[MS-PBSD-Diff]:

Publication Services Data Structure

Revision Summary

Date	Revision History	Revision Class	Comments
9/23/2011	0.1	New	Released new document
12/16/2011	0.1	None	No changes to the meaning, language, or formatting of the technical content.
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1 Introduction

Publication Services enables computers to advertise (that is, publish) their presence and their resources as Web services over IP-based networks. By doing so, other computers can find (that is, discover) the Web services that have been published on the same network.

This document specifies the data, along with its structure, that computers use to describe themselves and the resources that are being offered.

Sections 1.7 and 2 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

client: A computer on which the remote procedure call (RPC) client is executing.

device: Any peripheral or part of a computer system that can send or receive data.

domain name: A domain name or a NetBIOS name that identifies a domain.

endpoint: In the context of a web service, a network target to which a SOAP message can be addressed. See [WSADDR].

NetBIOS: A particular network transport that is part of the LAN Manager protocol suite. NetBIOS uses a broadcast communication style that was applicable to early segmented local area networks. ~~The LAN Manager protocols were the default in Windows NT operating system environments prior to Windows 2000 operating system.~~ A protocol family including name resolution, datagram, and connection services. For more information, see [RFC1001] and [RFC1002].

Publication Services: A Microsoft Windows Devices Profile for Web Services (DPWS) service that enables computers to publish resources so that those resources can be discovered by other computers on the same network.

service: A process or agent that is available on the network, offering resources or services for clients. Examples of services include file servers, web servers, and so on.

web service: A software system designed to support interoperable machine-to-machine interaction over a network, using XML-based standards and open transport protocols.

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

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the Errata.

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.

[DPWS] Chans, S., Conti, D., Schlimmer, J., et al., "Devices Profile for Web Services", February 2006, http://specs.xmlsoap.org/ws/2006/02/devprof/devicesprofile.pdf

[MS-DPWSSN] Microsoft Corporation, "Devices Profile for Web Services (DPWS): Size Negotiation Extension".

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

[MSDN-PnP-X] Microsoft Corporation, "PnP X: Plug and Play Extensions for Window", http://www.microsoft.com/whdc/connect/rally/pnpx-spec.mspx

[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

[W3C-XSD] World Wide Web Consortium, "XML Schema Part 2: Datatypes Second Edition", October 2004, http://www.w3.org/TR/2004/REC-xmlschema-2-20041028

[WS-Discovery] Beatty, J., Kakivaya, G., Kemp D., et al., "Web Services Dynamic Discovery (WS-Discovery)", April 2005, http://specs.xmlsoap.org/ws/2005/04/discovery/ws-discovery.pdf

[XMLNS] Bray, T., Hollander, D., Layman, A., et al., Eds., "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation, December 2009, http://www.w3.org/TR/2009/REC-xml-names-20091208/

1.2.2 Informative References

[MS-DPWSRP] Microsoft Corporation, "Devices Profile for Web Services (DPWS): Shared Resource Publishing Data Structure".

[MS-HGRP] Microsoft Corporation, "HomeGroup Protocol".

[MSDN-DPWS] Microsoft Corporation, "Understanding Devices Profile for Web Services, WS-Discovery, and SOAP-over-UDP", http://msdn.microsoft.com/en-us/library/dd179231.aspx

[MSDN-WSD] Microsoft Corporation, "Web Services on Devices", http://msdn.microsoft.com/en-us/library/bb756908.aspx

[WSADDR] Gudgin, M., Hadley, M., and Rogers, T., "Web Services Addressing (WS-Addressing) 1.0", W3C Recommendation, May 2006, http://www.w3.org/2005/08/addressing

1.3 Overview

The Devices Profile for Web Services (DPWS), as defined in [DPWS], specifies a well-structured messaging model that provides basic functionality such as discovery of an endpoint [WSADDR], metadata for that endpoint, and request/response messaging. [DPWS] specifies the role of clients, devices, and services. Clients discover services and communicate with their endpoints. Devices are special service endpoints that can host other services. [DPWS] defines metadata for both devices and the services hosted by those devices. Clients can request this metadata and send requests to specific endpoints described in the metadata.

This model fits the requirements of a computer. Computers are often set to be discoverable and advertise metadata that describes themselves and their resources to clients on a network. Publication Services models a computer as a DPWS device, and the resources on a computer are modeled as Web

services within the same device. The information that describes a computer and the actual data associated with the resources are stored as part of the device metadata.

The Publication Services Data Structure document defines the organization used for the information that describes how a computer and its resources are represented within the DPWS device metadata.

For additional explanatory information about DPWS, see [MSDN-DPWS]. For information about the Microsoft implementation of DPWS, which is called Web Services for Devices (WSD), see [MSDN-WSD].

1.4   Relationship to Protocols and Other Structures

The Publication Services data structure is built on [DPWS] and relies on the Microsoft implementation of DPWS. For more information, see [MSDN-WSD].

Because the number of resources on a computer and the data associated with them can increase over time, clients also implement the Size Negotiation Extension as specified in [MS-DPWSSN] to be able to retrieve resources completely.<1>

The HomeGroup Protocol [MS-HGRP], which is used to create a trust relationship that facilitates the advertising and publishing of content between machines in a home environment, and the Shell Publishing data structure [MS-DPWSRP] use the Publication Services data structure to advertise their content and resources.

1.5   Applicability Statement

Use of this data structure is suitable for clients if:

- The client is a compliant DPWS implementation.

- The client requires communication with the DPWS representation of a computer and its resources.

- The client supports the Size Negotiation Extension [MS-DPWSSN] and can receive messages longer than 32767 octets ([MS-DTYP] section 2.1.5).

Use of this protocol is suitable for **service** implementations if:

- The service will represent itself as a DPWS-compliant computer on the network.

- The service supports the Size Negotiation Extension [MS-DPWSSN] and can send messages longer than 32767 octets.

1.6   Versioning and Localization

This data structure is not versioned and it does not explicitly support localization.

1.7   Vendor-Extensible Fields

This data structure does not define any additional vendor-extensible fields.

2 Structures

2.1 Namespaces

This document defines and references various XML namespaces using the mechanisms specified in [XMLNS]. Even though this document 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
pub	http://schemas.microsoft.com/windows/pub/2005/07	This document
pnpx	http://schemas.microsoft.com/windows/pnpx/2005/10	[MSDN-PnP-X]
wsd	http://schemas.xmlsoap.org/ws/2005/04/discovery	[WS-Discovery]
wsdp	http://schemas.xmlsoap.org/ws/2006/02/devprof	[DPWS]
xs	http://www.w3.org/2001/XMLSchema	[W3C-XSD]

2.2 Computer Information

The Publication Services Data Structure advertises three pieces of information about a computer:

- A type indicating that the device represents a computer

- The NetBIOS domain name for the computer

- The NetBIOS computer name

```
<xs:simpleType name="DiscoveryTypeValues">
  <xs:restriction base="xs:QName">
    <xs:enumeration value="Computer" />
  </xs:restriction>
</xs:simpleType>

<xs:element name="Computer" type="xs:string" minOccurs="0" />
```

Element	Description
wsdp:Relationship/wsdp:Host/wsdp:Types	Indicator type for a device representation of a Publication Services-enabled computer (pub:Computer).
wsdp:Relationship/wsdp:Host/pub:Computer	NetBIOS information for the computer.

NetBIOS information for the computer is formatted as follows:

- If the computer is domain joined:

```
<NetBIOS_Computer_Name>/Domain:<NetBIOS_Domain_Name>
```

- If the computer is in a workgroup:

```
<NetBIOS_Computer_Name>\Workgroup:<Workgroup_Name>
```

- Otherwise:

```
<NetBIOS_Computer_Name>\NotJoined
```

Note The pub:Computer element replaces the <any> element wildcard of the HostServiceType complex type, which is instantiated through the <Host> element of the DPWS schema.

2.3   Resource

Each resource to be advertised by a Publication Services device host as a service consists of two fields:

- Type

- Actual data

The resource type is used as the Types (wsdp:Relationship/wsdp:Hosted/wsdp:Types) implemented by a Host Service (see [WS-Discovery]).

The Publication Services Data Structure defines a new element to enclose the actual data associated with the resource as follows.

```
<xs:element name="Resource" type="xs:string" minOccurs="0" />
```

Element	Description
wsdp:Relationship/wsdp:Hosted/pub:Resource	Resource data
wsdp:Relationship/wsdp:Hosted/pub:Resource1	Resource data continued
…	…
wsdp:Relationship/wsdp:Hosted/pub:ResourceN	Resource data continued

If the data is more than 8192 octets ([MS-DTYP] section 2.1.5), it can be split into multiple Resource elements. Clients that want to retrieve the full resource data must combine the data in the order implied by the element names.

Note The pub:Resource* elements replace the <any> element wildcard of the HostServiceType complex type, which is instantiated through the <Hosted> element of the DPWS schema.

3 Structure Examples

3.1 Publication Services Data with no Listed Services

This section contains an example of the Publication Services data associated with a computer (that is, a device). The example data indicates that there are no services being advertised by the computer.

```xml
<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex"
xmlns:wsdp="http://schemas.xmlsoap.org/ws/2006/02/devprof"
xmlns:pnpx="http://schemas.microsoft.com/windows/pnpx/2005/10"
xmlns:pub="http://schemas.microsoft.com/windows/pub/2005/07">
  <soap:Header>
    <wsa:To>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:To>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse</wsa:Action>
    <wsa:MessageID>urn:uuid:8a07696e-8128-456c-af85-9a5008aa0446</wsa:MessageID>
    <wsa:RelatesTo>urn:uuid:bac3eeec-5488-4a27-99c9-795d0651d914</wsa:RelatesTo>
  </soap:Header>
  <soap:Body>
    <wsx:Metadata>
      <wsx:MetadataSection
Dialect="http://schemas.xmlsoap.org/ws/2006/02/devprof/ThisDevice">
        <wsdp:ThisDevice>
          <wsdp:FriendlyName>Contoso Publication Service Device Host</wsdp:FriendlyName>
          <wsdp:FirmwareVersion>1.0</wsdp:FirmwareVersion>
          <wsdp:SerialNumber>20050718</wsdp:SerialNumber>
        </wsdp:ThisDevice>
      </wsx:MetadataSection>
      <wsx:MetadataSection Dialect="http://schemas.xmlsoap.org/ws/2006/02/devprof/ThisModel">
        <wsdp:ThisModel>
          <wsdp:Manufacturer>Contoso, Ltd</wsdp:Manufacturer>
          <wsdp:ManufacturerUrl>http://www.contoso.com</wsdp:ManufacturerUrl>
          <wsdp:ModelName>Contoso Publication Service</wsdp:ModelName>
          <wsdp:ModelNumber>1</wsdp:ModelNumber>
          <wsdp:ModelUrl>http://www.contoso.com</wsdp:ModelUrl>
          <wsdp:PresentationUrl>http://www.contoso.com</wsdp:PresentationUrl>
          <pnpx:DeviceCategory>Computers</pnpx:DeviceCategory>
        </wsdp:ThisModel>
      </wsx:MetadataSection>
      <wsx:MetadataSection
Dialect="http://schemas.xmlsoap.org/ws/2006/02/devprof/Relationship">
        <wsdp:Relationship Type="http://schemas.xmlsoap.org/ws/2006/02/devprof/host">
          <wsdp:Host>
            <wsa:EndpointReference>
              <wsa:Address>urn:uuid:95ce917d-9e37-4099-aee4-db3292041ea6</wsa:Address>
            </wsa:EndpointReference>
            <wsdp:Types>pub:Computer</wsdp:Types>
            <wsdp:ServiceId>urn:uuid:95ce917d-9e37-4099-aee4-db3292041ea6</wsdp:ServiceId>
            <pub:Computer>D-HAMILTON-1/Domain:CONTOSO_DOMAIN1</pub:Computer>
          </wsdp:Host>
        </wsdp:Relationship>
      </wsx:MetadataSection>
    </wsx:Metadata>
  </soap:Body>
</soap:Envelope>
```

From the example data, the following lines make use of the Computer Information structure (section 2.2):

```xml
          <wsdp:Types>pub:Computer</wsdp:Types>
  ...
```

```
            <pub:Computer>D-HAMILTON-1/Domain:CONTOSO_DOMAIN1</pub:Computer>
```

3.2 Publication Services Data with Listed Resources

This section contains an example of the Publication Services data associated with a computer (that is, a device) along with one service that is being advertised by that computer.

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex"
xmlns:wsdp="http://schemas.xmlsoap.org/ws/2006/02/devprof"
xmlns:pnpx="http://schemas.microsoft.com/windows/pnpx/2005/10"
xmlns:pub="http://schemas.microsoft.com/windows/pub/2005/07">
  <soap:Header>
    <wsa:To>http://schemas.xmlsoap.org/ws/2004/08/addressing/role/anonymous</wsa:To>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse</wsa:Action>
    <wsa:MessageID>urn:uuid:009c39c2-5835-4660-a4bf-53c6fd9b96fd</wsa:MessageID>
    <wsa:RelatesTo>urn:uuid:fc7cdb58-30b4-4e0d-a309-5bd7db689a0c</wsa:RelatesTo>
  </soap:Header>
  <soap:Body>
    <wsx:Metadata>
      <wsx:MetadataSection
Dialect="http://schemas.xmlsoap.org/ws/2006/02/devprof/ThisDevice">
        <wsdp:ThisDevice>
          <wsdp:FriendlyName>Contoso Publication Service Device Host</wsdp:FriendlyName>
          <wsdp:FirmwareVersion>1.0</wsdp:FirmwareVersion>
          <wsdp:SerialNumber>20050718</wsdp:SerialNumber>
        </wsdp:ThisDevice>
      </wsx:MetadataSection>
      <wsx:MetadataSection Dialect="http://schemas.xmlsoap.org/ws/2006/02/devprof/ThisModel">
        <wsdp:ThisModel>
          <wsdp:Manufacturer>Contoso, Ltd</wsdp:Manufacturer>
          <wsdp:ManufacturerUrl>http://www.contoso.com</wsdp:ManufacturerUrl>
          <wsdp:ModelName>Contoso Publication Service</wsdp:ModelName>
          <wsdp:ModelNumber>1</wsdp:ModelNumber>
          <wsdp:ModelUrl>http://www.contoso.com</wsdp:ModelUrl>
          <wsdp:PresentationUrl>http://www.contoso.com</wsdp:PresentationUrl>
          <pnpx:DeviceCategory>Computers</pnpx:DeviceCategory>
        </wsdp:ThisModel>
      </wsx:MetadataSection>
      <wsx:MetadataSection
Dialect="http://schemas.xmlsoap.org/ws/2006/02/devprof/Relationship">
        <wsdp:Relationship Type="http://schemas.xmlsoap.org/ws/2006/02/devprof/host">
          <wsdp:Host>
            <wsa:EndpointReference>
              <wsa:Address>urn:uuid:95ce917d-9e37-4099-aee4-db3292041ea6</wsa:Address>
            </wsa:EndpointReference>
            <wsdp:Types>pub:Computer</wsdp:Types>
            <wsdp:ServiceId>urn:uuid:95ce917d-9e37-4099-aee4-db3292041ea6</wsdp:ServiceId>
            <pub:Computer>D-HAMILTON-1/Domain:CONTOSO_DOMAIN1</pub:Computer>
          </wsdp:Host>
          <wsdp:Hosted>
            <wsa:EndpointReference>
              <wsa:Address>urn:uuid:95ce917d-9e37-4099-aee4-db3292041ea6</wsa:Address>
            </wsa:EndpointReference>
            <wsdp:Types>pub:ShellPublishing</wsdp:Types>

<wsdp:ServiceId>fdid:Provider%5CMicrosoft.Base.Publication/Publication%5CExplorer/C692EF15-
7F02-42E9-9FA9-D5F313749B04_S-1-5-21-738895527-329673414-497557404-1000</wsdp:ServiceId>

<pub:Resource>m9CAAwzP41GbgYXZyNXav5WPiEjLwICIl52YvRWaudWPiUFVG1COi8jPNoAPwlmPNoAIgwTdzVmczZU
asV2cEV2cjJXawRXav5mPNoAIgACI88GI15WPic2br1WZuJCIh1jIn92atVmbiAyc9IyyQ2kjMFZUM10yNGBjMtQjMFlTL
5YUQ50CR1Y0MxMzN0kjQwQzXT1SMtUTLyETL3MDO4kTN1IzNtMjM5YzNzQTM00CN5cTN1cDNwQTLxADMwICIv4TDKACIg
ACPpxmPNoAIgACIgACPp5TDKACIgACIgACI8AnPcV1clJ3ccd2br1WZuxVQwBHRhRXYcJ1bh1WaudGXNl2Yy92cvZGdcd
VauR2b3NHXMlmYyFmcpV2ccR0bjVXbl5Gdz5CbpJmchJXet02c88Cc+0gCgACIgACIgACPzxmPNJUQBFURBZ0QBFUQBFU
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```

BFUQBFUQBFUQBFUQBFUQBF0dJFUQBFESBFUQBNUQBFUQBFUQBFUQBFUQBF0YBFUQBFVRBFUQBtUQBFUQDFUQBFUUCFUQB
FUQBFUQBFUQnFUQ3ZEWIlDMT5kVrRVSOZlUNpVRYZlTWJ1UOZUQuljMhRnVtJ2YGV0Y3JVVVZBjRHh1U5cVW0xWbi5GeWR
FcO12Y250Mi1mUIhFWs1mYrljMkpHeGRFcK12YopEWhxmTIhVR5ITWxEzVaVnUzMWd3dVYppEWZlHbYxEdOhUQU9UQBF0
dBFUQBtkRBhjQX50bCx0dIlmdR5URpd3TzoFOiVzN4MGTBFUQRNXQzdjcUVnevFUUBFUQBFUQBBzQBFUQR1EVCFTV65UV
1sEN3EFdrUFar52Rzc0TE1WdGJUQBF0dDFUQBFUQzFUQBFUQdv8CRBFUQBFUQBVVRBFUQR1EVCFTV3VkZKNzKrIVYBJFc4
xUQZ1kN1YzctNUQBF0ZDFUQBFUQ4IUQBFUQEFUQBFESCdHVBNXRB5kQRJVQ0UUQJJ0dVFUVFFUTCdmUBFUQBFUQBFUQwM
UQBFUUNRlQxUlNRFfmdlB1NOR0TVtmbUVUBh52UsJ3RCFUQBdXQBFUBFUTCFUQBFUQBFUQBFUQBFUQBFUQBFENDFE
RIFFFejhXMSBFdVRlR1U0UUZVRUdEeWZleW12Y6JUUUBnTtNmdONjYtJFSJ9kVHR2M502YyJUQBNUQBVVQFRUQBFUQBF0b
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FEVBt2RBlmQnNWQFdUQ5JUUhFUVHFkeCFUQBdmQBF2Qn1UQ4QzRBF0ZxsSSQB1ZBFkUQ5UVW5kVrZGe0MEVKpURBFENIF
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iF0dDFEdBdXTBFFRBFTQ35UQVRUQBFUQIFUQBF0SPFUQBtWQBFUQxZGRBFUQ41kRVRlSllWWaVkdNhmeRdTevUEVhNUb0
VzYIFUQBF0QBFUQBFUQTFUQBFEVHZ0TuZESNh0QFhmZkkx0VrRlSuZzVwEUQBdXQBFUQBFURCVUQBdXTEFUQBVVQ3hUUCt
CVRRUa2YzaHVUap50QBN3QNdHMadUQ4kXU2cnRBFUQBFUQBFUQBFUQBFUQBFUQBBjQR1UQBFUQBF0Z5tybVFm
UBFlV6ZVbjpnQBlVQnFUQFF0d3sSazBlWLxWer8WVhFXQBFUQBpWQBFUQBFURBFUQBFUQBFUQn5UQBFUQBFUUWFUT
IFEbCd2YB1ESBFUQBFVQNhUQvJUUaF0dHF0cCdXTBlERBVXQBpVQ3dUQzJUQMFEMDFUeBFVTBdGRBhXQ31UQBFUQVFUQV
FUREFUQBFUQB92cQNkYHVUQjJjYyFzVaVnQBFkNBF0QBFVQBZ3Nyl3KrJnWLdja31GcDFUQBdGaBFUQBFUQnFUQBFUQBF
UQBFUQBFUQBFUQB5mQ3JWQzdUQ0JUUaFENHFUQBdmRBlkRBhXQBFUQBFUQLdDR21mSCFkQCh0YFZ0RkhmQBBVQnFU
QFF0d3sSczBVNh1WercncaFXQBFUQFpUQBFUQBFUSBFUQBFUQBFUQBFUQBFUQBFUURFUQIF0dCFkUBV0RBBjQRlVQ
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VYBV1RBpnQBFUQnJUQVN0ZNFUWxcUQBdWMrkEUQdWQnZlSSVlUQ5EbmhHNDRlSKVUQBdGSBlUQBJUQ4UndLdja31mW0BV
e6p2SBFUQB12TCFUQBFUQHFUQBFUQBFUQBRTRBFUQBFUQZZUQwJUQaFUVHFkdCd3YBRzQBNnQRFWQJdUQ5JUUZFUS
IFUNCFFTBBzRBpnQBFUQBVUQ6JUQhFUVHF0cCFkYB1ERBlXQnxUQRdUQzJUQiF0dDFEdBdXTBFFRBJTQn1UQBRUQBFUQI
FUQBF0RPFUQBtWQBFUQxVGRBFUQ41kRVRlS1lWWaVkdNhmeRdTevUEVhNUb0VzYIFUQBF0QBFUQBFUQTFUQBFEVHZ0Tuz
ESNh0QFhmZkx0VrRlSuZzRwEUQBdXQBFUQBFURCVUQBFFTEFUQBVVQ3hUUCtCVRRUa2YzaHVUap50QBN3QNdHMadUQ4kX
U2crRBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBBjQR1UQBFUQBF0Z5tybVFmUBFlV6ZVbjpnQBlVQnFUQFF0d3sSazBlW
LxWer8WVhFXQBFUQBpWQBFUQBFURBFUQBFUQBFUQBFUQn5UQBFUQBFUUWFUTIFEbCd2YB1ESBFUQBFVQNhUQvJUUaF0dH
F0cCdXTBlERBVXQBpVQ3dUQzJUQMFEMDFUeBFVTBdGRBhXQ31UQBFUQVFUQVFUREFUQBFUQ92cQNkYHVUQjJjYyFzVaV
nQBFkNBF0QBFVQBZ3Nyl3KrJnWLdja31GcDFUQBdGaBFUQBFUQnFUQBFUQBFUQBFUQBFUQBFUQB5mQ3JWQzdUQ0JU
UaFENHFUQBdmRBlkRBhXQBFUQBFUQLdDR21mSCFkQCh0YFZ0RkhmQBBVQnFUQFF0d3sSczBVNh1WercncaFXQBFUQFpUQ
BFUQBFUSBFUQBFUQBFUQBFUQBFUURFUQIF0dCFkUBV0RBBjQRlVQBFUQXF0ZVFUREFUQBFUQBd2cQZ3MGVUQJ
FjYoFzVhVHZHFEOBF0QBFVQBZ3Nyl3KrJnWLdDV11GcDFUQBd2aBFUQBFUQnFUQBFUQBFUQBFUQBFUQBFUQBNlQ3J
WQFdUQ0JUUhFENHFkbCFUQBllQBllQR1UQBFUQBF0ZxsSRQBVVBFFVK50aVBlTsZGeBFUQBJUQDFUUBFkd3IXersmcad1
NUhDOvNUQBF0drFUQBFUQBdWQBFUQBFUQBFUQBFUQBFkTCFVYB10RBlnQ3JWQNhUQ2J0ZaFUUIFUQBF0RBlkR
BhXQBFUQBFUQLdDR51mQCFEWs1mYrljMkpnQBBVQnFUQFF0d3sSczBVNh1Werc2caFXQBFUQRpUQBFUQBFUSBFUQBFUQB
FUQBFUQBFUQBF0dWF0aHFUdCFkWBhzRBNjQ3NWQBFUQXFUQXFUREFUQBFUQBlFdQlneUVUQ3V1UDpkVRNVNY1UQBF
UUBdWQBVUQ3dzKxNHUDJWbxsSSQBVcBFUQBFFMFFUQBFUQNFUQBFUQBFUQBFUQBFUQBFUQBRVQrdUQpJ0ZjFURHFU
eCFVYBV1RBpnQBFUQnJUQVN0ZNFUWxcUQBdWMrkEUQdWQnZlSSVlUQ5EbmhHNDRlSKVUQBdGSBlUQBJUQ4UndLdja31mW
0BVe6p2SBFUQB12TCFUQBFUQHFUQBFUQBFUQBRTRBFUQBFUQZZUQwJUQaFUVHFkdCd3YBRzQBNnQRFWQJdUQ5JUUZ
FUSIFUNCFFTBBzRBpnQBFUQBVUQ6JUQhFUVHF0cCFkYB1ERBlXQnxUQRdUQzJUQiF0dDFEdBdXTBFFRBJTQn1UQBRUQBF
UQIFUQBFUQBFUQBFUQBFUQBFUWBFUQBRUQBF0ZpZUQBFUQBFUQFkb5ITY0ZVbi9mTYp1cadUQBFUQBF0ZvFUOh9W
RmVXWU5WahNGSvJ1LI1Gc0UXcTFGROpENSBjSn1GSCNkdUVnZJtUU2d0S45GTyADcvd0MCFGMvgmWLVncxtmMRR1QlVEZ
D9WNSd2d3s2NIFUQBFUQ88ycs5TDKACIgACIgwzLp5TDKACIgACPvkGb+0gCgACPvU3clJ3cGlGblNHRlN3YylGc0l2bu
5TDKwzLwlmPAEAAA0gjq6BIHKuQ9MtcAQzek05xoILdb7aP6FqXQcO1Wcn9/+pzK9YEARQtdmy2jY5AQUV7eI17MG6h7i
m54HXW7C+OqS2F3cOn0Cxl4l4TZXL3ldB9j8jpYTcnw1QQufPVgzKk/piBoC/qwRRQqjmtUkxcGEvq5ZBIh88rLUHEVHy
1EyG4k8XYLqP6fA3oWIAy</pub:Resource1>

<pub:Resource2>WCfU3BofYTXgsXNr3ikT3JZcccgdhbCNEYS/CuMIHi5cKGLCIPDcSg7P3VRyx1VzDOW170YhGD7Pa+
NJDFeuGO73NiEaCtTljULnyYlqtQokSdeYJJJGqs6g6nd8iLGQ0857nG/PMxvCzdirzSa1hxK</pub:Resource2>
          </wsdp:Hosted>
        </wsdp:Relationship>
      </wsx:MetadataSection>
    </wsx:Metadata>
  </soap:Body>
</soap:Envelope>

From the example data, the following lines make use of the Computer Information structure (section 2.2):

```
        <wsdp:Types>pub:Computer</wsdp:Types>
...
        <pub:Computer>D-HAMILTON-1/Domain:CONTOSO_DOMAIN1</pub:Computer>
```

Also from the example data, the Resource structure (section 2.3) is demonstrated in the lines that start with "<pub:Resource>", "<pub:Resource1>", and "<pub:Resource2>".

4 Security

4.1 Security Considerations for Implementers

Publication Services does not provide any security to protect the data that is being advertised or to ensure its authenticity. Applications that need to secure their advertised resources typically implement their security policy on top of Publication Service data structures.

4.2 Index Of Security Fields

None.

5   Appendix A: Full XML Schema

For ease of implementation, the following is the full XML schema for this protocol.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  targetNamespace="http://schemas.microsoft.com/windows/pub/2005/07"
  xmlns:pub="http://schemas.microsoft.com/windows/pub/2005/07"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified"
  blockDefault="#all" >

  <xs:simpleType name="DiscoveryTypeValues">
    <xs:restriction base="xs:QName">
      <xs:enumeration value="pub:Computer"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="Computer" type="xs:string" minOccurs="0" />

  <xs:element name="Resource" type="xs:string" minOccurs="0" />

</xs:schema>
```

6   Appendix B: 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 Vista operating system

- Windows Server 2008 operating system

- Windows 7 operating system

- Windows Server 2008 R2 operating system

- Windows 8 operating system

- Windows Server 2012 operating system

- Windows 8.1 operating system

- Windows Server 2012 R2 operating system

- Windows 10 operating system

- Windows Server 2016 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 1.4: On Windows Vista and Windows Server 2008, the maximum metadata size that the device representation of a computer can be is 32767 octets ([MS-DTYP] section 2.1.5). This is because the extension that is documented in [MS-DPWSSN] is not supported on these operating systems.

7 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

8 Index

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