[MS-DPWSRP]:
Devices Profile for Web Services (DPWS): Shared Resource Publishing Data Structure

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Revision Summary

Date	Revision History	Revision Class	Comments
07/16/2010	1.0	New	First Release.
08/27/2010	1.0	No change	No changes to the meaning, language, or formatting of the technical content.
10/08/2010	1.0	No change	No changes to the meaning, language, or formatting of the technical content.
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06/17/2011	1.1	Minor	Clarified the meaning of the technical content.

Contents

1 Introduction

The Devices Profile for Web Services (DPWS): Shared Resource Publishing Data Structure describes the Shell Publishing data structure. This data structure is used by the HomeGroup Protocol to advertise shared files and folders in a HomeGroup peer-to-peer network environment.

1.1 Glossary

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

alias object
security identifier (SID)
SOAP
Universal Naming Convention (UNC)
XML
XML namespace
XML schema (XSD)

The following terms are specific to this document:

item ID list (ID list): A data structure that refers to a location. An **item ID list** is a multi-segment data structure. Each segment contains content defined by a data source that is responsible for a particular location in the namespace referred to by preceding segments.

HomeGroup: A group of one or more computers joined together through the HomeGroup Protocol, which are able to share resources (files, printers, and so on) with each other.

HomeGroup user: A user account on the **HomeGroup machine** where files are being shared.

HomeGroup machine: The machine where files are being shared, and that creates the Shell Publishing data structure.

Web Services on Devices (WSD): A function-discovery protocol used to discover and transfer Shell Publishing data structure in a HomeGroup network environment. Implementation details are specified in [DPWS].

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 Specification documents 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.

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.

[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-SHLLINK] Microsoft Corporation, "Shell Link (.LNK) Binary File Format".

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

[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

[RFC3548] Josefsson, S., Ed., "The Base16, Base32, and Base64 Data Encodings", RFC 3548, July 2003, http://www.ietf.org/rfc/rfc3548.txt

1.2.2 Informative References

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

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

1.3 Overview

This specification extends DPWS [DPWS] by adding the Shell Publishing data structure. The Shell Publishing data structure describes shared files and folders by each **HomeGroup user** on each **HomeGroup machine** in a **HomeGroup** network environment.

1.4 Relationship to Protocols and Other Structures

The Shell Publishing data structure is a data structure format made available to HomeGroup networked environment by a DPWS provider.

Shell Publishing Extension	This extension
DPWS	Industry standard
SOAP	Industry standard

1.5 Applicability Statement

Use of the Shell Publishing data structure is suitable when machines in a HomeGroup network environment share files and folders among HomeGroup members.

1.6 Versioning and Localization

This document covers versioning issues in the following areas:

- **Supported Transports:** This data structure uses the DPWS provider as the only transport.
- **Protocol Versions:** This data structure is not versioned.
- **Security and Authentication Methods:** This data structure does not support authentication. The data structure is signed using a HomeGroup public key (see [MS-HGRP] section 3.1.4.5).
- **Localization:** This data structure does not support localization.
- **Capability Negotiation:** This data structure does not support explicit capability negotiation.

1.7 Vendor-Extensible Fields

There are no vendor-extensible fields. The **XML schema** of the data structure is not validated, making it possible for vendors to extend the Shell Publishing data structure by adding additional elements and/or attributes. The extended data will not be interpreted unless consumed by the vendor who added it.

2 Structures

2.1 The Shell Publishing Data Structure

The Shell Publishing data structure describes a method of publishing and discovering shared files and folders in a HomeGroup configured network environment.

The Shell Publishing data structure MUST be transported using **WSD**. The WSD type MUST be ShellPublishing.

This structure uses SID structures as specified in [MS-DTYP] section 2.4.2.

An individual HomeGroup member MUST publish certain data about his or her shared files and folders as specified in section 2.1.2.1, in order to participate in the HomeGroup sharing.

The Shell Publishing XML data structure is defined as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified">
  <xs:simpleType name="serializedType">
    <xs:restriction base="xs:string">
      <xs:pattern value="\{[A-Za-z0-9+/]*\}"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="pi" type="pi" />
</xs:schema>
```

pi: A **pi** complex type, as specified in section 2.1.2.1. Published items. Serves as an envelope for descriptions of a HomeGroup user's shared files.

2.1.1 Namespaces

XML Namespace	Reference
http://www.w3.org/2001/XMLSchema	[XMLNS]

2.1.2 Complex Types

The following table summarizes the set of common XML schema complex types defined by this specification.

Complex Type	Description
pi	Published Items. The envelope for the description of shared files and folders.
usersFilesDescription	Describes shared files and folders per HomeGroup user, per HomeGroup machine in the HomeGroup.
o	Owner. Describes a HomeGroup user in the HomeGroup machine that is sharing the files and folders on the HomeGroup.
il	Items List. Describes a list of items that are being shared by a HomeGroup user in a HomeGroup machine on the HomeGroup.

Complex Type	Description
i	Item. This type describes a file or folder that is being shared by a HomeGroup user in a HomeGroup machine on the HomeGroup.

2.1.2.1 pi

```
<xs:element name="pi">
 <xs:complexType>
  <xs:element name="usersFilesDescription" type="usersFilesDescription" />
 <xs:complexType>
</xs:element>
```

usersFilesDescription: A description of the HomeGroup user's files. Defines the resources shared by a HomeGroup user on a HomeGroup machine.

2.1.2.2 usersFilesDescription

```
<xs:element name="usersFilesDescription">
  <xs:complexType>
    <xs:all>
      <xs:element name="o" type="o" />
      <xs:element name="il" type="il" />
    </xs:all>
  </xs:complexType>
</xs:element>
```

o: The owner of the shared resource. The owner is typically the HomeGroup user who designates a resource for sharing.

il: Contains a sequence of one or more items (the item list).

2.1.2.3 o

```
<xs:element name="o">
  <xs:complexType>
    <xs:annotation>
      <xs:documentation>owner information, attributes are user name, alias and
SID</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:attribute name="un" type="xs:string" />
      <xs:attribute name="a" type="xs:string" />
      <xs:attribute name="s" type="xs:string" />
    </xs:complexContent>
  </xs:complexType>
</xs:element>
```

un: The owner's user name (display name). This is the display name for the HomeGroup user on the HomeGroup machine sharing the files and folders on the HomeGroup.

a: The owner's alias. Describes the **alias object** of the HomeGroup user on the HomeGroup machine sharing the files and folders on the HomeGroup. This value MAY be used by the implementation as a hint for the HomeGroup user identity.

s: The SID (security identifier) of the account sharing the files on the HomeGroup machine. Describes the security identifier for the HomeGroup user on the HomeGroup machine that is sharing the files and folders on the HomeGroup.

2.1.2.4 il

```
<xs:element name="il">
  <xs:complexType>
    <xs:annotation>
      <xs:documentation>item list</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="i" minOccurs="1" maxOccurs="unbounded" type="i" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

i: An item in the item list. Contains a description of shared files and folders for the HomeGroup user on the HomeGroup machine.

2.1.2.5 i

```
<xs:element name="i" minOccurs="1" maxOccurs="unbounded">
  <xs:complexType>
    <xs:annotation>
      <xs:documentation>item, sub elements are path (absolute UNC or machine relative),
display name and BASE-64 encoded serialized shell link</xs:documentation>
    </xs:annotation>
    <xs:element name="p" type="xs:anyURI"/>
    <xs:element name="dn" type="xs:string"/>
    <xs:element name="sl" type="serializedType" minOccurs="0"/>
  </xs:complexType>
</xs:element>
```

i.p: An absolute **UNC** path or a relative machine path to the shared file or folder. If the path begins with a "\" then it is a machine-relative path. Relative paths are related to the HomeGroup machine where the message originated. The machine name is taken from the WSD Shell Publishing message that is transporting this data structure.

This element is used to access the shared resource if the shell link element **pi.usersFilesDescription.il.i.sl** is not present or if the HomeGroup machine originating the message has changed since the link was created.

dn: The display name of the item. The display name is sent so that if the message client implementation uses the display name, it is unnecessary to use additional protocols to retrieve the display name.

sl: A base-64-encoded binary stream representing a serialized shell link. The shell link references a file or folder shared by the HomeGroup user on the machine and contains the associated **item ID**

list. This information is sent so that if the implementation uses the item ID list, it is unnecessary to use additional protocols to retrieve the ID list. Shell Links are specified in [MS-SHLLINK].

This field uses nonstandard base-64 encoding as specified in section 2.1.4.2.

2.1.3 Simple Types

The following table summarizes the set of common XML schema simple type definitions defined by this specification.

Simple type	Description
serializedType	This is a base-64-encoded binary stream

2.1.3.1 serializedType

```
<xs:simpleType name="serializedType">
  <xs:restriction base="xs:string">
    <xs:pattern value="\{[A-Za-z0-9+/]*\}"/>
  </xs:restriction>
</xs:simpleType>
```

pattern: This value describes base-64 encoding using the following pattern: `[A-Za-z0-9+/]*`

This field uses non-standard base-64 encoding as specified in section 2.1.4.2.

2.1.4 Encryption Rules

2.1.4.1 Data Signing

The Shell Publishing data structure MUST be signed using a HomeGroup public key ([MS-HGRP] section 3.1.4.5) prior to being encoded. To create the signature, the data structure is hashed and the hash value is encrypted using HomeGroup public key. This signature is then appended to the data structure.

2.1.4.2 Data Encoding

This data structure MUST be base-64 encoded after being signed and before being transported in a WSD message. The base-64 encoding used by this data structure is a modification on the standard encoding specified by [RFC3548]. The alphabet used is the same, but the encoding algorithm is different (see 2.1.4.2.2).

2.1.4.2.1 Alphabet

The base-64 alphabet used by this data structure is the following:

Value	Encoding	Value	Encoding	Value	Encoding	Value	Encoding
0	A	17	R	34	i	51	z
1	B	18	S	35	j	52	0
2	C	19	T	36	k	53	1

Value	Encoding	Value	Encoding	Value	Encoding	Value	Encoding
3	D	20	U	37	l	54	2
4	E	21	V	38	m	55	3
5	F	22	W	39	n	56	4
6	G	23	X	40	o	57	5
7	H	24	Y	41	p	58	6
8	I	25	Z	42	q	59	7
9	J	26	a	43	r	60	8
10	K	27	b	44	s	61	9
11	L	28	c	45	t	62	+
12	M	29	d	46	u	63	/
13	N	30	e	47	v		
14	O	31	f	48	w		
15	P	32	g	49	x		
16	Q	33	h	50	y		

2.1.4.2.2 Encoding

The data being encoded is manipulated at the 8-bit chunk (octet) borders. The lowest 6 bits are converted to an appropriate alphabet character. (The value represented by these 6 bits is converted to a corresponding character, shown in the table in 2.1.4.2.1). The remaining 2 bits are combined with the next octet by making them the lowest 2 bits. And the process is repeated, with each step having 2 more extra bits until 6 bits remain, which are then converted to a character without the use of the next octet. The following diagram illustrates this process:

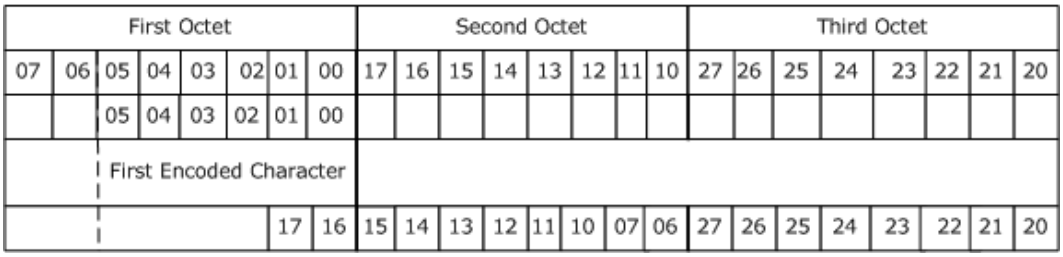

Figure 1: Data encoding at the 8-bit (octet) level

The lowest 6 bits of the second octet are converted to the next character, and the remaining 4 bits are moved to be the lowest 4 bits of the next octet.

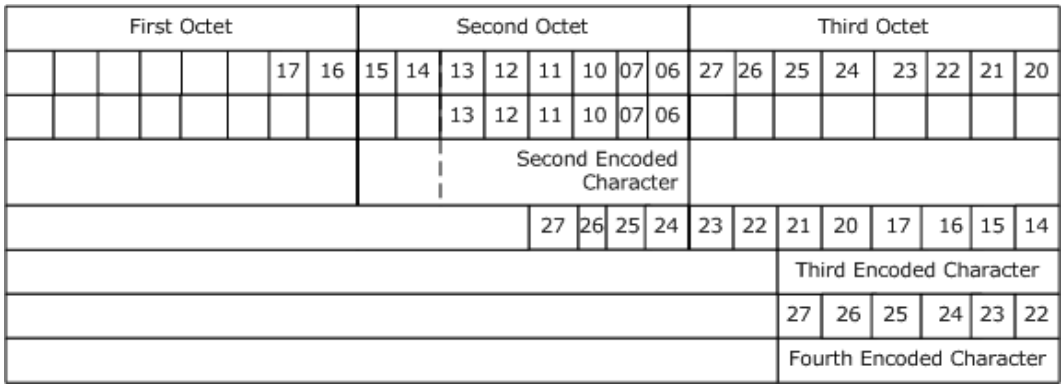

Figure 2: Data encoding of the lowest 6 bits and remaining 4 bits

3 Structure Examples

3.1 Shell Publishing Data Structure Example

This section contains an example of the Shell Publishing data structure. This example is given raw, before the structure is signed and base-64 encoded. Sections 3.2 and 3.3 contain examples of signing and base-64 encoding for this particular example.

```
<?xml version="1.0" encoding="UTF-8"?>
<pi>
 <usersFilesDescription>
  <o un="nikola" a="nikola" s="S-1-5-21-2555710863-3024264161-1621211007-1001" />
  <il>
   <i>
    <p>\Users\nikola\AppData\Roaming\Microsoft\Windows\Libraries\Music.library-ms</p>
<sl>MBAAAEAFCAAAAAAAADAAAAAAAYkgAADBgAAAAUOEKgxcWpcAF2JNOOnVKHQhdSjjzZlyBMtHAAAAAAAABAAAAAAAA
AAAAAAAAAAAAAYIAAAAHAAAACAAAAAAAAAAAAAAAcAAAAIEAAAgJAAAACAAAAQBAAAAAAAAAAAgAAwFXOl0SPxUQtA1QcV
1UFJ1UA4War9GbhxVQwBHRhRXYcJ1bh1WaudGXNl2Yy92cvZGdcdVauR2b3NHXMlmYyFmcpV2cc1Udzl2YuwWaiJXYylX
LtNHADOAAAwAAAAKFA8BWNoBLwHivQNEiwO3Z8b578MLAAAQrAs7rTuznAQAAAAAAAEEAAAQMTB1UwEfJ3++RaARpxLAY
M656sWCAAAgCAAAAA8BAAAgCAAAAuBQaAsGAvBAbAEGAtAAUAMEAAAAAAAAAtAAAAEzUQNlOk2r3zezgDF55Ehp2pU5qR
AAAAMAAAAAATAAAAAAAAAAAAAAAtAAAAEzUQN1cDVuC+OUrPVI5pxthzgpbRAAAAsAAAAALAAAA8//AAAAAAAAAAAAAA
AAsAwwBUMXc5War9Gbh1CUDxVVzVmczBQTpNmcvN3bmRHIOVGd39mcrBAACAAUAEDAAAAAAo1OXwJEA4War9GbhBAA6AA
CAQAAv7rW7oAnatzFcqCAAAwqTDAAAAgAAAAAAAAAAAAAAAAAAAAAAAuBQaAsGAvBAbAEGAAAgFAIFAxAAAAAAAatzCcCBA
BBHcEFGdhBAPAgAAEAw7+q1OLwpW7sAnqAAAAc70AAAAAIAAAAAAAAAAAAAAAAAAAAQQAAHAwBARAEGA0BQYAAAAWAgUA
EDAAAAAAo1OSwJEAI1bh1WaudGA8AACAQAAv7rW7sAnatjEcqCAAAAuTDAAAAgAAAAAAAAAAAAAAAAAAAAAASBwbAEGAtB
QaA4GAnBAAAYBAYBQMAAAAAAgW70BnQAQTJNkUPNlfxAAAABACAQAAv7rW7sAnatTHcqCAAAQuTDAAAAgAAAAAAAAAAAA
AAAAAAAAANBQaAMGAyBwbAMHAvBgZAQHAAAAGAIFAxAAAAAAAatzFcCBAXlmbk92dzBAPAgAAEAw7+q1OLwpW7cBnqAAA
Ao70AAAAAIAAAAAAAAAAAAAAAAAAAAAAwVAkGAuBAZA8GA3BwcAAAAWAAWAEDAAAAAAo1ODyZEAwUSCJVQS5XMAAAQAgAAE
Aw7+q1OXwpW7MInqAAAAgE/AAAAAMAAAAAAAAAAAAAAAAAAAAATAkGAiBgcAEGAyBQaAUGAzBAAAgBAQCgMAMtHAAgW7M
IngAQTVNVSD5XMuwUSCBgdAgAAEAw7+q1OXwpW7MInqAAAAQ6CBAAAAIAAAAAAAAAAAAATAAAAAAQTAUHAzBQaAMGAuAA
bAkGAiBgcAEGAyBQeA0CAtBwcAAAAABwcAgGAlBAbAwGAzAgMA4CAkBAbAwGAsAQLAMDA0AQNAgDA0AAAAoBAAAggDAAA
JAAAga3AAAQMTB1UirIWGxLT4M0u8PxkmgZbO3zAAAwAAAAAAAEBEAAQKDAAAUAwHQB+TQDi66kGEiiNCAsCMw0ZGA8CR6
wFAAAAAAAAAAAAAAAAAAAAAAAAAAA0BQMAAAAAAgW7oAnRAQVzVmczBAYAgAAEAw7+e1OVBpW7oAnqAAAAQ60AAAAAEAAAA
AAAAAAAAgNAAAAAAQVAMHAlBgcAMHAAAAQAMHAoBQZAwGAsBwMAIDAuAAZAwGAsBALA0CAyAQMAgDAxAwMAAAAUAAUAED
AAAAAAo1OXwJEA4War9GbhBAA6AACAQAAv7rW7oAnatzFcqCAAAwqTDAAAAgAAAAAAAAAAAAAAAAAAAAAAAuBQaAsGAvBAb
AEGAAAgFAIFAxAAAAAAAatzCcCBABBHcEFGdhBAPAgAAEAw7+q1OLwpW7sAnqAAAAc70AAAAAIAAAAAAAAAAAAAAAAAAAA
AQQAAHAwBARAEGA0BQYAAAAWAgUAEDAAAAAAo1OSwJEAI1bh1WaudGA8AACAQAAv7rW7sAnatjEcqCAAAAuTDAAAAgAAA
AAAAAAAAAAAAAAAAAAASBwbAEGAtBQaA4GAnBAAAYBAYBQMAAAAAAgW70BnQAQTJNkUPNlfxAAAABACAQAAv7rW7sAnatT
HcqCAAAQuTDAAAAgAAAAAAAAAAAAAAAAAAAAAANBQaAMGAyBwbAMHAvBgZAQHAAAAGAIFAxAAAAAAAatzFcCBAXlmbk92d
zBAPAgAAEAw7+q1OLwpW7cBnqAAAAo70AAAAAIAAAAAAAAAAAAAAAAAAAAAAwVAkGAuBAZA8GA3BwcAAAAWAAWAEDAAAAAA
o1ODyZEAwUSCJVQS5XMAAAQAgAAEAw7+q1OXwpW7MInqAAAAgE/AAAAAMAAAAAAAAAAAAAAAAAAAAAAATAkGAiBgcAEGAyB
QaAUGAzBAAAgBAQCgMAMtHAAgW7MIngAQTVNVSD5XMuwUSCBgdAgAAEAw7+q1OXwpW7MInqAAAAQ6CBAAAAIAAAAAAAAA
AAAATAAAAAAQTAUHAzBQaAMGAuAAbAkGAiBgcAEGAyBQeA0CAtBwcAAAAABwcAgGAlBAbAwGAzAgMA4CAkBAbAwGAsAQL
AMDA0AQNAgDA0AAAAoBAAAAAAAQHAAAACAAAAAASAAAAzTOLWqwOb10lgo8ypOky4DAAAAAAAAAAgBAAAMAAAAKWAAAAA
AAAA4War9Gbh1CcjBAAAAAAAAgdMZXAs83/JVraoUOqV22MdO1ac+CweHBrgDACU19WTaHT2FAL/9fS1qGKljaltNTnTt
GnvAs3RwK4AgAVdv1kAAAAAA</sl>
   </i>
  </il>
 </usersFilesDescription>
</pi>
```

3.2 Signed XML Data

The following signature has been created based on the Shell Publishing data structure example in section 3.1. This signature has been created by hashing the data using the HomeGroup public key (see section 2.1.4.1). This signature can be appended to the Shell Publishing data structure example before base-64 encoding in order to create an authentic message.

```
0x0000:             01 00 00 9d 21 49 20 76
0x0008: ff 72 31 7f 31 5f 57 ef-22 ae 08 92 8e 08 29 5d
0x0028: cd 54 ab 8f 7e 9a 42 ea-a4 c1 03 07 41 38 62 77
0x0048: de 33 cb 83 c2 4f eb b2-cb 10 84 02 8b 22 4f d0
0x0068: 74 e2 04 c6 af 3c 23 8a-5d e3 7c c0 5b b1 84 c2
0x0088: 2c 95 67 aa ff 17 08 7a-48 52 0f 30 2b 6c cd 3d
0x00A8: 3a 24 97 67 0a 68 5d b2-8c 3c a9 d6 90 cf 18 3b
0x00C8: 69 c8 58 de 94 57 e8 39-30 98 0a 79 ac 44 85 02
0x00E8: 21 5e 5e cf 96 24 64 27-59 0a 98 cb 88 68 a5 66
0x0108: 14 1e e6 4a 7d ab e0 15-8e 5b 57 08 3d 7f 0c c3
0x0128: f3 d9 dc 68 95 48 8d 5d-e3 1d 42 3b d0 a1 33 ed
0x0148: f0 30 ea 0e 5c de ca 93-a5 c2 fe a5 72 0c c6 3b
0x0168: c6 aa dd 38 99 dd 44 22-f5 e0 d4 df 74 2a f3 4b
0x0188: 32 c5 55 59 c4 a1 a6 52-3f 9f a2 39 24 33 38 c5
0x01A8: 45 3b 9c f1 24 de be af-41 c0 6d 28 0e 5a 75 4c
0x01C8: 4a 64 5d b0 b0 6d d1 d2-39 2f 1c f3 64 f3 0c 3a
0x01E8: df 9f 00 ec 48 37 01 24-f7 a4 9a
```

3.3 Base-64-Encoded Shell Publishing Data Structure Example

This section contains a signed, base-64-encoded version of the Shell Publishing data structure example provided in section 3.1. The base-64 encoding has been applied to the structure after appending the signature given in section 3.2.

```
0x0000: TxAAAwzP41GbgYXZyNXav5WPiEjLwICI
0x0020: l52YvRWaudWPiUFVG1COi8jPNoAPwlmP
0x0040: NoAIgwTdzVmczZUasV2cEV2cjJXawRXa
0x0060: v5mPNoAIgACI88GI15WPi4War9GbhJCI
0x0080: h1jIul2avxWYiAyc9IyUtETL10iMx0iM
0x00A0: 1UTN3EDM4YzMtMDMyQjM2QTM2ETLxYjM
0x00C0: xITMxADM30SMwATMiAyL+0gCgACIgwTa
0x00E0: s5TDKACIgACIgwTa+0gCgACIgACIgACP
0x0100: w5DXVNXZyNHXul2avxWYcFEcwRUY0FGX
0x0120: S9WYtlmbnxVTpNmcvN3bmRHXXlmbk92d
0x0140: zxFTpJmchJXalNHXNV3cpNmLslmYyFmc
0x0160: 51SbzxzLw5TDKACIgACIgACI8MHb+0kQ
0x0180: BFUQFFkRDFUQBFUQBFUQEFUQBFUQBFUW
0x01A0: rdWQBRkQnFUQBFUVPV0Snh3YXB3YBZkM
0x01C0: K50TP5mVLhUUoR2UqpmeaxWeC1EdIFUQ
0x01E0: BFUQBFUQCFUQBFUQBFUQBFUQBFUQBFUQ
0x0200: BFUQZlUQBFUQIFUQBF0QBFUQBFUQBFUQ
0x0220: BFUQBFUQjFUQBFUSFFUQBdmSBFUQBNUQ
0x0240: BFUQRJUQBFUQBFUQBFUQBdWQBdnRY9Eb
0x0260: wMFU4VVU0FUMRNmVxUlRKFTVBRzVhJXO
0x0280: HJGa4ZVU3JESShmUYl1YKFjYoFzVhVHZ
0x02A0: HhlTsJTW5ljMjZnWHR2YkZVY1JlMiNjT
0x02C0: IhVTs1WW5ZUbjBnVyM2YxUFZ6xmMZV3d
0x02E0: XFWaKhVW5xGWMRnTIFERPFUQBdXQBFUQ
0x0300: LZUQ4I0VO9mQMdHSpZXUOVUa390MahjY
0x0320: 1cDONxUQBFUUyF0c3IHV1pnbBFVQBFUQ
0x0340: BFUQFVUQBFUUNRlQxU1dFZmSzsyKSFWQ
0x0360: SBHeMFUWNZTN2M3VDFUQBd2QBFUQBFEO
0x0380: CFUQBd2QBFUQBVnQRFWQzdUQ2JUQiFUR
0x03A0: HFEdBFUVB1URBFUQBFUQBFUQ0FUQBFUR
0x03C0: 6VVUOx2TrJjczoXZ6dGRGVTNFhGcyAXV
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0x03E0: 1EnUBFUQB1UQBFUQBFEVBFUQBFUQBFUQ
0x0400: BFUQBFUQ0FUQBFUR6VVUOFzYEZVdDtyT
0x0420: VJHUWlUNwhHdop3ZwJmUBFUQBNXQBFUQ
0x0440: BFETBFUQBhzLvEUQBFUQBFUQBFUQBFUQ
0x0460: BF0cBd3dCVVTYNWNXFmc5ckYoFzQVREe
0x0480: WZleW12Y6JUUUBnTtNmdONjYtJFSJ9kV
0x04A0: HR2M502YyJUQBNUQBVVQFRUQBFUQBF0b
0x04C0: x8EW3pURBRzVhJXOHJGaCFUQ2EUQDFUU
0x04E0: BFkd3I3V38WQuFGd6Z0YxNUQBF0dxRFR
0x0500: BFUQBdWQBFUQBFUQBFUQBFUQBFUQBFUQ
0x0520: BFUdCFVYBN3RBZnQBJWQFdUQBF0ZGFUS
0x0540: GFEeBFUQBFUQBFGd6N0YDJUQCJESjVkR
0x0560: HRGaCFEUBdWQBVUQ3dzKxFzTMdHcXdzc
0x0580: B5WcBFUQBN2NwEUQBFUQJFUQBFUQBFUQ
0x05A0: BFUQBFUQBFUQBFUQRFVQBhUQ3JUQSFUR
0x05C0: HFEMCFVWBFUQBdVQnVVQFRUQBFUQBF0b
0x05E0: x80U3pURBlUMihWMXFWdkdUQ4EUQDFUU
0x0600: BFkd3I3V3MXQuFGdqV0YxNUQBFUQ1RFR
0x0620: BFUQBdWQBFUQBFUQBFUQBFUQBFUQBFUQ
0x0640: BF0UCdnYBV0RBRnQRFWQ0cUQuJUQBFUW
0x0660: CFUWCFVTBFUQBFUQnd1NwIkbRFUUUpkT
0x0680: rVFUOxmZ4FUQBFkQBNUQRFUQ2djcXdzc
0x06A0: B5WY0RFSjF3QBFUQRVHVEFUQBF0ZBFUQ
0x06C0: BFUQBFUQBFUQBFUQBFUQBFUQOJUUhFUT
0x06E0: HFUeCdnYB1ESBZnQnpVQRhUQBFUQHFUS
0x0700: GFEeBFUQBFUQBFGd6Z0YDJUQYxWbitWO
0x0720: yQmeCFEUBdWQBVUQ3dzKxFzTMdHcXdzY
0x0740: C5WcBFUQB92NwEUQBFUQJFUQBFUQBFUQ
0x0760: BFUQBFUQBFUQBFUQ3ZVQrdUQ1JUQaFEO
0x0780: HF0MCd3YBFUQBdVQBdVQFRUQBFUQBF0b
0x07A0: x8ER5pVRBdXVTNkSWF1U1gVTBFUQRF0Z
0x07C0: BFURBd3NrEXMPh1dwd1NNlkbxFUQBF0Z
0x07E0: F9SQBFUQB1UQBFUQBFUQBFUQBFUQBFUQ
0x0800: BFUQBFEVBt2RBlmQnNWQFdUQ5JUUhFUV
0x0820: HFkeCFUQBdmQBF1Qn1UQNRHSBF0ZXdTT
0x0840: J52ZBFFVW5kVTRUNY1Ud3V1UDJ0ZkF0Z
0x0860: BFURBd3NrEXMPh1dwd1NNlkbxFUQBFUU
0x0880: 2MkQBFUQBlUQBFUQBFUQBFUQBFUQUFUQ
0x08A0: BFUQBFFVBVFSBpnQRFWQNdUQ1FUQiF0a
0x08C0: HFUaCd2YBV0RBlnQRVWQwMUQ0J0djFUQ
0x08E0: BFUQCd3YBd2RBxmQBJWQ3dUQ6F0ZNFEN
0x0900: DF0aCFkYBd3RBNXQRxUQNRUQwEUUOF0Z
0x0920: EFEMBFUQB9mQBFUQndGRBFUQKFUQBdWY
0x0940: zEUQBFVTUJUMVlmcJd1R4xEV00EM1hDU
0x0960: 4tWbnplYPNjeBFUQ3FUQBFUQBVkQFFUQ
0x0980: RtERBFUQVF0dIFlQrQVUElmN2s2RFlWa
0x09A0: ONUQzNUT3BjWHFEODJlN3ZUQBFUQBFUQ
0x09C0: BFUQBFUQBFUQBFUQBFUQBFUQwIUUNFUQ
0x09E0: BFUQBd2V38WQuJVQRZleW12Y6JUQZF0Z
0x0A00: BFURBd3NrUWMPZlQwd1NvFkbxFUQBFUU
0x0A20: 2ATQBFUQBVUQBFUQBFUQBFUQBF0ZOFUQ
0x0A40: BFUQBFlVB1ESBxmQnNWQNhUQBFUQRFUT
0x0A60: IF0bCFlWBd3RBNnQ31UQJRUQ1FUQaF0d
0x0A80: HF0cCFETBBzQBlXQR1UQnRUQ4F0dNFUQ
0x0AA0: BFUVBFUVBVERBFUQBFUQvFzTYdnSFFEN
0x0AC0: XFmc5ckYoJUQBZTQBNUQRFUQ2djcXdzb
0x0AE0: B5WY0pnRjF3QBFUQ3FHVEFUQBF0ZBFUQ
0x0B00: BFUQBFUQBFUQBFUQBFUQBFUQ1JUUhF0c
0x0B20: HFkdCFkYBV0RBFUQnZUQJZUQ4FUQBFUQ
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0x0B40: BFUY0p3QjNkQBJkQINWRGdEZoJUQQF0Z
0x0B60: BFURBd3NrEXMPx0dwd1NzFkbxFUQBF0Y
0x0B80: 3ATQBFUQBlUQBFUQBFUQBFUQBFUQBFUQ
0x0BA0: BFUQBFVUBFESBdnQBJVQFdUQwIUUZFUQ
0x0BC0: BF0VBdWVBVERBFUQBFUQvFzTTdnSFFUS
0x0BE0: xIGaxcVY1R2RBhTQBNUQRFUQ2djcXdzc
0x0C00: B5WY0pWRjF3QBFUQBVHVEFUQBF0ZBFUQ
0x0C20: BFUQBFUQBFUQBFUQBFUQBFUQTJ0diFUR
0x0C40: HFEdCFVYBRzRB5mQBFUQZJUQZJUUNFUQ
0x0C60: BFUQBd2V3AjQuFVQRRlSOtWVQ5EbmhXQ
0x0C80: BFUQCF0QBFVQBZ3Nyd1NzFkbhRHVINWc
0x0CA0: DFUQBFVdURUQBFUQnFUQBFUQBFUQBFUQ
0x0CC0: BFUQBFUQBFUQB5kQRFWQNdUQ5J0diFUT
0x0CE0: IFkdCdmWBFFSBFUQBdUQJZUQ4FUQBFUQ
0x0D00: BFUY0pnRjNkQBhFbtJ2a5IDZ6JUQQF0Z
0x0D20: BFURBd3NrEXMPx0dwd1NjJkbxFUQBF0b
0x0D40: 3ATQBFUQBlUQBFUQBFUQBFUQBFUQBFUQ
0x0D60: BFUQBdnVBt2RBVnQBpVQ4cUQzI0djFUQ
0x0D80: BF0VBF0VBVERBFUQBFUQvFzTElnWFF0d
0x0DA0: VN1QKZVUTVDWNFUQBFVQnFUQFF0d3sSc
0x0DC0: x8EW3B3V30USuFXQBFUQnV0LBFUQBFUT
0x0DE0: BFUQBFUQBFUQBFUQBFUQBFUQBFUQUF0a
0x0E00: HFUaCd2YBV0RBlnQRFWQVdUQ6JUQBF0Z
0x0E20: CFUUDdWTB1EdIFUQnd1NNlkbnFUUUZlT
0x0E40: WNFR1gVT1dXVTNkQnRWQnFUQFF0d3sSc
0x0E60: x8EW3B3V30USuFXQBFUQRZzQCFUQBFUS
0x0E80: BFUQBFUQBFUQBFUQBRVQBFUQBFUUUFUV
0x0EA0: IFkeCFVYB10RBVXQBJWQrdUQpJ0ZjFUR
0x0EC0: HFUeCFVZBBzQBRnQ3NWQBFUQBJ0djF0Z
0x0EE0: HFEbCFkYBd3RBpXQn1UQ0MUQrJUQiF0d
0x0F00: HF0cBFFTB1ERBBTQR5UQnRUQwEUQBF0b
0x0F20: CFUQBFUQBFUUIFUQBF0QBFUQBFUQTFUQ
0x0F40: BFkeU9ETXF3dPJWMww2ZvhTew90a5RDR
0x0F60: BFUQBFUQBFUQBdmQBFUQNFUQBF0SXFUQ
0x0F80: BFUQBFUQBRzVhJXOHJGaxM0YqJUQBFUQ
0x0FA0: BFUQBdGZNpFWBNHOz8iSWJXYvV1TxZlM
0x0FC0: y0EZPFTYjtyQ3VGSCJ3ZEF0QVFTOXRVY
0x0FE0: IRlMGFETvkjZTFTcHtEbqFGb05EVuRFd
0x1000: H5mdBN3MSd3S0E0ZBZFZ2FzaBFUQBFUQ
0x1020: 88ycs5TDKACIgACIgwzLp5TDKACIgACP
0x1040: vkGb+0gCgACPvU3clJ3cGlGblNHRlN3Y
0x1060: ylGc0l2bu5TDKwzLwlmPAEAAA0ZIJBid
0x1080: /LXM/FzXX9uIuigkOiQKd1MVr+ofaKk6
0x10A0: kG8AHEEOidn3zs8gC/06yuMEEKwii8E0
0x10C0: 0JOBG/KPjoYXjzHwbFLhCzSlnp6/Xgge
0x10E0: IJ1DwsCbN3jOkc5ZKgWXyyIPpaNkPjxO
0x1100: phMWeT5VonDMYqQesSUhCEiXe9slkQ2J
0x1120: ZpAmLjIalaGFeYuS9tK4V44WXhQP/xww
0x1140: znN3oVJSN214dI0OQH6MtDPMq7AXer8k
0x1160: lKs/lKHDGvjxq2NOZ2NRiUP4U/NdqM/S
0x1180: yUcVZRcomK1PfKaOkMDOFX0OcGPJe77r
0x11A0: BBcbo4gW1xkSk1Fsw2W0SnzLcMPZzzgO
0x11C0: f/JAsj0NBQy9kqJ
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4 Security

4.1 Security Considerations for Implementers

The Shell Publishing data structure relies on HomeGroup key signing to validate authenticity of the data.

4.2 Index of Security Fields

Security parameter	Section
HomeGroup public key	2.1.4.1

5 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® Home Server 2011 server software

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.

6 Change Tracking

This section identifies changes that were made to the [MS-DPWSRP] protocol document between the May 2011 and June 2011 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

The revision class **New** means that a new document is being released.

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 or functionality.
- An extensive rewrite, addition, or deletion of major portions of content.
- The removal of a document from the documentation set.
- Changes made for template compliance.

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 **Editorial** means that the language and formatting in the technical content was changed. Editorial changes apply to grammatical, formatting, and style issues.

The revision class **No change** means that no new technical or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

Major and minor changes can be described further using the following change types:

- New content added.
- Content updated.
- Content removed.
- New product behavior note added.
- Product behavior note updated.
- Product behavior note removed.
- New protocol syntax added.
- Protocol syntax updated.
- Protocol syntax removed.
- New content added due to protocol revision.
- Content updated due to protocol revision.
- Content removed due to protocol revision.
- New protocol syntax added due to protocol revision.

- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- Obsolete document removed.

Editorial changes are always classified with the change type **Editorially updated.**

Some important terms used in the change type descriptions are defined as follows:

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.
- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact protocol@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
1.2 References	Added explanatory statement regarding the removal of the publishing year from Microsoft Open Specification document references.	N	Content updated.

7 Index

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