[MS-SNID]:
Server Network Information Discovery Protocol

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Revision Summary

Date	Revision History	Revision Class	Comments
08/08/2013	1.0	New	Released new document.

Contents

1   Introduction

The Server Network Information Discovery Protocol enables protocol clients to discover protocol servers within a UDP broadcast boundary and get server's networking configuration information.

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]:

   Domain Name System (DNS)
   Internet Protocol version 4 (IPv4)
   Internet Protocol version 6 (IPv6)
   NetBIOS name
   User Datagram Protocol (UDP)

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.

[RFC768] Postel, J., "User Datagram Protocol", STD 6, RFC 768, August 1980, http://www.ietf.org/rfc/rfc768.txt

[RFC919] Mogul, J., "BROADCASTING INTERNET DATAGRAMS", RFC 919, October 1984, http://www.rfc-editor.org/rfc/rfc919.txt

1.2.2   Informative References

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

[RFC2375] Hinden, R., and Deering, S., "IPv6 Multicast Address Assignments", RFC 2375, July 1998, http://www.rfc-editor.org/rfc/rfc2375.txt

1.3 Overview

The Server Network Information Discovery Protocol defines a pair of request and response messages by which a protocol client can locate protocol servers within the broadcast/multicast scope and get network information (such as **NetBIOS name**, **Internet Protocol version 4 (IPv4)**, and **Internet Protocol version 6 (IPv6)** addresses) of the servers.

1.4 Relationship to Other Protocols

The protocol relies on **User Datagram Protocol (UDP)** as specified in [RFC 768].

1.5 Prerequisites/Preconditions

Protocol server MUST allow the incoming UDP package from port 8912 in the firewall.

1.6 Applicability Statement

The protocol server and client MUST be connected to the same subnet with IPv4 broadcast support or IPv4 link-local scope multicast support.

1.7 Versioning and Capability Negotiation

The protocol version specifies the interop capability of the protocol on different Windows operating systems. See section 6 for detailed product behaviors of protocol versions and corresponding supported operating system. Protocol servers and clients with different protocol versions are not able to negotiate with each other.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

Parameter	Value	Reference
UDP port	8912	http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xml

2 Messages

2.1 Transport

The protocol transports messages over UDP as specified in [RFC768]. A protocol client MUST send one UDP package to the broadcast (IPv4) address and multicast (IPv6 link local scope all nodes) address using UDP port 8912. Protocol servers MUST reply to the protocol client with a UDP package containing its NetBIOS name and **DNS** configuration of the protocol server as specified later in this section.

2.2 Message Syntax

### 2.2.1 Enumerations

2.2.1.1 Id Enumeration

The **Id** enumeration is used to distinguish the Network Information Discovery request and Network Information Discovery response package types.

Field/Value	Description
RequestIdentifier 0x00000000	Indicates that the package is a Network Information Discovery request from the protocol client to the protocol server.
ResponseIdentifier 0xFFFFFFFF	Indicates that the package is a Network Information Discovery response from the protocol server to the protocol client.

2.2.2 Structures

2.2.2.1 Network Information Discovery Request

The package from protocol clients MUST set the **Id** field to RequestIdentifier and SHOULD include a single byte payload of any value.

0	1	2	3	4	5	6	7	8	9	1 0	1	2	3	4	5	6	7	8	9	2 0	1	2	3	4	5	6	7	8	9	3 0	1
Id																																
Payload									
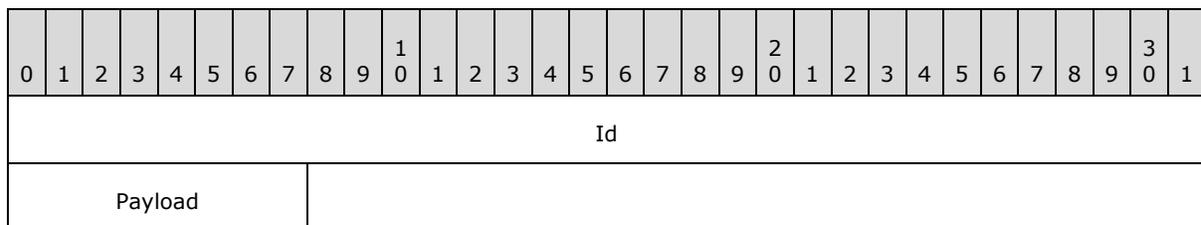
Id (4 bytes): A message identifier to specify the package type of Network Information Discovery Request. The value MUST be RequestIdentifier, which is defined in 2.2.1.1.

2.2.2.2 Network Information Discovery Response

The package from protocol servers MUST set all fields with the format described in this section. There is no alignment requirement for fields after the variable SERVER_NAME, but all fields after that variable are presented in a specific structure with fixed size.

0	1	2	3	4	5	6	7	8	9	1 0	1	2	3	4	5	6	7	8	9	2 0	1	2	3	4	5	6	7	8	9	3 0	1
Id																															
SERVER_NAME (variable)																															
...																															
VERSION																															
LOWEST_VERSION																															
IPv4_DNS_NUM																															
IPv4_DNS_ADDRESS (variable)																															
...																															
IPv6_DNS_NUM																															
IPv6_DNS_ADDRESS (variable)																															
...																															

Id (4 bytes): Message identifier to specify the package type of Network Information Discovery Response. The value MUST be ResponseIdentifier, which is defined in section 2.2.1.1.

SERVER_NAME (variable): The protocol server's NetBIOS name in a null-terminated Unicode string.

VERSION (4 bytes): The current version of the beacon. The protocol server MUST set this field according to the corresponding protocol version it is using. The value for this field MUST be 256 or 512. If the field is set to 256, all fields starting from **IPv4_DNS_NUM** are ignored by the protocol client.

LOWEST_VERSION (4 bytes): The lowest version of the beacon the protocol server supports. The value of this field MUST be 256 or 512.

IPv4_DNS_NUM (4 bytes): The number of elements stored in **IPv4_DNS_ADDRESS**. This field is set to a value greater than or equal to 0x00000000 if the following IP address fields are used. It is set to 0xFFFFFFFF to ignore all following fields in the message.

IPv4_DNS_ADDRESS (variable): A list of IP addresses stored in the SOCKADDR_STORAGE structure, 128 bytes each. The total number MUST be equal to **IPv4_DNS_NUM**.

IPv6_DNS_NUM (4 bytes): The number of elements stored in **IPv6_DNS_ADDRESS**. The value MUST be greater than or equal to 0x00000000.

IPv6_DNS_ADDRESS (variable): A list of IP addresses stored in the SOCKADDR_STORAGE structure, 128 bytes each. The total number MUST be equal to **IPv6_DNS_NUM**.

2.2.3   Namespaces

None.

2.2.4   Messages

Message	Description
Network information discovery request	The User Datagram Protocol (UDP) broadcast packages are sent from protocol clients to discover protocol servers within the broadcast scope.
Network information discovery response	The UDP packages are sent from protocol servers to protocol clients to respond to the discovery package and to carry the protocol server network information.

2.3   Directory Service Schema Elements

None.

3   Protocol Details

3.1   Server Network Information Discovery Request Details

3.1.1   Abstract Data Model

None.

3.1.2   Timers

None.

3.1.3   Initialization

None.

3.1.4   Higher-Layer Triggered Events

None.

3.1.5   Message Processing Events and Sequencing Rules

The protocol client creates a socket on a randomly selected port and sends a Network Information Discovery Request with appropriate Id (section 2.2.1.1) defined and a payload to the IPv4 broadcast address and IPv6 link-local all nodes multicast address.

The protocol client then listens to the same port waiting for the Network Information Discovery Response.

3.1.6   Timer Events

None.

3.1.7   Other Local Events

None.

3.2   Server Network Information Discovery Response Details

3.2.1   Abstract Data Model

None.

3.2.2   Timers

None.

3.2.3   Initialization

The protocol server creates a UDP socket that listens to port 8912 when the protocol is started.

3.2.4 Higher-Layer Triggered Events

None.

3.2.5 Message Processing Events and Sequencing Rules

When the server receives a UDP Network Information Discovery request package from port 8912, it checks the **Id** in the package. If the **Id** is the correct request **Id** as defined in section 2.2.1.1, the server finds the NetBIOS name and all DNS addresses on its network adapters and then sets the corresponding fields of the Network Information Discovery response package.

When the Network Information Discovery response package is received, the client checks the **Id** in the package. If the **Id** is the correct response **Id** defined in section 2.2.1.1, the client checks the **VERSION** and **LOWEST_VERSION** fields in the package. If the **VERSION** is lower than the lowest supported version of protocol client, or the **LOWEST_VERSION** is higher than the current version of the protocol client, the client will ignore the response message. Otherwise the client reads the remaining fields.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

4 Protocol Examples

Network Information Discovery Request

0	1	2	3	4	5	6	7	8	9	1 0	1	2	3	4	5	6	7	8	9	2 0	1	2	3	4	5	6	7	8	9	3 0	1
0x00000000																																
0x01																															

Network Information Discovery Response

0	1	2	3	4	5	6	7	8	9	1 0	1	2	3	4	5	6	7	8	9	2 0	1	2	3	4	5	6	7	8	9	3 0	1
0xFFFFFF																																
s	v	r	n	a	m	e	\0	0x0000																								
0x0100																0x0000																
0x0100																0x00																
0x0004																																
…																																
0x0006																																
…																																

The example response package's **IPv4_DNS_ADDRESS** field contains four elements of structure SOCKADDR_STORAGE, and the **IPv6_DNS_ADDRESS** field contains six elements of structure SOCKADDR_STORAGE.

5   Security

5.1   Security Considerations for Implementers

None.

5.2   Index of Security Parameters

None.

6   Appendix A: 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 7 operating system

- Windows Server 2008 R2 operating system

- Windows 8 operating system

- Windows Server 2012 operating system

- Windows Home Server 2011 server software

- Windows 8.1 operating system

- 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.

7   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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