

## [MS-PBSD-Diff]:

# Publication Services Data Structure

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# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
1.1	Glossary .....	4
1.2	References .....	4
1.2.1	Normative References .....	4
1.2.2	Informative References .....	5
1.3	Overview .....	5
1.4	Relationship to Protocols and Other Structures .....	6
1.5	Applicability Statement .....	6
1.6	Versioning and Localization .....	6
1.7	Vendor-Extensible Fields .....	6
<b>2</b>	<b>Structures .....</b>	<b>7</b>
2.1	Namespaces .....	7
2.2	Computer Information .....	7
2.3	Resource.....	8
<b>3</b>	<b>Structure Examples .....</b>	<b>9</b>
3.1	Publication Services Data with no Listed Services .....	9
3.2	Publication Services Data with Listed Resources .....	10
<b>4</b>	<b>Security .....</b>	<b>14</b>
4.1	Security Considerations for Implementers .....	14
4.2	Index Of Security Fields .....	14
<b>5</b>	<b>Appendix A: Full XML Schema.....</b>	<b>15</b>
<b>6</b>	<b>Appendix B: Product Behavior .....</b>	<b>16</b>
<b>7</b>	<b>Change Tracking.....</b>	<b>17</b>
<b>8</b>	<b>Index.....</b>	<b>18</b>

# 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. 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](mailto: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 Windows", <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-xmldatatypes-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
pnp	http://schemas.microsoft.com/windows/pnp/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.

```
<xss:element name="Resource" type="xss: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 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:pnp="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>
          <pnp:DeviceCategory>Computers</pnp: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):

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

```
...
```

## 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:pnp="http://schemas.microsoft.com/windows/pnp/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>
          <pnp:DeviceCategory>Computers</pnp: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-aae4-db3292041ea6</wsa:Address>
            </wsa:EndpointReference>
            <wsdp:Types>pub:Computer</wsdp:Types>
            <wsdp:ServiceId>urn:uuid:95ce917d-9e37-4099-aae4-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-aae4-db3292041ea6</wsa:Address>
            </wsa:EndpointReference>
            <wsdp:Types>pub:ShellPublishing</wsdp:Types>
          </wsdp:Hosted>
        </wsdp:Relationship>
      </wsx:MetadataSection>
    </soap:Body>
  </soap:Envelope>
<pub:Resource>m9CAAwzP41GbgYXZyNXav5WPiEjLwICl152YvRWaudWPiUFVG1COi8jPNoAPwlmPNoAIgwTdzVmczZUasV2cEV2cjJXawRXav5mPNoAIgACI88GI15WPic2br1WZuJCIh1jIn92atVmbiAyc9IyQ2kjMFZUM10yNGBjMtQjMF1TL5YUQ50CR1Y0MzMzN0kjQwQzXT1SMtUTLyETL3MDO4kTN1IzNtMjM5YzNzQTM00CN5cTN1cDNwQTLxADMwIClIv4TDKACIgACPPxmPNoAIgACIgACP5TDKACIgACIgACIgACI8AnPcV1clJ3ccd2br1WZuxVQwBHRhRXYCJ1bh1WaudGXN12Yy92cvZGdcdVauR2b3NHXM1mYyFmcPv2ccR0bjVXB15Gdz5CbpJmchJXet02c88Cc+0gCgACIgACIgACPzxmPNJUQBFURBZ0QBFUQBFUQBFERBFUQBFUQB1lanFUQEJ0ZBFUQBF0YwgUbYJmb3NWQwZWYvg0KL1UT1T0MzLoZ3QEpnQ4QzRBFUQBFkQBFUQ
```

BFUQBFUQBFUQBFUQBF0dJFUQBFESBFUQBNUQBFUQBFUQBF0YBFUQBFVRFUQBTUQBFUQDFUQBFUUCFUQB  
 FUQBFUQBFUQnFUQ3ZEWI1DMT5kVrRVSOZ1UnpVRYZ1TWJ1UOZUQu1jMhRnVtJ2YGV0Y3JVVZbjRH1U5cVW0xWb15GeWR  
 Fco12Y250Mi1mUiHFs1mYr1jMkpHeGRFCK12YopEWxmTihVR51TWxEzVaVnUzMd3dVYppEWZ1HbYxEdOhUQ9UQBF0  
 dBFUQBTkRBhjQX50bcx0d1lmdr5URpd3TzoFOiVzN4MGTBFUQQRNXQzdjcUVneFVUUBFUQBFUQBBzQBFUQR1EVCFTV65UV  
 1sEN3EFdrUFar52Rzc0TE1WdGJuQBF0dDFUQBFUQzFUQBF0dv8CRBFUQBFUQBFUQBFUQzJUQFVRFUQzJUQFVRFUQzJUQFVRFU  
 xUQZ1kN1YzctNUQBF0ZDFUQBFUQ4IUQBFUQEFUQBFEScdHVBNXRB5kQRJQ0UUQJ0dVFUVFFUTCdmbUFUQBFUQBFUQBFENDFE  
 UQBFUUNR1QxU1NRFm1b1NOR0TVtmbUVUbh52UsJ3RCFUQbdXQBFUQBFUTCFUQBFUQBFUQBFUQBFUQBFENDFE  
 RIFFejhXMSBFdVr1R1U0U0UZVRUdEewZleW12Y6JUUUbnTtNmDOnjYtJFSJ9kVHR2M502YyJUQBNQBVVQFRUQBFUQBF0b  
 zB1QidURBnmMiJXMxpVdcFUQ2EUDFUFUQbd3IXersmcat0NqdXbwNUQBF0zOFUQBFUQbdWQBFUQBFUQBFUQBFUQBF  
 FUQBFkCdnYBN3RBnRQrpVQ0cuQBF02GFUSGFeeBFUQBFUQbt0NE2XbkJUQCJESjVkrHRAgACEUbdWQBVUQ3dzKxNHu1E  
 Wb5tydyPvcFBVQBFvksBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQ  
 QBFUQBF0ZzB1dzyURB1UMihWMXFwdkdUQ4EUQDFUUBFk3IXersmcat0NUVxbwNUQBF0zrFUQBFUQbdWQBFUQBFUQBF  
 BFUQBFUQBFUQBF0UcdnYBV0RBRnQRFWQ0cQujuQBFUWCWFCVTB1FUQBFUQnFzKFBFUVFUUUpkTrVFUOxmZ4FUQBFkQB  
 NUQRFUQ2dj5tyayp1V3QFO482QBFUQ3tWQBFUQBF0ZBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 nQnpVQRhUQBFUQHFUSGFeeBFUQBFUQbt0NE1XbCJUQYxWbitWOyQmcCEUEBdWQBVUQ3dzKxNHu1EWb5tyzpzVcBFUQBF  
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 FEVbT2RBlmQnNWQFdUQ5JUUhFUVHfkcfUQbfQ2n1UQ4QzRBF0ZxsSSQb12BFkUQ5UVW5kVrZGe0MEVkpURBFENIF  
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 NHFEMcd3YBzRQBNnQRFWQJdUQ5JUUZFUSIFUNCFTBzRbpnQBFUQBVUQ6JUQhFUVHF0cCfkyB1ERB1XQnxUQRdQzJUQ  
 iF0ddFEdBdXTBFFRFTQ35UQVRUQBFUQF0SPFUQbtWQBFUQzXGRBFUQ41kRVR1S11WWaVkdNhmRdTeVUEvhNuB0  
 VzY1FUQBF0QBFUQBFUQTFUQBFEVHZ0TuZESNh0QfhmZkx0VrR1Su2zVwEUQbdXQBFUQBFURCVUQbdXTEFUQBVQ3hUUCT  
 CVRRUa2YzaHVUap50QBN3QNdhMadUQ4kXU2cnRBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF025tybVfm  
 UBFlV6ZVbjpnQb1VQnFUQFF0d3sSazB1LwlxWer8WVhFxQBFUQbPwQBFUQBFUQBFUQBFUQn5UQBFUQBFUQBF  
 IFEbCd2Y1ESEBFUQBFVQnhUQvJUUaF0dHf0cCdxtB1ERBVXQbpVQ3duQzJUQMFEMDFUeBFVtBdgrBhXQ31UQBFUQVF  
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 QFF0d3sSczBvnH1WercncaxFXQBFUQFPUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
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 1TsZGeBFUQBUQJDFUJUBFk3IXersmcat1NuhdovNUQF0drFUQBFUQbdWQBFUQBFUQBFUQBFUQBF  
 RB1nQ3JWQnhUQ2j0zAfuuiFuQBF0R1kRbhXQBFUQbdR51nQCFEWs1mYr1jMkpnQBVQnFUQF0d3sSczBvnH1We  
 rc2caFXQBFUQRpUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 FUQBF1Fd1neUVQ3V1UpdkvRNvNy1UQBFUQbdWQBVUQ3dzKxNHUDJWbxssSBQVcBFUQBFUQBFUQBFUQBF  
 UQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
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 xWbitWoyQme4ZEVwpUbjhmSYFGbOhEWrxmzbjVuNg05gtzXwBz1nRtnNxM1y6JUUrRQBFUtbFQnN1Qbz2Zwruy3N  
 Eo0RDTvREaJNekd0LxtYtQnZQBFUQxFUQ3siNrdttLFLURBFUQBFUQBFUQBFUQBFUQBFUQBF  
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 BFUQBFUQmFuQBF0dBFUQbdnUbhTRBxkQRVQVUQJPJQTFUTGFkRcFevb1VrbFUFQBFUQ0FUFbFUR6VVUo2TrJjcz  
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 GMVZEerJ1YWFzYsp0MjFEMFVmkaKNjY61TbaBjQpRfbSndZ2p0MhFuQnfQbzUQ4FUQBFUQBF0S3o2dtjkQb5W0yEgdW1m  
 YBF0ZPF0ZBFURbd3NrE3CQVtYt13KJNnWxFUQBFUWQxFUQ3siNrdttLFLURBFUQBFUQBFUQBFUQBF  
 vduQ1JUQBFUWCF0UCFVtBFUQBFUQn13K3JnWTFUURdQ1jFaShWbdHrb1UQBJUQ4Undldv11GczBfoh12SBFQbj1Qb  
 FUQBFUQDFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 VOX1Fd1ms1yuJUQZQF0ZBFURbd3NrE3CQVtYt13KJnWxFUQBFUQSKF0QBFUQBFUQBFUQBFUQBFUQBF  
 RBhmQRJWQrdUQ1J0daFUQBF0VBF0VBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 rUEUQFXQBFUQNPuQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 FVTBFUQBFUQn13KnNnWRF0dWBXNhp1dknZyBdHrb1UQBJUQ4Undldv11GczBvs12SBFUQBF1QBFUQDFUQBFUQBF  
 UQBFUQDFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 QFFUSBF1Qbhtd2t0NqdXbaRH55pnalFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 jf0aHFEbCd3YBFUQb1VQb1WQJRUQGVnQBFUW0Bve6Rusbfkvtrkwz1U1gvt1dxvtnkQbfEOCf0QBFVQbZ3ny13KJNnWx  
 dja4gbzBQBF1ZUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 UQ5JUUZfUSIFUNCFTBzRbpnQBFUQBFUQ6JUQhFUVHF0cCfkyB1ERB1XQnxUQRdQzJUQif0dFEdBdXTBFREFTQR9U  
 QVRUQBFUQF1UQBF0SPFUQbtWQBFUQzGRBFUQ41kRVR1S11WWaVkdNhmRdTevUEvhNuB0vzY1FUQBF0QBFUQBFUQF  
 BFEVHZ0TuZESNh0QfhmZkx0VrR1Su2zVwEUQbdXQBFUQBFUQBFUQBFUQBF  
 dHMAdUQ4kXu2cnRBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 jJyYfzVaVnQBFkNbf0QBFVQbz3Ny13KJnWldja31GcDFUQbdGaBFUQBFUQnFUQBFUQBFUQBFUQBF  
 JWQzdUQ0JUuaFENHfuQbdmR1kRbhXQBFUQbdR21mScfkQch0Yfz0RkhmQBBVQnFUQFF0d3sSczBvnH1WeRCnaF



QBFUSBFUQBFUQBFUQBFUQBFUQBFUURFUQIF0dCFkUBV0RBBjQR1VQBFUQXF0ZVFUREFUQBFUQbd2cQZ3MGVUQJFjY  
 oFzVhVHZHFE0BF0QBFVQBZ3Ny13KrJnWLdDV11GcDFUQbd2aBFUQBFUQnFUQBFUQBFUQBFUQBFUQBN1Q3JWQF  
 duQ0JUUhFENHFkbCFUQb11Qb11Qr1QBFUQBF0ZxsSRQBVBFVK50aVB1TsZGeBFUQBFUQBFUQBFkd3IXersmcad1NUh  
 DOvNUQBF0drFUQBFUQbWQBFUQBFUQBFUQBFkTCFVYB10RB1nQ3JWQNhUQ2J0zaFUUIFUQBF0RB1kRBhX  
 QBFUQBFUQbLDR51mQCFEWs1mYrljMkpnnQBBVQnFUQFFF0d3sSczBVNh1Werc2caFXQBFUQRFpUQBFUQBFUQBFUQBFUQ  
 BFUQBFUQBFUQBF0dWF0aHFUDCFkWBhZRBnjQ3NWQBFUQXFUQXFUREFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQ  
 dWQBVUQ3dzKxNHUDJWbxSSQBVcBFUQBFMFFUQBFUQNFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQ  
 VYBV1RBpnQBFUQnJUQVN0ZNFUWxcUQBDWMrkEUQdWQn1SSV1UQ5EbmhHNDR1SKVUQbDGSB1UQBJUQ4UndLdj31mW0BV  
 e6p2SBFUQB12TCFUQBFUQHFUQBFUQBFUQBRTRBFUQBFUQZUQwJUQaFUVHFkdCd3YBRzQBNnQRFWQJdUQ5JUUZFUS  
 IFUNCFFTBBzRBpnQBFUQBVQ6JUQhFUVHF0cCFkYB1ERB1XQnxUQRdUQzJUQiF0dDFEdBdTBFFRBJTQn1UQBRUQBFUQI  
 FUQBF0RPFUQBTWQBFUQxVGRBFUQ41kRVR1S11WWaVkdNhmeRdTevUEVhNub0VzY1FUQBF0QBFUQBFUQTFUQBFVHZ0TuZ  
 ESNh0QFhmZkx0Vr1SuZzRwEUQbdXQBFUQBFURCVUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQ  
 U2cnRBFUQ  
 LxWer8WvhFXQBFUQBPwQBFUQBFUQBFUQBFUQn5UQBFUQBFUUWFUT1FebcCd2YB1ESBFUQBFVQnhUQvJUUaF0dH  
 F0cCdXTB1ERBVXQbpVQ3dUQzJUQMFEMDFUeBFVTBdGRBhXQ31UQBFUQVFUQVFUREFUQBFUQBF92cQNKyHUVQjJyFzVaV  
 nQBFkNBF0QBFVQBZ3Ny13KrJnWLdja31GcDFUQBDgAbFUFQBFUQnFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 UaFENHFUQbdmRB1kRBhXQBFUQBFUQBLdR21mSCFkQCh0YFZ0RkhmQBBVQnFUQFFF0d3sSczBVNh1WercncFXQBFUQFpUQ  
 BFUQBF  
 FjYoFzVhVHZHFE0B0QBFVQBZ3Ny13KrJnWLdDV11GcDFUQbd2aBFUQBFUQnFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 WQFdUQ0JUUhFENHFkbCFUQb11Qb11Qr1UQBFUQBF02xsSRQBVBFVK50aVB1TsZGeBFUQBFUQBFUQBFUQBFUQBFUQBF  
 NUhDOvNUQBF0drFUQBFUQBFdWQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 BhXQBFUQBFUQbLDR51mQCFEWs1mYrljMkpnnQBBVQnFUQFFF0d3sSczBVNh1Werc2caFXQBFUQRFpUQBFUQBFUQBF  
 FUQBF  
 UUBdWQBVUQ3dzKxNHUDJWbxSSQBVcBFUQBFMFFUQnFUQNFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 eCFVYBV1RBpnQBFUQnJUQVN0ZNFUWxcUQBDWMrkEUQdWQn1SSV1UQ5EbmhHNDR1SKVUQbDGSB1UQBFUQBFUQBF  
 0BVe6p2SBFUQb12TCFUQBFUQHFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBFUQBF  
 FUSIFUNCFTBBzRBpnQBFUQBVQ6JUQhFUVHF0cCFkYB1ERB1XQnxUQRFdUQzJUQiF0dDFEdBdTBFFRBJTQn1UQBRUQBF  
 UQIFUQBF  
 RmVXWU5WahNGSvJ1LI1Gc0UXctFGROpENSBjSn1GSCNkdUvnZjtUu2d0s45GTYAdcvd0MCFGMvgmWLvnctmMRR1Q1VEZ  
 D9WNSd2d3s2N1FUQBFUQ88ycs5TDKAC1gAC1gwzLp5TDKAC1gACPvkgb+0gCgACPvU3c1J3cG1Gb1NHR1N3Yy1Gc012bu  
 5TDKwzLw1mPAEAAA0gjg6BIHKuQ9MtcaQzek05xoILdb7aP6FqXQc01Wcn9/+pZ9YEARQtdmy2jY5AQUV7e117MG6h7i  
 m54HXW7C+OqS2F3cOn0Cx1414T2XL3ldB9j8jpYTcnw1QQufpVgzk/piBoC/qwRRQqjmtUkxcGEvg5ZBih88rlUHEVHy  
 1EyG4k8XYLqP6fa3oWIAY</pub:Resource1>

```

<pub:Resource2>WCfU3BofYTXgsXNr3ikT3JZcccgdhbCNEYs/CuMIHi5cKGLCIPDcSg7P3VRyx1VzDOW170YhGD7Pa+
NJDFeuGO73NiEaCtljULnyYlqtQokSdeYJJGqs6g6nd8iLGQ0857nG/PMvxvCzdirzSa1hxK</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 version="1.0" encoding="UTF-8"?>
<xss: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" >

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

  <xss:element name="Computer" type="xs:string" minOccurs="0" />
  <xss:element name="Resource" type="xs:string" minOccurs="0" />
</xss: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~~updates to those products.

- 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

### Windows Server operating system

Exceptions, if any, are noted ~~below in this section~~. If ~~a~~an update version, service pack or ~~Quick Fix Engineering (QFE)~~Knowledge Base (KB) number appears with ~~the~~a product ~~version, name, the~~update behavior changed in that ~~service pack or QFE update~~. The new behavior also applies to subsequent ~~service packs of the product~~updates 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 This section identifies changes is available. The that were made to this document is either new or has had no changes since it's the last release. Changes are classified as Major, Minor, or None.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements.
- A document revision that captures changes to protocol functionality.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

The changes made to this document are listed in the following table. For more information, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com).

<u>Section</u>	<u>Description</u>	<u>Revision class</u>
6 Appendix B: Product Behavior	Added Windows Server to the list of applicable products.	Major

## **8 Index**

### **A**

Applicability 6

### **C**

Change tracking 17

### **E**

#### Examples

- Publication Services Data with Listed Resources 10
- Publication Services Data with no Listed Services 9

### **F**

Fields - vendor-extensible 6

Full XML schema 15

### **G**

Glossary 4

### **I**

Implementer - security considerations 14

Informative references 5

Introduction 4

### **L**

Localization 6

### **N**

Normative references 4

### **O**

Overview (synopsis) 5

### **P**

Product behavior 16

Publication Services Data with Listed Resources example 10

Publication Services Data with no Listed Services example 9

### **R**

References 4

    informative 5

    normative 4

Relationship to protocols and other structures 6

### **S**

Security

    implementer considerations 14

### **T**

Tracking changes 17

**V**

Vendor-extensible fields 6  
Versioning 6

**X**

XML schema 15