAndManagedByEntity	GenericRead	
FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace	GenericRead	
FindAvailableDhcpServersForReservation	GenericRead	
FindAvailableScopeForReservationInDhcpServer	GenericRead	
GenerateUpgradeValidationFailureLog		
GetAccessScope	GenericRead	
GetAddressSpaceById	GenericRead	
GetAddressSpaceByName	GenericRead	
GetAddressSpacesByIds	GenericRead	
GetAllAddressSpaceNames	GenericRead	
GetAllPoliciesFromDB	GenericRead	
GetBlockById	GenericRead	
GetBlockByIPAddressAndPrefixLength	GenericRead	
GetBlockHierarchy	GenericRead	

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Operation	Mapping OperationId	ObjectForAccessScope Determination
GetBlockHierarchyForRangeId	GenericRead	
GetBlockHierarchyForSubnetId	GenericRead	
GetBlocksByIds	GenericRead	
GetBlockUtilization	GenericRead	
GetBuiltInCustomField	GenericRead	
GetBuiltInLogicalGroup	GenericRead	
GetCommonPropertyValue	GenericRead	
GetCurrentDatabaseConfiguration	RetrieveDatabaseConfiguration	Admin only operation
GetCustomFieldById	GenericRead	
GetDefaultProviderAddressSpaceRecordId	GenericRead	
GetDhcpReservationOptions	GenericRead	
GetDiscoveryConfig	GenericRead	
GetFilters	GenericRead	
GetFreeIPAddresses	GenericRead	
GetFreeIPAddressesFromScope	GenericRead	
GetIPAddressById	GenericRead	
GetIPAddressesByIds	GenericRead	
GetIpamTasksInfo	GenericRead	
GetIpamVersion	GenericRead	
GetIPRangeById	GenericRead	
GetIPRangesByIds	GenericRead	
GetLogicalGroupById	GenericRead	
GetLogicalGroupUtilizationByPeriod	GenericRead	
GetLogicalGroupUtilizationByType	GenericRead	
GetNumberOfForwardLookupZonesForServers	GenericRead	
GetPolicyConditionFromDB	GenericRead	
GetPolicyFromDB	GenericRead	
GetPolicyOptionsFromDB	GenericRead	
GetPolicyRangesFromDB	GenericRead	

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Operation	Mapping OperationId	ObjectForAccessScope Determination
GetRangeByAddressSpaceIdAndManagedByManagedByEntity	GenericRead	
GetRangeByIPAddress	GenericRead	
GetRangeByScopeRecordId	GenericRead	
GetRangeUtilization	GenericRead	
GetReservations	GenericRead	
GetSchemaConversionInfo	GenericRead	
GetScopesByIds	GenericRead	
GetScopesForSuperscope	GenericRead	
GetServersForMultipleId	GenericRead	
GetSubnetById	GenericRead	
GetSubnetByNetworkIdAndAddressSpace	GenericRead	
GetSubnetsByIds	GenericRead	
GetSubnetUtilization	GenericRead	
GetSuperscopes	GenericRead	
GetTotalUnmappedRanges	GenericRead	
GetUserAccessPolicy	GenericRead	
GetUserRole	GenericRead	
IPAddressSubnetSetAccessScope	SetAddressSubnetAccessScope	IPSubnet
IsIPAddressMapped	GenericRead	
IsIpamConfigured	GenericRead	
IsPurgeTaskRunning	GenericRead	
IsSchemaConversionInProgress	GenericRead	
IsSchemaConversionRequired	GenericRead	
IsTaskRunning	GenericRead	
ManuallyAddServer	AddServer	AccessScope agnostic operation
ManuallyUpdateServer	UpdateServer	AccessScope agnostic operation
PurgeAuditData	PurgeAuditData	AccessScope agnostic operation

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Operation	Mapping OperationId	ObjectForAccessScope Determination
RemapRange	MapAddressRangeToAddressBlock	IPRange
RemapSubnet	AddressSubnetRemapToBlock	IPSubnet
ResetZoneHealth	MsmDnsResetZoneStatus	DnsZone
SaveAddressSpace	AddressSpaceCreate	AddressSpace
SaveBlock	CreateAddressBlock	IPBlock
SaveCustomField	CreateCustomField	AccessScope agnostic operation
SaveCustomFieldAssociation	ManageCustomFieldValues	AccessScope agnostic operation
SaveDiscoveryConfig	SaveDiscoveryConfig	AccessScope agnostic operation
SaveLogicalGroup	CreateLogicalGroup	AccessScope agnostic operation
SaveRange	CreateAddressRange	IPSubnet
SaveSubnet	AddressSubnetCreate	IPSubnet
SetAccessScopeForObjects		
SetCommonPropertyValue	SetCommonPropertyValue	AccessScope agnostic operation
SetDatabaseConfiguration	ConnectToAnotherDatabase	Admin only operation
StartTask	TaskStart	AccessScope agnostic operation
TaskLastRunResult	GenericRead	
TaskLastRuntime	GenericRead	
TaskNextRuntime	GenericRead	
TaskRecurrenceDuration	GenericRead	
UpdateAccessScope	UpdateAccessScope	Admin only operation
UpdateAddressSpace	AddressSpaceEdit	AddressSpace
UpdateBlock	UpdateAddressBlock	IPBlock
UpdateCustomField	EditCustomField	AccessScope agnostic operation
UpdateCustomFieldAssociation	ManageCustomFieldValues	AccessScope agnostic operation

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Operation	Mapping OperationId	ObjectForAccessScope Determination
UpdateDiscoveryConfig	UpdateDiscoveryConfig	AccessScope agnostic operation
UpdateGpoForMultipleServers	UpdateServer	AccessScope agnostic operation
UpdateLogicalGroup	UpdateLogicalGroup	AccessScope agnostic operation
UpdateRange	UpdateIPAddressRange	IPRange
UpdateSubnet	AddressSubnetEdit	IPSubnet
UpdateUserAccessPolicy	UpdateAccessPolicy	Admin only operation
UpdateUserRole	UpdateUserRole	Admin only operation
ValidateIfUpgradeIsPossible	ValidateIfUpgradeIsPossible	Admin only operation

3.4 IIpamServer Client Details

The client details of this port type are captured in section 3.2. There are no additional processing required for this port type.

3.4.1 Abstract Data Model

See section 3.2.1.

3.4.2 Timers

See section 3.2.2.

3.4.3 Initialization

See section 3.2.3.

3.4.4 Message Processing Events and Sequencing Rules

See section 3.2.4.

3.4.5 Timer Events

See section 3.2.5.

3.4.6 Other Local Events

See section 3.2.6.

3.5 IIpamEnumerator Server Details

This port type is used for enumerating larger number of rows from the management server. The management client establishes a session to the management server, invokes operations on the management server port to initialize the enumeration parameters and trigger the enumeration. On

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the same session, the client initializes the IIpamEnumeratorCallback port type server. This port type provides a callback the management server can call into to provide the enumeration rows. The interaction is captured in the figure below.

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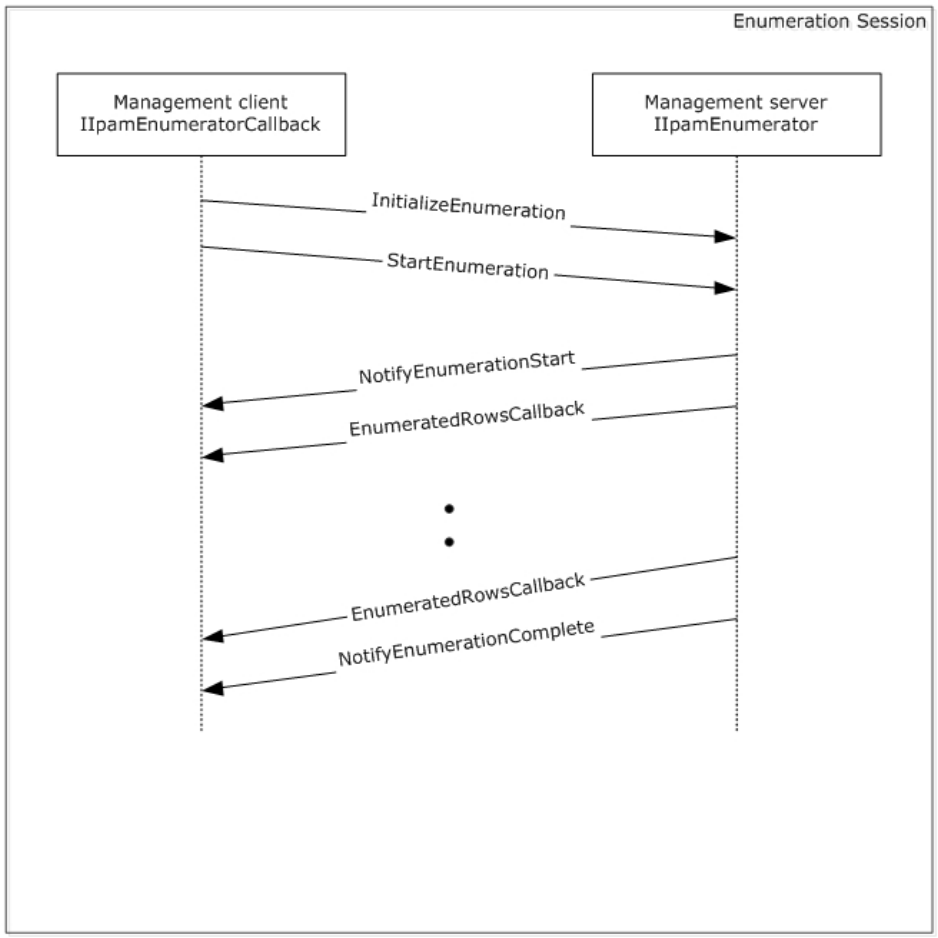

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Figure 3: Enumeration Callback Interaction

3.5.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.5.1.1 State Machine

The following figure shows the state machine of the IIpamEnumerator server port type.

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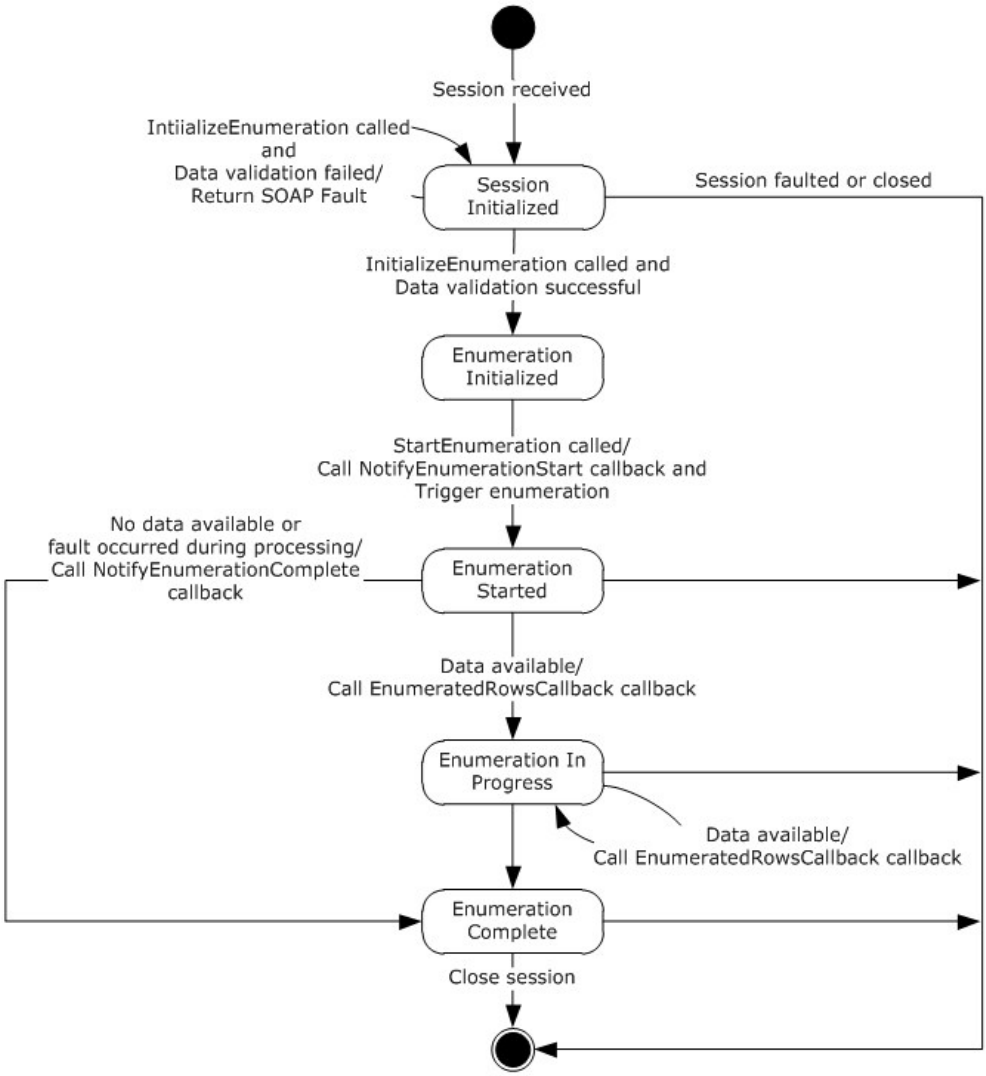

Figure 4: IIpamEnumerator - server state machine

The IIpamEnumerator server is session-based and stateful in nature. The **session state** variable will be used to keep track of the current state for each session and it can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

State	Description
Session	This would be the initial state of the session when it has been indicated from the

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State	Description
Initialized	lower layer of the protocol. When in this state, when the InitializeEnumeration operation is invoked (by the client), the data received as a part of the InitializeEnumeration is validated. If the data validation succeeds, the state is changed to **Enumeration Initialized**. If the data validation fails, the server returns an appropriate SOAP fault and remains in the **Session Initialized** state itself.
Enumeration Initialized	This would be the state when the enumerator is initialized and ready to start the processing to return the data back to the client. When in this state, the StartEnumeration operation is invoked (by the client), the server invokes the NotifyEnumerationStart and triggers the enumeration processing. The state is changed to **Enumeration Started**.
Enumeration Started	This state denotes the enumeration has been initialized successfully and the enumeration processing is currently in progress. If there is data available to be sent across from the enumeration processing, the EnumeratedRowsCallback operation is invoked with the data available and the state is changed to **Enumeration In Progress**. If there is no data available but the enumeration processing completes successfully, the NotifyEnumerationComplete operation is invoked and the state is changed to **Enumeration Completed**. If there is no data available but the enumeration processing has failed with some error, the NotifyEnumerationComplete is called to provide the fault information to the client and the state is changed to **Enumeration Completed**.
Enumeration In Progress	This state denotes the enumeration is in progress and more data is available to be sent across to the client. If there is data available to be sent across from the enumeration processing, the EnumeratedRowsCallback operation is invoked with the data available and the state remains at **Enumeration In Progress.** If there is no data available but the enumeration processing completes successfully, the NotifyEnumerationComplete operation is invoked and the state is changed to **Enumeration Completed**. If there is no data available but the enumeration processing has failed with some error, the NotifyEnumerationComplete is called to provide the fault information to the client and the state is changed to **Enumeration Completed**.
Enumeration Completed	This state indicates there is no further processing required in the session and proceeds to close the session itself.

3.5.1.2 Other Miscellaneous States

EnumInputParameters: This is of type EnumerationParametersBase and can be any of the extending enumeration parameters type. This is initialized with the parameters received as a part of the InitializeEnumeration method.

EnumOutputData: This is of type ArrayOfIpamObject – a collect of data which have IpamObject as the base type. This will be assigned the data to be sent across to the client in EnumeratedRowsCallback operation.

EnumOutputResult: This is of type IpamObject to hold any additional data to be sent to the client at the end of the enumeration.

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3.5.2 Timers

There are no additional timers other than those which are described in section 3.1.2.

3.5.3 Initialization

None.

3.5.4 Message Processing Events and Sequencing Rules

3.5.4.1 New Session Indication

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when a new session is available from the client. The **session state** is initialized to **Session Initialized**.

3.5.4.2 Session Closed or Faulted

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when an existing session is either closed by the client or an irrecoverable error has occurred. This event will result in termination of the state machine as the session itself is no longer valid.

3.5.4.3 EnumeratedRowsCallback

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="EnumeratedRowsCallback">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/EnumeratedRowsCallback"
message="ipam:IIpamEnumerator_EnumeratedRowsCallback_OutputCallbackMessage" />
</wsdl:operation>
```

3.5.4.3.1 Messages

3.5.4.3.1.1 IIpamEnumerator_EnumeratedRowsCallback_OutputCallbackMessage

This is the request for the EnumeratedRowsCallback operation.

```
<wsdl:message name="IIpamEnumerator_EnumeratedRowsCallback_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:EnumeratedRowsCallback" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumerator/EnumeratedRowsCallback
```

The body of the SOAP message MUST contain the EnumeratedRowsCallback element.

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3.5.4.3.2 Elements

3.5.4.3.2.1 EnumeratedRowsCallback

This element specifies the input values for the EnumeratedRowsCallback operation.

```
<xs:element name="EnumeratedRowsCallback">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.5.4.4 InitializeEnumeration

This is an **initiating operation**. This operation is used to specify the type of object that is to be enumerated using the enumeration session and the enumeration parameters itself.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeEnumeration">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumeration"
message="ipam:IIpamEnumerator_InitializeEnumeration_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationResponse"
message="ipam:IIpamEnumerator_InitializeEnumeration_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamEnumerator_InitializeEnumeration_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamEnumerator_InitializeEnumeration_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. The session state is set to Enumeration Initialized.
2. The InitializeEnumeration.parameters.objectType MUST be a valid value of EnumerationObjectType and MUST NOT be None.
3. The InitializeEnumeration.parameters MUST be valid as per their definitions given in section 2.2.4. If the data is valid assign InitializeEnumeration.parameters to EnumInputParameters.
4. If the validation of the InitializeEnumeration.parameters done fails, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

3.5.4.4.1 Messages

3.5.4.4.1.1 IIpamEnumerator_InitializeEnumeration_InputMessage

This is the request for the InitializeEnumeration operation.

```
<wsdl:message name="IIpamEnumerator_InitializeEnumeration_InputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeEnumeration" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumeration
```

The body of the SOAP message MUST contain the InitializeEnumeration element.

3.5.4.4.1.2 IIpamEnumerator_InitializeEnumeration_OutputMessage

This is the response for the InitializeEnumeration operation.

```
<wsdl:message name="IIpamEnumerator_InitializeEnumeration_OutputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeEnumerationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationResponse
```

The body of the SOAP message MUST contain the InitializeEnumerationResponse element.

3.5.4.4.2 Elements

3.5.4.4.2.1 InitializeEnumeration

This element specifies the input values for the InitializeEnumeration operation.

```
<xs:element name="InitializeEnumeration">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.5.4.4.2.2 InitializeEnumerationResponse

This element specifies the output values for the InitializeEnumeration operation.

```
<xs:element name="InitializeEnumerationResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```


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3.5.4.5 InitializeEnumerationWithModule

This is an initiating operation. This operation specifies the type of object that is to be enumerated using the enumeration session and the enumeration parameters. This operation is called when the enumeration is invoked from PowerShell. This operation SHOULD be called for enumerations invoked through any other remoting module and the InitializeEnumeration operation defined in section 3.5.4.4.2.1 SHOULD be deprecated.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeEnumerationWithModule"
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationWithModule"
message="ipam:IIpamEnumerator_InitializeEnumerationWithModule_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationWithModuleRes
ponse" message="ipam:IIpamEnumerator_InitializeEnumerationWithModule_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" />
</wsdl:operation>
```

Upon receiving the IIpamEnumerator_InitializeEnumerationWithModule_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamEnumerator_InitializeEnumerationWithModule_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. The session state is set to Enumeration Initialized.
2. The InitializeEnumerationWithModule.parameters MUST be valid as defined in section 2.2.4. If the data is valid, assign InitializeEnumerationWithModule.parameters to EnumInputParameters.
3. The InitializeEnumerationWithModule.parameters.objectType MUST be a valid value of EnumerationObjectType and MUST not be None.
4. The InitializeEnumerationWithModule.parameters.remotingModule MUST not be NULL.
5. If the validation of the InitializeEnumerationWithModule.parameters done fails, an appropriate SOAP fault MUST be sent to the client as specified section 2.2.2.1.
6. Initialize the session with InitializeEnumerationWithModule.parameters.remotingModule.

3.5.4.5.1 Messages

3.5.4.5.1.1 IIpamEnumerator_InitializeEnumerationWithModule_InputMessage

This is the request for the InitializeEnumerationWithModule operation.

```
<wsdl:message name="IIpamEnumerator_InitializeEnumerationWithModule_InputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeEnumerationWithModule" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action:

```
http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationWithModul
e
```


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The body of the SOAP message MUST contain the **InitializeEnumerationWithModule** element.

3.5.4.5.1.2 IIpamEnumerator_InitializeEnumerationWithModule_OutputMessage

This is the response message for the InitializeEnumerationWithModule operation.

```
<wsdl:message name="IIpamEnumerator_InitializeEnumerationWithModule_OutputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeEnumerationWithModuleResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action:

http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationWithModuleResponse

The body of the SOAP message MUST contain the **InitializeEnumerationWithModuleResponse** element.

3.5.4.5.2 Elements

3.5.4.5.2.1 InitializeEnumerationWithModule

This element specifies the input values for the operation InitializeEnumerationWithModule.

```
<xs:element name="InitializeEnumerationWithModule" >
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
      <xs:element minOccurs="0" name="remotingModule" nillable="true"
type="ipam1:IIpamRemotingModule" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.5.4.5.2.2 InitializeEnumerationWithModuleResponse

This element specifies the output values for the operation InitializeEnumerationWithModuleResponse.

```
<xs:element name="InitializeEnumerationWithModuleResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.5.4.6 NotifyEnumerationComplete

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyEnumerationComplete">
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationComplete"
message="ipam:IIpamEnumerator_NotifyEnumerationComplete_OutputCallbackMessage" />
</wsdl:operation>
```

3.5.4.6.1 Messages

3.5.4.6.1.1 IIpamEnumerator_NotifyEnumerationComplete_OutputCallbackMessage

This is the request for the NotifyEnumerationComplete operation.

```
<wsdl:message name="IIpamEnumerator_NotifyEnumerationComplete_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyEnumerationComplete" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationComplete
```

The body of the SOAP message MUST contain the NotifyEnumerationComplete element.

3.5.4.6.2 Elements

3.5.4.6.2.1 NotifyEnumerationComplete

This element specifies the input values for the NotifyEnumerationComplete operation.

```
<xs:element name="NotifyEnumerationComplete">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
      <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.5.4.7 NotifyEnumerationStart

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyEnumerationStart">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationStart"
message="ipam:IIpamEnumerator_NotifyEnumerationStart_OutputCallbackMessage" />
</wsdl:operation>
```


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3.5.4.7.1 Messages

3.5.4.7.1.1 IIpamEnumerator_NotifyEnumerationStart_OutputCallbackMessage

This is the request for the NotifyEnumerationStart operation.

```
<wsdl:message name="IIpamEnumerator_NotifyEnumerationStart_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyEnumerationStart" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationStart
```

The body of the SOAP message MUST contain the NotifyEnumerationStart element.

3.5.4.7.2 Elements

3.5.4.7.2.1 NotifyEnumerationStart

This element specifies the input values for the NotifyEnumerationStart operation.

```
<xs:element name="NotifyEnumerationStart">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.5.4.8 StartEnumeration

This operation is used to trigger the processing of the enumeration. This causes the session state to be set to **Enumeration Started**.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false" name="StartEnumeration">
  <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/StartEnumeration"
message="ipam:IIpamEnumerator_StartEnumeration_InputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamEnumerator_StartEnumeration_InputMessage, the server MUST invoke NotifyEnumerationStart operation. The enumeration processing logic as described in section 3.5.4.8.1 has to be triggered as well.

3.5.4.8.1 Enumeration Processing Logic

This section captures the enumeration processing steps for the various types of **EnumInputParameters**. The following table captures the type, which extends the EnumerationParametersBase and the corresponding ObjectType.

Enumeration Parameter Type	Object Type
AddressSpaceByFilterEnumerationParameters	AddressSpace

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Enumeration Parameter Type	Object Type
AddressSpaceEnumerationParameters	AddressSpace
ConfigurationAuditEnumerationParameters	ConfigurationAudit
CustomFieldAssociationEnumerationParameters	CustomFieldAssociation
CustomFieldEnumerationParameters	CustomField
DHCPEffectiveScopePoliciesEnumerationParameters	DHCPPolicy
DHCPEffectiveServerPoliciesEnumerationParameters	DHCPPolicy
DHCPFailoverAllEnumerationParameters	DHCPFailover
DHCPFailoverByServerIdsEnumerationParameters	DHCPFailover
DHCPFailoverEnumerationParameters	DHCPFailover
DHCPFailoverScopesEnumerationParameters	DHCPScope
DHCPFilterAllEnumerationParameters	DHCPFilter
DHCPFilterByServerIdsEnumerationParameters	DHCPFilter
DHCPPoliciesByDhcpServerIdListEnumerationParameters	DHCPPolicy
DHCPPoliciesEnumerationParameters	DHCPPolicy
DHCPReservationAllEnumerationParameters	DHCPReservation
DHCPReservationScopeBasedEnumerationParameters	DHCPReservation
DhcpScopeAllEnumerationParameters	DhcpScope
DhcpScopeAssociatedWithVendorClassesEnumerationParameters	DhcpScope
DhcpScopeForIpBlockEnumerationParameters	DhcpScope
DHCPScopePoliciesWithoutRangesEnumerationParameters	DHCPPolicy
DhcpScopesByDhcpServerIdListEnumerationParameters	DhcpScope
DhcpScopeUnmappedEnumerationParameters	DhcpScope
DhcpScopeObjectSpecificEnumerationParameters	DhcpScope
DhcpServerAllEnumerationParameters	DhcpServer
DhcpServerByServerInfoIdsEnumerationParameters	DhcpServer
DHCPSuperscopeByDhcpServerIdListEnumerationParameters	DHCPSuperscope
DHCPSuperscopeEnumerationParameters	DHCPSuperscope
DiscoverySubnetEnumerationParameters	DiscoveredSubnets
DnsReverseLookupZoneEnumerationParameters	DnsReverseLookupZone
DnsServerByServerInfoIdsEnumerationParameters	DnsServer

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Enumeration Parameter Type	Object Type
DnsServerEnumerationParameters	DnsServer
DnsServerReverseZoneEnumerationParameters	DnsServerReverseZone
DnsServerZoneEnumerationParameters	DnsServerZone
DnsZoneEnumerationParameters	DnsZone
DnsZoneEventEnumerationParameters	DnsZoneEvent
IpamIPAddressAllForLogicalGroupEnumerationParameters	IPAddress
IpamIPAddressAllForLogicalGroupNodeEnumerationParameters	IPAddress
IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters	IPAddress
IpamIPAddressByBlockIdEnumerationParameters	IPAddress
IpamIPAddressByFilterEnumerationParameters	IPAddress
IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters	IPAddress
IpamIPAddressByRangeIdEnumerationParameters	IPAddress
IpamIPAddressBySubnetIdEnumerationParameters	IPAddress
IpamIPAddressByVirtualizationTypeParameters	IPAddress
IpamIPAddressForUnmappedRangesEnumerationParameters	IPAddress
IpamIPAddressRootAddressesEnumerationParameters	IPAddress
IpamIPAddressUnmappedAddressEnumerationParameters	IPAddress
IpamIPSubnetByFilterEnumerationParameters	IPSubnet
IpamIPSubnetsByAddressCategoryEnumerationParameters	IPSubnet
IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters	IPSubnet
IpamIPSubnetsByBlockIdEnumerationParameters	IPSubnet
IpamIPSubnetsByUnmappedEnumerationParameters	IPSubnet
IpamIPSubnetsByVirtualizationTypeEnumerationParameters	IPSubnet
IpamIPSubnetsDirectChildrenByBlockIdEnumerationParameters	IPSubnet
IpamProvisioningEnumerationParameters	Provisioning
IPAuditEnumerationParameters	IPAudit
IPBlockChildBlockEnumerationParameters	IPBlock
IPBlockGetAllBlocksEnumerationParameters	IPBlock
IPBlockRootEnumerationParameters	IPBlock
IPRangeAllForBlockEnumerationParameter	IPRange

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Enumeration Parameter Type	Object Type
IPRangeAllForDhcpServerEnumerationParameters	IPRange
IPRangeAllForLogicalGroupNodeEnumerationParameters	IPRange
IPRangeByAddressSpaceAndVirtualizationTypeParameters	IPRange
IPRangeByFilterEnumerationParameters	IPRange
IPRangeByManagedByAndManagedByEntityEnumerationParameters	IPRange
IPRangeByVirtualizationTypeParameters	IPRange
IPRangeForBlockEnumerationParameters	IPRange
IPRangeForSubnetEnumerationParameter	IPRange
IPRangeRootEnumerationParameters	IPRange
IPRangeUnmappedEnumerationParameters	IPRange
LogicalGroupDataForLogicalGroupNodeEnumerationParameters	LogicalGroupData
LogicalGroupDataForRootAlternateItemsEnumerationParameters	LogicalGroupData
LogicalGroupDataUnmappedItemsEnumerationParameters	LogicalGroupData
LogicalGroupNodeChildrenEnumerationParameters	LogicalGroupNode
LogicalGroupNodeRootEnumerationParameters	LogicalGroupNode
LogicalGroupsEnumerationParameters	LogicalGroup
ServerInfoEnumerationParameters	ServerInfo
SubnetLogicalGroupNodeRootEnumerationParameters	LogicalGroupNode
UnmappedIpamIPAddressForLogicalGroupEnumerationParameters	IPAddress

The following sections describe the processing rules involved in generating the enumerated data. The **EnumInputParameters** will contain the input parameters and on completion the **EnumOutputData** will have the collection of data to be sent to the client. When the data is available in **EnumOutputData** and the **session state** is **Enumeration Started** or **Enumeration In Progress**, the EnumeratedRowsCallback operation is invoked multiple times as necessary to send the enumerated data to the client.

When there are no more data to be sent across and the enumeration processing has completed successfully without any faults, the EnumOutputResult is set with any additional data to be sent across to the client as a part of enumeration completion. The NotifyEnumerationComplete operation MUST be called with **NotifyEnumerationComplete.result** being set to **EnumOutputResult** and the **NotifyEnumerationComplete.exception** being set to null.

When the enumeration processing results in a fault getting generated, the NotifyEnumerationComplete operation MUST be called with NotifyEnumerationComplete.result not being set and **NotifyEnumerationComplete.exception** is set to the fault information.

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3.5.4.8.1.1 AddressSpaceByFilterEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type AddressSpaceByFilterEnumerationParameters. The ObjectType MUST be EnumerationObjectType.AddressSpace. This is used to enumerate all address spaces that meet all the filter criteria in AddressSpaceByFilterEnumerationParameters.filterInfo. AddressSpaceByFilterEnumerationParameters.filterInfo is a collection of various filter types (specified by ipam:GetAddressSpaceFilter) and their values.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. For all rows in ADM_AddressSpaceTable, call GetAddressSpaceById from ADM_AddressSpaceTable by passing the RecordID as Param_AddressSpaceId.

2. If Result_AddressSpace object satisfies every subcriteria in AddressSpaceByFilterEnumerationParameters.FilterInfo, then add it to EnumOutputData.

3.5.4.8.1.2 AddressSpaceEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **AddressSpaceEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType.AddressSpace**. This is used to enumerate all the address spaces of the type **AddressSpaceEnumerationParameters.AddressSpaceType**.

The following steps are used to identify the rows to be returned as a part of the enumeration.

1. Call the procedure **GetAllAddressSpaceNames** from **ADM_AddressSpaceTable** by passing AddressSpaceEnumerationParameters.AddressSpaceType as Param_AddressSpaceType.

2. For each tuple in Result_AddressSpaceNames, call GetAddressSpaceById from ADM_AddressSpaceTable with Param_AddressSpaceId as AddressSpaceRecordId field of the tuple.

3. The Result_AddressSpace will form the set of AddressSpace objects that have to be returned as EnumOutputData.

3.5.4.8.1.3 ConfigurationAuditEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type ConfigurationAuditEnumerationParameters. The ObjectType MUST be EnumerationObjectType.ConfigurationAudit.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Validate the ConfigurationAuditEnumerationParameters as specified in section 2.2.4.63. If the validation conditions are not being met, return an appropriate SOAP fault as specified in section 2.2.2.1.

2. Call the procedure SearchConfigurationAuditTable in ADM_ConfigurationAuditTable, specifying the ConfigurationAuditEnumerationParameters.SearchXml as Param_searchCriteriaXml and ConfigurationAuditEnumerationParameters.NumberOfRecords as Param_numberOfRows.

3. The Result_events will form the set of events that have to be returned as **EnumOutputData**.

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3.5.4.8.1.4 CustomFieldAssociationEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type CustomFieldAssociationEnumerationParameters. The ObjectType MUST be EnumerationObjectType.CustomFieldAssociation. This is used to enumerate all CustomFieldAssociation in the IPAM data store.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call GetAllAssociations from ADM_MultiValueCustomFieldValueAssociationTable.

2. Create an object of type CustomFieldAssociation. Call GetCustomField from ADM_CustomFieldsTable for the values in the tuples returned in step 1 and store them as CustomField1 and CustomField2 of the created object. Store the tuple as CustomFieldValueAssociations of the object. Add the object to EnumOutputData.

3.5.4.8.1.5 CustomFieldEnumerationParameters

This is the processing done when the EnumInputParameters contains the data of type CustomFieldEnumerationParameters. The ObjectType MUST be EnumerationObjectType.CustomField.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. If CustomFieldEnumerationParameters.CustomFieldName is specified, enumerate the row in ADM_CustomFieldsTable that have **CustomFieldDetails.Name** to be CustomFieldEnumerationParameters.CustomFieldName.

2. If CustomFieldEnumerationParameters.CustomFieldName is not specified, enumerate all the rows in ADM_CustomFieldsTable.

3. For each enumerated row, perform the following steps.

    1. Call the procedure GetCustomField in ADM_CustomFieldsTable passing the following parameters:

        - Param_Id is set to the value of RecordId of the enumerated row.

    2. Add Result_customField to **EnumOutputData**.

3.5.4.8.1.6 DHCPEffectiveScopePoliciesEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DHCPEffectiveScopePoliciesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPPolicy. This is used to enumerate the effective DHCP policies for a given scope. These would be the scope level policies for the given scope in DHCPEffectiveScopePoliciesEnumerationParameters.DhcpScope followed by the server level policies corresponding to parent server of DHCPEffectiveScopePoliciesEnumerationParameters.DhcpScope.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetPoliciesForScopeByScopeId of ADM_DHCPPolicyTable passing DHCPEffectiveScopePoliciesEnumerationParameters.DhcpScope as Param_scopeId.

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2. Add the entries in Result_scopePolicies to EnumOutputData.

3. Retrieve the parent DHCP server ID to which the passed scope belongs to, from DHCPEffectiveScopePoliciesEnumerationParameters.DhcpScope.DHCPServerRecordId and initialize that into local variable serverId.

4. Call the procedure GetPoliciesForServerByServerId of ADM_DHCPPolicyTable passing serverId as Param_serverId.

5. Add the entries in Result_serverPolicies to EnumOutputData.

3.5.4.8.1.7 DHCPEffectiveServerPoliciesEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DHCPEffectiveServerPoliciesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPPolicy. This is used to enumerate the effective DHCP policies that belong to the given DHCP server specified in DHCPEffectiveServerPoliciesEnumerationParameters.DhcpServer.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetPoliciesForServerByServerId of ADM_DHCPPolicyTable passing DHCPEffectiveServerPoliciesEnumerationParameters.DhcpServer as Param_serverId.

2. Add the entries in Result_serverPolicies to EnumOutputData.

3.5.4.8.1.8 DHCPFailoverAllEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPFailoverAllEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPFailover. This is used to retrieve all the DHCP failover relationships in the system.

The following are the steps to identify the data to be returned as a part of the enumeration.

1. Enumerate all the rows in **ADM_DhcpFailoverRelationTable**.

2. Initialize Result_failoverCollection.

3. For each row retrieved from **ADM_DhcpFailoverRelationTable,create** an instance of DhcpFailover with the following assignments and add it to Result_failoverCollection collection:

    1. Assign DhcpFailover.RecordId with RecordId of the row.

    2. If Server1RecordId is not 0, then copy Server1RecordId into DhcpFailover.Server1RecordId.

    3. If Server2RecordId is not 0, then copy Server2RecordId into DhcpFailover.Server2RecordId.

    4. Copy the FailoverDetails into DhcpFailover.

    5. Add all the entries in Result_failoverCollection to EnumOutputData.

3.5.4.8.1.9 DHCPFailoverByServerIdsEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPFailoverByServerIdsEnumerationParameters. The ObjectType MUST be

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EnumerationObjectType.DHCPFailover. This is used to retrieve the DHCP failover data for all the failover relationships belonging to the list of server IDs specified in DHCPFailoverByServerIdsEnumerationParameters.ServerIds.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. For each ServerId in DHCPFailoverByServerIdsEnumerationParameters.ServerIds do the following steps:

2. Call the procedure GetAllDhcpFailoverByServerId of ADM_DHCPFailoverRelationTable passing ServerId as Param_DhcpServerId.

3. Add all the entries in Param_failoverCollection to EnumOutputData.

3.5.4.8.1.10 DHCPFailoverEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPFailoverEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPFailover. This is used to retrieve the DHCP failover data for the given Failover ID in DHCPFailoverEnumerationParameters.Failover.

The following are the steps involved in identifying the data to be returned as a part of the enumeration.

Call the procedure GetDhcpFailoverById of ADM_DHCPFailoverRelationTable passing DHCPFailoverEnumerationParameters.Failover as Param_FailoverId.

Add the entry in Result_Failover to EnumOutputData.

3.5.4.8.1.11 DHCPFailoverScopesEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPFailoverScopesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPScope. This is used to retrieve the DHCP scopes participating in the failover relationship given by DHCPFailoverScopesEnumerationParameters.failover.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetDhcpFailoverScopes of ADM_DHCPScopeFailoverTable passing DHCPFailoverScopesEnumerationParameters.failover as Param_Failover.

2. Add the scopes returned in Param_scopeCollection to EnumOutputData.

3.5.4.8.1.12 DHCPFilterAllEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPFilterAllEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPFilter. This is used to retrieve the DHCP filters in the system.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

The following are the processing steps involved:

1. Enumerate all the rows in ADM_DhcpFilterTable.

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2. Initialize Result_Filters as collection of type DhcpFilter.

3. Add all the rows from ADM_DhcpFilterTable to the Result_Filters collection.

4. Add all rows from Result_Filters to EnumOutputData.

3.5.4.8.1.13 DHCPFilterByServerIdsEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPFilterByServerIdsEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPFilter. This is used to retrieve the DHCP filters belonging to the list of server IDs specified in DHCPFilterByServerIdsEnumerationParameters.ServerIds.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. For each ServerId in DHCPFilterByServerIdsEnumerationParameters.ServerIds do the following steps:

2. Call the procedure GetFiltersForServer of ADM_DHCPFilterTable passing ServerId as Param_serverId.

3. Add all the entries in Result_Filters to EnumOutputData.

3.5.4.8.1.14 DHCPPoliciesByDhcpServerIdListEnumerationParameters

This is processing is done when the EnumInputParameters contains data of type DHCPPoliciesByDhcpServerIdListEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPPolicy. This is used to enumerate the DHCP policies that belong to the given set of DHCP servers specified in DHCPPoliciesByDhcpServerIdListEnumerationParameters.DhcpServers.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Retrieve the passed Server IDs in DHCPPoliciesByDhcpServerIdListEnumerationParameters.DhcpServers collection and for each retrieved serverID do the following:

2. Call the procedure GetPoliciesForServerByServerId of ADM_DHCPPolicyTable passing serverID as Param_serverId.

3. Add the entries in Result_serverPolicies to EnumOutputData.

3.5.4.8.1.15 DHCPPoliciesEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPPoliciesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPPolicy. This is used to enumerate the DHCP policies that meet the specified filter condition in DHCPPoliciesEnumerationParameters.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

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1. Enumerate the rows in ADM_DhcpPolicyTable.
2. Initialize Result_Policies.
3. For each row, perform the following steps.
4. Create an instance of DhcpPolicyV4 with the following assignments and add it to Result_Policies collection:
5. Assign DhcpPolicyV4.PolicyId with PolicyId of the row.
6. Copy the PolicyDetails to DhcpPolicyV4 instance.
7. Initialize DhcpPolicyV4.Server with DhcpServerV4.
8. Assign DhcpPolicyV4.Server.RecordId with Server of the row.
9. Initialize DhcpPolicyV4.Scope with DhcpScopeV4 and assign DhcpPolicyV4.Scope.RecordId with Scope of the row.
10. Add the entries in Result_Policies to EnumOutputData.

3.5.4.8.1.16 DHCPReservationAllEnumerationParameters

This processing is done when the EnumInputParameters contains data of type DHCPReservationAllEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPReservation. This is used to enumerate the DHCP reservations that meet the specified filter condition in DHCPreservationAllEnumerationParameters.ReservationAddressFamily and DHCPreservationAllEnumerationParameters.ReservationAddressType.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Use the DHCPreservationAllEnumerationParameters.ReservationAddressFamily and DHCPreservationAllEnumerationParameters.ReservationAddressType to determine the simple table within the ADM_DHCPReservationTable compound table to perform the rest of the processing.
2. For all the reservation entries that match the filter criteria, add the entries to EnumOutputData.

3.5.4.8.1.17 DHCPReservationScopeBasedEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DHCPReservationScopeBasedEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPReservation. This is used to enumerate the DHCP reservations that belong to specific scopes and meet the specified filter condition in DHCPreservationScopeBasedEnumerationParameters.ReservationAddressFamily and DHCPreservationScopeBasedEnumerationParameters.ReservationAddressType.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Use the DHCPreservationScopeBasedEnumerationParameters.Scopes, DHCPreservationScopeBasedEnumerationParameters.ReservationAddressFamily and DHCPreservationScopeBasedEnumerationParameters.ReservationAddressType to determine the

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simple table within the ADM_DHCPReservationTable compound table to perform the rest of the processing.

2. For all the reservation entries that match the filter criteria, add the entries to EnumOutputData.

3.5.4.8.1.18 DhcpScopeAllEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpScopeAllEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpScope. This is used to enumerate all the DHCP scopes that are present in the IPAM data store. The DhcpScopeAllEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_DHCPScopesTable compound table on which the processing has to be done. The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate all the rows in the ADM_DHCPScopesTable.

2. For each row enumerated, perform the following steps:

    1. Call the procedure GetScopeFromTable of the ADM_DHCPScopesTable passing the following parameters:

        - Param_Id is assigned the value of the RecordId of the row being enumerated.

        - Param_addressfamily is assigned the value of DhcpScopeAllEnumerationParameters.AddressFamily.

    2. Add the returned result Result_scope to EnumOutputData.

3.5.4.8.1.19 DhcpScopeAssociatedWithVendorClassesEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpScopeAssociatedWithVendorClassesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpScope. This is used to enumerate all the DHCP scopes that are present on a specified DHCP server and having an option specified for a particular vendor class. The DhcpScopeAssociatedWithVendorClassesEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_DHCPScopesTable compound table on which the processing has to be done. The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. If DhcpScopeAssociatedWithVendorClassesEnumerationParameters.VendorClassRecordIds is not specified or is an empty collection, EnumOutputData is assigned an empty collection.

2. Fetch the DHCP server against which the scopes having options of the specified vendor classes are required. This is done by calling the procedure GetDHCPServerFromTable and passing the following parameters:

    - Param_Id is set to DhcpScopeAssociatedWithVendorClassesEnumerationParameters.ParentServerRecordId.

    - Param_addressfamily is assigned the value of DhcpScopeAssociatedWithVendorClassesEnumerationParameters.AddressFamily.

3. If any of the entries in the DhcpScopeAssociatedWithVendorClassesEnumerationParameters.VendorClassRecordIds is 0, it means the scopes associated with the default vendor class option is being requested. Perform the following steps to enumerate the rows:

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- In this case, enumerate all the scopes in ADM_DHCPScopesTable whose DHCPServerRecordId is the same as DhcpScopeAssociatedWithVendorClassesEnumerationParameters.ParentServerRecordId.

4. Otherwise perform the following steps to enumerate the rows of interest.

    1. Enumerate the option definitions from Result_server.OptionDefinitions whose VendorClassRecordId is one of the values in the list DhcpScopeAssociatedWithVendorClassesEnumerationParameters.VendorClassRecordIds.

    2. For each of the enumerated option definitions, enumerate the rows in the ADM_DhcpOptionsTable whose ScopeRecordId is not null and OptionDefinitionRecordId is the same as the RecordId of the option definition that is getting enumerated. This will provide the list of scopes in the form of RecordId in ADM_DHCPScopesTable that are associated with the specified vendor class.

    3. Enumerate the scopes with the RecordId in the previously generated list.

5. For each row enumerated in the ADM_DHCPScopesTable, perform the following steps to generate the enumerated data.

    1. Call the procedure GetDhcpScopeFromTable of ADM_DHCPScopesTable passing the following input parameters:

        - Param_Id is set to the RecordId of the row being enumerated.

        - Param_addressFamily is set to DhcpScopeAssociatedWithVendorClassesEnumerationParameters.AddressFamily.

    2. Add the Result_scope returned by the procedure to **EnumOutputData**.

3.5.4.8.1.20 DhcpScopeForIpBlockEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpScopeForIpBlockEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpScope. This is used to enumerate all the DHCP scopes that are mapped to a particular IP address block specified as parameter using DhcpScopeForIpBlockEnumerationParameters. ParentIPBlockRecordId. The DhcpScopeForIpBlockEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_DHCPScopesTable compound table on which the processing has to be done. The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Get the IP address block for which the scopes are being requested by calling the procedure GetIPBlockFromTable of ADM_IPBlocksTable passing the following as input parameters:

    - Param_blockId is set to DhcpScopeForIpBlockEnumerationParameters.ParentIPBlockRecordId.

    - Param_addressFamily is set to DhcpScopeForIpBlockEnumerationParameters.AddressFamily.

2. Enumerate the ranges in the ADM_IPRangeTable that meet the following criteria:

    - StartIPAddress >= **result**.StartIPAddress.

    - EndIPAddress <= **result**.EndIPAddress.

    - PrefixLength >= **result**.PrefixLength.

    - ParentIPBlockRecordId is not null.

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- AddressAssignment is Dynamic.

3. For each of the previously enumerated rows, perform the following steps to get the associated scopes:

    1. Call the procedure GetScopeFromTable in ADM_DHCPScopesTable with the following parameters:

        - Param_Id is set to the value of ScopeRecordId of the row enumerated.

        - Param_addressfamily is assigned the value of DhcpScopeForIpBlockEnumerationParameters.AddressFamily.

    2. Add the returned Result_scope to **EnumOutputData**.

3.5.4.8.1.21 DHCPScopePoliciesWithoutRangesEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DHCPScopePoliciesWithoutRangesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPPolicy. This is used to enumerate the DHCP policies that belong to the given scope specified in DHCPScopePoliciesWithoutRangesEnumerationParameters.DhcpScope.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetPoliciesForScopeByScopeId of ADM_DHCPPolicyTable passing DHCPScopePoliciesWithoutRangesEnumerationParameters.DhcpScope as Param_scopeId.

2. Add the entries in Result_scopePolicies to EnumOutputData.

3.5.4.8.1.22 DhcpScopesByDhcpServerIdListEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpScopesByDhcpServerIdListEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpScope. This is used to enumerate all the DHCP scopes that have DHCP server instances with a record identifier equal to any of the values specified in the DhcpScopesByDhcpServerIdListEnumerationParameters.DhcpServerIds. The DhcpScopesByDhcpServerIdListEnumerationParameters.AddressFamily value is used to determine the simple table within the ADM_DHCPScopesTable compound table on which the processing has to be done.

The following are the steps involved in identifying the rows that are returned as a part of the enumeration.

1. Enumerate the rows in the ADM_DHCPScopesTable that have a DHCPServerRecordId value equal to any of the values specified by DhcpScopesByDhcpServerIdListEnumerationParameters.DhcpServerIds.

2. For each of the rows enumerated previously, perform the following steps to get the associated scopes:

    1. Call the procedure GetScopeFromTable in ADM_DHCPScopesTable with the following parameters:

        - Param_Id is set to the value of ScopeRecordId of the row enumerated.

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- Param_addressfamily is assigned the value of DhcpScopesByDhcpServerIdListEnumerationParameters.AddressFamily.

2. Add the returned Result_scope to EnumOutputData.

3.5.4.8.1.23 DhcpScopeUnmappedEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpScopeUnmappedEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpScope. This is used to enumerate all the DHCP scopes that are not mapped to any of the address blocks. The DhcpScopeUnmappedEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_DHCPScopesTable compound table on which the processing has to be done. The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate the ranges in the ADM_IPRangeTable that meet the following criteria:

   - ParentIPBlockRecordId is null.

   - AddressAssignment is Dynamic.

2. For each of the previously enumerated rows, perform the following steps to get the associated scopes:

   1. Call the procedure GetScopeFromTable in ADM_DHCPScopesTable with the following parameters:

      - Param_Id is set to the value of ScopeRecordId of the row enumerated.

      - Param_addressfamily is assigned the value of DhcpScopeForIpBlockEnumerationParameters.AddressFamily.

   2. Add the returned Result_scope to EnumOutputData.

3.5.4.8.1.24 DhcpServerAllEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpServerAllEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpServer. This is used to enumerate the DhcpServer instances that meet a specified set of filter conditions. If no filter conditions are specified, all the DhcpServer instances will be returned. The DhcpServerAllEnumerationParameters.AddressFamily value is used to determine the simple table within the ADM_DHCPServersTable compound table on which the processing has to be done.

The following are the processing steps involved in identifying the rows to be returned as a part of the enumeration.

1. The keys in the DhcpServerAllEnumerationParameters.Filter MUST be unique and MUST be a valid ServerInfoGetServerFilter. Set the Filter to have ServerInfoGetServerFilter.IPType to be DhcpServerAllEnumerationParameters.AddressFamily. Set the Filter to have ServerInfoGetServerFilter.Role to ServerRoleType.Dhcp.

2. Call the procedure GetFilteredServerInfoFromTable passing DhcpServerAllEnumerationParameters.Filter as Param_filters to get the ServerInfo instances that have a DHCP server role that meets the specified filter condition.

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3. Enumerate the rows in ADM_ServerRolesTable whose ServerRecordID is the part of the Result_filteredServerInfoRows returned in the previous steps.

4. Enumerate the rows in ADM_DHCPServersTable whose ServerRoleRecordId is a value listed from step 3. For each of the rows, call the procedure GetDhcpServerFromTable passing the record identifier of the row as Param_Id and DhcpServerAllEnumerationParameters.AddressFamily as Param_addressfamily. Add the returned Result_server to EnumOutputData.

3.5.4.8.1.25 DhcpServerByServerInfoIdsEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpServerByServerInfoIdsEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpServer. This is used to return the DhcpServer instances that are configured on the server instances specified by the list of record identifiers of the ServerInfo instances in ADM_ServersTable. The DhcpServerByServerInfoIdsEnumerationParameters.AddressFamily value is used to determine the simple table within the ADM_DHCPServersTable compound table on which the processing has to be done.

The following are the processing steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate the rows in ADM_ServerRolesTable whose ServerRecordID is the part of the DhcpServerByServerInfoIdsEnumerationParameters.ServerInfoIds.

2. Enumerate the rows in ADM_DHCPServersTable whose ServerRoleRecordId is a value listed in the previous step. For each of the rows, call the procedure GetDhcpServerFromTable passing the record identifier of the row as Param_Id and DhcpServerByServerInfoIdsEnumerationParameters.AddressFamily as Param_addressfamily. Add the returned Result_server to EnumOutputData.

3.5.4.8.1.26 DHCPSuperscopeByDhcpServerIdListEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DHCPSuperscopeByDhcpServerIdListEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPSuperscope. This is used to retrieve the DHCP superscopes belonging to the list of server IDs specified in DHCPSuperscopeByDhcpServerIdListEnumerationParameters.DhcpServers.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. For each ServerId in DHCPSuperscopeByDhcpServerIdListEnumerationParameters.DhcpServers, do the following steps:

2. Call the procedure GetSuperscopesForServer of ADM_DHCPSuperscopeTable passing ServerId as Param_serverId.

3. Add all the entries in Result_Superscopes to EnumOutputData.

3.5.4.8.1.27 DHCPSuperscopeEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DHCPSuperscopeEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DHCPSuperscope. This is used to retrieve the DHCP superscopes in the system.

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The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate all the rows in ADM_DhcpSuperscopeTable.

2. Add all the rows from ADM_DhcpSuperscopeTable to EnumOutputData.

3.5.4.8.1.28 DiscoverySubnetEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DiscoverySubnetEnumerationParameters. The ObjectType MUST be EnumerationObjectType. DiscoveredSubnets. The following are the processing steps involved to identify the rows to be returned as a part of the enumeration.

1. Enumerate the rows in ADM_ServersTable that meet the following conditions:

   - If DiscoverySubnetEnumerationParameters.InclusionStatus is specified, ServerInfoDetails.ManagementStatus MUST be equal to DiscoverySubnetEnumerationParameters.InclusionStatus.

   - If DiscoverySubnetEnumerationParameters.MultipleRole is specified and has the value of ServerMultipleRole.DhcpOrDns, for the row in the ADM_ServersTable being enumerated, there MUST be a row in ADM_ServerRolesTable whose ServerRecordId is the RecordId of the row in ADM_ServersTable and ServerRoleFlag is either ServerRoleType.Dhcp or ServerRoleFlag.Dns.

   - If DiscoverySubnetEnumerationParameters.ServerRole is specified, for the row in the ADM_ServersTable being enumerated, there MUST be a row in ADM_ServerRolesTable whose ServerRecordId is the RecordId of the row in ADM_ServersTable and the ServerRoleFlag is DiscoverySubnetEnumerationParameters.ServerRole.

2. For each of the rows enumerated that meet the previously mentioned condition, get the addresses specified by ServerInfoDetails.IPAddresses. For each of the addresses, perform the following processing:

   1. If DiscoverySubnetEnumerationParameters.SubnetType is specified, filter the addresses based on the address family.

      - If it is of value ServerInfoIPType.IPv4:

        1. Filter addresses that are of address family of Internet.

        2. Get the subnet with a /16 prefix.

        3. Ensure it was not already added to EnumOutputData and if not, add it to EnumOutputData.

   2. Similarly, if it is of value ServerInfoIPType.IPv6:

      1. Filter addresses that are of address family InternetV6.

      2. Get the subnet with a /16 prefix.

      3. Ensure it was not already added to EnumOutputData and if not, add it to EnumOutputData.

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3.5.4.8.1.29 DnsReverseLookupZoneEnumerationParameters

This is the processing done when the EnumInputParameters is of type DnsReverseLookupZoneEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DnsReverseLookupZone. This is used to enumerate the reverse lookup zones based on certain conditions specified as a part of the DnsReverseLookupZoneEnumerationParameters. The following are the processing steps involved in identifying the rows that have to be returned for the enumeration:

1. Enumerate the rows in ADM_DNSReverseLookupTable that meet the following criteria.
    - If DnsReverseLookupZoneEnumerationParameters.Filter contains a key value pair with the key being DnsReverseLookupZoneFilterCriteria.IP, the value MUST be a valid IP address in string format. The row MUST have the value of DnsReverseLookupZoneFilterCriteria.IP between StartIP and EndIP.
    - If DnsReverseLookupZoneEnumerationParameters.Filter contains a key value pair with the key being DnsReverseLookupZoneFilterCriteria.IPType, the value MUST be a valid AddressFamily and the row MUST have the IPType to be the same as the value specified.
    - If DnsReverseLookupZoneEnumerationParameters.Filter contains a key value pair with the key being DnsReverseLookupZoneFilterCriteria.RecordId, the value MUST be a valid RecordId and the row MUST have the RecordId to be the same as the value specified.
    - If DnsReverseLookupZoneEnumerationParameters.Filter contains a key value pair with the key being DnsReverseLookupZoneFilterCriteria.Name, the value MUST be a valid reverse lookup DNS zone name and the row MUST have Name field to be the same as the specified value.
2. For each previously enumerated row that meets the conditions specified in DnsReverseLookupZoneEnumerationParameters.Filter:
    1. Call the procedure GetDnsReverseLookupZoneFromTable in ADM_DNSReverseLookupTable passing the following parameters.
        - Param_recordId is set to the RecordId of the row.
    2. Add the Result_reverseLookupZone to **EnumOutputData**.

3.5.4.8.1.30 DnsServerByServerInfoIdsEnumerationParameters

This is the processing done when the EnumInputParameters is of type DnsServerByServerInfoIdsEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DnsServer. This is used to enumerate the DNS server instances corresponding to the ServerInfo instances specified in the form of DnsServerByServerInfoIdsEnumerationParameters.ServerInfoIds.

The following are the processing steps involved in identifying the rows that have to be returned for the enumeration:

1. Enumerate the rows in ADM_ServerRolesTable whose RecordId is part of the DnsServerByServerInfoIdsEnumerationParameters.ServerInfoIds and that have ServerRoleDetails.ServerRoleFlag equal to ServerRoleType.Dns.
2. Enumerate the rows in ADM_DnsServersTable whose ServerRoleRecordId is present in the rows returned by the previous query.

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3. For each of the previously enumerated rows, call the procedure GetDnsServerFromTable passing the record identifier of the row as Param_Id. Add the returned Result_DnsServer to EnumOutputData.

3.5.4.8.1.31 DnsServerEnumerationParameters

This is the processing done when the EnumInputParameters is of type DnsServerEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DnsServer. This is used to enumerate the DNS server instances based on certain conditions specified as a part of the DnsServerEnumerationParameters. The following are the processing steps involved in identifying the rows that have to be returned for the enumeration:

1. If the DnsServerEnumerationParameters.Filter contains the key ServerInfoGetServerFilter.Role, replace the filter condition with ServerRoleType.Dns. If the filter condition is not specified, add the filter condition for ServerRoleType.Dns.

2. If the DnsServerEnumerationParameters.Filter contains the key ServerInfoGetServersFilter.RecordId, the RecordId specified will be the RecordId of the DNS Server Role and it has to be converted to the ServerInfo RecordId. For this, enumerate the row in ADM_ServerRolesTable whose RecordId is the value of RecordId filter specified. Get the ServerRecordID out of the row. If the row is not found having the RecordId to be the RecordId of the filter, an appropriate SOAP fault MUST be returned. Replace the ServerInfoGetServersFilter.RecordId with the ServerRecordId fetch.

3. Call the procedure GetFilteredServerInfoFromTable procedure in ADM_ServersTable passing the DnsServerEnumerationParameters.Filter as Param_filters.

4. For each row ServerInfoRow in the Result_filteredServerInfoRows, perform the following processing steps.

    1. Lookup the ADM_ServerRolesTable for the row with ServerRecordId being ServerInfoRow.RecordId and ServerRoleDetails.ServerRoleFlag is ServerRoleType.Dns.

    2. Call the procedure GetDnsServerFromTable by passing the RecordId of the row in ADM_ServerRolesTable as Param_Id.

    3. Add the Result_DnsServer to **EnumOutputData**.

3.5.4.8.1.32 DnsServerReverseZoneEnumerationParameters

This is the processing done when the EnumInputParameters is of type DnsServerReverseZoneEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DnsServerReverseZone. This is used to enumerate the reverse lookup DNS zone hosting information on DNS server instances based on certain conditions specified as a part of the DnsServerReverseZoneEnumerationParameters. The following are the processing steps involved in identifying the rows that have to be returned for the enumeration.

1. Enumerate the rows in ADM_DnsServerReverseLookupZoneTable that meet the following conditions.

    - DnsReverseZoneId is DnsServerReverseZoneEnumerationParameters.DnsReverseLookupZoneId.

    - ServerRecordId is DnsServerReverseZoneEnumerationParameters.DnsServerId.

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- If DnsServerReverseZoneEnumerationParameters.ZoneType is specified, the ReverseLookupZoneDetails.ZoneType MUST match the specified value.

2. Call the procedure GetDnsServerReverseLookupZoneFromTable procedure in ADM_DNSServerReverseLookupZoneTable and add the Result_data into **EnumOutputData**.

3.5.4.8.1.33 DnsServerZoneEnumerationParameters

This is the processing done when the EnumInputParameters is of type DnsServerZoneEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DnsServerZone. This is used to enumerate the forward lookup DNS zone hosting information on DNS server instances based on certain conditions specified as a part of the DnsServerZoneEnumerationParameters. The following are the processing steps involved in identifying the rows that have to be returned for the enumeration:

1. Enumerate the rows in ADM_DNSServerForwardLookupZoneTable that meet the following conditions.

   - DnsZoneId is DnsServerZoneEnumerationParameters.DnsZoneId.
   - ServerRecordId is DnsServerZoneEnumerationParameters.DnsServerId.
   - If DnsServerZoneEnumerationParameters.ZoneType is specified, the ForwardLookupZoneDetails.ZoneType MUST match the specified value.

2. Call the procedure GetDnsServerZoneFromTable procedure in ADM_DNSServerForwardLookupZoneTable and add the Result_data into **EnumOutputData**.

3.5.4.8.1.34 DnsZoneEnumerationParameters

This is the processing done when the EnumInputParameters is of type DnsZoneEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DnsZone. This is used to enumerate the forward lookup DNS zones based on certain conditions specified as a part of the DnsZoneEnumerationParameters. The following are the processing steps involved in identifying the rows that have to be returned for the enumeration.

- Enumerate the rows in ADM_DNSForwardLookupTable that meet the filter conditions listed in the form of a key value pair in DnsZoneEnumerationParameters.Filter. The following are the keys that can be in the Filter and their corresponding value types and filter conditions.

Filter.Key	Filter.ValueType	Filter Criteria
ParentRecordId	Integer	ParentId is equal to the specified value.
RecordId	Integer	RecordId is equal to the specified value.
Name	String	Name is equal to the specified value.

- For each of the previously enumerated rows, call the procedure GetDnsZoneFromTable in ADM_DNSForwardLookupTable, passing the RecordId of the row as Param_Id. Add the returned Result_zone to **EnumOutputData**.

3.5.4.8.1.35 DnsZoneEventEnumerationParameters

This is the processing done when the EnumInputParameters is of type DnsZoneEventEnumerationParameters. The ObjectType MUST be

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EnumerationObjectType.DnsZoneEvent. This is used to enumerate the DNS zone specific events either for the specified zone or for the specified DNS server. The following are the processing steps involved in identifying the rows that have to be returned for the enumeration.

1. Validate the DnsZoneEventEnumerationParameters to ensure it is not null and either DnsServerId is specified to be a non-zero value or DnsServerZoneId is specified as a non-zero value but not both. If the condition is not being met, generate an appropriate SOAP fault.

2. If DnsZoneEventEnumerationParameters.DnsServerZoneId is specified,

3. Enumerate the rows in ADM_DNSZoneEventsTable where in DnsServerZoneId is equal to DnsZoneEventEnumerationParameters.DnsServerZoneId.

4. If DnsZoneEventEnumerationParameters.DnsServerId is specified,

5. Enumerate the rows in ADM_DNSServerForwardLookupTable whose DnsServerId is equal to DnsZoneEventEnumerationParameters.DnsServerId. For each of the rows enumerated, enumerate the rows in ADM_DNSZoneEventsTable where DnsServerZoneId is equal to the RecordId of the row in ADM_DNSServerForwardLookupTable.

6. For the previously enumerated rows, call the procedure GetDnsZoneEventFromTable in ADM_DNSZoneEventsTable with the parameter Param_Id passing the value of RecordId of the row and adding Result_eventData to **EnumOutputData**.

3.5.4.8.1.36 IpamIPAddressAllForLogicalGroupEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressAllForLogicalGroupEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate the addresses mapped to a particular logical group specified by IpamIPAddressAllForLogicalGroupEnumerationParameters.LogicalGroupRecordId. The IpamIPAddressAllForLogicalGroupEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData is a collection of IpamIPv4Address and if it is InternetV6, the EnumOutputData is a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetObjectIdsForLogicalGroup in ADM_CustomFieldValuesAssociationTable passing the following parameters.

    1. Param_logicalGroup is set to LogicalGroup instance corresponding to the IpamIPAddressAllForLogicalGroupEnumerationParameters.LogicalGroupRecordId that is retrieved by calling the procedure GetLogicalGroupFromTable in ADM_LogicalGroupsTable. This is done so by passing the Param_Id as IpamIPAddressAllForLogicalGroupEnumerationParameters.LogicalGroupRecordId. Param_groupType is set to LogicalGroupType.Range and Param_addressFamily is set to IpamIPAddressAllForLogicalGroupEnumerationParameters.AddressFamily.

    2. Param_objectType is set to LogicalGroupType.Range.

    3. Param_addressFamily is set to IpamIPAddressAllForLogicalGroupEnumerationParameters.AddressFamily.

2. The previously returned Result_ObjectIds comprises a list of address range instances. Get the list of addresses that map to these address ranges by enumerating the rows whose RangeRecordId is

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the value of the range record identifier returned in Result_ObjectIds. For each of the address instances, call the procedure GetIPAddressFromTable in ADM_IPAddressTable passing the address instance's record identifier as Param_Id and IpamIPAddressAllForLogicalGroupEnumerationParameters.AddressFamily as Param_addressFamily. Add the returned result to EnumOutputData.

3.5.4.8.1.37 IpamIPAddressAllForLogicalGroupNodeEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressAllForLogicalGroupNodeEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate addresses mapped to a certain logical group node given by **IpamIPAddressAllForLogicalGroupNodeEnumerationParameters. LogicalGroupNode**. The IpamIPAddressAllForLogicalGroupNodeEnumerationParameters.addressfamily is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IpamIPv4Address and if it is InternetV6, the EnumOutputData will be a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. If the **IpamIPAddressAllForLogicalGroupNodeEnumerationParameters.LogicalGroupType** is not equal to LogicalGroupType.Range, generate an appropriate SOAP fault.

2. Store the logical group node **IpamIPAddressAllForLogicalGroupNodeEnumerationParameters.LogicalGroupNode** as **specifiedNode**.

3. Call the procedure GetObjectIdsForLogicalGroupNode ADM_CustomFieldValuesAssociationTable passing the following parameters:

   - Param_logicalGroupNode is assigned the value of specifiedNode.
   - Param_objectType is assigned the value of EnumerationObjectType.IPRange.
   - Param_addressfamily is assigned the value of IpamIPAddressAllForLogicalGroupNodeEnumerationParameters.addressfamily.

4. For each objectId in the list Result_objectIds returned from the previous procedure call:

   - Enumerate the rows in ADM_IPAddressTable wherein RangeRecordId is equal to objectId.

     1. For each of the previously enumerated rows, call the procedure GetIPAddressFromTable in ADM_IPAddressTable passing the RecordId of the row as Param_Id and Param_addressfamily as parameters.

     2. Add the returned result to EnumOutputData.

3.5.4.8.1.38 IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate all IP addresses that belong to the specified address family, virtualization type and address space.

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The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate rows of ADM_IPAddressTable, whose AddressSpaceRecordId matches IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters.AddressSpaceRecordID and its VirtualizationType matches IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters.VirtualizationType.

2. For the previously enumerated rows, call GetIPAddressFromTable in ADM_IPAddressTable with Param_Id as RecordId and Param_addressfamily as IpamIPAddressByAddressSpaceAndVirtualizationTypeParameters.AddressFamily. Add the returned IPAddress object into EnumOutputData.

3.5.4.8.1.39 IpamIPAddressByBlockIdEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressByBlockIdEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate addresses mapped to the specified address block given byIpamIPAddressByBlockIdEnumerationParameters.BlockId. The IpamIPAddressByBlockIdEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IpamIPv4Address and if it is InternetV6, the EnumOutputData will be a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration:

1. Enumerate the rows in ADM_IPRangeTable whose ParentIPBlockRecordId is equal to **IpamIPAddressByBlockIdEnumerationParameters.BlockId**.

2. For each of the address range row enumerated from the above query:

   - Enumerate the rows in ADM_IPAddressTable wherein RangeRecordId is equal to RecordId of the rows enumerated in step 1.

     1. For each of the previously enumerated rows, call the procedure GetIPAddressFromTable in ADM_IPAddressTable passing the RecordId of the row as Param_Id and Param_addressfamily as parameters.

     2. Add the returned **result** to **EnumOutputData**.

3.5.4.8.1.40 IpamIPAddressByFilterEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressByFilterEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate all IP addresses that belong to an address family and meet all the filter criteria in IpamIPAddressByFilterEnumerationParameters.filterInfo. IpamIPAddressByFilterEnumerationParameters.filterInfo is a collection of various filter types (specified by ipam:GetIpamIPAddressFilter) and their values.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

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1. Enumerate all the rows in ADM_IPAddressTable and call GetIPAddressFromTable from ADM_ IPAddressTable by passing the RecordID as Param_AddressSpaceId and IpamIPAddressByFilterEnumerationParameters.AddressFamily as Param_AddressFamily.

2. For each IPAddress object, check if it satisfies each subcriteria in IpamIPAddressByFilterEnumerationParameters.FilterInfo and add it to EnumOutputData if it does.

3.5.4.8.1.41 IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate addresses mapped to the specified address block given by **IpamIPAddressByBlockIdEnumerationParameters.BlockId**. The IpamIPAddressByBlockIdEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IpamIPv4Address and if it is InternetV6, the EnumOutputData will be a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration:

1. Enumerate the row in ADM_CustomFieldValues where CustomFieldValueDetails.Value is equal to IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters.ManagedByValue. Store the RecordId of the row in requiredManagedByCustomFieldValueId.

2. Enumerate the row in ADM_CustomFieldValues where CustomFieldValueDetails.Value is equal to IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters.ManagedByEntityValue . Store the RecordId of the row in requiredManagedByEntityCustomFieldValueId.

3. Enumerate the rows in ADM_CustomFieldValuesAssociationTable that meet the following criteria.

   - ObjectType is EnumerationObjectType.IPAddress.
   - Af is IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters.AddressFamily.
   - CustomFieldId is equal to ADM_ManagedByCustomFieldId.
   - CustomFieldValueId is equal to requiredManagedByCustomFieldValueId.

4. The rows enumerated in step 3 will provide the list of IP addresses that have the specified value for the ManagedBy custom field. For each of these rows, perform the following steps to filter out the rows that have the specified custom field value as well.

   - Enumerate the rows in ADM_CustomFieldValuesAssociationTable that meet the following criteria.
     - Param_ObjectType is EnumerationObjectType.IPAddress.
     - Af is IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters.AddressFamily.
     - CustomFieldId is equal to ADM_ManagedByEntityCustomFieldId.
     - CustomFieldValueId is equal to requiredManagedByEntityCustomFieldValueId.

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- UsedById is equal to row.RecordId.
- If there is a row that is meeting the previously mentioned criteria, the address with RecordId equal to row.RecordId meets the required condition. Call the procedure GetIPAddressFromTable passing row.RecordId as Param_Id and IpamIPAddressByManagedByAndManagedByEntityEnumerationParameters.AddressFamily as Param_addressfamily. Add result to EnumOutputData.

3.5.4.8.1.42 IpamIPAddressByRangeIdEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressByRangeIdEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate addresses mapped to the specified address range given by **IpamIPAddressByRangeIdEnumerationParameters.RangeId**. The IpamIPAddressByRangeIdEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IpamIPv4Address and if it is InternetV6, the EnumOutputData will be a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration:

1. If IpamIPAddressByRangeIdEnumerationParameters.RangeId is not specified or null or 0, an appropriate SOAP fault MUST be generated.
2. Enumerate the rows in ADM_IPAddressTable that have RangeRecordId equal to IpamIPAddressByRangeIdEnumerationParameters.RangeId.
   - For each of the rows that meets the previous condition, call the procedure GetIPAddressFromTable passing the RecordId as Param_Id and IpamIPAddressByRangeIdEnumerationParameters.AddressFamily as Param_addressfamily. Add result to **EnumOutputData**.

3.5.4.8.1.43 IpamIPAddressBySubnetIdEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressBySubnetIdEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate all IpamIPAddress in the IPAM data store belonging to the specified address family and subnet ID.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate the rows in ADM_IPRangeTable and find the row whose ParentIpBlockRecordId is IpamIPAddressBySubnetIdEnumerationParameters.SubnetId (since RecordId of ADM_SubnetTable is a foreign key into RecordId of ADM_IPBlocksTable).
2. For the enumerated rows, call GetAllMappingIPAddressesForRange in ADM_IPAddressTable with Param_id as RecordId and Param_addressfamily as IpamIPAddressBySubnetIdEnumerationParameters.AddressFamily.
3. The returned IPAddresses are added to EnumOutputData.

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3.5.4.8.1.44 IpamIPAddressByVirtualizationTypeParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressByVirtualizationTypeParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate all IP address that belong to the specified address family and virtualization type.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate all rows in ADM_IPAddressTable, if VirtualizationType is IpamIPAddressByVirtualizationTypeParameters.virtualizationType, then call function GetIPAddressFromTable in the same ADM, by passing the RecordId as Param_RecordId and IpamIPAddressByVirtualizationTypeParameters.addressFamily as Param_AddressFamily.

2. Add the object returned by each call to the function to EnumOutputData.

3.5.4.8.1.45 IpamIPAddressForUnmappedRangesEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressForUnmappedRangesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate addresses that are mapped to address ranges that are not mapped to an address block. The IpamIPAddressForUnmappedRangesEnumerationParameters.AddressFamily is used to determine the processed simple table within ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData is a collection of IpamIPv4Address. If it is InternetV6, the EnumOutputData is a collection of IpamIPv6Address.

The following are the processing steps involved in identifying the rows to be returned as a part of the enumeration:

1. Enumerate the rows in the ADM_IPRangeTable where the ParentIPBlockRecordId value is set to zero. This will be the address ranges that are not mapped to the address blocks.

2. For each of the previously enumerated rows, enumerate the rows in the ADM_IPAddressTable whose RangeRecordId is equal to the record identifier of the address range enumerated earlier.

3. Call the procedure GetIPAddressFromTable passing the RecordId of the rows enumerated earlier as Param_Id and IpamIPAddressForUnmappedRangesEnumerationParameters.AddressFamily as Param_addressfamily. Add result to EnumOutputData.

3.5.4.8.1.46 IpamIPAddressRootAddressesEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressRootAddressesEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate all the addresses specific to the address family and also optionally belonging to a specific AddressCategory in the IPAM data store. The IpamIPAddressRootAddressesEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IpamIPv4Address and if it is InternetV6, the EnumOutputData will be a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration:

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- Enumerate the rows in ADM_IPAddressTable. If IpamIPAddressRootAddressesEnumerationParameters.AddressCategory is specified enumerate only those addresses for which AddressDetails.AddressCategory is equal to IpamIPAddressRootAddressesEnumerationParameters.AddressCategory.

    - For each of the rows that meets the previous condition, call the procedure GetIPAddressFromTable passing the RecordId as Param_Id and IpamIPAddressByRangeIdEnumerationParameters.AddressFamily as Param_addressfamily. Add result to **EnumOutputData**.

3.5.4.8.1.47 IpamIPAddressUnmappedAddressEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IpamIPAddressUnmappedAddressEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate all the addresses specific to the address family and also not mapped to an address range in the IPAM data store. The IpamIPAddressUnmappedAddressEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IpamIPv4Address and if it is InternetV6, the EnumOutputData will be a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration:

- Enumerate the rows in ADM_IPAddressTable for which RangeRecordId is not set.

    - For each of the rows that meets the previous condition, call the procedure GetIPAddressFromTable passing the RecordId as Param_Id and IpamIPAddressByRangeIdEnumerationParameters.AddressFamily as Param_addressfamily. Add result to **EnumOutputData**.

3.5.4.8.1.48 IpamIPSubnetByFilterEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **IpamIPSubnetByFilterEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType**.**IPSubnet**. This is used to enumerate all IP subnets that belong to an address family and meet all the filter criteria in IpamIPSubnetByFilterEnumerationParameters.filterInfo. IpamIPSubnetByFilterEnumerationParameters.filterInfo is a collection of various filter types (specified by **ipam**:**GetIPSubnetFilter**) and their values.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. For each row in ADM_SubnetTable, call GetSubnetById from ADM_SubnetTable by passing the RecordID as Param_SubnetId and IpamIPSubnetByFilterEnumerationParameters.AddressFamily as Param_AddressFamily.

2. Check if each object returned satisfies every subcriteria in IpamIPSubnetByFilterEnumerationParameters.FilterInfo, if so, add it to EnumOutputData.

3.5.4.8.1.49 IpamIPSubnetsByAddressCategoryEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **IpamIPSubnetsByAddressCategoryEnumerationParameters**. The ObjectType MUST be

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EnumerationObjectType.**IPSubnet**. This is used to enumerate all IP subnets in the IPAM data store belonging to the specified address family and address category.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate the rows of **ADM_IPBlocksTable** whose **AddressCategory** matches **IpamIPSubnetsByAddressCategoryEnumerationParameters.AddressCategory** and its **IsSubnet** is true.

2. For the rows enumerated above, call GetSubnetByNetworkIdAndAddressSpace from ADM_SubnetTable by passing NetworkId as Param_NetworkId, PrefixLength as Param_PrefixLength and AddressSpaceRecordId as Param_AddressSpaceRecordId.

3. Add the Result_IPSubnet to EnumOutputData.

3.5.4.8.1.50 IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType**.**IPSubnet**. This is used to enumerate all IP subnets in the IPAM data store belonging to the specified address family, address space and virtualization type.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call **GetAllSubnetsForAddressSpace** of **ADM_SubnetTable** with **Param_AddressSpaceRecordId** as **IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters**.**AddressSpaceRecordId** and **Param_AddressFamily** as **IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters**.**AddressFamily**.

2. For each object returned, add those whose **VirtualizationType** matches **IpamIPSubnetsByAddressSpaceAndVirtualizationTypeEnumerationParameters.VirtualizationType** into EnumOutputData.

3.5.4.8.1.51 IpamIPSubnetsByBlockIdEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **IpamIPSubnetsByBlockIdEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType**.**IPSubnet**. This is used to enumerate all IP subnets in the IPAM data store belonging to the specified address family and IP block.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Find the row in **ADM_IPBlocksTable** whose **RecordId** is **IpamIPSubnetsByBlockIdEnumerationParameters**.**ParentBlockRecordId**. Note its **StartIPAddress**, **EndIPAddress**, **PrefixLength** and **AddressSpaceRecordId**.

2. Enumerate all rows of **ADM_IPBlocksTable** whose **StartIPAddress**, **EndIPAddress** fall within the boundary of the noted value and **PrefixLength** and **AddressSpaceRecordId** match the noted values and whose **ParentBlockRecordId** is not null.

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3. For each enumerated row, call **GetSubnetById** of **ADM_SubnetTable** with **RecordId** as the **Param_SubnetId** and **IpamIPSubnetsByBlockIdEnumerationParameters**.**AddressFamily** as **Param_addressfamily**.

4. Collect the returned IPSubnet object into EnumOutputData.

3.5.4.8.1.52 IpamIPSubnetsByUnmappedEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **IpamIPSubnetsByUnmappedEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType**.**IPSubnet**. This is used to enumerate all IP subnets in the IPAM data store belonging to the specified address family and virtualization type and that are not associated with an IP block.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call function **GetUnmappedSubnets** in **ADM_SubnetTable** with Param_VirtualizationType as **IpamIPSubnetsByUnmappedEnumerationParameters**.**VirtualizationType** and **Param_AddressFamily** as **IpamIPSubnetsByUnmappedEnumerationParameters**.**AddressFamily**.

2. Add the returned objects from the function to EnumOutputData.

3.5.4.8.1.53 IpamIPSubnetsByVirtualizationTypeEnumerationParameters

This processing is done when the EnumInputParameters contains data of type **IpamIPSubnetsByVirtualizationTypeEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType.IPSubnet**. This is used to enumerate all IP subnets in the IPAM data store belonging to the specified address family, virtualization type. They are further filtered based on whether empty subnets alone should be returned or not.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. If **IpamIPSubnetsByVirtualizationTypeEnumerationParameters**.**EmptySubnetOnly** is FALSE, then do step 2, otherwise do step 3.

2. Enumerate all **IPSubnets** belonging to the specified **IpamIPSubnetsByVirtualizationTypeEnumerationParameters**.**VirtualizationType**.

    1. Enumerate all the rows in **ADM_SubnetTable** whose **VirtualizationType** matches **IpamIPSubnetsByVirtualizationTypeEnumerationParameters**.**VirtualizationType**.

    2. For the enumerated rows, call GetSubnetById from **ADM_SubnetTable** by passing the **RecordID** as **Param_AddressSpaceId** and **IpamIPSubnetByFilterEnumerationParameters**.**AddressFamily** as **Param_AddressFamily**. Add the returned object to EnumOutputData.

3. Enumerate all **IPSubnets** belonging to the specified **IpamIPSubnetsByVirtualizationTypeEnumerationParameters**.**VirtualizationType** that do not have a corresponding IP range.

    1. Enumerate the rows of **ADM_IPBlocksTable**, whose **RecordId** does not correspond to the **ParentIPBlockRecordId** of any row in **ADM_IPRangeTable**.

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2. For the enumerated rows, call **GetSubnetByNetworkIdAndAddressSpace** from **ADM_SubnetTable** by passing **NetworkId** as **Param_NetworkId**, **PrefixLength** as **Param_PrefixLength** and **AddressSpaceRecordId** as **Param_AddressSpaceRecordId**. Add the returned object to EnumOutputData.

3.5.4.8.1.54 IpamIPSubnetsDirectChildrenByBlockIdEnumerationParameters

This is the processing done when the **EnumInputParameters** contains data of type **IpamIPSubnetsDirectChildrenByBlockIdEnumerationParameters**. The **ObjectType** MUST be **EnumerationObjectType.IPSubnet**. This is used to enumerate all IP Subnets of the specified address family which are associated with the IP Blocks who are direct children of the specified parent IP Block.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call **GetChildIPBlocksForBlock** of **ADM_IPBlocksTable** with Param_blockId as **IpamIPSubnetsByBlockIdEnumerationParameters**.**ParentBlockRecordId** and **Param_AddressFamily** as **IpamIPSubnetsByBlockIdEnumerationParameters**.**AddressFamily**.

2. Go through each object of **Result_IPBlock** and find the row in **ADM_IPBlocksTable** corresponding to its **RecordId** .

3. For each row found, call **GetSubnetByNetworkIdAndAddressSpace** from **ADM_SubnetTable** by passing **NetworkId** as **Param_NetworkId, PrefixLength** as **Param_PrefixLength** and **AddressSpaceRecordId** as **Param_AddressSpaceRecordId**. Add the returned **IPSubnet** object into **EnumOutputData**.

3.5.4.8.1.55 IpamProvisioningEnumerationParameters

This processing is done when EnumInputParameters contains data of type **IpamProvisioningEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType.AsyncProvision.** This combines all provisioning settings into one object for use during IPAM provisioning.

3.5.4.8.1.56 IPBlockChildBlockEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IPBlockChildBlockEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPBlock. This is used to enumerate all the address blocks specific to the address family and are child blocks of a specific IP address block. The IPBlockChildBlockEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPBlocksTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IPv4Block and if it is InternetV6, the EnumOutputData will be a collection of IPv6Block.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration:

1. Enumerate the rows in ADM_IPBlocksTable wherein ParentBlockRecordId is equal to IPBlockChildBlockEnumerationParameters.ParentBlockRecordId.

2. For each of the previously enumerated rows, call the procedure GetIPBlockFromTable passing RecordId of the row as Param_blockId and

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IPBlockChildBlockEnumerationParameters.AddressFamily as Param_addressfamily. Add the **result** to **EnumOutputData**.

3.5.4.8.1.57 IPBlockGetAllBlocksEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IPBlockGetAllBlocksEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPBlock. This is used to enumerate all the address blocks specific to the address family. The IPBlockGetAllBlocksEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPBlocksTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IPv4Block and if it is InternetV6, the EnumOutputData will be a collection of IPv6Block.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate all the rows in ADM_IPBlocksTable.

2. For each of the previously enumerated rows, call the procedure GetIPBlockFromTable passing RecordId of the row as Param_blockId and IPBlockChildBlockEnumerationParameters.AddressFamily as Param_addressfamily. Add the **result** to **EnumOutputData**.

3.5.4.8.1.58 IPBlockRootEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IPBlockRootEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPBlock. This is used to enumerate all the address blocks that are at the root-level, that is, the ones for which ParentBlockRecordId is null and specific to the address family specified. The IPBlockRootEnumerationParameters.AddressFamily is used to determine the simple table within the ADM_IPBlocksTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IPv4Block and if it is InternetV6, the EnumOutputData will be a collection of IPv6Block.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate the rows in ADM_IPBlocksTable wherein ParentBlockRecordId is not set. If IPBlockRootEnumerationParameters.AddressCategory is specified, enumerate the rows for which ParentBlockRecordId is not set as well as BlockDetails.AddressCategory is equal to the IPBlockRootEnumerationParameters.AddressCategory.

2. For each of the previously enumerated rows, call the procedure GetIPBlockFromTable passing RecordId of the row as Param_blockId and IPBlockChildBlockEnumerationParameters.AddressFamily as Param_addressfamily. Add the **result** to **EnumOutputData**.

3.5.4.8.1.59 IPRangeAllForBlockEnumerationParameter

This is the processing done when the EnumInputParameters contains data of type IPRangeForAllBlockEnumerationParameter. The ObjectType MUST be EnumerationObjectType.IPRange. This is used to enumerate address ranges mapped to a certain block given by **IPRangeAllForBlockEnumerationParameter.ParentBlockRecordId**. The IPRangeAllForBlockEnumerationParameter.AddressFamily is used to determine the simple table within the IP address range compound table on which the processing has to be done. The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

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1. Get the IPBlock corresponding to **IPRangeAllForBlockEnumerationParameter.ParentBlockRecordId** that is an identifier for a valid block in the ADM_IPBlocksTable. This is done by calling the **GetIPBlockFromTable** procedure of the ADM_IPBlocksTable passing the IPRangeAllForBlockEnumerationParameter.ParentBlockRecordId as Param_blockId and IPRangeAllForBlockEnumerationParameter.AddressFamily as Param_addressfamily. Store the result in **specifiedBlock**.

2. If the **specifiedBlock** is null, the ParentBlockRecordId is an invalid block and return an appropriate SOAP fault as specified in section 2.2.2.1.

3. The range enumeration for a block is composed of the ranges that map at a particular block as well as all the blocks that are under the specified block. In order to enumerate all the ranges that belong to the block specified as well as the blocks that are below the specified block, get all the rows in the **ADM_IPRangeTable** that meet the following criteria:

   - StartIPAddress is greater than or equal to the specifiedBlock.StartIPAddress.
   - EndIPAddress is lesser than or equal to the specifiedBlock.EndIPAddress.
   - PrefixLength is greater than or equal to the specifiedBlock.PrefixLength.
   - ParentIPBlockRecordId is not 0.

4. For each of the previously enumerated rows, get the IPRange by calling the procedure GetIPRangeFromTable passing the record identifier of the row as **Param_id** input parameter and the IPRangeAllForBlockEnumerationParameter.AddressFamily as the **Param_addressfamily** input parameter. Add the range information returned as result to **EnumOutputData** collection.

3.5.4.8.1.60 IPRangeAllForDhcpServerEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **IPRangeAllForDhcpServerEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType.IPRange**. This is used to enumerate all IP address ranges that correspond to the specified DHCP server.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Find the row in **ADM_ServersTable** whose **ServerGuid** matches **IPRangeAllForDhcpServerEnumerationParameters.ServerGuid**.

2. Call **GetScopesForServer** from the **ADM_DHCPScopesTable** with **Param_serverId** as **RecordId** of the enumerated row, and **Param_addressfamily** as **IPRangeAllForDhcpServerEnumerationParameters.AddressFamily**.

3. For each **DhcpScope** object returned, enumerate all the rows in the **ADM_IPRangeTable** whose **ScopeRecordId** matches the **RecordId** of the object.

4. Call **GetIPRangeFromTable** with **Param_id** as **RecordId** and **Param_addressfamily** as **IPRangeAllForDhcpServerEnumerationParameters.AddressFamily**. Store the returned IP Range object into **EnumOutputData.**

3.5.4.8.1.61 IPRangeAllForLogicalGroupNodeEnumerationParameters

This processing is done when the EnumInputParameters contains data of type **IPRangeAllForLogicalGroupNodeEnumerationParameters**. The ObjectType MUST be

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EnumerationObjectType.IPRange. This is used to enumerate all IP address ranges that belong to the specified address family and logical group node.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call **GetObjectIdsForLogicalGroupNode** of **ADM_CustomFieldValuesAssociationTable** with **Param_logicalGroupNode** as **IPRangeAllForLogicalGroupNodeEnumerationParameters.LogicalGroupNode**, **Param_objectType** as **EnumerationObjectType.IPRange** and **Param_addressFamily** as **IPRangeAllForLogicalGroupNodeEnumerationParameters.AddressFamily**.

2. For each Id obtained from the previous call, identify the row in **ADM_ IPRangeTable** whose **RecordId** matches it and call function **GetIPRangeFromTable** in **ADM_IPRangeTable** with **Param_id** as **RecordId** and **Param_addressfamily** as **IPRangeAllForLogicalGroupNodeEnumerationParameters.AddressFamily**. Add the returned IPRange object to EnumOutputData.

3.5.4.8.1.62 IPRangeByAddressSpaceAndVirtualizationTypeParameters

This is the processing done when the EnumInputParameters contains data of type **IPRangeByAddressSpaceAndVirtualizationTypeParameters**. The ObjectType MUST be **EnumerationObjectType.IPRange**. This is used to enumerate all IP address ranges that belong to the specified address family, virtualization type and address space.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call function **GetRangesForAddressSpace** in **ADM_IPRangeTable**, by passing the **IPRangeByAddressSpaceAndVirtualizationTypeParameters**.**AddressSpaceRecordId** and the **IPRangeByAddressSpaceAndVirtualizationTypeParameters**.**AddressFamily** as the parameter.

2. For each object returned from the previous call, add those whose **VirtualizationType** matches **IPRangeByAddressSpaceAndVirtualizationTypeParameters**.**VirtualizationType** into EnumOutputData.

3.5.4.8.1.63 IPRangeByFilterEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **IPRangeByFilterEnumerationParameters.** The ObjectType MUST be **EnumerationObjectType.IPRange**. This is used to enumerate all IP ranges that belong to an address family and meet all the filter criteria in IPRangeByFilterEnumerationParameters.FilterInfo. IpamIPAddressByFilterEnumerationParameters.FilterInfo is a collection of various filter types (specified by **ipam:GetIPRangeFilter**) and their values.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate all the rows in ADM_IPRangeTable whose VirtualizationType matches IPRangeByFilterEnumerationParameters.VirtualizationType.

2. For all previously enumerated rows, call GetIPRangeFromTable from ADM_IPRangeTable by passing the RecordID as Param_AddressSpaceId and IPRangeByFilterEnumerationParameters.AddressFamily as Param_AddressFamily.

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3. Add the returned IPRange object into EnumOutputData.

3.5.4.8.1.64 IPRangeByManagedByAndManagedByEntityEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IPRangeByManagedByAndManagedByEntityEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPRange. This will return IPRange data that have the specified values for the ManagedBy and ManagedByEntity built-in custom fields. The IPRangeByManagedByAndManagedByEntityEnumerationParameters.AddressFamily is used to determine the simple table within the IP address range compound table on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData will be a collection of IPv4Range and if it is InternetV6, the EnumOutputData will be a collection of IPv6Range.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Get all the rows in the ADM_IPRangeTable.

2. For each row:

    1. Get IPRange for the row by calling the procedure GetIPRangeFromTable passing the record identifier of the row as Param_id input field and the IPRangeByManagedByAndManagedByEntityEnumerationParameters.AddressFamily as Param_addressfamily input field.

    2. If the value of the custom field of the range returned earlier (as result) with record identifier being ADM_ManagedByCustomFieldId is IPRangeByManagedByAndManagedByEntityEnumerationParameters.ManagedByValue and the value of the custom field of the range with record identifier ManagedByEntityCustomFieldId is IPRangeByManagedByAndManagedByEntityEnumerationParameters.ManagedByEntityValue, and if IPRangeByManagedByAndManagedByEntityEnumerationParameters.AddressSpaceId is not NULL, then IPRange.AddressSpaceRecordId is equal to IPRangeByManagedByAndManagedByEntityEnumerationParameters.AddressSpaceId, and add the result to EnumOutputData.

3.5.4.8.1.65 IPRangeByVirtualizationTypeParameters

This is the processing done when the EnumInputParameters contains data of type **IPRangeByVirtualizationTypeParameters**. The ObjectType MUST be **EnumerationObjectType**.IPRange. This is used to enumerate all IP address ranges that belong to the specified address family and virtualization type.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate all the rows in **ADM_IPRangeTable**, whose **VirtualizationType** matches **IPRangeByVirtualizationTypeParameters.VirtualizationType**.

2. For the previously enumerated rows, call **GetIPRangeFromTabl**e from **ADM_IPRangeTable** by passing the **RecordID** as **Param_AddressSpaceId** and **IPRangeByFilterEnumerationParameters.AddressFamily** as **Param_AddressFamily**.

3. Store the returned IPRange object into EnumOutputData.

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3.5.4.8.1.66 IPRangeForBlockEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IPRangeForBlockEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPRange. This will return IPRange data for the address ranges that are mapped to a specified address block. IPRangeForBlockEnumerationParameters.AddressFamily specifies the address family used to identify the simple table against which the query processing is to be done. If the address family specified is Internet, the EnumOutputData will be a collection of IPv4Range. Otherwise it will consist of a collection of IPv6Range. The following are the processing steps involved.

1. Get the IPBlock for which the ranges are requested by calling the procedure GetIPBlockFromTable in ADM_IPBlocksTable by passing IPRangeForBlockEnumerationParameters.ParentBlockRecordId as the **Param_id** input parameter and IPRangeForBlockEnumerationParameters.AddressFamily as the **Param_addressfamily** input parameter.

2. If the **result** is null, that is, the specified ParentBlockRecordId value is not found in the table, an appropriate SOAP fault MUST be returned.

3. Enumerate the rows in the ADM_IPRangeTable that have the **IPBlockRecordI** to be the ParentBlockRecordId passed as input parameter. If the IPRangeForBlockEnumerationParameters.AddressAssignment is also specified, enumerate rows that have the specific AddressAssignment type as well.

    - For each row retrieved, get IPRange data by calling the procedure GetIPRangeFromTable by passing the RecordId as the **Param_id** input parameter and IPRangeForBlockEnumerationParameters.AddressFamily as the **Param_addressfamily** input parameter. Add the data in **result** to **EnumOutputData**.

3.5.4.8.1.67 IPRangeForSubnetEnumerationParameter

This is the processing done when the EnumInputParameters contains data of type **IPRangeForSubnetEnumerationParameter**. The ObjectType MUST be **EnumerationObjectType.IPRange**. This is used to enumerate all IP ranges in the IPAM data store belonging to the specified address family and subnet ID.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call **GetChildRanges** from **ADM_IPRangeTable** with **Param_blockId** as **IPRangeForSubnetEnumerationParameter.SubnetId** (since the RecordId for **ADM_SubnetTable** is defined as the same as the RecordId of the corresponding IPBlock object in **ADM_IPBlocksTable**) and **Param_addressfamily** as **IPRangeForSubnetEnumerationParameter.AddressFamily**.

2. Store the returned collection of IPRanges to EnumOutputData.

3.5.4.8.1.68 IPRangeRootEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IPRangeRootEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPRange. This will return IPRange data for the address ranges that are mapped to a specified address block. IPRangeRootEnumerationParameters.AddressFamily specifies the address family used to identify the simple table against which the query processing is to be done. If the address family specified is Internet, the EnumOutputData will be a collection of IPv4Range. Otherwise it will consist of a collection of IPv6Range. The following are the processing steps involved.

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1. If IPRangeRootEnumerationParameters.AddressCategory is not null, enumerate the rows in the **ADM_IPRangeTable** having the specified AddressCategory. If AddressCategory is null, enumerate all the rows in the ADM_IPRangeTable.

2. For each row retrieved, get IPRange data by calling the procedure GetIPRangeFromTable by passing the RecordId as **Param_id** input parameter and IPRangeForBlockEnumerationParameters.AddressFamily as the **Param_addressfamily** input parameter. Add the data in **result** to **EnumOutputData**.

3.5.4.8.1.69 IPRangeUnmappedEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type IPRangeUnmappedEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPRange. This will return IPRange data for the address ranges that are not mapped to an address block. IPRangeUnmappedEnumerationParameters.AddressFamily specifies the address family used to identify the simple table against which the query processing is to be done. If the address family specified is Internet, the EnumOutputData will be a collection of IPv4Range. Otherwise it will consist of a collection of IPv6Range. The following are the processing steps involved.

1. Enumerate the rows in the **ADM_IPRangeTable** that have ParentIPBlockRecordId set to 0.

2. For each row retrieved, get IPRange data by calling the procedure GetIPRangeFromTable by passing the RecordId as **Param_id** input parameter and IPRangeForBlockEnumerationParameters.AddressFamily as the **Param_addressfamily** input parameter. Add the data in **result** to **EnumOutputData**.

3.5.4.8.1.70 LogicalGroupDataForLogicalGroupNodeEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type LogicalGroupDataForLogicalGroupNodeEnumerationParameters. The ObjectType MUST be EnumerationObjectType.LogicalGroupData. This is used to enumerate objects that map to the LogicalGroupNode specified. The specific type of LogicalGroupNode is used to determine the object type and the address family that is of interest.

The following table specifies the type of LogicalGroupNode, the corresponding address family, and the object type that gets enumerated.

LogicalGroupNode Type	AddressFamily	ObjectType(EnumerationObjectType)
IPv4RangeLogicalGroupNode	Internet	IPRange
IPv6RangeLogicalGroupNode	InternetV6	IPRange
IpamIPv4AddressLogicalGroupNode	Internet	IPAddress
IpamIPv6AddressLogicalGroupNode	InternetV6	IPAddress
ActiveServerV4LogicalGroupNode	Internet	ServerInfo
ActiveServerV6LogicalGroupNode	InternetV6	ServerInfo

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

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1. Call the procedure GetObjectIdsForLogicalGroupNode in ADM_CustomFieldValuesAssociationTable with the following parameters:

   - Param_logicalGroupNode is assigned the value of LogicalGroupDataForLogicalGroupNodeEnumerationParameters.LogicalGroupNode.
   - Param_objectType is assigned the value of ObjectType from the previous table based on the type of Param_logicalGroupNode.
   - Param_addressFamily is assigned the value of AddressFamily from the previous table based on the type of Param_logicalGroupNode. If Param_objectType is EnumerationObjectType.ServerInfo, Param_addressFamily is not specified a value.

2. For each objectId in Result_ObjectIds, perform the following steps:

   1. Call the procedure GetObjectForLogicalGroupObjectId passing the following parameters:

      - Param_objectType is set to the value of ObjectType as computed based on the previous table.
      - Param_addressFamily is set to the value of AddressFamily as computed based on the previous table.
      - Param_Id is assigned the value of objectId.
      - Param_filter is assigned the value of LogicalGroupDataForLogicalGroupNodeEnumerationParameters.Filter.

   2. Add Result_object to EnumOutputData.

3.5.4.8.1.71 LogicalGroupDataForRootAlternateItemsEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type LogicalGroupDataForRootAlternateItemsEnumerationParameters. The ObjectType MUST be EnumerationObjectType.LogicalGroupData. This is used to enumerate objects that map to the LogicalGroup specified. The specific type of LogicalGroup is used to determine the object type and the address family that is of interest.

The following table specifies the type of LogicalGroup, the corresponding address family, and the object type that gets enumerated.

LogicalGroup Type	AddressFamily	ObjectType(EnumerationObjectType)
IPv4RangeLogicalGroup	Internet	IPRange
IPv6RangeLogicalGroup	InternetV6	IPRange
IpamIPv4AddressLogicalGroup	Internet	IPAddress
IpamIPv6AddressLogicalGroup	InternetV6	IPAddress
ActiveServerV4LogicalGroup	Internet	ServerInfo
ActiveServerV6LogicalGroup	InternetV6	ServerInfo

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

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1. Call the procedure GetObjectIdsForLogicalGroup in ADM_CustomFieldValuesAssociationTable with the following parameters:

   - Param_logicalGroup is assigned the value of LogicalGroupDataForRootAlternateItemsEnumerationParameters.LogicalGroup.
   - Param_objectType is assigned the value of ObjectType from the previous table based on the type of Param_logicalGroupNode.
   - Param_addressFamily is assigned the value of AddressFamily from the previous table based on the type of Param_logicalGroupNode. If Param_objectType is EnumerationObjectType.ServerInfo, Param_addressFamily is not specified a value.

2. For each objectId in Result_ObjectIds, perform the following steps:

   1. Call the procedure GetObjectForLogicalGroupObjectId passing the following parameters:

      - Param_objectType is set the value of ObjectType as computed based on the previous table.
      - Param_addressFamily is set to the value of AddressFamily as computed based on the previous table.
      - Param_Id is assigned the value of objectId.
      - Param_filter is assigned the value of LogicalGroupDataForLogicalGroupNodeEnumerationParameters.Filter.

   2. Add Result_object to EnumOutputData.

3.5.4.8.1.72 LogicalGroupDataUnmappedItemsEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type LogicalGroupDataUnmappedItemsEnumerationParameters. The ObjectType MUST be EnumerationObjectType.LogicalGroupData. This is used to enumerate objects that map to the LogicalGroup specified. The specific type of LogicalGroup is used to determine the object type and the address family that is of interest.

The following table specifies the type of LogicalGroup, the corresponding address family, and the object type that gets enumerated.

LogicalGroup Type	AddressFamily	ObjectType(EnumerationObjectType)
IPv4RangeLogicalGroup	Internet	IPRange
IPv6RangeLogicalGroup	InternetV6	IPRange
IpamIPv4AddressLogicalGroup	Internet	IPAddress
IpamIPv6AddressLogicalGroup	InternetV6	IPAddress
ActiveServerV4LogicalGroup	Internet	ServerInfo
ActiveServerV6LogicalGroup	InternetV6	ServerInfo

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

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1. Call the procedure GetUnmappedObjectIdsForLogicalGroup in ADM_CustomFieldValuesAssociationTable with the following parameters:

   - Param_logicalGroup is assigned the value of LogicalGroupDataForRootAlternateItemsEnumerationParameters.LogicalGroup.
   - Param_objectType is assigned the value of ObjectType from the previous table based on the type of Param_logicalGroupNode.
   - Param_addressFamily is assigned the value of AddressFamily from the previous table based on the type of Param_logicalGroupNode. If Param_objectType is EnumerationObjectType.ServerInfo, Param_addressFamily is not specified a value.

2. For each objectId in Result_ObjectIds, perform the following steps:

   1. Call the procedure GetObjectForLogicalGroupObjectId passing the following parameters:

      - Param_objectType is set the value of ObjectType as computed based on the previous table.
      - Param_addressFamily is set to the value of AddressFamily as computed based on the previous table.
      - Param_Id is assigned the value of objectId.
      - Param_filter is assigned the value of LogicalGroupDataForLogicalGroupNodeEnumerationParameters.Filter.

   2. Add Result_object to EnumOutputData.

3.5.4.8.1.73 LogicalGroupNodeChildrenEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type LogicalGroupNodeChildrenEnumerationParameters. The ObjectType MUST be EnumerationObjectType.LogicalGroupNode. This is used to enumerate the logical group nodes that will form the children of a specified logical group node. The specific type of LogicalGroupNode is used to determine the object type and the address family that is of interest.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetNextLevelLogicalGroupNodes in ADM_LogicalGroupsTable with the following parameters:

   - Param_ logicalGroupNode is assigned the value of LogicalGroupNodeChildrenEnumerationParameters.ParentLogicalGroupNode.

2. Copy the Result_logicalGroupNodes to EnumOutputData.

3.5.4.8.1.74 LogicalGroupNodeRootEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type LogicalGroupNodeRootEnumerationParameters. The ObjectType MUST be EnumerationObjectType.LogicalGroupNode. This is used to enumerate the logical group nodes that will form the top-level children of a specified logical group.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

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1. Call the procedure GetRootLogicalGroupNodesForLogicalGroup in ADM_LogicalGroupsTable with the following parameters:

    - Param_logicalGroup is assigned the value of LogicalGroupNodeRootEnumerationParameters.LogicalGroup.

2. Copy the Result_logicalGroupNodes to EnumOutputData.

3.5.4.8.1.75 LogicalGroupsEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type LogicalGroupsEnumerationParameters. The ObjectType MUST be EnumerationObjectType.LogicalGroup. This is used to enumerate the logical groups of the specified address family and logical group type.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Enumerate the rows in ADM_LogicalGroupsTable that meet the following conditions.

    - If LogicalGroupsEnumerationParameters.LogicalGroupType is either Range or IPAddress, LogicalGroupDetails.Users is IPAddressSpaceManagement. Otherwise LogicalGroupDetails.Users is ServerManagement.

    - If LogicalGroupsEnumerationParameters.LogicalGroupName is specified, LogicalGroupDetails.Name is LogicalGroupsEnumerationParameters.LogicalGroupName.

2. For each of the previously enumerated rows, perform the following steps:

    1. Call the procedure GetLogicalGroupFromTable passing the following parameters:

        - Param_Id is assigned the RecordId of the row.

        - Param_groupType is assigned the value of LogicalGroupsEnumerationParameters.LogicalGroupType.

        - Param_addressFamily is assigned the value of LogicalGroupsEnumerationParameters.AddressFamily.

    2. Add Result_logicalGroup to EnumOutputData.

3.5.4.8.1.76 ServerInfoEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type ServerInfoEnumerationParameters. The ObjectType MUST be EnumerationObjectType.ServerInfo. This is used to enumerate the server instances that meet the specified filter condition in the form of ServerInfoEnumerationParameters.Filter.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetFilteredServerInfoFromTable passing ServerInfoEnumerationParameters.Filter as Param_filters.

2. Add the entries in Result_filteredServerInfoRows to EnumOutputData.

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3.5.4.8.1.77 SubnetLogicalGroupNodeRootEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type **SubnetLogicalGroupNodeRootEnumerationParameters**. The ObjectType MUST be **EnumerationObjectType.LogicalGroupNode**. This is used to enumerate all **LogicalGroupNodes** in the IPAM data store belonging to the specified address family, address space and logical group.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call function **GetRootLogicalGroupNodesForLogicalGroup** with **Param_logicalGroup** as **SubnetLogicalGroupNodeRootEnumerationParameters.LogicalNode.RecordId**.

2. The returned collection of **LogicalGroupNode** is added to EnumOutputData.

3.5.4.8.1.78 UnmappedIpamIPAddressForLogicalGroupEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type UnmappedIpamIPAddressForLogicalGroupEnumerationParameters. The ObjectType MUST be EnumerationObjectType.IPAddress. This is used to enumerate the address instances belonging to address ranges that do not map to the specified logical group. The UnmappedIpamIPAddressForLogicalGroupEnumerationParameters.AddressFamily value is used to determine the simple table within the ADM_IPAddressTable on which the processing has to be done. If the AddressFamily is Internet, the EnumOutputData is a collection of IpamIPv4Address. If it is InternetV6, the EnumOutputData is a collection of IpamIPv6Address.

The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. Call the procedure GetUnmappedObjectIdsForLogicalGroup in ADM_CustomFieldValuesAssociationTable passing the following parameters.

    1. Param_logicalGroup is set to LogicalGroup instance corresponding to the UnmappedIpamIPAddressForLogicalGroupEnumerationParameters.LogicalGroupRecordId retrieved by calling the procedure GetLogicalGroupFromTable in ADM_LogicalGroupsTable. This is done by passing the Param_Id to UnmappedIpamIPAddressForLogicalGroupEnumerationParameters.LogicalGroupRecordId. Param_groupType is set to LogicalGroupType.Range and Param_addressFamily is set to UnmappedIpamIPAddressForLogicalGroupEnumerationParameters.AddressFamily.

    2. Param_objectType is set to LogicalGroupType.Range.

    3. Param_addressFamily is set to UnmappedIpamIPAddressForLogicalGroupEnumerationParameters.AddressFamily.

2. The previously returned Result_ObjectIds comprises a list of address range instances. Get the list of addresses mapping to these address ranges by enumerating the rows whose RangeRecordId is the value of the range record identifier that is returned in Result_ObjectIds. For each of the address instances, call the procedure GetIPAddressFromTable in ADM_IPAddressTable passing the address instance's record identifier as Param_Id and UnmappedIpamIPAddressForLogicalGroupEnumerationParameters.AddressFamily as Param_addressFamily. Add the returned result to EnumOutputData.

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3.5.4.8.1.79 DhcpScopeObjectSpecificEnumerationParameters

This is the processing done when the EnumInputParameters contains data of type DhcpScopeObjectSpecificEnumerationParameters. The ObjectType MUST be EnumerationObjectType.DhcpScope. This is used to enumerate all the DHCP scopes that are mapped to specified DHCP Reservations or DHCP Policies specified as parameters using DhcpScopeObjectSpecificEnumerationParameters.RecordIds. The DhcpScopeObjectSpecificEnumerationParameters.AddressFamily is used to determine the simple table within the **ADM_DHCPScopesTable** compound table on which it is processed. The following are the steps involved in identifying the rows to be returned as a part of the enumeration.

1. If DhcpScopeObjectSpecificEnumerationParameters.IpamObjectTypeForEnumeration is equal to IpamObjectType.DHCPReservationV4 or is equal to IpamObjectType.DHCPReservationV6, get the DHCP Reservations for which the scopes are being requested by doing the following processing:

    1. Iterate on all the elements of the list of reservation record ids specified by DhcpScopeObjectSpecificEnumerationParameters.RecordIds, each id is specified as ReservationRecordId. If the DhcpScopeObjectSpecificEnumerationParameters.RecordIds list is NULL or is empty, then enumerate all the rows of **ADM_DHCPReservationTable** and perform the folowing operations on all the rows.

    2. Call the procedure GetDhcpReservation of **ADM_DHCPReservationTable** passing the following as input parameters:

        1. Param_addressfamily is set to DhcpScopeForIpBlockEnumerationParameters.AddressFamily.

        2. Param_Id is set to ReservationRecordId.

    3. Call the procedure GetScopeFromTable of **ADM_DHCPScopesTable** passing the following as input parameters:

        1. Param_addressfamily is set to DhcpScopeForIpBlockEnumerationParameters.AddressFamily.

        2. Param_reservationId is set to Result_Reservation.ScopeRecordId.

    4. Add the returned Result_scope to EnumOutputData.

2. If DhcpScopeObjectSpecificEnumerationParameters.IpamObjectTypeForEnumeration is equal to IpamObjectType.DHCPPolicyV4 and DhcpScopeObjectSpecificEnumerationParameters.AddressFamily is equal to AddressFamily.Internetwork, get the DHCP Policies for which the scopes are being requested by doing the following processing:

    1. Iterate on all the elements of the list of policy record ids specified by DhcpScopeObjectSpecificEnumerationParameters.RecordIds, each id specified as PolicyRecordId. If the DhcpScopeObjectSpecificEnumerationParameters.RecordIds list is NULL or is empty, then enumerate all the rows of **ADM_DHCPReservationTable** and perform the following operations on all the rows.

    2. Call the procedure GetPolicyById of ADM_DhcpPolicyTable passing the following as input parameters:

        - Param_PolicyId is set to PolicyRecordId.

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3. Call the procedure GetScopeFromTable of **ADM_DHCPScopesTable** passing the following as input parameters:

    1. Param_addressfamily is set to DhcpScopeForIpBlockEnumerationParameters.AddressFamily.

    2. Param_reservationId is set to Result_Policy.Scope.

4. Add the returned Result_scope to EnumOutputData.

3.5.4.8.2 Messages

3.5.4.8.2.1 IIpamEnumerator_StartEnumeration_InputMessage

This is the request for the StartEnumeration operation.

```
<wsdl:message name="IIpamEnumerator_StartEnumeration_InputMessage">
  <wsdl:part name="parameters" element="ipam:StartEnumeration" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumerator/StartEnumeration
```

The body of the SOAP message MUST contain the StartEnumeration element.

3.5.4.8.3 Elements

3.5.4.8.3.1 StartEnumeration

This element specifies the input values for the StartEnumeration operation.

```
<xs:element name="StartEnumeration">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.5.5 Timer Events

None.

3.5.6 Other Local Events

None.

3.5.6.1 User Authorization

This section lists the user authorization requirements for the various operations defined in this port type. After the user authentication is complete, the user MUST be authorized for the operation that is being requested. If the required authorization is not present, the user MUST be denied access to perform the operation by returning an appropriate SOAP fault as specified in section 2.2.2.1.

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The following table specifies the operations and the authorization requirements. At least one of the states listed under the column "ADM States to be checked" MUST be TRUE for the user to be authorized to perform the specified operation. Any further granular authorization requirements for an operation will be captured under the section specific to the operation itself. This check is done after the steps listed in section 3.1.4.3 are complete.

Operation	ADM States to be checked
InitializeEnumeration	IsIpamUser
StartEnumeration	IsIpamUser

3.6 IIpamEnumerator Client Details

The client side of the IIpamEnumerator MUST provide the IIpamEnumeratorCallback server interface. The IIpamEnumerator server will callback into the IIpamEnumeratorCallback of the client for notifying the start of enumeration, providing the data and to notify the completion of the enumeration along with status.

In summary, on a single session, the management client implements the IIpamEnumeratorCallback port type and the management server implements the IIpamEnumerator port type.

3.6.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

The following state is available on a per-session basis.

EnumerationInfo: This is a compound data consisting of the following three portions. This will have the complete information regarding the enumeration – the data if it has completed successfully or not, and the failure information if it has failed.

EnumeratedData: This is a collection of IpamObject type (or any type extending the IpamObjectType). At the end of the successful enumeration completion, this will have the data enumerated.

EnumerationResult: This is of type IpamObject (or any type extending the IpamObjectType). At the end of the successful enumeration completion, this will have any additional data pertaining to the enumeration.

EnumerationFault: This contains the IpamException having the fault that the server has sent across to the client or any session establishment failure fault that the lower transport layer might have indicated. If this value is set, the enumeration is considered unsuccessful. If this value is not set, the enumeration is considered successful. In this case, EnumeratedData and EnumeratedResult are considered valid.

3.6.2 Timers

There are no additional timers beyond those specified in section 3.2.2.

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3.6.3 Initialization

The IIpamEnumerator client on initialization will establish the session to the management server. On successfully setting up the session, the IIpamEnumerator client MUST initialize the IIpamEnumeratorCallback session on the same session so the IIpamEnumerator server can callback with the enumerated data. In order to obtain the enumeration data from the IIpamEnumeratorCallback port type, the EnumerationInfo is passed as a part of the initialization routine. The IIpamEnumeratorCallback port type's server fills the data pertaining to the enumeration in the EnumerationInfo for the IIpamEnumerator client to provide to the application layer.

3.6.4 Message Processing Events and Sequencing Rules

3.6.4.1 Enumeration Completed

This is an event that is triggered by the IIpamEnumerationCallback server on the session to indicate that the enumeration processing is completed and the **EnumerationInfo** has the data.

3.6.5 Timer Events

None.

3.6.6 Other Local Events

None.

3.7 IIpamEnumeratorCallback Server Details

This port type is implemented by the management client and initialized on the same session used to perform operations against the IIpamEnumerator server on the management server. This provides the callback interface, which the IIpamEnumerator server invokes to provide the enumeration data.

3.7.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.7.1.1 State Machine

The following figure shows the state machine of the IIpamEnumeratorCallback server port type.

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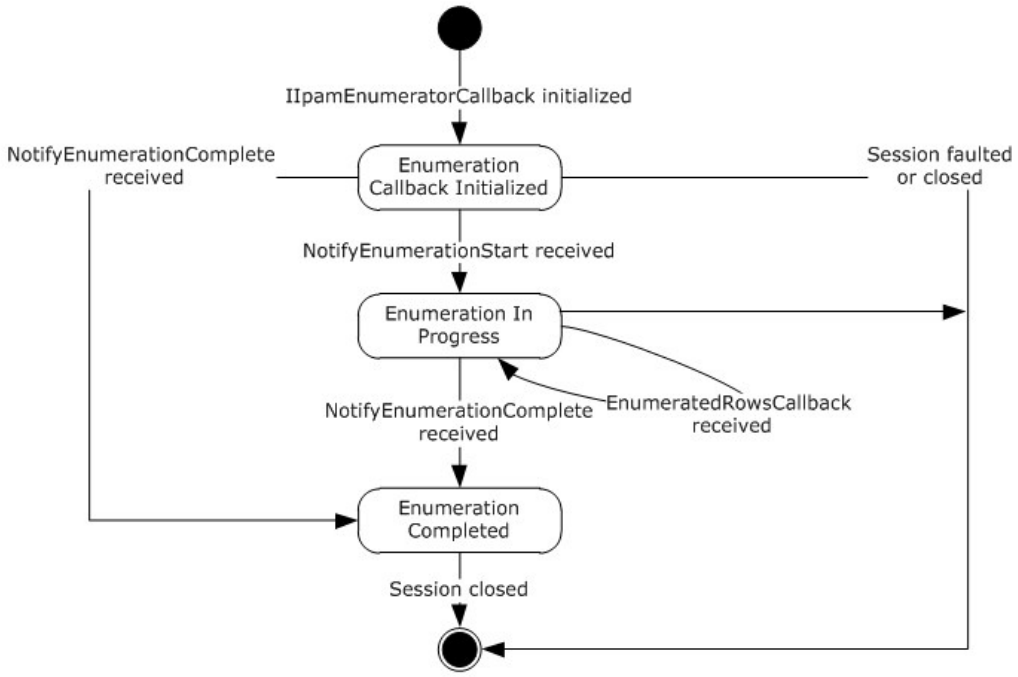

Figure 5: IIpamEnumeratorCallback state machine

The IIpamEnumeratorCallback server is session-based, sharing the same session the management client has with the management server using the IIpamEnumerator port type. It is also stateful in nature. The **session state** variable is used to keep track of the current state for each session and it can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

State	Description
Enumeration Callback Initialized	This is the initial state of the IIpamEnumeratorCallback when it has been initialized by the IIpamEnumerator client. When the NotifyEnumerationStart is received in this state from the IIpamEnumerator server port on the management server-end of the session, the transition to the **Enumeration In Progress** state will happen.

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State	Description
Enumeration In Progress	This state indicates the IIpamEnumeratorCallback is ready to receive the data. When the EnumeratedRowsCallback is received in this state from the IIpamEnumerator server port on the management server-end of the session, the state will continue to be in **Enumeration In Progress**. When the NotifyEnumerationComplete is received in this state from the IIpamEnumerator server port on the management server-end of the session, the state will transition to **Enumeration Completed**.
Enumeration Completed	This is the state to notify the enumeration interaction between the IIpamEnumerator server port on the management server-end and the IIpamEnumeratorCallback server port on the management client-end is complete and the full data or result is available.

3.7.1.2 Other Miscellaneous States

EnumerationInfo: This is used to store the EnumerationInfo instance provided by the IIpamEnumerator client as a part of the initialization to hold the enumeration data and result. See section 3.1.1 for the details.

3.7.2 Timers

There are no additional timers beyond the ones defined by the lower layer of the protocols.

3.7.3 Initialization

The IIpamEnumeratorCallback interface is initialized by the IIpamEnumerator client on the management client-end. The IIpamEnumerator client passes the EnumerationInfo instance during initialization, which will be updated by the IIpamEnumeratorCallback server with the enumeration data received from the server. This instance is stored in EnumerationInfo. The session state is set to Enumeration Callback Initialized.

3.7.4 Message Processing Events and Sequencing Rules

3.7.4.1 Session Faulted or Closed

This is an event triggered by the lower transport layer when the session has received a SOAP fault or a forceful session close has occurred. If the **session state** is **Enumeration Callback Initialized** or **Enumeration In Progress**, the **EnumerationInfo.EnumerationFault** has to be set to an appropriate reason associated with the session closure and the EnumerationInfo.EnumerationData is discarded.

3.7.4.2 EnumeratedRowsCallback

This operation is used to provide the enumeration data.

```
<wsdl:operation name="EnumeratedRowsCallback">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/EnumeratedRowsCallback"
message="ipam:IIpamEnumeratorCallback_EnumeratedRowsCallback_InputMessage" />
</wsdl:operation>
```

This operation has only the input message and there is no output message associated with it. Upon receiving the message, the **EnumeratedRowsCallback.data** received is added to the

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EnumerationInfo.EnumerationData collection. This operation will be called a number of times during an enumeration with different set of data with each invocation. The data received across all the calls will form the full enumeration data.

3.7.4.2.1 Messages

3.7.4.2.1.1 IIpamEnumeratorCallback_EnumeratedRowsCallback_InputMessage

This is the request for the EnumeratedRowsCallback operation.

```
<wsdl:message name="IIpamEnumeratorCallback_EnumeratedRowsCallback_InputMessage">
  <wsdl:part name="parameters" element="ipam:EnumeratedRowsCallback" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/EnumeratedRowsCallback
```

The body of the SOAP message MUST contain the EnumeratedRowsCallback element.

3.7.4.2.2 Elements

3.7.4.2.2.1 EnumeratedRowsCallback

This element specifies the input values for the EnumeratedRowsCallback operation.

```
<xs:element name="EnumeratedRowsCallback">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.7.4.3 NotifyEnumerationComplete

This operation is used to indicate the completion of the enumeration.

```
<wsdl:operation name="NotifyEnumerationComplete">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationComplete"
message="ipam:IIpamEnumeratorCallback_NotifyEnumerationComplete_InputMessage" />
</wsdl:operation>
```

This operation has only the request message. This signifies the completion of the enumeration and the Enumeration Completed event of the IIpamEnumerator client is invoked. The session state is set to Enumeration Completed.

If NotifyEnumerationComplete.exception is set, the enumeration has faulted. The EnumerationInfo.EnumerationData has to be discarded. The EnumerationInfo.EnumerationFault is set to NotifyEnumerationComplete.exception.

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If NotifyEnumerationComplete.exception is null, the enumeration has completed successfully. The EnumerationInfo.EnumerationResult is set to NotifyEnumerationComplete.result.

3.7.4.3.1 Messages

3.7.4.3.1.1 IIpamEnumeratorCallback_NotifyEnumerationComplete_InputMessage

This is the request for the NotifyEnumerationComplete operation.

```
<wsdl:message name="IIpamEnumeratorCallback_NotifyEnumerationComplete_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyEnumerationComplete" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationComplete
```

The body of the SOAP message MUST contain the NotifyEnumerationComplete element.

3.7.4.3.2 Elements

3.7.4.3.2.1 NotifyEnumerationComplete

This element specifies the input values for the NotifyEnumerationComplete operation.

```
<xs:element name="NotifyEnumerationComplete">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
      <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.7.4.4 NotifyEnumerationStart

This operation is used to indicate the start of the enumeration.

```
<wsdl:operation name="NotifyEnumerationStart">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationStart"
message="ipam:IIpamEnumeratorCallback_NotifyEnumerationStart_InputMessage" />
</wsdl:operation>
```

This operation only has the request message to provide the notification. On receiving the message, the session state is set to **Enumeration In Progress**.

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3.7.4.4.1 Messages

3.7.4.4.1.1 IIpamEnumeratorCallback_NotifyEnumerationStart_InputMessage

This is the request for the NotifyEnumerationStart operation.

```
<wsdl:message name="IIpamEnumeratorCallback_NotifyEnumerationStart_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyEnumerationStart" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationStart
```

The body of the SOAP message MUST contain the NotifyEnumerationStart element.

3.7.4.4.2 Elements

3.7.4.4.2.1 NotifyEnumerationStart

This element specifies the input values for the NotifyEnumerationStart operation.

```
<xs:element name="NotifyEnumerationStart">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.7.5 Timer Events

None.

3.7.6 Other Local Events

None.

3.7.6.1 User Authorization

Since the IIpamEnumeratorCallback server is initialized on the same session as the IIpamEnumeration session, no additional user authentication and authorization is performed beyond what was done for the operations in the IIpamEnumerator session.

3.8 IIpamEnumeratorCallback Client Details

The IIpamEnumerator server is the endpoint that will also be the IIpamEnumeratorCallback client. The same session has the IIpamEnumerator and the IIpamEnumeratorCallback implemented on either ends. The management server will provide the IIpamEnumerator server and the IIpamEnumeratorCallback client implementations and the management client will provide the IIpamEnumeratorCallback server and the IIpamEnumerator client implementations. The IIpamEnumeratorCallback is only a request interface, which means that there is no data obtained from the IIpamEnumeratorCallback server.

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3.8.1 Abstract Data Model

None.

3.8.2 Timers

None.

3.8.3 Initialization

None.

3.8.4 Message Processing Events and Sequencing Rules

None, other than those captured as a part of the IIpamEnumerator server section 3.5.

3.8.5 Timer Events

None.

3.8.6 Other Local Events

None.

3.9 IIpamIPAuditEnumerator Server Details

This port type is used for enumerating the IP address audit rows from the management server. The management client establishes a session to the management server, and invokes operations on the management server port to initialize the enumeration parameters and trigger the enumeration. On the same session, the client initializes the server-side of the IIpamEnumeratorCallback port type. This port type provides a callback the management server can call into to provide the enumeration rows. The interaction is captured in the figure below.

Except for the operation name, the state machine and the interaction with the IIpamEnumeratorCallback of this port type remains the same as that of IIpamEnumerator server (section 3.5).

3.9.1 Abstract Data Model

See section 3.5.1 for the state machine and the states associated with this port type. The states and interaction remains the same except for the name of the operations.

3.9.2 Timers

See section 3.5.2.

3.9.3 Initialization

See section 3.5.3.

3.9.4 Message Processing Events and Sequencing Rules

The message processing events and sequencing rules for this port type remain the same as those specified in section 3.5.4. The difference in processing rules with the operations in this port type alone will be captured here in detail.

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3.9.4.1 EnumeratedRowsCallback

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="EnumeratedRowsCallback">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/EnumeratedRowsCallback"
message="ipam:IIpamIPAuditEnumerator_EnumeratedRowsCallback_OutputCallbackMessage" />
</wsdl:operation>
```

3.9.4.1.1 Messages

3.9.4.1.1.1 IIpamIPAuditEnumerator_EnumeratedRowsCallback_OutputCallbackMessage

This is the request for the EnumeratedRowsCallback operation.

```
<wsdl:message name="IIpamIPAuditEnumerator_EnumeratedRowsCallback_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:EnumeratedRowsCallback" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/EnumeratedRowsCallback
```

The body of the SOAP message MUST contain the EnumeratedRowsCallback element.

3.9.4.1.2 Elements

3.9.4.1.2.1 EnumeratedRowsCallback

This element specifies the input values for the EnumeratedRowsCallback operation.

```
<xs:element name="EnumeratedRowsCallback">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.9.4.2 IPAuditInitializeEnumeration

This operation is the equivalent to InitializeEnumeration operation in IIpamEnumerator port type (section 3.5). See section 3.5.4.4 for the processing steps involved when this operation is received.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="IPAuditInitializeEnumeration">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditInitializeEnumeratio
n" message="ipam:IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditInitializeEnumeratio
nResponse" message="ipam:IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_OutputMessage"
/>
</wsdl:operation>
```

3.9.4.2.1 Messages

3.9.4.2.1.1 IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_InputMessage

This is the request for the IPAuditInitializeEnumeration operation.

```
<wsdl:message name="IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_InputMessage">
  <wsdl:part name="parameters" element="ipam:IPAuditInitializeEnumeration" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditInitializeEnumeration
```

The body of the SOAP message MUST contain the IPAuditInitializeEnumeration element.

3.9.4.2.1.2 IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_OutputMessage

This is the response for the IPAuditInitializeEnumeration operation.

```
<wsdl:message name="IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_OutputMessage">
  <wsdl:part name="parameters" element="ipam:IPAuditInitializeEnumerationResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditInitializeEnumerationResponse
```

The body of the SOAP message MUST contain the IPAuditInitializeEnumerationResponse element.

3.9.4.2.2 Elements

3.9.4.2.2.1 IPAuditInitializeEnumeration

This element specifies the input values for the IPAuditInitializeEnumeration operation.

```
<xs:element name="IPAuditInitializeEnumeration">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
```


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```
  </xs:complexType>
</xs:element>
```

3.9.4.2.2.2 IPAuditInitializeEnumerationResponse

This element specifies the output values for the IPAuditInitializeEnumeration operation.

```
<xs:element name="IPAuditInitializeEnumerationResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.9.4.3 IPAuditStartEnumeration

This is similar to the StartEnumeration operation of the IIpamEnumerator port type (section 3.5.4.8). This causes the session state to be set to **Enumeration Started**.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="IPAuditStartEnumeration">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditStartEnumeration"
message="ipam:IIpamIPAuditEnumerator_IPAuditStartEnumeration_InputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamEnumerator_StartEnumeration_InputMessage, the server MUST invoke NotifyEnumerationStart operation. The enumeration processing logic as described in section 3.5.4.8.1 has to be triggered as well.

3.9.4.3.1 Enumeration Processing Logic

The only supported EnumInputParameter type is IPAuditEnumerationParameters having the ObjectType to be EnumerationObjectType.IPAudit. Any other type is not expected and MUST result in an appropriate SOAP fault being returned to the client.

The difference between IIpamIPAuditEnumerator and IIpamEnumerator is only in terms of the data generation logic and the user authorization. The rest of the processing remains the same including the way the generated data is returned back to the management client remains the same. See section 3.5.4.8.1 for further details.

3.9.4.3.1.1 IPAuditEnumerationParameters

The following are the processing steps for generating the data for this enumeration.

1. Validate the specified input parameters based on the conditions given below. If any of the validations fail, an appropriate SOAP fault MUST be generated.

   - The IPAuditEnumerationParameters.SearchXml MUST be a valid Search XML as specified in section 2.2.4.244.
   - An IPSearchNode with Name being TIME_DURATION MUST be present.
   - An IPSearchNode with Name being one of the following MUST be present.

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- IP_ADDRESS
- MAC_ADDRESS
- HOST_NAME
- USER_NAME

2. Validate the start duration specified using Value1 of TIME_DURATION IPSearchNode is lesser than end duration specified using Value2 of TIME_DURATION IPSearchNode.
3. If Name is IP_ADDRESS, call the procedure SearchIPAddressAuditByIPAddress with the following parameters:
   - Param_IPAddress is assigned the IPSearchNode.Value of the node having Name as IP_ADDRESS.
   - Param_StartDate is assigned the start duration.
   - Param_EndDate is assigned the end duration.
   - IPAuditEnumerationParameters.IncludeUserInformation is assigned to Param_correlateUserLogon.
4. If Name is MAC_ADDRESS, call the procedure SearchIPAddressAuditByMacAddress with the following parameters:
   - Param_MacAddress is assigned the IPSearchNode.Value of the node having Name as MAC_ADDRESS.
   - Param_StartDate is assigned the start duration.
   - Param_EndDate is assigned the end duration.
   - IPAuditEnumerationParameters.IncludeUserInformation is assigned to Param_correlateUserLogon.
5. If Name is USER_ADDRESS, call the procedure SearchIPAddressAuditByUserName with the following parameters:
   - Param_UserName is assigned the IPSearchNode.Value of the node having Name as USER_NAME.
   - Param_StartDate is assigned the start duration.
   - Param_EndDate is assigned the end duration.
   - IPAuditEnumerationParameters.IncludeUserInformation is assigned to Param_correlateUserLogon.
6. If Name is HOST_NAME, call the procedure SearchIPAddressAuditByHostName with the following parameters:
   - Param_HostName is assigned the IPSearchNode.Value of the node having Name as HOST_NAME.
   - Param_StartDate is assigned the start duration.
   - Param_EndDate is assigned the end duration.

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- IPAuditEnumerationParameters.IncludeUserInformation is assigned to Param_correlateUserLogon.

7. If IPAuditEnumerationParameters.NumberOfRecords is specified, restrict the output of Result_searchResult to have no more than the specified number of records.

8. Set Result_searchResult to EnumOutputData collection.

3.9.4.3.2 Messages

3.9.4.3.2.1 IIpamIPAuditEnumerator_IPAuditStartEnumeration_InputMessage

This is the request for the IPAuditStartEnumeration operation.

```
<wsdl:message name="IIpamIPAuditEnumerator_IPAuditStartEnumeration_InputMessage">
  <wsdl:part name="parameters" element="ipam:IPAuditStartEnumeration" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditStartEnumeration
```

The body of the SOAP message MUST contain the IPAuditStartEnumeration element.

3.9.4.3.3 Elements

3.9.4.3.3.1 IPAuditStartEnumeration

This element specifies the input values for the IPAuditStartEnumeration operation.

```
<xs:element name="IPAuditStartEnumeration">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.9.4.4 NotifyEnumerationComplete

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyEnumerationComplete">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationComplete"
message="ipam:IIpamIPAuditEnumerator_NotifyEnumerationComplete_OutputCallbackMessage" />
</wsdl:operation>
```

Upon receiving the IIpamIPAuditEnumerator_NotifyEnumerationComplete_OutputCallbackMessage request message, the server performs the following processing steps. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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3.9.4.4.1 Messages

3.9.4.4.1.1 IIpamIPAuditEnumerator_NotifyEnumerationComplete_OutputCallbackMessage

This is the request for the NotifyEnumerationComplete operation.

```
<wsdl:message name="IIpamIPAuditEnumerator_NotifyEnumerationComplete_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyEnumerationComplete" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationComplete
```

The body of the SOAP message MUST contain the NotifyEnumerationComplete element.

3.9.4.4.2 Elements

3.9.4.4.2.1 NotifyEnumerationComplete

This element specifies the input values for the NotifyEnumerationComplete operation.

```
<xs:element name="NotifyEnumerationComplete">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
      <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.9.4.5 NotifyEnumerationStart

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyEnumerationStart">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationStart"
message="ipam:IIpamIPAuditEnumerator_NotifyEnumerationStart_OutputCallbackMessage" />
</wsdl:operation>
```

Upon receiving the IIpamIPAuditEnumerator_NotifyEnumerationStart_OutputCallbackMessage request message, the server performs the following processing steps. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

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3.9.4.5.1 Messages

3.9.4.5.1.1 IIpamIPAuditEnumerator_NotifyEnumerationStart_OutputCallbackMessage

This is the request for the NotifyEnumerationStart operation.

```
<wsdl:message name="IIpamIPAuditEnumerator_NotifyEnumerationStart_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyEnumerationStart" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationStart
```

The body of the SOAP message MUST contain the NotifyEnumerationStart element.

3.9.4.5.2 Elements

3.9.4.5.2.1 NotifyEnumerationStart

This element specifies the input values for the NotifyEnumerationStart operation.

```
<xs:element name="NotifyEnumerationStart">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.9.5 Timer Events

None.

3.9.6 Other Local Events

None.

3.9.6.1 User Authorization

This section lists the user authorization requirements for the various operations defined in this port type. After the user authentication is complete, the user MUST be authorized for the operation that is being requested. If the required authorization is not present, the user MUST be denied access to perform the operation by returning an appropriate SOAP fault as specified in section 2.2.2.1.

The following table specifies the operations and the authorization requirements. At least one of the states listed under the column "ADM States to be checked" MUST be TRUE for the user to be authorized to perform the specified operation. Any further granular authorization requirements for an operation will be captured under the section specific to the operation itself. This check is done after the steps listed in section 3.1.4.3 are complete.

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Operation	ADM States to be checked
InitializeEnumeration	IsIpamIPAuditAdministrator
StartEnumeration	IsIpamIPAuditAdministrator

3.10 IIpamIPAuditEnumerator Client Details

The client side of the IIpamIPAuditEnumerator MUST provide the IIpamEnumeratorCallback server interface. The IIpamIPAuditEnumerator server will callback into the IIpamEnumeratorCallback of the client for notifying the start of enumeration, providing the data and to notify the completion of the enumeration along with status.

In summary, on a single session, the management client implements the IIpamEnumeratorCallback port type and the management server implements the IIpamIPAuditEnumerator port type.

The processing rules and states remain the same as that of the IIpamEnumerator client details specified in section 3.6.

3.10.1 Abstract Data Model

See section 3.6.1.

3.10.2 Timers

See section 3.6.2.

3.10.3 Initialization

The IIpamIPAuditEnumerator client on initialization will establish the session to the management server. On successfully setting up the session, the IIpamIPAuditEnumerator client MUST initialize IIpamEnumeratorCallback session on the same session so the IIpamIPAuditEnumerator server can callback with the enumerated data. In order to obtain the enumeration data from the IIpamEnumeratorCallback port type, the EnumerationInfo is passed as a part of the initialization routine. The IIpamEnumeratorCallback port type's server fills the data pertaining to the enumeration in the EnumerationInfo for the IIpamEnumerator client to provide to the application layer.

3.10.4 Message Processing Events and Sequencing Rules

See section 3.6.4.

3.10.5 Timer Events

See section 3.6.5.

3.10.6 Other Local Events

See section 3.6.6.

3.11 IIpamAsyncProvision Server Details

This port type enables the provisioning of the IPAM data store, which is required before performing any other management activity. The provisioning activity can be a time-consuming activity. By taking the callback approach, it is possible to perform and complete the activity without running into

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operation timeouts that are managed by the lower layers. The following diagram shows the interaction between the management client and the management server to enable the provisioning scenario.

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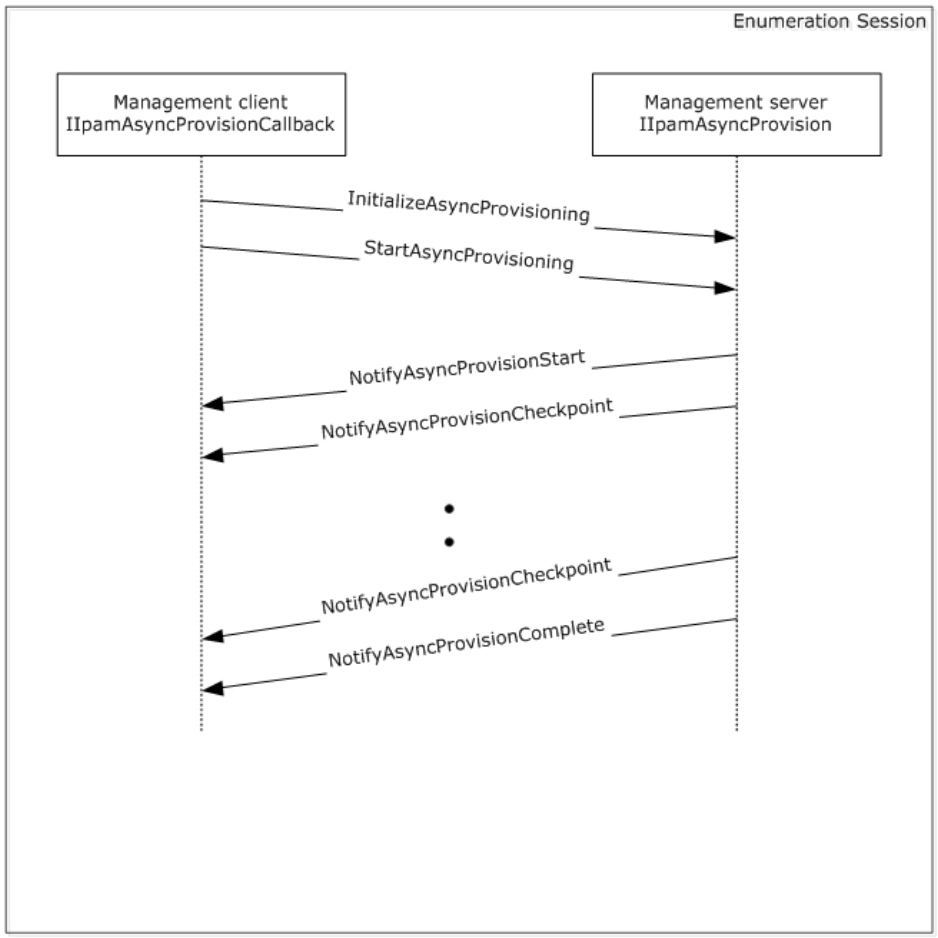

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Figure 6: Provisioning – protocol interaction

3.11.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.11.1.1 State Machine

The following figure shows the state machine of the IIpamEnumerator server port type.

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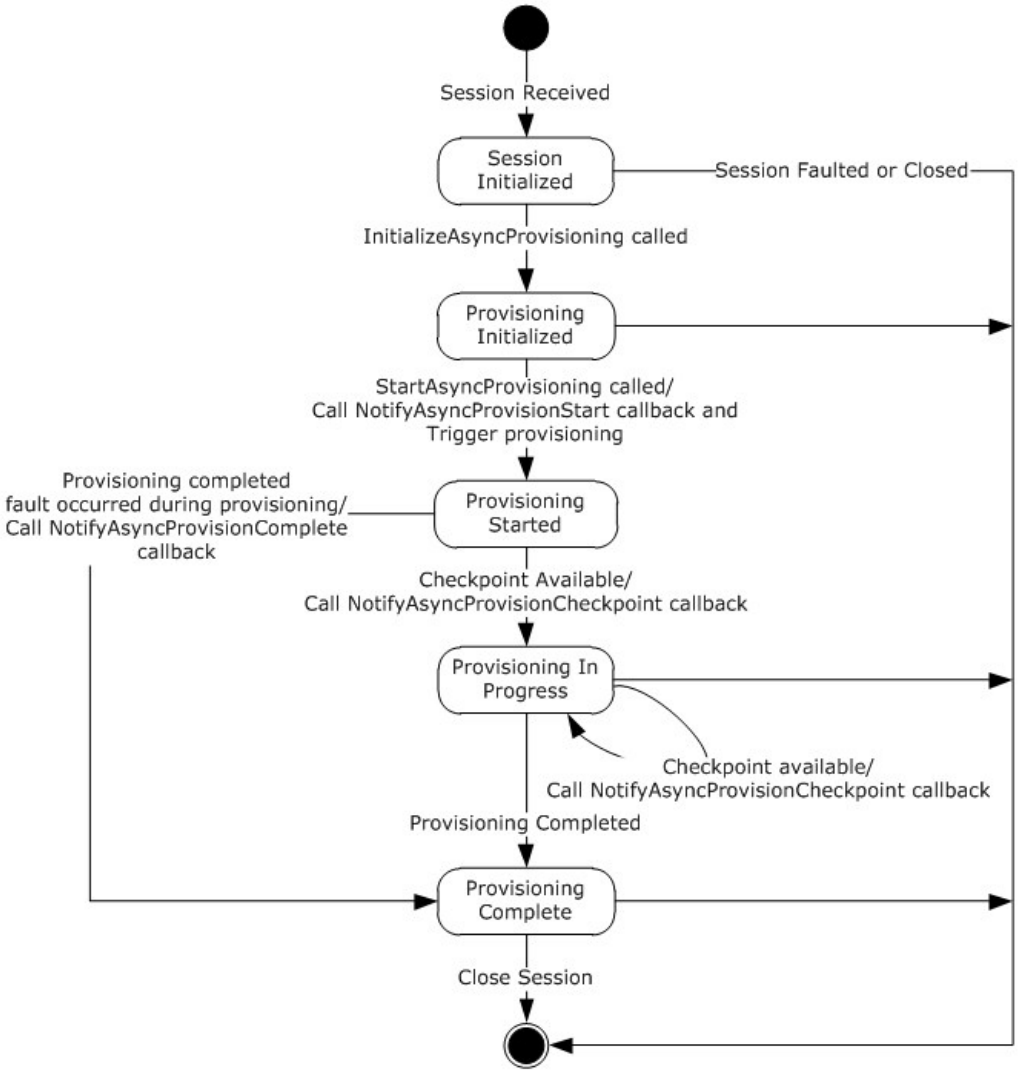

Figure 7: IIpamAsyncProvision server state machine

The IIpamAsyncProvision server is session-based and stateful in nature. The **session state** variable will be used to keep track of the current state for each session and it can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

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State	Description
Session Initialized	This would be the initial state of the session when it has been indicated from the lower layer of the protocol. When in this state, when the InitializeAsyncProvisioning operation is invoked (by the client), the state is changed to **Provisioning Initialized**.
Provisioning Initialized	This would be the state when the provisioning is initialized and ready to start the processing. When in this state, the StartAsyncProvisioning operation request is received from the management client, the server invokes the NotifyAsyncProvisionStart callback operation and triggers the provisioning. The state is changed to **Provisioning Started**.
Provisioning Started	This state denotes the provisioning has been initialized successfully and the provisioning is currently in progress. If there is a checkpoint available to be sent across from the enumeration processing, the NotifyAsyncProvisionCheckpoint operation is invoked and the state is changed to **Provisioning In Progress**. When the provisioning has completed successfully, the NotifyAsyncProvisionComplete operation is invoked and the state is changed to **Provisioning Completed**. When the provisioning has failed to complete with some error, the NotifyAsyncProvisionComplete is called to provide the fault information to the client and the state is changed to **Provisioning Completed**.
Provisioning In Progress	This state denotes the provisioning is in progress. If there is a checkpoint available to be sent across from the enumeration processing, the NotifyAsyncProvisionCheckpoint operation is invoked and the state is changed to **Provisioning In Progress**. When the provisioning has completed successfully, the NotifyAsyncProvisionComplete operation is invoked and the state is changed to **Provisioning Completed**. When the provisioning has failed to complete with some error, the NotifyAsyncProvisionComplete is called to provide the fault information to the client and the state is changed to **Provisioning Completed**.
Provisioning Completed	This state indicates there is no further processing required in the session and proceeds to close the session itself.

3.11.2 Timers

There are no additional timers other than those which are described in section 3.1.2.

3.11.3 Initialization

None.

3.11.4 Message Processing Events and Sequencing Rules

3.11.4.1 New Session Indication

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when a new session is available from the client. The **session state** is initialized to **Session Initialized**.

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3.11.4.2 Session Closed or Faulted

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when an existing session is either closed by the client or an irrecoverable error has occurred. This event will result in termination of the state machine as the session itself is no longer valid.

3.11.4.3 InitializeAsyncProvisioning

This is an initiating operation. This operation is used to signify the interest of the management client to provision the IPAM data store.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeAsyncProvisioning">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/InitializeAsyncProvisioning"
message="ipam:IIpamAsyncProvision_InitializeAsyncProvisioning_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/InitializeAsyncProvisioningRes
ponse" message="ipam:IIpamAsyncProvision_InitializeAsyncProvisioning_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamAsyncProvision_InitializeAsyncProvisioning_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamAsyncProvision_InitializeAsyncProvisioning_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

The session state is set to **Provisioning Initialized**.

3.11.4.3.1 Messages

3.11.4.3.1.1 IIpamAsyncProvision_InitializeAsyncProvisioning_InputMessage

This is the request for the InitializeAsyncProvisioning operation.

```
<wsdl:message name="IIpamAsyncProvision_InitializeAsyncProvisioning_InputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeAsyncProvisioning" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvision/InitializeAsyncProvisioning
```

The body of the SOAP message MUST contain the InitializeAsyncProvisioning element.

3.11.4.3.1.2 IIpamAsyncProvision_InitializeAsyncProvisioning_OutputMessage

This is the response for the InitializeAsyncProvisioning operation.

```
<wsdl:message name="IIpamAsyncProvision_InitializeAsyncProvisioning_OutputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeAsyncProvisioningResponse" />
</wsdl:message>
```


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This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvision/InitializeAsyncProvisioningResponse
```

The body of the SOAP message MUST contain the InitializeAsyncProvisioningResponse element.

3.11.4.3.2 Elements

3.11.4.3.2.1 InitializeAsyncProvisioning

This element specifies the input values for the InitializeAsyncProvisioning operation.

```
<xs:element name="InitializeAsyncProvisioning">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.11.4.3.2.2 InitializeAsyncProvisioningResponse

This element specifies the output values for the InitializeAsyncProvisioning operation.

```
<xs:element name="InitializeAsyncProvisioningResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.11.4.4 NotifyAsyncProvisionCheckpoint

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncProvisionCheckpoint">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionCheckpoint
" message="ipam:IIpamAsyncProvision_NotifyAsyncProvisionCheckpoint_OutputCallbackMessage" />
</wsdl:operation>
```

3.11.4.4.1 Messages

3.11.4.4.1.1 IIpamAsyncProvision_NotifyAsyncProvisionCheckpoint_OutputCallbackMessage

This is the request for the NotifyAsyncProvisionCheckpoint operation.

```
<wsdl:message
name="IIpamAsyncProvision_NotifyAsyncProvisionCheckpoint_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionCheckpoint" />
```


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```
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionCheckpoint
```

The body of the SOAP message MUST contain the NotifyAsyncProvisionCheckpoint element.

3.11.4.4.2 Elements

3.11.4.4.2.1 NotifyAsyncProvisionCheckpoint

This element specifies the input values for the NotifyAsyncProvisionCheckpoint operation.

```
<xs:element name="NotifyAsyncProvisionCheckpoint">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.11.4.5 NotifyAsyncProvisionComplete

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncProvisionComplete">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionComplete"
message="ipam:IIpamAsyncProvision_NotifyAsyncProvisionComplete_OutputCallbackMessage" />
</wsdl:operation>
```

3.11.4.5.1 Messages

3.11.4.5.1.1 IIpamAsyncProvision_NotifyAsyncProvisionComplete_OutputCallbackMessage

This is the request for the NotifyAsyncProvisionComplete operation.

```
<wsdl:message name="IIpamAsyncProvision_NotifyAsyncProvisionComplete_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionComplete" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionComplete
```

The body of the SOAP message MUST contain the NotifyAsyncProvisionComplete element.

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3.11.4.5.2 Elements

3.11.4.5.2.1 NotifyAsyncProvisionComplete

This element specifies the input values for the NotifyAsyncProvisionComplete operation.

```
<xs:element name="NotifyAsyncProvisionComplete">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
      <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.11.4.6 NotifyAsyncProvisionStart

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncProvisionStart">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionStart"
message="ipam:IIpamAsyncProvision_NotifyAsyncProvisionStart_OutputCallbackMessage" />
</wsdl:operation>
```

3.11.4.6.1 Messages

3.11.4.6.1.1 IIpamAsyncProvision_NotifyAsyncProvisionStart_OutputCallbackMessage

This is the request for the NotifyAsyncProvisionStart operation.

```
<wsdl:message name="IIpamAsyncProvision_NotifyAsyncProvisionStart_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionStart" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionStart
```

The body of the SOAP message MUST contain the NotifyAsyncProvisionStart element.

3.11.4.6.2 Elements

3.11.4.6.2.1 NotifyAsyncProvisionStart

This element specifies the input values for the NotifyAsyncProvisionStart operation.

```
<xs:element name="NotifyAsyncProvisionStart">
```


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```
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.11.4.7 StartAsyncProvisioning

This operation is invoked by the client to trigger the start of the provisioning. This causes the session state to be set to **Enumeration Started**.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartAsyncProvisioning">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/StartAsyncProvisioning"
message="ipam:IIpamAsyncProvision_StartAsyncProvisioning_InputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamAsyncProvision_StartAsyncProvisioning_InputMessage request message, the server MUST invoke the NotifyAsyncProvisionStart operation. The following processing steps are then invoked to provision the IPAM data store. If the processing steps take longer than the lower layer session timeout values, the implementation MUST send checkpoint updates to the management client by invoking the NotifyAsyncProvisionCheckpoint callback operation.

Also if a fault is generated in any of the steps below, the NotifyAsyncProvisionComplete callback operation MUST be called specifying NotifyAsyncProvisionComplete.exception set to the fault information. The **session state** will be set to **Provisioning Completed** when a fault is encountered.

1. If **ADM_IsIPAMProvisioningInProgress** is set to TRUE, return an appropriate SOAP fault as there is already a session which has triggered the provisioning.
2. If **ADM_IsIPAMConfigured** is FALSE, perform the following steps.
    1. Setup the IPAM data store ADM_IPAMDataStore in an implementation specific manner. Where applicable as described in the ADM section, initialize the tables with the default values as well.
    2. Setup the ADM_IPAMSecurityGroups in an implementation specific manner.
    3. If the provisioning has been completed successfully,
        - Set ADM_IsIPAMConfigured to TRUE.
    4. If any fault was encountered as a part of the provisioning steps,
        - Set NotifyAsyncProvisionComplete.exception to the fault information.
    5. Set **session state** to **Provisioning Completed**.
    6. Set the current date and time to **ADM_CommonProperties.IpamConfiguredDate**.
    7. Set ADM_IsIPAMProvisioningInProgress to FALSE.

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3.11.4.7.1 Messages

3.11.4.7.1.1 IIpamAsyncProvision_StartAsyncProvisioning_InputMessage

This is the request for the StartAsyncProvisioning operation.

```
<wsdl:message name="IIpamAsyncProvision_StartAsyncProvisioning_InputMessage">
  <wsdl:part name="parameters" element="ipam:StartAsyncProvisioning" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvision/StartAsyncProvisioning
```

The body of the SOAP message MUST contain the StartAsyncProvisioning element.

3.11.4.7.2 Elements

3.11.4.7.2.1 StartAsyncProvisioning

This element specifies the input values for the StartAsyncProvisioning operation.

```
<xs:element name="StartAsyncProvisioning">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.11.5 Timer Events

None.

3.11.6 Other Local Events

None.

3.11.6.1 User Authorization

This section lists the user authorization requirements for the various operations defined in this port type. After the user authentication is complete, the user MUST be authorized for the operation that is being requested. If the required authorization is not present, the user MUST be denied access to perform the operation by returning an appropriate SOAP fault as specified in section 2.2.2.1.

The following table specifies the operations and the authorization requirements. At least one of the states listed under the column "ADM States to be checked" MUST be TRUE for the user to be authorized to perform the specified operation. Any further granular authorization requirements for an operation will be captured under the section specific to the operation itself. This check is done after the steps listed in section 3.1.4.3 are complete.

Operation	ADM States to be checked
InitializeAsyncProvisioning	IsAdministrator

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Operation	ADM States to be checked
StartAsyncProvisioning	IsAdministrator

3.12 IIpamAsyncProvision Client Details

The client side of the IIpamAsyncProvision MUST provide the IIpamAsyncProvisionCallback server interface. The IIpamAsyncProvision server will callback into the IIpamAsyncProvisionCallback of the client for notifying the start of provisioning, providing the provisioning checkpoints and to notify the completion of the provisioning along with status.

In summary, on a single session, the management client implements the IIpamAsyncProvisionCallback port type and the management server implements the IIpamAsyncProvision port type.

3.12.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

The following state is available on a per-session basis:

ProvisioningFault: This contains the IpamException having the fault that the server has sent across to the client or any session establishment failure fault that the lower transport layer might have indicated. If this value is set, the provisioning is considered unsuccessful. If this value is not set, the provisioning is considered successful.

3.12.2 Timers

There are no additional timers beyond those specified in section 3.2.2.

3.12.3 Initialization

The IIpamAsyncProvision client on initialization will establish the session to the management server. On successfully setting up the session, the IIpamAsyncProvision client MUST initialize the IIpamAsyncProvisionCallback session on the same session so the IIpamAsyncProvision server can callback with the provisioning status. In order to obtain the provisioning status from the IIpamAsyncProvisionCallback port type, the ProvisioningFault is passed as a part of the initialization routine. The IIpamAsyncProvisionCallback port type's server sets the provisioning status into ProvisioningFault to provide to the application layer.

3.12.4 Message Processing Events and Sequencing Rules

3.12.4.1 Provisioning Completed

This is an event which is triggered by the IIpamAsyncProvisionCallback server on the session to indicate that the provisioning is completed and the **ProvisionFault** has the status of the completion.

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3.12.5 Timer Events

None.

3.12.6 Other Local Events

None.

3.13 IIpamAsyncProvisionCallback Server Details

This port type is implemented by the management client and initialized on the same session used to perform operations against the IIpamAsyncProvision server on the management server. This provides the callback interface which the IIpamAsyncProvision server invokes to provide the provisioning checkpoint and completion status.

3.13.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.13.1.1 State Machine

The following figure shows the state machine of the IIpamAsyncProvisionCallback server port type.

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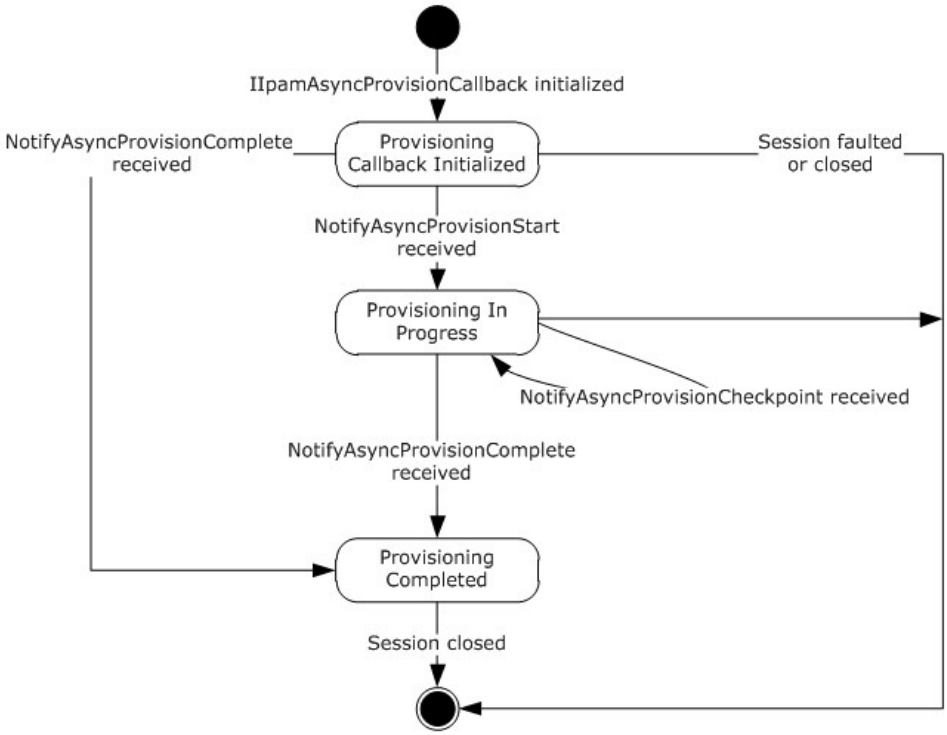

Figure 8: IIpamAsyncProvisionCallback state machine

The IIpamAsyncProvisionCallback server is session-based sharing the same session the management client has with the management server using the IIpamAsyncProvision port type. It is also stateful in nature. The **session state** variable will be used to keep track of the current state for each session and it can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

State	Description
Provisioning Callback Initialized	This is the initial state of the IIpamAsyncProvisionCallback will be when it has been initialized by the IIpamAsyncProvision client. When the NotifyAsyncProvisionStart is received in this state from the IIpamAsyncProvision server port on the management server-end of the session, the transition to the **Provisioning In Progress** state will happen.
Provisioning In Progress	This state indicates the IIpamAsyncProvisionCallback is ready to receive the provisioning checkpoint and completion status. When the NotifyAsyncProvisionCheckpoint is received in this state from the

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State	Description
	IIpamAsyncProvision server port on the management server-end of the session, the state will continue to be in **Provisioning In Progress**. When the NotifyAsyncProvisionComplete is received in this state from the IIpamAsyncProvision server port on the management server-end of the session, the state will transition to **Provisioning Completed**.
Provisioning Completed	This is the state to notify the Provisioning interaction between the IIpamAsyncProvision server port on the management server-end and the IIpamAsyncProvisionCallback server port on the management client-end is complete and the result is available.

3.13.1.2 Other Miscellaneous States

ProvisioningFault: This is used to store the ProvisioningFault instance provided by IIpamAsyncProvision client as a part of the initialization to hold the provisioning result. See section 3.12.1 for more details.

3.13.2 Timers

There are no additional timers beyond the ones defined by the lower layer of the protocols.

3.13.3 Initialization

The IIpamAsyncProvisionCallback interface is initialized by the IIpamAsyncProvision client on the management client-end. The IIpamAsyncProvision client passes the ProvisionFault instance during initialization which will be updated by the IIpamAsyncProvisionCallback server with the result of the provisioning. The session state is set to **Provisioning Callback Initialized**.

3.13.4 Message Processing Events and Sequencing Rules

3.13.4.1 Session Faulted or Closed

This is an event triggered by the lower transport layer when the session has received a SOAP fault or a forceful session close has occurred. If the **session state** is **Provisioning Callback Initialized** or **Provisioning In Progress**, the **ProvisioningFault** has to be set to an appropriate reason associated with the session closure.

3.13.4.2 NotifyAsyncProvisionCheckpoint

This operation is used to provide the checkpoint when the provisioning is in progress.

```
<wsdl:operation name="NotifyAsyncProvisionCheckpoint">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionCh
eckpoint"
message="ipam:IIpamAsyncProvisionCallback_NotifyAsyncProvisionCheckpoint_InputMessage" />
</wsdl:operation>
```

This operation has only the input message and there is no output message associated with it. This operation will be called a number of times during the provisioning.

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3.13.4.2.1 Messages

3.13.4.2.1.1 IIpamAsyncProvisionCallback_NotifyAsyncProvisionCheckpoint_InputMessage

This is the request for the NotifyAsyncProvisionCheckpoint operation.

```
<wsdl:message name="IIpamAsyncProvisionCallback_NotifyAsyncProvisionCheckpoint_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionCheckpoint" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionCheckpoint
```

The body of the SOAP message MUST contain the NotifyAsyncProvisionCheckpoint element.

3.13.4.2.2 Elements

3.13.4.2.2.1 NotifyAsyncProvisionCheckpoint

This element specifies the input values for the NotifyAsyncProvisionCheckpoint operation.

```
<xs:element name="NotifyAsyncProvisionCheckpoint">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.13.4.3 NotifyAsyncProvisionComplete

This operation is used to indicate the completion of provisioning.

```
<wsdl:operation name="NotifyAsyncProvisionComplete">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionCo
mplete" message="ipam:IIpamAsyncProvisionCallback_NotifyAsyncProvisionComplete_InputMessage"
/>
</wsdl:operation>
```

This operation has only the request message. This signifies the completion of the provisioning and the Provisioning Completed event of the IIpamAsyncProvision client is invoked. The session state is set to **Provisioning Completed**.

If NotifyAsyncProvisionComplete.exception is set, the provisioning has faulted. The ProvisioningFault is set to NotifyAsyncProvisionComplete.exception.

If NotifyAsyncProvisionComplete.exception is null, the provisioning has completed successfully.

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3.13.4.3.1 Messages

3.13.4.3.1.1 IIpamAsyncProvisionCallback_NotifyAsyncProvisionComplete_InputMessage

This is the request for the NotifyAsyncProvisionComplete operation.

```
<wsdl:message name="IIpamAsyncProvisionCallback_NotifyAsyncProvisionComplete_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionComplete" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionComplete
```

The body of the SOAP message MUST contain the NotifyAsyncProvisionComplete element.

3.13.4.3.2 Elements

3.13.4.3.2.1 NotifyAsyncProvisionComplete

This element specifies the input values for the NotifyAsyncProvisionComplete operation.

```
<xs:element name="NotifyAsyncProvisionComplete">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
      <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.13.4.4 NotifyAsyncProvisionStart

This operation is used to indicate the start of the provisioning of the IPAM data store.

```
<wsdl:operation name="NotifyAsyncProvisionStart">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionSt
art" message="ipam:IIpamAsyncProvisionCallback_NotifyAsyncProvisionStart_InputMessage" />
</wsdl:operation>
```

This operation only has the request message to provide the notification. On receiving the message, the session state is set to **Provisioning In Progress**.

3.13.4.4.1 Messages

3.13.4.4.1.1 IIpamAsyncProvisionCallback_NotifyAsyncProvisionStart_InputMessage

This is the request for the NotifyAsyncProvisionStart operation.

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```
<wsdl:message name="IIpamAsyncProvisionCallback_NotifyAsyncProvisionStart_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionStart" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionStart
```

The body of the SOAP message MUST contain the NotifyAsyncProvisionStart element.

3.13.4.4.2 Elements

3.13.4.4.2.1 NotifyAsyncProvisionStart

This element specifies the input values for the NotifyAsyncProvisionStart operation.

```
<xs:element name="NotifyAsyncProvisionStart">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.13.5 Timer Events

None.

3.13.6 Other Local Events

3.13.6.1 User Authorization

Since the IIpamAsyncProvisionCallback server is initialized on the same session as the IIpamAsyncProvision session, no additional user authentication and authorization is performed beyond what was done for the operations in the IIpamAsyncProvision session.

3.14 IIpamAsyncProvisionCallback Client Details

The IIpamAsyncProvision server is the endpoint which will also be the IIpamAsyncProvisionCallback client. The same session has the IIpamAsyncProvision and the IIpamAsyncProvisionCallback implemented on either ends. The management server will provide the IIpamAsyncProvision server and the IIpamAsyncProvisionCallback client implementations and the management client will provide the IIpamAsyncProvisionCallback server and the IIpamAsyncProvision client implementations. The IIpamAsyncProvisionCallback is only a request interface i.e. there is no data obtained from the IIpamAsyncProvisionCallback server.

3.14.1 Abstract Data Model

None.

3.14.2 Timers

None.

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3.14.3 Initialization

None.

3.14.4 Message Processing Events and Sequencing Rules

None other than those captured as a part of the IIpamAsyncProvision server section 3.11.

3.14.5 Timer Events

None.

3.14.6 Other Local Events

None.

3.15 IIpamAsyncSchemaConversion Server Details

This port type enables the schema conversion of the IPAM data store. When the management server determines the need for schema conversion, no other management activity can be performed till the schema conversion is completed. The schema conversion activity can be a time consuming activity. By taking the callback approach, it is possible to perform and complete the activity without running into operation timeouts that are managed by the lower layers. The following diagram shows the interaction between the management client and the management server to enable the provisioning scenario.

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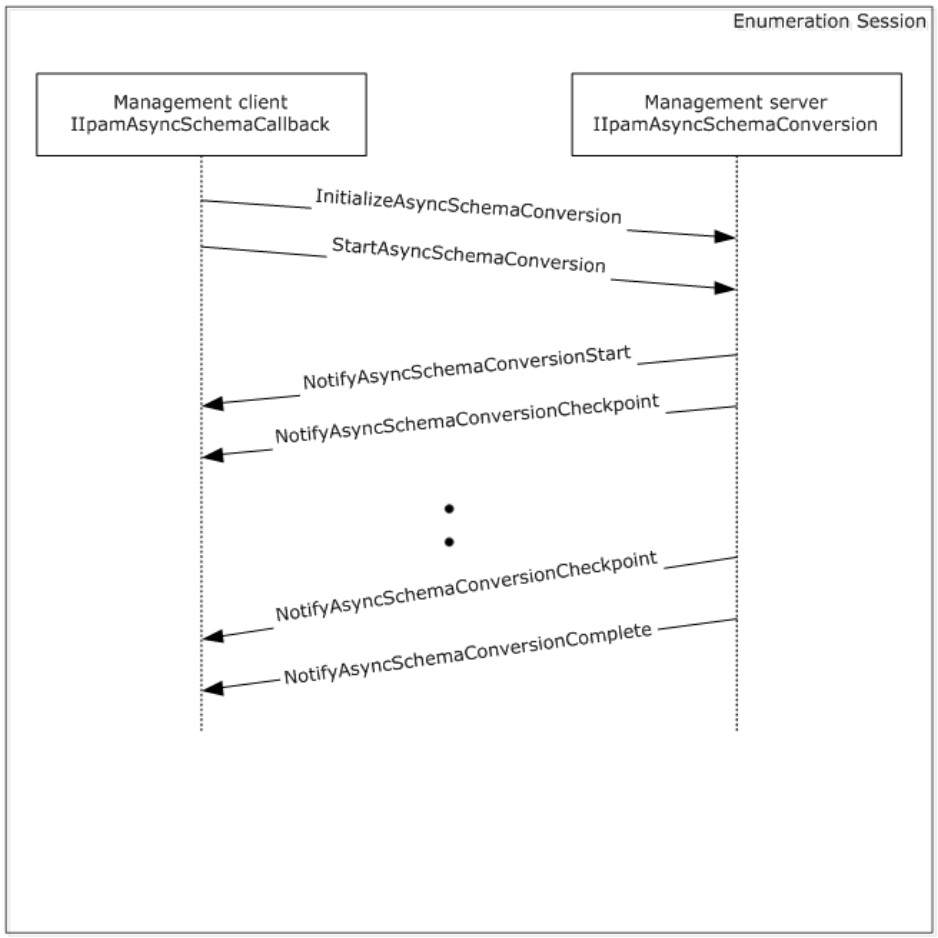

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Figure 9: Schema Conversion - Protocol Interaction

3.15.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.15.1.1 State Machine

The following figure shows the state machine of the IIpamEnumerator server port type.

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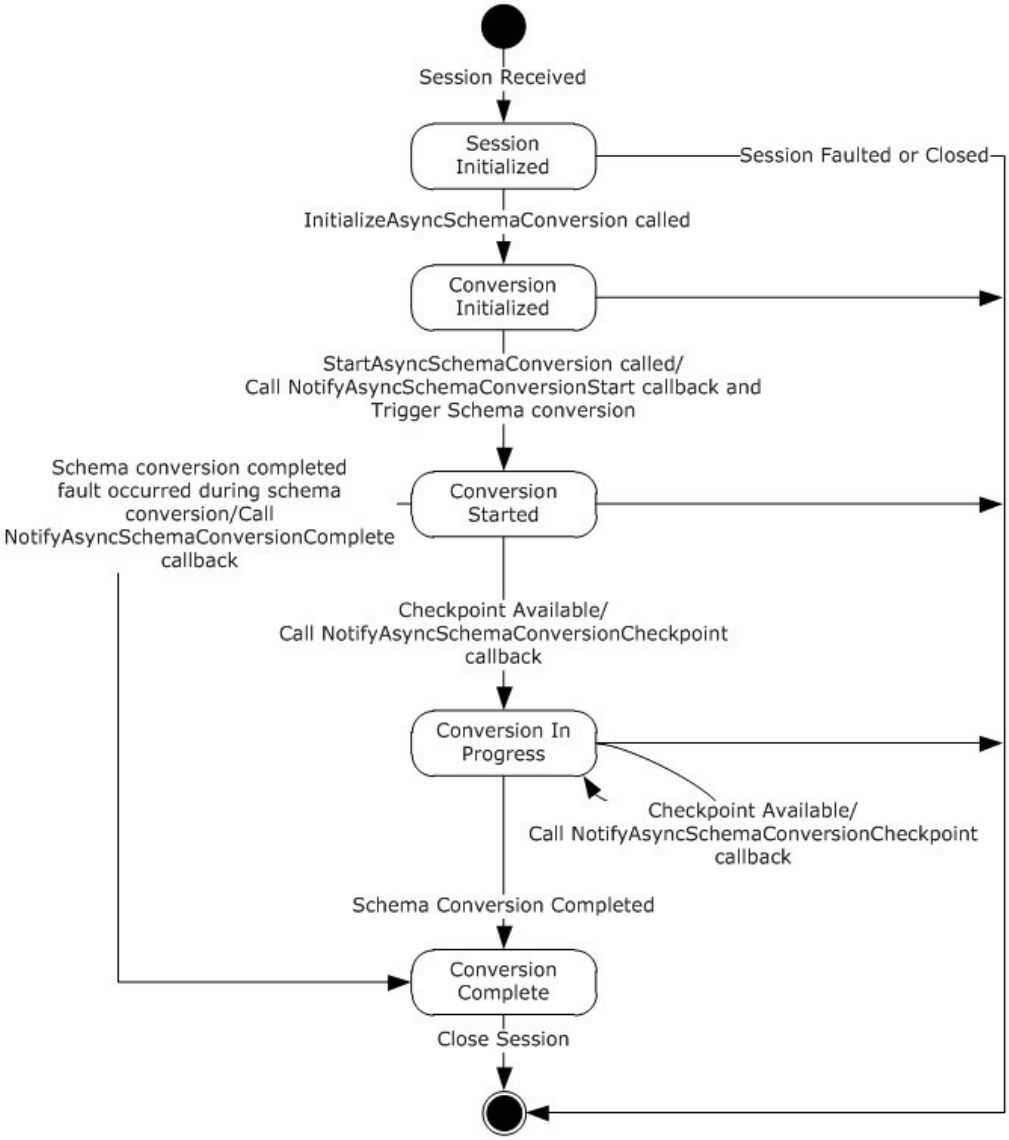

Figure 10: IIpamAsyncSchemaConversion server state machine

The IIpamAsyncSchemaConversion server is session-based and stateful in nature. The **session state** variable will be used to keep track of the current state for each session and it can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

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State	Description
Session Initialized	This would be the initial state of the session when it has been indicated from the lower layer of the protocol. In this state, when the InitializeAsyncSchemaConversion operation request is received from the management client, the state is changed to **Provisioning Initialized**.
Conversion Initialized	This would be the state when the schema conversion is initialized and ready to start the processing. In this state, when the StartAsyncSchemaConversion operation request is received from the management client, the server invokes the NotifyAsyncSchemaConversionStart and triggers the schema conversion. The state is changed to **Conversion Started**.
Conversion Started	This state denotes the schema conversion has been initialized successfully and is currently in progress. If there is a checkpoint available to be sent across to the management client, the NotifyAsyncSchemaConversionCheckpoint operation is invoked and the state is changed to **Conversion In Progress**. When the schema conversion has completed successfully, the NotifyAsyncSchemaConversionComplete operation is invoked and the state is changed to **Conversion Completed**. When the scheme conversion has failed to complete with some error, the NotifyAsyncSchemaConversionComplete is called to provide the fault information to the client and the state is changed to **Conversion Completed**.
Conversion In Progress	This state denotes the schema conversion is in progress. If there is a checkpoint available to be sent across to the management client, the NotifyAsyncSchemaConversionCheckpoint operation is invoked and the state is changed to **Conversion In Progress**. When the schema conversion has completed successfully, the NotifyAsyncSchemaConversionComplete operation is invoked and the state is changed to **Conversion Completed**. When the scheme conversion has failed to complete with some error, the NotifyAsyncSchemaConversionComplete is called to provide the fault information to the client and the state is changed to **Conversion Completed**.
Conversion Completed	This state indicates there is no further processing required in the session and proceeds to close the session itself.

3.15.2 Timers

There are no additional timers other than those which are described in section 3.1.2.

3.15.3 Initialization

None.

3.15.4 Message Processing Events and Sequencing Rules

3.15.4.1 New Session Indication

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when a new session is available from the client. The **session state** is initialized to **Session Initialized**.

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3.15.4.2 Session Closed or Faulted

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when an existing session is either closed by the client or an irrecoverable error has occurred. This event will result in termination of the state machine as the session itself is no longer valid.

3.15.4.3 InitializeAsyncSchemaConversion

This is an initiating operation. This operation is used signify the interest of the management client to provision the IPAM data store.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeAsyncSchemaConversion">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/InitializeAsyncSchemaCo
nversion"
message="ipam:IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_InputMessage" />
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/InitializeAsyncSchemaCo
nversionResponse"
message="ipam:IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_InputMessage request message, the server performs the following processing steps. Upon successful completion of the steps specified below, the server MUST respond with the IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_OutputMessage message.In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

The session state is set to **Conversion Initialized**.

3.15.4.3.1 Messages

3.15.4.3.1.1 IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_InputMessage

This is the request for the InitializeAsyncSchemaConversion operation.

```
<wsdl:message name="IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_InputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeAsyncSchemaConversion" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/InitializeAsyncSchemaConversion
```

The body of the SOAP message MUST contain the InitializeAsyncSchemaConversion element.

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3.15.4.3.1.2 IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_OutputMessage

This is the response for the InitializeAsyncSchemaConversion operation.

```
<wsdl:message
name="IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_OutputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeAsyncSchemaConversionResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/InitializeAsyncSchemaConversionRespo
nse
```

The body of the SOAP message MUST contain the InitializeAsyncSchemaConversionResponse element.

3.15.4.3.2 Elements

3.15.4.3.2.1 InitializeAsyncSchemaConversion

This element specifies the input values for the InitializeAsyncSchemaConversion operation.

```
<xs:element name="InitializeAsyncSchemaConversion">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.15.4.3.2.2 InitializeAsyncSchemaConversionResponse

This element specifies the output values for the InitializeAsyncSchemaConversion operation.

```
<xs:element name="InitializeAsyncSchemaConversionResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.15.4.4 NotifyAsyncSchemaConversionCheckpoint

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncSchemaConversionCheckpoint">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConver
```


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```
sionCheckpoint"
message="ipam:IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionCheckpoint_OutputCallback
Message" />
</wsdl:operation>
```

3.15.4.4.1 Messages

3.15.4.4.1.1 IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionCheckpoint_OutputCallbackMessage

This is the request for the NotifyAsyncSchemaConversionCheckpoint operation.

```
<wsdl:message
name="IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionCheckpoint_OutputCallbackMessage"
>
  <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionCheckpoint" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConversionCheckpoin
t
```

The body of the SOAP message MUST contain the NotifyAsyncSchemaConversionCheckpoint element.

3.15.4.4.2 Elements

3.15.4.4.2.1 NotifyAsyncSchemaConversionCheckpoint

This element specifies the input values for the NotifyAsyncSchemaConversionCheckpoint operation.

```
<xs:element name="NotifyAsyncSchemaConversionCheckpoint">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.15.4.5 NotifyAsyncSchemaConversionComplete

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncSchemaConversionComplete">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConver
sionComplete"
message="ipam:IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionComplete_OutputCallbackMe
ssage" />
```


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```
</wsdl:operation>
```

3.15.4.5.1 Messages

3.15.4.5.1.1 IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionComplete_OutputCallbackMessage

This is the request for the NotifyAsyncSchemaConversionComplete operation.

```
<wsdl:message
name="IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionComplete_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionComplete" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConversionComplete
```

The body of the SOAP message MUST contain the NotifyAsyncSchemaConversionComplete element.

3.15.4.5.2 Elements

3.15.4.5.2.1 NotifyAsyncSchemaConversionComplete

This element specifies the input values for the NotifyAsyncSchemaConversionComplete operation.

```
<xs:element name="NotifyAsyncSchemaConversionComplete">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
      <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.15.4.6 NotifyAsyncSchemaConversionStart

This operation MUST NOT be invoked by the management client and MUST be ignored by the server.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncSchemaConversionStart">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConver
sionStart"
message="ipam:IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionStart_OutputCallbackMessa
ge" />
</wsdl:operation>
```


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3.15.4.6.1 Messages

3.15.4.6.1.1 IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionStart_OutputCallbackMessage

This is the request for the NotifyAsyncSchemaConversionStart operation.

```
<wsdl:message
name="IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionStart_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionStart" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConversionStart
```

The body of the SOAP message MUST contain the NotifyAsyncSchemaConversionStart element.

3.15.4.6.2 Elements

3.15.4.6.2.1 NotifyAsyncSchemaConversionStart

This element specifies the input values for the NotifyAsyncSchemaConversionStart operation.

```
<xs:element name="NotifyAsyncSchemaConversionStart">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.15.4.7 StartAsyncSchemaConversion

This operation is invoked by the client to trigger the start of the schema conversion. This causes the session state to be set to **Conversion Started**.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartAsyncSchemaConversion">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/StartAsyncSchemaConversion" message="ipam:IIpamAsyncSchemaConversion_StartAsyncSchemaConversion_InputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamAsyncSchemaConversion_StartAsyncSchemaConversion_InputMessage request message, the server MUST invoke the NotifyAsyncProvisionStart operation. The **session state** is set to **Conversion Started**.

The following are the processing steps involved. If a fault needs to be returned back to the client, the NotifyAsyncSchemaConversionComplete operation MUST be called with the fault specified in NotifyAsyncSchemaConversionComplete.exception.

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1. If ADM_IsSchemaConversionInProgress is set to TRUE, there is already a schema conversion session currently in progress. The current request cannot be processed. An appropriate SOAP fault MUST be returned to the client.

2. Set ADM_IsSchemaConversionInProgress to TRUE so that no other schema conversion sessions become active.

3. Check if schema conversion is required by checking ADM_IsSchemaConversionRequired. If it is FALSE, the schema conversion has been triggered when it is not required. An appropriate SOAP fault MUST be returned to the client.

4. Initiate the database conversion schema in an implementation specific manner asynchronously. Provide adequate checkpoint status to the client by invoking NotifyAsyncSchemaConversionCheckpoint callback operation and set the **session state** to **Conversion In Progress**.

5. If the schema conversion completes successfully,

    1. Return the success status by invoking NotifyAsyncSchemaConversionComplete with NotifyAsyncSchemaConversionComplete.exception set to null.

    2. Set **session state** to **Conversion Completed**.

    3. Set ADM_IsSchemaConversionRequired to FALSE.

    4. Set ADM_IsSchmeConversionInProgress to FALSE.

6. If the schema conversion has failed,

    1. Specify the fault with which the schema conversion completed by invoking NotifyAsyncSchemaConversionComplete with NotifyAsyncSchemaConversionComplete.exception set to the fault that occurred.

    2. Set **session state** to **Conversion Completed**.

    3. Set ADM_IsSchmeConversionInProgress to FALSE.

3.15.4.7.1 Messages

3.15.4.7.1.1 IIpamAsyncSchemaConversion_StartAsyncSchemaConversion_InputMessage

This is the request for the StartAsyncSchemaConversion operation.

```
<wsdl:message name="IIpamAsyncSchemaConversion_StartAsyncSchemaConversion_InputMessage">
  <wsdl:part name="parameters" element="ipam:StartAsyncSchemaConversion" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/StartAsyncSchemaConversion
```

The body of the SOAP message MUST contain the StartAsyncSchemaConversion element.

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3.15.4.7.2 Elements

3.15.4.7.2.1 StartAsyncSchemaConversion

This element specifies the input values for the StartAsyncSchemaConversion operation.

```
<xs:element name="StartAsyncSchemaConversion">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.15.5 Timer Events

None.

3.15.6 Other Local Events

None.

3.15.6.1 User Authorization

This section lists the user authorization requirements for the various operations defined in this port type. After the user authentication is complete, the user MUST be authorized for the operation that is being requested. If the required authorization is not present, the user MUST be denied access to perform the operation by returning an appropriate SOAP fault as specified in section 2.2.2.1.

The following table specifies the operations and the authorization requirements. At least one of the states listed under the column "ADM States to be checked" MUST be TRUE for the user to be authorized to perform the specified operation. Any further granular authorization requirements for an operation will be captured under the section specific to the operation itself. This check is done after the steps listed in section 3.1.4.3 are complete.

Operation	ADM States to be checked
InitializeAsyncSchemaConversion	IsAdministrator
StartAsyncSchemaConversion	IsAdministrator

3.16 IIpamAsyncSchemaConversion Client Details

The client side of the IIpamAsyncSchemaConversion MUST provide the IIpamAsyncSchemaCallback server interface. The IIpamAsyncSchemaConversion server will callback into the IIpamAsyncSchemaCallback of the client for notifying the start of schema conversion, providing the status checkpoints and to notify the completion of the schema conversion along with status.

In summary, on a single session, the management client implements the IIpamAsyncSchemaCallback port type and the management server implements the IIpamAsyncSchemaConversion port type.

3.16.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the

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explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

The following state is available on a per-session basis:

ConversionFault: This contains the IpamException having the fault that the server has sent across to the client or any session establishment failure fault that the lower transport layer might have indicated. If this value is set, the schema conversion is considered unsuccessful. If this value is not set, the schema conversion is considered successful.

3.16.2 Timers

There are no additional timers beyond those specified in section 3.2.2.

3.16.3 Initialization

The IIpamAsyncSchemaConversion client on initialization will establish the session to the management server. On successfully setting up the session, the IIpamAsyncSchemaConversion client MUST initialize the IIpamAsyncSchemaCallback session on the same session so the IIpamAsyncSchemaConversion server can callback with the schema conversion status. In order to obtain the schema conversion status from the IIpamAsyncSchemaCallback port type, the ConversionFault is passed as a part of the initialization routine. The IIpamAsyncSchemaCallback port type's server sets the schema conversion status into ConversionFault to provide to the application layer.

3.16.4 Message Processing Events and Sequencing Rules

3.16.4.1 Conversion Completed

This is an event which is triggered by the IIpamAsyncSchemaCallback server on the session to indicate that the schema conversion is completed and the **ConversionFault** has the status of the completion.

3.16.5 Timer Events

None.

3.16.6 Other Local Events

None.

3.17 IIpamAsyncSchemaCallback Server Details

This port type is implemented by the management client and initialized on the same session used to perform operations against the IIpamAsyncSchemaConversion server on the management server. This provides the callback interface which the IIpamAsyncSchemaConversion server invokes to provide the schema conversion checkpoint and completion status.

3.17.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations

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adhere to this model as long as their external behavior is consistent with that described in this document.

3.17.1.1 State Machine

The following figure shows the state machine of the IIpamAsyncSchemaCallback server port type.

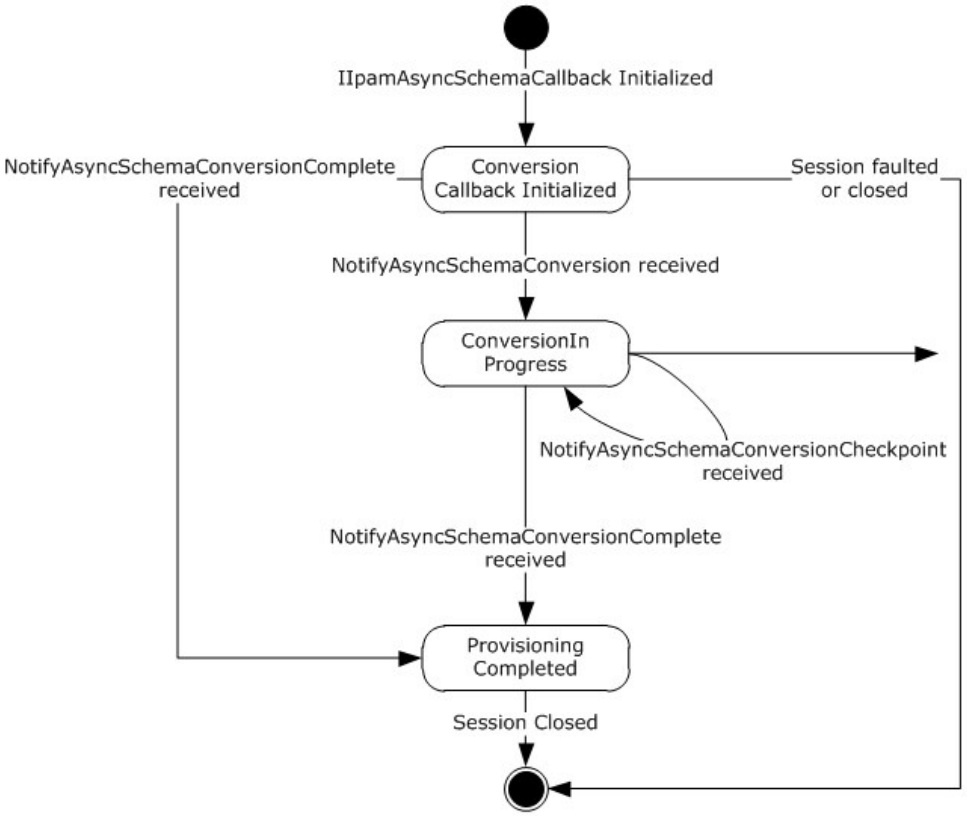

Figure 11: IIpamAsyncSchemaCallback state machine

The IIpamAsyncSchemaCallback server is session-based sharing the same session the management client has with the management server using the IIpamAsyncSchemaConversion port type. It is also stateful in nature. The **session state** variable will be used to keep track of the current state for each session and it can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

State	Description
Conversion Callback	This is the initial state of the IIpamAsyncSchemaCallback will be when it has been

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State	Description
Initialized	initialized by the IIpamAsyncSchemaConversion client. When the NotifyAsyncSchemaConversionStart is received in this state from the IIpamAsyncSchemaConversion server port on the management server-end of the session, the transition to the **Conversion In Progress** state will happen.
Conversion In Progress	This state indicates the IIpamAsyncSchemaCallback is ready to receive the schema conversion checkpoint and completion status. When the NotifyAsyncSchemaConversionCheckpoint is received in this state from the IIpamAsyncSchemaConversion server port on the management server-end of the session, the state will continue to be in **Conversion In Progress**. When the NotifyAsyncSchemaConversionComplete is received in this state from the IIpamAsyncSchemaConversion server port on the management server-end of the session, the state will transition to **Conversion Completed**.
Conversion Completed	This is the state to notify the schema conversion status interaction between the IIpamAsyncSchemaConversion server port on the management server-end and the IIpamAsyncSchemaCallback server port on the management client-end is complete and the result is available.

3.17.1.2 Other Miscellaneous States

ConversionFault: This is used to store the ConversionFault instance provided by IIpamAsyncSchemaConversion client as a part of the initialization to hold the schema conversion result. See section 3.16.1 for more details.

3.17.2 Timers

There are no additional timers beyond the ones defined by the lower layer of the protocols.

3.17.3 Initialization

The IIpamAsyncSchemaCallback interface is initialized by the IIpamAsyncSchemaConversion client on the management client-end. The IIpamAsyncSchemaConversion client passes the ProvisionFault instance during initialization which will be updated by the IIpamAsyncSchemaCallback server with the result of the schema conversion. The session state is set to **Conversion Callback Initialized**.

3.17.4 Message Processing Events and Sequencing Rules

3.17.4.1 Session Faulted or Closed

This is an event triggered by the lower transport layer when the session has received a SOAP fault or a forceful session close has occurred. If the **session state** is **Conversion Callback Initialized** or **Conversion In Progress**, the **ProvisioningFault** has to be set to an appropriate reason associated with the session closure.

3.17.4.2 NotifyAsyncSchemaConversionCheckpoint

This operation is used to provide the checkpoint when the schema conversion is in progress.

```
<wsdl:operation name="NotifyAsyncSchemaConversionCheckpoint">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversi
```


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```
onCheckpoint"
message="ipam:IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionCheckpoint_InputMessage" />
</wsdl:operation>
```

This operation has only the input message and there is no output message associated with it. This operation will be called a number of times during the schema conversion.

3.17.4.2.1 Messages

3.17.4.2.1.1 IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionCheckpoint_InputMessage

This is the request for the NotifyAsyncSchemaConversionCheckpoint operation.

```
<wsdl:message
name="IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionCheckpoint_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionCheckpoint" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversionCheckpoint
```

The body of the SOAP message MUST contain the NotifyAsyncSchemaConversionCheckpoint element.

3.17.4.2.2 Elements

3.17.4.2.2.1 NotifyAsyncSchemaConversionCheckpoint

This element specifies the input values for the NotifyAsyncSchemaConversionCheckpoint operation.

```
<xs:element name="NotifyAsyncSchemaConversionCheckpoint">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.17.4.3 NotifyAsyncSchemaConversionComplete

This operation is used to indicate the completion of schema conversion.

```
<wsdl:operation name="NotifyAsyncSchemaConversionComplete">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversi
onComplete"
message="ipam:IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionComplete_InputMessage" />
</wsdl:operation>
```


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This operation has only the request message. This signifies the completion of the schema conversion and the Conversion Completed event of the IIpamAsyncSchemaConversion client is invoked. The session state is set to **Conversion Completed**.

If NotifyAsyncSchemaConversionComplete.exception is set, the schema conversion has faulted. The ConversionFault is set to NotifyAsyncSchemaConversionComplete.exception.

If NotifyAsyncSchemaConversionComplete.exception is null, the schema conversion has completed successfully.

3.17.4.3.1 Messages

3.17.4.3.1.1 IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionComplete_InputMessage

This is the request for the NotifyAsyncSchemaConversionComplete operation.

```
<wsdl:message
name="IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionComplete_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionComplete" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversionComplete
```

The body of the SOAP message MUST contain the NotifyAsyncSchemaConversionComplete element.

3.17.4.3.2 Elements

3.17.4.3.2.1 NotifyAsyncSchemaConversionComplete

This element specifies the input values for the NotifyAsyncSchemaConversionComplete operation.

```
<xs:element name="NotifyAsyncSchemaConversionComplete">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
            <xs:element minOccurs="0" name="exception" nillable="true"
type="ipam1:IpamException" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.17.4.4 NotifyAsyncSchemaConversionStart

This operation is used to indicate the start of the schema conversion of the IPAM data store.

```
<wsdl:operation name="NotifyAsyncSchemaConversionStart">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversi
```


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```
onStart"
message="ipam:IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionStart_InputMessage" />
</wsdl:operation>
```

This operation only has the request message to provide the notification. On receiving the message, the session state is set to **Conversion In Progress**.

3.17.4.4.1 Messages

3.17.4.4.1.1 IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionStart_InputMessage

This is the request for the NotifyAsyncSchemaConversionStart operation.

```
<wsdl:message name="IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionStart_InputMessage">
  <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionStart" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversionStart
```

The body of the SOAP message MUST contain the NotifyAsyncSchemaConversionStart element.

3.17.4.4.2 Elements

3.17.4.4.2.1 NotifyAsyncSchemaConversionStart

This element specifies the input values for the NotifyAsyncSchemaConversionStart operation.

```
<xs:element name="NotifyAsyncSchemaConversionStart">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.17.5 Timer Events

None.

3.17.6 Other Local Events

3.17.6.1 User Authorization

Since the IIpamAsyncSchemaCallback server is initialized on the same session as the IIpamAsyncSchemaConversion session, no additional user authentication and authorization is performed beyond what was done for the operations in the IIpamAsyncSchemaConversion session.

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3.18 IIpamAsyncSchemaCallback Client Details

The IIpamAsyncSchemaConversion server is the endpoint, which will also be the IIpamAsyncSchemaCallback client. The same session has the IIpamAsyncSchemaConversion and the IIpamAsyncSchemaCallback implemented on either end. The management server will provide the IIpamAsyncSchemaConversion server and the IIpamAsyncSchemaCallback client implementations and the management client will provide the IIpamAsyncSchemaCallback server and the IIpamAsyncSchemaConversion client implementations. The IIpamAsyncSchemaCallback is only a request interface, i.e., there is no data obtained from the IIpamAsyncSchemaCallback server.

3.18.1 Abstract Data Model

None.

3.18.2 Timers

None.

3.18.3 Initialization

None.

3.18.4 Message Processing Events and Sequencing Rules

None other than those captured as a part of the IIpamAsyncProvision server in section 3.11.

3.18.5 Timer Events

None.

3.18.6 Other Local Events

None.

3.19 IIpamOperationWithProgress Server Details

This port type is used by the management client for tracking the progress of operations running on the management server. The management client establishes a session to the management server and calls the management server port to initialize and start the operation. On the same session, the client initializes the IIpamOperationWithProgressCallback port type server. This port type provides a callback the management server can call into to provide the status and percentage completion of the running operation. The interaction is captured in a figure later in this section.

The management client calls InitializeOperationParameters, which initiates the complete operation. It then calls StartOperationWithCallback to start the operation. At this point, the management server calls StartProgressCallback on the interface IIpamOperationWithProgressCallback indicating to the management client that the management server is starting the operation and so will send the status and task messages back. While the operation is in progress, the management server MAY send indication that some subtasks are starting by calling AddSubTask and also set the subtask status or the overall status by calling the functions SetSubTaskStatus, setOverallStatus, or SetCompletionPercentage. The operation ends when the management server calls SetOverallStatus with Success and 100% completion status.

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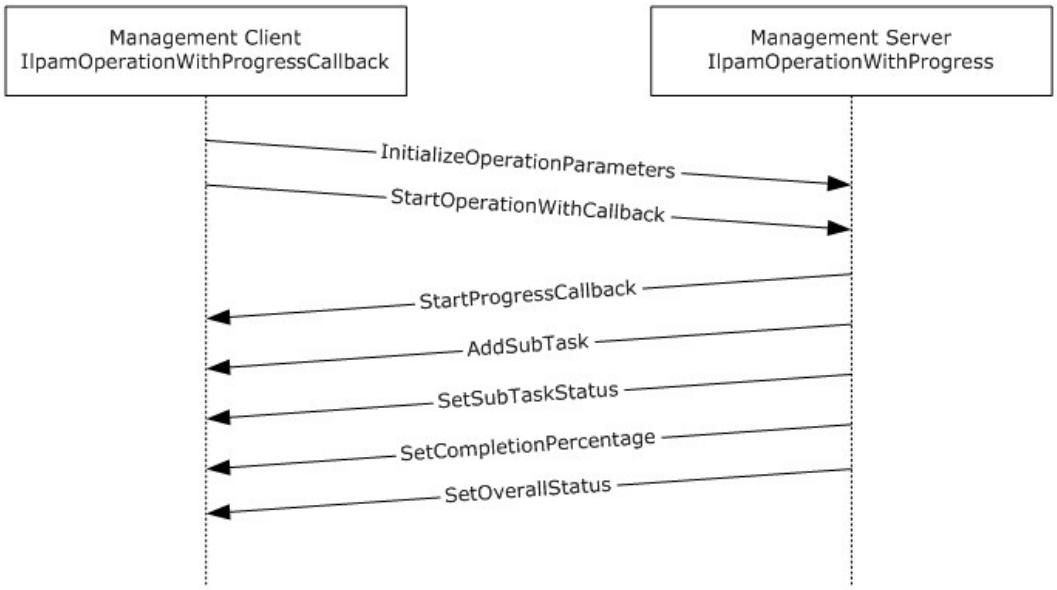

Figure 12: OperationWithProgress interaction

3.19.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.19.1.1 State Machine

The following figure shows the state machine of the IIpamOperationWithProgress server port type.

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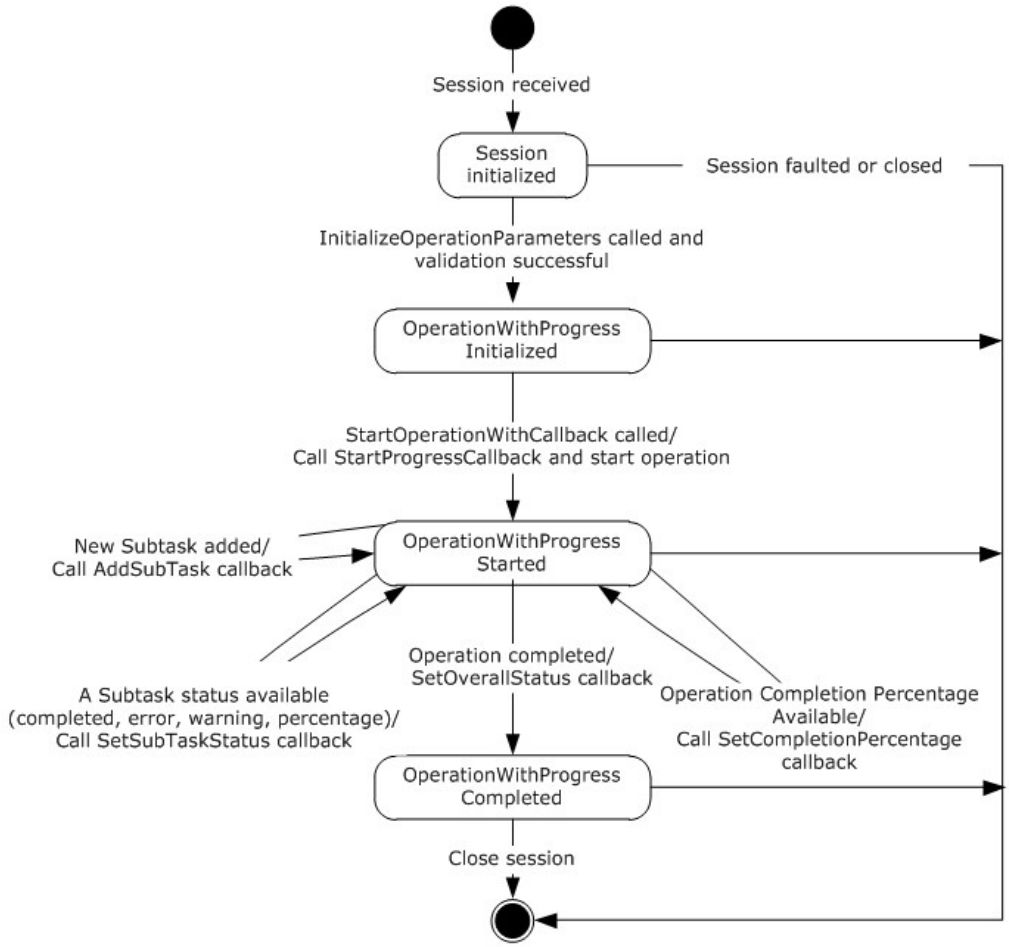

Figure 13: IIpamOperationWithProgress - server state machine

The IIpamOperationWithProgress server is session-based and stateful in nature. The session state variable keeps track of the current state for each session, and can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

State	Description
Session Initialized	This is the initial state of the session, indicated from the lower layer of the protocol. In this state, when the InitializeOperationParameters operation is invoked (by the client), the data received as a part of the InitializeOperationParameters is validated. If the data validation succeeds, the state is changed to **OperationWithProgressInitialized** If the data validation fails, the server returns an appropriate SOAP fault and closes the session.
OperationWithProgress Initialized	This is the state when the IpamOperationWithProgress is initialized and ready to start the specified operation.

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State	Description
	When in this state, the StartOperationWithCallback operation is invoked (by the client), and the server invokes the StartProgressCallback and triggers the operation. The state is changed to OperationWithProgress Started.
OperationWithProgress Started	This state denotes that the operation has been initialized successfully and is currently in progress. An operation MAY be divided into subtasks, which may be added to the overall operation at any time and be tracked separately. If the operation requires a new subtask to be added, the AddSubTask callback operation is invoked. The state remains OperationWithProgress Started. As the subtasks progress, the percentage progress will change, and the subtask may get completed with success, with error, or with warning. In each of these cases, the SetSubTaskStatus operation is invoked. The state remains OperationWithProgress Started. If the server operation is tracking the overall operation percentage completion and if the percentage completion of the operation changes, the SetCompletionPercentage operation is invoked. The state remains OperationWithProgress Started. If all the subtasks and the operation as a whole is completed with success, with error, or with warnings, the SetOverallStatus callback operation is invoked. The state is changed to OperationWithProgress Completed.
OperationWithProgress Completed	This state indicates that there is no further processing required in the session and proceeds to close the session itself.

3.19.1.2 Other Miscellaneous States

IpamOperationWithProgressParameter: This is of type IpamOperationWithProgressParameters and can correspond to any of the different operations. The IpamOperationWithProgressParameters.AdminOperationId specifies the operation to be performed. This is initialized with the parameters received as a part of the InitializeOperationParameters method.

3.19.2 Timers

Other than those that are described in section 3.1.2, there are no additional timers.

3.19.3 Initialization

None.

3.19.4 Message Processing Events and Sequencing Rules

3.19.4.1 New Session Indication

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when a new session is available from the client. The session state is initialized to Session Initialized.

3.19.4.2 Session Closed or Faulted

This event will be indicated by the lower transport layer of the protocol ([MS-NMFTB]) when an existing session is either closed by the client or an irrecoverable error has occurred. This event will result in termination of the state machine as the session itself is no longer valid.

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3.19.4.3 InitializeOperationParameters

This is an initiating operation. This operation is used to specify the operation to be executed using the session.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeOperationParameters">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/InitializeOperationPara
meters" message="ipam:IIpamOperationWithProgress_InitializeOperationParameters_InputMessage"
/>
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/InitializeOperationPara
metersResponse"
message="ipam:IIpamOperationWithProgress_InitializeOperationParameters_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamOperationWithProgress_InitializeOperationParameters_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamOperationWithProgress_InitializeOperationParameters_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. The session state is set to OperationWithProgressInitialized.
2. The InitializeOperationParameters.IpamOperationWithProgressParameters element MUST be valid and MUST NOT be NULL.
3. The IpamOperationWithProgressParameters.OperationId MUST be valid as per the definition in section 2.2.4.236. If the data is valid, assign InitializeOperationParameters.IpamOperationWithProgressParameters to IpamOperationWithProgressParameter.
4. If the validation of the IpamOperationWithProgressParameters.OperationId done fails, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

3.19.4.3.1 Messages

3.19.4.3.1.1 IIpamOperationWithProgress_InitializeOperationParameters_InputMessage

This is the request for the InitializeOperationParameters operation.

```
<wsdl:message name="IIpamOperationWithProgress_InitializeOperationParameters_InputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeOperationParameters" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/InitializeOperationParameters
```

The body of the SOAP message MUST contain the InitializeOperationParameters element.

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3.19.4.3.1.2 IIpamOperationWithProgress_InitializeOperationParameters_OutputMessage

This is the response for the InitializationOperationParameters operation.

```
<wsdl:message name="IIpamOperationWithProgress_InitializeOperationParameters_OutputMessage">
  <wsdl:part name="parameters" element="ipam:InitializeOperationParametersResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/InitializeOperationParametersRespons
e
```

The body of the SOAP message MUST contain the InitializeOperationParametersResponse element.

3.19.4.3.2 Elements

3.19.4.3.2.1 InitializeOperationParameters

This element specifies the request element for the InitializeOperationParameter operation.

```
<xs:element name="InitializeOperationParameters">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="paramters" nillable="true"
type="ipam:IpamOperationWithProgressParameters" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.19.4.3.2.2 InitializeOperationParametersResponse

This element specifies the response element for the InitializeOperationParameter operation.

```
<xs:element name="InitializeOperationParametersResponse">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.19.4.4 StartOperationWithCallback

This operation is used to trigger the operation specified. The operation triggered is determined by the IpamOperationId ADM field.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartOperationWithCallback">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartOperationWithCallb
ack" message="ipam:IIpamOperationWithProgress_StartOperationWithCallback_InputMessage" />
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartOperationWithCallb
ackResponse"
message="ipam:IIpamOperationWithProgress_StartOperationWithCallback_OutputMessage" />
</wsdl:operation>
```

Upon receiving the IIpamOperationWithProgress_StartOperationWithCallback_InputMessage request message, the server performs the following processing steps. Upon successful completion of these steps, the server MUST respond with the IIpamOperationWithProgress_StartOperationWithCallback_OutputMessage message. In the event of a failure, an appropriate SOAP fault MUST be sent to the client as specified in section 2.2.2.1.

1. Invoke the StartProgressCallback operation on the IIpamOperationWithProgressCallback interface.

2. The OperationWithProgress processing logic as described in the section 3.19.4.4.1 should be triggered.

3.19.4.4.1 OperationWithProgress Processing Logic

This section captures the steps to be performed for the processing of different operations passed as parameters to IpamOperationWithProgress. The following table captures the operation ID, related sub-section explaining the processing steps and the passed operation parameters.

Operation Id	Operation steps	Operation Parameters
EditDhcpServer	UpdateDhcpServerDelegate	UpdateDhcpServerParameters
ApplyServerConfigurationTemplate	ApplyDhcpServerConfigurationDelegate	ApplyDhcpServerConfigurationParameters
CreateDhcpScope	CreateDhcpScopeDelegate	CreateDhcpScopeParameters
EditDhcpScope	UpdateDhcpScopeDelegate	UpdateDhcpScopeParameters
DeleteDhcpScope	DeleteDhcpScopeDelegate	DeleteDhcpScopeParameters
ApplyScopeConfigurationTemplate	ApplyDhcpScopeConfigurationDelegate	ApplyDhcpScopeConfigurationParameters
AddScopesToSuperscope	AddScopesToSuperscopeDelegate	AddScopesToSuperscopeParameters
RemoveScopesfromSuperscope	RemoveScopesFromSuperscopeDelegate	RemoveScopesFromSuperscopeParameters
RenameSuperscope	RenameSuperscopeDelegate	RenameSuperscopeParameters
DeleteSuperscopes	DeleteSuperscopesDelegate	DeleteSuperscopesParameters
SetSuperscopeActivationStatus	SetSuperscopeActivationStatusDelegate	SetSuperscopeActivationStatusParameters
CreateDhcpServerPolicy	CreateServerPolicyDelegate	CreateDhcpServerPolicyParameters
CreateDhcpScopePolicy	CreateScopePolicyDelegate	CreateDhcpScopePolicyParameters
UpdatePolicy	UpdatePolicyDelegate	UpdatePolicyParameters

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Operation Id	Operation steps	Operation Parameters
DeletePolicy	DeletePolicyDelegate	DeletePolicyParameters
UpdatePolicyProperty	UpdatePolicyPropertiesDelegate	UpdatePolicyPropertiesParameters
MovePolicyProcessingOreder	MovePolicyProcessingOrderDelegate	MovePolicyProcessingOrderParameters
CreateDhcpReservation	CreateDhcpReservationDelegate	CreateDhcpReservationParameters
DeleteDhcpReservation	DeleteDhcpReservationDelegate	DeleteDhcpReservationParameters
DeleteDhcpReservationCollection	DeleteDhcpReservationCollectionDelegate	DeleteDhcpReservationCollectionParameters
SetDhcpreservation	SetDhcpReservationDelegate	SetDhcpReservationParameters
SetDhcpReservationCollection	SetDhcpReservationCollectionDelegate	SetDhcpReservationCollectionParameters
CreateDhcpFailover	CreateDhcpFailoverDelegate	DhcpFailoverWithScopesParameters
EditDhcpFailover	UpdateDhcpFailoverDelegate	DhcpFailoverParameters
AddDhcpFailoverScopes	DhcpFailoverAddScopesDelegate	DhcpFailoverWithScopesParameters
RemoveDhcpFailoverScopes	DhcpFailoverRemoveScopesDelegate	DhcpFailoverRemoveScopesParameters
DeleteDhcpFailover	DeleteDhcpFailoverDelegate	DhcpFailoverDeleteParameters
ResetConfigSyncStatus	ResetConfigSyncStatusDelegate	ResetConfigSyncStatusParameters
ReplicateScope	ReplicateFailoverScopeDelegate	ReplicateScopeParameters
ReplicateRelation	DoFailoverReplicationDelegate	ReplicateRelationParameters
ReplicateServer	ReplicateFailoverServerDelegate	ReplicateServerParameters
CreateDhcpFilters	CreateDhcpFiltersDelegate	CreateDhcpFiltersParameters
UpdateDhcpFilter	UpdateDhcpFilterDelegate	UpdateDhcpFilterParameters
UpdateDhcpFilters	UpdateDhcpFiltersDelegate	UpdateDhcpFiltersParameters
DeleteDhcpFilters	DeleteDhcpFiltersDelegate	DeleteDhcpFiltersParameters
CreateIpamIPAddress	SaveIpamIPAddressDelegate	CreateIpamIPAddressParameters
UpdateIpamIPAddress	UpdateIpamIPAddressDelegate	UpdateIpamIPAddressParameters

Different operations are called based on the value of OperationId that's passed as a parameter. The following sections describe the processing rules involved in the different operations. The IpamOperationWithProgressParameter will contain the input parameters and on completion the OverallProgressStatus will have the overall status of the operation.

When the operation has been completed successfully, the **OverallProgressStatus** is updated with the value **CompletedWithSuccess** and the **SetOverallStatus** operation is called.

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When the operation processing results in a fault getting generated, an IPamException having the details about the fault is raised and the **SetOverallStatus** operation MUST be called with the value **CompletedWithFailure**.

3.19.4.4.1.1 UpdateDhcpServerDelegate

This is the processing done when the **IpamOperationWithProgressParameter**.**OperationId** is AdminOperationId.EditDhcpServer. The **IpamOperationWithProgressParameter** instance in this case MUST be of type UpdateDhcpServerParameters.

This operation is used to modify the server-level properties of a DHCP server instance. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If **IpamOperationWithProgressParameter** is NULL or not of type **UpdateDhcpServerParameters**, generate an appropriate SOAP fault as specified in section 2.2.2.1. Put **IpamOperationWithProgressParameter** in a local variable as **UpdateDhcpServerParameters**.

2. Validate that **UpdateDhcpServerParameters**.**Server** is not NULL. If it is NULL, an appropriate SOAP fault as specified in section 2.2.2.1 MUST be generated.

3. The **UpdateDhcpServerParameters**.**Server** MUST be validated as per the processing rules listed under ValidateDhcpServer. If the validation does not succeed, an appropriate SOAP fault as specified in section 2.2.2.1 MUST be generated.

4. If **UpdateDhcpServerParameters**.**Server** is a DhcpServerV4 instance, addressfamily is initialized to Internet. Otherwise the addressfamily is initialized to InternetV6.

5. If **UpdateDhcpServerParameters**.**Server**.**ModifiedProperties** is empty, there are no properties to update. No further processing is required.

6. Compute **dhcpServerExists** to be a flag that indicates whether the DhcpServer information is present in the **ADM_DHCPServersTable** by performing a lookup in the table based on **UpdateDhcpServerParameters**.**Server.RecordId**. If the row is present, **dhcpServerExists** is set to TRUE. Otherwise **dhcpServerExists** is set to FALSE.

7. If **UpdateDhcpServerParameters**.**Server.OperationTracker** contains DhcpServerOperations.ServerDnsUpdate, perform the following updates to the ADM_DhcpServersTable:

    - If **dhcpServerExists**, update the row in **ADM_DhcpServersTable** for the following fields. If **dhcpServerExists** is FALSE, insert a new row in **ADM_DhcpServersTable** with the following fields:

        1. Set ServerRoleRecordId to **UpdateDhcpServerParameters**.**Server.ServerRoleInfo.RecordId**

        2. Set the following values from **UpdateDhcpServerParameters.Server** to the row. Based on whether the addressfamily is Internet or InternetV6, the appropriate fields are selected for database update.

            1. DnsUpdateType

            2. DiscardDnsRecordOnLeaseDeletionStatus

            3. DnsUpdateForNonRequestingClients

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4. DnsNameProtectionStatus

3. Assign the record identifier of the newly inserted row to dhcpServer.RecordId for use with subsequent processing.

8. If OperationTracker contains DhcpServerOperations.ServerAuditLogSettingUpdate, the audit log setting MUST be updated to the table.

   - Update the AuditLoggingStatus of the **UpdateDhcpServerParameters.Server** into the table.

9. If OperationTracker contains DhcpServerOperations.ServerDnsRegistrationCredentialUpdate, the DNS credential user name has to be updated to the table. This consists of the values for fields **DnsRegistrationCredentialDomainName** and **DnsRegistrationCredentialUserName**.

10. If OperationTracker contains DhcpServerOperations.PolicyActivation, the policy activation status has to be updated to the table. This consists of the value for the field PolicyActivationStatus. Initialize the field with **UpdateDhcpServerParameters**.**Server.PolicyActivationState**.

11. If OperationTracker contains DhcpServerOperations.FilterListUpdate, the filter state has to be updated to the table. This consists of the values for the fields AllowFilterState and DenyFilterState. Initialize the fields with **UpdateDhcpServerParameters**.**Server.AllowFilterEnabled** and **UpdateDhcpServerParameters**.**Server.DenyFilterEnabled**.

12. For each entry in the UsersClasses.OperationTracker, the key specifies the operation to be performed and value specifies the DhcpUserClass on which the operation is to be performed.

    1. If Key is CollectionOperations.Add, then add the DhcpUserClass to the **DhcpServer.UserClasses** row in **ADM_DHCPServersTable**.

    2. If Key is CollectionOperations.Set, then update the DhcpUserClass to the value already present in DhcpServer.UserClasses row in **ADM_DHCPServersTable**.

    3. If the Key is CollectionOperations.Delete, then delete the DhcpUserClass specified from the DhcpServer.UserClasses row.

13. For each entry in the VendorClasses.OperationTracker, the key specifies the operation to be performed and value specifies the DhcpVendorClass on which the operation is to be performed.

    1. If Key is CollectionOperations.Add, then add the DhcpVendorClass to the DhcpServer.VendorClasses row in **ADM_DHCPServersTable**.

    2. If Key is CollectionOperations.Set, then update the DhcpVendorClass to the value already present in the DhcpServer.VendorClasses row in **ADM_DHCPServersTable**.

    3. If the Key is CollectionOperations.Delete, then delete the DhcpVendorClass specified from the DhcpServer.VendorClasses row.

14. For each entry in the OptionDefinitions.OperationTracker, the key specifies the operation to be performed and value specifies the DhcpOptionDefinition on which the operation is to be performed.

    1. If Key is CollectionOperations.Add, then add the DhcpOptionDefinition to the DhcpServer.OptionDefinitions row in **ADM_DHCPServersTable**.

    2. If Key is CollectionOperations.Update, then update the DhcpOptionDefinition to the value already present in the DhcpServer.OptionDefinitions row in **ADM_DHCPServersTable**.

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3. If the Key is CollectionOperations.Delete, then delete the DhcpOptionDefinition specified from the DhcpServer.OptionDefinitions row.

15. For each key value pair in **UpdateDhcpServerParameters.Server.Options.OperationTracker**, perform the following operations:

    1. If the Key is CollectionOperations.Add or CollectionOperations.Set, add or update the DhcpOption in Value portion of the key value pair into ADM_DhcpOptionsTable as follows:

        1. Delete the row from **ADM_DhcpOptionsTable** that meets the following criteria (if it already exists):

            1. ServerRecordId is dhcpServer.RecordId.

            2. ScopeRecordId is NULL.

            3. OptionDefinitionRecordId is DhcpOption.OptionDefinition.RecordID.

            4. UserClassRecordId is DhcpOption.UserClass.RecordId.

        2. Insert a new row into ADM_DhcpOptionstable with the following values:

            1. ServerRecordId is dhcpServer.RecordId.

            2. ScopeRecordId is NULL.

            3. OptionDefinitionRecordId is set to DhcpOption.OptionDefinition.RecordId.

            4. UserClassRecordId is set to the value of DhcpOption.UserClass.RecordId.

            5. Values is assigned the value of DhcpOption.Values.

            6. OptionOwnerType is assigned the value of DhcpOption.OptionOwnerType.

    2. If the Key is CollectionOperations.Delete, delete the DhcpOption form **ADM_DhcpOptionsTable** by performing a lookup based on the following values:

        1. ServerRecordId is dhcpServer.RecordId.

        2. ScopeRecordId is NULL.

        3. OptionDefinitionRecordId is DhcpOption.OptionDefinition.RecordID.

        4. UserClassRecordId is DhcpOption.UserClass.RecordId.

16. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.2 ApplyDhcpServerConfigurationDelegate

This is the processing done when the **IpamOperationWithProgressParameter.OperationId** is AdminOperationId.ApplyServerConfigurationTemplate. The **IpamOperationWithProgressParameter** instance in that case MUST be of type ApplyDhcpServerConfigurationParameters.

This operation is used in multi-edits of DHCP servers to update multiple DHCP servers with specific properties. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

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1. If **IpamOperationWithProgressParameter** is NULL or not of type **ApplyDhcpServerConfigurationParameters**, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Put **IpamOperationWithProgressParameter** in a local variable, as A**pplyDhcpServerConfigurationParameters**.

2. If **ApplyDhcpServerConfigurationParameters.ServerIds** is NULL or **ApplyDhcpServerConfigurationParameters.ServerIds.count** = 0 or **ApplyDhcpServerConfigurationParameters.ServerTemplate** is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each server specified by **ApplyDhcpServerConfigurationParameters.ServerIds**, perform the following steps:

4. Retrieve the server object corresponding to the server ID by calling the procedure GetServerInfoFromTable of ADM_ServersTable and passing the serverId as a parameter in Param_id. Assign the server object to a local variable Server.

5. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionApplyType** != none, update the server options in the server object through these steps:

    1. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionApplyType** = AddorOverwrite, append or update the options for the Server with the list of DHCP options specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.Options**.

    2. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionApplyType** = Delete, delete the options specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.Options** from the Server.

    3. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionApplyType** = Append, append the options specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.Options** to the options in the Server.

    4. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionApplyTyp**e = FindAndreplace, find the options specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.Options** in the server configuration, and if they exist, replace with the options specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.FindAndReplaceOptions**.

6. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.UserClassApplyType** != none or FindAndReplace, update the user class in the server object through these steps:

    1. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.UserClassType** = AddorOverwrite, append or update the user class for the Server with the user class specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.UserClasses**.

    2. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionApplyType** = Delete, delete the user classes specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.UserClasses** from the Server.

    3. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionApplyType** = Append, append the user classes specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.UserClasses** to the Server.

7. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.VendorClassApplyType** != none or FindAndReplace, update the vendor class in the server object through these steps:

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1. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.VendorClassType** = AddorOverwrite, append or update the vendor class for the Server with the vendor class specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.VendorClasses**.

2. If **ApplyDhcpServerConfigurationParameters.ServerTemplate. VendorClassType** = Delete, delete the vendor classes specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.VendorClasses** from the Server.

3. If **ApplyDhcpServerConfigurationParameters.ServerTemplate. VendorClassType** = Append, append the vendor classes specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.VendorClasses** to the Server.

8. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionDefinitionApplyType** != none or FindAndReplace, update the option definitions in the server object through these steps:

    1. If **ApplyDhcpServerConfigurationParameters.ServerTemplate. OptionDefinitionApplyType** = AddorOverwrite, append or update the option definitions for the server with the option definitions specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionDefinitions**.

    2. If **ApplyDhcpServerConfigurationParameters.ServerTemplate. OptionDefinitionApplyType** = Delete, delete the option definitions specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionDefinitions** from the Server.

    3. If **ApplyDhcpServerConfigurationParameters.ServerTemplate. OptionDefinitionApplyType** = Append, append the option definitions specified in **ApplyDhcpServerConfigurationParameters.ServerTemplate.OptionDefinitions** to the Server.

9. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsNameProtectionStatus** != none, assign Server.DnsNameProtectionStatus = **ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsNameProtectionStatus**.

10. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsUpdateType** != none, assign Server.DnsUpdateType = A**pplyDhcpServerConfigurationParameters.ServerTemplate.DnsUpdateType**.

11. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.DiscardDnsRecordOnLeaseDeletionStatus** != none, assign Server.DiscardDnsRecordOnLeaseDeletionStatus = **ApplyDhcpServerConfigurationParameters.ServerTemplate.DiscardDnsRecordOnLeaseDeletionStatus**.

12. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsRegistrationCredentialUserName** != null or empty string, assign Server.DnsRegistrationCredentialUserName = ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsRegistrationCredentialUserName.

13. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsRegistrationCredentialDomainName** != null or empty string, assign Server.DnsRegistrationCredentialDomainName =

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ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsRegistrationCredentialDomainName.

14. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsRegistrationCredentialPassword** != null or empty string, assign Server.DnsRegistrationCredentialPassword = ApplyDhcpServerConfigurationParameters.ServerTemplate.DnsRegistrationCredentialPassword.

15. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.AuditLoggingStatus** != none, assign Server.AuditLoggingStatus = **ApplyDhcpServerConfigurationParameters.ServerTemplate.AuditLoggingStatus**.

16. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.Type** == DhcpServerV6TemplateConfiguration, then perform the following steps :

    1. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.StatelessClientInventoryStatus !**= none, assign **Server.StatelessClientInventoryStatus = ApplyDhcpServerConfigurationParameters.ServerTemplate.StatelessClientInventoryStatus**.

    2. If **ApplyDhcpServerConfigurationParameters.ServerTemplate.PurgeInterval !**= 0, assign **Server.PurgeInterval = ApplyDhcpServerConfigurationParameters.ServerTemplate.PurgeInterval**.

17. If the procedures returns any error, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

18. Call the SetOverallStatus with Success and 100% completion.

3.19.4.4.1.3 CreateDhcpScopeDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.CreateDhcpScope. The IpamOperationWithProgressParameter instance in this case MUST be of type CreateDhcpScopeParameters.

This operation is used to create a new DHCP scope. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus should be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type CreateDhcpScopeParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as CreateDhcpScopeParameters.

2. If CreateDhcpScopeParameters.Scope is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Store CreateDhcpScopeParameters.Scope as scopeToStore variable.

4. If scopeToStore is an instance of DhcpScopeV4, the addressfamily is set to Internet. Otherwise, the addressfamily is set to InternetV6.

5. If scopeToStore.ParentDhcpServerRecordId has been specified, fetch the DhcpServer instance by calling the procedure GetDHCPServerFromTable and passing scopeToStore.ParentDhcpServerRecordId as Param_Id parameter and addressfamily as Param_addressfamily.

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6. If Result_server is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Otherwise, assign Result_server to the dhcpServer variable.

7. Check if the scope already exists. Store the result in scopeExists flag. This is done based on following conditions:

    1. If scopeToStore.RecordId is specified, look up the row in ADM_DHCPScopesTable for the row with RecordId equal to scopeToStore.RecordId.

    2. If scopeToStore.RecordId is not specified but ScopeId is specified, look up the row in ADM_DHCPScopesTable wherein ScopeDetails.ScopeId is equal to scopeToStore.ScopeId.

8. If scopeExists flag is TRUE or scopeToStore.OperationTracker does not contain ScopeOperations.ScopeCoreCreate, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be generated.

9. Validate the scopeToStore data by invoking ValidateDhcpScope with scopeToStore as the Param_scope parameter. If the validation fails, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be generated.

10. Insert a new row in ADM_DHCPScopesTable with RecordId being scopeToStore.RecordId and with the following values:

    1. ScopeId

    2. ScopeName

    3. Status

    4. SubnetDelay

    5. LeaseDurationType

    6. LeaseDuration

    7. ServingClientsType

11. Create a new instance of IPRange based on addressfamily and assign it to scopeRange.

12. Update the scopeRange with the following values and update the same to the ADM_IPRangeTable.

    1. StartIPAddress

    2. EndIPAddress

    3. PrefixLength

    4. SubnetId

    5. ScopeId

    6. Description

13. Set or update scopeRange.CustomFieldValues to include built-in custom fields--BuiltinCustomField.ManagedBy and BuiltinCustomField.ManagedByEntity--and assign them to MSDHCP and the dhcpServer.ServerName, respectively.

14. Add or update the scopeRange that was created/modified into ASM_IPRangeTable.

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15. If OperationTracker contains an entry with ScopeOperations.ScopeDnsUpdate, the DNS settings for the scopes have to be updated as follows.
    1. For DhcpScopeV4, the following properties are updated:
        1. DnsNameProtectionStatus
        2. DiscardDnsRecordOnLeaseDeletionStatus
        3. DhcpDnsUpdateType
        4. DnsNotRequestingClientsUpdateType
    2. For DhcpScopeV6, the following properties are updated:
        1. DnsNameProtectionStatus
        2. DiscardDnsRecordOnLeaseDeletionStatus
        3. DhcpDnsUpdateType
16. For each key value pair in scopeToStore.Options.OperationTracker, perform the following operations:
    1. If the Key is CollectionOperations.Add or CollectionOperations.Set,
        - Add or update the DhcpOption in the value portion of the key value pair into ADM_DhcpOptionsTable as follows:
            1. Delete the row from the ADM_DhcpOptionsTable that meets the following criteria (if it already exists):
                1. ServerRecordId is dhcpServer.RecordId
                2. ScopeRecordId is scopeToStore.RecordId
                3. OptionDefinitionRecordId is DhcpOption.OptionDefinition.RecordID
                4. UserClassRecordId is DhcpOption.UserClass.RecordId
            2. Insert a new row into the ADM_DhcpOptionstable with the following values:
                1. ServerRecordId is dhcpServer.RecordId
                2. ScopeRecordId is scopeToStore.RecordId
                3. OptionDefinitionRecordId is set to DhcpOption.OptionDefinition.RecordId
                4. UserClassRecordId is set to the value of DhcpOption.UserClass.RecordId
                5. Values is assigned the value of DhcpOption.Values
                6. OptionOwnerType is assigned the value of DhcpOption.OptionOwnerType.
    2. If the Key is CollectionOperations.Delete
        - Delete the DhcpOption from ADM_DhcpOptionsTable by looking it up based on the following values.

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1. ServerRecordId is dhcpServer.RecordId
2. ScopeRecordId is scopeToStore.RecordId
3. OptionDefinitionRecordId is DhcpOption.OptionDefinition.RecordID
4. UserClassRecordId is DhcpOption.UserClass.RecordId

17. For each Key Value Pair in scopeToStore.ExclusionRanges, perform the following operations:
    1. If Key is CollectionOperations.Add, add the DhcpExclusionRange specified in Value to scopeToStore.ScopeDetails.ExclusionRanges.
    2. If Key is CollectionOperations.Delete, delete the DhcpExclusionRange specified in Value to scopeToStore.ScopeDetails.ExclusionRanges.
18. If the scopeToStore.ExclusionRanges is modified, the scopeRange's IsOverlapping and address mapping will need to be updated as well. For this, perform the following steps:
19. The IsOverlapping field and the IP address mapping to the range will need to be reset. This is done by invoking the ResetCurrentIPRangeMapping procedure of the ADM_IPRangeTable with the Param_range parameter set to scopeRange.
20. The IsOverlapping field has to be recalculated for the address ranges based on the updated address range. Also, the addresses in ADM_IPAddressTable have to be recalculated based on the new range. This is done by performing the steps listed under SetIPRangeMapping--by passing the scopeRange as the currentRange parameter.
21. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.4 UpdateDhcpScopeDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.EditDhcpScope. The IpamOperationWithProgressParameter instance in that case MUST be of type UpdateDhcpScopeParameters.

This operation is used to update an existing DHCP scope. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus should be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type UpdateDhcpScopeParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as UpdateDhcpScopeParameters.
2. If UpdateDhcpScopeParameters.scope is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).
3. Store UpdateDhcpScopeParameters.scope as a scopeToStore variable.
4. If scopeToStore is an instance of DhcpScopeV4, the addressfamily is set to Internet. Otherwise the addressfamily is set to InternetV6.
5. If scopeToStore.ParentDhcpServerRecordId has been specified, fetch the DhcpServer instance by calling the procedure GetDHCPServerFromTable and passing scopeToStore.ParentDhcpServerRecordId as Param_Id parameter and addressfamily as Param_addressfamily.

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6. If Result_server is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Otherwise assign Result_server to dhcpServer variable.

7. Check whether the scope already exists. Store the result in scopeExists flag. This is done based on the following conditions:

    1. If scopeToStore.RecordId is specified, look up the row in ADM_DHCPScopesTable for the row in which RecordId is equal to scopeToStore.RecordId.

    2. If scopeToStore.RecordId is not specified but ScopeId is specified, look up the row in ADM_DHCPScopesTable wherein ScopeDetails.ScopeId is equal to scopeToStore.ScopeId.

8. If either scopeExists is FALSE or scopeToStore.OperationTracker does not contain ScopeOperations.ScopeCoreUpdate, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be generated.

9. Validate the scopeToStore data by invoking ValidateDhcpScope with scopeToStore as Param_scope parameter. If the validation fails, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be generated.

10. Update the existing scope row in ADM_DHCPScopesTable with RecordId being scopeToStore.RecordId for the following values:

    1. ScopeId

    2. ScopeName

    3. Status

    4. SubnetDelay

    5. LeaseDurationType

    6. LeaseDuration

    7. ServingClientsType

11. Get the address range corresponding to the scope and store it in scopeRange.

    1. Lookup the ADM_IPRangeTable for the row whose ScopeRecordId is equal to scopeToStore.RecordId.

    2. Call the procedure GetIPRangeFromTable, passing the RecordId of the row found as Param_id and addressfamily as Param_addressfamily. Store the result into scopeRange.

12. Update the scopeRange with the following values and update the same to the ADM_IPRangeTable.

    1. StartIPAddress

    2. EndIPAddress

    3. PrefixLength

    4. SubnetId

    5. ScopeId

    6. Description

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13. Set or update scopeRange.CustomFieldValues to include built-in custom fields--BuiltinCustomField.ManagedBy and BuiltinCustomField.ManagedByEntity--and assign them to MSDHCP and the dhcpServer.ServerName, respectively.

14. Add or update the scopeRange that was created/modified into the ASM_IPRangeTable.

15. If OperationTracker contains an entry with ScopeOperations.ScopeDnsUpdate, the DNS settings for the scopes have to be updated as follows:

    1. For DhcpScopeV4, the following properties are updated:

        1. DnsNameProtectionStatus

        2. DiscardDnsRecordOnLeaseDeletionStatus

        3. DhcpDnsUpdateType

        4. DnsNotRequestingClientsUpdateType

    2. For DhcpScopeV6, the following properties are updated:

        1. DnsNameProtectionStatus

        2. DiscardDnsRecordOnLeaseDeletionStatus

        3. DhcpDnsUpdateType

16. For each key value pair in scopeToStore.Options.OperationTracker, perform the following operations:

    1. If the Key is CollectionOperations.Add or CollectionOperations.Set, add or update the DhcpOption in Value portion of key value pair into ADM_DhcpOptionsTable as follows:

        1. Delete the row from the ADM_DhcpOptionsTable that meets the following criteria (if it already exists):

            1. ServerRecordId is dhcpServer.RecordId

            2. ScopeRecordId is scopeToStore.RecordId

            3. OptionDefinitionRecordId is DhcpOption.OptionDefinition.RecordID

            4. UserClassRecordId is DhcpOption.UserClass.RecordId

        2. Insert a new row into ADM_DhcpOptionstable with the following values:

            1. ServerRecordId is dhcpServer.RecordId

            2. ScopeRecordId is nullscopeToStore.RecordId

            3. OptionDefinitionRecordId is set to DhcpOption.OptionDefinition.RecordId

            4. UserClassRecordId is set to the value of DhcpOption.UserClass.RecordId

            5. Values is assigned the value of DhcpOption.Values

            6. OptionOwnerType is assigned the value of DhcpOption.OptionOwnerType.

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2. If the Key is CollectionOperations.Delete, delete the DhcpOption form ADM_DhcpOptionsTable by looking up based on the following values:

    1. ServerRecordId is dhcpServer.RecordId.

    2. ScopeRecordId is scopeToStore.RecordId.

    3. OptionDefinitionRecordId is DhcpOption.OptionDefinition.RecordID.

    4. UserClassRecordId is DhcpOption.UserClass.RecordId.

17. For each key value pair in scopeToStore.ExclusionRanges, perform the following operations:

    1. If Key is CollectionOperations.Add, add the DhcpExclusionRange specified in Value to scopeToStore.ScopeDetails.ExclusionRanges.

    2. If Key is CollectionOperations.Delete, delete the DhcpExclusionRange specified in Value to scopeToStore.ScopeDetails.ExclusionRanges.

18. If the scopeToStore.ExclusionRanges is modified, the scopeRange's IsOverlapping and address mapping will need to be updated as well. For this, perform the following steps:

19. The IsOverlapping field and the IP address mapping to the range will need to be reset. This is done by invoking the ResetCurrentIPRangeMapping procedure of the ADM_IPRangeTable with the Param_range parameter set to scopeRange.

20. The IsOverlapping field has to be recalculated for the address ranges based on the updated address range. Also, the addresses in ADM_IPAddressTable have to be recalculated based on the new range. This is done by performing the steps listed under SetIPRangeMapping by passing the scopeRange as the currentRange parameter.

21. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.5 DeleteDhcpScopeDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.DeleteDhcpScope. The IpamOperationWithProgressParameter instance in that case MUST be of type DeleteDhcpScopeParameters.

This operation is used to delete an existing DHCP scope. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus should be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type DeleteDhcpScopeParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as DeleteDhcpScopeParameters.

2. Validate that the DeleteDhcpScopeParameters.Scope.addressFamily is either Internet or InternetV6. If not, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Look up the ADM_IPRangeTable for the row in which the ScopeRecordId is DeleteDhcpScopeParameters.Scope.scopeRecordId using the DeleteDhcpScopeParameters.Scope.addressFamily to select the simple table within the ADM_IPRangeTable compound table.

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4. Using the RecordId of the row, delete the IPRange by following the steps as described in DeleteRange by passing DeleteRange.rangeRecordId with the RecordId and passing DeleteDhcpScopeParameters.Scope.addressFamily as DeleteRange.addressFamily.

5. Delete the row in ADM_DHCPScopesTable that has a RecordId value the same as DeleteDhcpScopeParameters.Scope.scopeRecordId.

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.6 ApplyDhcpScopeConfigurationDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.ApplyScopeConfigurationTemplate. The IpamOperationWithProgressParameter instance in this case MUST be of type ApplyDhcpScopeConfigurationParameters.

This operation is used in the multi-edit of DHCP scopes to update multiple DHCP scopes with specific properties. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus should be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type ApplyDhcpScopeConfigurationParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as ApplyDhcpScopeConfigurationParameters.

2. If ApplyDhcpServerConfigurationParameters.ScopeIds is null or ApplyDhcpServerConfigurationParameters.ScopeIds.count = 0 or ApplyDhcpServerConfigurationParameters.ScopeTemplate is null, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each scope specified by ApplyDhcpServerConfigurationParameters.ScopeIds, retrieve the corresponding scope object and create a collection of scopes called collectionScopes.

4. To retrieve the scope object corresponding to the scope ID, in the step above, call the procedure GetScopeFromTable of ADM_DHCPScopesTable, passing the scopeId as a parmeter in Param_id and ApplyDhcpServerConfigurationParameters.ScopeAddressFamily as a parameter in param_addressFamily.

5. For each Scope in collectionScopes, populate the relationship name that the scope belongs to by searching for the scopeId in ADM_DhcpScopeFailoverTable and then for the corresponding relationshipId in the ADM_DhcpFailoverTable. Using the relationship names, remove one of the scopes of a given relationship from collectionScopes, if both the scopes of a relationship are in the collection.

6. For each Scope in collectionScope, do the following steps:

7. If ApplyDhcpScopeConfigurationParameters.ScopeTemplate.ModifiedProperties contains DnsNameProtectionStatus, assign Scope.DnsNameProtectionStatus = ApplyDhcpScopeConfigurationParameters.ScopeTemplate.DnsNameProtectionStatus.

8. If ApplyDhcpScopeConfigurationParameters.ScopeTemplate.ModifiedProperties contains DnsUpdateType, assign Scope.DnsUpdateType = ApplyDhcpScopeConfigurationParameters.ScopeTemplate.DnsUpdateType.

9. If ApplyDhcpScopeConfigurationParameters.ScopeTemplate.ModifiedProperties contains DiscardDnsRecordOnLeaseDeletionStatus, assign Scope.DiscardDnsRecordOnLeaseDeletionStatus =

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ApplyDhcpScopeConfigurationParameters.ScopeTemplate.DiscardDnsRecordOnLeaseDeletionStatus.

10. If ApplyDhcpScopeConfigurationParameters.ScopeTemplate.ModifiedProperties contains Status, assign Scope.Status = ApplyDhcpScopeConfigurationParameters.ScopeTemplate.Status.

11. If ApplyDhcpScopeConfigurationParameters.ScopeTemplate.ModifiedProperties contains Description, assign Scope.Description = ApplyDhcpScopeConfigurationParameters.ScopeTemplate.Description.

12. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.7 AddScopesToSuperscopeDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.AddScopesToSuperscope. The IpamOperationWithProgressParameter instance in this case MUST be of type AddScopesToSuperscopeParameters.

This operation is used to add a collection of scopes to a new or existing super scope. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type AddScopesToSuperscopeParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as AddScopesToSuperscopeParameters.

2. If AddScopesToSuperscopeParameters.ScopeIds is null, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Check if the SuperScope already exists, by looking for a row in ADM_DhcpSuperscopeTable that has the same RecordId as AddScopesToSuperscopeParameters.SuperScope.RecordId.

4. If the Superscope does not already exist, create it by adding a row to ADM_DhcpSuperscopeTable and initializing the row with the contents of AddScopesToSuperscopeParameters.SuperScope.

5. Call the procedure AddScopesToSuperScope of the ADM_DhcpScopesTable, passing AddScopesToSuperscopeParameters.SuperScope as Param_SuperScope and AddScopesToSuperscopeParameters.ScopeIds as Param_scopes.

6. For each scope added to the superscope, if it is in a failover relationship, this function is called for the partner scope. This will add the partner scope to a superscope with the same configuration as AddScopesToSuperscopeParameters.SuperScope, on the partner server.

7. If the procedure returns any error, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

8. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.8 RemoveScopesFromSuperscopeDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.RemoveScopesFromSuperscope. The IpamOperationWithProgressParameter instance in this case MUST be of type RemoveScopesFromSuperscopeParameters.

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This operation is used to remove a collection of scopes from an existing existing super scope. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type RemoveScopesFromSuperscopeParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as RemoveScopesFromSuperscopeParameters.

2. If RemoveScopesToSuperscopeParameters.ScopeIds is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Call the procedure RemoveScopesToSuperScope of the ADM_DhcpScopesTable, passing RemoveScopesFromSuperscopeParameters.ScopeIds as Param_scopes.

4. For each scope removed from the superscope, if it is in a failover relationship, this function is called for the partner scope. This will remove the partner scope from the superscope with the same configuration as RemoveScopesFromSuperscopeParameters.SuperScope, on the partner server.

5. If the procedure returns any error, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.9 RenameSuperscopeDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.RenameSuperscope. The IpamOperationWithProgressParameter instance in that case MUST be of type RenameSuperscopeParameters.

This operation is used to rename an existing superscope. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type RenameSuperscopeParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as RenameSuperscopeParameters.

2. If RenameSuperscopeParameters.Superscope or RenameSuperscopeParameters.NewName is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Call the procedure RenameSuperScope of the ADM_DhcpSuperscopeTable, passing RenameSuperscopeParameters.Superscope as Param_Superscope and RenameSuperscopeParameters.NewName as Param_newName.

4. For each scope belonging to the superscope, if it is in a failover relationship, this function is called for the partner scope. This will rename the superscope of the partner scope to the same configuration as RenameSuperscopeParameters.SuperScope, on the partner server.

5. If the procedues generates any error, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

6. Call SetOverallStatus with Success and 100% completion.

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3.19.4.4.1.10 DeleteSuperscopesDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.DeleteSuperscope. The IpamOperationWithProgressParameter instance in this case MUST be of type DeleteSuperscopesParameters.

This operation is used to delete a given superscope. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type DeleteSuperscopesParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as DeleteSuperscopesParameters.

2. If DeleteSuperscopesParameters.Superscopes is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each scope belonging to each superscope, if it is in a failover relationship, this function is called for the partner scope. This will remove the partner scope from the superscope with the same configuration as DeleteSuperscopesParameters.SuperScope, on the partner server.

4. For each superscope in the list DeleteSuperscopesParameters.Superscopes, retrieve the superScope ID from SuperScope.RecordId. Delete the row in ADM_SuperScopeTable that has ADM_DhcpSuperscopetable.RecordId equal to retrieved superscope ID.

5. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.11 SetSuperscopeActivationStatusDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.SetSuperscopeActivationStatus. The IpamOperationWithProgressParameter instance in this case MUST be of type SetSuperscopeActivationStatusParameters.

This operation is used to activate a list of superscopes. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type SetSuperscopeActivationStatusParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as SetSuperscopeActivationStatusParameters.

2. If SetSuperscopeActivationStatusParameters.Superscopes is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each superscope in the list, extract the scope list from Superscope.ScopeList and add it to a local list of scopes names ScopesList.

4. For each scope in the ScopesList, retrieve the row from ADM_DHCPScopesTable corresponding to ADM_DHCPScopesTable.RecordId that is the same as the retrieved scope's recordId, and set the ADM_DHCPScopesTable.Status to be the same as SetSuperscopeActivationStatusParameters.ActivationStatus.

5. Call SetOverallStatus with Success and 100% completion.

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3.19.4.4.1.12 CreateServerPolicyDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.CreateDhcpServerPolicy. The IpamOperationWithProgressParameter instance in this case MUST be of type CreateDhcpServerPolicyParameters.

This operation is used to create a new server-level DHCP policy. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type CreateDhcpServerPolicyParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as CreateDhcpServerPolicyParameters.

2. If CreateDhcpServerPolicyParameters.Policy is NULL or CreateDhcpServerPolicyParameters.ServerList is NULL or CreateDhcpServerPolicyParameters.ServerList.Count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Validate the CreateDhcpServerPolicyParameters.Policy using the processing rules listed under ValidateDhcpPolicy by passing CreateDhcpServerPolicyParameters.Policy as Param_policy. If any of the processing rules are not met, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

4. For each server in the CreateDhcpServerPolicyParameters.ServerList, put the server object in a local variable dhcpServer and do the following steps for each server:

5. Create a new row in the table ADM_DhcpPolicyTable, assigning a new policyId to this row. Populate this row as follows:

   - ADM_DhcpPolicyTable.Server = dhcpServer
   - ADM_DhcpPolicyTable.Scope = NULL
   - ADM_DhcpPolicyTable.PolicyName = CreateDhcpServerPolicyParameters.Policy.PolicyName
   - ADM_DhcpPolicyTable.PolicyDescription = CreateDhcpServerPolicyParameters.Policy.PolicyDescription
   - ADM_DhcpPolicyTable.ProcessingOrder = CreateDhcpServerPolicyParameters.Policy.ProcessingOrder
   - ADM_DhcpPolicyTable.State = CreateDhcpServerPolicyParameters.Policy.State
   - ADM_DhcpPolicyTable.LeaseDurationType = CreateDhcpServerPolicyParameters.Policy.LeaseDurationType
   - ADM_DhcpPolicyTable.LeaseDuration = CreateDhcpServerPolicyParameters.Policy.LeaseDuration
   - ADM_DhcpPolicyTable.DnsUpdateType = CreateDhcpServerPolicyParameters.Policy.DnsUpdateType
   - ADM_DhcpPolicyTable.DiscardDnsRecordOnLeaseDeletionStatus = CreateDhcpServerPolicyParameters.Policy.DiscardDnsRecordOnLeaseDeletionStatus

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- ADM_DhcpPolicyTable.DnsNameProtectionStatus = CreateDhcpServerPolicyParameters.Policy.DnsNameProtectionStatus
- ADM_DhcpPolicyTable.DnsNotRequestingClientUpdateType = CreateDhcpServerPolicyParameters.Policy.DnsNotRequestingClientUpdateType
- ADM_DhcpPolicyTable.DnsDisableDynamicPtrUpdate = CreateDhcpServerPolicyParameters.Policy.DnsDisableDynamicPtrUpdate
- ADM_DhcpPolicyTable.DnsSuffix = CreateDhcpServerPolicyParameters.Policy.DnsSuffix

6. Create a new row in ADM_DhcpOptionsTable with the details set from CreateDhcpServerPolicyParameters.Policy and the PolicyId set to the policy ID of the configured policy.
7. Since this is a server-based policy, nothing needs to be done to add ranges to this policy.
8. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.13 CreateScopePolicyDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.CreateDhcpScopePolicy. The IpamOperationWithProgressParameter instance in this case MUST be of type CreateDhcpScopePolicyParameters.

This operation is used to create a new scope-level DHCP policy. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type CreateDhcpScopePolicyParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as CreateDhcpScopePolicyParameters.
2. If CreateDhcpScopePolicyParameters.Policy is NULL or CreateDhcpScopePolicyParameters.ScopeList is NULL or CreateDhcpScopePolicyParameters.ScopeList.Count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).
3. Validate the CreateDhcpScopePolicyParameters.Policy using the processing rules listed under ValidateDhcpPolicy by passing CreateDhcpScopePolicyParameters.Policy as Param_policy. If any of the processing rules are not met, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.
4. For each scope identifier ScopeRecordId in the CreateDhcpScopePolicyParameters.ScopeList, get the DHCP Scope by calling the GetScopeFromTable procedure of ADM_DHCPScopesTable, passing the following values:
   - Param_Id is assigned the value of ScopeRecordId.
   - Param_addressfamily is assigned AddressFamily.Internetwork

   Assign the Result_scope from the procedure call to a local variable dhcpScope and do all the following steps for each scope.
5. Get the server associated with the scope from the ADM for scope.dhcpServer = dhcpScope.ServerId.

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6. Create a new row in the table ADM_DhcpPolicyTable, assigning a new policyId to this row. Populate this row as follows:

   - ADM_DhcpPolicyTable.Server = dhcpServer.RecordId
   - ADM_DhcpPolicyTable.Scope = dhcpScope.RecordId
   - ADM_DhcpPolicyTable.PolicyName = CreateDhcpScopePolicyParameters.Policy.PolicyName
   - ADM_DhcpPolicyTable.PolicyDescription = CreateDhcpScopePolicyParameters.Policy.PolicyDescription
   - ADM_DhcpPolicyTable.ProcessingOrder = CreateDhcpScopePolicyParameters.Policy.ProcessingOrder
   - ADM_DhcpPolicyTable.State = CreateDhcpScopePolicyParameters.Policy.State
   - ADM_DhcpPolicyTable.LeaseDurationType = CreateDhcpScopePolicyParameters.Policy.LeaseDurationType
   - ADM_DhcpPolicyTable.LeaseDuration = CreateDhcpScopePolicyParameters.Policy.LeaseDuration
   - ADM_DhcpPolicyTable.DnsUpdateType = CreateDhcpScopePolicyParameters.Policy.DnsUpdateType
   - ADM_DhcpPolicyTable.DiscardDnsRecordOnLeaseDeletionStatus = CreateDhcpScopePolicyParameters.Policy.DiscardDnsRecordOnLeaseDeletionStatus
   - ADM_DhcpPolicyTable.DnsNameProtectionStatus = CreateDhcpScopePolicyParameters.Policy.DnsNameProtectionStatus
   - ADM_DhcpPolicyTable.DnsNotRequestingClientUpdateType = CreateDhcpScopePolicyParameters.Policy.DnsNotRequestingClientUpdateType
   - ADM_DhcpPolicyTable.DnsDisableDynamicPtrUpdate = CreateDhcpScopePolicyParameters.Policy.DnsDisableDynamicPtrUpdate
   - ADM_DhcpPolicyTable.DnsSuffix = CreateDhcpScopePolicyParameters.Policy.DnsSuffix

7. Create a new row in ADM_DhcpPolicyConditionTable, assigning a new PolicyConditionId to this row and to the PolicyId added in ADM_DhcpPolicytable. Populate all the fields of this row from CreateDhcpScopePolicyParameters.Policy.Condition.

8. Add any policy ranges corresponding to this policy, if this policy has any IPranges. Check whether CreateDhcpScopePolicyParameters.Policy.Ranges is NULL or CreateDhcpScopePolicyParameters.Policy.Ranges.count = 0. If so, the policy has no ranges. Otherwise, add a new row to ADM_DhcpPolicySubrangeTable for each range in the collection CreateDhcpScopePolicyParameters.Policy.Ranges. Assign a new PolicySubRangeId to the new row and the PolicyId for the new policy from ADM_DhcpPolicyTable. Initialize other fields of the ADM_DhcpPolicySubrangetable as follows:

   - ADM_DhcpPolicySubrangeTable.StartIPAddress = CreateDhcpScopePolicyParameters.Policy.Ranges.StartIPAddress
   - ADM_DhcpPolicySubrangeTable.EndIPAddress = CreateDhcpScopePolicyParameters.Policy.Ranges.EndIPAddress

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9. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.14 UpdatePolicyDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.UpdatePolicy. The IpamOperationWithProgressParameter instance in this case MUST be of type UpdatePolicyParameters.

This operation is used to update an existing DHCP policy. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type UpdatePolicyParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as UpdatePolicyParameters.

2. If UpdatePolicyParameters.Policy is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Validate the UpdatePolicyParameters.Policy using the processing rules listed under ValidateDhcpPolicy by passing UpdatePolicyParameters.Policy as Param_policy. If any of the processing rules are not met, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

4. Get the ADM policy corresponding to the specified Policy by calling the ADM procedure GetPolicyById of ADM_DhcpPolicyTable. Pass UpdatePolicyParameters.Policy.recordId as Param_PolicyId. If the procedure returns an Error, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

5. Update the ADM row for the retrieved.

    1. ADM_DhcpPolicyTable.Server = UpdatePolicyParameters.Policy.Server

    2. ADM_DhcpPolicyTable.Scope = UpdatePolicyParameters.Policy.Scope

    3. ADM_DhcpPolicyTable.PolicyName = UpdatePolicyParameters.Policy.PolicyName

    4. ADM_DhcpPolicyTable.PolicyDescription = UpdatePolicyParameters.Policy.PolicyDescription

    5. ADM_DhcpPolicyTable.ProcessingOrder = UpdatePolicyParameters.Policy.ProcessingOrder

    6. ADM_DhcpPolicyTable.State = UpdatePolicyParameters.Policy.State

    7. ADM_DhcpPolicyTable.LeaseDurationType = UpdatePolicyParameters.Policy.LeaseDurationType

    8. ADM_DhcpPolicyTable.LeaseDuration = UpdatePolicyParameters.Policy.LeaseDuration

    9. ADM_DhcpPolicyTable.DnsUpdateType = UpdatePolicyParameters.Policy.DnsUpdateType

    10. ADM_DhcpPolicyTable.DiscardDnsRecordOnLeaseDeletionStatus = UpdatePolicyParameters.Policy.DiscardDnsRecordOnLeaseDeletionStatus

    11. ADM_DhcpPolicyTable.DnsNameProtectionStatus = UpdatePolicyParameters.Policy.DnsNameProtectionStatus

    12. ADM_DhcpPolicyTable.DnsNotRequestingClientUpdateType = UpdatePolicyParameters.Policy.DnsNotRequestingClientUpdateType

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13. ADM_DhcpPolicyTable.DnsDisableDynamicPtrUpdate = UpdatePolicyParameters.Policy.DnsDisableDynamicPtrUpdate

14. ADM_DhcpPolicyTable.DnsSuffix = UpdatePolicyParameters.Policy.DnsSuffix

6. Get the ADM policy condition corresponding to the specified policy by calling the ADM procedure GetPolicyConditionsForPolicyId of ADM_DhcpPolicyConditionTable. Pass UpdatePolicyParameters.Policy.recordId as Param_PolicyId. If the procedure returns an Error, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

7. Populate all the fields of this row from UpdatePolicyParameters.Policy.Condition.

8. Get the ADM policy Subranges corresponding to the specified policy, by calling the ADM procedure GetPolicySubrangesForPolicyId of ADM_DhcpPolicySubrangeTable. Pass UpdatePolicyParameters.Policy.recordId as Param_PolicyId. If the procedure returns an Error, an appropriate SOAP fault (as specified in section section 2.2.2.1) MUST be returned.

9. For the returned collection of PolicyRanges, for each PolicyRange do the following:

    1. Check whether the PolicyRange.StartIPAddress is equal to startIPAddress of any range in the collection UpdatePolicyParameters.Policy.Ranges AND PolicyRange.EndIPAddress is equal to EndIPAddress of any range in the collection UpdatePolicyParameters.Policy.Ranges.

    2. Delete all ranges from ADM_DhcpPolicySubrangesTable for which ADM_DhcpPolicySubrangeTable.PolicyId = UpdatePolicyParameters.Policy.PolicyId but for which the StartIPAddress and the EndIPAddress are not in the passed parameter UpdatePolicyParameters.Policy.Ranges.

    3. Add new ranges to ADM_DhcpPolicySubrangesTable with ADM_DhcpPolicySubrangeTable.PolicyId = UpdatePolicyParameters.Policy.PolicyId, for cases in which the passed range in UpdatePolicyParameters.Policy.Ranges does not exist in ADM_DhcpPolicySubrangeTable.

10. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.15 DeletePolicyDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.DeletePolicy. The IpamOperationWithProgressParameter instance in this case MUST be of type DeletePolicyParameters.

This operation is used to delete the DHCP policies. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type DeletePolicyParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as DeletePolicyParameters.

2. If DeletePolicyParameters.Policies is NULL or if DeletePolicyParameters.Policies.count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each DhcpPolicy in DeletePolicyParameters.Policies, do the following:

4. Delete the ADM rows from ADM_DhcpPolicyTable where ADM_DhcpPolicyTable.PolicyId = DhcpPolicy.PolicyId.

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5. Delete the ADM rows from ADM_DhcpPolicyConditionTable where ADM_DhcpPolicyConditionTable.PolicyId = DhcpPolicy.PolicyId.

6. Delete the ADM rows from ADM_DhcpPolicySubRangeTable where ADM_DhcpPolicySubRangeTable.PolicyId = DhcpPolicy.PolicyId.

7. Delete the rows from ADM_DhcpOptionsTable where ADM_ DhcpOptionsTable.PolicyId = DhcpPolicy.PolicyId.

8. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.16 UpdatePolicyPropertiesDelegate

IpamOperationWithProgressParameter.OperationId is AdminOperationId.UpdatePolicyProperty. The **IpamOperationWithProgressParameter** instance in that case MUST be of type UpdatePolicyParameters.

This operation is used to update the properties of a DHCP policy. The following are the steps involved. In these steps, at anytime when a fault is generated, the SetOverallStatus should be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type UpdatePolicyPropertiesParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as UpdatePolicyPropertiesParameters.

2. If UpdatePolicyPropertiesParameters.Policies is NULL or UpdatePolicyPropertiesParameters.Policies.count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each DhcpPolicy in UpdatePolicyPropertiesParameters.Policies, do the following:

4. Get the ADM policy corresponding to the specified Policy, by calling the ADM procedure GetPolicyById of ADM_DhcpPolicyTable. Pass DhcpPolicy.recordId as Param_PolicyId.

5. Update the ADM row for the retrieved policy from the properties passed in the parameter:

    1. ADM_DhcpPolicyTable.Server = DhcpPolicy.Server

    2. ADM_DhcpPolicyTable.Scope = DhcpPolicy.Scope

    3. ADM_DhcpPolicyTable.PolicyName = DhcpPolicy.PolicyName

    4. ADM_DhcpPolicyTable.PolicyDescription = DhcpPolicy.PolicyDescription

    5. ADM_DhcpPolicyTable.ProcessingOrder = DhcpPolicy.ProcessingOrder

    6. ADM_DhcpPolicyTable.State = DhcpPolicy.State

    7. ADM_DhcpPolicyTable.LeaseDurationType = DhcpPolicy.LeaseDurationType

    8. ADM_DhcpPolicyTable.LeaseDuration = DhcpPolicy.LeaseDuration

    9. ADM_DhcpPolicyTable.DnsUpdateType = DhcpPolicy.DnsUpdateType

    10. ADM_DhcpPolicyTable.DiscardDnsRecordOnLeaseDeletionStatus = DhcpPolicy.DiscardDnsRecordOnLeaseDeletionStatus

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11. ADM_DhcpPolicyTable.DnsNameProtectionStatus = DhcpPolicy.DnsNameProtectionStatus

12. ADM_DhcpPolicyTable.DnsNotRequestingClientUpdateType = DhcpPolicy.DnsNotRequestingClientUpdateType

13. ADM_DhcpPolicyTable.DnsDisableDynamicPtrUpdate = DhcpPolicy.DnsDisableDynamicPtrUpdate

14. ADM_DhcpPolicyTable.DnsSuffix = DhcpPolicy.DnsSuffix

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.17 MovePolicyProcessingOrderDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.MovePolicyProcessingOrder. The IpamOperationWithProgressParameter instance in that case MUST be of type MovePolicyProcessingOrderParameters.

This operation is used to move a given DHCP policy order either up or down. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type MovePolicyProcessingOrderParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as MovePolicyProcessingOrderParameters.

2. If UpdatePolicyPropertiesParameters.Policy is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Call the procedure MovePolicyProcessingOrder of ADM_DhcpPolicyTable, passing UpdatePolicyPropertiesParameters.Policy as Param_Policy and UpdatePolicyPropertiesParameters.Direction as Param_ProcessingDirection.

4. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.18 CreateDhcpReservationDelegate

This processing is done when the **IpamOperationWithProgressParameter**.**OperationId** is AdminOperationId.CreateDhcpReservation. The **IpamOperationWithProgressParameter** instance in that case MUST be of type CreateDhcpReservationParameters.

This operation is used to create a new DHCP reservation. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If **IpamOperationWithProgressParameter** is NULL or not of type **CreateDhcpReservationParameters**, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project **IpamOperationWithProgressParameter** in a local variable as **CreateDhcpReservationParameters**.

2. If **CreateDhcpReservationParameters**.**Reservation** is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Validate the **CreateDhcpReservationParameters**.**Reservation** using the processing rules listed under **ValidateDhcpReservation** by passing **CreateDhcpReservationParameters**.**Reservation** as **Param_reservation**. If any of the

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processing rules are not met, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

4. Call the procedure **AddOrUpdateReservation** of **ADM_DHCPReservationTable**, passing the following parameters:

    1. Pass **Param_addressfamily** as Internet if **CreateDhcpReservationParameters.Reservation.Address** is IpamIPv4Address and InternetV6 if **CreateDhcpReservationParameters.Reservation.Address** is IpamIPv6Address.

    2. Pass **Param_reservationId** as **CreateDhcpReservationParameters.Reservation.RecordId**.

    3. Pass **Param_scopeId** as **CreateDhcpReservationParameters.scopeRecordId**.

    4. Pass **Param_AddressId** as **CreateDhcpReservationParameters.Reservation.Address.RecordId**.

    5. Pass **Param_reservationDetails** as **CreateDhcpReservationParameters.Reservation**.

5. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.19 DeleteDhcpReservationDelegate

This is the processing done when the **IpamOperationWithProgressParameter**.**OperationId** is AdminOperationId.DeleteDhcpReservation. The **IpamOperationWithProgressParameter** instance in this case MUST be of type **DeleteDhcpReservationParameters**.

The following steps are used to delete an existing DHCP reservation. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If **IpamOperationWithProgressParameter** is NULL or not of type **DeleteDhcpReservationParameters**, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Put **IpamOperationWithProgressParameter** in a local variable as **DeleteDhcpReservationParameters**.

2. If **DeleteDhcpReservationParameters**.**ReservationRecordId** is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Call the procedure **DeleteReservation** of **ADM_DHCPReservationTable**, passing the following parameters:

    1. Assign **DeleteDhcpReservationParameters.Family** to **Param_addressfamily**.

    2. Assign **DeleteDhcpReservationParameters.ReservationRecordId** to **Param_reservationId**.

4. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.20 DeleteDhcpReservationCollectionDelegate

This processing is done when the **IpamOperationWithProgressParameter**.**OperationId** is AdminOperationId.DeleteDhcpReservationCollection. The **IpamOperationWithProgressParameter** instance in this case MUST be of type DeleteDhcpReservationCollectionParameters.

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Using the following steps, this operation deletes a collection of existing DHCP reservations. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If **IpamOperationWithProgressParameter** is NULL or not of type **DeleteDhcpReservationCollectionParameters**, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project **IpamOperationWithProgressParameter** in a local variable as **DeleteDhcpReservationCollectionParameters**.

2. If **DeleteDhcpReservationCollectionParameters**.**ReservationRecordIds** is NULL or **DeleteDhcpReservationCollectionParameters.ReservationRecordIds.count** = 0 or **DeleteDhcpReservationCollectionParameters**.**Flag** > **DhcpReservationDeletionFlag**.**DeleteIPAddressAndDnsRecord** or **DeleteDhcpReservationCollectionParameters**.**Flag** > **DhcpReservationDeletionFlag**.**DeleteIPAddressAndDnsRecord**, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each reservation identifier ReservationRecordId in **DeleteDhcpReservationCollectionParameters.ReservationRecordIds**, do the following steps.

4. Call the procedure **DeleteReservation** of **ADM_DHCPReservationTable**, passing the following parameters:

    1. Assign **DeleteDhcpReservationCollectionParameters.Family** to **Param_addressfamily**.

    2. Assign **ReservationRecordId** to **Param_reservationId**.

5. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.21 SetDhcpReservationDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.SetDhcpReservation. The IpamOperationWithProgressParameter instance in this case MUST be of type SetDhcpReservationParameters.

This operation is used to update the properties of an existing DHCP reservation. In the following steps, any time a fault is generated, SetOverallStatus SHOULD be called with the fault details.

1. If **IpamOperationWithProgressParameter** is NULL or not of type **SetDhcpReservationParameters**, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project **IpamOperationWithProgressParameter** in a local variable as **SetDhcpReservationParameters**.

2. If **SetDhcpReservationParameters**.**Reservation** is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. If **SetDhcpReservationParameters.scopeRecordId** is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

4. Validate the **SetDhcpReservationParameters**.**Reservation** using the processing rules listed under ValidateDhcpReservation by passing **SetDhcpReservationParameters.Reservation** as **Param_reservation**. If any of the processing rules are not met, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

5. Call the procedure **AddOrUpdateReservation** of **ADM_DHCPReservationTable**, passing the following parameters:

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1. Pass **Param_addressfamily** as Internet if **SetDhcpReservationParameters.Reservation.Address** is IpamIPv4Address and InternetV6 if **SetDhcpReservationParameters.Reservation.Address** is IpamIPv6Address.
2. Pass **Param_reservationId** as **SetDhcpReservationParameters.Reservation.RecordId**.
3. Pass **Param_scopeId** as **SetDhcpReservationParameters.Reservation.ParentScope**.
4. Pass **Param_addressId** as **SetDhcpReservationParameters.Reservation.Address**.
5. Pass **Param_reservationDetails** as **SetDhcpReservationParameters.Reservation**.

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.22 SetDhcpReservationCollectionDelegate

This is the processing done when the **IpamOperationWithProgressParameter**.**OperationId** is AdminOperationId.SetDhcpReservationCollection. The **IpamOperationWithProgressParameter** instance in this case MUST be of type SetDhcpReservationCollectionParameters.

This operation is used to update the properties of a collection of existing DHCP reservations. In the following steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type SetDhcpReservationCollectionParameters, generate an appropriate section 2.2.2.1(as specified in section 2.2.2.1). Project **IpamOperationWithProgressParameter** in a local variable as **SetDhcpReservationCollectionParameters**.
2. If **SetDhcpReservationCollectionParameters**.**ReservationRecordIds** is NULL or. **SetDhcpReservationCollectionParameters.ReservationRecordIds.count** = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).
3. For each reservation identifier **DhcpReservationRecordId** in the **SetDhcpReservationCollectionParameters.ReservationRecordIds** collection, do steps number 4 and 5.
4. Call the **GetDhcpReservation** procedure of **ADM_DHCPReservationTable** by passing the following values:
    1. Assign to **Param_addressfamily**.
    2. Assign **DhcpReservationRecordId** to **Param_reservationId**.

Assign **Result_reservation** output from the procedure to a local variable **DhcpReservation**.

1. Call the procedure **AddOrUpdateReservation** of **ADM_DHCPReservationTable**, passing the following parameters:
    1. Assign SetDhcpReservationCollectionParameters.Family to **Param_addressfamily**.
    2. Assign **DhcpReservationRecordId** to **Param_reservationId**.
    3. Pass **Param_addressId** as **DhcpReservation.Address**.
    4. Pass **Param_scopeId** as **DhcpReservation.ParentScope**.

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5. Pass **Param_reservationDetails** as **SetDhcpReservationCollectionParameters.Configuration**.

2. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.23 CreateDhcpFailoverDelegate

This processing is done when the **IpamOperationWithProgressParameter.OperationId** is AdminOperationId.CreateDhcpFailover. The **IpamOperationWithProgressParameter** instance in this case MUST be of type DhcpFailoverWithScopesParameters.

This operation is used to create a new DHCP failover relationship. The following steps are involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If **IpamOperationWithProgressParameter** is NULL or not of type **DhcpFailoverWithScopesParameters**, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project **IpamOperationWithProgressParameter** in a local variable as **CreateDhcpFailoverParameters**.

2. If **CreateDhcpFailoverParameters**.**Failover** is NULL or **CreateDhcpFailoverParameters**.**ScopeIds** is NULL or **CreateDhcpFailoverParameters**.**ScopeIds.count** = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Insert a new row into **ADM_DhcpFailoverRelationTable** with all the field values populated from the corresponding fields of **CreateDhcpFailoverParameters.Failover**. Keep the returned RecordId of the new relationship in the local variable **FailoverRecordId**.

4. For each scope identifier in **CreateDhcpFailoverParameters.ScopeIds** list, put the reference of the scope identifier in **localDhcpScopeId** variable and do the following steps:

    1. Check if a row exists in **ADM_DhcpScopeFailoverTable** that has localDhcpScopeId = **ADM_DhcpScopeFailoverTable.ScopeId** AND FailoverRecordId = **ADM_DhcpScopeFailoverTable.FailoverRelationId**.

    2. If the row does not exist, add a row to **the ADM_DhcpScopeFailoverTable** with **ADM_DhcpScopeFailoverTable.ScopeId** = localDhcpScopeId and **ADM_DhcpScopeFailoverTable.FailoverRelationId** = FailoverRecordId.

5. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.24 UpdateDhcpFailoverDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.EditDhcpFailover. The IpamOperationWithProgressParameter instance in this case MUST be of type DhcpFailoverParameters.

This operation is used to modify the properties of a DHCP failover relationship. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type DhcpFailoverParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as DhcpFailoverParameters.

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2. If DhcpFailoverParameters.Failover is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Retrieve the failover relationship row from ADM_DhcpFailoverTable by looking for the row in which the value of RecordId is identical to that of DhcpFailoverParameters.Failover.RecordId.

4. Identify the list of modified properties in the DhcpFailoverParameters.Failover by examining the number of properties modified in DhcpFailoverParameters.Failover.ModifiedProperties. If there are none, no further processing is required and the procedure can return successfully.

5. For all the properties indicated in DhcpFailoverParameters.Failover.ModifiedProperties, update the property in the retrieved row of ADM_DhcpFailoverTable from the corresponding properties from DhcpFailoverParameters.Failover.

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.25 DhcpFailoverAddScopesDelegate

This is the processing done when the **IpamOperationWithProgressParameter**.**OperationId** is AdminOperationId.AddDhcpFailoverScopes. The **IpamOperationWithProgressParameter** instance in this case MUST be of type DhcpFailoverWithScopesParameters.

This operation is used to add scopes to an existing failover relationship. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If **IpamOperationWithProgressParameter** is NULL or not of type **DhcpFailoverWithScopesParameters**, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project **IpamOperationWithProgressParameter** in a local variable as **AddScopesFailoverParameters**.

2. If **AddScopesFailoverParameters**.**Failover** is NULL or **AddScopesFailoverParameters**.**ScopeIds** is NULL, or **AddScopesFailoverParameters**.**ScopeIds**.**count** = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Retrieve the failover relationship row from **ADM_DhcpScopeFailoverTable** by looking for the row in which the value of RecordId is identical to that of **AddScopesFailoverParameters.Failover.RecordId**.

4. For each scope identifier in **AddScopesFailoverParameters.ScopeIds**, put the reference of the scope identifier in localDhcpScopeId variable and do the following steps:

    1. Check if a row exists in **ADM_DhcpScopeFailoverTable** that has localDhcpScopeId = **ADM_DhcpScopeFailoverTable.ScopeId** and AddScopesFailoverParameters.Failover.RecordId = ADM_DhcpScopeFailoverTable.FailoverRelationId.

    2. If the row does not exist, add a row to the **ADM_DhcpScopeFailoverTable** with **ADM_DhcpScopeFailoverTable.ScopeId** = localDhcpScopeId and **ADM_DhcpScopeFailoverTable.FailoverRelationId** = **AddScopesFailoverParameters.Failover.RecordId**.

5. Call SetOverallStatus with Success and 100% completion and return the updated **AddScopesFailoverParameters.Failover object**.

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3.19.4.4.1.26 DhcpFailoverRemoveScopesDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.RemoveDhcpFailoverScopes. The IpamOperationWithProgressParameter instance in this case MUST be of type DhcpFailoverRemoveScopesParameters.

This operation is used to remove scopes from an existing failover relationship. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type DhcpFailoverRemoveScopesParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as DhcpFailoverRemoveScopesParameters.

2. If AddScopesFailoverParameters.Failover is NULL or AddScopesFailoverParameters.ScopeIds is NULL or AddScopesFailoverParameters.ScopeIds.count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each DHCP scope identifier in the list, AddScopesFailoverParameters.ScopeIds, put the reference of the scope identifier in the localDhcpScopeId variable, and do the following step:

4. Delete the row from the **ADM_DhcpScopeFailoverTable** that has **ADM_DhcpScopeFailoverTable.ScopeId** equal to localDhcpScopeId.

5. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.27 DeleteDhcpFailoverDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.DeleteDhcpFailover. The IpamOperationWithProgressParameter instance in this case MUST be of type DhcpFailoverDeleteParameters.

This operation is used to delete an existing failover relationship. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type DhcpFailoverDeleteParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as DhcpFailoverDeleteParameters.

2. If DhcpFailoverDeleteParameters.Failover is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Retrieve the failover relationship row from ADM_DhcpFailoverTable by looking for the row in which the value of RecordId is identical to that of DhcpFailoverDeleteParameters.Failover.RecordId.

4. Delete the retrieved row from ADM_ DhcpFailoverTable.

5. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.28 ResetConfigSyncStatusDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.ResetConfigSyncStatus. The IpamOperationWithProgressParameter instance in this case MUST be of type ResetConfigSyncStatusParameters.

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This operation is used to Reset the config sync status of the scopes passed in the parameter to "InSync". The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type ResetConfigSyncStatusParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as ResetConfigSyncStatusParameters.

2. If ResetConfigSyncStatusParameters.Scopes is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each Scope in ResetConfigSyncStatusParameters.Scopes, put the reference of the scope in localDhcpScope variable and do the following steps:

4. Retrieve the row from ADM_DhcpScopesTable that has localDhcpScope.RecordId = ADM_DhcpScopesTable.ScopeId.

5. If the row does exist, set the field FailoverConfigSyncStatus of the relevant entry of the ADM_DhcpDcopesTable to "InSync".

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.29 ReplicateFailoverScopeDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.ReplicateScope. The IpamOperationWithProgressParameter instance in this case MUST be of type ReplicateScopeParameters.

This operation is used to replicate a scope to the partner server in a DHCP failover relationship. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type ReplicateScopeParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as ReplicateScopeParameters.

2. If ReplicateScopeParameters.Scopes is NULL or ReplicateScopeParameters.Scopes.count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each scope object in ReplicateScopeParameters.Scopes, put the scope object in a local variable Scope. Do the following steps for each such reservation in the collection.

4. Find the partner server in a failover relationship for this scope. Search for a failover relationship corresponding to a given scope by looking for a row in the ADM_DhcpScopeFailoverTable that has ScopeId = Scope.RecordId. If no such ADM record is found, skip this scope. If the ADM record is found, look for a row in the ADM_FailoverRelationTable that has ADM_FailoverRelationTable.RecordId = ADM_DhcpScopeFailoverTable.FailoverRelationId. If no such ADM record is found, skip this scope. If the ADM is found, assign the failover relationship object to a local variable called Relationship.

5. Create a local variable DestinationServer. If Relationship.Server1RecordId = Scope.DHCPServerRecordId, assign Relationship.Server1RecordId to DestinationServer. If Relationship.Server2RecordId = Scope.DHCPServerRecordId, assign Relationship.Server2RecordId to DestinationServer.

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6. Clone the Scope variable to another local variable ScopeToStore. Assign DestinationServer to ScopeToStore.DHCPServerRecordId.

7. Check if ScopeToStore already exists in DestinationServer. If it does, call UpdateDhcpScopeDelegate (section 3.19.4.4.1.4), passing ScopeToStore as the parameter. If the scope does not exist in the DestinationServer, call CreateDhcpScopeDelegate (section 3.19.4.4.1.3), passing ScopeToStore as the parameter.

8. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.30 DoFailoverReplicationDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.ReplicateRelation. The IpamOperationWithProgressParameter instance in this case MUST be of type ReplicateRelationParameters.

This operation is used to replicate all scopes of a failover relationship to the partner server. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type ReplicateRelationParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as ReplicateRelationParameters.

2. If ReplicateRelationParameters.relation is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Retrieve all scopes for the relation, by searching the table ADM_DHCPScopeFailoverTable for rows that have FailoverRelationId = ReplicateRelationParameters.relation.RecordId. Populate all the retrieved scopes in a collection of scope and then call ReplicateFailoverScopeDelegate (section 3.19.4.4.1.29), passing the scope collection as a parameter.

4. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.31 ReplicateFailoverServerDelegate

This is the processing done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.ReplicateServer. The IpamOperationWithProgressParameter instance in this case MUST be of type ReplicateServerParameters.

This operation is used to replicate all scopes of a server that participate in any failover relationship to the partner server. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus should be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type ReplicateServerParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as ReplicateServerParameters.

2. If ReplicateServerParameters.server is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Retrieve all scopes for the server, by searching the table ADM_DHCPScopesTable for rows that have DHCPServerRecordId = ReplicateServerParameters.server.RecordId. Populate all the retrieved scopes in a collection of scope and then call ReplicateFailoverScopeDelegate (section 3.19.4.4.1.29) passing the scope collection as a parameter.

4. Call SetOverallStatus with Success and 100% completion.

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3.19.4.4.1.32 CreateDhcpFiltersDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.CreateDhcpFilters. The IpamOperationWithProgressParameter instance in this case MUST be of type CreateDhcpFiltersParameters.

This operation is used to create DHCP filters. The following are the steps involved. In these steps, at any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type CreateDhcpFiltersParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as CreateDhcpFiltersParameters.

2. If CreateDhcpFiltersParameters.Filters is NULL or CreateDhcpFiltersParameters.Filters.count = 0 or CreateDhcpFiltersParameters.DhcpServerIDs is NULL or CreateDhcpFiltersParameters.DhcpServerIds.count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each combination of FilterId and ServerId from the collections CreateDhcpFiltersParameters.Filters and CreateDhcpFiltersParameters.DhcpServerIDs, check whether a row exists in ADM_DhcpFiltersTable that has ADM_DhcpFiltersTable.FilterId = FilterId and ADM_DhcpFiltersTable.ServerId = ServerId.

4. If the row corresponding to FilterId and ServerId exists, update the row of the ADM_DhcpFiltersTable with the properties of the filter specified in the specific filter entry of CreateDhcpFiltersParameters.Filters.

5. If the row corresponding to FilterId and ServerId does not exist, create a new row in ADM_DhcpFiltersTable and initialize it with the FilterId and Server Id and the filter properties from the specific filter entry of CreateDhcpFiltersParameters.Filters.

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.33 UpdateDhcpFilterDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.UpdateDhcpFilter. The IpamOperationWithProgressParameter instance in this case MUST be of type UpdateDhcpFilterParameters.

This operation is used to update DHCP filter properties. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type UpdateDhcpFilterParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as UpdateDhcpFilterParameters.

2. If UpdateDhcpFilterParameters.Filter is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Check if a row exists in ADM_DhcpFiltersTable that has ADM_DhcpFiltersTable.FilterId = UpdateDhcpFilterParameters.Filter.FilterId and ADM_DhcpFiltersTable.ServerId = UpdateDhcpFilterParameters.Filter.ServerId.

4. If the row exists, update the row of the ADM_DhcpFiltersTable with the properties of the filter specified in the UpdateDhcpFilterParameters.Filter.

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5. If the row does not exist, create a new row in ADM_DhcpFiltersTable and initialize it with the FilterId and ServerId and the filter properties from UpdateDhcpFilterParameters.Filter.

6. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.34 UpdateDhcpFiltersDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.UpdateDhcpFilters. The IpamOperationWithProgressParameter instance in this case MUST be of type UpdateDhcpFiltersParameters.

This operation is used to update the filter properties of a collection of DHCP filters. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type UpdateDhcpFiltersParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as UpdateDhcpFiltersParameters.

2. If UpdateDhcpFiltersParameters.Filters is NULL or UpdateDhcpFiltersParameters.Filters.count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each Filter entry in the collection UpdateDhcpFiltersParameters.Filters, copy the filter instance in a local variable localFilter and the do the following steps:

4. Check if a row exists in ADM_DhcpFiltersTable in which ADM_DhcpFiltersTable.FilterId = localFilter.FilterId and ADM_DhcpFiltersTable.ServerId = localFilter.ServerId.

5. If the row exists, update the row of the ADM_DhcpFiltersTable with the properties of the filter specified in the localFilter.

6. If the row does not exist, create a new row in ADM_DhcpFiltersTable and initialize it with the FilterId and ServerId and the filter properties from localFilter.

7. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.35 DeleteDhcpFiltersDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.DeleteDhcpFilters. The IpamOperationWithProgressParameter instance in this case MUST be of type DeleteDhcpFiltersParameters.

This operation is used to delete the filters specified in the collection of DHCP filters passed as a parameter. The following are the steps involved. In these steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type DeleteDhcpFiltersParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as DeleteDhcpFiltersParameters.

2. If DeleteDhcpFiltersParameters.Filters is NULL or DeleteDhcpFiltersParameters.Filters.count = 0, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. For each Filter entry in the collection DeleteDhcpFiltersParameters.Filters, copy the filter instance in a local variable localFilter and the do the following steps:

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4. Check whether a row exists in ADM_DhcpFiltersTable that has ADM_DhcpFiltersTable.FilterId = localFilter.FilterId and ADM_DhcpFiltersTable.ServerId = localFilter.ServerId.

5. If the row does not exist, jump back to step 3 and do the same operation for the next filter in the list.

6. If the row exists, delete the row of the ADM_DhcpFiltersTable that has ADM_DhcpFiltersTable.FilterId = localFilter.FilterId and ADM_DhcpFiltersTable.ServerId = localFilter.ServerId.

7. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.36 SaveIpamIPAddressDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.CreateIpamIpAddress. The IpamOperationWithProgressParameter instance in this case MUST be of type CreateIpamIpAddressParameters.

This operation is used to save an IP address. In the following steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

1. If IpamOperationWithProgressParameter is NULL or not of type CreateIpamIpAddressParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as CreateIpamIpAddressParameters.

2. If CreateIpamIpAddressParameters.Address is NULL, generate an appropriate SOAP fault (as specified in section 2.2.2.1).

3. Set currentIpamIPAddress variable as CreateIpamIpAddressParameters.Address.

4. The addressfamily is set to Internet if the currentIpamIPAddress is IpamIPv4Address and InternetV6 if the currentIpamIPAddress is IpamIPv6Address. If the addressfamily is Internet, the rest of the processing is done with the IPv4-specific tables. Otherwise IPv6-specific tables are used for further processing.

5. Validate the currentIpamIPAddress using the processing rules listed under ValidateIpamIPAddress, passing currentIpamIPAddress as Param_address. If any of the processing rules are not met, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

6. If adding currentIpamIPAddress leads to any invalid duplicate addresses in the IPAM data store, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned. Validation of invalid duplicate address is done as follows:

    - Enumerate all rows in ADM_IPAddressTable where IPAddress value is same as currentIpamIPAddress.IPAddress. For each row:

        1. Calculate the ManagedBy value to be the custom field value whose custom field identifier is the same value as ADM_ManagedByCustomFieldId.

        2. Calculate the ManagedByEntity value to be the custom field value whose custom field identifier is the same as the ADM_ManagedByEntityCustomFieldId.

        3. If the ManagedBy and ManagedByEntity values of the row are the same as currentIpamIPAddress.ManagedByValue and currentIpamIPAddress.ManagedByEntityValue, respectively, the newly added address is an invalid duplicate address.

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7. Find out whether currentIpamIPAddress maps to any existing range, by checking the following conditions against the IPRange objects in the ADM_IPRangeTable. If all the conditions that follow are met for an IPRange, set the ParentIPRangeRecordId of currentIpamIPAddress to record identifier of the IPRange, else set it to NULL.

    1. currentIpamIPAddress.IPAddress SHOULD be greater than or equal to StartIPAddress of IPRange.

    2. currentIpamIPAddress.IPAddress SHOULD be greater than or equal to EndIPAddress of IPRange.

    3. currentIpamIPAddress.ManagedByValue is equal to ManagedByValue of IPRange.

    4. currentIpamIPAddress.ManagedByEntityValue is equal to ManagedByEntityValue of IPRange.

8. Find out whether currentIpamIPAddress has any duplicate addresses in the existing IpamIPAddress objects in the ADM_IPAddressTable. Enumerate all rows in the table whose IPAddress value is the same as currentIpamIPAddress.IPAddress. If one or more rows are enumerated, update the IsDuplicate field of all these rows as TRUE. Also set the IsDuplicate value of currentIpamIPAddress to 1.

9. Add currentIpamIPAddress to ADM_IPAddressTable and set the currentIpamIPAddress.RecordId to the value of RecordId.

10. If CreateIpamIpAddressParameters.CreateDhcpReservation is TRUE and currentIpamIPAddress.DhcpScopeId is specified:

    - Call the procedure AddOrUpdateReservation in ADM_DHCPReservationTable with the following parameters:

        1. Param_addressfamily is set to addressfamily.

        2. If currentIpamIPAddress.ReservationId is specified, set Param_reservationId to the value.

        3. Param_scopeId is set to currentIpamIPAddress.DhcpScopeId.

        4. Param_addressId is set to currentIpamIPAddress.RecordId.

        5. Copy ReservationDetails from currentIpamIPAddress to Param_reservationDetails.

        6. If the reservation detail is being added newly, assign Result_reservationId to currentipamIPAddress.ReservationId and store it in ADM_IPAddressTable.

11. If CreateIpamIpAddressParameters.CreateDnsRecord is TRUE, call the procedure AddOrUpdateAddressDNSForwardLookupTable in ADM_AddressDNSForwardLookupTable with the following parameters:

    1. Param_addressfamily is set to addressfamily.

    2. Param_addressId is set to currentIpamIPAddress.RecordId.

    3. Param_dnsZoneId is set to the value of currentIpamIPAddress.DnsZoneId.

    4. Param_serverDnsZoneId is set to the value of currentIpamIPAddress.DnsForwardLookupZoneDnsServerId.

    5. If currentIpamIPAddress.DnsForwardLookupZoneRecordId is specified, assign it to Param_recordId.

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6. On return, assign Result_recordId to currentIpamIPAddress.DnsForwardLookupZoneRecordId.

12. If CreateIpamIpAddressParameters.CreateDnsRecord is TRUE, call the procedure AddOrUpdateAddressDNSReverseLookup in ADM_AddressDNSReverseLookupTable with the following parameters:

    1. Param_addressfamily is set to addressfamily.

    2. Param_addressId is set to currentIpamIPAddress.RecordId.

    3. Param_dnsZoneId is set to the value of currentIpamIPAddress.DnsReverseLookupZoneId.

    4. Param_serverDnsZoneId is set to the value of currentIpamIPAddress.DnsReverseLookupZoneDnsServerId.

    5. If currentIpamIPAddress.DnsReverseLookupZoneRecordId is specified, assign it to Param_recordId.

    6. On return, assign Result_recordId to currentIpamIPAddress.DnsReverseLookupZoneRecordId.

13. Validate the currentIpamIPAddress.CustomFieldValues by performing the processing rules listed under the section ValidateCustomFields. If the custom field values are valid, call the SetCustomFieldValues procedure of ADM_CustomFieldValuesAssociationTable table with the following parameters:

    1. Param_ObjectRecordId is assigned the value of currentIpamIPAddress.RecordId.

    2. Param_ObjectType is set to EnumerationObjectType.IPAddress.

    3. Param_addressFamily is set to the value of addressfamily.

    4. Param_CustomFieldValuesCollection is set to the value of currentIpamIPAddress.CustomFieldValues.

14. If the ADM_CommonProperties.ExpiryAlertThreshold is not 0, and if currentIpamIPAddress.ExpiryDate is set, then set currentIpamIPAddress.InWarningPeriod to TRUE if the following conditions are satisfied. Otherwise InWarningPeriod is set to FALSE.

    1. Current date and time is less than currentIpamIPAddress.ExpiryDate.

    2. Current date and time plus ADM_CommonProperties.ExpiryAlertThreshold is greater than currentIpamIPAddress.ExpiryDate.

15. If current date and time is greater than currentIpamIPAddress.ExpiryDate, set currentIpamIPAddress.IsExpired to TRUE. Otherwise currentIpamIPAddress.IsExpired is set to FALSE.

16. Call SetOverallStatus with Success and 100% completion.

3.19.4.4.1.37 UpdateIpamIPAddressDelegate

This processing is done when the IpamOperationWithProgressParameter.OperationId is AdminOperationId.UpdateIpamIpAddress. The IpamOperationWithProgressParameter instance in this case MUST be of type UpdateIpamIpAddressParameters.

This operation is used to update the properties of an IP address. In the following steps, any time a fault is generated, the SetOverallStatus SHOULD be called with the fault details.

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1. If IpamOperationWithProgressParameter is NULL or not of type UpdateIpamIpAddressParameters, generate an appropriate SOAP fault (as specified in section 2.2.2.1). Project IpamOperationWithProgressParameter in a local variable as UpdateIpamIpAddressParameters.

2. Set the updateIpAddress to UpdateIpamIpAddressParameters.Address.

3. Set the currentIpAddress to UpdateIpamIpAddressParameters.OldAddress.

4. If updateIpAddress or oldIpAddress is NULL, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

5. Validate the updateIpAddress using the processing rules listed under ValidateIpamIPAddress, passing updateIpAddress as Param_address. If any of the processing rules are not met, an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

6. Identify the list of modified properties in the updateIpAddress by finding the number of properties modified in updateIpAddress.ModifiedProperties. If there are none, no further processing is required and success is returned.

7. The addressfamily is set to Internet if the updateIpAddress is IpamIPv4Address and InternetV6 if the updateIpAddress is IpamIPv6Address. If the addressFamily is Internet, the rest of the processing is done with the IPv4-specific tables. Otherwise IPv6-specific tables are used for further processing.

8. Fetch the existing IpamIPAddress data by invoking the GetIPAddressFromTable procedure of ADM_IPAddressTable by passing the currentIpAddress.RecordId as the Param_id parameter and addressfamily as Param_addressfamily.

9. Compare the values of the properties listed in updateIpAddress.ModifiedProperties to their corresponding values in currentIpAddress. Only those values that have changed will be used to update the values in the data store.

10. Identify whether any of the following properties are part of updateIPAddress.ModifiedProperties and whether there is a difference in value between the one present in currentIPAddress and updateIPaddress:

    1. IPAddress

    2. ManagedByValue. This is a computed field of the updateIpAddress. This is the value of the custom field whose record identifier is ADM_ManagedByCustomFieldId retrieved from updateIpAddress.CustomFieldValues.

    3. ManagedByEntityValue. This is a computed field of the updateIpAddress. This is the value of the custom field whose record identifier is ManagedByEntityCustomFieldId, retrieved from updateIpAddress.CustomFieldValues.

11. If any of the above fields have changed and are different from the values in currentIpAddress, the following additional processing has to be done:

    - Validate if adding updateIpAddress can lead to any invalid duplicate addresses in the IPAM data store as follows:

        1. Enumerate all rows in ADM_IPAddressTable where IPAddress value is the same as updateIpAddress.IPAddress.

        2. For each row:

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1. Calculate the ManagedBy value to be the custom field value whose custom field identifier is the same value as ADM_ManagedByCustomFieldId.

2. Calculate the ManagedByEntity value to be the custom field value whose custom field identifier is the same as the ADM_ManagedByEntityCustomFieldId.

3. If the ManagedBy and ManagedByEntity values of the row are the same as updateIpAddress.ManagedByValue and updateIpAddress.ManagedByEntityValue, respectively, then an appropriate SOAP fault (as specified in section 2.2.2.1) MUST be returned.

12. The IsDuplicate field of the existing IP address will need to be reset for currentIpamIPAddress. Enumerate all rows in IP address table, where the value of IPAddress is the same as currentIpamIPAddress.IPAddress, and the RecordId is not the same as currentIpamIPAddress.RecordId, to find the duplicate addresses of the address that got modified. If the number of rows found is 1, then there is only one duplicate address, and hence its duplicate status should be reset. Update the IsDuplicate field of the only IpamIPAddress found thus as 0.

13. The IsDuplicate field is recalculated for the addresses based on the new address updateIpAddress. Enumerate all rows in the table whose IPAddress value is the same as updateIpAddress.IPAddress. If one or more rows are enumerated, update the IsDuplicate field of all these rows as 1. Also update the IsDuplicate value of updateIpAddress to 1.

14. Update the modified fields of the address in the IP address table by looking up the row with the RecordId being updateIpAddress.RecordId.

15. If UpdateIpamIpAddressParameters.CreateDhcpReservation is TRUE and UpdateIpamIpAddressParameters.currentIpamIPAddress.DhcpScopeId is specified:

    - Call the procedure AddOrUpdateReservation in ADM_DHCPReservationTable with the following parameters:

      1. Param_addressfamily is set to addressfamily.

      2. If currentIpamIPAddress.ReservationId is specified, set Param_reservationId to the value.

      3. Param_scopeId is set to currentIpamIPAddress.DhcpScopeId.

      4. Param_addressId is set to currentIpamIPAddress.RecordId.

      5. Copy ReservationDetails from currentIpamIPAddress to Param_reservationDetails.

      6. If the reservation detail is being added newly, assign Result_reservationId to currentipamIPAddress.ReservationId and store it in ADM_IPAddressTable.

16. If UpdateIpamIpAddressParameters.CreateDNSRecord is TRUE, call the procedure AddOrUpdateAddressDNSForwardLookupTable ADM_AddressDNSForwardLookupTable with the following parameters:

    1. Param_addressfamily is set to addressfamily.

    2. Param_addressId is set to currentIpamIPAddress.RecordId.

    3. Param_dnsZoneId is set to the value of currentIpamIPAddress.DnsZoneId.

    4. Param_serverDnsZoneId is set to the value of currentIpamIPAddress.DnsForwardLookupZoneDnsServerId.

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5. If currentIpamIPAddress.DnsForwardLookupZoneRecordId is specified assign it to Param_recordId.

6. On return, assign Result_recordId to currentIpamIPAddress.DnsForwardLookupZoneRecordId.

17. If UpdateIpamIpAddressParameters.CreateDNSRecord is TRUE, call the procedure AddOrUpdateAddressDNSReverseLookup in ADM_AddressDNSReverseLookupTable with the following parameters:

    1. Param_addressfamily is set to addressfamily.

    2. Param_addressId is set to currentIpamIPAddress.RecordId.

    3. Param_dnsZoneId is set to the value of currentIpamIPAddress.DnsReverseLookupZoneId.

    4. Param_serverDnsZoneId is set to the value of currentIpamIPAddress.DnsReverseLookupZoneDnsServerId.

    5. If currentIpamIPAddress.DnsReverseLookupZoneRecordId is specified assign it to Param_recordId.

    6. On return, assign Result_recordId to currentIpamIPAddress.DnsReverseLookupZoneRecordId.

18. Validate the updateIpAddress.CustomFieldValues by performing the processing rules listed under the ValidateCustomFieldValues section. If the custom field values are valid, call the SetCustomFieldValues procedure of the ADM_CustomFieldValuesAssociationTable table with the following parameters:

    1. Param_ObjectRecordId is assigned the value of updateIpAddress.RecordId.

    2. Param_ObjectType is set to EnumerationObjectType.IPAddress.

    3. Param_addressFamily is set to the value of addressfamily.

    4. Param_CustomFieldValuesCollection is set to the value of updateIpAddress.CustomFieldValues.

19. If the ADM_CommonProperties.ExpiryAlertThreshold is not 0, and if currentIpamIPAddress.ExpiryDate is modified, then set currentIpamIPAddress.InWarningPeriod to TRUE if the following conditions are satisfied. Otherwise, InWarningPeriod is set to FALSE.

    1. Current date and time is less than currentIpamIPAddress.ExpiryDate.

    2. Current date and time + ADM_CommonProperties.ExpiryAlertThreshold is greater than currentIpamIPAddress.ExpiryDate.

20. If current date and time is greater than currentIpamIPAddress.ExpiryDate, set currentIpamIPAddress.IsExpired to TRUE. Otherwise, currentIpamIPAddress.IsExpired is set to FALSE.

Call SetOverallStatus with Success and 100% completion.

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3.19.4.4.2 Messages

3.19.4.4.2.1 IIpamOperationWithProgress_StartOperationWithCallback_InputMessage

This is the request for the StartOperationWithCallback operation.

```
<wsdl:message name="IIpamOperationWithProgress_StartOperationWithCallback_InputMessage">
  <wsdl:part name="parameters" element="ipam:StartOperationWithCallback" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartOperationWithCallback
```

The body of the SOAP message MUST contain the StartOperationWithCallback element.

3.19.4.4.2.2 IIpamOperationWithProgress_StartOperationWithCallbackResponse_OutputMessage

This is the response for the StartOperationWithCallback operation.

```
<wsdl:message name="IIpamOperationWithProgress_StartOperationWithCallback_OutputMessage">
  <wsdl:part name="parameters" element="ipam:StartOperationWithCallbackResponse" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartOperationWithCallbackResponse
```

The body of the SOAP message MUST contain the StartOperationWithCallbackResponse element.

3.19.4.4.3 Elements

3.19.4.4.3.1 StartOperationWithCallback

This element specifies the input values for the StartOperationWithCallback operation.

```
<xs:element name="StartOperationWithCallback">
  <xs:complexType>
    <xs:sequence />
  </xs:complexType>
</xs:element>
```

3.19.4.4.3.2 StartOperationWithCallbackResponse

This element specifies the input values for the StartOperationWithCallbackResponse operation.

```
<xs:element name="StartOperationWithCallbackResponse">
```


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```
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
```

3.19.4.5 StartProgressCallback

This operation MUST NOT be invoked by the management client and MUST be ignored by the server. This operation is called by the management server back to the management client once the server operation StartOperationWithCallback is called.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartProgressCallback">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartProgressCallback"
message="ipam:IIpamOperationWithProgress_StartProgressCallback_OutputCallbackMessage" />
</wsdl:operation>
```

3.19.4.5.1 Messages

3.19.4.5.1.1 IIpamOperationWithProgress_StartProgressCallbackResponse_OutputMessage

This is the request for the StartProgressCallback operation.

```
<wsdl:message name="IIpamOperationWithProgress_StartProgressCallback_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:StartProgressCallback" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartProgressCallback
```

The body of the SOAP message MUST contain the StartProgressCallback element.

3.19.4.5.2 Elements

3.19.4.5.2.1 StartProgressCallback

This element specifies the input values for the StartProgressCallback operation.

```
<xs:element name="StartProgressCallback">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="isNonDeterministic" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```


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3.19.4.6 SetCompletionPercentage

This operation MUST NOT be invoked by the management client and MUST be ignored by the server. The management server calls SetCompletionPercentage on the management client interface to indicate the completion percentage for the overall task.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="SetCompletionPercentage">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetCompletionPercentage
" message="ipam:IIpamOperationWithProgress_SetCompletionPercentage_OutputCallbackMessage" />
</wsdl:operation>
```

3.19.4.6.1 Messages

3.19.4.6.1.1 IIpamOperationWithProgress_ SetCompletionPercentage _OutputMessage

This is the request for the SetCompletionPercentage operation.

```
<wsdl:message
name="IIpamOperationWithProgress_SetCompletionPercentage_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:SetCompletionPercentage" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetCompletionPercentage
```

The body of the SOAP message MUST contain the SetCompletionPercentage element.

3.19.4.6.2 Elements

3.19.4.6.3 SetCompletionPercentage

This element specifies the input values for the SetCompletionPercentage operation.

```
<xs:element name="SetCompletionPercentage">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="completionPercentage" type="xsd:decimal" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.19.4.7 SetSubTaskStatus

This operation MUST NOT be invoked by the management client and MUST be ignored by the server. The management server calls SetSubTaskStatus of the management client interface when it needs to communicate the status of a subtask.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false" name="SetSubTaskStatus">
```


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```
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetSubTaskStatus"
message="ipam:IIpamOperationWithProgress_SetSubTaskStatus_OutputCallbackMessage" />
</wsdl:operation>
```

3.19.4.7.1 Messages

3.19.4.7.1.1 IIpamOperationWithProgress_SetSubTaskStatus_OutputMessage

This is the request for the SetSubTaskStatus operation.

```
<wsdl:message name="IIpamOperationWithProgress_SetSubTaskStatus_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:SetSubTaskStatus" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetSubTaskStatus
```

The body of the SOAP message MUST contain the SetSubTaskStatus element.

3.19.4.7.2 Elements

3.19.4.7.2.1 SetSubTaskStatus

This element specifies the input values for the SetSubTaskStatus operation.

```
<xs:element name="SetSubTaskStatus">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subTaskInstance" nillable="true"
type="ipam:SubTaskInstance" />
      <xs:element minOccurs="0" name="status" type="ipam:SubTaskStatus" />
      <xs:element minOccurs="0" name="percentComplete" type="xsd:decimal" />
      <xs:element minOccurs="0" name="completionStatus" nillable="true"
type="ipam1:IpamException" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.19.4.8 SetOverallStatus

This operation MUST NOT be invoked by the management client and MUST be ignored by the server. The management server calls SetOverallStatus of the management client interface when it needs to communicate the completion and the status of the overall operation.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false" name="SetOverallStatus">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetOverallStatus"
message="ipam:IIpamOperationWithProgress_SetOverallStatus_OutputCallbackMessage" />
</wsdl:operation>
```


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3.19.4.8.1 Messages

3.19.4.8.1.1 IIpamOperationWithProgress_SetOverallStatus_OutputMessage

This is the request for the SetOverallStatus operation.

```
<wsdl:message name="IIpamOperationWithProgress_SetOverallStatus_OutputCallbackMessage">
  <wsdl:part name="parameters" element="ipam:SetOverallStatus" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetOverallStatus
```

The body of the SOAP message MUST contain the SetOverallStatus element.

3.19.4.8.2 Elements

3.19.4.8.2.1 SetOverallStatus

This element specifies the input values for the SetOverallStatus operation.

```
<xs:element name="SetOverallStatus">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="overallStatus" type="ipam1:OverallProgressStatus" />
      <xs:element minOccurs="0" name="completionStatus" nillable="true"
type="ipam:IpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.19.4.9 AddSubTask

This operation MUST NOT be invoked by the management client and MUST be ignored by the server. The management server calls AddSubTask of the management client interface when it needs to communicate the completion and the status of the overall operation.

```
<wsdl:operation msc:isInitiating="true" msc:isTerminating="false" name="AddSubTask">
  <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/AddSubTask"
message="ipam:IIpamOperationWithProgress_AddSubTask_OutputCallbackMessage" />
</wsdl:operation>
```

3.19.4.9.1 Messages

3.19.4.9.1.1 IIpamOperationWithProgress_AddSubTask_OutputMessage

This is the request for the AddSubTask operation.

```
<wsdl:message name="IIpamOperationWithProgress_AddSubTask_OutputCallbackMessage">
```


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```
  <wsdl:part name="parameters" element="ipam:AddSubTask" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/AddSubTask
```

The body of the SOAP message MUST contain the AddSubTask element.

3.19.4.9.2 Elements

3.19.4.9.2.1 AddSubTask

This element specifies the input values for the AddSubTask operation.

```
<xs:element name="AddSubTask">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subTaskInstance" nillable="true"
type="ipam:SubTaskInstance" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.19.5 Timer Events

None.

3.19.6 Other Local Events

3.19.6.1 User Authorization

This section lists the user authorization requirements for the various operations defined in this port type. After the user authentication is complete, the user MUST be authorized for the operation that is being requested. If the required authorization is not present, the user MUST be denied access to perform the operation by returning an appropriate SOAP fault as specified in section 2.2.2.1.

IIpamOperationWithProgress Operation	ADM States to be checked
InitializeOperationParameters	Allowed for all users
StartOperationWithCallback	Permission determined as mentioned below

Following are the steps to determine if the user is authorized to perform the operation or not. This check is done after the steps listed in section 3.1.4.3 are complete.

1. Determine the mapping OperationId of the operation with the help of the table mentioned below. Call GetOperationById procedure of ADM_AdminOperationsTable by passing OperationId as Param_operationId. Process the results from the procedure by doing below steps:

    1. Assign Param_OperationGroupId to OperationGroupId

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2. Assign Param_IsAdminRoleOnlyOperation to AdminRoleOnlyOperation

3. Assign Param_IsNonRBACOperation to IsNonRBACOperation

4. Assign Param_IsAccessScopeAgnosticOperation to IsAccessScopeAgnosticOperation

5. Assign Param_NonRBACAdminAccessRequirement to NonRBACAdminAccessRequirement

2. If either AdminRoleOnlyOperation or IsNonRBACOperation is set to TRUE, then based on the requirements of the security group mentioned in NonRBACAdminAccessRequirement, evaluate the ADM_UserAuthorizationData has the appropriate role value set to TRUE. If the appropriate role value is set to TRUE, the operation is allowed else the access to perform operation is denied.

3. If both AdminRoleOnlyOperation and IsNonRBACOperation set to FALSE, then based on the requirements of the security groups mentioned in NonRBACAdminAccessRequirement, evaluate the ADM_UserAuthorizationData has the appropriate role value set to TRUE. If the appropriate role value is set to TRUE, the operation is allowed.

4. If IsAccessScopeAgnosticOperation set to FALSE, then determine the AccessScope association of the object by calling procedure GetAccessScopeForObjectIdAndType of ADM_AccessScopeAssociationTable passing the following parameters:

    1. Param_objectId is set to appropriate RecordId

    2. Param_objectType is set to appropriate Object Type

    3. Param_accessScopeId

    4. Param_objectInheritanceStatus

    5. Param_inheritanceId

Assign Param_accessScopeId to ObjectAccessScopeId, which is a 64 bit signed integer to represent the AccessScopeId associated to a specific object.

1. Initialize a collection UserAccessPolicies of type AccessScopeToUserRoleMapping.

2. For each entry in the ADM_UserAuthorizationData.MappingPolicyId collection, call procedure GetPolicyMapEntriesForPolicyId by assigning Param_policyId, value of entry in MappingPolicyIds. Add the entries in Result_policyEntries to collection UserAccessPolicies.

3. For each entry UserAccessPolicy in the UserAccessPolicies, call procedure GetAllOperationsForRoleById of ADM_RoleOperationMapTable by assigning UserAccessPolicy.UserRoleId to Param_RoleId.

4. If Result_operations collection contains an entry of OperationId, do the following:

    1. If IsAccessScopeAgnosticOperation set to TRUE, the operation is allowed for the user.

    2. If the UserAccessPolicy.AccessScopeId is same as ObjectAccessScopeId, the operation is allowed for the user.

5. Operation is not allowed for the user.

The following table specifies the operations and the corresponding OperationId mapping as mentioned in the Builtin Operations section of ADM_RoleDefinitionTable. For operations that operate on multiple objects of the same type (like DeleteSuperscopes) or have multiple suboperations, the

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validations for operation being allowed is performed on each individual object and each sub-operation.

Operation	Operation steps	Mapping OperationId	Object for AccesScope Determination
EditDhcpServer	UpdateDhcpServerDelegate	MsmDhcpEditServerProperties	DhcpServer
ApplyServerConfigurationTemplate	ApplyDhcpServerConfigurationDelegate	MsmDhcpEditServerProperties	DhcpServer
CreateDhcpScope	CreateDhcpScopeDelegate	MsmDhcpCreateScope	DhcpServer
EditDhcpScope	UpdateDhcpScopeDelegate	MsmDhcpEditScope	DhcpScope
DeleteDhcpScope	DeleteDhcpScopeDelegate	MsmDhcpDeleteScope	DhcpScope
ApplyScopeConfigurationTemplate	ApplyDhcpScopeConfigurationDelegate	MsmDhcpEditScope	DhcpScope
AddScopesToSuperscope	AddScopesToSuperscopeDelegate	MsmDhcpEditSuperscope	DhcpSuperscopeV4
RemoveScopesfromSuperscope	RemoveScopesFromSuperscopeDelegate	MsmDhcpEditSuperscope	DhcpSuperscopeV4
RenameSuperscope	RenameSuperscopeDelegate	MsmDhcpEditSuperscope	DhcpSuperscopeV4
DeleteSuperscopes	DeleteSuperscopesDelegate	MsmDhcpDeleteSuperscope	DhcpSuperscopeV4
SetSuperscopeActivationStatus	SetSuperscopeActivationStatusDelegate	MsmDhcpEditSuperscope	DhcpSuperscope
CreateDhcpServerPolicy	CreateServerPolicyDelegate	MsmDhcpCreateServerPolicy	DhcpServer
CreateDhcpScopePolicy	CreateScopePolicyDelegate	MsmDhcpCreateScopePolicy	DhcpScope
UpdatePolicy	UpdatePolicyDelegate	MsmDhcpEditScopePolicy/ MsmDhcpEditServerPolicy	DhcpScope/DhcpServer
DeletePolicy	DeletePolicyDelegate	MsmDhcpDeleteScopePolicy/ MsmDhcpDeleteServerPolicy	DhcpScope/DhcpServer
UpdatePolicyProperty	UpdatePolicyPropertiesDelegate	MsmDhcpDeleteScopePolicy/ MsmDhcpDeleteServerPolicy	DhcpScope/DhcpServer
MovePolicyProcessingOreder	MovePolicyProcessingOrderDelegate	MsmDhcpDeleteScopePolicy/ MsmDhcpDeleteServerPolicy	DhcpScope/DhcpServer
CreateDhcpReservation	CreateDhcpReservationDelegate	MsmDhcpScopeCreateOrEditAddressReservation	DhcpScope
DeleteDhcpReservation	DeleteDhcpReservationDelegate	MsmDhcpScopeDeleteAddressReservation	DhcpScope
DeleteDhcpReservation	DeleteDhcpReservationColle	MsmDhcpScopeDeleteAddressRe	DhcpScope

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Operation	Operation steps	Mapping OperationId	Object for AccesScope Determination
Collection	ctionDelegate	servation	
SetDhcpreservation	SetDhcpReservationDelegate	MsmDhcpScopeCreateOrEditAddressReservation	DhcpScope
SetDhcpReservationCollection	SetDhcpReservationCollectionDelegate	MsmDhcpScopeCreateOrEditAddressReservation	DhcpScope
CreateDhcpFailover	CreateDhcpFailoverDelegate	MsmDhcpCreateFailover	DhcpServer
EditDhcpFailover	UpdateDhcpFailoverDelegate	MsmDhcpEditFailover	DhcpServer
AddDhcpFailoverScopes	DhcpFailoverAddScopesDelegate	MsmDhcpEditFailover	DhcpServer
RemoveDhcpFailoverScopes	DhcpFailoverRemoveScopesDelegate	MsmDhcpEditFailover	DhcpServer
DeleteDhcpFailover	DeleteDhcpFailoverDelegate	MsmDhcpDeleteFailover	DhcpServer
ResetConfigSyncStatus	ResetConfigSyncStatusDelegate	MsmDhcpReplicateOperation	AccessScopeAgnostic
ReplicateScope	ReplicateFailoverScopeDelegate	MsmDhcpReplicateOperation	AccessScopeAgnostic
ReplicateRelation	DoFailoverReplicationDelegate	MsmDhcpReplicateOperation	AccessScopeAgnostic
ReplicateServer	ReplicateFailoverServerDelegate	MsmDhcpReplicateOperation	AccessScopeAgnostic
CreateDhcpFilters	CreateDhcpFiltersDelegate	MsmDhcpCreateEditFilter	DhcpServer
UpdateDhcpFilter	UpdateDhcpFilterDelegate	MsmDhcpCreateEditFilter	DhcpServer
UpdateDhcpFilters	UpdateDhcpFiltersDelegate	MsmDhcpCreateEditFilter	DhcpServer
DeleteDhcpFilters	DeleteDhcpFiltersDelegate	MsmDhcpDeleteFilter	DhcpServer
CreateIpamIPAddress	SaveIpamIPAddressDelegate	CreateIPAddress	IPRange
UpdateIpamIPAddress	UpdateIpamIPAddressDelegate	UpdateIPAddress	IPRange

3.20 IIpamOperationWithProgress Client Details

The client side of the IIpamOperationWithProgress MUST provide the IIpamOperationWithProgressCallback server interface. The IIpamOperationWithProgress server will callback into the IIpamOperationWithProgressCallback of the client for notifying the start of the operation, addition of subtasks, the status of the subtasks, percentage completion of the operation and the overall completion of the operation.

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In summary, on a single session, the management client implements the IIpamOperationWithProgressCallback port type and the management server implements the IIpamOperationWithProgress port type.

3.20.1 Abstract Data Model

None.

3.20.2 Timers

There are no additional timers beyond those specified in section 3.2.2.

3.20.3 Initialization

The IIpamOperationWithProgress client on initialization will establish the session to the management server. On successfully setting up the session, the IIpamOperationWithProgress client MUST initialize the IIpamOperationWithProgressCallback session on the same session so the IIpamOperationWithProgress server can callback with the operation status.

3.20.4 Message Processing Events and Sequencing Rules

None, other than those captured as part of the IIpamOperationWithProgressCallback server.

3.20.5 Timer Events

None.

3.20.6 Other Local Events

None.

3.21 IIpamOperationWithProgressCallback Server Details

This port type is implemented by the management client and initialized on the same session used to perform operations against the IIpamOperationWithProgress server on the management server. This provides the callback interface, which the IIpamOperationWithProgress server invokes to provide the Operation task and subtask status.

3.21.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

3.21.1.1 State Machine

The following figure shows the state machine of the IIpamOperationWithProgressCallback server port type.

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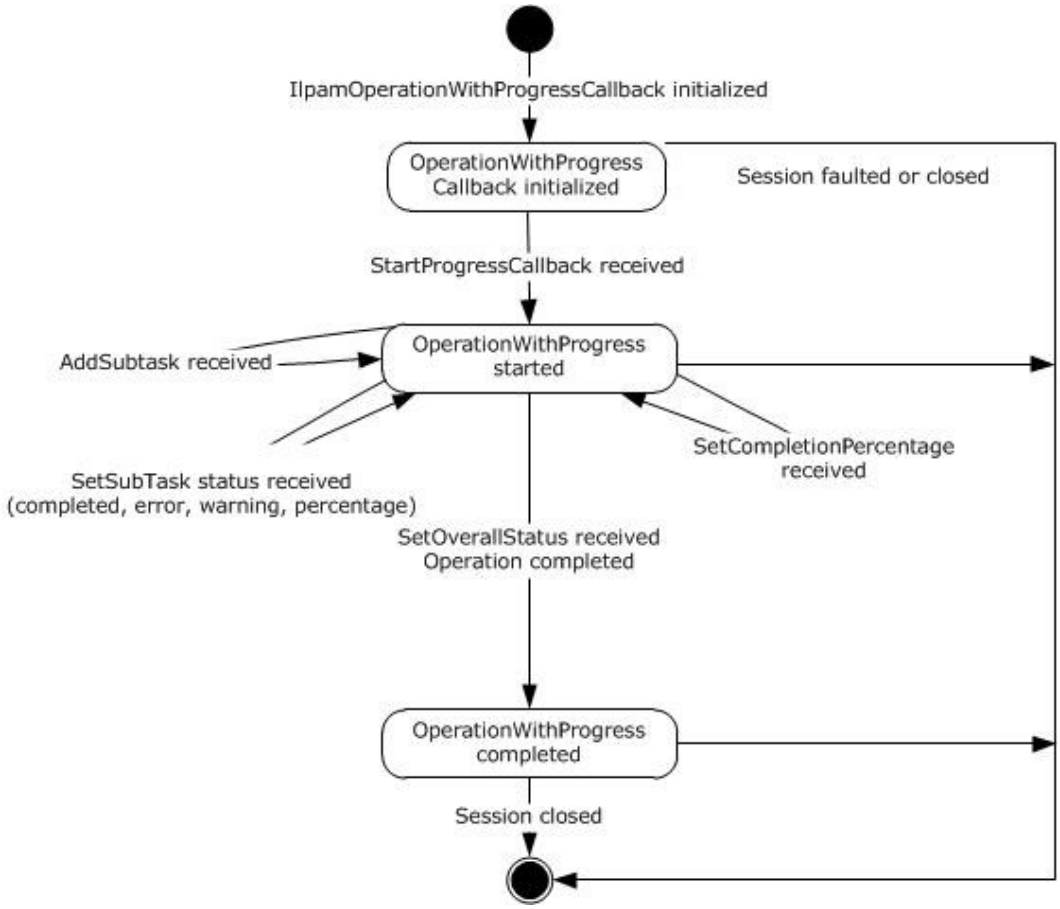

Figure 14: IIpamOperationWithProgressCallback state machine

The IIpamOperationWithProgressCallback server is session-based, sharing the same session the management client has with the management server using the IIpamOperationWithProgress port type. It is also stateful in nature. The session state variable is used to keep track of the current state for each session and it can have the following states as possible values. At any point of the session, if the session is known to be faulted or closed by the lower layer, the state machine ends.

State	Description
OperationWithProgress Callback initialized	This is the initial state of the IIpamOperationWithProgressCallback when it has been initialized by the IIpamOperationWithProgress client. When the StartProgressCallback is received in this state from the IIpamOperationWithProgress server port on the management server-end of the session, the transition to the OperationWithProgress started state will happen.
OperationWithProgress started	This state indicates the IIpamOperationWithProgressCallback is ready to receive the task and subtask status. When the AddSubTask callback or SetSubTaskStatus callback or SetCompletionPercentage callback is received in this state from the IIpamOperationWithProgress server port on the management server-end of the session, the state will continue to be in OperationWithProgress Started.

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State	Description
	When the SetOverallStatus callback is received in this state from the IIpamOperationWithProgress server port on the management server-end of the session, the state will transition to OperationWithProgress Completed.
OperationWithProgress completed	This is the state to notify that the interaction between the IIpamOperationWithProgress server port on the management server-end and the IIpamOperationWithProgressCallback server port on the management client-end is complete and the overall status of the operation is available.

3.21.1.2 Other Miscellaneous States

The following state is maintained on a per-session basis.

ProgressTracker: This is a compound data consisting of the following three portions. This will have the complete information regarding the status, percentage completion and errors or warnings of all the subtask and the overall operation.

SubTasksStatus: This is a collection of **SubTaskInstance** objects that stores the status information of all subtasks.

SubTaskInstance: This is an IpamObject that stores the SubTask status, SubTask percentage completion and SubTask Failure or warning data.

OverallProgressStatus: This is an IpamObject that contains the overall operation status, overall percentage completion and the error or warning information.

3.21.2 Timers

There are no additional timers beyond the ones defined by the lower layer of the protocols.

3.21.3 Initialization

The IIpamOperationWithProgressCallback interface is initialized by the IIpamOperationWithProgress client on the management client-end. The IIpamOperationWithProgress client initializes the ProgressTracker local variable by ensuring that the subtask collection is empty and the overall status is initialized. The session state is set to OperationWithProgress Callback Initialized.

3.21.4 Message Processing Events and Sequencing Rules

3.21.4.1 Session Faulted or Closed

This is an event triggered by the lower transport layer when the session has received a SOAP fault or a forceful session close has occurred. If the session state is OperationWithProgress Callback Initialized or OperationWithProgress Started, the **ProgressTracker.OverallProgressStatus** has to be set to an appropriate reason associated with the session.

3.21.4.2 AddSubTask

This operation is used by the management server to indicate addition of a subtask.

```
<wsdl:operation name="AddSubTask">
```


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```
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/AddSubTask"
message="ipam:IIpamOperationWithProgressCallback_AddSubTask_InputMessage" />
</wsdl:operation>
```

This operation has only the input message and there is no output message associated with it. Upon receiving the message, the Progresstracker.SubTasksStatus is updated by adding the received SubTaskInstance into the collection and initializing the status of the subtask.

3.21.4.2.1 Messages

3.21.4.2.1.1 IIpamOperationWithProgressCallback_AddSubTask_InputMessage

This is the request for the AddSubTask operation.

```
<wsdl:message name="IIpamOperationWithProgressCallback_AddSubTask_InputMessage">
  <wsdl:part name="parameters" element="ipam:AddSubTask" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/AddSubTask
```

The body of the SOAP message MUST contain the SubTaskInstance element.

3.21.4.2.2 Elements

3.21.4.2.2.1 AddSubTask

This element specifies the input values for the AddSubTask operation.

```
<xs:element name="AddSubTask">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subTaskInstance" nillable="true"
type="ipam:SubTaskInstance" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.21.4.3 SetCompletionPercentage

This operation is used to provide the overall completion percentage data.

```
<wsdl:operation name="SetCompletionPercentage">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetCompletionPe
rcentage"
message="ipam:IIpamOperationWithProgressCallback_SetCompletionPercentage_InputMessage" />
</wsdl:operation>
```


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This operation has only the input message and there is no output message associated with it. Upon receiving the message, the Progresstracker.OverallProgressStatus is updated with the overall percentage completion from SetCompletionPercentage.percentageCompletion.

3.21.4.3.1 Messages

3.21.4.3.1.1 IIpamOperationWithProgressCallback_SetCompletionPercentage_InputMessage

This is the request for the SetCompletionPercentage operation.

```
<wsdl:message name="IIpamOperationWithProgressCallback_SetCompletionPercentage_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetCompletionPercentage" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetCompletionPercentage
```

The body of the SOAP message MUST contain the SetCompletionPercentage element.

3.21.4.3.2 Elements

3.21.4.3.2.1 SetCompletionPercentage

This element specifies the input values for the SetCompletionPercentage operation.

```
<xs:element name="SetCompletionPercentage">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="completionPercentage" type="xsd:decimal" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.21.4.4 SetOverallStatus

This operation is used to provide the overall status of the operation.

```
<wsdl:operation name="SetOverallStatus">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetOverallStatu
s" message="ipam:IIpamOperationWithProgressCallback_SetOverallStatus_InputMessage" />
</wsdl:operation>
```

This operation has only the input message and there is no output message associated with it. Upon receiving the message, the Progresstracker.OverallProgressStatus is updated with the overall progress status from SetOverallStatus.OverallProgressStatus, and any error or warning information is updated from SetOverallStatus.CompletionStatus.

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3.21.4.4.1 Messages

3.21.4.4.1.1 IIpamOperationWithProgressCallback_SetOverallStatus_InputMessage

This is the request for the SetOverallStatus operation.

```
<wsdl:message name="IIpamOperationWithProgressCallback_SetOverallStatus_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetOverallStatus" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetOverallStatus
```

The body of the SOAP message MUST contain the SetOverallStatus element.

3.21.4.4.2 Elements

3.21.4.4.2.1 SetOverallStatus

This element specifies the input values for the SetOverallStatus operation.

```
<xs:element name="SetOverallStatus">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="overallStatus" type="ipam1:OverallProgressStatus" />
      <xs:element minOccurs="0" name="completionStatus" nillable="true"
type="ipam:IpamObject" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.21.4.5 SetSubTaskStatus

This operation is used to provide the completion status and the percentage completion for a subtask.

```
<wsdl:operation name="SetSubTaskStatus">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetSubTaskStatu
s" message="ipam:IIpamOperationWithProgressCallback_SetSubTaskStatus_InputMessage" />
</wsdl:operation>
```

This operation has only the input message and there is no output message associated with it. Upon receiving the message, the SetSubTaskStatus.SubTaskInstance is looked up in the local collection **ProgressTracker.SubTasksStatus**. The **Progresstracker.SubTasksStatus.SubTaskInstance** is then updated with the status, percent complete and the completion status indicated in the message.

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3.21.4.5.1 Messages

3.21.4.5.1.1 IIpamOperationWithProgressCallback_SetSubTaskStatus_InputMessage

This is the request for the SetSubTaskStatus operation.

```
<wsdl:message name="IIpamOperationWithProgressCallback_SetSubTaskStatus_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetSubTaskStatus" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetSubTaskStatus
```

The body of the SOAP message MUST contain the SetSubTaskStatus element.

3.21.4.5.2 Elements

3.21.4.5.2.1 SetSubTaskStatus

This element specifies the input values for the SetSubTaskStatus operation.

```
<xs:element name="SetSubTaskStatus">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="subTaskInstance" nillable="true"
type="ipam:SubTaskInstance" />
      <xs:element minOccurs="0" name="status" type="ipam:SubTaskStatus" />
      <xs:element minOccurs="0" name="percentComplete" type="xsd:decimal" />
      <xs:element minOccurs="0" name="completionStatus" nillable="true"
type="ipam1:IpamException" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.21.4.6 StartProgressCallback

This operation is used to indicate the start of operation tracking.

```
<wsdl:operation name="StartProgressCallback">
  <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/StartProgressCa
llback" message="ipam:IIpamOperationWithProgressCallback_StartProgressCallback_InputMessage"
/>
</wsdl:operation>
```

This operation has only the input message and there is no output message associated with it. Upon receiving the message, initialize the ProgressTracker local variable by ensuring that the subtask collection is empty and the overall status is initialized. The session state is set to OperationWithProgress Callback Initialized.

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3.21.4.6.1 Messages

3.21.4.6.1.1 IIpamOperationWithProgressCallback_StartProgressCallback_InputMessage

This is the request for the StartProgressCallback operation.

```
<wsdl:message name="IIpamOperationWithProgressCallback_StartProgressCallback_InputMessage">
  <wsdl:part name="parameters" element="ipam:StartProgressCallback" />
</wsdl:message>
```

This message MUST be sent with the following SOAP action.

```
http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/StartProgressCallback
```

The body of the SOAP message MUST contain the StartProgresscallback element.

3.21.4.6.2 Elements

3.21.4.6.2.1 StartProgressCallback

This element specifies the input values for the StartProgressCallback operation.

```
<xs:element name="StartProgressCallback">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="isNonDeterministic" type="xsd:boolean" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

3.21.5 Timer Events

None.

3.21.6 Other Local Events

3.21.6.1 User Authorization

Since the IIpamOperationWithProgressCallback server is initialized on the same session as the IIpamOperationWithProgress session, no additional user authentication and authorization is performed beyond what was done for the operations in the IIpamOperationWithProgress session.

3.22 IIpamOperationWithProgressCallback Client Details

The IIpamOperationWithProgress server is the endpoint that will also be the IIpamOperationWithProgressCallback client. The same session has the IIpamOperationWithProgress and the IIpamOperationWithProgressCallback implemented on either end. The management server will provide the IIpamOperationWithProgress server and the IIpamOperationWithProgressCallback client implementations and the management client will provide the IIpamOperationWithProgressCallback server and the IIpamOperationWithProgress client

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implementations. The IIpamOperationWithProgressCallback is only a request interface, which means that there is no data obtained from the IIpamOperationWithProgressCallback server.

3.22.1 Abstract Data Model

None.

3.22.2 Timers

None.

3.22.3 Initialization

None.

3.22.4 Message Processing Events and Sequencing Rules

None, other than those captured as a part of the IIpamOperationWithProgress server section 3.19.

3.22.5 Timer Events

None.

3.22.6 Other Local Events

None.

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4 Protocol Examples

4.1 Querying the Common Property

The following is the SOAP request message that can be sent to query the MinimumUtilizationThreshold property.

```
<s:Envelope xmlns:a="http://www.w3.org/2005/08/addressing"
xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValue</a:Acti
on>
    <a:MessageID>urn:uuid:0438627c-633b-4536-846c-31d195c8d51e</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
  </s:Header>
  <s:Body>
    <GetCommonPropertyValue xmlns="http://Microsoft.Windows.Ipam">
      <commonProperty>MinimumUtilizationThreshold</commonProperty>
    </GetCommonPropertyValue>
  </s:Body>
</s:Envelope>
```

The following is the SOAP response message for the above request.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValueResponse
</a:Action>
    <a:RelatesTo>urn:uuid:0438627c-633b-4536-846c-31d195c8d51e</a:RelatesTo>
    <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
  </s:Header>
  <s:Body>
    <GetCommonPropertyValueResponse xmlns="http://Microsoft.Windows.Ipam">
      <GetCommonPropertyValueResult>20</GetCommonPropertyValueResult>
    </GetCommonPropertyValueResponse>
  </s:Body></s:Envelope>
```

4.2 Creating an Address Range

The following request and response messages specify an example exchange for creating a static address range 192.168.1.0/24.

```
<s:Envelope xmlns:a="http://www.w3.org/2005/08/addressing"
xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamServer/SaveRange</a:Action>
    <a:MessageID>urn:uuid:c5150214-3f8b-4814-bff1-f5c2cc78fd48</a:MessageID>
    <a:ReplyTo>
```


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```
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
  </s:Header>
  <s:Body>
    <SaveRange xmlns="http://Microsoft.Windows.Ipam">
      <range xmlns:i="http://www.w3.org/2001/XMLSchema-instance" z:Id="i1" i:type="IPv4Range"
xmlns:z="http://schemas.microsoft.com/2003/10/Serialization/">
        <ModifiedProperties
xmlns:d5p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
          <d5p1:string>SubnetId</d5p1:string>
          <d5p1:string>StartIPAddress</d5p1:string>
          <d5p1:string>EndIPAddress</d5p1:string>
          <d5p1:string>PrefixLength</d5p1:string>
          <d5p1:string>UtilizationStatistics</d5p1:string>
        </ModifiedProperties>
        <SetProperties
xmlns:d5p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
          <d5p1:string>SubnetId</d5p1:string>
          <d5p1:string>StartIPAddress</d5p1:string>
          <d5p1:string>EndIPAddress</d5p1:string>
          <d5p1:string>PrefixLength</d5p1:string>
          <d5p1:string>AddressAssignment</d5p1:string>
          <d5p1:string>UtilizationCalculationType</d5p1:string>
          <d5p1:string>LastAssignedDate</d5p1:string>
          <d5p1:string>Owner</d5p1:string>
          <d5p1:string>Description</d5p1:string>
          <d5p1:string>UtilizationStatistics</d5p1:string>
          <d5p1:string>VirtualizationType</d5p1:string>
          <d5p1:string>AddressSpaceRecordId</d5p1:string>
        </SetProperties>
        <AccessScopeId>0</AccessScopeId>
        <AddressAssignment>Static</AddressAssignment>
        <AddressCategory>Private</AddressCategory>
        <AddressSpaceRecordId>1</AddressSpaceRecordId>
        <ConnectionSpecificDNSSuffix i:nil="true" />
        <CustomFieldValues>
          <CustomFieldValue z:Id="i2">
            <ModifiedProperties
xmlns:d7p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <d7p1:string>ParentCustomFieldRecordId</d7p1:string>
              <d7p1:string>ParentCustomFieldName</d7p1:string>
              <d7p1:string>ParentCustomFieldNumber</d7p1:string>
              <d7p1:string>Value</d7p1:string>
            </ModifiedProperties>
            <SetProperties
xmlns:d7p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <d7p1:string>ParentCustomFieldRecordId</d7p1:string>
              <d7p1:string>ParentCustomFieldName</d7p1:string>
              <d7p1:string>ParentCustomFieldNumber</d7p1:string>
              <d7p1:string>Value</d7p1:string>
            </SetProperties>
            <BuiltInCustomFieldValueId>1</BuiltInCustomFieldValueId>
            <ParentCustomFieldName>Managed by Service</ParentCustomFieldName>
            <ParentCustomFieldNumber>8</ParentCustomFieldNumber>
            <ParentCustomFieldRecordId>9</ParentCustomFieldRecordId>
            <RecordId>328</RecordId>
            <Value>IPAM</Value>
          </CustomFieldValue>
          <CustomFieldValue z:Id="i3">
```


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```
            <ModifiedProperties
  xmlns:d7p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <d7p1:string>ParentCustomFieldRecordId</d7p1:string>
              <d7p1:string>ParentCustomFieldName</d7p1:string>
              <d7p1:string>ParentCustomFieldNumber</d7p1:string>
              <d7p1:string>Value</d7p1:string>
            </ModifiedProperties>
            <SetProperties
  xmlns:d7p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <d7p1:string>ParentCustomFieldRecordId</d7p1:string>
              <d7p1:string>ParentCustomFieldName</d7p1:string>
              <d7p1:string>ParentCustomFieldNumber</d7p1:string>
              <d7p1:string>Value</d7p1:string>
            </SetProperties>
            <BuiltInCustomFieldValueId>1</BuiltInCustomFieldValueId>
            <ParentCustomFieldName>Service Instance</ParentCustomFieldName>
            <ParentCustomFieldNumber>9</ParentCustomFieldNumber>
            <ParentCustomFieldRecordId>10</ParentCustomFieldRecordId>
            <RecordId>333</RecordId>
            <Value>Localhost</Value>
          </CustomFieldValue>
        </CustomFieldValues>
        <CustomerAddressSpaceName i:nil="true" />
        <DNSServers xmlns:d5p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
        <DNSSuffixes xmlns:d5p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
  />
        <Description i:nil="true" />
        <DhcpScopeName i:nil="true" />
        <DhcpServerGuid i:nil="true" />
        <DhcpServerName i:nil="true" />
        <EndIPAddress xmlns:d5p1="http://schemas.datacontract.org/2004/07/System.Net">
          <d5p1:m_Address>4261412874</d5p1:m_Address>
          <d5p1:m_Family>InterNetwork</d5p1:m_Family>
          <d5p1:m_HashCode>0</d5p1:m_HashCode>
          <d5p1:m_Numbers
  xmlns:d6p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
          </d5p1:m_Numbers>
          <d5p1:m_ScopeId>0</d5p1:m_ScopeId>
        </EndIPAddress>
        <ExclusionRanges />
        <Gateways />
        <IsInheritedAccessScope>true</IsInheritedAccessScope>
        <IsOverlapping>false</IsOverlapping>
        <LastAssignedDate i:nil="true" />
        <LastChangeDate i:nil="true" />
        <LastReclaimRuntime i:nil="true" />
        <NumberOfChildAddresses>0</NumberOfChildAddresses>
        <Owner i:nil="true" />
        <ParentIPBlockRecordId i:nil="true" />
        <PartialCustomFieldValues />
        <PrefixLength>24</PrefixLength>
```


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```
        <ProviderAddressSpaceName i:nil="true" />
        <RangeOverlapState>NotOverlapping</RangeOverlapState>
        <RecordId i:nil="true" />
        <ReservedIPRanges xmlns:d5p1="http://schemas.datacontract.org/2004/07/System" />
        <ReservedIPs xmlns:d5p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
/>
        <ScopeRecordId i:nil="true" />
        <StartIPAddress xmlns:d5p1="http://schemas.datacontract.org/2004/07/System.Net">
          <d5p1:m_Address>16777226</d5p1:m_Address>
          <d5p1:m_Family>InterNetwork</d5p1:m_Family>
          <d5p1:m_HashCode>0</d5p1:m_HashCode>
          <d5p1:m_Numbers
xmlns:d6p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
          </d5p1:m_Numbers>
          <d5p1:m_ScopeId>0</d5p1:m_ScopeId>
        </StartIPAddress>
        <SubnetId xmlns:d5p1="http://schemas.datacontract.org/2004/07/System.Net">
          <d5p1:m_Address>10</d5p1:m_Address>
          <d5p1:m_Family>InterNetwork</d5p1:m_Family>
          <d5p1:m_HashCode>0</d5p1:m_HashCode>
          <d5p1:m_Numbers
xmlns:d6p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
          </d5p1:m_Numbers>
          <d5p1:m_ScopeId>0</d5p1:m_ScopeId>
        </SubnetId>
        <SubnetMask xmlns:d5p1="http://schemas.datacontract.org/2004/07/System.Net">
          <d5p1:m_Address>16777215</d5p1:m_Address>
          <d5p1:m_Family>InterNetwork</d5p1:m_Family>
          <d5p1:m_HashCode>0</d5p1:m_HashCode>
          <d5p1:m_Numbers
xmlns:d6p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
            <d6p1:unsignedShort>0</d6p1:unsignedShort>
          </d5p1:m_Numbers>
          <d5p1:m_ScopeId>0</d5p1:m_ScopeId>
        </SubnetMask>
        <UseForUtilization>true</UseForUtilization>
```


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```
        <UtilizationCalculationType>Auto</UtilizationCalculationType>
        <UtilizationEventLogStatus>None</UtilizationEventLogStatus>
        <UtilizationStatistics i:nil="true" />
        <VIPRanges xmlns:d5p1="http://schemas.datacontract.org/2004/07/System" />
        <VIPs xmlns:d5p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
        <VirtualizationType>NonVirtualized</VirtualizationType>
        <WINSServers xmlns:d5p1="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
/>
      </range>
      <createSubnetIfDoesNotExist>true</createSubnetIfDoesNotExist>
    </SaveRange>
  </s:Body>
</s:Envelope>
```

The following is a sample response message for the previous request returning the record identifier of the newly created range instance.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamServer/SaveRangeResponse</a:Action>
    <a:RelatesTo>urn:uuid:c5150214-3f8b-4814-bff1-f5c2cc78fd48</a:RelatesTo>
    <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
  </s:Header>
  <s:Body>
    <SaveRangeResponse xmlns="http://Microsoft.Windows.Ipam">
      <SaveRangeResult>262165</SaveRangeResult>
    </SaveRangeResponse>
  </s:Body>
</s:Envelope>
```

4.3 Enumerating the Address Ranges

This section captures the enumeration sequence between the client and server for enumerating the address ranges.

The following is the SOAP message request for enumerating all the address ranges.

```
<s:Envelope xmlns:a="http://www.w3.org/2005/08/addressing"
xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumeration</a:A
ction>
    <a:MessageID>urn:uuid:cada78c6-1a4b-4c58-bf53-b153b893c46a</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
  </s:Header>
  <s:Body>
    <InitializeEnumeration xmlns="http://Microsoft.Windows.Ipam">
```


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```
      <parameters xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
i:type="IPRangeByAddressSpaceAndVirtualizationTypeParameters">
        <FetchAllData>false</FetchAllData>
        <IncludeCustomFieldValues>false</IncludeCustomFieldValues>
        <ObjectType>IPRange</ObjectType>
        <AddressFamily>InterNetwork</AddressFamily>
        <AddressSpaceRecordID>1</AddressSpaceRecordID>
        <VirtualizationType i:nil="true" />
      </parameters>
    </InitializeEnumeration>
  </s:Body>
</s:Envelope>
```

The following is the SOAP response to the previous request denoting the successful processing of the request.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationRespo
nse</a:Action>
    <a:RelatesTo>urn:uuid:cada78c6-1a4b-4c58-bf53-b153b893c46a</a:RelatesTo>
    <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
  </s:Header>
  <s:Body>
    <InitializeEnumerationResponse
xmlns="http://Microsoft.Windows.Ipam"></InitializeEnumerationResponse>
  </s:Body>
</s:Envelope>
```

The client sends the following message to start the enumeration.

```
<s:Envelope xmlns:a="http://www.w3.org/2005/08/addressing"
xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamEnumerator/StartEnumeration</a:Action
>
  </s:Header>
  <s:Body>
    <StartEnumeration xmlns="http://Microsoft.Windows.Ipam" />
  </s:Body>
</s:Envelope>
```

The server sends the following message to denote the start of the enumeration.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationStart</a:
Action>
```


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```
    <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
  </s:Header>
  <s:Body>
    <NotifyEnumerationStart xmlns="http://Microsoft.Windows.Ipam"></NotifyEnumerationStart>
  </s:Body>
</s:Envelope>
```

The following is the EnumeratedRowsCallback message generated by the server to pass the requested data to the client.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamEnumerator/EnumeratedRowsCallback</a:
Action>
    <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
  </s:Header>
  <s:Body>
    <EnumeratedRowsCallback xmlns="http://Microsoft.Windows.Ipam">
      <data xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
        <IpamObject z:Id="i1" i:type="IPv4Range"
xmlns:z="http://schemas.microsoft.com/2003/10/Serialization/">
          <ModifiedProperties i:nil="true"
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></ModifiedProperties>
          <SetProperties i:nil="true"
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></SetProperties>
          <AccessScopeId>1</AccessScopeId>
          <AddressAssignment>Dynamic</AddressAssignment>
          <AddressCategory>Private</AddressCategory>
          <AddressSpaceRecordId>1</AddressSpaceRecordId>
          <ConnectionSpecificDNSSuffix i:nil="true"></ConnectionSpecificDNSSuffix>
          <CustomFieldValues>
            <CustomFieldValue z:Id="i2">
              <ModifiedProperties
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
                <b:string>ParentCustomFieldRecordId</b:string>
                <b:string>ParentCustomFieldName</b:string>
                <b:string>ParentCustomFieldNumber</b:string>
                <b:string>Value</b:string>
              </ModifiedProperties>
              <SetProperties
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
                <b:string>ParentCustomFieldRecordId</b:string>
                <b:string>ParentCustomFieldName</b:string>
                <b:string>ParentCustomFieldNumber</b:string>
                <b:string>Value</b:string>
              </SetProperties>
              <BuiltInCustomFieldValueId>2</BuiltInCustomFieldValueId>
              <ParentCustomFieldName>Managed by Service</ParentCustomFieldName>
              <ParentCustomFieldNumber>8</ParentCustomFieldNumber>
              <ParentCustomFieldRecordId>9</ParentCustomFieldRecordId>
              <RecordId>329</RecordId>
              <Value>MS DHCP</Value>
            </CustomFieldValue>
            <CustomFieldValue z:Id="i3">
              <ModifiedProperties
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
```


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```
                <b:string>ParentCustomFieldRecordId</b:string>
                <b:string>ParentCustomFieldName</b:string>
                <b:string>ParentCustomFieldNumber</b:string>
                <b:string>Value</b:string>
              </ModifiedProperties>
              <SetProperties
  xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
                <b:string>ParentCustomFieldRecordId</b:string>
                <b:string>ParentCustomFieldName</b:string>
                <b:string>ParentCustomFieldNumber</b:string>
                <b:string>Value</b:string>
              </SetProperties>
              <BuiltInCustomFieldValueId>0</BuiltInCustomFieldValueId>
              <ParentCustomFieldName>Service Instance</ParentCustomFieldName>
              <ParentCustomFieldNumber>9</ParentCustomFieldNumber>
              <ParentCustomFieldRecordId>10</ParentCustomFieldRecordId>
              <RecordId>441555</RecordId>
              <Value>rguptsrvtest2.drguptsrvtest3.ipamtest.idc.local</Value>
            </CustomFieldValue>
          </CustomFieldValues>
          <CustomerAddressSpaceName i:nil="true"></CustomerAddressSpaceName>
          <DNSServers
  xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></DNSServers>
          <DNSSuffixes
  xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></DNSSuffixes>
          <Description></Description>
          <DhcpScopeName>test</DhcpScopeName>
          <DhcpServerGuid>4562f61c-b373-46de-af73-32fb8a58e893</DhcpServerGuid>
          <DhcpServerName>rguptsrvtest2.drguptsrvtest3.ipamtest.idc.local</DhcpServerName>
          <EndIPAddress xmlns:b="http://schemas.datacontract.org/2004/07/System.Net">
            <b:m_Address>1677724170</b:m_Address>
            <b:m_Family>InterNetwork</b:m_Family>
            <b:m_HashCode>0</b:m_HashCode>
            <b:m_Numbers xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
            </b:m_Numbers>
            <b:m_ScopeId>0</b:m_ScopeId>
          </EndIPAddress>
          <ExclusionRanges></ExclusionRanges>
          <Gateways></Gateways>
          <IsInheritedAccessScope>true</IsInheritedAccessScope>
          <IsOverlapping>false</IsOverlapping>
          <LastAssignedDate i:nil="true"></LastAssignedDate>
          <LastChangeDate>2013-06-06T10:21:03.6654624</LastChangeDate>
          <LastReclaimRuntime i:nil="true"></LastReclaimRuntime>
          <NumberOfChildAddresses>0</NumberOfChildAddresses>
          <Owner i:nil="true"></Owner>
          <ParentIPBlockRecordId>151126</ParentIPBlockRecordId>
          <PartialCustomFieldValues>
            <CustomFieldPartialValue>
              <ParentCustomFieldId>9</ParentCustomFieldId>
              <Value>MS DHCP</Value>
```


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```
              <ValueId>329</ValueId>
            </CustomFieldPartialValue>
            <CustomFieldPartialValue>
              <ParentCustomFieldId>10</ParentCustomFieldId>
              <Value>rguptsrvtest2.drguptsrvtest3.ipamtest.idc.local</Value>
              <ValueId>441555</ValueId>
            </CustomFieldPartialValue>
          </PartialCustomFieldValues>
          <PrefixLength>8</PrefixLength>
          <ProviderAddressSpaceName>Default IP Address Space</ProviderAddressSpaceName>
          <RangeOverlapState>NotOverlapping</RangeOverlapState>
          <RecordId>262164</RecordId>
          <ReservedIPRanges
xmlns:b="http://schemas.datacontract.org/2004/07/System"></ReservedIPRanges>
          <ReservedIPs
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></ReservedIPs>
          <ScopeRecordId>262142</ScopeRecordId>
          <StartIPAddress xmlns:b="http://schemas.datacontract.org/2004/07/System.Net">
            <b:m_Address>16779786</b:m_Address>
            <b:m_Family>InterNetwork</b:m_Family>
            <b:m_HashCode>0</b:m_HashCode>
            <b:m_Numbers xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
            </b:m_Numbers>
            <b:m_ScopeId>0</b:m_ScopeId>
          </StartIPAddress>
          <SubnetId xmlns:b="http://schemas.datacontract.org/2004/07/System.Net">
            <b:m_Address>10</b:m_Address>
            <b:m_Family>InterNetwork</b:m_Family>
            <b:m_HashCode>0</b:m_HashCode>
            <b:m_Numbers xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
            </b:m_Numbers>
            <b:m_ScopeId>0</b:m_ScopeId>
          </SubnetId>
          <SubnetMask xmlns:b="http://schemas.datacontract.org/2004/07/System.Net">
            <b:m_Address>255</b:m_Address>
            <b:m_Family>InterNetwork</b:m_Family>
            <b:m_HashCode>0</b:m_HashCode>
            <b:m_Numbers xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
```


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```
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
              <c:unsignedShort>0</c:unsignedShort>
            </b:m_Numbers>
            <b:m_ScopeId>0</b:m_ScopeId>
          </SubnetMask>
          <UseForUtilization>true</UseForUtilization>
          <UtilizationCalculationType>Auto</UtilizationCalculationType>
          <UtilizationEventLogStatus>Under</UtilizationEventLogStatus>
          <UtilizationStatistics z:Id="i4" i:type="IPv4Utilization">
            <EndTime i:nil="true"></EndTime>
            <IsValid>true</IsValid>
            <StartTime i:nil="true"></StartTime>
            <TotalAssignedAddresses>100</TotalAssignedAddresses>
            <TotalAvailableAddresses>100</TotalAvailableAddresses>
            <TotalUtilizedAddresses>0</TotalUtilizedAddresses>
          </UtilizationStatistics>
          <VIPRanges xmlns:b="http://schemas.datacontract.org/2004/07/System"></VIPRanges>
          <VIPs xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></VIPs>
          <VirtualizationType>NonVirtualized</VirtualizationType>
          <WINSServers
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></WINSServers>
        </IpamObject>
      </data>
    </EnumeratedRowsCallback>
  </s:Body>
</s:Envelope>
```

The following is the enumeration completion notification by the server to the client.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationComplete<
/a:Action>
    <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
  </s:Header>
  <s:Body>
    <NotifyEnumerationComplete xmlns="http://Microsoft.Windows.Ipam">
      <result i:nil="true" xmlns:i="http://www.w3.org/2001/XMLSchema-instance"></result>
      <exception i:nil="true" xmlns:i="http://www.w3.org/2001/XMLSchema-
instance"></exception>
    </NotifyEnumerationComplete>
  </s:Body>
</s:Envelope>
```


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5 Security

5.1 Security Considerations for Implementers

This security protocol does not introduce any additional security considerations beyond those that apply to its underlying protocol.

5.2 Index of Security Parameters

Security parameter	Section
Authentication and Encryption Mechanism	section 2.1

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6 Appendix A: Full WSDL

For ease of implementation, the full WSDL and schema are provided in this appendix.

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions targetNamespace="http://Microsoft.Windows.Ipam"
xmlns:msc="http://schemas.microsoft.com/ws/2005/12/wsdl/contract"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:ipam="http://Microsoft.Windows.Ipam"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xsd:schema targetNamespace="http://Microsoft.Windows.Ipam/Imports">
      <xsd:import namespace="http://Microsoft.Windows.Ipam" />
      <xsd:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
      <xsd:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
      <xsd:import namespace="http://schemas.datacontract.org/2004/07/System.Net" />
      <xsd:import namespace="http://schemas.datacontract.org/2004/07/System.Net.Sockets" />
      <xsd:import
namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic" />
      <xsd:import namespace="http://schemas.datacontract.org/2004/07/System" />
      <xsd:import namespace="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam"
/>
    </xsd:schema>
  </wsdl:types>
  <wsdl:binding name="DefaultBinding_IIpamAsyncProvision" type="ipam:IIpamAsyncProvision">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="InitializeAsyncProvisioning">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/InitializeAsyncProvisioning"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="StartAsyncProvisioning">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/StartAsyncProvisioning"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncProvisionStart">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionStart"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncProvisionCheckpoint">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionCheckpoint"
style="document" />
      <wsdl:output>
```


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```
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncProvisionComplete">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionComplete"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamAsyncProvisionCallback"
type="ipam:IIpamAsyncProvisionCallback">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="NotifyAsyncProvisionStart">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionSta
rt" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncProvisionCheckpoint">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionChe
ckpoint" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncProvisionComplete">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionCom
plete" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamAsyncSchemaCallback"
type="ipam:IIpamAsyncSchemaCallback">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="NotifyAsyncSchemaConversionStart">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversio
nStart" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncSchemaConversionCheckpoint">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversio
nCheckpoint" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncSchemaConversionComplete">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversio
nComplete" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamAsyncSchemaConversion"
type="ipam:IIpamAsyncSchemaConversion">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="InitializeAsyncSchemaConversion">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/InitializeAsyncSchemaCon
version" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="StartAsyncSchemaConversion">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/StartAsyncSchemaConversi
on" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncSchemaConversionStart">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConvers
ionStart" style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncSchemaConversionCheckpoint">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConvers
ionCheckpoint" style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncSchemaConversionComplete">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConvers
ionComplete" style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamEnumerator" type="ipam:IIpamEnumerator">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="InitializeEnumeration">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumeration"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="InitializeEnumerationWithModule">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationWithModule"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="StartEnumeration">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumerator/StartEnumeration" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyEnumerationStart">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationStart"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="EnumeratedRowsCallback">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumerator/EnumeratedRowsCallback"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="NotifyEnumerationComplete">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationComplete"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamEnumeratorCallback"
type="ipam:IIpamEnumeratorCallback">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="NotifyEnumerationStart">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationStart"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="EnumeratedRowsCallback">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/EnumeratedRowsCallback"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyEnumerationComplete">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationComplete"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamIPAuditEnumerator"
type="ipam:IIpamIPAuditEnumerator">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="IPAuditInitializeEnumeration">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditInitializeEnumeration
" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="IPAuditStartEnumeration">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditStartEnumeration"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="NotifyEnumerationStart">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationStart"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="EnumeratedRowsCallback">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/EnumeratedRowsCallback"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
```


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```
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="NotifyEnumerationComplete">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationComplete"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamOperationWithProgress"
type="ipam:IIpamOperationWithProgress">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="InitializeOperationParameters">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/InitializeOperationParam
eters" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="StartOperationWithCallback">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartOperationWithCallba
ck" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="StartProgressCallback">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartProgressCallback"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SetCompletionPercentage">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetCompletionPercentage"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SetSubTaskStatus">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetSubTaskStatus"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
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    <wsdl:operation name="SetOverallStatus">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetOverallStatus"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="AddSubTask">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/AddSubTask"
style="document" />
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamOperationWithProgressCallback"
type="ipam:IIpamOperationWithProgressCallback">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="StartProgressCallback">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/StartProgressCal
lback" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="SetCompletionPercentage">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetCompletionPer
centage" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="SetSubTaskStatus">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetSubTaskStatus
" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="SetOverallStatus">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetOverallStatus
" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
    <wsdl:operation name="AddSubTask">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/AddSubTask"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
    </wsdl:operation>
```


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```
  </wsdl:binding>
  <wsdl:binding name="DefaultBinding_IIpamServer" type="ipam:IIpamServer">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="IsIpamConfigured">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/IsIpamConfigured"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetIpamVersion">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamVersion"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="IsSchemaConversionRequired">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionRequired"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="IsSchemaConversionInProgress">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionInProgress"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetSchemaConversionInfo">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetSchemaConversionInfo"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="ValidateIfUpgradeIsPossible">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/ValidateIfUpgradeIsPossible"
style="document" />
```


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```
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GenerateUpgradeValidationFailureLog">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLog"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DoProvisioningWithEnumerator">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DoProvisioningWithEnumerator"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateUserRole">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserRole"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateUserRole">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserRole"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteUserRole">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserRole"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
```


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```
    <wsdl:operation name="GetUserRole">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetUserRole"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetAccessScope">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetAccessScope"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateAccessScope">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CreateAccessScope" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateAccessScope">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAccessScope" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteAccessScope">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAccessScope" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetUserAccessPolicy">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetUserAccessPolicy" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
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```
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateUserAccessPolicy">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserAccessPolicy"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateUserAccessPolicy">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserAccessPolicy"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteUserAccessPolicy">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserAccessPolicy"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SetAccessScopeForObjects">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SetAccessScopeForObjects"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetCurrentDatabaseConfiguration">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetCurrentDatabaseConfiguration"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SetDatabaseConfiguration">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SetDatabaseConfiguration"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetDefaultProviderAddressSpaceRecordId">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetDefaultProviderAddressSpaceRecordId"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetAddressSpaceById">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceById" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetAddressSpaceByName">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByName" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetAddressSpacesByIds">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpacesByIds" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveAddressSpace">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveAddressSpace"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
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      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateAddressSpace">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAddressSpace" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteAddressSpace">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAddressSpace" style="document" />
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        <soap:body use="literal" />
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        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="BulkUpdateAddressSpaces">
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soapAction="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateAddressSpaces"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetAllAddressSpaceNames">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetAllAddressSpaceNames"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveSubnet">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveSubnet"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateSubnet">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateSubnet"
style="document" />
      <wsdl:input>
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```
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteSubnet">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteSubnet"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetSubnetById">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetById"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="GetSubnetByNetworkIdAndAddressSpace">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByNetworkIdAndAddressSpace"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="GetSubnetsByIds">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetsByIds"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="RemapSubnet">
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style="document" />
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        <soap:body use="literal" />
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      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetSubnetUtilization">
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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetUtilization" style="document"
/>
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        <soap:body use="literal" />
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        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="BulkUpdateSubnets">
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soapAction="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateSubnets" style="document" />
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    </wsdl:operation>
    <wsdl:operation name="GetBlockUtilization">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockUtilization" style="document"
/>
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveBlock">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveBlock"
style="document" />
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      <wsdl:output>
        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="UpdateBlock">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateBlock"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteBlock">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteBlock"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
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    </wsdl:operation>
    <wsdl:operation name="GetBlockById">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockById"
style="document" />
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        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetBlocksByIds">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBlocksByIds"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetBlockByIPAddressAndPrefixLength">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIPAddressAndPrefixLength"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetBlockHierarchy">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchy" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
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        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="BulkUpdateBlocks">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateBlocks"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetBlockHierarchyForRangeId">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForRangeId"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
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        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="GetBlockHierarchyForSubnetId">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForSubnetId"
style="document" />
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        <soap:body use="literal" />
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      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="EnumerateIpamIPBlock">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateIpamIPBlock" style="document"
/>
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="GetBuiltInCustomField">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInCustomField" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetCustomFieldById">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetCustomFieldById" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveCustomField">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomField"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateCustomField">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomField" style="document" />
      <wsdl:input>
```


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```
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteCustomField">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomField" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="EnumerateCustomFields">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFields" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveCustomFieldAssociation">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociation"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateCustomFieldAssociation">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldAssociation"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteCustomFieldAssociation">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldAssociation"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
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```
    <wsdl:operation name="EnumerateCustomFieldAssociations">
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soapAction="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldAssociations"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveRange">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveRange"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateRange">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateRange"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateRanges">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateRanges"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteRange">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteRange"
style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="RemapRange">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/RemapRange"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
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      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetRangeUtilization">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeUtilization" style="document"
/>
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      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetIPRangeById">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangeById"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetIPRangesByIds">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangesByIds"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetTotalUnmappedRanges">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetTotalUnmappedRanges"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetFreeIPAddresses">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddresses" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="IsIPAddressMapped">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/IsIPAddressMapped" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
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      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetRangeByScopeRecordId">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByScopeRecordId"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetRangeByIPAddress">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByIPAddress" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetRangeByAddressSpaceIdAndManagedByManagedByEntity">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByAddressSpaceIdAndManagedByMan
agedByEntity" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateIPAddresses">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateIPAddresses" style="document"
/>
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteIpamIPAddress">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIpamIPAddress" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FetchIpamIPAddress">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddress" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FetchIpamIPAddressByManagedByAndManagedByEntity">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManaged
ByEntity" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManaged
ByEntityAndAddressSpace" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetIPAddressById">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressById"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetIPAddressesByIds">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressesByIds" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FindAvailableDhcpServersForReservation">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableDhcpServersForReservation"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
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        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FindAvailableScopeForReservationInDhcpServer">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableScopeForReservationInDhcpS
erver" style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveLogicalGroup">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveLogicalGroup"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateLogicalGroup">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateLogicalGroup" style="document" />
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      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteLogicalGroup">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteLogicalGroup" style="document" />
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        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetBuiltInLogicalGroup">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInLogicalGroup"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetLogicalGroupById">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupById" style="document"
/>
      <wsdl:input>
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```
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetLogicalGroupUtilizationByPeriod">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByPeriod"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetLogicalGroupUtilizationByType">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByType"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteServer">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteServer"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="ManuallyUpdateServer">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyUpdateServer" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="ManuallyAddServer">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyAddServer" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetServersForMultipleId">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetServersForMultipleId"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateServers">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateServers" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateGpoForMultipleServers">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateGpoForMultipleServers"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="EnumerateServerInfo">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateServerInfo" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetDiscoveryConfig">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetDiscoveryConfig" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SaveDiscoveryConfig">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SaveDiscoveryConfig" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
```


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```
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateDiscoveryConfig">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/UpdateDiscoveryConfig" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteDiscoveryConfig">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDiscoveryConfig" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="IsTaskRunning">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/IsTaskRunning"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="TaskLastRuntime">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRuntime"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="TaskLastRunResult">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRunResult" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="TaskNextRuntime">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/TaskNextRuntime"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
```


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```
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="TaskRecurrenceDuration">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/TaskRecurrenceDuration"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="StartTask">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/StartTask"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetIpamTasksInfo">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamTasksInfo"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetCommonPropertyValue">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValue"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="SetCommonPropertyValue">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/SetCommonPropertyValue"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetNumberOfForwardLookupZonesForServers">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetNumberOfForwardLookupZonesForServers
" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FetchDnsServerReverseZoneById">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerReverseZoneById"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FetchDnsServerZoneById">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerZoneById"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CheckIfDnsServerReverseZoneHostedOnServer">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerReverseZoneHostedOnServ
er" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CheckIfDnsServerZoneHostedOnServer">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerZoneHostedOnServer"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="ResetZoneHealth">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/ResetZoneHealth"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
```


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```
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FetchDnsZonesByIds">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsZonesByIds" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FetchDnsReverseLookupZonesByIds">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsReverseLookupZonesByIds"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateOrUpdateIPv4Reservation">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPv4Reservation"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateOrUpdateIPV6Reservation">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPV6Reservation"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteIPV4Reservation">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV4Reservation" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteIPV6Reservation">
```


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```
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV6Reservation" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateDNSHostRecord">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSHostRecord" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteDNSHostRecord">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSHostRecord" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateDNSPTRRecord">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSPTRRecord" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteDNSPTRRecord">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSPTRRecord" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetFreeIPAddressesFromScope">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesFromScope"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
```


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```
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DBGetScopeFromRecordId">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromRecordId"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DBGetScopeFromNetworkIDAndServer">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromNetworkIDAndServer"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DBGetDhcpServerFromServerInfoRecordId">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromServerInfoRecordId"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DBGetDhcpServerFromRecordId">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromRecordId"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetScopesByIds">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesByIds"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetPolicyFromDB">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyFromDB"
style="document" />
```


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```
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetAllPoliciesFromDB">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetAllPoliciesFromDB" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetReservations">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetReservations"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetDhcpReservationOptions">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetDhcpReservationOptions"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetPolicyConditionFromDB">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyConditionFromDB"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetPolicyRangesFromDB">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyRangesFromDB" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
```


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```
    </wsdl:operation>
    <wsdl:operation name="GetPolicyOptionsFromDB">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyOptionsFromDB"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetScopesForSuperscope">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesForSuperscope"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetFilters">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetFilters"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetSuperscopes">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/GetSuperscopes"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="PurgeAuditData">
      <soap:operation soapAction="http://Microsoft.Windows.Ipam/IIpamServer/PurgeAuditData"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="IsPurgeTaskRunning">
      <soap:operation
soapAction="http://Microsoft.Windows.Ipam/IIpamServer/IsPurgeTaskRunning" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
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        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:portType msc:usingSession="true" name="IIpamAsyncProvision">
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeAsyncProvisioning">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/InitializeAsyncProvisioning"
message="ipam:IIpamAsyncProvision_InitializeAsyncProvisioning_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/InitializeAsyncProvisioningRes
ponse" message="ipam:IIpamAsyncProvision_InitializeAsyncProvisioning_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartAsyncProvisioning">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/StartAsyncProvisioning"
message="ipam:IIpamAsyncProvision_StartAsyncProvisioning_InputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncProvisionStart">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionStart"
message="ipam:IIpamAsyncProvision_NotifyAsyncProvisionStart_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncProvisionCheckpoint">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionCheckpoint
" message="ipam:IIpamAsyncProvision_NotifyAsyncProvisionCheckpoint_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncProvisionComplete">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvision/NotifyAsyncProvisionComplete"
message="ipam:IIpamAsyncProvision_NotifyAsyncProvisionComplete_OutputCallbackMessage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message name="IIpamAsyncProvision_InitializeAsyncProvisioning_InputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeAsyncProvisioning" />
  </wsdl:message>
  <wsdl:message name="IIpamAsyncProvision_InitializeAsyncProvisioning_OutputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeAsyncProvisioningResponse" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncProvision_NotifyAsyncProvisionCheckpoint_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionCheckpoint" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncProvision_NotifyAsyncProvisionComplete_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionComplete" />
  </wsdl:message>
  <wsdl:message name="IIpamAsyncProvision_NotifyAsyncProvisionStart_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionStart" />
  </wsdl:message>
  <wsdl:message name="IIpamAsyncProvision_StartAsyncProvisioning_InputMessage">
    <wsdl:part name="parameters" element="ipam:StartAsyncProvisioning" />
  </wsdl:message>
  <wsdl:portType name="IIpamAsyncProvisionCallback">
    <wsdl:operation name="NotifyAsyncProvisionStart">
```


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```
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionSt
art" message="ipam:IIpamAsyncProvisionCallback_NotifyAsyncProvisionStart_InputMessage" />
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncProvisionCheckpoint">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionCh
eckpoint"
message="ipam:IIpamAsyncProvisionCallback_NotifyAsyncProvisionCheckpoint_InputMessage" />
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncProvisionComplete">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncProvisionCallback/NotifyAsyncProvisionCo
mplete" message="ipam:IIpamAsyncProvisionCallback_NotifyAsyncProvisionComplete_InputMessage"
/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message
name="IIpamAsyncProvisionCallback_NotifyAsyncProvisionCheckpoint_InputMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionCheckpoint" />
  </wsdl:message>
  <wsdl:message name="IIpamAsyncProvisionCallback_NotifyAsyncProvisionComplete_InputMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionComplete" />
  </wsdl:message>
  <wsdl:message name="IIpamAsyncProvisionCallback_NotifyAsyncProvisionStart_InputMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncProvisionStart" />
  </wsdl:message>
  <wsdl:portType name="IIpamAsyncSchemaCallback">
    <wsdl:operation name="NotifyAsyncSchemaConversionStart">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversi
onStart"
message="ipam:IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionStart_InputMessage" />
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncSchemaConversionCheckpoint">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversi
onCheckpoint"
message="ipam:IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionCheckpoint_InputMessage" />
    </wsdl:operation>
    <wsdl:operation name="NotifyAsyncSchemaConversionComplete">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaCallback/NotifyAsyncSchemaConversi
onComplete"
message="ipam:IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionComplete_InputMessage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message
name="IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionCheckpoint_InputMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionCheckpoint" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionComplete_InputMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionComplete" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncSchemaCallback_NotifyAsyncSchemaConversionStart_InputMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionStart" />
  </wsdl:message>
  <wsdl:portType msc:usingSession="true" name="IIpamAsyncSchemaConversion">
```


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```
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeAsyncSchemaConversion">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/InitializeAsyncSchemaCo
nversion"
message="ipam:IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/InitializeAsyncSchemaCo
nversionResponse"
message="ipam:IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartAsyncSchemaConversion">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/StartAsyncSchemaConvers
ion" message="ipam:IIpamAsyncSchemaConversion_StartAsyncSchemaConversion_InputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncSchemaConversionStart">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConver
sionStart"
message="ipam:IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionStart_OutputCallbackMessa
ge" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncSchemaConversionCheckpoint">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConver
sionCheckpoint"
message="ipam:IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionCheckpoint_OutputCallback
Message" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyAsyncSchemaConversionComplete">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamAsyncSchemaConversion/NotifyAsyncSchemaConver
sionComplete"
message="ipam:IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionComplete_OutputCallbackMe
ssage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message
name="IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_InputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeAsyncSchemaConversion" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncSchemaConversion_InitializeAsyncSchemaConversion_OutputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeAsyncSchemaConversionResponse" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionCheckpoint_OutputCallbackMessage"
>
    <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionCheckpoint" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionComplete_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionComplete" />
  </wsdl:message>
  <wsdl:message
name="IIpamAsyncSchemaConversion_NotifyAsyncSchemaConversionStart_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:NotifyAsyncSchemaConversionStart" />
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  </wsdl:message>
  <wsdl:message name="IIpamAsyncSchemaConversion_StartAsyncSchemaConversion_InputMessage">
    <wsdl:part name="parameters" element="ipam:StartAsyncSchemaConversion" />
  </wsdl:message>
  <wsdl:portType msc:usingSession="true" name="IIpamEnumerator">
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeEnumeration">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumeration"
message="ipam:IIpamEnumerator_InitializeEnumeration_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationResponse"
message="ipam:IIpamEnumerator_InitializeEnumeration_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeEnumerationWithModule">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationWithModule"
message="ipam:IIpamEnumerator_InitializeEnumerationWithModule_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/InitializeEnumerationWithModuleRes
ponse" message="ipam:IIpamEnumerator_InitializeEnumerationWithModule_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartEnumeration">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/StartEnumeration"
message="ipam:IIpamEnumerator_StartEnumeration_InputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyEnumerationStart">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationStart"
message="ipam:IIpamEnumerator_NotifyEnumerationStart_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="EnumeratedRowsCallback">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/EnumeratedRowsCallback"
message="ipam:IIpamEnumerator_EnumeratedRowsCallback_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyEnumerationComplete">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumerator/NotifyEnumerationComplete"
message="ipam:IIpamEnumerator_NotifyEnumerationComplete_OutputCallbackMessage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message name="IIpamEnumerator_EnumeratedRowsCallback_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:EnumeratedRowsCallback" />
  </wsdl:message>
  <wsdl:message name="IIpamEnumerator_InitializeEnumeration_InputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeEnumeration" />
  </wsdl:message>
  <wsdl:message name="IIpamEnumerator_InitializeEnumeration_OutputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeEnumerationResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamEnumerator_InitializeEnumerationWithModule_InputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeEnumerationWithModule" />
  </wsdl:message>
  <wsdl:message name="IIpamEnumerator_InitializeEnumerationWithModule_OutputMessage">
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      <wsdl:part name="parameters" element="ipam:InitializeEnumerationWithModuleResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamEnumerator_NotifyEnumerationComplete_OutputCallbackMessage">
      <wsdl:part name="parameters" element="ipam:NotifyEnumerationComplete" />
    </wsdl:message>
    <wsdl:message name="IIpamEnumerator_NotifyEnumerationStart_OutputCallbackMessage">
      <wsdl:part name="parameters" element="ipam:NotifyEnumerationStart" />
    </wsdl:message>
    <wsdl:message name="IIpamEnumerator_StartEnumeration_InputMessage">
      <wsdl:part name="parameters" element="ipam:StartEnumeration" />
    </wsdl:message>
    <wsdl:portType name="IIpamEnumeratorCallback">
      <wsdl:operation name="NotifyEnumerationStart">
        <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationStart"
  message="ipam:IIpamEnumeratorCallback_NotifyEnumerationStart_InputMessage" />
      </wsdl:operation>
      <wsdl:operation name="EnumeratedRowsCallback">
        <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/EnumeratedRowsCallback"
  message="ipam:IIpamEnumeratorCallback_EnumeratedRowsCallback_InputMessage" />
      </wsdl:operation>
      <wsdl:operation name="NotifyEnumerationComplete">
        <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamEnumeratorCallback/NotifyEnumerationComplete"
  message="ipam:IIpamEnumeratorCallback_NotifyEnumerationComplete_InputMessage" />
      </wsdl:operation>
    </wsdl:portType>
    <wsdl:message name="IIpamEnumeratorCallback_EnumeratedRowsCallback_InputMessage">
      <wsdl:part name="parameters" element="ipam:EnumeratedRowsCallback" />
    </wsdl:message>
    <wsdl:message name="IIpamEnumeratorCallback_NotifyEnumerationComplete_InputMessage">
      <wsdl:part name="parameters" element="ipam:NotifyEnumerationComplete" />
    </wsdl:message>
    <wsdl:message name="IIpamEnumeratorCallback_NotifyEnumerationStart_InputMessage">
      <wsdl:part name="parameters" element="ipam:NotifyEnumerationStart" />
    </wsdl:message>
    <wsdl:portType msc:usingSession="true" name="IIpamIPAuditEnumerator">
      <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
  name="IPAuditInitializeEnumeration">
        <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditInitializeEnumeratio
  n" message="ipam:IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_InputMessage" />
        <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditInitializeEnumeratio
  nResponse" message="ipam:IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_OutputMessage"
  />
      </wsdl:operation>
      <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
  name="IPAuditStartEnumeration">
        <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/IPAuditStartEnumeration"
  message="ipam:IIpamIPAuditEnumerator_IPAuditStartEnumeration_InputMessage" />
      </wsdl:operation>
      <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
  name="NotifyEnumerationStart">
        <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationStart"
  message="ipam:IIpamIPAuditEnumerator_NotifyEnumerationStart_OutputCallbackMessage" />
      </wsdl:operation>
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    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="EnumeratedRowsCallback">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/EnumeratedRowsCallback"
message="ipam:IIpamIPAuditEnumerator_EnumeratedRowsCallback_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="NotifyEnumerationComplete">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamIPAuditEnumerator/NotifyEnumerationComplete"
message="ipam:IIpamIPAuditEnumerator_NotifyEnumerationComplete_OutputCallbackMessage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message name="IIpamIPAuditEnumerator_EnumeratedRowsCallback_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:EnumeratedRowsCallback" />
  </wsdl:message>
  <wsdl:message name="IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_InputMessage">
    <wsdl:part name="parameters" element="ipam:IPAuditInitializeEnumeration" />
  </wsdl:message>
  <wsdl:message name="IIpamIPAuditEnumerator_IPAuditInitializeEnumeration_OutputMessage">
    <wsdl:part name="parameters" element="ipam:IPAuditInitializeEnumerationResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamIPAuditEnumerator_IPAuditStartEnumeration_InputMessage">
    <wsdl:part name="parameters" element="ipam:IPAuditStartEnumeration" />
  </wsdl:message>
  <wsdl:message
name="IIpamIPAuditEnumerator_NotifyEnumerationComplete_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:NotifyEnumerationComplete" />
  </wsdl:message>
  <wsdl:message name="IIpamIPAuditEnumerator_NotifyEnumerationStart_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:NotifyEnumerationStart" />
  </wsdl:message>
  <wsdl:portType msc:usingSession="true" name="IIpamOperationWithProgress">
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="InitializeOperationParameters">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/InitializeOperationPara
meters" message="ipam:IIpamOperationWithProgress_InitializeOperationParameters_InputMessage"
/>
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/InitializeOperationPara
metersResponse"
message="ipam:IIpamOperationWithProgress_InitializeOperationParameters_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartOperationWithCallback">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartOperationWithCallb
ack" message="ipam:IIpamOperationWithProgress_StartOperationWithCallback_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartOperationWithCallb
ackResponse"
message="ipam:IIpamOperationWithProgress_StartOperationWithCallback_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="StartProgressCallback">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/StartProgressCallback"
message="ipam:IIpamOperationWithProgress_StartProgressCallback_OutputCallbackMessage" />
    </wsdl:operation>
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    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="SetCompletionPercentage">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetCompletionPercentage
" message="ipam:IIpamOperationWithProgress_SetCompletionPercentage_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="SetSubTaskStatus">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetSubTaskStatus"
message="ipam:IIpamOperationWithProgress_SetSubTaskStatus_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false"
name="SetOverallStatus">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/SetOverallStatus"
message="ipam:IIpamOperationWithProgress_SetOverallStatus_OutputCallbackMessage" />
    </wsdl:operation>
    <wsdl:operation msc:isInitiating="true" msc:isTerminating="false" name="AddSubTask">
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgress/AddSubTask"
message="ipam:IIpamOperationWithProgress_AddSubTask_OutputCallbackMessage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message name="IIpamOperationWithProgress_AddSubTask_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:AddSubTask" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgress_InitializeOperationParameters_InputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeOperationParameters" />
  </wsdl:message>
  <wsdl:message
name="IIpamOperationWithProgress_InitializeOperationParameters_OutputMessage">
    <wsdl:part name="parameters" element="ipam:InitializeOperationParametersResponse" />
  </wsdl:message>
  <wsdl:message
name="IIpamOperationWithProgress_SetCompletionPercentage_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:SetCompletionPercentage" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgress_SetOverallStatus_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:SetOverallStatus" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgress_SetSubTaskStatus_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:SetSubTaskStatus" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgress_StartOperationWithCallback_InputMessage">
    <wsdl:part name="parameters" element="ipam:StartOperationWithCallback" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgress_StartOperationWithCallback_OutputMessage">
    <wsdl:part name="parameters" element="ipam:StartOperationWithCallbackResponse" />
  </wsdl:message>
  <wsdl:message
name="IIpamOperationWithProgress_StartProgressCallback_OutputCallbackMessage">
    <wsdl:part name="parameters" element="ipam:StartProgressCallback" />
  </wsdl:message>
  <wsdl:portType name="IIpamOperationWithProgressCallback">
    <wsdl:operation name="StartProgressCallback">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/StartProgressCa
llback" message="ipam:IIpamOperationWithProgressCallback_StartProgressCallback_InputMessage"
/>
```


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    </wsdl:operation>
    <wsdl:operation name="SetCompletionPercentage">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetCompletionPe
rcentage"
message="ipam:IIpamOperationWithProgressCallback_SetCompletionPercentage_InputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SetSubTaskStatus">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetSubTaskStatu
s" message="ipam:IIpamOperationWithProgressCallback_SetSubTaskStatus_InputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SetOverallStatus">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/SetOverallStatu
s" message="ipam:IIpamOperationWithProgressCallback_SetOverallStatus_InputMessage" />
    </wsdl:operation>
    <wsdl:operation name="AddSubTask">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamOperationWithProgressCallback/AddSubTask"
message="ipam:IIpamOperationWithProgressCallback_AddSubTask_InputMessage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message name="IIpamOperationWithProgressCallback_AddSubTask_InputMessage">
    <wsdl:part name="parameters" element="ipam:AddSubTask" />
  </wsdl:message>
  <wsdl:message
name="IIpamOperationWithProgressCallback_SetCompletionPercentage_InputMessage">
    <wsdl:part name="parameters" element="ipam:SetCompletionPercentage" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgressCallback_SetOverallStatus_InputMessage">
    <wsdl:part name="parameters" element="ipam:SetOverallStatus" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgressCallback_SetSubTaskStatus_InputMessage">
    <wsdl:part name="parameters" element="ipam:SetSubTaskStatus" />
  </wsdl:message>
  <wsdl:message name="IIpamOperationWithProgressCallback_StartProgressCallback_InputMessage">
    <wsdl:part name="parameters" element="ipam:StartProgressCallback" />
  </wsdl:message>
  <wsdl:portType name="IIpamServer">
    <wsdl:operation name="IsIpamConfigured">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIpamConfigured"
message="ipam:IIpamServer_IsIpamConfigured_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIpamConfiguredResponse"
message="ipam:IIpamServer_IsIpamConfigured_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetIpamVersion">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamVersion"
message="ipam:IIpamServer_GetIpamVersion_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamVersionResponse"
message="ipam:IIpamServer_GetIpamVersion_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="IsSchemaConversionRequired">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionRequired"
message="ipam:IIpamServer_IsSchemaConversionRequired_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionRequiredResponse"
message="ipam:IIpamServer_IsSchemaConversionRequired_OutputMessage" />
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    </wsdl:operation>
    <wsdl:operation name="IsSchemaConversionInProgress">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionInProgress"
message="ipam:IIpamServer_IsSchemaConversionInProgress_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsSchemaConversionInProgressResponse"
message="ipam:IIpamServer_IsSchemaConversionInProgress_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetSchemaConversionInfo">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSchemaConversionInfo"
message="ipam:IIpamServer_GetSchemaConversionInfo_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSchemaConversionInfoResponse"
message="ipam:IIpamServer_GetSchemaConversionInfo_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="ValidateIfUpgradeIsPossible">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ValidateIfUpgradeIsPossible"
message="ipam:IIpamServer_ValidateIfUpgradeIsPossible_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ValidateIfUpgradeIsPossibleResponse"
message="ipam:IIpamServer_ValidateIfUpgradeIsPossible_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GenerateUpgradeValidationFailureLog">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLog"
message="ipam:IIpamServer_GenerateUpgradeValidationFailureLog_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GenerateUpgradeValidationFailureLogRes
ponse" message="ipam:IIpamServer_GenerateUpgradeValidationFailureLog_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DoProvisioningWithEnumerator">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DoProvisioningWithEnumerator"
message="ipam:IIpamServer_DoProvisioningWithEnumerator_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DoProvisioningWithEnumeratorResponse"
message="ipam:IIpamServer_DoProvisioningWithEnumerator_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="CreateUserRole">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserRole"
message="ipam:IIpamServer_CreateUserRole_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserRoleResponse"
message="ipam:IIpamServer_CreateUserRole_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateUserRole">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserRole"
message="ipam:IIpamServer_UpdateUserRole_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserRoleResponse"
message="ipam:IIpamServer_UpdateUserRole_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteUserRole">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserRole"
message="ipam:IIpamServer_DeleteUserRole_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserRoleResponse"
message="ipam:IIpamServer_DeleteUserRole_OutputMessage" />
    </wsdl:operation>
```


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```
    <wsdl:operation name="GetUserRole">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserRole"
  message="ipam:IIpamServer_GetUserRole_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserRoleResponse"
  message="ipam:IIpamServer_GetUserRole_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetAccessScope">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAccessScope"
  message="ipam:IIpamServer_GetAccessScope_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAccessScopeResponse"
  message="ipam:IIpamServer_GetAccessScope_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="CreateAccessScope">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateAccessScope"
  message="ipam:IIpamServer_CreateAccessScope_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateAccessScopeResponse"
  message="ipam:IIpamServer_CreateAccessScope_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateAccessScope">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAccessScope"
  message="ipam:IIpamServer_UpdateAccessScope_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAccessScopeResponse"
  message="ipam:IIpamServer_UpdateAccessScope_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteAccessScope">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAccessScope"
  message="ipam:IIpamServer_DeleteAccessScope_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAccessScopeResponse"
  message="ipam:IIpamServer_DeleteAccessScope_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetUserAccessPolicy">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserAccessPolicy"
  message="ipam:IIpamServer_GetUserAccessPolicy_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetUserAccessPolicyResponse"
  message="ipam:IIpamServer_GetUserAccessPolicy_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="CreateUserAccessPolicy">
      <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserAccessPolicy"
  message="ipam:IIpamServer_CreateUserAccessPolicy_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateUserAccessPolicyResponse"
  message="ipam:IIpamServer_CreateUserAccessPolicy_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateUserAccessPolicy">
      <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserAccessPolicy"
  message="ipam:IIpamServer_UpdateUserAccessPolicy_InputMessage" />
      <wsdl:output
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateUserAccessPolicyResponse"
  message="ipam:IIpamServer_UpdateUserAccessPolicy_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteUserAccessPolicy">
      <wsdl:input
  wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserAccessPolicy"
  message="ipam:IIpamServer_DeleteUserAccessPolicy_InputMessage" />
```


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      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteUserAccessPolicyResponse"
message="ipam:IIpamServer_DeleteUserAccessPolicy_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SetAccessScopeForObjects">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetAccessScopeForObjects"
message="ipam:IIpamServer_SetAccessScopeForObjects_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetAccessScopeForObjectsResponse"
message="ipam:IIpamServer_SetAccessScopeForObjects_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetCurrentDatabaseConfiguration">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCurrentDatabaseConfiguration"
message="ipam:IIpamServer_GetCurrentDatabaseConfiguration_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCurrentDatabaseConfigurationRespons
e" message="ipam:IIpamServer_GetCurrentDatabaseConfiguration_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SetDatabaseConfiguration">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetDatabaseConfiguration"
message="ipam:IIpamServer_SetDatabaseConfiguration_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetDatabaseConfigurationResponse"
message="ipam:IIpamServer_SetDatabaseConfiguration_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetDefaultProviderAddressSpaceRecordId">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDefaultProviderAddressSpaceRecordId
" message="ipam:IIpamServer_GetDefaultProviderAddressSpaceRecordId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDefaultProviderAddressSpaceRecordId
Response" message="ipam:IIpamServer_GetDefaultProviderAddressSpaceRecordId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetAddressSpaceById">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceById"
message="ipam:IIpamServer_GetAddressSpaceById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByIdResponse"
message="ipam:IIpamServer_GetAddressSpaceById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetAddressSpaceByName">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByName"
message="ipam:IIpamServer_GetAddressSpaceByName_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpaceByNameResponse"
message="ipam:IIpamServer_GetAddressSpaceByName_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetAddressSpacesByIds">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpacesByIds"
message="ipam:IIpamServer_GetAddressSpacesByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAddressSpacesByIdsResponse"
message="ipam:IIpamServer_GetAddressSpacesByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SaveAddressSpace">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveAddressSpace"
message="ipam:IIpamServer_SaveAddressSpace_InputMessage" />
```


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      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveAddressSpaceResponse"
message="ipam:IIpamServer_SaveAddressSpace_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateAddressSpace">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAddressSpace"
message="ipam:IIpamServer_UpdateAddressSpace_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateAddressSpaceResponse"
message="ipam:IIpamServer_UpdateAddressSpace_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteAddressSpace">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAddressSpace"
message="ipam:IIpamServer_DeleteAddressSpace_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteAddressSpaceResponse"
message="ipam:IIpamServer_DeleteAddressSpace_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateAddressSpaces">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateAddressSpaces"
message="ipam:IIpamServer_BulkUpdateAddressSpaces_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateAddressSpacesResponse"
message="ipam:IIpamServer_BulkUpdateAddressSpaces_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetAllAddressSpaceNames">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllAddressSpaceNames"
message="ipam:IIpamServer_GetAllAddressSpaceNames_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllAddressSpaceNamesResponse"
message="ipam:IIpamServer_GetAllAddressSpaceNames_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SaveSubnet">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveSubnet"
message="ipam:IIpamServer_SaveSubnet_InputMessage" />
      <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveSubnetResponse"
message="ipam:IIpamServer_SaveSubnet_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateSubnet">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateSubnet"
message="ipam:IIpamServer_UpdateSubnet_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateSubnetResponse"
message="ipam:IIpamServer_UpdateSubnet_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteSubnet">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteSubnet"
message="ipam:IIpamServer_DeleteSubnet_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteSubnetResponse"
message="ipam:IIpamServer_DeleteSubnet_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetSubnetById">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetById"
message="ipam:IIpamServer_GetSubnetById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByIdResponse"
message="ipam:IIpamServer_GetSubnetById_OutputMessage" />
    </wsdl:operation>
```


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```
    <wsdl:operation name="GetSubnetByNetworkIdAndAddressSpace">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByNetworkIdAndAddressSpace"
message="ipam:IIpamServer_GetSubnetByNetworkIdAndAddressSpace_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetByNetworkIdAndAddressSpaceRes
ponse" message="ipam:IIpamServer_GetSubnetByNetworkIdAndAddressSpace_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetSubnetsByIds">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetsByIds"
message="ipam:IIpamServer_GetSubnetsByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetsByIdsResponse"
message="ipam:IIpamServer_GetSubnetsByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="RemapSubnet">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapSubnet"
message="ipam:IIpamServer_RemapSubnet_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapSubnetResponse"
message="ipam:IIpamServer_RemapSubnet_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetSubnetUtilization">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetUtilization"
message="ipam:IIpamServer_GetSubnetUtilization_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSubnetUtilizationResponse"
message="ipam:IIpamServer_GetSubnetUtilization_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateSubnets">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateSubnets"
message="ipam:IIpamServer_BulkUpdateSubnets_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateSubnetsResponse"
message="ipam:IIpamServer_BulkUpdateSubnets_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBlockUtilization">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockUtilization"
message="ipam:IIpamServer_GetBlockUtilization_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockUtilizationResponse"
message="ipam:IIpamServer_GetBlockUtilization_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SaveBlock">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveBlock"
message="ipam:IIpamServer_SaveBlock_InputMessage" />
      <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveBlockResponse"
message="ipam:IIpamServer_SaveBlock_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateBlock">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateBlock"
message="ipam:IIpamServer_UpdateBlock_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateBlockResponse"
message="ipam:IIpamServer_UpdateBlock_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteBlock">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteBlock"
message="ipam:IIpamServer_DeleteBlock_InputMessage" />
```


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      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteBlockResponse"
message="ipam:IIpamServer_DeleteBlock_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBlockById">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockById"
message="ipam:IIpamServer_GetBlockById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIdResponse"
message="ipam:IIpamServer_GetBlockById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBlocksByIds">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlocksByIds"
message="ipam:IIpamServer_GetBlocksByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlocksByIdsResponse"
message="ipam:IIpamServer_GetBlocksByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBlockByIPAddressAndPrefixLength">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIPAddressAndPrefixLength"
message="ipam:IIpamServer_GetBlockByIPAddressAndPrefixLength_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockByIPAddressAndPrefixLengthResp
onse" message="ipam:IIpamServer_GetBlockByIPAddressAndPrefixLength_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBlockHierarchy">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchy"
message="ipam:IIpamServer_GetBlockHierarchy_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyResponse"
message="ipam:IIpamServer_GetBlockHierarchy_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateBlocks">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateBlocks"
message="ipam:IIpamServer_BulkUpdateBlocks_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateBlocksResponse"
message="ipam:IIpamServer_BulkUpdateBlocks_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBlockHierarchyForRangeId">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForRangeId"
message="ipam:IIpamServer_GetBlockHierarchyForRangeId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForRangeIdResponse"
message="ipam:IIpamServer_GetBlockHierarchyForRangeId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBlockHierarchyForSubnetId">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForSubnetId"
message="ipam:IIpamServer_GetBlockHierarchyForSubnetId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBlockHierarchyForSubnetIdResponse"
message="ipam:IIpamServer_GetBlockHierarchyForSubnetId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="EnumerateIpamIPBlock">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateIpamIPBlock"
message="ipam:IIpamServer_EnumerateIpamIPBlock_InputMessage" />
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      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateIpamIPBlockResponse"
message="ipam:IIpamServer_EnumerateIpamIPBlock_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBuiltInCustomField">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInCustomField"
message="ipam:IIpamServer_GetBuiltInCustomField_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInCustomFieldResponse"
message="ipam:IIpamServer_GetBuiltInCustomField_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetCustomFieldById">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCustomFieldById"
message="ipam:IIpamServer_GetCustomFieldById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCustomFieldByIdResponse"
message="ipam:IIpamServer_GetCustomFieldById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SaveCustomField">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomField"
message="ipam:IIpamServer_SaveCustomField_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldResponse"
message="ipam:IIpamServer_SaveCustomField_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateCustomField">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomField"
message="ipam:IIpamServer_UpdateCustomField_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldResponse"
message="ipam:IIpamServer_UpdateCustomField_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteCustomField">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomField"
message="ipam:IIpamServer_DeleteCustomField_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldResponse"
message="ipam:IIpamServer_DeleteCustomField_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="EnumerateCustomFields">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFields"
message="ipam:IIpamServer_EnumerateCustomFields_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldsResponse"
message="ipam:IIpamServer_EnumerateCustomFields_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SaveCustomFieldAssociation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociation"
message="ipam:IIpamServer_SaveCustomFieldAssociation_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveCustomFieldAssociationResponse"
message="ipam:IIpamServer_SaveCustomFieldAssociation_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateCustomFieldAssociation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldAssociation"
message="ipam:IIpamServer_UpdateCustomFieldAssociation_InputMessage" />
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      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateCustomFieldAssociationResponse"
message="ipam:IIpamServer_UpdateCustomFieldAssociation_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteCustomFieldAssociation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldAssociation"
message="ipam:IIpamServer_DeleteCustomFieldAssociation_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteCustomFieldAssociationResponse"
message="ipam:IIpamServer_DeleteCustomFieldAssociation_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="EnumerateCustomFieldAssociations">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldAssociations"
message="ipam:IIpamServer_EnumerateCustomFieldAssociations_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateCustomFieldAssociationsRespon
se" message="ipam:IIpamServer_EnumerateCustomFieldAssociations_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SaveRange">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveRange"
message="ipam:IIpamServer_SaveRange_InputMessage" />
      <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveRangeResponse"
message="ipam:IIpamServer_SaveRange_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateRange">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateRange"
message="ipam:IIpamServer_UpdateRange_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateRangeResponse"
message="ipam:IIpamServer_UpdateRange_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateRanges">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateRanges"
message="ipam:IIpamServer_BulkUpdateRanges_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateRangesResponse"
message="ipam:IIpamServer_BulkUpdateRanges_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteRange">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteRange"
message="ipam:IIpamServer_DeleteRange_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteRangeResponse"
message="ipam:IIpamServer_DeleteRange_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="RemapRange">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapRange"
message="ipam:IIpamServer_RemapRange_InputMessage" />
      <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/RemapRangeResponse"
message="ipam:IIpamServer_RemapRange_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetRangeUtilization">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeUtilization"
message="ipam:IIpamServer_GetRangeUtilization_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeUtilizationResponse"
message="ipam:IIpamServer_GetRangeUtilization_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetIPRangeById">
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```
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangeById"
message="ipam:IIpamServer_GetIPRangeById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangeByIdResponse"
message="ipam:IIpamServer_GetIPRangeById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetIPRangesByIds">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangesByIds"
message="ipam:IIpamServer_GetIPRangesByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPRangesByIdsResponse"
message="ipam:IIpamServer_GetIPRangesByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetTotalUnmappedRanges">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetTotalUnmappedRanges"
message="ipam:IIpamServer_GetTotalUnmappedRanges_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetTotalUnmappedRangesResponse"
message="ipam:IIpamServer_GetTotalUnmappedRanges_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetFreeIPAddresses">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddresses"
message="ipam:IIpamServer_GetFreeIPAddresses_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesResponse"
message="ipam:IIpamServer_GetFreeIPAddresses_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="IsIPAddressMapped">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIPAddressMapped"
message="ipam:IIpamServer_IsIPAddressMapped_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsIPAddressMappedResponse"
message="ipam:IIpamServer_IsIPAddressMapped_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetRangeByScopeRecordId">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByScopeRecordId"
message="ipam:IIpamServer_GetRangeByScopeRecordId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByScopeRecordIdResponse"
message="ipam:IIpamServer_GetRangeByScopeRecordId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetRangeByIPAddress">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByIPAddress"
message="ipam:IIpamServer_GetRangeByIPAddress_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByIPAddressResponse"
message="ipam:IIpamServer_GetRangeByIPAddress_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetRangeByAddressSpaceIdAndManagedByManagedByEntity">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByAddressSpaceIdAndManagedByMa
nagedByEntity"
message="ipam:IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_InputMessage"
/>
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetRangeByAddressSpaceIdAndManagedByMa
nagedByEntityResponse"
message="ipam:IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_OutputMessage"
/>
    </wsdl:operation>
```


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```
    <wsdl:operation name="BulkUpdateIPAddresses">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateIPAddresses"
message="ipam:IIpamServer_BulkUpdateIPAddresses_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateIPAddressesResponse"
message="ipam:IIpamServer_BulkUpdateIPAddresses_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteIpamIPAddress">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIpamIPAddress"
message="ipam:IIpamServer_DeleteIpamIPAddress_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIpamIPAddressResponse"
message="ipam:IIpamServer_DeleteIpamIPAddress_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FetchIpamIPAddress">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddress"
message="ipam:IIpamServer_FetchIpamIPAddress_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressResponse"
message="ipam:IIpamServer_FetchIpamIPAddress_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FetchIpamIPAddressByManagedByAndManagedByEntity">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntity"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntityResponse"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntityAndAddressSpace"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_Inpu
tMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchIpamIPAddressByManagedByAndManage
dByEntityAndAddressSpaceResponse"
message="ipam:IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_Outp
utMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetIPAddressById">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressById"
message="ipam:IIpamServer_GetIPAddressById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressByIdResponse"
message="ipam:IIpamServer_GetIPAddressById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetIPAddressesByIds">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressesByIds"
message="ipam:IIpamServer_GetIPAddressesByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIPAddressesByIdsResponse"
message="ipam:IIpamServer_GetIPAddressesByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FindAvailableDhcpServersForReservation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableDhcpServersForReservation
" message="ipam:IIpamServer_FindAvailableDhcpServersForReservation_InputMessage" />
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      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableDhcpServersForReservation
Response" message="ipam:IIpamServer_FindAvailableDhcpServersForReservation_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FindAvailableScopeForReservationInDhcpServer">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableScopeForReservationInDhcp
Server" message="ipam:IIpamServer_FindAvailableScopeForReservationInDhcpServer_InputMessage"
/>
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FindAvailableScopeForReservationInDhcp
ServerResponse"
message="ipam:IIpamServer_FindAvailableScopeForReservationInDhcpServer_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SaveLogicalGroup">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveLogicalGroup"
message="ipam:IIpamServer_SaveLogicalGroup_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveLogicalGroupResponse"
message="ipam:IIpamServer_SaveLogicalGroup_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateLogicalGroup">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateLogicalGroup"
message="ipam:IIpamServer_UpdateLogicalGroup_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateLogicalGroupResponse"
message="ipam:IIpamServer_UpdateLogicalGroup_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteLogicalGroup">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteLogicalGroup"
message="ipam:IIpamServer_DeleteLogicalGroup_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteLogicalGroupResponse"
message="ipam:IIpamServer_DeleteLogicalGroup_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetBuiltInLogicalGroup">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInLogicalGroup"
message="ipam:IIpamServer_GetBuiltInLogicalGroup_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetBuiltInLogicalGroupResponse"
message="ipam:IIpamServer_GetBuiltInLogicalGroup_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetLogicalGroupById">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupById"
message="ipam:IIpamServer_GetLogicalGroupById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupByIdResponse"
message="ipam:IIpamServer_GetLogicalGroupById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetLogicalGroupUtilizationByPeriod">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByPeriod"
message="ipam:IIpamServer_GetLogicalGroupUtilizationByPeriod_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByPeriodResp
onse" message="ipam:IIpamServer_GetLogicalGroupUtilizationByPeriod_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetLogicalGroupUtilizationByType">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByType"
message="ipam:IIpamServer_GetLogicalGroupUtilizationByType_InputMessage" />
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      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetLogicalGroupUtilizationByTypeRespon
se" message="ipam:IIpamServer_GetLogicalGroupUtilizationByType_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteServer">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteServer"
message="ipam:IIpamServer_DeleteServer_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteServerResponse"
message="ipam:IIpamServer_DeleteServer_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="ManuallyUpdateServer">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyUpdateServer"
message="ipam:IIpamServer_ManuallyUpdateServer_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyUpdateServerResponse"
message="ipam:IIpamServer_ManuallyUpdateServer_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="ManuallyAddServer">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyAddServer"
message="ipam:IIpamServer_ManuallyAddServer_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ManuallyAddServerResponse"
message="ipam:IIpamServer_ManuallyAddServer_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetServersForMultipleId">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetServersForMultipleId"
message="ipam:IIpamServer_GetServersForMultipleId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetServersForMultipleIdResponse"
message="ipam:IIpamServer_GetServersForMultipleId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="BulkUpdateServers">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateServers"
message="ipam:IIpamServer_BulkUpdateServers_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/BulkUpdateServersResponse"
message="ipam:IIpamServer_BulkUpdateServers_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateGpoForMultipleServers">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateGpoForMultipleServers"
message="ipam:IIpamServer_UpdateGpoForMultipleServers_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateGpoForMultipleServersResponse"
message="ipam:IIpamServer_UpdateGpoForMultipleServers_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="EnumerateServerInfo">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateServerInfo"
message="ipam:IIpamServer_EnumerateServerInfo_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/EnumerateServerInfoResponse"
message="ipam:IIpamServer_EnumerateServerInfo_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetDiscoveryConfig">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDiscoveryConfig"
message="ipam:IIpamServer_GetDiscoveryConfig_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDiscoveryConfigResponse"
message="ipam:IIpamServer_GetDiscoveryConfig_OutputMessage" />
```


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    </wsdl:operation>
    <wsdl:operation name="SaveDiscoveryConfig">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveDiscoveryConfig"
message="ipam:IIpamServer_SaveDiscoveryConfig_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SaveDiscoveryConfigResponse"
message="ipam:IIpamServer_SaveDiscoveryConfig_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="UpdateDiscoveryConfig">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateDiscoveryConfig"
message="ipam:IIpamServer_UpdateDiscoveryConfig_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/UpdateDiscoveryConfigResponse"
message="ipam:IIpamServer_UpdateDiscoveryConfig_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteDiscoveryConfig">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDiscoveryConfig"
message="ipam:IIpamServer_DeleteDiscoveryConfig_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDiscoveryConfigResponse"
message="ipam:IIpamServer_DeleteDiscoveryConfig_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="IsTaskRunning">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsTaskRunning"
message="ipam:IIpamServer_IsTaskRunning_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsTaskRunningResponse"
message="ipam:IIpamServer_IsTaskRunning_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="TaskLastRuntime">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRuntime"
message="ipam:IIpamServer_TaskLastRuntime_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRuntimeResponse"
message="ipam:IIpamServer_TaskLastRuntime_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="TaskLastRunResult">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRunResult"
message="ipam:IIpamServer_TaskLastRunResult_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskLastRunResultResponse"
message="ipam:IIpamServer_TaskLastRunResult_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="TaskNextRuntime">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskNextRuntime"
message="ipam:IIpamServer_TaskNextRuntime_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskNextRuntimeResponse"
message="ipam:IIpamServer_TaskNextRuntime_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="TaskRecurrenceDuration">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskRecurrenceDuration"
message="ipam:IIpamServer_TaskRecurrenceDuration_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/TaskRecurrenceDurationResponse"
message="ipam:IIpamServer_TaskRecurrenceDuration_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="StartTask">
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      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/StartTask"
message="ipam:IIpamServer_StartTask_InputMessage" />
      <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/StartTaskResponse"
message="ipam:IIpamServer_StartTask_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetIpamTasksInfo">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamTasksInfo"
message="ipam:IIpamServer_GetIpamTasksInfo_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetIpamTasksInfoResponse"
message="ipam:IIpamServer_GetIpamTasksInfo_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetCommonPropertyValue">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValue"
message="ipam:IIpamServer_GetCommonPropertyValue_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetCommonPropertyValueResponse"
message="ipam:IIpamServer_GetCommonPropertyValue_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="SetCommonPropertyValue">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetCommonPropertyValue"
message="ipam:IIpamServer_SetCommonPropertyValue_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/SetCommonPropertyValueResponse"
message="ipam:IIpamServer_SetCommonPropertyValue_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetNumberOfForwardLookupZonesForServers">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetNumberOfForwardLookupZonesForServer
s" message="ipam:IIpamServer_GetNumberOfForwardLookupZonesForServers_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetNumberOfForwardLookupZonesForServer
sResponse" message="ipam:IIpamServer_GetNumberOfForwardLookupZonesForServers_OutputMessage"
/>
    </wsdl:operation>
    <wsdl:operation name="FetchDnsServerReverseZoneById">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerReverseZoneById"
message="ipam:IIpamServer_FetchDnsServerReverseZoneById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerReverseZoneByIdResponse"
message="ipam:IIpamServer_FetchDnsServerReverseZoneById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FetchDnsServerZoneById">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerZoneById"
message="ipam:IIpamServer_FetchDnsServerZoneById_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsServerZoneByIdResponse"
message="ipam:IIpamServer_FetchDnsServerZoneById_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="CheckIfDnsServerReverseZoneHostedOnServer">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerReverseZoneHostedOnSer
ver" message="ipam:IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerReverseZoneHostedOnSer
verResponse"
message="ipam:IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_OutputMessage" />
    </wsdl:operation>
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    <wsdl:operation name="CheckIfDnsServerZoneHostedOnServer">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerZoneHostedOnServer"
message="ipam:IIpamServer_CheckIfDnsServerZoneHostedOnServer_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CheckIfDnsServerZoneHostedOnServerResp
onse" message="ipam:IIpamServer_CheckIfDnsServerZoneHostedOnServer_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="ResetZoneHealth">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ResetZoneHealth"
message="ipam:IIpamServer_ResetZoneHealth_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/ResetZoneHealthResponse"
message="ipam:IIpamServer_ResetZoneHealth_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FetchDnsZonesByIds">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsZonesByIds"
message="ipam:IIpamServer_FetchDnsZonesByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsZonesByIdsResponse"
message="ipam:IIpamServer_FetchDnsZonesByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="FetchDnsReverseLookupZonesByIds">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsReverseLookupZonesByIds"
message="ipam:IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/FetchDnsReverseLookupZonesByIdsRespons
e" message="ipam:IIpamServer_FetchDnsReverseLookupZonesByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="CreateOrUpdateIPv4Reservation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPv4Reservation"
message="ipam:IIpamServer_CreateOrUpdateIPv4Reservation_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPv4ReservationResponse"
message="ipam:IIpamServer_CreateOrUpdateIPv4Reservation_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="CreateOrUpdateIPV6Reservation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPV6Reservation"
message="ipam:IIpamServer_CreateOrUpdateIPV6Reservation_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateOrUpdateIPV6ReservationResponse"
message="ipam:IIpamServer_CreateOrUpdateIPV6Reservation_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteIPV4Reservation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV4Reservation"
message="ipam:IIpamServer_DeleteIPV4Reservation_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV4ReservationResponse"
message="ipam:IIpamServer_DeleteIPV4Reservation_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteIPV6Reservation">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV6Reservation"
message="ipam:IIpamServer_DeleteIPV6Reservation_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteIPV6ReservationResponse"
message="ipam:IIpamServer_DeleteIPV6Reservation_OutputMessage" />
    </wsdl:operation>
```


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```
    <wsdl:operation name="CreateDNSHostRecord">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSHostRecord"
message="ipam:IIpamServer_CreateDNSHostRecord_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSHostRecordResponse"
message="ipam:IIpamServer_CreateDNSHostRecord_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteDNSHostRecord">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSHostRecord"
message="ipam:IIpamServer_DeleteDNSHostRecord_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSHostRecordResponse"
message="ipam:IIpamServer_DeleteDNSHostRecord_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="CreateDNSPTRRecord">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSPTRRecord"
message="ipam:IIpamServer_CreateDNSPTRRecord_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/CreateDNSPTRRecordResponse"
message="ipam:IIpamServer_CreateDNSPTRRecord_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DeleteDNSPTRRecord">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSPTRRecord"
message="ipam:IIpamServer_DeleteDNSPTRRecord_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DeleteDNSPTRRecordResponse"
message="ipam:IIpamServer_DeleteDNSPTRRecord_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetFreeIPAddressesFromScope">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesFromScope"
message="ipam:IIpamServer_GetFreeIPAddressesFromScope_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFreeIPAddressesFromScopeResponse"
message="ipam:IIpamServer_GetFreeIPAddressesFromScope_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DBGetScopeFromRecordId">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromRecordId"
message="ipam:IIpamServer_DBGetScopeFromRecordId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromRecordIdResponse"
message="ipam:IIpamServer_DBGetScopeFromRecordId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DBGetScopeFromNetworkIDAndServer">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromNetworkIDAndServer"
message="ipam:IIpamServer_DBGetScopeFromNetworkIDAndServer_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetScopeFromNetworkIDAndServerRespon
se" message="ipam:IIpamServer_DBGetScopeFromNetworkIDAndServer_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DBGetDhcpServerFromServerInfoRecordId">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromServerInfoRecordId"
message="ipam:IIpamServer_DBGetDhcpServerFromServerInfoRecordId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromServerInfoRecordIdR
esponse" message="ipam:IIpamServer_DBGetDhcpServerFromServerInfoRecordId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="DBGetDhcpServerFromRecordId">
```


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      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromRecordId"
message="ipam:IIpamServer_DBGetDhcpServerFromRecordId_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/DBGetDhcpServerFromRecordIdResponse"
message="ipam:IIpamServer_DBGetDhcpServerFromRecordId_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetScopesByIds">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesByIds"
message="ipam:IIpamServer_GetScopesByIds_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesByIdsResponse"
message="ipam:IIpamServer_GetScopesByIds_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetPolicyFromDB">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyFromDB"
message="ipam:IIpamServer_GetPolicyFromDB_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyFromDBResponse"
message="ipam:IIpamServer_GetPolicyFromDB_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetAllPoliciesFromDB">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllPoliciesFromDB"
message="ipam:IIpamServer_GetAllPoliciesFromDB_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetAllPoliciesFromDBResponse"
message="ipam:IIpamServer_GetAllPoliciesFromDB_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetReservations">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetReservations"
message="ipam:IIpamServer_GetReservations_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetReservationsResponse"
message="ipam:IIpamServer_GetReservations_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetDhcpReservationOptions">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDhcpReservationOptions"
message="ipam:IIpamServer_GetDhcpReservationOptions_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetDhcpReservationOptionsResponse"
message="ipam:IIpamServer_GetDhcpReservationOptions_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetPolicyConditionFromDB">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyConditionFromDB"
message="ipam:IIpamServer_GetPolicyConditionFromDB_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyConditionFromDBResponse"
message="ipam:IIpamServer_GetPolicyConditionFromDB_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetPolicyRangesFromDB">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyRangesFromDB"
message="ipam:IIpamServer_GetPolicyRangesFromDB_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyRangesFromDBResponse"
message="ipam:IIpamServer_GetPolicyRangesFromDB_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetPolicyOptionsFromDB">
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      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyOptionsFromDB"
message="ipam:IIpamServer_GetPolicyOptionsFromDB_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetPolicyOptionsFromDBResponse"
message="ipam:IIpamServer_GetPolicyOptionsFromDB_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetScopesForSuperscope">
      <wsdl:input
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesForSuperscope"
message="ipam:IIpamServer_GetScopesForSuperscope_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetScopesForSuperscopeResponse"
message="ipam:IIpamServer_GetScopesForSuperscope_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetFilters">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFilters"
message="ipam:IIpamServer_GetFilters_InputMessage" />
      <wsdl:output wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetFiltersResponse"
message="ipam:IIpamServer_GetFilters_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetSuperscopes">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSuperscopes"
message="ipam:IIpamServer_GetSuperscopes_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/GetSuperscopesResponse"
message="ipam:IIpamServer_GetSuperscopes_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="PurgeAuditData">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/PurgeAuditData"
message="ipam:IIpamServer_PurgeAuditData_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/PurgeAuditDataResponse"
message="ipam:IIpamServer_PurgeAuditData_OutputMessage" />
    </wsdl:operation>
    <wsdl:operation name="IsPurgeTaskRunning">
      <wsdl:input wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsPurgeTaskRunning"
message="ipam:IIpamServer_IsPurgeTaskRunning_InputMessage" />
      <wsdl:output
wsaw:Action="http://Microsoft.Windows.Ipam/IIpamServer/IsPurgeTaskRunningResponse"
message="ipam:IIpamServer_IsPurgeTaskRunning_OutputMessage" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message name="IIpamServer_BulkUpdateAddressSpaces_InputMessage">
    <wsdl:part name="parameters" element="ipam:BulkUpdateAddressSpaces" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_BulkUpdateAddressSpaces_OutputMessage">
    <wsdl:part name="parameters" element="ipam:BulkUpdateAddressSpacesResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_BulkUpdateBlocks_InputMessage">
    <wsdl:part name="parameters" element="ipam:BulkUpdateBlocks" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_BulkUpdateBlocks_OutputMessage">
    <wsdl:part name="parameters" element="ipam:BulkUpdateBlocksResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_BulkUpdateIPAddresses_InputMessage">
    <wsdl:part name="parameters" element="ipam:BulkUpdateIPAddresses" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_BulkUpdateIPAddresses_OutputMessage">
    <wsdl:part name="parameters" element="ipam:BulkUpdateIPAddressesResponse" />
  </wsdl:message>
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    <wsdl:message name="IIpamServer_BulkUpdateRanges_InputMessage">
      <wsdl:part name="parameters" element="ipam:BulkUpdateRanges" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_BulkUpdateRanges_OutputMessage">
      <wsdl:part name="parameters" element="ipam:BulkUpdateRangesResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_BulkUpdateServers_InputMessage">
      <wsdl:part name="parameters" element="ipam:BulkUpdateServers" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_BulkUpdateServers_OutputMessage">
      <wsdl:part name="parameters" element="ipam:BulkUpdateServersResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_BulkUpdateSubnets_InputMessage">
      <wsdl:part name="parameters" element="ipam:BulkUpdateSubnets" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_BulkUpdateSubnets_OutputMessage">
      <wsdl:part name="parameters" element="ipam:BulkUpdateSubnetsResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_InputMessage">
      <wsdl:part name="parameters" element="ipam:CheckIfDnsServerReverseZoneHostedOnServer" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CheckIfDnsServerReverseZoneHostedOnServer_OutputMessage">
      <wsdl:part name="parameters"
  element="ipam:CheckIfDnsServerReverseZoneHostedOnServerResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CheckIfDnsServerZoneHostedOnServer_InputMessage">
      <wsdl:part name="parameters" element="ipam:CheckIfDnsServerZoneHostedOnServer" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CheckIfDnsServerZoneHostedOnServer_OutputMessage">
      <wsdl:part name="parameters" element="ipam:CheckIfDnsServerZoneHostedOnServerResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateAccessScope_InputMessage">
      <wsdl:part name="parameters" element="ipam:CreateAccessScope" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateAccessScope_OutputMessage">
      <wsdl:part name="parameters" element="ipam:CreateAccessScopeResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateDNSHostRecord_InputMessage">
      <wsdl:part name="parameters" element="ipam:CreateDNSHostRecord" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateDNSHostRecord_OutputMessage">
      <wsdl:part name="parameters" element="ipam:CreateDNSHostRecordResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateDNSPTRRecord_InputMessage">
      <wsdl:part name="parameters" element="ipam:CreateDNSPTRRecord" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateDNSPTRRecord_OutputMessage">
      <wsdl:part name="parameters" element="ipam:CreateDNSPTRRecordResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateOrUpdateIPv4Reservation_InputMessage">
      <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPv4Reservation" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateOrUpdateIPv4Reservation_OutputMessage">
      <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPv4ReservationResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateOrUpdateIPV6Reservation_InputMessage">
      <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPV6Reservation" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateOrUpdateIPV6Reservation_OutputMessage">
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      <wsdl:part name="parameters" element="ipam:CreateOrUpdateIPV6ReservationResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateUserAccessPolicy_InputMessage">
      <wsdl:part name="parameters" element="ipam:CreateUserAccessPolicy" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateUserAccessPolicy_OutputMessage">
      <wsdl:part name="parameters" element="ipam:CreateUserAccessPolicyResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateUserRole_InputMessage">
      <wsdl:part name="parameters" element="ipam:CreateUserRole" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_CreateUserRole_OutputMessage">
      <wsdl:part name="parameters" element="ipam:CreateUserRoleResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetDhcpServerFromRecordId_InputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromRecordId" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetDhcpServerFromRecordId_OutputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromRecordIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetDhcpServerFromServerInfoRecordId_InputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromServerInfoRecordId" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetDhcpServerFromServerInfoRecordId_OutputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetDhcpServerFromServerInfoRecordIdResponse"
  />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetScopeFromNetworkIDAndServer_InputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetScopeFromNetworkIDAndServer" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetScopeFromNetworkIDAndServer_OutputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetScopeFromNetworkIDAndServerResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetScopeFromRecordId_InputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetScopeFromRecordId" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DBGetScopeFromRecordId_OutputMessage">
      <wsdl:part name="parameters" element="ipam:DBGetScopeFromRecordIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DeleteAccessScope_InputMessage">
      <wsdl:part name="parameters" element="ipam:DeleteAccessScope" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DeleteAccessScope_OutputMessage">
      <wsdl:part name="parameters" element="ipam:DeleteAccessScopeResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DeleteAddressSpace_InputMessage">
      <wsdl:part name="parameters" element="ipam:DeleteAddressSpace" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DeleteAddressSpace_OutputMessage">
      <wsdl:part name="parameters" element="ipam:DeleteAddressSpaceResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DeleteBlock_InputMessage">
      <wsdl:part name="parameters" element="ipam:DeleteBlock" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DeleteBlock_OutputMessage">
      <wsdl:part name="parameters" element="ipam:DeleteBlockResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_DeleteCustomField_InputMessage">
      <wsdl:part name="parameters" element="ipam:DeleteCustomField" />
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</wsdl:message>
<wsdl:message name="IIpamServer_DeleteCustomField_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteCustomFieldResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteCustomFieldAssociation_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteCustomFieldAssociation" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteCustomFieldAssociation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteCustomFieldAssociationResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteDiscoveryConfig_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDiscoveryConfig" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteDiscoveryConfig_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDiscoveryConfigResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteDNSHostRecord_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSHostRecord" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteDNSHostRecord_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSHostRecordResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteDNSPTRRecord_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSPTRRecord" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteDNSPTRRecord_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteDNSPTRRecordResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteIpamIPAddress_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIpamIPAddress" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteIpamIPAddress_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIpamIPAddressResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteIPV4Reservation_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV4Reservation" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteIPV4Reservation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV4ReservationResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteIPV6Reservation_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV6Reservation" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteIPV6Reservation_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteIPV6ReservationResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteLogicalGroup_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteLogicalGroup" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteLogicalGroup_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteLogicalGroupResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteRange_InputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteRange" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteRange_OutputMessage">
  <wsdl:part name="parameters" element="ipam:DeleteRangeResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_DeleteServer_InputMessage">
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    <wsdl:part name="parameters" element="ipam:DeleteServer" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DeleteServer_OutputMessage">
    <wsdl:part name="parameters" element="ipam:DeleteServerResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DeleteSubnet_InputMessage">
    <wsdl:part name="parameters" element="ipam:DeleteSubnet" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DeleteSubnet_OutputMessage">
    <wsdl:part name="parameters" element="ipam:DeleteSubnetResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DeleteUserAccessPolicy_InputMessage">
    <wsdl:part name="parameters" element="ipam:DeleteUserAccessPolicy" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DeleteUserAccessPolicy_OutputMessage">
    <wsdl:part name="parameters" element="ipam:DeleteUserAccessPolicyResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DeleteUserRole_InputMessage">
    <wsdl:part name="parameters" element="ipam:DeleteUserRole" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DeleteUserRole_OutputMessage">
    <wsdl:part name="parameters" element="ipam:DeleteUserRoleResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DoProvisioningWithEnumerator_InputMessage">
    <wsdl:part name="parameters" element="ipam:DoProvisioningWithEnumerator" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_DoProvisioningWithEnumerator_OutputMessage">
    <wsdl:part name="parameters" element="ipam:DoProvisioningWithEnumeratorResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateCustomFieldAssociations_InputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateCustomFieldAssociations" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateCustomFieldAssociations_OutputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateCustomFieldAssociationsResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateCustomFields_InputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateCustomFields" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateCustomFields_OutputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateCustomFieldsResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateIpamIPBlock_InputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateIpamIPBlock" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateIpamIPBlock_OutputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateIpamIPBlockResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateServerInfo_InputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateServerInfo" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_EnumerateServerInfo_OutputMessage">
    <wsdl:part name="parameters" element="ipam:EnumerateServerInfoResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchDnsReverseLookupZonesByIds_InputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsReverseLookupZonesByIds" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchDnsReverseLookupZonesByIds_OutputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsReverseLookupZonesByIdsResponse" />
  </wsdl:message>
```


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```
  <wsdl:message name="IIpamServer_FetchDnsServerReverseZoneById_InputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsServerReverseZoneById" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchDnsServerReverseZoneById_OutputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsServerReverseZoneByIdResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchDnsServerZoneById_InputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsServerZoneById" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchDnsServerZoneById_OutputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsServerZoneByIdResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchDnsZonesByIds_InputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsZonesByIds" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchDnsZonesByIds_OutputMessage">
    <wsdl:part name="parameters" element="ipam:FetchDnsZonesByIdsResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchIpamIPAddress_InputMessage">
    <wsdl:part name="parameters" element="ipam:FetchIpamIPAddress" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FetchIpamIPAddress_OutputMessage">
    <wsdl:part name="parameters" element="ipam:FetchIpamIPAddressResponse" />
  </wsdl:message>
  <wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_InputMessage">
    <wsdl:part name="parameters"
element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntity" />
  </wsdl:message>
  <wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntity_OutputMessage">
    <wsdl:part name="parameters"
element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntityResponse" />
  </wsdl:message>
  <wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_InputMessage
">
    <wsdl:part name="parameters"
element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace" />
  </wsdl:message>
  <wsdl:message
name="IIpamServer_FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace_OutputMessag
e">
    <wsdl:part name="parameters"
element="ipam:FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FindAvailableDhcpServersForReservation_InputMessage">
    <wsdl:part name="parameters" element="ipam:FindAvailableDhcpServersForReservation" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FindAvailableDhcpServersForReservation_OutputMessage">
    <wsdl:part name="parameters"
element="ipam:FindAvailableDhcpServersForReservationResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_FindAvailableScopeForReservationInDhcpServer_InputMessage">
    <wsdl:part name="parameters" element="ipam:FindAvailableScopeForReservationInDhcpServer"
/>
  </wsdl:message>
  <wsdl:message
name="IIpamServer_FindAvailableScopeForReservationInDhcpServer_OutputMessage">
```


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      <wsdl:part name="parameters"
  element="ipam:FindAvailableScopeForReservationInDhcpServerResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GenerateUpgradeValidationFailureLog_InputMessage">
      <wsdl:part name="parameters" element="ipam:GenerateUpgradeValidationFailureLog" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GenerateUpgradeValidationFailureLog_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GenerateUpgradeValidationFailureLogResponse"
  />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAccessScope_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetAccessScope" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAccessScope_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetAccessScopeResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAddressSpaceById_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetAddressSpaceById" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAddressSpaceById_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetAddressSpaceByIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAddressSpaceByName_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetAddressSpaceByName" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAddressSpaceByName_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetAddressSpaceByNameResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAddressSpacesByIds_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetAddressSpacesByIds" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAddressSpacesByIds_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetAddressSpacesByIdsResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAllAddressSpaceNames_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetAllAddressSpaceNames" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAllAddressSpaceNames_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetAllAddressSpaceNamesResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAllPoliciesFromDB_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetAllPoliciesFromDB" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetAllPoliciesFromDB_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetAllPoliciesFromDBResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetBlockById_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetBlockById" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetBlockById_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetBlockByIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetBlockByIPAddressAndPrefixLength_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetBlockByIPAddressAndPrefixLength" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetBlockByIPAddressAndPrefixLength_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetBlockByIPAddressAndPrefixLengthResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetBlockHierarchy_InputMessage">
```


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    <wsdl:part name="parameters" element="ipam:GetBlockHierarchy" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlockHierarchy_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlockHierarchyResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlockHierarchyForRangeId_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForRangeId" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlockHierarchyForRangeId_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForRangeIdResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlockHierarchyForSubnetId_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForSubnetId" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlockHierarchyForSubnetId_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlockHierarchyForSubnetIdResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlocksByIds_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlocksByIds" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlocksByIds_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlocksByIdsResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlockUtilization_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlockUtilization" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBlockUtilization_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetBlockUtilizationResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBuiltInCustomField_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetBuiltInCustomField" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBuiltInCustomField_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetBuiltInCustomFieldResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBuiltInLogicalGroup_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetBuiltInLogicalGroup" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetBuiltInLogicalGroup_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetBuiltInLogicalGroupResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetCommonPropertyValue_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetCommonPropertyValue" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetCommonPropertyValue_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetCommonPropertyValueResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetCurrentDatabaseConfiguration_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetCurrentDatabaseConfiguration" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetCurrentDatabaseConfiguration_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetCurrentDatabaseConfigurationResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetCustomFieldById_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetCustomFieldById" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetCustomFieldById_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetCustomFieldByIdResponse" />
  </wsdl:message>
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    <wsdl:message name="IIpamServer_GetDefaultProviderAddressSpaceRecordId_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetDefaultProviderAddressSpaceRecordId" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetDefaultProviderAddressSpaceRecordId_OutputMessage">
      <wsdl:part name="parameters"
  element="ipam:GetDefaultProviderAddressSpaceRecordIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetDhcpReservationOptions_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetDhcpReservationOptions" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetDhcpReservationOptions_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetDhcpReservationOptionsResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetDiscoveryConfig_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetDiscoveryConfig" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetDiscoveryConfig_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetDiscoveryConfigResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetFilters_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetFilters" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetFilters_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetFiltersResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetFreeIPAddresses_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetFreeIPAddresses" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetFreeIPAddresses_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetFreeIPAddressesResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetFreeIPAddressesFromScope_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetFreeIPAddressesFromScope" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetFreeIPAddressesFromScope_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetFreeIPAddressesFromScopeResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPAddressById_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPAddressById" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPAddressById_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPAddressByIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPAddressesByIds_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPAddressesByIds" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPAddressesByIds_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPAddressesByIdsResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIpamTasksInfo_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetIpamTasksInfo" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIpamTasksInfo_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetIpamTasksInfoResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIpamVersion_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetIpamVersion" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIpamVersion_OutputMessage">
```


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      <wsdl:part name="parameters" element="ipam:GetIpamVersionResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPRangeById_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPRangeById" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPRangeById_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPRangeByIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPRangesByIds_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPRangesByIds" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetIPRangesByIds_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetIPRangesByIdsResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetLogicalGroupById_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetLogicalGroupById" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetLogicalGroupById_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetLogicalGroupByIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByPeriod_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByPeriod" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByPeriod_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByPeriodResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByType_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByType" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetLogicalGroupUtilizationByType_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetLogicalGroupUtilizationByTypeResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetNumberOfForwardLookupZonesForServers_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetNumberOfForwardLookupZonesForServers" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetNumberOfForwardLookupZonesForServers_OutputMessage">
      <wsdl:part name="parameters"
  element="ipam:GetNumberOfForwardLookupZonesForServersResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetPolicyConditionFromDB_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetPolicyConditionFromDB" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetPolicyConditionFromDB_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetPolicyConditionFromDBResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetPolicyFromDB_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetPolicyFromDB" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetPolicyFromDB_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetPolicyFromDBResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetPolicyOptionsFromDB_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetPolicyOptionsFromDB" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetPolicyOptionsFromDB_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetPolicyOptionsFromDBResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetPolicyRangesFromDB_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetPolicyRangesFromDB" />
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  </wsdl:message>
  <wsdl:message name="IIpamServer_GetPolicyRangesFromDB_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetPolicyRangesFromDBResponse" />
  </wsdl:message>
  <wsdl:message
name="IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_InputMessage">
    <wsdl:part name="parameters"
element="ipam:GetRangeByAddressSpaceIdAndManagedByManagedByEntity" />
  </wsdl:message>
  <wsdl:message
name="IIpamServer_GetRangeByAddressSpaceIdAndManagedByManagedByEntity_OutputMessage">
    <wsdl:part name="parameters"
element="ipam:GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetRangeByIPAddress_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetRangeByIPAddress" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetRangeByIPAddress_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetRangeByIPAddressResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetRangeByScopeRecordId_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetRangeByScopeRecordId" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetRangeByScopeRecordId_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetRangeByScopeRecordIdResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetRangeUtilization_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetRangeUtilization" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetRangeUtilization_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetRangeUtilizationResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetReservations_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetReservations" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetReservations_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetReservationsResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetSchemaConversionInfo_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetSchemaConversionInfo" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetSchemaConversionInfo_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetSchemaConversionInfoResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetScopesByIds_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetScopesByIds" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetScopesByIds_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetScopesByIdsResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetScopesForSuperscope_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetScopesForSuperscope" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetScopesForSuperscope_OutputMessage">
    <wsdl:part name="parameters" element="ipam:GetScopesForSuperscopeResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_GetServersForMultipleId_InputMessage">
    <wsdl:part name="parameters" element="ipam:GetServersForMultipleId" />
  </wsdl:message>
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    <wsdl:message name="IIpamServer_GetServersForMultipleId_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetServersForMultipleIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetById_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetById" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetById_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetByIdResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetByNetworkIdAndAddressSpace_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetByNetworkIdAndAddressSpace" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetByNetworkIdAndAddressSpace_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetByNetworkIdAndAddressSpaceResponse"
  />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetsByIds_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetsByIds" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetsByIds_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetsByIdsResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetUtilization_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetUtilization" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSubnetUtilization_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetSubnetUtilizationResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSuperscopes_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetSuperscopes" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetSuperscopes_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetSuperscopesResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetTotalUnmappedRanges_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetTotalUnmappedRanges" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetTotalUnmappedRanges_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetTotalUnmappedRangesResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetUserAccessPolicy_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetUserAccessPolicy" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetUserAccessPolicy_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetUserAccessPolicyResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetUserRole_InputMessage">
      <wsdl:part name="parameters" element="ipam:GetUserRole" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_GetUserRole_OutputMessage">
      <wsdl:part name="parameters" element="ipam:GetUserRoleResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_IsIPAddressMapped_InputMessage">
      <wsdl:part name="parameters" element="ipam:IsIPAddressMapped" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_IsIPAddressMapped_OutputMessage">
      <wsdl:part name="parameters" element="ipam:IsIPAddressMappedResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_IsIpamConfigured_InputMessage">
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    <wsdl:part name="parameters" element="ipam:IsIpamConfigured" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsIpamConfigured_OutputMessage">
    <wsdl:part name="parameters" element="ipam:IsIpamConfiguredResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsPurgeTaskRunning_InputMessage">
    <wsdl:part name="parameters" element="ipam:IsPurgeTaskRunning" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsPurgeTaskRunning_OutputMessage">
    <wsdl:part name="parameters" element="ipam:IsPurgeTaskRunningResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsSchemaConversionInProgress_InputMessage">
    <wsdl:part name="parameters" element="ipam:IsSchemaConversionInProgress" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsSchemaConversionInProgress_OutputMessage">
    <wsdl:part name="parameters" element="ipam:IsSchemaConversionInProgressResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsSchemaConversionRequired_InputMessage">
    <wsdl:part name="parameters" element="ipam:IsSchemaConversionRequired" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsSchemaConversionRequired_OutputMessage">
    <wsdl:part name="parameters" element="ipam:IsSchemaConversionRequiredResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsTaskRunning_InputMessage">
    <wsdl:part name="parameters" element="ipam:IsTaskRunning" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_IsTaskRunning_OutputMessage">
    <wsdl:part name="parameters" element="ipam:IsTaskRunningResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_ManuallyAddServer_InputMessage">
    <wsdl:part name="parameters" element="ipam:ManuallyAddServer" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_ManuallyAddServer_OutputMessage">
    <wsdl:part name="parameters" element="ipam:ManuallyAddServerResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_ManuallyUpdateServer_InputMessage">
    <wsdl:part name="parameters" element="ipam:ManuallyUpdateServer" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_ManuallyUpdateServer_OutputMessage">
    <wsdl:part name="parameters" element="ipam:ManuallyUpdateServerResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_PurgeAuditData_InputMessage">
    <wsdl:part name="parameters" element="ipam:PurgeAuditData" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_PurgeAuditData_OutputMessage">
    <wsdl:part name="parameters" element="ipam:PurgeAuditDataResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_RemapRange_InputMessage">
    <wsdl:part name="parameters" element="ipam:RemapRange" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_RemapRange_OutputMessage">
    <wsdl:part name="parameters" element="ipam:RemapRangeResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_RemapSubnet_InputMessage">
    <wsdl:part name="parameters" element="ipam:RemapSubnet" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_RemapSubnet_OutputMessage">
    <wsdl:part name="parameters" element="ipam:RemapSubnetResponse" />
  </wsdl:message>
```


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```
    <wsdl:message name="IIpamServer_ResetZoneHealth_InputMessage">
      <wsdl:part name="parameters" element="ipam:ResetZoneHealth" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_ResetZoneHealth_OutputMessage">
      <wsdl:part name="parameters" element="ipam:ResetZoneHealthResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveAddressSpace_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveAddressSpace" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveAddressSpace_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveAddressSpaceResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveBlock_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveBlock" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveBlock_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveBlockResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveCustomField_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveCustomField" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveCustomField_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveCustomFieldResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveCustomFieldAssociation_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveCustomFieldAssociation" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveCustomFieldAssociation_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveCustomFieldAssociationResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveDiscoveryConfig_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveDiscoveryConfig" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveDiscoveryConfig_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveDiscoveryConfigResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveLogicalGroup_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveLogicalGroup" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveLogicalGroup_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveLogicalGroupResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveRange_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveRange" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveRange_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveRangeResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveSubnet_InputMessage">
      <wsdl:part name="parameters" element="ipam:SaveSubnet" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SaveSubnet_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SaveSubnetResponse" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SetAccessScopeForObjects_InputMessage">
      <wsdl:part name="parameters" element="ipam:SetAccessScopeForObjects" />
    </wsdl:message>
    <wsdl:message name="IIpamServer_SetAccessScopeForObjects_OutputMessage">
      <wsdl:part name="parameters" element="ipam:SetAccessScopeForObjectsResponse" />
```


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```
</wsdl:message>
<wsdl:message name="IIpamServer_SetCommonPropertyValue_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetCommonPropertyValue" />
</wsdl:message>
<wsdl:message name="IIpamServer_SetCommonPropertyValue_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SetCommonPropertyValueResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_SetDatabaseConfiguration_InputMessage">
  <wsdl:part name="parameters" element="ipam:SetDatabaseConfiguration" />
</wsdl:message>
<wsdl:message name="IIpamServer_SetDatabaseConfiguration_OutputMessage">
  <wsdl:part name="parameters" element="ipam:SetDatabaseConfigurationResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_StartTask_InputMessage">
  <wsdl:part name="parameters" element="ipam:StartTask" />
</wsdl:message>
<wsdl:message name="IIpamServer_StartTask_OutputMessage">
  <wsdl:part name="parameters" element="ipam:StartTaskResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskLastRunResult_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRunResult" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskLastRunResult_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRunResultResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskLastRuntime_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRuntime" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskLastRuntime_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskLastRuntimeResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskNextRuntime_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskNextRuntime" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskNextRuntime_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskNextRuntimeResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskRecurrenceDuration_InputMessage">
  <wsdl:part name="parameters" element="ipam:TaskRecurrenceDuration" />
</wsdl:message>
<wsdl:message name="IIpamServer_TaskRecurrenceDuration_OutputMessage">
  <wsdl:part name="parameters" element="ipam:TaskRecurrenceDurationResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_UpdateAccessScope_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAccessScope" />
</wsdl:message>
<wsdl:message name="IIpamServer_UpdateAccessScope_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAccessScopeResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_UpdateAddressSpace_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAddressSpace" />
</wsdl:message>
<wsdl:message name="IIpamServer_UpdateAddressSpace_OutputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateAddressSpaceResponse" />
</wsdl:message>
<wsdl:message name="IIpamServer_UpdateBlock_InputMessage">
  <wsdl:part name="parameters" element="ipam:UpdateBlock" />
</wsdl:message>
<wsdl:message name="IIpamServer_UpdateBlock_OutputMessage">
```


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```
    <wsdl:part name="parameters" element="ipam:UpdateBlockResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateCustomField_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateCustomField" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateCustomField_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateCustomFieldResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateCustomFieldAssociation_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateCustomFieldAssociation" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateCustomFieldAssociation_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateCustomFieldAssociationResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateDiscoveryConfig_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateDiscoveryConfig" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateDiscoveryConfig_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateDiscoveryConfigResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateGpoForMultipleServers_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateGpoForMultipleServers" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateGpoForMultipleServers_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateGpoForMultipleServersResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateLogicalGroup_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateLogicalGroup" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateLogicalGroup_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateLogicalGroupResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateRange_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateRange" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateRange_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateRangeResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateSubnet_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateSubnet" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateSubnet_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateSubnetResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateUserAccessPolicy_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateUserAccessPolicy" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateUserAccessPolicy_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateUserAccessPolicyResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateUserRole_InputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateUserRole" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_UpdateUserRole_OutputMessage">
    <wsdl:part name="parameters" element="ipam:UpdateUserRoleResponse" />
  </wsdl:message>
  <wsdl:message name="IIpamServer_ValidateIfUpgradeIsPossible_InputMessage">
    <wsdl:part name="parameters" element="ipam:ValidateIfUpgradeIsPossible" />
  </wsdl:message>
```


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```
    <wsdl:message name="IIpamServer_ValidateIfUpgradeIsPossible_OutputMessage">
      <wsdl:part name="parameters" element="ipam:ValidateIfUpgradeIsPossibleResponse" />
    </wsdl:message>
  </wsdl:definitions>
```


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7 Appendix B: Full XML Schema

For ease of implementation, the following sections provide the full XML schemas for this protocol.

Schema name	Prefix	Section
Microsoft.Windows.Ipam.xsd	ipam1	section 7.1
Microsoft.Windows.Ipam1.xsd	ipam	section 7.2
schemas.microsoft.com.2003.10.Serialization.Arrays.xsd	serarr	section 7.3
schemas.microsoft.com.2003.10.Serialization.xsd	ser	section 7.4
System.Collections.Generic.xsd	sysgen	section 7.5
System.Net.Sockets.xsd	syssock	section 7.6
System.Net.xsd	sysnet	section 7.7
System.xsd	sys	section 7.8

7.1 Microsoft.Windows.Ipam.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified" targetNamespace="http://Microsoft.Windows.Ipam"
xmlns:ser="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:ipam="http://Microsoft.Windows.Ipam" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ipam1="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam"
xmlns:sysnet="http://schemas.datacontract.org/2004/07/System.Net"
xmlns:serarr="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:sysgen="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns:sys="http://schemas.datacontract.org/2004/07/System"
xmlns:syssock="http://schemas.datacontract.org/2004/07/System.Net.Sockets"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam" />
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System.Net" />
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
/>
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System" />
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System.Net.Sockets" />
  <xs:complexType name="AccessScope">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="FullScopePath" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsBuiltIn" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Label" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ParentAccessScopeID" nillable="true"
type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```


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```
    <xs:complexType name="AccessScopeToUserRoleMapping">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:BaseIpamObject">
          <xs:sequence>
            <xs:element minOccurs="0" name="AccessScopeId" nillable="true" type="xsd:long" />
            <xs:element minOccurs="0" name="AccessScopeName" nillable="true" type="xsd:string"
/>
            <xs:element minOccurs="0" name="UserRoleId" nillable="true" type="xsd:long" />
            <xs:element minOccurs="0" name="UserRoleName" nillable="true" type="xsd:string" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="ActiveServerV4LogicalGroup">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:LogicalGroup">
          <xs:sequence />
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="ActiveServerV4LogicalGroupNode">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:LogicalGroupNode">
          <xs:sequence />
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="ActiveServerV6LogicalGroup">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:LogicalGroup">
          <xs:sequence />
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="ActiveServerV6LogicalGroupNode">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:LogicalGroupNode">
          <xs:sequence />
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:simpleType name="ADDomainConfigurationStatus">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="NotConfigured" />
        <xs:enumeration value="Configured" />
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="AddressAssignment">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="Static" />
        <xs:enumeration value="Dynamic" />
        <xs:enumeration value="Auto" />
        <xs:enumeration value="VIP" />
        <xs:enumeration value="Reserved" />
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="AddressCategory">
```


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```
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Public" />
      <xs:enumeration value="Private" />
      <xs:enumeration value="GlobalIPv6Unicast" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="AddressSpace">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
          <xs:element minOccurs="0" name="AddressSpaceType" type="ipam:IPAddressSpaceType" />
          <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IPv4UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
          <xs:element minOccurs="0" name="IPv6UtilizationStatistics" nillable="true"
type="ipam:IPv6Utilization" />
          <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="PartialCustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldPartialValue" />
          <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="AddressSpaceByFilterEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="FilterInfo" nillable="true"
type="sys:ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="AddressSpaceEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="AddressType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Public" />
      <xs:enumeration value="Private" />
      <xs:enumeration value="Unmapped" />
      <xs:enumeration value="GlobalIPv6Unicast" />
      <xs:enumeration value="All" />
    </xs:restriction>
```


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```
  </xs:simpleType>
  <xs:complexType name="AddScopesToSuperscopeParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
/>
          <xs:element minOccurs="0" name="Superscope" nillable="true"
type="ipam:DhcpSuperscopeV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="AddSubTask">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="subTaskInstance" nillable="true"
type="ipam:SubTaskInstance" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="ApplyDhcpScopeConfigurationparameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="ScopeAddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ScopeId" nillable="true" type="serarr:ArrayOflong"
/>
          <xs:element minOccurs="0" name="ScopeTemplate" nillable="true"
type="ipam:DhcpScopeTemplateConfiguration" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ApplyDhcpServerConfigurationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerAddressFamily" type="syssock:AddressFamily"
/>
          <xs:element minOccurs="0" name="ServerIds" nillable="true"
type="serarr:ArrayOflong" />
          <xs:element minOccurs="0" name="ServerTemplate" nillable="true"
type="ipam:DhcpServerTemplateConfiguration" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ArrayOfAccessScopeToUserRoleMapping">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="AccessScopeToUserRoleMapping"
nillable="true" type="ipam:AccessScopeToUserRoleMapping" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfAddressSpace">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="AddressSpace" nillable="true"
type="ipam:AddressSpace" />
    </xs:sequence>
  </xs:complexType>
```


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```
  <xs:complexType name="ArrayOfCustomField">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="CustomField" nillable="true"
type="ipam:CustomField" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfCustomFieldAssociation">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="CustomFieldAssociation"
nillable="true" type="ipam:CustomFieldAssociation" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfCustomFieldPartialValue">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="CustomFieldPartialValue"
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        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">27</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
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      <xs:enumeration value="RowCountOnFirstFetch">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">28</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="ConfigurationAuditEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="NumberOfRecords" type="xsd:int" />
          <xs:element minOccurs="0" name="SearchCriteriaXml" nillable="true"
type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ConfigurationAuditRecord">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="EventID" type="xsd:int" />
          <xs:element minOccurs="0" name="EventParameters" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="Keywords" nillable="true" type="xsd:base64Binary"
/>
          <xs:element minOccurs="0" name="Opcode" nillable="true" type="xsd:int" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ServerType" type="ipam:ServerAuditType" />
          <xs:element minOccurs="0" name="ServerVersion" type="xsd:decimal" />
          <xs:element minOccurs="0" name="TaskCategory" nillable="true" type="xsd:int" />
          <xs:element minOccurs="0" name="TimeOfEvent" nillable="true" type="xsd:dateTime" />
          <xs:element minOccurs="0" name="UserDomainName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ConflictingIPAddressFailureIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressSpaceName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="IPAddress" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ManagedBy" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ManagedByEntity" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ConflictingIPBlockFailureIpamExceptionData">
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    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="ConflictingIPBlock" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="IPBlock" nillable="true" type="xsd:string" />
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ConflictingIPRangeFailureIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="ConflictingIPRangesManaged" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="IPRangeManaged" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="CreateAccessScope">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="accessScope" nillable="true" type="ipam:AccessScope"
/>
        <xs:element minOccurs="0" name="parentFullScopePath" nillable="true"
type="xsd:string" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="CreateAccessScopeResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="CreateAccessScopeResult" type="xsd:long" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="CreateDhcpFiltersParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="DhcpServerIds" nillable="true"
type="serarr:ArrayOflong" />
          <xs:element minOccurs="0" name="Filters" nillable="true"
type="ipam:ArrayOfDhcpFilter" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="CreateDhcpReservationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Reservation" nillable="true"
type="ipam:DhcpReservation" />
          <xs:element minOccurs="0" name="scopeRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
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```
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="CreateDhcpScopeParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
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        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="CreateDhcpScopePolicyParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
            <xs:element minOccurs="0" name="ScopeList" nillable="true"
  type="serarr:ArrayOflong" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="CreateDhcpServerPolicyParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
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  type="ipam:ArrayOfDhcpServerV4" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="CreateDNSHostRecord">
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        <xs:sequence>
          <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
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    </xs:element>
    <xs:element name="CreateDNSHostRecordResponse">
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        <xs:sequence>
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        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="CreateDNSPTRRecord">
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        <xs:sequence>
          <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="CreateDNSPTRRecordResponse">
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        <xs:sequence>
          <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
        </xs:sequence>
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    </xs:complexType>
  </xs:element>
  <xs:complexType name="CreateIpamIPAddressParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Address" nillable="true" type="ipam:IpamIPAddress"
/>
          <xs:element minOccurs="0" name="CreateDhcpReservation" type="xsd:boolean" />
          <xs:element minOccurs="0" name="CreateDnsRecord" type="xsd:boolean" />
          <xs:element minOccurs="0" name="OverrideMBEAndSI" type="xsd:boolean" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="CreateOrUpdateIPv4Reservation">
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        <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="CreateOrUpdateIPv4ReservationResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="CreateOrUpdateIPV6Reservation">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="CreateOrUpdateIPV6ReservationResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="CreateUserAccessPolicy">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="policy" nillable="true" type="ipam:UserAccessPolicy"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="CreateUserAccessPolicyResponse">
    <xs:complexType>
      <xs:sequence>
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```
        <xs:element minOccurs="0" name="CreateUserAccessPolicyResult" nillable="true"
type="ipam:UserAccessPolicy" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="CreateUserRole">
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      <xs:sequence>
        <xs:element minOccurs="0" name="role" nillable="true" type="ipam:UserRole" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="CreateUserRoleResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="CreateUserRoleResult" type="xsd:long" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="CustomerAddressSpace">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:AddressSpace">
        <xs:sequence>
          <xs:element minOccurs="0" name="ProviderAddressSpaceName" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="ProviderAddressSpaceRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="CustomField">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="BuiltInCustomFieldNumber"
type="ipam:BuiltInCustomField" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Origin" type="ipam:CustomFieldOrigin" />
          <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="Type" type="ipam:CustomFieldType" />
          <xs:element minOccurs="0" name="Values" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="CustomFieldAssociation">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="CustomField1" nillable="true"
type="ipam:CustomField" />
          <xs:element minOccurs="0" name="CustomField2" nillable="true"
type="ipam:CustomField" />
          <xs:element minOccurs="0" name="CustomFieldValueAssociations" nillable="true"
type="sys:ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
```


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```
    </xs:complexType>
    <xs:complexType name="CustomFieldAssociationEnumerationParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:EnumerationParametersBase">
          <xs:sequence />
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="CustomFieldEnumerationParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:EnumerationParametersBase">
          <xs:sequence>
            <xs:element minOccurs="0" name="CustomFieldName" nillable="true" type="xsd:string"
/>
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:simpleType name="CustomFieldOrigin">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="BuiltIn" />
        <xs:enumeration value="External" />
      </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="CustomFieldPartialValue">
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        <xs:element minOccurs="0" name="ParentCustomFieldId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="Value" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="ValueId" nillable="true" type="xsd:long" />
      </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="CustomFieldType">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="Freeform" />
        <xs:enumeration value="Multivalued" />
      </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="CustomFieldValue">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:BaseIpamObject">
          <xs:sequence>
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            <xs:element minOccurs="0" name="ParentCustomFieldName" nillable="true"
type="xsd:string" />
            <xs:element minOccurs="0" name="ParentCustomFieldNumber" type="xsd:int" />
            <xs:element minOccurs="0" name="ParentCustomFieldRecordId" nillable="true"
type="xsd:long" />
            <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
            <xs:element minOccurs="0" name="Value" nillable="true" type="xsd:string" />
          </xs:sequence>
        </xs:extension>
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    </xs:complexType>
    <xs:complexType name="DatabaseLocaleMismatchIpamExceptionData">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamExceptionData">
          <xs:sequence>
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```
          <xs:element minOccurs="0" name="DatabaseLocale" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="DatabaseName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IPAMServerLocale" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DatabaseSchemaVersionMismatchIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseSchemaVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
          <xs:element minOccurs="0" name="IPAMServerSchemaVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DatabaseServerEditionNotSupportedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseServerEdition" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="ExpectedDatabaseServerEdition" nillable="true"
type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DatabaseServerVersionNotSupportedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="DatabaseServerVersion" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="MinSupportedDatabaseServerVersion" nillable="true"
type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="DBGetDhcpServerFromRecordId">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="recordId" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DBGetDhcpServerFromRecordIdResponse">
    <xs:complexType>
      <xs:sequence>
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```
        <xs:element minOccurs="0" name="DBGetDhcpServerFromRecordIdResult" nillable="true"
type="ipam:DhcpServer" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DBGetDhcpServerFromServerInfoRecordId">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="serverInfoRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DBGetDhcpServerFromServerInfoRecordIdResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="DBGetDhcpServerFromServerInfoRecordIdResult"
nillable="true" type="ipam:DhcpServer" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DBGetScopeFromNetworkIDAndServer">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="scopeId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="dhcpServerRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DBGetScopeFromNetworkIDAndServerResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="DBGetScopeFromNetworkIDAndServerResult"
nillable="true" type="ipam:DhcpScope" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DBGetScopeFromRecordId">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="recordId" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DBGetScopeFromRecordIdResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="DBGetScopeFromRecordIdResult" nillable="true"
type="ipam:DhcpScope" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteAccessScope">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="accessScopeId" type="xsd:long" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteAccessScopeResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="DeleteAccessScopeResult" type="xsd:int" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteAddressSpace">
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  type="ipam:AddressSpace" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteAddressSpaceResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteBlock">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="blockRecordId" type="xsd:long" />
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          <xs:element minOccurs="0" name="deleteChildBlocks" type="xsd:boolean" />
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    <xs:element name="DeleteBlockResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="DeleteBlockResult" nillable="true"
  type="serarr:ArrayOfKeyValueOfIPBlockDataFormatterIpamException0cupfWA8" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteCustomField">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="customField" nillable="true" type="ipam:CustomField"
  />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteCustomFieldAssociation">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="customFieldAssociation" nillable="true"
  type="ipam:CustomFieldAssociation" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteCustomFieldAssociationResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
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```
    </xs:element>
    <xs:element name="DeleteCustomFieldResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:complexType name="DeleteDhcpFiltersParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Filters" nillable="true"
  type="ipam:ArrayOfDhcpFilter" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="DeleteDhcpReservationCollectionParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Family" type="syssock:AddressFamily" />
            <xs:element minOccurs="0" name="Flag" type="ipam:DhcpReservationDeletionFlag" />
            <xs:element minOccurs="0" name="ReservationRecordIds" nillable="true"
  type="serarr:ArrayOflong" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="DeleteDhcpReservationParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Family" type="syssock:AddressFamily" />
            <xs:element minOccurs="0" name="Flag" type="ipam:DhcpReservationDeletionFlag" />
            <xs:element minOccurs="0" name="ReservationRecordId" type="xsd:long" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="DeleteDhcpScopeParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="DeleteDiscoveryConfig">
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        <xs:sequence>
          <xs:element minOccurs="0" name="discConfig" nillable="true"
  type="ipam:DiscoveryConfig" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteDiscoveryConfigResponse">
      <xs:complexType>
        <xs:sequence />
```


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```
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteDNSHostRecord">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteDNSHostRecordResponse">
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        <xs:sequence>
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        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteDNSPTRRecord">
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        <xs:sequence>
          <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteDNSPTRRecordResponse">
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        <xs:sequence>
          <xs:element minOccurs="0" name="address" nillable="true" type="ipam:IpamIPAddress" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteIpamIPAddress">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="ipAddressRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteIpamIPAddressResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteIPV4Reservation">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
  />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="DeleteIPV4ReservationResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
  />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
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  <xs:element name="DeleteIPV6Reservation">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteIPV6ReservationResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ipAddress" nillable="true" type="ipam:IpamIPAddress"
/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteLogicalGroup">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="logicalgroup" nillable="true"
type="ipam:LogicalGroup" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteLogicalGroupResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:complexType name="DeletePolicyParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Policies" nillable="true"
type="ipam:ArrayOfDhcpPolicyV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="DeleteRange">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="rangeRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="deleteMappedAddresses" type="xsd:boolean" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteRangeResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteServer">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="serverInfoRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:complexType>
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```
  </xs:element>
  <xs:element name="DeleteServerResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteSubnet">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="id" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="deleteChildRanges" type="xsd:boolean" />
        <xs:element minOccurs="0" name="deleteChildAddresses" type="xsd:boolean" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteSubnetResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="DeleteSubnetResult" nillable="true"
type="serarr:ArrayOfKeyValueOfIPRangeDataFormatterIpamException0cupfWA8" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="DeleteSuperscopesParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Superscopes" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="DeleteUserAccessPolicy">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="policyId" type="xsd:long" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteUserAccessPolicyResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="DeleteUserAccessPolicyResult" type="xsd:int" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteUserRole">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="roleRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="DeleteUserRoleResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="DeleteUserRoleResult" type="xsd:long" />
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```
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:simpleType name="DhcpAuditLoggingStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Enabled" />
      <xs:enumeration value="Disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpDiscardDnsRecordOnLeaseDeletionStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Enabled" />
      <xs:enumeration value="Disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpDnsNameProtectionStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Enabled" />
      <xs:enumeration value="Disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpDnsNotRequestingClientsUpdateType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Enabled" />
      <xs:enumeration value="Disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpDnsUpdateType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Never" />
      <xs:enumeration value="DynamicUpdateOnRequestByClient" />
      <xs:enumeration value="DynamicUpdateAlways" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpEffectiveScopePoliciesEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="DhcpScope" nillable="true" type="ipam:DhcpScopeV4"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpEffectiveServerPoliciesEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="DhcpServer" nillable="true"
type="ipam:DhcpServerV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
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```
  <xs:complexType name="DhcpExclusionRange">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="EndAddress" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="StartAddress" nillable="true"
type="sysnet:IPAddress" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpExclusionRangeCollection">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ExclusionRangesInCollection" nillable="true"
type="ipam:ArrayOfDhcpExclusionRange" />
          <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpExclusionRangeV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpExclusionRange">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpExclusionRangeV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpExclusionRange">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFailover">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AutoStateTransition" type="xsd:boolean" />
          <xs:element minOccurs="0" name="MCLT" type="ser:duration" />
          <xs:element minOccurs="0" name="Mode" type="ipam:DhcpFailoverMode" />
          <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfDhcpFailoverOperations" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="RelationshipName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="Server1IP" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="Server1Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Server1PSName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Server1Percentage" type="xsd:unsignedInt" />
          <xs:element minOccurs="0" name="Server1RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="Server1State" type="ipam:DhcpFailoverState" />
          <xs:element minOccurs="0" name="Server2IP" nillable="true" type="sysnet:IPAddress"
/>
```


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```
          <xs:element minOccurs="0" name="Server2Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Server2PSName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Server2RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="Server2State" type="ipam:DhcpFailoverState" />
          <xs:element minOccurs="0" name="ServerOwner" type="ipam:DhcpFailoverOperationOwner"
/>
          <xs:element minOccurs="0" name="SharedSecret" nillable="true"
type="xsd:base64Binary" />
          <xs:element minOccurs="0" name="SharedSecretEnabled" type="xsd:boolean" />
          <xs:element minOccurs="0" name="StateSwitchInterval" type="ser:duration" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFailoverAllEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFailoverByServerIdsEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerIds" nillable="true"
type="serarr:ArrayOflong" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpFailoverConfigSyncStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="Unknown" />
      <xs:enumeration value="InSync" />
      <xs:enumeration value="OutOfSync" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpFailoverDeleteParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover"
/>
          <xs:element minOccurs="0" name="Force" type="xsd:boolean" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFailoverEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```


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```
  <xs:simpleType name="DhcpFailoverMode">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="LoadBalance" />
      <xs:enumeration value="HotStandby" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpFailoverOperationOwner">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="ServerOne" />
      <xs:enumeration value="ServerTwo" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpFailoverOperations">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="FailoverCreate" />
      <xs:enumeration value="FailoverUpdate" />
      <xs:enumeration value="FailoverAddScopes" />
      <xs:enumeration value="FailoverRemoveScopes" />
      <xs:enumeration value="FailoverDelete" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpFailoverParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFailoverRemoveScopesParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Force" type="xsd:boolean" />
          <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFailoverScopesEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpFailoverState">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="Unknown" />
      <xs:enumeration value="NoState" />
      <xs:enumeration value="Init" />
```


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```
      <xs:enumeration value="Startup" />
      <xs:enumeration value="Normal" />
      <xs:enumeration value="CommunicationsInterrupted" />
      <xs:enumeration value="PartnerDown" />
      <xs:enumeration value="PotentialConflict" />
      <xs:enumeration value="ConflictDone" />
      <xs:enumeration value="ResolutionInterrupted" />
      <xs:enumeration value="Recover" />
      <xs:enumeration value="RecoverWait" />
      <xs:enumeration value="RecoverDone" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpFailoverWithScopesParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Failover" nillable="true" type="ipam:DhcpFailover"
/>
          <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFilter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsAllow" type="xsd:boolean" />
          <xs:element minOccurs="0" name="MacAddress" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="OperationTrackerServerIds" nillable="true"
type="serarr:ArrayOflong" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ServerRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFilterAllEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFilterByServerIdsEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerIds" nillable="true"
type="serarr:ArrayOflong" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpFilterMultiEditFields">
    <xs:restriction base="xsd:string">
```


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```
      <xs:enumeration value="AllowOrDeny" />
      <xs:enumeration value="Description" />
      <xs:enumeration value="Both" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpFindAndReplaceOption">
    <xs:sequence>
      <xs:element minOccurs="0" name="NewValue" nillable="true" type="xsd:anyType" />
      <xs:element minOccurs="0" name="OldValue" nillable="true" type="xsd:anyType" />
      <xs:element minOccurs="0" name="Option" nillable="true" type="ipam:DhcpOption" />
    </xs:sequence>
    <xs:attribute ref="ser:Id" />
    <xs:attribute ref="ser:Ref" />
  </xs:complexType>
  <xs:complexType name="DhcpFindAndReplaceOptionV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpFindAndReplaceOption">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpFindAndReplaceOptionV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpFindAndReplaceOption">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpLeaseDurationType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Limited" />
      <xs:enumeration value="Unlimited" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpMsmOverallCompletionStatus">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="EntityStatusCollectionObject" nillable="true"
type="ipam:IpamObject" />
          <xs:element minOccurs="0" name="ErrorInfo" nillable="true"
type="ipam1:IpamException" />
          <xs:element minOccurs="0" name="HasIpamUpdateError" type="xsd:boolean" />
          <xs:element minOccurs="0" name="ReturnObject" nillable="true"
type="ipam:IpamObject" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpOperationState">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Enabled" />
      <xs:enumeration value="Disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpOption">
    <xs:complexContent mixed="false">
```


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```
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="OptionDefinition" nillable="true"
type="ipam:DhcpOptionDefinition" />
          <xs:element minOccurs="0" name="OptionOwnerType" type="ipam:DhcpOptionOwnerType" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="UserClass" nillable="true"
type="ipam:DhcpUserClass" />
          <xs:element minOccurs="0" name="Values" nillable="true"
type="serarr:ArrayOfanyType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpOptionApplyType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="AddOrOverwrite" />
      <xs:enumeration value="Delete" />
      <xs:enumeration value="Append" />
      <xs:enumeration value="FindAndReplace" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpOptionCollection">
    <xs:sequence>
      <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S" />
      <xs:element minOccurs="0" name="OptionsInCollection" nillable="true"
type="ipam:ArrayOfDhcpOption" />
      <xs:element minOccurs="0" name="OwnerType" type="ipam:DhcpOptionOwnerType" />
    </xs:sequence>
    <xs:attribute ref="ser:Id" />
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  </xs:complexType>
  <xs:simpleType name="DhcpOptionCollectionType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="SingleValue" />
      <xs:enumeration value="MultiValue" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpOptionDefinition">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="OptionCollectionType"
type="ipam:DhcpOptionCollectionType" />
          <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
          <xs:element minOccurs="0" name="OptionType" type="ipam:DhcpOptionType" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="Values" nillable="true"
type="serarr:ArrayOfanyType" />
          <xs:element minOccurs="0" name="VendorClass" nillable="true"
type="ipam:DhcpVendorClass" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```


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```
  <xs:simpleType name="DhcpOptionDefinitionApplyType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="AddOrOverwrite" />
      <xs:enumeration value="Append" />
      <xs:enumeration value="Delete" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpOptionDefinitionCollection">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
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type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S" />
          <xs:element minOccurs="0" name="OptionDefinitionsInCollection" nillable="true"
type="ipam:ArrayOfDhcpOptionDefinition" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpOptionDefinitionV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpOptionDefinition">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpOptionDefinitionV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpOptionDefinition">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpOptionOwnerType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Scope" />
      <xs:enumeration value="Server" />
      <xs:enumeration value="Policy" />
      <xs:enumeration value="Reservation" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpOptionType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Byte" />
      <xs:enumeration value="Word" />
      <xs:enumeration value="DWord" />
      <xs:enumeration value="DWordDWord" />
      <xs:enumeration value="Encapsulated" />
      <xs:enumeration value="String" />
      <xs:enumeration value="IPAddress" />
      <xs:enumeration value="BinaryData" />
      <xs:enumeration value="IPv6Address" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpOptionV4">
    <xs:complexContent mixed="false">
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```
      <xs:extension base="ipam:DhcpOption">
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          <xs:element minOccurs="0" name="PolicyOwner" nillable="true"
type="ipam:DhcpPolicyV4" />
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  </xs:complexType>
  <xs:complexType name="DhcpOptionV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpOption">
        <xs:sequence />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpPoliciesByDhcpServerIdListEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="DhcpServers" nillable="true"
type="ipam:ArrayOfDhcpServerV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpPoliciesEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpPolicyConditionV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ClientId" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="Fqdn" nillable="true" type="serarr:ArrayOfstring"
/>
          <xs:element minOccurs="0" name="MacAddress" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="Operator" type="ipam:PolicyOperator" />
          <xs:element minOccurs="0" name="RelayAgentCidInfo" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="RelayAgentInfo" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="RelayAgentRidInfo" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="RelayAgentSidInfo" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="UserClass" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="VendorClass" nillable="true"
type="serarr:ArrayOfstring" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpPolicyPropertyUpdate">
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      <xs:restriction base="xsd:string">
        <xs:enumeration value="EnablePolicy" />
        <xs:enumeration value="DisablePolicy" />
      </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="DhcpPolicyRangeV4">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:BaseIpamObject">
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            <xs:element minOccurs="0" name="EndIPAddress" nillable="true"
type="sysnet:IPAddress" />
            <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
            <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
type="sysnet:IPAddress" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="DhcpPolicyV4">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:BaseIpamObject">
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type="ipam:DhcpPolicyConditionV4" />
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type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
            <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
            <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
            <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
            <xs:element minOccurs="0" name="DnsSuffix" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
            <xs:element minOccurs="0" name="LeaseDuration" type="ser:duration" />
            <xs:element minOccurs="0" name="LeaseDurationType"
type="ipam:DhcpLeaseDurationType" />
            <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfPolicyOperations" />
            <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:DhcpOptionCollection" />
            <xs:element minOccurs="0" name="PolicyDescription" nillable="true"
type="xsd:string" />
            <xs:element minOccurs="0" name="PolicyId" type="xsd:long" />
            <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="ProcessingOrder" type="xsd:unsignedInt" />
            <xs:element minOccurs="0" name="Ranges" nillable="true"
type="ipam:ArrayOfDhcpPolicyRangeV4" />
            <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
            <xs:element minOccurs="0" name="ScopeRecordId" type="xsd:long" />
            <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DhcpServer" />
            <xs:element minOccurs="0" name="ServerRecordId" type="xsd:long" />
            <xs:element minOccurs="0" name="State" type="xsd:boolean" />
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        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="DhcpReservation">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:BaseIpamObject">
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```
        <xs:sequence>
          <xs:element minOccurs="0" name="Address" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
          <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
          <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfReservationOperations" />
          <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:DhcpOptionCollection" />
          <xs:element minOccurs="0" name="ParentScope" nillable="true" type="ipam:DhcpScope"
/>
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="Status" type="ipam:DhcpReservationStatus" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpReservationDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ScopeId" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpReservationDeletionFlag">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="Default" />
      <xs:enumeration value="DeleteReservationRecord" />
      <xs:enumeration value="DeleteIPAddressRecord" />
      <xs:enumeration value="DeleteDnsRecord" />
      <xs:enumeration value="DeleteIPAddressAndDnsRecord" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpReservationStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="Inactive" />
      <xs:enumeration value="Active" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpReservationSyncStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="NotAttempted" />
      <xs:enumeration value="CreateSuccess" />
      <xs:enumeration value="CreateFailure" />
      <xs:enumeration value="DeleteSuccess" />
      <xs:enumeration value="DeleteFailure" />
      <xs:enumeration value="Exists" />
      <xs:enumeration value="Deleted" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpReservationTemplateConfiguration">
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```
    <xs:complexContent mixed="false">
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        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
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type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
          <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
          <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
          <xs:element minOccurs="0" name="FindAndReplaceOptions" nillable="true"
type="ipam:ArrayOfDhcpFindAndReplaceOption" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="OptionApplyType" type="ipam:DhcpOptionApplyType" />
          <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:ArrayOfDhcpOption" />
          <xs:element minOccurs="0" name="Status" type="ipam:DhcpReservationStatus" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpReservationV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpReservation">
        <xs:sequence>
          <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
          <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
          <xs:element minOccurs="0" name="MacAddress" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpReservationV4TemplateConfiguration">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpReservationTemplateConfiguration">
        <xs:sequence>
          <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdatesType"
type="ipam:DnsDisableDynamicPtrUpdateType" />
          <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
          <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpReservationV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpReservation">
        <xs:sequence>
          <xs:element minOccurs="0" name="Duid" nillable="true" type="xsd:string" />
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpReservationV6TemplateConfiguration">
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    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpReservationTemplateConfiguration">
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScope">
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      <xs:extension base="ipam:BaseIpamObject">
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          <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
          <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
          <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
          <xs:element minOccurs="0" name="EndAddress" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="ExclusionRanges" nillable="true"
type="ipam:DhcpExclusionRangeCollection" />
          <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
          <xs:element minOccurs="0" name="NumberOfActiveLeases" type="xsd:double" />
          <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:DhcpOptionCollection" />
          <xs:element minOccurs="0" name="ParentDhcpServerRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ScopeName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="StartAddress" nillable="true"
type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="Status" type="ipam:DhcpScopeStatus" />
          <xs:element minOccurs="0" name="SubnetMask" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="TotalNumberOfAddressesInScope" type="xsd:double" />
          <xs:element minOccurs="0" name="TotalNumberOfExcludedAddressesInScope"
type="xsd:double" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeAllEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressCategory" nillable="true"
type="ipam:AddressCategory" />
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        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeAssociatedWithVendorClassesEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ParentServerRecordId" type="xsd:long" />
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          <xs:element minOccurs="0" name="VendorClassRecordIds" nillable="true"
type="serarr:ArrayOflong" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeForIpBlockEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ParentIPBlockRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeObjectSpecificEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="IpamObjectTypeForEnumeration"
type="ipam:IpamObjectType" />
          <xs:element minOccurs="0" name="RecordIds" nillable="true"
type="serarr:ArrayOflong" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopePoliciesWithoutRangesEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="DhcpScope" nillable="true" type="ipam:DhcpScopeV4"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopesByDhcpServerIdListEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="DhcpServerIds" nillable="true"
type="serarr:ArrayOflong" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpScopeStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Activated" />
      <xs:enumeration value="Deactivated" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpScopeTemplateConfiguration">
    <xs:complexContent mixed="false">
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```
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
          <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
          <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
          <xs:element minOccurs="0" name="FindAndReplaceOptions" nillable="true"
type="ipam:ArrayOfDhcpFindAndReplaceOption" />
          <xs:element minOccurs="0" name="OptionApplyType" type="ipam:DhcpOptionApplyType" />
          <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:ArrayOfDhcpOption" />
          <xs:element minOccurs="0" name="Status" type="ipam:DhcpScopeStatus" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeUnmappedEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpScope">
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          <xs:element minOccurs="0" name="BootpLeaseDurationType"
type="ipam:DhcpLeaseDurationType" />
          <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
          <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
          <xs:element minOccurs="0" name="FailoverConfigSyncStatus"
type="ipam:DhcpFailoverConfigSyncStatus" />
          <xs:element minOccurs="0" name="FailoverRelationshipName" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="LeaseDuration" type="ser:duration" />
          <xs:element minOccurs="0" name="LeaseDurationType"
type="ipam:DhcpLeaseDurationType" />
          <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
          <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
          <xs:element minOccurs="0" name="SubnetDelay" type="xsd:long" />
          <xs:element minOccurs="0" name="SuperscopeName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="SuperscopeRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeV4TemplateConfiguration">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpScopeTemplateConfiguration">
        <xs:sequence>
```


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```
          <xs:element minOccurs="0" name="BootpLeaseDuration" type="ser:duration" />
          <xs:element minOccurs="0" name="BootpLeaseDurationType"
type="ipam:DhcpLeaseDurationType" />
          <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdatesType"
type="ipam:DnsDisableDynamicPtrUpdateType" />
          <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
          <xs:element minOccurs="0" name="LeaseDuration" type="ser:duration" />
          <xs:element minOccurs="0" name="LeaseDurationType"
type="ipam:DhcpLeaseDurationType" />
          <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
          <xs:element minOccurs="0" name="ServingClientsType"
type="ipam:DhcpServingClientsType" />
          <xs:element minOccurs="0" name="SubnetDelay" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpScope">
        <xs:sequence>
          <xs:element minOccurs="0" name="PreferredLeaseTime" type="ser:duration" />
          <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
          <xs:element minOccurs="0" name="ScopePreference" type="xsd:unsignedByte" />
          <xs:element minOccurs="0" name="ScopeType" type="ipam:AddressAssignment" />
          <xs:element minOccurs="0" name="StatelessClientInventoryStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
          <xs:element minOccurs="0" name="ValidLeaseTime" type="ser:duration" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpScopeV6TemplateConfiguration">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpScopeTemplateConfiguration">
        <xs:sequence>
          <xs:element minOccurs="0" name="PreferredLeaseTime" type="ser:duration" />
          <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
          <xs:element minOccurs="0" name="ScopePreference" type="xsd:unsignedByte" />
          <xs:element minOccurs="0" name="StatelessClientInventoryStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
          <xs:element minOccurs="0" name="ValidLeaseTime" type="ser:duration" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServer">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
          <xs:element minOccurs="0" name="AuditLoggingStatus"
type="ipam:DhcpAuditLoggingStatus" />
          <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
          <xs:element minOccurs="0" name="DnsNameProtectionStatus"
type="ipam:DhcpDnsNameProtectionStatus" />
          <xs:element minOccurs="0" name="DnsRegistrationCredentialDomainName"
nillable="true" type="xsd:string" />
```


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```
          <xs:element minOccurs="0" name="DnsRegistrationCredentialPassword" nillable="true"
  type="xsd:base64Binary" />
          <xs:element minOccurs="0" name="DnsRegistrationCredentialUserName" nillable="true"
  type="xsd:string" />
          <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
          <xs:element minOccurs="0" name="NumberOfActiveLeases" type="xsd:double" />
          <xs:element minOccurs="0" name="NumberOfAvailableAddresses" type="xsd:double" />
          <xs:element minOccurs="0" name="NumberOfScopes" type="xsd:int" />
          <xs:element minOccurs="0" name="OptionDefinitions" nillable="true"
  type="ipam:DhcpOptionDefinitionCollection" />
          <xs:element minOccurs="0" name="Options" nillable="true"
  type="ipam:DhcpOptionCollection" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="ServerRoleInfo" nillable="true"
  type="ipam:ServerRoleDhcp" />
          <xs:element minOccurs="0" name="UserClasses" nillable="true"
  type="ipam:DhcpUserClassCollection" />
          <xs:element minOccurs="0" name="VendorClasses" nillable="true"
  type="ipam:DhcpVendorClassCollection" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServerAllEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="Filter" nillable="true"
  type="serarr:ArrayOfKeyValueOfintanyType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServerByServerInfoIdsEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ServerInfoIds" nillable="true"
  type="serarr:ArrayOflong" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServerTemplateConfiguration">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AuditLoggingStatus"
  type="ipam:DhcpAuditLoggingStatus" />
          <xs:element minOccurs="0" name="DiscardDnsRecordOnLeaseDeletionStatus"
  type="ipam:DhcpDiscardDnsRecordOnLeaseDeletionStatus" />
          <xs:element minOccurs="0" name="DnsNameProtectionStatus"
  type="ipam:DhcpDnsNameProtectionStatus" />
          <xs:element minOccurs="0" name="DnsRegistrationCredentialDomainName"
  nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DnsRegistrationCredentialPassword" nillable="true"
  type="xsd:base64Binary" />
```


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```
          <xs:element minOccurs="0" name="DnsRegistrationCredentialUserName" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="DnsUpdateType" type="ipam:DhcpDnsUpdateType" />
          <xs:element minOccurs="0" name="FindAndReplaceOptions" nillable="true"
type="ipam:ArrayOfDhcpFindAndReplaceOption" />
          <xs:element minOccurs="0" name="OptionApplyType" type="ipam:DhcpOptionApplyType" />
          <xs:element minOccurs="0" name="OptionDefinitionApplyType"
type="ipam:DhcpOptionDefinitionApplyType" />
          <xs:element minOccurs="0" name="OptionDefinitions" nillable="true"
type="ipam:ArrayOfDhcpOptionDefinition" />
          <xs:element minOccurs="0" name="Options" nillable="true"
type="ipam:ArrayOfDhcpOption" />
          <xs:element minOccurs="0" name="UserClassApplyType"
type="ipam:DhcpUserClassApplyType" />
          <xs:element minOccurs="0" name="UserClasses" nillable="true"
type="ipam:ArrayOfDhcpUserClass" />
          <xs:element minOccurs="0" name="VendorClassApplyType"
type="ipam:DhcpVendorClassApplyType" />
          <xs:element minOccurs="0" name="VendorClasses" nillable="true"
type="ipam:ArrayOfDhcpVendorClass" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServerV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpServer">
        <xs:sequence>
          <xs:element minOccurs="0" name="AllowFilterEnabled" type="ipam:DhcpOperationState"
/>
          <xs:element minOccurs="0" name="DenyFilterEnabled" type="ipam:DhcpOperationState"
/>
          <xs:element minOccurs="0" name="DhcpDnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
          <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdates"
type="ipam:DnsDisableDynamicPtrUpdateType" />
          <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServerV4TemplateConfiguration">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpServerTemplateConfiguration">
        <xs:sequence>
          <xs:element minOccurs="0" name="AllowFilterEnabled" type="ipam:DhcpOperationState"
/>
          <xs:element minOccurs="0" name="DenyFilterEnabled" type="ipam:DhcpOperationState"
/>
          <xs:element minOccurs="0" name="DnsDisableDynamicPtrUpdatesType"
type="ipam:DnsDisableDynamicPtrUpdateType" />
          <xs:element minOccurs="0" name="DnsNotRequestingClientsUpdateType"
type="ipam:DhcpDnsNotRequestingClientsUpdateType" />
          <xs:element minOccurs="0" name="PolicyActivationState" type="ipam:PolicyState" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServerV6">
    <xs:complexContent mixed="false">
```


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```
      <xs:extension base="ipam:DhcpServer">
        <xs:sequence>
          <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
          <xs:element minOccurs="0" name="StatelessClientInventoryStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpServerV6TemplateConfiguration">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpServerTemplateConfiguration">
        <xs:sequence>
          <xs:element minOccurs="0" name="PurgeInterval" type="ser:duration" />
          <xs:element minOccurs="0" name="StatelessClientInventoryStatus"
type="ipam:DhcpStatelessClientInventoryStatus" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpServingClientsType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Dhcp" />
      <xs:enumeration value="Bootp" />
      <xs:enumeration value="Both" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="DhcpStatelessClientInventoryStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Enabled" />
      <xs:enumeration value="Disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpSuperscopeByDhcpServerIdListEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="DhcpServers" nillable="true"
type="ipam:ArrayOfDhcpServerV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpSuperscopeEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpSuperscopeV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
          <xs:element minOccurs="0" name="AccessScopePath" nillable="true" type="xsd:string"
/>
```


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```
          <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="ipam:ArrayOfSuperscopeOperations" />
          <xs:element minOccurs="0" name="ParentServerId" type="xsd:long" />
          <xs:element minOccurs="0" name="PercentageUsed" type="xsd:double" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DhcpServerV4" />
          <xs:element minOccurs="0" name="Status" type="ipam:DhcpScopeStatus" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpUserClass">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsDefault" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="Value" nillable="true"
type="serarr:ArrayOfunsignedByte" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpUserClassApplyType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Create" />
      <xs:enumeration value="AddOrOverwrite" />
      <xs:enumeration value="Delete" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpUserClassCollection">
    <xs:sequence>
      <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S" />
      <xs:element minOccurs="0" name="UserClassesInCollection" nillable="true"
type="ipam:ArrayOfDhcpUserClass" />
    </xs:sequence>
    <xs:attribute ref="ser:Id" />
    <xs:attribute ref="ser:Ref" />
  </xs:complexType>
  <xs:complexType name="DhcpUserClassV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpUserClass">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpUserClassV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpUserClass">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```


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```
  <xs:complexType name="DhcpVendorClass">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsDefault" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="Value" nillable="true"
type="serarr:ArrayOfunsignedByte" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DhcpVendorClassApplyType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Create" />
      <xs:enumeration value="AddOrOverwrite" />
      <xs:enumeration value="Delete" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DhcpVendorClassCollection">
    <xs:sequence>
      <xs:element minOccurs="0" name="OperationTracker" nillable="true"
type="sysgen:ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S" />
      <xs:element minOccurs="0" name="VendorClassesInCollection" nillable="true"
type="ipam:ArrayOfDhcpVendorClass" />
    </xs:sequence>
    <xs:attribute ref="ser:Id" />
    <xs:attribute ref="ser:Ref" />
  </xs:complexType>
  <xs:complexType name="DhcpVendorClassV4">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpVendorClass">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpVendorClassV6">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:DhcpVendorClass">
        <xs:sequence>
          <xs:element minOccurs="0" name="IanaVendorID" type="xsd:unsignedInt" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DiscoveryConfig">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="DiscoverDhcpServers" type="xsd:boolean" />
          <xs:element minOccurs="0" name="DiscoverDnsServers" type="xsd:boolean" />
          <xs:element minOccurs="0" name="DiscoverDomainControllers" type="xsd:boolean" />
          <xs:element minOccurs="0" name="DiscoveryConfigurationStatus"
type="ipam:ADDomainConfigurationStatus" />
          <xs:element minOccurs="0" name="DiscoveryDomain" nillable="true" type="xsd:string"
/>
```


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```
          <xs:element minOccurs="0" name="DomainGuid" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:int" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DiscoverySubnetEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="InclusionStatus" nillable="true"
type="ipam:ManagementStatus" />
          <xs:element minOccurs="0" name="MultipleRole" nillable="true"
type="ipam:ServerMultipleRole" />
          <xs:element minOccurs="0" name="ServerRole" nillable="true"
type="ipam:ServerRoleType" />
          <xs:element minOccurs="0" name="SubnetType" nillable="true"
type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DnsDisableDynamicPtrUpdateType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Enabled" />
      <xs:enumeration value="Disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DnsRecordFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ZoneName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsReverseLookupZone">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseDnsZone">
        <xs:sequence>
          <xs:element minOccurs="0" name="EndIP" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="IPType" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="Prefix" nillable="true" type="xsd:int" />
          <xs:element minOccurs="0" name="StartIP" nillable="true" type="sysnet:IPAddress" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsReverseLookupZoneEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz" />
        </xs:sequence>
      </xs:extension>
```


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```
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DnsReverseLookupZoneFilterCriteria">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="IP" />
      <xs:enumeration value="RecordId" />
      <xs:enumeration value="Name" />
      <xs:enumeration value="IPType" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DnsServer">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
          <xs:element minOccurs="0" name="ServerRoleInfo" nillable="true"
type="ipam:ServerRoleDns" />
          <xs:element minOccurs="0" name="ZoneHealthSummary" type="ipam:HealthStatus" />
          <xs:element minOccurs="0" name="ZoneHealthSummaryLastUpdateTime" nillable="true"
type="xsd:dateTime" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsServerByServerInfoIdsEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerInfoIds" nillable="true"
type="serarr:ArrayOflong" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsServerEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsServerReverseZone">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseDnsServerZone">
        <xs:sequence>
          <xs:element minOccurs="0" name="Zone" nillable="true"
type="ipam:DnsReverseLookupZone" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsServerReverseZoneEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
```


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```
          <xs:element minOccurs="0" name="DnsReverseLookupZoneId" type="xsd:long" />
          <xs:element minOccurs="0" name="DnsServerId" type="xsd:long" />
          <xs:element minOccurs="0" name="ZoneType" nillable="true"
type="ipam:ZoneHostingDnsServerType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsServerZone">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseDnsServerZone">
        <xs:sequence>
          <xs:element minOccurs="0" name="Zone" nillable="true" type="ipam:DnsZone" />
          <xs:element minOccurs="0" name="ZoneHealth" type="ipam:HealthStatus" />
          <xs:element minOccurs="0" name="ZoneHealthLastUpdateTime" nillable="true"
type="xsd:dateTime" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsServerZoneEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="DnsServerId" type="xsd:long" />
          <xs:element minOccurs="0" name="DnsZoneId" type="xsd:long" />
          <xs:element minOccurs="0" name="ZoneType" nillable="true"
type="ipam:ZoneHostingDnsServerType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DnsSyncStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="NotAttempted" />
      <xs:enumeration value="CreateSuccess" />
      <xs:enumeration value="CreateFailure" />
      <xs:enumeration value="DeleteSuccess" />
      <xs:enumeration value="DeleteFailure" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="DnsZone">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseDnsZone">
        <xs:sequence>
          <xs:element minOccurs="0" name="ParentId" type="xsd:long" />
          <xs:element minOccurs="0" name="ParentZone" nillable="true" type="ipam:DnsZone" />
          <xs:element minOccurs="0" name="ShortName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ZoneOverallHealth" type="ipam:HealthStatus" />
          <xs:element minOccurs="0" name="ZoneOverallHealthLastUpdateTime" nillable="true"
type="xsd:dateTime" />
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  </xs:complexType>
  <xs:complexType name="DnsZoneEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
```


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        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true"
  type="serarr:ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz" />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsZoneEvent">
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          <xs:element minOccurs="0" name="EventParametersString" nillable="true"
  type="xsd:string" />
          <xs:element minOccurs="0" name="LoggedEventLevel" type="ipam:EventLevel" />
          <xs:element minOccurs="0" name="LoggedOn" nillable="true" type="xsd:dateTime" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="ServerZone" nillable="true"
  type="ipam:DnsServerZone" />
          <xs:element minOccurs="0" name="ServerZoneId" type="xsd:long" />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DnsZoneEventEnumerationParameters">
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        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="DnsZoneFilterCriteria">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="ParentRecordId" />
      <xs:enumeration value="RecordId" />
      <xs:enumeration value="Name" />
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="DoProvisioningWithEnumerator">
    <xs:complexType>
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        <xs:element minOccurs="0" name="parametersInput" nillable="true"
  type="ipam:EnumerationParametersBase" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="DoProvisioningWithEnumeratorResponse">
    <xs:complexType>
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  </xs:element>
  <xs:simpleType name="EntityOperationType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="Unknown" />
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```
      <xs:enumeration value="Add" />
      <xs:enumeration value="Update" />
      <xs:enumeration value="Delete" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="EntityStatus">
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      <xs:element minOccurs="0" name="ObjectType" type="ipam:IpamObjectType" />
      <xs:element minOccurs="0" name="OperationType" type="ipam:EntityOperationType" />
      <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="EntityStatusCollection">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
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type="ipam:ArrayOfEntityStatus" />
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="EnumerateCustomFieldAssociations">
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      <xs:sequence>
        <xs:element minOccurs="0" name="parametersInput" nillable="true"
type="ipam:EnumerationParametersBase" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="EnumerateCustomFieldAssociationsResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="EnumerateCustomFieldAssociationsResult"
nillable="true" type="ipam:ArrayOfCustomFieldAssociation" />
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    </xs:complexType>
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  <xs:element name="EnumerateCustomFields">
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type="ipam:EnumerationParametersBase" />
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  </xs:element>
  <xs:element name="EnumerateCustomFieldsResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="EnumerateCustomFieldsResult" nillable="true"
type="ipam:ArrayOfCustomField" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="EnumeratedRowsCallback">
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      <xs:sequence>
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        <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="EnumerateIpamIPBlock">
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type="ipam:EnumerationParametersBase" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="EnumerateIpamIPBlockResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="EnumerateIpamIPBlockResult" nillable="true"
type="ipam:ArrayOfIPBlock" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="EnumerateServerInfo">
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      <xs:sequence>
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type="ipam:EnumerationParametersBase" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="EnumerateServerInfoResponse">
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        <xs:element minOccurs="0" name="EnumerateServerInfoResult" nillable="true"
type="ipam:ArrayOfServerInfo" />
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    </xs:complexType>
  </xs:element>
  <xs:simpleType name="EnumerationObjectType">
    <xs:restriction base="xsd:string">
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      <xs:enumeration value="ServerInfo" />
      <xs:enumeration value="IPAddress" />
      <xs:enumeration value="IPRange" />
      <xs:enumeration value="IPBlock" />
      <xs:enumeration value="LogicalGroupData" />
      <xs:enumeration value="CustomField" />
      <xs:enumeration value="CustomFieldAssociation" />
      <xs:enumeration value="LogicalGroup" />
      <xs:enumeration value="LogicalGroupNode" />
      <xs:enumeration value="DiscoveredSubnets" />
      <xs:enumeration value="DhcpServer" />
      <xs:enumeration value="DhcpScope" />
      <xs:enumeration value="DhcpReservation" />
      <xs:enumeration value="DhcpVendorClass" />
      <xs:enumeration value="DhcpUserClass" />
      <xs:enumeration value="DhcpOptionDefinition" />
      <xs:enumeration value="DhcpOption" />
      <xs:enumeration value="DhcpExclusionRange" />
      <xs:enumeration value="ConfigurationAudit" />
```


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```
        <xs:enumeration value="IPAudit" />
        <xs:enumeration value="DnsServerReverseZone" />
        <xs:enumeration value="DnsReverseLookupZone" />
        <xs:enumeration value="DnsServerZone" />
        <xs:enumeration value="DnsZone" />
        <xs:enumeration value="DnsServer" />
        <xs:enumeration value="DnsZoneEvent" />
        <xs:enumeration value="AsyncProvision" />
        <xs:enumeration value="AsyncSchemaConversion" />
        <xs:enumeration value="Operations" />
        <xs:enumeration value="UserRoles" />
        <xs:enumeration value="AddressSpace" />
        <xs:enumeration value="AccessScopes" />
        <xs:enumeration value="UserAccessPolicies" />
        <xs:enumeration value="IPSubnet" />
        <xs:enumeration value="DhcpPolicy" />
        <xs:enumeration value="DhcpFailover" />
        <xs:enumeration value="DhcpSuperscope" />
        <xs:enumeration value="DhcpFilter" />
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    </xs:simpleType>
    <xs:complexType name="EnumerationParametersBase">
      <xs:sequence>
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        <xs:element name="ObjectType" type="ipam:EnumerationObjectType" />
      </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="EventLevel">
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        <xs:enumeration value="None" />
        <xs:enumeration value="Information" />
        <xs:enumeration value="Warning" />
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      </xs:restriction>
    </xs:simpleType>
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  type="sysnet:IPAddress" />
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            <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
  type="sysnet:IPAddress" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="FailoverDataFormatter">
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            <xs:element minOccurs="0" name="FailoverName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="Server1Name" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="Server2Name" nillable="true" type="xsd:string" />
          </xs:sequence>
        </xs:extension>
```


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```
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="FetchDnsReverseLookupZonesByIds">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="FetchDnsReverseLookupZonesByIdsResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="FetchDnsReverseLookupZonesByIdsResult"
nillable="true" type="ipam:ArrayOfDnsReverseLookupZone" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="FetchDnsServerReverseZoneById">
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  <xs:element name="FetchDnsServerReverseZoneByIdResponse">
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type="ipam:DnsServerReverseZone" />
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  <xs:element name="FetchDnsServerZoneById">
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    </xs:complexType>
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  <xs:element name="FetchDnsServerZoneByIdResponse">
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type="ipam:DnsServerZone" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="FetchDnsZonesByIds">
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    </xs:complexType>
  </xs:element>
  <xs:element name="FetchDnsZonesByIdsResponse">
    <xs:complexType>
      <xs:sequence>
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type="ipam:ArrayOfDnsZone" />
```


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```
      </xs:sequence>
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  </xs:element>
  <xs:element name="FetchIpamIPAddress">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="address" nillable="true" type="sysnet:IPAddress" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntity">
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      <xs:sequence>
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        <xs:element minOccurs="0" name="address" nillable="true" type="sysnet:IPAddress" />
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        <xs:element minOccurs="0" name="managedByEntity" nillable="true" type="xsd:string" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpace">
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        <xs:element minOccurs="0" name="managedBy" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="managedByEntity" nillable="true" type="xsd:string" />
        <xs:element minOccurs="0" name="addressSpaceId" type="xsd:long" />
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  <xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResponse">
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name="FetchIpamIPAddressByManagedByAndManagedByEntityAndAddressSpaceResult" nillable="true"
type="ipam:IpamIPAddress" />
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  <xs:element name="FetchIpamIPAddressByManagedByAndManagedByEntityResponse">
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name="FetchIpamIPAddressByManagedByAndManagedByEntityResult" nillable="true"
type="ipam:IpamIPAddress" />
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  <xs:element name="FetchIpamIPAddressResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="FetchIpamIPAddressResult" nillable="true"
type="ipam:ArrayOfIpamIPAddress" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="FilterDataFormatter">
```


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```
      <xs:complexContent mixed="false">
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          <xs:sequence>
            <xs:element minOccurs="0" name="MacAddress" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="FindAvailableDhcpServersForReservation">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ipAddress" nillable="true" type="sysnet:IPAddress" />
        </xs:sequence>
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    </xs:element>
    <xs:element name="FindAvailableDhcpServersForReservationResponse">
      <xs:complexType>
        <xs:sequence>
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  nillable="true" type="ipam:ArrayOfDhcpServer" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="FindAvailableScopeForReservationInDhcpServer">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="dhcpServerRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="ipAddress" nillable="true" type="sysnet:IPAddress" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="FindAvailableScopeForReservationInDhcpServerResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="FindAvailableScopeForReservationInDhcpServerResult"
  nillable="true" type="ipam:DhcpScope" />
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    </xs:element>
    <xs:complexType name="GatewayAddress">
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        <xs:extension base="ipam:BaseIpamObject">
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            <xs:element minOccurs="0" name="GatewayIP" nillable="true" type="sysnet:IPAddress"
  />
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            <xs:element minOccurs="0" name="Metric" type="xsd:int" />
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    </xs:complexType>
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      <xs:complexType>
        <xs:sequence />
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    </xs:element>
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```
    <xs:element name="GenerateUpgradeValidationFailureLogResponse">
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    <xs:element name="GetAccessScopeResponse">
      <xs:complexType>
        <xs:sequence>
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    </xs:element>
    <xs:element name="GetAddressSpaceById">
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        <xs:sequence>
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  type="ipam:IPAddressSpaceType" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="GetAddressSpaceByIdResponse">
      <xs:complexType>
        <xs:sequence>
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  type="ipam:AddressSpace" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="GetAddressSpaceByName">
      <xs:complexType>
        <xs:sequence>
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          <xs:element minOccurs="0" name="addressSpaceType" nillable="true"
  type="ipam:IPAddressSpaceType" />
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    </xs:element>
    <xs:element name="GetAddressSpaceByNameResponse">
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        <xs:sequence>
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  type="ipam:AddressSpace" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:simpleType name="GetAddressSpaceFilter">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="IPAddressSpaceType" />
        <xs:enumeration value="MappingProviderAddressSpaceName" />
      </xs:restriction>
```


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```
  </xs:simpleType>
  <xs:element name="GetAddressSpacesByIds">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="addressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetAddressSpacesByIdsResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetAddressSpacesByIdsResult" nillable="true"
type="sysgen:ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetAllAddressSpaceNames">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="addressSpaceType" nillable="true"
type="ipam:IPAddressSpaceType" />
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    </xs:complexType>
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  <xs:element name="GetAllAddressSpaceNamesResponse">
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  <xs:element name="GetAllPoliciesFromDB">
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/>
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  <xs:element name="GetAllPoliciesFromDBResponse">
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        <xs:element minOccurs="0" name="GetAllPoliciesFromDBResult" nillable="true"
type="ipam:ArrayOfDhcpPolicyV4" />
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    </xs:complexType>
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  <xs:element name="GetBlockById">
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/>
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  <xs:element name="GetBlockHierarchyForRangeIdResponse">
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```
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type="ipam:IPUtilizationType" />
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  <xs:element name="GetBuiltInCustomFieldResponse">
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        <xs:element minOccurs="0" name="GetBuiltInCustomFieldResult" nillable="true"
type="ipam:CustomField" />
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  </xs:element>
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        <xs:element minOccurs="0" name="startIPAddress" nillable="true"
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/>
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  <xs:element name="GetIPAddressById">
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```
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  <xs:element name="GetIPAddressByIdResponse">
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  <xs:element name="GetIPAddressesByIds">
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      <xs:enumeration value="AddressSpaceName" />
      <xs:enumeration value="ManagedByService" />
      <xs:enumeration value="ServiceInstance" />
      <xs:enumeration value="Unmapped" />
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    </xs:restriction>
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    </xs:complexType>
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  <xs:element name="GetIPRangeByIdResponse">
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type="ipam:IPRange" />
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      <xs:enumeration value="Unmapped" />
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      <xs:enumeration value="NetworkId" />
      <xs:enumeration value="PrefixLength" />
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      <xs:enumeration value="LogicalNetwork" />
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```
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type="ipam:LogicalGroupNode" />
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nillable="true" type="ipam:IPCumulativeUtilization" />
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  <xs:element name="GetLogicalGroupUtilizationByType">
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```


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```
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/>
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```
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          <xs:element minOccurs="0" name="managedByEntity" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="addressSpaceId" type="xsd:long" />
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    <xs:element name="GetRangeByAddressSpaceIdAndManagedByManagedByEntityResponse">
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  type="ipam:IPRange" />
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    <xs:element name="GetRangeByScopeRecordId">
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        <xs:element minOccurs="0" name="GetRangeByScopeRecordIdResult" nillable="true"
type="ipam:IPRange" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetRangeUtilization">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ipRangeRecordId" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="requestedIPUtilizationType"
type="ipam:IPUtilizationType" />
        <xs:element minOccurs="0" name="startDate" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="endDate" nillable="true" type="xsd:dateTime" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetRangeUtilizationResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetRangeUtilizationResult" nillable="true"
type="ipam:IPCumulativeUtilization" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetReservations">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="reservationRecordIds" nillable="true"
type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetReservationsResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetReservationsResult" nillable="true"
type="ipam:ArrayOfDhcpReservation" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSchemaConversionInfo">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSchemaConversionInfoResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetSchemaConversionInfoResult" type="xsd:boolean" />
        <xs:element minOccurs="0" name="configuredVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
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```
        <xs:element minOccurs="0" name="nextVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
        <xs:element minOccurs="0" name="installedVersion" nillable="true"
type="ipam:IpamSchemaVersion" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetScopesByIds">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetScopesByIdsResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetScopesByIdsResult" nillable="true"
type="serarr:ArrayOfKeyValueOflongDhcpScopem1ahUJFx" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetScopesForSuperscope">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="superscope" nillable="true"
type="ipam:DhcpSuperscopeV4" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetScopesForSuperscopeResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetScopesForSuperscopeResult" nillable="true"
type="ipam:ArrayOfDhcpScopeV4" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetServersForMultipleId">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="serverIds" nillable="true" type="serarr:ArrayOflong"
/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetServersForMultipleIdResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetServersForMultipleIdResult" nillable="true"
type="ipam:ArrayOfServerInfo" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetById">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="id" type="xsd:long" />
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```
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetByIdResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetSubnetByIdResult" nillable="true"
type="ipam:IPSubnet" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetByNetworkIdAndAddressSpace">
    <xs:complexType>
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        <xs:element minOccurs="0" name="networkId" nillable="true" type="sysnet:IPAddress" />
        <xs:element minOccurs="0" name="prefixLength" type="xsd:int" />
        <xs:element minOccurs="0" name="addressSpaceRecordId" type="xsd:long" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetByNetworkIdAndAddressSpaceResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetSubnetByNetworkIdAndAddressSpaceResult"
nillable="true" type="ipam:IPSubnet" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetsByIds">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ids" nillable="true" type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetsByIdsResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetSubnetsByIdsResult" nillable="true"
type="ipam:ArrayOfIPSubnet" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetUtilization">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="id" type="xsd:long" />
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        <xs:element minOccurs="0" name="requestedIPUtilizationType"
type="ipam:IPUtilizationType" />
        <xs:element minOccurs="0" name="startDate" nillable="true" type="xsd:dateTime" />
        <xs:element minOccurs="0" name="endDate" nillable="true" type="xsd:dateTime" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSubnetUtilizationResponse">
    <xs:complexType>
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      <xs:sequence>
        <xs:element minOccurs="0" name="GetSubnetUtilizationResult" nillable="true"
type="ipam:IPCumulativeUtilization" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSuperscopes">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="superscopes" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetSuperscopesResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetSuperscopesResult" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetTotalUnmappedRanges">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetTotalUnmappedRangesResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetTotalUnmappedRangesResult" type="xsd:int" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetUserAccessPolicy">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="policyId" type="xsd:long" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetUserAccessPolicyResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="GetUserAccessPolicyResult" nillable="true"
type="ipam:UserAccessPolicy" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetUserRole">
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        <xs:element minOccurs="0" name="roleRecordId" type="xsd:long" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="GetUserRoleResponse">
```


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```
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetUserRoleResult" nillable="true"
type="ipam:UserRole" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:simpleType name="HealthStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Healthy" />
      <xs:enumeration value="HealthyWithWarnings" />
      <xs:enumeration value="Unhealthy" />
      <xs:enumeration value="NotApplicable" />
      <xs:enumeration value="Unknown" />
      <xs:enumeration value="Unchecked" />
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="InitializeAsyncProvisioning">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeAsyncProvisioningResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeAsyncSchemaConversion">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeAsyncSchemaConversionResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeEnumeration">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeEnumerationResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeEnumerationWithModule">
    <xs:complexType>
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```
      <xs:sequence>
        <xs:element minOccurs="0" name="parameters" nillable="true"
type="ipam:EnumerationParametersBase" />
        <xs:element minOccurs="0" name="remotingModule" nillable="true"
type="ipam1:IIpamRemotingModule" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeEnumerationWithModuleResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeOperationParameters">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="paramters" nillable="true"
type="ipam:IpamOperationWithProgressParameters" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="InitializeOperationParametersResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:complexType name="InvalidDBConfigDatabaseTypeNotValidIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseType" type="xsd:int" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidSQLDBConfigAuthNotSupportedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseAuthenticationType" type="xsd:int" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidSQLDBConfigInvalidPortIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="InputPort" type="xsd:unsignedInt" />
          <xs:element minOccurs="0" name="MaxAllowedPort" type="xsd:unsignedInt" />
          <xs:element minOccurs="0" name="MinAllowedPort" type="xsd:unsignedInt" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidWIDDBConfigAuthNotSupportedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
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```
          <xs:element minOccurs="0" name="DatabaseAuthenticationType" type="xsd:int" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidWIDDBConfigDirectoryDoesNotExistIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="Path" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidWIDDBConfigInvalidCredentialIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="Username" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidWIDDBConfigNameMustBeIPAMIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="ExpectedDatabaseName" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="InputDatabaseName" nillable="true"
type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidWIDDBConfigPortNotAllowedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="Port" type="xsd:unsignedInt" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="InvalidWIDDBConfigServerNotAllowedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="IPAddressExpiryStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Active" />
      <xs:enumeration value="Alert" />
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      <xs:enumeration value="Expired" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="IPAddressSpaceType">
    <xs:list>
      <xs:simpleType>
        <xs:restriction base="xsd:string">
          <xs:enumeration value="None">
            <xs:annotation>
              <xs:appinfo>
                <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
              </xs:appinfo>
            </xs:annotation>
          </xs:enumeration>
          <xs:enumeration value="Provider">
            <xs:annotation>
              <xs:appinfo>
                <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
              </xs:appinfo>
            </xs:annotation>
          </xs:enumeration>
          <xs:enumeration value="Customer">
            <xs:annotation>
              <xs:appinfo>
                <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
              </xs:appinfo>
            </xs:annotation>
          </xs:enumeration>
        </xs:restriction>
      </xs:simpleType>
    </xs:list>
  </xs:simpleType>
  <xs:complexType name="IpamAddressObject">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Address" nillable="true" type="sysnet:IPAddress" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IpamAdminOperation">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Category" type="xsd:int" />
          <xs:element minOccurs="0" name="CategoryName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsAdminRoleOnlyOperation" type="xsd:boolean" />
          <xs:element minOccurs="0" name="OperationId" type="xsd:int" />
          <xs:element minOccurs="0" name="OperationName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IpamCredential">
    <xs:complexContent mixed="false">
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      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Password" nillable="true" type="xsd:base64Binary"
/>
          <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="IpamDatabaseAuthenticationType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="AuthenticationNotConfigured" />
      <xs:enumeration value="WindowsAuthentication" />
      <xs:enumeration value="SQLAuthentication" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="IpamDatabaseConfiguration">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="DatabaseAuthenticationType"
type="ipam:IpamDatabaseAuthenticationType" />
          <xs:element minOccurs="0" name="DatabaseCredential" nillable="true"
type="ipam:IpamCredential" />
          <xs:element minOccurs="0" name="DatabaseName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DatabasePath" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DatabasePort" type="xsd:unsignedInt" />
          <xs:element minOccurs="0" name="DatabaseServerNameOrIP" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="DatabaseType" type="ipam:IpamDatabaseType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="IpamDatabaseType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="DatabaseTypeNotConfigured" />
      <xs:enumeration value="WindowsInternalDatabase" />
      <xs:enumeration value="MSSQLServer" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="IpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ExceptionId" type="ipam1:IpamExceptionId" />
          <xs:element minOccurs="0" name="ExceptionMessage" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IpamGenericExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
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  <xs:complexType name="IpamGpoError">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="DomainName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ErrorInfoCollection" nillable="true"
type="ipam:ArrayOfIpamGpoErrorInfo" />
          <xs:element minOccurs="0" name="GpoName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IpamGpoErrorInfo">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Domain" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="GpoErrorType" type="ipam:IpamGpoErrorType" />
          <xs:element minOccurs="0" name="GpoName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="InnerErrorMessage" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="IpamGpoOperation" type="ipam:IpamGpoOperation" />
          <xs:element minOccurs="0" name="ServerInfo" nillable="true" type="ipam:ServerInfo"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="IpamGpoErrorType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="IpamApiErrorGpoGenericFailure" />
      <xs:enumeration value="IpamApiErrorGpoOperationFailed" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="IpamGpoOperation">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="Add" />
      <xs:enumeration value="Delete" />
      <xs:enumeration value="NoOperation" />
      <xs:enumeration value="NotApplicable" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="IpamIPAddress">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
          <xs:element minOccurs="0" name="Address" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="AddressAssignment" type="ipam:AddressAssignment" />
          <xs:element minOccurs="0" name="AddressCategory" type="ipam:AddressCategory" />
          <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="AssetTag" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="AssignedDate" nillable="true" type="xsd:dateTime"
/>
          <xs:element minOccurs="0" name="ChangedDate" nillable="true" type="xsd:dateTime" />
          <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
          <xs:element minOccurs="0" name="CustomerAddressSpaceName" nillable="true"
type="xsd:string" />
```


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type="ipam:LogicalGroupNode" />
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type="sys:ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz" />
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type="xsd:string" />
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      <xs:enumeration value="DHCPSuperscopeV4" />
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      <xs:enumeration value="DHCPFilter" />
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      <xs:enumeration value="ServerAvailability" />
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type="ipam1:IpamUpgradeValidationRuleDescriptionId" />
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type="ipam1:IpamUpgradeValidationRuleNameId" />
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type="ipam:IpamUpgradeValidationRuleInfo" />
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      <xs:enumeration value="UpgradeAllowedWithDefaultChanges" />
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type="xsd:string" />
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        <xs:enumeration value="DHCPStatelessClientPurged" />
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/>
            <xs:element minOccurs="0" name="DomainName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="EventType" type="ipam:IPAuditEventType" />
            <xs:element minOccurs="0" name="HostName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="IPAddress" nillable="true" type="sysnet:IPAddress"
/>
            <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
            <xs:element minOccurs="0" name="ServerType" type="ipam:ServerAuditType" />
            <xs:element minOccurs="0" name="SourceServerName" nillable="true" type="xsd:string"
/>
            <xs:element minOccurs="0" name="TimeOfEvent" nillable="true" type="xsd:dateTime" />
```


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```
          <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="IPAuditStartEnumeration">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:complexType name="IPBlock">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
          <xs:element minOccurs="0" name="AddressCategory" type="ipam:AddressCategory" />
          <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="EndIPAddress" nillable="true"
type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
          <xs:element minOccurs="0" name="LastAssignedDate" nillable="true"
type="xsd:dateTime" />
          <xs:element minOccurs="0" name="LastModifiedDate" nillable="true"
type="xsd:dateTime" />
          <xs:element minOccurs="0" name="NetworkId" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="NumberOfChildBlocks" type="xsd:int" />
          <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ParentIPBlockRecordId" nillable="true"
type="xsd:long" />
          <xs:element minOccurs="0" name="PartialCustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldPartialValue" />
          <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
          <xs:element minOccurs="0" name="RIRReceivedDate" nillable="true"
type="xsd:dateTime" />
          <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="SubnetMask" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPUtilization" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPBlockChildBlockEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPBlockDataFormatter">
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```
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="EndIP" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="NetwordkId" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
          <xs:element minOccurs="0" name="StartIP" nillable="true" type="sysnet:IPAddress" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPBlockGetAllBlocksEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPBlockRootEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressCategory" nillable="true"
type="ipam:AddressCategory" />
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPCumulativeUtilization">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="IPUtilizationType" type="ipam:IPUtilizationType" />
          <xs:element minOccurs="0" name="IpUtilization" nillable="true"
type="ipam:ArrayOfIPUtilization" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRange">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AccessScopeId" type="xsd:long" />
          <xs:element minOccurs="0" name="AddressAssignment" type="ipam:AddressAssignment" />
          <xs:element minOccurs="0" name="AddressCategory" type="ipam:AddressCategory" />
          <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="ConnectionSpecificDNSSuffix" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="CustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
          <xs:element minOccurs="0" name="CustomerAddressSpaceName" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="DNSServers" nillable="true"
type="serarr:ArrayOfstring" />
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```
          <xs:element minOccurs="0" name="DNSSuffixes" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DhcpScopeName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DhcpServerGuid" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="DhcpServerName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="EndIPAddress" nillable="true"
type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ExclusionRanges" nillable="true"
type="ipam:ArrayOfDhcpExclusionRange" />
          <xs:element minOccurs="0" name="Gateways" nillable="true"
type="ipam:ArrayOfGatewayAddress" />
          <xs:element minOccurs="0" name="IsInheritedAccessScope" type="xsd:boolean" />
          <xs:element minOccurs="0" name="IsOverlapping" type="xsd:boolean" />
          <xs:element minOccurs="0" name="LastAssignedDate" nillable="true"
type="xsd:dateTime" />
          <xs:element minOccurs="0" name="LastChangeDate" nillable="true" type="xsd:dateTime"
/>
          <xs:element minOccurs="0" name="LastReclaimRuntime" nillable="true"
type="xsd:dateTime" />
          <xs:element minOccurs="0" name="NumberOfChildAddresses" type="xsd:int" />
          <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ParentIPBlockRecordId" nillable="true"
type="xsd:long" />
          <xs:element minOccurs="0" name="PartialCustomFieldValues" nillable="true"
type="ipam:ArrayOfCustomFieldPartialValue" />
          <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
          <xs:element minOccurs="0" name="ProviderAddressSpaceName" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="RangeOverlapState" type="ipam:IPRangeOverlap" />
          <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="ReservedIPRanges" nillable="true"
type="sys:ArrayOfTupleOfstringstring" />
          <xs:element minOccurs="0" name="ReservedIPs" nillable="true"
type="serarr:ArrayOfstring" />
          <xs:element minOccurs="0" name="ScopeRecordId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="StartIPAddress" nillable="true"
type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="SubnetId" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="SubnetMask" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="UseForUtilization" type="xsd:boolean" />
          <xs:element minOccurs="0" name="UtilizationCalculationType"
type="ipam:IPUtilizationCalculationType" />
          <xs:element minOccurs="0" name="UtilizationEventLogStatus"
type="ipam:UtilizationStatus" />
          <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPUtilization" />
          <xs:element minOccurs="0" name="VIPRanges" nillable="true"
type="sys:ArrayOfTupleOfstringstring" />
          <xs:element minOccurs="0" name="VIPs" nillable="true" type="serarr:ArrayOfstring"
/>
          <xs:element minOccurs="0" name="VirtualizationType"
type="ipam:IPVirtualizationType" />
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
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```
  <xs:complexType name="IPRangeAllForBlockEnumerationParameter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeAllForDhcpServerEnumerationParameters">
    <xs:complexContent mixed="false">
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          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="IncludeAutoTypeRanges" type="xsd:boolean" />
          <xs:element minOccurs="0" name="ServerGuid" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeAllForLogicalGroupNodeEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="LogicalGroupNode" nillable="true"
type="ipam:LogicalGroupNode" />
          <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeByAddressSpaceAndVirtualizationTypeParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="AddressSpaceRecordID" type="xsd:long" />
          <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeByFilterEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
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type="sys:ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeByManagedByAndManagedByEntityEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
```


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```
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="AddressSpaceId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="ManagedByEntityValue" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="ManagedByValue" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeByVirtualizationTypeParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="VirtualizationType" nillable="true"
type="ipam:IPVirtualizationType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressSpaceName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="EndIP" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ManagedByService" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="NetwordkId" nillable="true" type="sysnet:IPAddress"
/>
          <xs:element minOccurs="0" name="PrefixLength" type="xsd:int" />
          <xs:element minOccurs="0" name="ServiceInstance" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="StartIP" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="VirtualizationType"
type="ipam:IPVirtualizationType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeForBlockEnumerationParameters">
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      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressAssignment" nillable="true"
type="ipam:AddressAssignment" />
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ParentBlockRecordId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeForSubnetEnumerationParameter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
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          <xs:element minOccurs="0" name="SubnetId" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="IPRangeOverlap">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="NotOverlapping" />
      <xs:enumeration value="Overlapping" />
      <xs:enumeration value="OverlappingBecauseFailover" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="IPRangeRootEnumerationParameters">
    <xs:complexContent mixed="false">
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        <xs:sequence>
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type="ipam:AddressCategory" />
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        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPRangeUnmappedEnumerationParameters">
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      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPSubnet">
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      <xs:extension base="ipam:IPBlock">
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type="xsd:string" />
          <xs:element minOccurs="0" name="IsOverlapping" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ProviderAddressSpaceName" nillable="true"
type="xsd:string" />
          <xs:element minOccurs="0" name="UseForUtilization" type="xsd:boolean" />
          <xs:element minOccurs="0" name="VLANId" nillable="true" type="serarr:ArrayOfint" />
          <xs:element minOccurs="0" name="VSId" type="xsd:int" />
          <xs:element minOccurs="0" name="VirtualizationType"
type="ipam:IPVirtualizationType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPUtilization">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="EndTime" nillable="true" type="xsd:dateTime" />
          <xs:element minOccurs="0" name="IsValid" type="xsd:boolean" />
          <xs:element minOccurs="0" name="StartTime" nillable="true" type="xsd:dateTime" />
          <xs:element minOccurs="0" name="TotalAssignedAddresses" type="xsd:double" />
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          <xs:element minOccurs="0" name="TotalAvailableAddresses" type="xsd:double" />
          <xs:element minOccurs="0" name="TotalUtilizedAddresses" type="xsd:double" />
        </xs:sequence>
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    </xs:complexContent>
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  <xs:simpleType name="IPUtilizationCalculationType">
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      <xs:enumeration value="None" />
      <xs:enumeration value="Auto" />
      <xs:enumeration value="Manual" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="IPUtilizationType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Current" />
      <xs:enumeration value="OneDay" />
      <xs:enumeration value="Week" />
      <xs:enumeration value="OneMonth" />
      <xs:enumeration value="ThreeMonth" />
      <xs:enumeration value="SixMonth" />
      <xs:enumeration value="OneYear" />
      <xs:enumeration value="TwoYear" />
      <xs:enumeration value="FiveYear" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="IPv4Block">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPBlock">
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv4Range">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPRange">
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          <xs:element minOccurs="0" name="WINSServers" nillable="true"
type="serarr:ArrayOfstring" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv4RangeLogicalGroup">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroup">
        <xs:sequence>
          <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv4RangeLogicalGroupNode">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroupNode">
        <xs:sequence>
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          <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv4Subnet">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPSubnet">
        <xs:sequence />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv4SubnetLogicalGroup">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroup">
        <xs:sequence />
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    </xs:complexContent>
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  <xs:complexType name="IPv4SubnetLogicalGroupNode">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroupNode">
        <xs:sequence>
          <xs:element minOccurs="0" name="AddressSpaceRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv4Utilization" />
        </xs:sequence>
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    </xs:complexContent>
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  <xs:complexType name="IPv4Utilization">
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv6Block">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPBlock">
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv6Range">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPRange">
        <xs:sequence />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv6RangeLogicalGroup">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroup">
        <xs:sequence>
          <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv6Utilization" />
        </xs:sequence>
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      </xs:extension>
    </xs:complexContent>
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    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroupNode">
        <xs:sequence>
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type="ipam:IPv6Utilization" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv6Subnet">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPSubnet">
        <xs:sequence />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv6SubnetLogicalGroup">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroup">
        <xs:sequence />
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    </xs:complexContent>
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    <xs:complexContent mixed="false">
      <xs:extension base="ipam:LogicalGroupNode">
        <xs:sequence>
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          <xs:element minOccurs="0" name="UtilizationStatistics" nillable="true"
type="ipam:IPv6Utilization" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IPv6Utilization">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IPUtilization">
        <xs:sequence>
          <xs:element minOccurs="0" name="TotalStatefulAddresses" type="xsd:double" />
          <xs:element minOccurs="0" name="TotalStatelessAddresses" type="xsd:double" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="IPVirtualizationType">
    <xs:list>
      <xs:simpleType>
        <xs:restriction base="xsd:string">
          <xs:enumeration value="NonVirtualized" />
          <xs:enumeration value="Fabric" />
          <xs:enumeration value="Virtual" />
        </xs:restriction>
      </xs:simpleType>
    </xs:list>
  </xs:simpleType>
```


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```
    <xs:element name="IsIPAddressMapped">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="rangeRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ipaddress" nillable="true" type="sysnet:IPAddress" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="IsIPAddressMappedResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="IsIPAddressMappedResult" type="xsd:boolean" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="IsIpamConfigured">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="IsIpamConfiguredResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="IsIpamConfiguredResult" type="xsd:boolean" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="IsPurgeTaskRunning">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="IsPurgeTaskRunningResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="IsPurgeTaskRunningResult" type="xsd:boolean" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="IsSchemaConversionInProgress">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="IsSchemaConversionInProgressResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="IsSchemaConversionInProgressResult"
  type="xsd:boolean" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="IsSchemaConversionRequired">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="IsSchemaConversionRequiredResponse">
```


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```
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="IsSchemaConversionRequiredResult" type="xsd:boolean"
/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="IsTaskRunning">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="IsTaskRunningResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="IsTaskRunningResult" type="xsd:boolean" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="LogicalGroup">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="BuiltInLogicalGroupNumber"
type="ipam:BuiltInLogicalGroup" />
          <xs:element minOccurs="0" name="Fields" nillable="true"
type="ipam:ArrayOfLogicalGroupField" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Origin" type="ipam:LogicalGroupOrigin" />
          <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="Users" type="ipam:LogicalGroupUsers" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="LogicalGroupDataForLogicalGroupNodeEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
          <xs:element minOccurs="0" name="LogicalGroupNode" nillable="true"
type="ipam:LogicalGroupNode" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="LogicalGroupDataForRootAlternateItemsEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
          <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
type="ipam:LogicalGroup" />
          <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
        </xs:sequence>
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="LogicalGroupDataUnmappedItemsEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
          <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
type="ipam:LogicalGroup" />
          <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="LogicalGroupField">
    <xs:sequence>
      <xs:element minOccurs="0" name="CustomFieldName" nillable="true" type="xsd:string" />
      <xs:element minOccurs="0" name="CustomFieldRecordId" nillable="true" type="xsd:long" />
      <xs:element minOccurs="0" name="RecordId" nillable="true" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="LogicalGroupNode">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="AncestorNodes" nillable="true"
type="ipam:ArrayOfLogicalGroupNode" />
          <xs:element minOccurs="0" name="CustomFieldRecordId" nillable="true"
type="xsd:long" />
          <xs:element minOccurs="0" name="LogicalGroupRecordId" nillable="true"
type="xsd:long" />
          <xs:element minOccurs="0" name="NodeLevel" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="NodeValue" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="LogicalGroupNodeChildrenEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="ParentLogicalGroupNode" nillable="true"
type="ipam:LogicalGroupNode" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="LogicalGroupNodeRootEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
type="ipam:LogicalGroup" />
          <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
```


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```
    </xs:complexType>
    <xs:simpleType name="LogicalGroupOrigin">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="BuiltIn" />
        <xs:enumeration value="External" />
      </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="LogicalGroupsEnumerationParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:EnumerationParametersBase">
          <xs:sequence>
            <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
            <xs:element minOccurs="0" name="LogicalGroupName" nillable="true" type="xsd:string"
/>
            <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:simpleType name="LogicalGroupType">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="Range" />
        <xs:enumeration value="IPAddress" />
        <xs:enumeration value="ManagedServer" />
        <xs:enumeration value="Subnet" />
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="LogicalGroupUsers">
      <xs:list>
        <xs:simpleType>
          <xs:restriction base="xsd:string">
            <xs:enumeration value="None">
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xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
                </xs:appinfo>
              </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="IPAddressSpaceManagement">
              <xs:annotation>
                <xs:appinfo>
                  <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
                </xs:appinfo>
              </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="ServerManagement">
              <xs:annotation>
                <xs:appinfo>
                  <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
                </xs:appinfo>
              </xs:annotation>
            </xs:enumeration>
          </xs:restriction>
        </xs:simpleType>
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      </xs:list>
    </xs:simpleType>
    <xs:complexType name="MACAddress">
      <xs:sequence>
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      </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="ManagementStatus">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="Unspecified" />
        <xs:enumeration value="Unmanaged" />
        <xs:enumeration value="Managed" />
      </xs:restriction>
    </xs:simpleType>
    <xs:element name="ManuallyAddServer">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="serverInfo" nillable="true" type="ipam:ServerInfo" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="ManuallyAddServerResponse">
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        <xs:sequence>
          <xs:element minOccurs="0" name="ManuallyAddServerResult" type="xsd:long" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="ManuallyUpdateServer">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="serverInfo" nillable="true" type="ipam:ServerInfo" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="ManuallyUpdateServerResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:complexType name="MovePolicyProcessingOrderParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="Direction"
type="ipam:PolicyProcessingOrderDirection" />
            <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="NotifyAsyncProvisionCheckpoint">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject"
/>
        </xs:sequence>
      </xs:complexType>
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```
  </xs:element>
  <xs:element name="NotifyAsyncProvisionComplete">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
        <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="NotifyAsyncProvisionStart">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="NotifyAsyncSchemaConversionCheckpoint">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="data" nillable="true" type="ipam:ArrayOfIpamObject"
/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="NotifyAsyncSchemaConversionComplete">
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      <xs:sequence>
        <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
        <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="NotifyAsyncSchemaConversionStart">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="NotifyEnumerationComplete">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="result" nillable="true" type="ipam:IpamObject" />
        <xs:element minOccurs="0" name="exception" nillable="true" type="ipam1:IpamException"
/>
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    </xs:complexType>
  </xs:element>
  <xs:element name="NotifyEnumerationStart">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:complexType name="OptionDefinitionDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string"
/>
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```
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="PolicyOperations">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="PolicyCreate" />
      <xs:enumeration value="PolicyAddRange" />
      <xs:enumeration value="PolicyAddOptions" />
      <xs:enumeration value="PolicyRemoveRange" />
      <xs:enumeration value="PolicyCoreSet" />
      <xs:enumeration value="PolicyRemove" />
      <xs:enumeration value="PolicySetDnsProperties" />
      <xs:enumeration value="PartnerPolicyCreate" />
      <xs:enumeration value="PartnerPolicyAddRange" />
      <xs:enumeration value="PartnerPolicyAddOptions" />
      <xs:enumeration value="PartnerPolicyRemoveRange" />
      <xs:enumeration value="PartnerPolicyCoreSet" />
      <xs:enumeration value="PartnerPolicyRemove" />
      <xs:enumeration value="PartnerPolicySetDnsProperties" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="PolicyOperator">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="Or" />
      <xs:enumeration value="And" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="PolicyProcessingOrderDirection">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="up" />
      <xs:enumeration value="down" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="PolicyState">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="none" />
      <xs:enumeration value="enabled" />
      <xs:enumeration value="disabled" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="PropertiesCouldNotBeValidatedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
        <xs:sequence>
          <xs:element minOccurs="0" name="PropertiesNotValidated" nillable="true"
type="serarr:ArrayOfstring" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ProviderAddressSpace">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:AddressSpace">
        <xs:sequence>
          <xs:element minOccurs="0" name="IsDefault" type="xsd:boolean" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
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```
    </xs:complexType>
    <xs:simpleType name="ProvisioningMethod">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="Automatic" />
        <xs:enumeration value="Manual" />
      </xs:restriction>
    </xs:simpleType>
    <xs:element name="PurgeAuditData">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="auditPurgeObject" nillable="true"
  type="ipam:AuditPurgeSettings" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="PurgeAuditDataResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="RemapRange">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="rangeRecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="RemapRangeResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="RemapSubnet">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="id" type="xsd:long" />
          <xs:element minOccurs="0" name="addressFamily" type="syssock:AddressFamily" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="RemapSubnetResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:complexType name="RemoveScopesFromSuperscopeParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
            <xs:element minOccurs="0" name="ScopeIds" nillable="true" type="serarr:ArrayOflong"
  />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="RenameSuperscopeParameters">
      <xs:complexContent mixed="false">
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```
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="NewName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Superscope" nillable="true"
type="ipam:DhcpSuperscopeV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReplicateRelationDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="RelationName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReplicateRelationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="FailoverRelation" nillable="true"
type="ipam:DhcpFailover" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReplicateScopeParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Scopes" nillable="true"
type="ipam:ArrayOfDhcpScope" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReplicateScopesDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="scopeListString" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReplicateServerDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
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```
  <xs:complexType name="ReplicateServerParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Server" nillable="true" type="ipam:DhcpServerV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReservationDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ReservationAddress" nillable="true"
type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="ReservationOperations">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="ReservationPropertyCreate" />
      <xs:enumeration value="ReservationOptionsCreate" />
      <xs:enumeration value="ReservationPropertyUpdate" />
      <xs:enumeration value="ReservationDnsUpdate" />
      <xs:enumeration value="ReservationOptionsUpdate" />
      <xs:enumeration value="ReservationDelete" />
      <xs:enumeration value="ReservationIPAddressDelete" />
      <xs:enumeration value="ReservationDNSRecordDelete" />
      <xs:enumeration value="PartnerReservationPropertyCreate" />
      <xs:enumeration value="PartnerReservationOptionsCreate" />
      <xs:enumeration value="PartnerReservationPropertyUpdate" />
      <xs:enumeration value="PartnerReservationDnsUpdate" />
      <xs:enumeration value="PartnerReservationOptionsUpdate" />
      <xs:enumeration value="PartnerReservationDelete" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="ReservationOptionDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="OptionId" type="xsd:int" />
          <xs:element minOccurs="0" name="ReservationAddress" nillable="true"
type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="UserClassName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ResetConfigSyncStatusDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
```


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```
        <xs:sequence>
          <xs:element minOccurs="0" name="Scopes" nillable="true"
type="ipam:ArrayOfDhcpScope" />
        </xs:sequence>
      </xs:extension>
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  </xs:complexType>
  <xs:complexType name="ResetConfigSyncStatusParameters">
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      <xs:extension base="ipam:IpamOperationWithProgressParameters">
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type="ipam:ArrayOfDhcpScope" />
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="ResetZoneHealth">
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    </xs:complexType>
  </xs:element>
  <xs:element name="ResetZoneHealthResponse">
    <xs:complexType>
      <xs:sequence />
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  </xs:element>
  <xs:element name="SaveAddressSpace">
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        <xs:element minOccurs="0" name="addressSpace" nillable="true"
type="ipam:AddressSpace" />
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  </xs:element>
  <xs:element name="SaveAddressSpaceResponse">
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        <xs:element minOccurs="0" name="SaveAddressSpaceResult" type="xsd:long" />
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  </xs:element>
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    </xs:complexType>
  </xs:element>
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```
  <xs:element name="SaveCustomField">
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/>
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    </xs:complexType>
  </xs:element>
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        <xs:element minOccurs="0" name="customFieldAssociation" nillable="true"
type="ipam:CustomFieldAssociation" />
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  <xs:element name="SaveCustomFieldResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="SaveCustomFieldResult" type="xsd:long" />
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type="ipam:DiscoveryConfig" />
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      <xs:sequence>
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type="ipam:LogicalGroup" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="SaveLogicalGroupResponse">
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      <xs:sequence>
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type="xsd:long" />
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  </xs:element>
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    <xs:element name="SaveRange">
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          <xs:element minOccurs="0" name="range" nillable="true" type="ipam:IPRange" />
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        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="SaveRangeResponse">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="SaveRangeResult" type="xsd:long" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="SaveSubnet">
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        <xs:sequence>
          <xs:element minOccurs="0" name="subnet" nillable="true" type="ipam:IPSubnet" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="SaveSubnetResponse">
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        <xs:sequence>
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      </xs:complexType>
    </xs:element>
    <xs:complexType name="ScopeDataFormatter">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamObject">
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            <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="ScopeOptionDataFormatter">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamObject">
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            <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
            <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="UserClassName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string"
  />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="ScopePolicyDataFormatter">
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        <xs:extension base="ipam:IpamObject">
          <xs:sequence>
            <xs:element minOccurs="0" name="PolicyName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
```


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```
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ScopePolicyIpRangeDataFormatter">
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          <xs:element minOccurs="0" name="PolicyRange" nillable="true"
type="ipam:DhcpPolicyRangeV4" />
          <xs:element minOccurs="0" name="ScopeId" nillable="true" type="sysnet:IPAddress" />
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ScopePolicyOptionDataFormatter">
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/>
        </xs:sequence>
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    </xs:complexContent>
  </xs:complexType>
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      <xs:enumeration value="Ipam" />
      <xs:enumeration value="Dhcp" />
      <xs:enumeration value="Nps" />
      <xs:enumeration value="Dc" />
    </xs:restriction>
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  <xs:complexType name="ServerDataFormatter">
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ServerInfo">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ADDomain" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ADDomainRecordId" type="xsd:int" />
          <xs:element minOccurs="0" name="ConfigurationRetrievalFlag"
type="ipam:ServerInfoConfigRetrievalStatus" />
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
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```
          <xs:element minOccurs="0" name="Domain" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IPAddresses" nillable="true"
type="sysnet:ArrayOfIPAddress" />
          <xs:element minOccurs="0" name="LastModified" type="xsd:dateTime" />
          <xs:element minOccurs="0" name="ManagementStatus" type="ipam:ManagementStatus" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="NewFlag" type="ipam:ServerInfoNewFlag" />
          <xs:element minOccurs="0" name="OSName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="OSVersion" type="xsd:decimal" />
          <xs:element minOccurs="0" name="Owner" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="SamAccountName" nillable="true" type="xsd:string"
/>
          <xs:element minOccurs="0" name="ServerCustomDataCollection" nillable="true"
type="ipam:ArrayOfCustomFieldValue" />
          <xs:element minOccurs="0" name="ServerGuid" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="ServerRoleCollection" nillable="true"
type="ipam:ArrayOfServerRole" />
        </xs:sequence>
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    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="ServerInfoConfigRetrievalStatus">
    <xs:restriction base="xsd:string">
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      <xs:enumeration value="NotStarted" />
      <xs:enumeration value="InProgress" />
      <xs:enumeration value="Completed" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="ServerInfoEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true"
type="serarr:ArrayOfKeyValueOfintanyType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="ServerInfoGetServerFilter">
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      <xs:enumeration value="RecordId" />
      <xs:enumeration value="Guid" />
      <xs:enumeration value="Role" />
      <xs:enumeration value="ManagementStatus" />
      <xs:enumeration value="Name" />
      <xs:enumeration value="IpType" />
      <xs:enumeration value="MultipleRole" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="ServerInfoNewFlag">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
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      <xs:enumeration value="New" />
      <xs:enumeration value="Modified" />
    </xs:restriction>
```


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```
  </xs:simpleType>
  <xs:simpleType name="ServerMultipleRole">
    <xs:restriction base="xsd:string">
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      <xs:enumeration value="DhcpOrDns" />
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    </xs:restriction>
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      <xs:extension base="ipam:IpamObject">
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/>
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ServerPolicyOptionDataFormatter">
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          <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string"
/>
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      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ServerRole">
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      <xs:extension base="ipam:BaseIpamObject">
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          <xs:element minOccurs="0" name="AuditFileAccessStatus"
type="ipam:ServerRoleAuditFileAccess" />
          <xs:element minOccurs="0" name="EventViewerAccessStatus"
type="ipam:ServerRoleEventViewerAccess" />
          <xs:element minOccurs="0" name="LastRefreshTime" type="xsd:dateTime" />
          <xs:element minOccurs="0" name="ParentServer" nillable="true"
type="ipam:ServerInfo" />
          <xs:element minOccurs="0" name="RecordId" type="xsd:long" />
          <xs:element minOccurs="0" name="RpcAccessStatus" type="ipam:ServerRoleRpcAccess" />
          <xs:element minOccurs="0" name="ServerRoleFlag" type="ipam:ServerRoleType" />
          <xs:element minOccurs="0" name="ServerRoleInclusionStatus" type="xsd:boolean" />
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```
          <xs:element minOccurs="0" name="ServiceStatus" type="ipam:ServiceRunningStatus" />
          <xs:element minOccurs="0" name="ServiceStatusModifiedTime" nillable="true"
type="xsd:dateTime" />
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  <xs:simpleType name="ServerRoleAuditFileAccess">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="NotChecked" />
      <xs:enumeration value="NotApplicable" />
      <xs:enumeration value="Denied" />
      <xs:enumeration value="Success" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="ServerRoleDc">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:ServerRole">
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ServerRoleDhcp">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:ServerRole">
        <xs:sequence>
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          <xs:element minOccurs="0" name="DatabasePath" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="DhcpCommonInfoId" type="xsd:long" />
          <xs:element minOccurs="0" name="ServerVersion" nillable="true"
type="ipam:ServerRoleDhcp.Version" />
        </xs:sequence>
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  <xs:complexType name="ServerRoleDhcp.Version">
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  <xs:complexType name="ServerRoleDns">
    <xs:complexContent mixed="false">
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    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="ServerRoleEventViewerAccess">
    <xs:restriction base="xsd:string">
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      <xs:enumeration value="NotApplicable" />
      <xs:enumeration value="Denied" />
      <xs:enumeration value="Success" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="ServerRoleNps">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:ServerRole">
```


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```
        <xs:sequence />
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="ServerRoleRpcAccess">
    <xs:restriction base="xsd:string">
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      <xs:enumeration value="Denied" />
      <xs:enumeration value="Success" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="ServerRoleType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Dc" />
      <xs:enumeration value="Dns" />
      <xs:enumeration value="Dhcp" />
      <xs:enumeration value="Nps" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="ServiceRunningStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="NotChecked" />
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      <xs:enumeration value="StartPending" />
      <xs:enumeration value="StopPending" />
      <xs:enumeration value="Running" />
      <xs:enumeration value="ContinuePending" />
      <xs:enumeration value="PausePending" />
      <xs:enumeration value="Paused" />
      <xs:enumeration value="NotApplicable" />
      <xs:enumeration value="NotReachable" />
      <xs:enumeration value="Unknown" />
      <xs:enumeration value="AccessDenied" />
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  <xs:element name="SetAccessScopeForObjects">
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        <xs:element minOccurs="0" name="objects" nillable="true" type="serarr:ArrayOflong" />
        <xs:element minOccurs="0" name="accessScopeId" nillable="true" type="xsd:long" />
        <xs:element minOccurs="0" name="objectType" type="ipam:IpamObjectType" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="SetAccessScopeForObjectsResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="SetAccessScopeForObjectsResult" nillable="true"
type="serarr:ArrayOfKeyValueOflongIpamExceptionmhTjmZB3" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="SetCommonPropertyValue">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="commonProperty" type="ipam:CommonProperties" />
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```
        <xs:element minOccurs="0" name="value" nillable="true" type="xsd:string" />
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    </xs:complexType>
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  <xs:element name="SetCommonPropertyValueResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="SetCompletionPercentage">
    <xs:complexType>
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        <xs:element minOccurs="0" name="completionPercentage" type="xsd:decimal" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="SetDatabaseConfiguration">
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        <xs:element minOccurs="0" name="newDBConfig" nillable="true"
type="ipam:IpamDatabaseConfiguration" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="SetDatabaseConfigurationResponse">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:complexType name="SetDhcpReservationCollectionParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Configuration" nillable="true"
type="ipam:DhcpReservationTemplateConfiguration" />
          <xs:element minOccurs="0" name="Family" type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ReservationRecordIds" nillable="true"
type="serarr:ArrayOflong" />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="SetDhcpReservationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Reservation" nillable="true"
type="ipam:DhcpReservation" />
          <xs:element minOccurs="0" name="scopeRecordId" type="xsd:long" />
        </xs:sequence>
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    </xs:complexContent>
  </xs:complexType>
  <xs:element name="SetOverallStatus">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="overallStatus" type="ipam1:OverallProgressStatus" />
        <xs:element minOccurs="0" name="completionStatus" nillable="true"
type="ipam:IpamObject" />
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      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="SetSubTaskStatus">
    <xs:complexType>
      <xs:sequence>
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type="ipam:SubTaskInstance" />
        <xs:element minOccurs="0" name="status" type="ipam:SubTaskStatus" />
        <xs:element minOccurs="0" name="percentComplete" type="xsd:decimal" />
        <xs:element minOccurs="0" name="completionStatus" nillable="true"
type="ipam1:IpamException" />
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    </xs:complexType>
  </xs:element>
  <xs:complexType name="SetSuperscopeActivationStatusParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="ActivationStatus" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Superscopes" nillable="true"
type="ipam:ArrayOfDhcpSuperscopeV4" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="StartAsyncProvisioning">
    <xs:complexType>
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  </xs:element>
  <xs:element name="StartAsyncSchemaConversion">
    <xs:complexType>
      <xs:sequence />
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  </xs:element>
  <xs:element name="StartEnumeration">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="StartOperationWithCallback">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="StartOperationWithCallbackResponse">
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  </xs:element>
  <xs:element name="StartProgressCallback">
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      <xs:sequence>
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      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="StartTask">
```


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```
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
          <xs:element minOccurs="0" name="server" nillable="true" type="xsd:string" />
        </xs:sequence>
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    </xs:element>
    <xs:element name="StartTaskResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:complexType name="SubnetLogicalGroupNodeRootEnumerationParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:EnumerationParametersBase">
          <xs:sequence>
            <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
            <xs:element minOccurs="0" name="AddressSpaceId" type="xsd:long" />
            <xs:element minOccurs="0" name="LogicalGroup" nillable="true"
  type="ipam:LogicalGroup" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="SubTaskInstance">
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        <xs:extension base="ipam:IpamObject">
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            <xs:element minOccurs="0" name="FailedCompletionStatus" nillable="true"
  type="ipam1:IpamException" />
            <xs:element minOccurs="0" name="IsNonDeterministicProgress" type="xsd:boolean" />
            <xs:element minOccurs="0" name="ProgressStatusDescriptions" nillable="true"
  type="xsd:string" />
            <xs:element minOccurs="0" name="SubTaskInstanceDetails" nillable="true"
  type="ipam:IpamObject" />
            <xs:element minOccurs="0" name="SubTaskInstanceId" type="xsd:int" />
            <xs:element minOccurs="0" name="SubTaskName" nillable="true" type="xsd:string" />
            <xs:element minOccurs="0" name="SubTaskStatus" type="ipam:SubTaskStatus" />
            <xs:element minOccurs="0" name="SubTaskUniqueId" type="xsd:int" />
          </xs:sequence>
        </xs:extension>
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        <xs:enumeration value="NotStarted" />
        <xs:enumeration value="InProgress" />
        <xs:enumeration value="CompletedWithError" />
        <xs:enumeration value="CompletedWithWarning" />
        <xs:enumeration value="CompletedWithSuccess" />
        <xs:enumeration value="NotApplicable" />
        <xs:enumeration value="NotRun" />
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="SuperscopeOperations">
      <xs:restriction base="xsd:string">
        <xs:enumeration value="AddScopes" />
        <xs:enumeration value="RemoveScopes" />
        <xs:enumeration value="DeleteSuperscope" />
```


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```
      <xs:enumeration value="AddFailover" />
      <xs:enumeration value="RemoveFailover" />
      <xs:enumeration value="RenameSuperscope" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="SuperscopeV4DataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
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          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="SuperscopeName" nillable="true" type="xsd:string"
/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
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      <xs:element minOccurs="0" name="NextRunTime" nillable="true" type="xsd:dateTime" />
      <xs:element minOccurs="0" name="State" type="ipam:IpamTaskState" />
      <xs:element minOccurs="0" name="TaskType" type="ipam:IpamTaskType" />
      <xs:element minOccurs="0" name="Triggers" nillable="true" type="xsd:string" />
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  </xs:element>
  <xs:element name="TaskLastRunResultResponse">
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  <xs:element name="TaskLastRuntimeResponse">
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  </xs:element>
  <xs:element name="TaskNextRuntime">
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        <xs:element minOccurs="0" name="taskType" type="ipam:IpamTaskType" />
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```
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    <xs:element name="TaskNextRuntimeResponse">
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          <xs:element minOccurs="0" name="TaskNextRuntimeResult" type="xsd:dateTime" />
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    </xs:element>
    <xs:element name="TaskRecurrenceDurationResponse">
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        <xs:sequence>
          <xs:element minOccurs="0" name="TaskRecurrenceDurationResult" type="ser:duration" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:complexType name="UnmappedIpamIPAddressForLogicalGroupEnumerationParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:EnumerationParametersBase">
          <xs:sequence>
            <xs:element minOccurs="0" name="AddressFamily" type="syssock:AddressFamily" />
            <xs:element minOccurs="0" name="LogicalGroupId" type="xsd:long" />
            <xs:element minOccurs="0" name="LogicalGroupType" type="ipam:LogicalGroupType" />
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="UpdateAccessScope">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="accessScope" nillable="true" type="ipam:AccessScope"
/>
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="UpdateAccessScopeResponse">
      <xs:complexType>
        <xs:sequence />
      </xs:complexType>
    </xs:element>
    <xs:element name="UpdateAddressSpace">
      <xs:complexType>
        <xs:sequence>
          <xs:element minOccurs="0" name="addressSpace" nillable="true"
  type="ipam:AddressSpace" />
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      </xs:complexType>
    </xs:element>
    <xs:element name="UpdateAddressSpaceResponse">
      <xs:complexType>
        <xs:sequence />
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    </xs:element>
```


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```
  <xs:element name="UpdateBlock">
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      <xs:sequence>
        <xs:element minOccurs="0" name="block" nillable="true" type="ipam:IPBlock" />
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  <xs:element name="UpdateBlockResponse">
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      <xs:sequence />
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  <xs:element name="UpdateCustomField">
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        <xs:element minOccurs="0" name="customField" nillable="true" type="ipam:CustomField"
/>
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  </xs:element>
  <xs:element name="UpdateCustomFieldAssociation">
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      <xs:sequence>
        <xs:element minOccurs="0" name="customFieldAssociation" nillable="true"
type="ipam:CustomFieldAssociation" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="UpdateCustomFieldAssociationResponse">
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      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:complexType name="UpdateDhcpFilterParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Filter" nillable="true" type="ipam:DhcpFilter" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="UpdateDhcpFiltersParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="EditFields" type="ipam:DhcpFilterMultiEditFields"
/>
          <xs:element minOccurs="0" name="Filters" nillable="true"
type="ipam:ArrayOfDhcpFilter" />
          <xs:element minOccurs="0" name="IsAllow" type="xsd:boolean" />
        </xs:sequence>
      </xs:extension>
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```
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="UpdateDhcpScopeParameters">
      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
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            <xs:element minOccurs="0" name="Scope" nillable="true" type="ipam:DhcpScope" />
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        </xs:extension>
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    </xs:complexType>
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      <xs:complexContent mixed="false">
        <xs:extension base="ipam:IpamOperationWithProgressParameters">
          <xs:sequence>
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        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="UpdateDiscoveryConfig">
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  type="ipam:DiscoveryConfig" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element name="UpdateDiscoveryConfigResponse">
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        <xs:sequence>
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  type="ipam:ArrayOfServerInfo" />
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    </xs:element>
    <xs:element name="UpdateGpoForMultipleServersResponse">
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        <xs:sequence>
          <xs:element minOccurs="0" name="UpdateGpoForMultipleServersResult" nillable="true"
  type="ipam:ArrayOfIpamGpoError" />
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    </xs:element>
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        <xs:extension base="ipam:IpamOperationWithProgressParameters">
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            <xs:element minOccurs="0" name="Address" nillable="true" type="ipam:IpamIPAddress"
  />
```


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```
          <xs:element minOccurs="0" name="CreateDhcpReservation" type="xsd:boolean" />
          <xs:element minOccurs="0" name="CreateDnsRecord" type="xsd:boolean" />
          <xs:element minOccurs="0" name="OldAddress" nillable="true"
type="ipam:IpamIPAddress" />
          <xs:element minOccurs="0" name="OverrideMBEAndSI" type="xsd:boolean" />
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type="ipam:LogicalGroup" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="UpdateLogicalGroupResponse">
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      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:complexType name="UpdatePolicyParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Policy" nillable="true" type="ipam:DhcpPolicyV4" />
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    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="UpdatePolicyPropertiesParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamOperationWithProgressParameters">
        <xs:sequence>
          <xs:element minOccurs="0" name="Policies" nillable="true"
type="ipam:ArrayOfDhcpPolicyV4" />
          <xs:element minOccurs="0" name="Update" type="ipam:DhcpPolicyPropertyUpdate" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="UpdateRange">
    <xs:complexType>
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        <xs:element minOccurs="0" name="range" nillable="true" type="ipam:IPRange" />
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    </xs:complexType>
  </xs:element>
  <xs:element name="UpdateRangeResponse">
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  </xs:element>
  <xs:element name="UpdateSubnet">
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        <xs:element minOccurs="0" name="subnet" nillable="true" type="ipam:IPSubnet" />
```


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```
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="UpdateSubnetResponse">
    <xs:complexType>
      <xs:sequence />
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  <xs:element name="UpdateUserAccessPolicy">
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        <xs:element minOccurs="0" name="policy" nillable="true" type="ipam:UserAccessPolicy"
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    </xs:complexType>
  </xs:element>
  <xs:element name="UpdateUserRoleResponse">
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      <xs:sequence>
        <xs:element minOccurs="0" name="UpdateUserRoleResult" type="xsd:long" />
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    </xs:complexType>
  </xs:element>
  <xs:complexType name="UserAccessPolicy">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsUserAliasValid" nillable="true"
type="xsd:boolean" />
          <xs:element minOccurs="0" name="PolicyDefinition" nillable="true"
type="ipam:ArrayOfAccessScopeToUserRoleMapping" />
          <xs:element minOccurs="0" name="PolicyId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="UserAlias" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="UserGroupId" nillable="true" type="xsd:long" />
          <xs:element minOccurs="0" name="UserGroupSecurityIdentifierBytes" nillable="true"
type="xsd:base64Binary" />
          <xs:element minOccurs="0" name="UserName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="UserClassDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
```


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```
          <xs:element minOccurs="0" name="UserClassName" nillable="true" type="xsd:string" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="UserRole">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:BaseIpamObject">
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          <xs:element minOccurs="0" name="Description" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="IsBuiltinRole" type="xsd:boolean" />
          <xs:element minOccurs="0" name="Name" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="Operations" nillable="true"
type="ipam:ArrayOfIpamAdminOperation" />
          <xs:element minOccurs="0" name="UserRoleID" nillable="true" type="xsd:long" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="UsingExistingSchemaNotSupportedIpamExceptionData">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamExceptionData">
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        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="UtilizationStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Under" />
      <xs:enumeration value="Optimal" />
      <xs:enumeration value="Over" />
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="ValidateIfUpgradeIsPossible">
    <xs:complexType>
      <xs:sequence />
    </xs:complexType>
  </xs:element>
  <xs:element name="ValidateIfUpgradeIsPossibleResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="ValidateIfUpgradeIsPossibleResult"
type="ipam:IpamUpgradeValidationStatus" />
        <xs:element minOccurs="0" name="rules" nillable="true"
type="ipam:ArrayOfIpamUpgradeValidationRuleStatus" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="VendorClassDataFormatter">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:IpamObject">
        <xs:sequence>
          <xs:element minOccurs="0" name="ServerName" nillable="true" type="xsd:string" />
          <xs:element minOccurs="0" name="VendorClassName" nillable="true" type="xsd:string"
/>
        </xs:sequence>
```


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```
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="ZoneConfiguration">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="ADIntegrated" />
      <xs:enumeration value="FileBacked" />
      <xs:enumeration value="NotApplicable" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="ZoneHostingDnsServerType">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="Primary" />
      <xs:enumeration value="Secondary" />
      <xs:enumeration value="Stub" />
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

7.2 Microsoft.Windows.Ipam1.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam"
xmlns:ipam1="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:sys="http://schemas.datacontract.org/2004/07/System"
xmlns:ipam="http://Microsoft.Windows.Ipam"
xmlns:syssock="http://schemas.datacontract.org/2004/07/System.Net.Sockets"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System" />
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System.Net.Sockets" />
  <xs:import namespace="http://Microsoft.Windows.Ipam" />
  <xs:complexType name="DhcpReservationAllEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="ReservationAddressFamily"
type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ReservationAddressType" type="ipam:AddressType" />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="DhcpReservationScopeBasedEnumerationParameters">
    <xs:complexContent mixed="false">
      <xs:extension base="ipam:EnumerationParametersBase">
        <xs:sequence>
          <xs:element minOccurs="0" name="ReservationAddressFamily"
type="syssock:AddressFamily" />
          <xs:element minOccurs="0" name="ReservationAddressType" type="ipam:AddressType" />
          <xs:element minOccurs="0" name="Scopes" nillable="true"
type="ipam:ArrayOfDhcpScope" />
        </xs:sequence>
```


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```
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IIpamRemotingModule">
    <xs:sequence />
  </xs:complexType>
  <xs:simpleType name="IpamAdminOperationId">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="EditDhcpServer" />
      <xs:enumeration value="ApplyServerConfigurationTemplate" />
      <xs:enumeration value="CreateDhcpScope" />
      <xs:enumeration value="EditDhcpScope" />
      <xs:enumeration value="DeleteDhcpScope" />
      <xs:enumeration value="ApplyScopeConfigurationTemplate" />
      <xs:enumeration value="AddScopesToSuperscope" />
      <xs:enumeration value="RemoveScopesFromSuperscope" />
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<xs:enumeration value="IpamApiErrorFailedToOpenCredentialRootKey" />
<xs:enumeration value="IpamApiErrorCredentialAlreadyExist" />
<xs:enumeration value="IpamAPiErrorCredentialDoesNotExist" />
<xs:enumeration value="IpamApiErrorCreateCredentialFailed" />
<xs:enumeration value="IpamApiErrorReadCredentialFailed" />
<xs:enumeration value="IpamApiErrorUpdateCredentialFailed" />
<xs:enumeration value="IpamApiErrorDeleteCredentialFailed" />
<xs:enumeration value="IpamApiErrorInvalidDBConfigurationStoreType" />
<xs:enumeration value="IpamApiErrorFailedToCreateDBConfigurationRootKey" />
<xs:enumeration value="IpamApiErrorFailedToOpenDBConfigurationRootKey" />
<xs:enumeration value="IpamApiErrorSaveDBConfigurationFailed" />
<xs:enumeration value="IpamApiErrorReadDBConfigurationFailed" />
<xs:enumeration value="IpamApiErrorDeleteDBConfigurationFailed" />
<xs:enumeration value="IpamApiFailedToRetrieveDatabaseConfiguration" />
<xs:enumeration value="IpamApiFailedToConnectToDatabase" />
<xs:enumeration value="IpamApiErrorDatabaseSchemaIsModified" />
<xs:enumeration value="IpamApiErrorUpgradePathNotAvailable" />
<xs:enumeration value="IpamApiErrorDatabaseIsAtHigherVersion" />
<xs:enumeration value="IpamApiErrorSchemaVersionNumberFormatError" />
<xs:enumeration value="IpamMsmGetDnsResourceRecordNonExistentRecord" />
<xs:enumeration value="IpamApiSameCustomFieldsInAssociation" />
<xs:enumeration value="IpamApiInvalidCustomFieldAssociationValues" />
<xs:enumeration value="IpamApiInvalidCustomFieldTypeInAssociation" />
<xs:enumeration value="IpamApiDuplicateCustomFieldAssociationValues" />
<xs:enumeration value="IpamApiCustomFieldAssociationIntersectionEmpty" />
<xs:enumeration value="IpamApiFailedToAddCustomFieldAssociation" />
<xs:enumeration value="IpamApiFailedToDeleteCustomFieldAssociation" />
<xs:enumeration value="IpamApiFailedToUpdateCustomFieldAssociation" />
<xs:enumeration value="IpamApiFailedToFetchCustomFieldAssociations" />
<xs:enumeration value="IpamApiCustomFieldAssociationAlreadyExists" />
<xs:enumeration value="IpamApiInvalidIPAuditTrackingSetting" />
<xs:enumeration value="IpamApiInvalidGpoPrefix" />
<xs:enumeration value="IpamApiErrorReadSecretKeyFailed" />
```


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```
      <xs:enumeration value="IpamApiErrorCreateSecretKeyFailed" />
      <xs:enumeration value="IpamApiErrorDeleteSecretKeyFailed" />
      <xs:enumeration value="IpamApiErrorUpdateSecretKeyFailed" />
      <xs:enumeration value="IpamApiErrorSecretKeyIsNotGUID" />
      <xs:enumeration value="IpamWmiInvalidUnmanagedObject" />
      <xs:enumeration value="IpamwmiInvalidManagedObject" />
      <xs:enumeration value="IpamWmiInvalidIPRangeRecordId" />
      <xs:enumeration value="IpamWmiInvalidNetworkId" />
      <xs:enumeration value="IpamWmiInvalidInstanceId" />
      <xs:enumeration value="IpamWmiInvalidIpamIPAddressRecordId" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="IpamUpgradeValidationRuleDescriptionId">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="RangeToValidSubnetValidationRuleDesc" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="IpamUpgradeValidationRuleNameId">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="None" />
      <xs:enumeration value="RangeToValidSubnetValidationRuleId" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="OverallProgressStatus">
    <xs:restriction base="xsd:string">
      <xs:enumeration value="NotStarted" />
      <xs:enumeration value="InProgress" />
      <xs:enumeration value="CompletedWithSuccess" />
      <xs:enumeration value="CompletedWithFailure" />
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

7.3 schemas.microsoft.com.2003.10.Serialization.Arrays.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:serarr="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ser="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:ipam="http://Microsoft.Windows.Ipam" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://Microsoft.Windows.Ipam" />
  <xs:complexType name="ArrayOfunsignedShort">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="unsignedShort"
type="xsd:unsignedShort" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfstring">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="xsd:string" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfanyType">
```


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```
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="anyType" nillable="true"
type="xsd:anyType" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfunsignedByte">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="unsignedByte"
type="xsd:unsignedByte" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfKeyValueOfintanyType">
    <xs:annotation>
      <xs:appinfo>
        <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValueOfintanyType">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Key" type="xsd:int" />
            <xs:element name="Value" nillable="true" type="xsd:anyType" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOflong">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="long" type="xsd:long" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfKeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz">
    <xs:annotation>
      <xs:appinfo>
        <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfDnsReverseLookupZoneFilterCriteriaanyType2zwQHvQz">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Key" type="ipam:DnsReverseLookupZoneFilterCriteria" />
            <xs:element name="Value" nillable="true" type="xsd:anyType" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfKeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz">
    <xs:annotation>
      <xs:appinfo>
        <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
      </xs:appinfo>
```


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```
    </xs:annotation>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfDnsZoneFilterCriteriaanyType2zwQHvQz">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Key" type="ipam:DnsZoneFilterCriteria" />
            <xs:element name="Value" nillable="true" type="xsd:anyType" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfKeyValueOfServerInfoGetServerFilteranyType2zwQHvQz">
    <xs:annotation>
      <xs:appinfo>
        <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValueOfServerInfoGetServerFilteranyType2zwQHvQz">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Key" type="ipam:ServerInfoGetServerFilter" />
            <xs:element name="Value" nillable="true" type="xsd:anyType" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfKeyValueOflongDhcpScopem1ahUJFx">
    <xs:annotation>
      <xs:appinfo>
        <IsDictionary
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsDictionary>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValueOflongDhcpScopem1ahUJFx">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Key" type="xsd:long" />
            <xs:element name="Value" nillable="true" type="ipam:DhcpScope" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

7.4 schemas.microsoft.com.2003.10.Serialization.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/"
attributeFormDefault="qualified" elementFormDefault="qualified"
```


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```
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="anyType" nillable="true" type="xs:anyType" />
  <xs:element name="anyURI" nillable="true" type="xs:anyURI" />
  <xs:element name="base64Binary" nillable="true" type="xs:base64Binary" />
  <xs:element name="boolean" nillable="true" type="xs:boolean" />
  <xs:element name="byte" nillable="true" type="xs:byte" />
  <xs:element name="dateTime" nillable="true" type="xs:dateTime" />
  <xs:element name="decimal" nillable="true" type="xs:decimal" />
  <xs:element name="double" nillable="true" type="xs:double" />
  <xs:element name="float" nillable="true" type="xs:float" />
  <xs:element name="int" nillable="true" type="xs:int" />
  <xs:element name="long" nillable="true" type="xs:long" />
  <xs:element name="QName" nillable="true" type="xs:QName" />
  <xs:element name="short" nillable="true" type="xs:short" />
  <xs:element name="string" nillable="true" type="xs:string" />
  <xs:element name="unsignedByte" nillable="true" type="xs:unsignedByte" />
  <xs:element name="unsignedInt" nillable="true" type="xs:unsignedInt" />
  <xs:element name="unsignedLong" nillable="true" type="xs:unsignedLong" />
  <xs:element name="unsignedShort" nillable="true" type="xs:unsignedShort" />
  <xs:element name="char" nillable="true" type="tns:char" />
  <xs:simpleType name="char">
    <xs:restriction base="xs:int" />
  </xs:simpleType>
  <xs:element name="duration" nillable="true" type="tns:duration" />
  <xs:simpleType name="duration">
    <xs:restriction base="xs:duration">
      <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?" />
      <xs:minInclusive value="-P10675199DT2H48M5.4775808S" />
      <xs:maxInclusive value="P10675199DT2H48M5.4775807S" />
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="guid" nillable="true" type="tns:guid" />
  <xs:simpleType name="guid">
    <xs:restriction base="xs:string">
      <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-
F]{12}" />
    </xs:restriction>
  </xs:simpleType>
  <xs:attribute name="FactoryType" type="xs:QName" />
  <xs:attribute name="Id" type="xs:ID" />
  <xs:attribute name="Ref" type="xs:IDREF" />
</xs:schema>
```

7.5 System.Collections.Generic.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:tns="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://Microsoft.Windows.Ipam" />
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
  <xs:import namespace="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam" />
  <xs:complexType
name="ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S">
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S"
type="tns:KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S"
nillable="true"
type="tns:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S" />
  <xs:complexType name="KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="DhcpOptionDefinition"
Namespace="http://Microsoft.Windows.Ipam" />
        </GenericType>
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="key" xmlns:q1="http://Microsoft.Windows.Ipam"
type="q1:CollectionOperations" />
      <xs:element name="value" nillable="true" xmlns:q2="http://Microsoft.Windows.Ipam"
type="q2:DhcpOptionDefinition" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S"
nillable="true" type="tns:KeyValuePairOfCollectionOperationsDhcpOptionDefinitionnTEz2bI_S" />
  <xs:complexType
name="ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S"
type="tns:KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S"
nillable="true"
type="tns:ArrayOfKeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S" />
  <xs:complexType name="KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="DhcpExclusionRange"
Namespace="http://Microsoft.Windows.Ipam" />
        </GenericType>
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="key" xmlns:q3="http://Microsoft.Windows.Ipam"
type="q3:CollectionOperations" />
```


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```
      <xs:element name="value" nillable="true" xmlns:q4="http://Microsoft.Windows.Ipam"
type="q4:DhcpExclusionRange" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S"
nillable="true" type="tns:KeyValuePairOfCollectionOperationsDhcpExclusionRangenTEz2bI_S" />
  <xs:complexType name="ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S"
type="tns:KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S"
nillable="true" type="tns:ArrayOfKeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S" />
  <xs:complexType name="KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="DhcpOption" Namespace="http://Microsoft.Windows.Ipam" />
        </GenericType>
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="key" xmlns:q5="http://Microsoft.Windows.Ipam"
type="q5:CollectionOperations" />
      <xs:element name="value" nillable="true" xmlns:q6="http://Microsoft.Windows.Ipam"
type="q6:DhcpOption" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S" nillable="true"
type="tns:KeyValuePairOfCollectionOperationsDhcpOptionnTEz2bI_S" />
  <xs:complexType name="ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S"
type="tns:KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S"
nillable="true" type="tns:ArrayOfKeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S" />
  <xs:complexType name="KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="DhcpUserClass" Namespace="http://Microsoft.Windows.Ipam" />
        </GenericType>
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
```


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```
    <xs:sequence>
      <xs:element name="key" xmlns:q7="http://Microsoft.Windows.Ipam"
type="q7:CollectionOperations" />
      <xs:element name="value" nillable="true" xmlns:q8="http://Microsoft.Windows.Ipam"
type="q8:DhcpUserClass" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S" nillable="true"
type="tns:KeyValuePairOfCollectionOperationsDhcpUserClassnTEz2bI_S" />
  <xs:complexType name="ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S"
type="tns:KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S"
nillable="true" type="tns:ArrayOfKeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S"
/>
  <xs:complexType name="KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="CollectionOperations"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="DhcpVendorClass" Namespace="http://Microsoft.Windows.Ipam"
/>
        </GenericType>
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="key" xmlns:q9="http://Microsoft.Windows.Ipam"
type="q9:CollectionOperations" />
      <xs:element name="value" nillable="true" xmlns:q10="http://Microsoft.Windows.Ipam"
type="q10:DhcpVendorClass" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S"
nillable="true" type="tns:KeyValuePairOfCollectionOperationsDhcpVendorClassnTEz2bI_S" />
  <xs:complexType name="ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOflongAddressSpacem1ahUJFx"
type="tns:KeyValuePairOflongAddressSpacem1ahUJFx" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx" nillable="true"
type="tns:ArrayOfKeyValuePairOflongAddressSpacem1ahUJFx" />
  <xs:complexType name="KeyValuePairOflongAddressSpacem1ahUJFx">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
          <GenericParameter Name="AddressSpace" Namespace="http://Microsoft.Windows.Ipam" />
        </GenericType>
```


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```
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="key" type="xs:long" />
      <xs:element name="value" nillable="true" xmlns:q11="http://Microsoft.Windows.Ipam"
type="q11:AddressSpace" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOflongAddressSpacem1ahUJFx" nillable="true"
type="tns:KeyValuePairOflongAddressSpacem1ahUJFx" />
  <xs:complexType name="ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="KeyValuePairOflongIpamExceptionmhTjmZB3"
type="tns:KeyValuePairOflongIpamExceptionmhTjmZB3" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3" nillable="true"
type="tns:ArrayOfKeyValuePairOflongIpamExceptionmhTjmZB3" />
  <xs:complexType name="KeyValuePairOflongIpamExceptionmhTjmZB3">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
          <GenericParameter Name="IpamException"
Namespace="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam" />
        </GenericType>
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="key" type="xs:long" />
      <xs:element name="value" nillable="true"
xmlns:q12="http://schemas.datacontract.org/2004/07/Microsoft.Windows.Ipam"
type="q12:IpamException" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOflongIpamExceptionmhTjmZB3" nillable="true"
type="tns:KeyValuePairOflongIpamExceptionmhTjmZB3" />
  <xs:complexType name="ArrayOfKeyValuePairOflongint">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValuePairOflongint"
type="tns:KeyValuePairOflongint" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValuePairOflongint" nillable="true"
type="tns:ArrayOfKeyValuePairOflongint" />
  <xs:complexType name="KeyValuePairOflongint">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="KeyValuePairOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System.Collections.Generic"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
          <GenericParameter Name="int" Namespace="http://www.w3.org/2001/XMLSchema" />
```


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```
        </GenericType>
        <IsValueType
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</IsValueType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="key" type="xs:long" />
      <xs:element name="value" type="xs:int" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="KeyValuePairOflongint" nillable="true" type="tns:KeyValuePairOflongint"
/>
</xs:schema>
```

7.6 System.Net.Sockets.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:tns="http://schemas.datacontract.org/2004/07/System.Net.Sockets"
elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/System.Net.Sockets"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
  <xs:simpleType name="AddressFamily">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Unknown">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue xmlns="http://schemas.microsoft.com/2003/10/Serialization/">-
1</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Unspecified">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">0</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Unix">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">1</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="InterNetwork">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">2</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="ImpLink">
```


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```
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">3</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Pup">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">4</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Chaos">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">5</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="NS">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">6</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Ipx">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">6</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Iso">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">7</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Osi">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">7</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Ecma">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">8</EnumerationValue>
```


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```
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="DataKit">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">9</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Ccitt">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">10</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Sna">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">11</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="DecNet">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">12</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="DataLink">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">13</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Lat">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">14</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="HyperChannel">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">15</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
```


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```
      <xs:enumeration value="AppleTalk">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">16</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="NetBios">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">17</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="VoiceView">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">18</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="FireFox">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">19</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Banyan">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">21</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Atm">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">22</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="InterNetworkV6">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">23</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Cluster">
        <xs:annotation>
          <xs:appinfo>
```


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```
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">24</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Ieee12844">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">25</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Irda">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">26</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="NetworkDesigners">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">28</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="Max">
        <xs:annotation>
          <xs:appinfo>
            <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">29</EnumerationValue>
          </xs:appinfo>
        </xs:annotation>
      </xs:enumeration>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="AddressFamily" nillable="true" type="tns:AddressFamily" />
</xs:schema>
```

7.7 System.Net.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:tns="http://schemas.datacontract.org/2004/07/System.Net"
elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/System.Net"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System.Net.Sockets" />
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
  <xs:complexType name="IPAddress">
    <xs:sequence>
      <xs:element name="m_Address" type="xs:long" />
      <xs:element name="m_Family"
xmlns:q1="http://schemas.datacontract.org/2004/07/System.Net.Sockets" type="q1:AddressFamily"
/>
      <xs:element name="m_HashCode" type="xs:int" />
```


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```
      <xs:element name="m_Numbers" nillable="true"
xmlns:q2="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
type="q2:ArrayOfunsignedShort" />
      <xs:element name="m_ScopeId" type="xs:long" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="IPAddress" nillable="true" type="tns:IPAddress" />
  <xs:complexType name="ArrayOfIPAddress">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="IPAddress" nillable="true"
type="tns:IPAddress" />
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfIPAddress" nillable="true" type="tns:ArrayOfIPAddress" />
</xs:schema>
```

7.8 System.xsd Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/System"
xmlns:sys="http://schemas.datacontract.org/2004/07/System"
xmlns:ser="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:ipam="http://Microsoft.Windows.Ipam"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://Microsoft.Windows.Ipam" />
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
  <xs:complexType name="ArrayOfTupleOfCustomFieldValueCustomFieldValuenTEz2bI_S">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S" nillable="true"
type="sys:TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfTupleOfGetAddressSpaceFilteranyType2zwQHvQz">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetAddressSpaceFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetAddressSpaceFilteranyType2zwQHvQz" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfTupleOfGetIpamIPAddressFilteranyType2zwQHvQz">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetIpamIPAddressFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetIpamIPAddressFilteranyType2zwQHvQz" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfTupleOfGetIPRangeFilteranyType2zwQHvQz">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetIPRangeFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetIPRangeFilteranyType2zwQHvQz" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfTupleOfGetIPSubnetFilteranyType2zwQHvQz">
    <xs:sequence>
```


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```
      <xs:element minOccurs="0" maxOccurs="unbounded"
name="TupleOfGetIPSubnetFilteranyType2zwQHvQz" nillable="true"
type="sys:TupleOfGetIPSubnetFilteranyType2zwQHvQz" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfTupleOflongstringstringstring">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="TupleOflongstringstringstring"
nillable="true" type="sys:TupleOflongstringstringstring" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfTupleOfstringstringstring">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="TupleOfstringstringstring"
nillable="true" type="sys:TupleOfstringstringstring" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="Exception">
    <xs:sequence>
      <xs:any minOccurs="0" maxOccurs="unbounded" namespace="##local" processContents="skip"
/>
    </xs:sequence>
    <xs:attribute ref="ser:FactoryType" />
  </xs:complexType>
  <xs:complexType name="TupleOfCustomFieldValueCustomFieldValuenTEz2bI_S">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="CustomFieldValue" Namespace="http://Microsoft.Windows.Ipam"
/>
          <GenericParameter Name="CustomFieldValue" Namespace="http://Microsoft.Windows.Ipam"
/>
        </GenericType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="m_Item1" nillable="true" type="ipam:CustomFieldValue" />
      <xs:element name="m_Item2" nillable="true" type="ipam:CustomFieldValue" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="TupleOfGetAddressSpaceFilteranyType2zwQHvQz">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="GetAddressSpaceFilter"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
        </GenericType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="m_Item1" type="ipam:GetAddressSpaceFilter" />
      <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="TupleOfGetIpamIPAddressFilteranyType2zwQHvQz">
```


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```
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="GetIpamIPAddressFilter"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
        </GenericType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="m_Item1" type="ipam:GetIpamIPAddressFilter" />
      <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="TupleOfGetIPRangeFilteranyType2zwQHvQz">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="GetIPRangeFilter" Namespace="http://Microsoft.Windows.Ipam"
/>
          <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
        </GenericType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="m_Item1" type="ipam:GetIPRangeFilter" />
      <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="TupleOfGetIPSubnetFilteranyType2zwQHvQz">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="GetIPSubnetFilter"
Namespace="http://Microsoft.Windows.Ipam" />
          <GenericParameter Name="anyType" Namespace="http://www.w3.org/2001/XMLSchema" />
        </GenericType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="m_Item1" type="ipam:GetIPSubnetFilter" />
      <xs:element name="m_Item2" nillable="true" type="xsd:anyType" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="TupleOflongstringstring">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="TupleOf{0}{1}{2}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="long" Namespace="http://www.w3.org/2001/XMLSchema" />
          <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
          <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
        </GenericType>
```


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```
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="m_Item1" type="xsd:long" />
      <xs:element name="m_Item2" nillable="true" type="xsd:string" />
      <xs:element name="m_Item3" nillable="true" type="xsd:string" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="TupleOfstringstring">
    <xs:annotation>
      <xs:appinfo>
        <GenericType Name="TupleOf{0}{1}{#}"
Namespace="http://schemas.datacontract.org/2004/07/System"
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
          <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
          <GenericParameter Name="string" Namespace="http://www.w3.org/2001/XMLSchema" />
        </GenericType>
      </xs:appinfo>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="m_Item1" nillable="true" type="xsd:string" />
      <xs:element name="m_Item2" nillable="true" type="xsd:string" />
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="Version">
    <xs:sequence>
      <xs:element name="_Build" type="xsd:int" />
      <xs:element name="_Major" type="xsd:int" />
      <xs:element name="_Minor" type="xsd:int" />
      <xs:element name="_Revision" type="xsd:int" />
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```


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8 Appendix C: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Windows Server 2012 R2 operating system

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

<1> Section 1.7: IPAM Management Protocol Version 1 is implemented in Windows Server 2012. IPAM Management Protocol Version 2 is implemented in Windows Server 2012 R2.

<2> Section 3.1.1.3: Windows implementation calculates this value using the maximum operation timeout value that can be configured in the registry. The registry value is under the key HKLM\SOFTWARE\Microsoft\IPAM and with the name OperationTimeoutMins. This is of type REG_DWORD. The value retrieved is used to compute the KeepaliveGraceCount as KeepaliveGraceCount = (OperationTimeoutMins * 60000)/15000.

<3> Section 3.1.4.12: The minimum OS version supported by the Windows implementation of this protocol

<4> Section 3.3.4.78: Windows IPAM server returns a version with MajorVersion 6 and MinorVersion 2.

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9 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

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