[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
1/29/2010	0.1	Major	First Release.
3/12/2010	0.1.1	Editorial	Changed language and formatting in the technical content.
4/23/2010	0.1.2	Editorial	Changed language and formatting in the technical content.
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2/13/2014	3.0	None	No changes to the meaning, language, or formatting of the technical content.
5/15/2014	3.0	None	No changes to the meaning, language, or formatting of the

Date	Revision History	Revision Class	Comments
			technical content.
6/30/2015	4.0	Major	Significantly changed the technical content.
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3/16/2018	5.0	Major	Significantly changed the technical content.

Table of 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.

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:

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

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

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

Internet SID: A user **SID** that represents an online identity. The **SID** is unique across all providers and all machines. The **SID** is a hash of the identity's unique ID and the provider GUID.

item ID list (IDList): A data structure that refers to a location. An item ID list is a multi-segment data structure where each segment's content is defined by a data source that is responsible for the location in the namespace referred to by the preceding segments.

security identifier (SID): An identifier for security principals that is used to identify an account or a group. Conceptually, the **SID** is composed of an account authority portion (typically a domain) and a smaller integer representing an identity relative to the account authority, termed the relative identifier (RID). The **SID** format is specified in [MS-DTYP] section 2.4.2; a string representation of **SIDs** is specified in [MS-DTYP] section 2.4.2 and [MS-AZOD] section 1.1.1.2.

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

XML schema: A description of a type of XML document that is typically expressed in terms of constraints on the structure and content of documents of that type, in addition to the basic syntax constraints that are imposed by XML itself. An XML schema provides a view of a document type at a relatively high level of abstraction.

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

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

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

[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.rfc-editor.org/rfc/rfc3548.txt

1.2.2 Informative References

[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/

1.3 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>

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.
dil	Discretionary access items list. Describes a list of items that have their security set so that only a specific set of HomeGroup users has access to them.

Complex Type	Description
i	Item. Describes a file or folder that is being shared by a HomeGroup user in a HomeGroup machine on the HomeGroup.
ul	User list. Describes a list of **SIDs** that identifies the users the particular item is shared with.

2.1.2.1 pi

The pi (published items) complex type is an envelope that contains the description of shared files and folders.

```
<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

The usersFilesDescription complex type describes shared files and folders per **HomeGroup user**, per **HomeGroup machine** in the **HomeGroup**.

```
<xs:element name="usersFilesDescription">
  <xs:complexType>
    <xs:all>
      <xs:element name="o" type="o" />
      <xs:element name="il" type="il" minOccurs="0" />
      <xs:element name="dil" type="dil" minOccurs="0" />
    </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: Optional element. When present, contains a sequence of one or more items (the item list).

dil: Optional element. When present, contains a sequence of one or more items (the item list), which are shared with specific other members of the HomeGroup using discretionary access.

The **usersFilesDescription** MUST contain at least an **il** or a **dil** element. If both the **il** and **dil** elements are missing, the message will be discarded.

2.1.2.3 o

The o (owner) complex type describes a **HomeGroup user** in the **HomeGroup machine** that is sharing the files and folders on the **HomeGroup**.

```
<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: Concatenation of the HomeGroup GUID and the SID (security identifier) of the account sharing the files on the HomeGroup machine. This is the unique identifier for the HomeGroup and 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

The il (items list) complex type describes a list of items that are being shared by a **HomeGroup user** in a **HomeGroup machine** on the **HomeGroup**.

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

The dil (discretionary access items list) complex type describes a list of items that have their security set so that only a specific set of **HomeGroup users** has access to them. Clients of the information SHOULD only present these items to the user if the user's **security identifier (SID)** values match one of the user identities in the **ul** (user list) complex type. Items that are shared by using discretionary access can be shared only with users represented by **Internet SIDs**.

```
<xs:element name="dil">
  <xs:complexType>
    <xs:annotation>
      <xs:documentation>discretionary access item list</xs:documentation>
    </xs:annotation>
    <xs:all>
      <xs:element name="i" minOccurs="1" maxOccurs="unbounded" type="i" />
    </xs:all>
```

```
  </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**.

2.1.2.6 i

The i (item) complex type describes a file or folder that is being shared by a **HomeGroup user** in a **HomeGroup machine** on the **HomeGroup**.

```
<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:all>
        <xs:element name="p" type="xs:anyURI"/>
        <xs:element name="dn" type="xs:string" minOccurs="0" />
        <xs:element name="sl" type="serializedType"/>
        <xs:element name="ul" type="ul" minOccurs="0" />
    </xs:all>
  </xs:complexType>
</xs:element>
```

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: Optional element. When present, contains 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.

ul: Optional element. When present, contains the users list. This is a list of **Internet SIDs** (security identifiers) that identifies the users that have discretionary access to a shared item. This list SHOULD only be included if the user is sharing out items by using discretionary access.

2.1.2.7 ul

The ul (user list) complex type describes a list of **SIDs** that identifies the users the particular item is shared with. Because sharing based on discretionary access is only possible using **Internet SIDs**, this list MUST contain only Internet SIDs.

```
<xs:element name="ul">
```

```
  <xs:complexType>
    <xs:annotation>
      <xs:documentation>user list</xs:documentation>
    </xs:annotation>
    <xs:all>
        <xs:element name="u" minOccurs="1">
            <xs:complexType>
                <xs:sequence>
                   <xs:element name="s" type="xs:string" minOccurs="1" maxOccurs="1" />
                </xs:sequence>
            </xs:complexType>
        </xs:element>
    </xs:all>
  </xs:complexType>
</xs:element>
```

u.s: The SID 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**.

2.1.3 Simple Types

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

Simple type	Description
serializedType	A base-64-encoded binary stream

2.1.3.1 serializedType

The serializedType simple type contains a base-64-encoded binary stream.

```
<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
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 section 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:

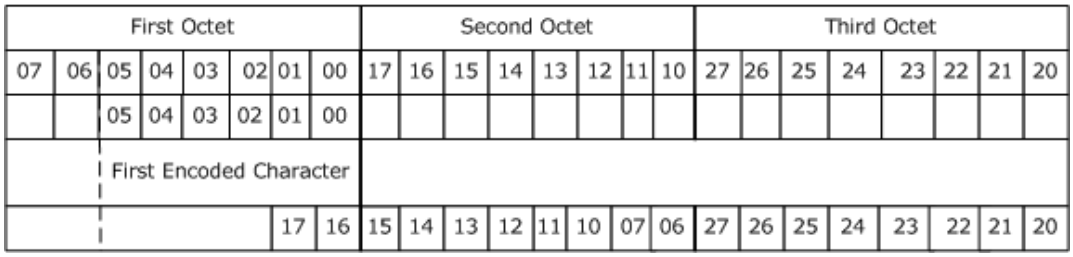

Figure 1: Data encoding at the 8-bit (octet) level

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.

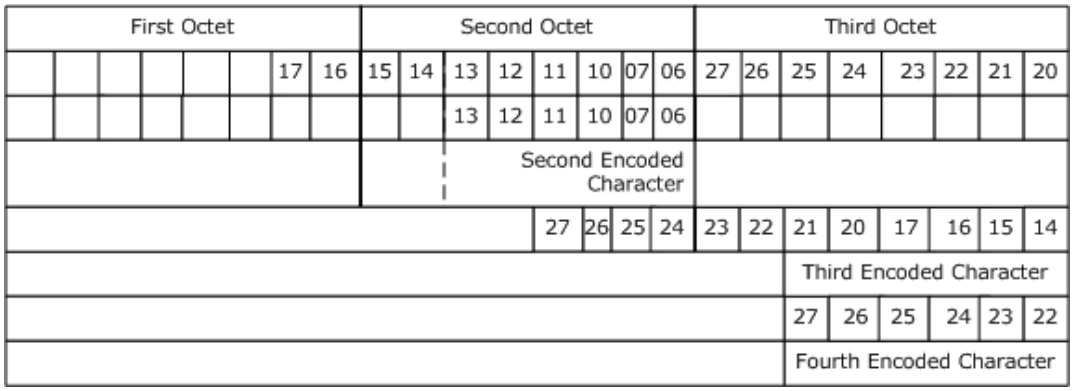

Figure 2: Data encoding of the lowest 6 bits and remaining 4 bits

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
AAAAAAAAAAAAYIAAAAHAAAACAAAAAAAAAAAAAAAcAAAAIEAAAgJAAAACAAAAQBAAAAAAAAAAAgAAwFXOl0SPxUQtA1QcV
1UFJ1UA4War9GbhxVQwBHRhRXYcJ1bh1WaudGXNl2Yy92cvZGdcdVauR2b3NHXMlmYyFmcpV2cc1Udzl2YuwWaiJXYylX
LtNHADOAAAwAAAAKFA8BWNoBLwHivQNEiwO3Z8b578MLAAAQrAs7rTuznAQAAAAAAAEEAAAQMTB1UwEfJ3++RaARpxLAY
M656sWCAAAgCAAAAA8BAAAgCAAAAuBQaAsGAvBAbAEGAtAAUAMEAAAAAAAAAtAAAAEzUQNlOk2r3zezgDF55Ehp2pU5qR
AAAAMAAAAAATAAAAAAAAAAAAAAAtAAAAEzUQN1cDVuC+OUrPVI5pxthzgpbRAAAAsAAAAAALAAAA8//AAAAAAAAAAAAAA
AAsAwwBUMXc5War9Gbh1CUDxVVzVmczBQTpNmcvN3bmRHIOVGd39mcrBAACAAUAEDAAAAAAo1OXwJEA4War9GbhBAA6AA
CAQAAv7rW7oAnatzFcqCAAAwqTDAAAAgAAAAAAAAAAAAAAAAAAAAAAAAuBQaAsGAvBAbAEGAAAgFAIFAxAAAAAAAatzCcCBA
BBHcEFGdhBAPAgAAEAw7+q1OLwpW7sAnqAAAAc70AAAAAIAAAAAAAAAAAAAAAAAAAAQQAAHAwBARAEGA0BQYAAAAWAgUA
EDAAAAAAAo1OSwJEAI1bh1WaudGA8AACAQAAv7rW7sAnatjEcqCAAAAuTDAAAAgAAAAAAAAAAAAAAAAAAAASBwbAEGAtB
QaA4GAnBAAAYBAYBQMAAAAAAgW70BnQAQTJNkUPNlfxAAAABACAQAAv7rW7sAnatTHcqCAAAQuTDAAAAgAAAAAAAAAAAA
AAAAAAAAANBQaAMGAyBwbAMHAvBgZAQHAAAAGAIFAxAAAAAAAatzFcCBAXlmbk92dzBAPAgAAEAw7+q1OLwpW7cBnqAAA
Ao70AAAAAIAAAAAAAAAAAAAAAAAAAAAwVAkGAuBAZA8GA3BwcAAAAWAAWAEDAAAAAAo1ODyZEAwUSCJVQS5XMAAAQAgAAE
Aw7+q1OXwpW7MInqAAAAgE/AAAAAMAAAAAAAAAAAAAAAAAAAAATAkGAiBgcAEGAyBQaAUGAzBAAAgBAQCgMAMtHAAgW7M
IngAQTVNVSD5XMuwUSCBgdAgAAEAw7+q1OXwpW7MInqAAAAQ6CBAAAAIAAAAAAAAAAAAATAAAAAQTAUHAzBQaAMGAuAA
bAkGAiBgcAEGAyBQeA0CAtBwcAAAAABwcAgGAlBAbAwGAzAgMA4CAkBAbAwGAsAQLAMDA0AQNAgDA0AAAAoBAAAggDAAA
JAAAga3AAAQMTB1UirIWGxLT4M0u8PxkmgZbO3zAAAwAAAAAAAEBEAAQKDAAAUAwHQB+TQDi66kGEiiNCAsCMw0ZGA8CR6
wFAAAAAAAAAAAAAAAAAAAAAAAAAA0BQMAAAAAAgW7oAnRAQVzVmczBAYAgAAEAw7+e1OVBpW7oAnqAAAAQ60AAAAAEAAAA
AAAAAAAAgNAAAAAAQVAMHAlBgcAMHAAAAQAMHAoBQZAwGAsBwMAIDAuAAZAwGAsBALA0CAyAQMAgDAxAwMAAAAUAAUAED
AAAAAAo1OXwJEA4War9GbhBAA6AACAQAAv7rW7oAnatzFcqCAAAwqTDAAAAgAAAAAAAAAAAAAAAAAAAAAAAAuBQaAsGAvBAb
AEGAAAgFAIFAxAAAAAAatzCcCBABBHcEFGdhBAPAgAAEAw7+q1OLwpW7sAnqAAAAc70AAAAAIAAAAAAAAAAAAAAAAAAAA
AQQAAHAwBARAEGA0BQYAAAAWAgUAEDAAAAAAo1OSwJEAI1bh1WaudGA8AACAQAAv7rW7sAnatjEcqCAAAAuTDAAAAgAAA
AAAAAAAAAAAAAAAAAAAASBwbAEGAtBQaA4GAnBAAAYBAYBQMAAAAAAgW70BnQAQTJNkUPNlfxAAAABACAQAAv7rW7sAnatT
HcqCAAAQuTDAAAAgAAAAAAAAAAAAAAAAAAAAAAANBQaAMGAyBwbAMHAvBgZAQHAAAAGAIFAxAAAAAAatzFcCBAXlmbk92d
zBAPAgAAEAw7+q1OLwpW7cBnqAAAAo70AAAAAIAAAAAAAAAAAAAAAAAAAAAAAwVAkGAuBAZA8GA3BwcAAAAWAAWAEDAAAAAA
o1ODyZEAwUSCJVQS5XMAAAQAgAAEAw7+q1OXwpW7MInqAAAAgE/AAAAAMAAAAAAAAAAAAAAAAAAAAAAATAkGAiBgcAEGAyB
QaAUGAzBAAAgBAQCgMAMtHAAgW7MIngAQTVNVSD5XMuwUSCBgdAgAAEAw7+q1OXwpW7MInqAAAAQ6CBAAAAIAAAAAAAAA
AAAATAAAAAQTAUHAzBQaAMGAuAAbAkGAiBgcAEGAyBQeA0CAtBwcAAAAABwcAgGAlBAbAwGAzAgMA4CAkBAbAwGAsAQL
AMDA0AQNAgDA0AAAAoBAAAAAAAQHAAAACAAAAAASAAAzTOLWqwOb10lgo8ypOky4DAAAAAAAAAAgBAAAMAAAAKWAAAAA
AAAA4War9Gbh1CcjBAAAAAAAAgdMZXAs83/JVraoUOqV22MdO1ac+CweHBrgDACU19WTaHT2FAL/9fS1qGKljaltNTnTt
GnvAs3RwK4AgAVdv1kAAAAAA</sl>
   </i>
  </il>    <dil>      <i>        <p>\Users\HomeGroupUser\Desktop</p>
<sl>MBAAAEAFCAAAAAAAADAAAAAAAYkgAADBRAAAAQ5iLF6+wucA0JZxmuPsLHQD6a/h9D7yBAAAAAAAAAAABAAAAAAAA
AAAAAAAAAAAA8EAAAAHAAAACAAAAAAAAAAAAAAAcAAAAEEAAAQJAAAACAAAAQBAAAAAAAAAAAgAAwFXSFUTB5UQSNDXVN
VRSNFAVNXZyNDXEV2crR3bwBgwBAAAMAAAgSBAfgVDawC8h4LUDhIszdG/W+OPzCAAA0KA7+6k78JAEAAAAAAAtAAAAEz
UQN1cDVuC+OUrPVI5pxthzgpbRAAAAsAAAAAALAAAA8//AAAAAAAABBAAAEzUQNFMxXytvfkGQUa8CAGjeuOrlAAAAoAA
AAAAfAAAAkAAAAgUAEEANBQQA4EABBgUAMDAAAAAAAAAAAQLAAAAxMFUTpDp969s3M4QReORYqdKVuaEAAAADAAAAAwEA
AAAAAAAAAAAAAAAAAAAAAAAwKAMcAFzFXSFUTB5UQSNDXVNXZyNHANl2Yy92cvZGdg4UZ0d3bytGAAIAAMBQMAAAAAAgK+A
smQAQVzVmczAAOAgAAEAw7+qiP5qpK+AsmqAAAAwiAAAAAA8DAAAAAAAAAAAAAAAAAAAAAAQVAMHAlBgcAMDAAAAFAoHAxAA
AAAAAq4jbcGBAEV2crR3bwBAZAgAAEAw7+qiP5qpK+AsmqAAAAQWBAAAAA8BAAAAAAAAAAAAgOAAAAAAARAUGAzBwaAQHA
vBAcAAAAABwcAgGAlBAbAwGAzAgMA4CAkBAbAwGAsAQLAIDAxAwNAYDA5AAAAYBAAAgwBAAAJAAAgabAAAQMTB1UirIWG
xLT4M0u8PxkmgZbO3BAAAgAAAAAAgEAAAQCGtRk7tO1NZbVWWLF3Qdr9FAAAMAAAAAARABAAkWAAAAFA8BUg/E0gouOpB
hoYjAArADMdmBAvMkOcBAAAAAAAAAAAAAAAAAAAAAAAAAAAAdAEDAAAAAAoiP5qZEAU1clJ3cAAGAIAABA8uvq4jx9oiP5qp
KAAAA7xCAAAAAOAAAAAAAAAAAAAYDAAAAAAUFAzBQZAIHAzBAAAAEAzBAaAUGAsBAbAMDAyAgLAQGAsBAbAwCAtAgMAEDA
4AQMAMDAAAAFAwEAxAAAAAAAq4DwaCBAVNXZyNDA4AACAQAAv7rK+krmq4DwaqCAAAALCAAAAAwPAAAAAAAAAAAAAAAAA
AAAVBwcAUGAyBwMAAAAUAgeAEDAAAAAAoiPuxZEAQUZztGdvBHAkBACAQAAv7rK+krmq4DwaqCAAAAZFAAAAAwHAAAAAA
AAAAAA6AAAAAAAEBQZAMHArBAdA8GAwBAAAAEAzBAaAUGAsBAbAMDAyAgLAQGAsBAbAwCAtAgMAEDA3AgNAkDAAAgFAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AQhIX54YWAFzT02B3vkstx9BihNjlBanNjr7cAeENeBAUIyVOOGAAAAA</sl>        <ul>          <u>
<s>S-1-11-96-3623454863-58364-18864-2661722203-1597581903-1847293483-3855340794-256571992-
```

```
1330011019-2935621724</s>          </u>        </ul>      </i>      <i>
<p>\Users\HomeGroupUser\AppData\Roaming\Microsoft\Windows\Libraries\Documents.library-ms</p>
<sl>MBAAAEAFCAAAAAAAADAAAAAAAYkgAADBgAAAAUptMb6+wucAs2YKL2PsLHArNmyi9D7yBMjDAAAAAAAABAAAAAAAA
AAAAAAAAAAAAgIAAAAHAAAACAAAAAAAAAAAAAAAcAAAAEEAAAQJAAAACAAAAQBAAAAAAAAAAAgAAwFXSFUTB5UQSNDXVN
VRSNFAVNXZyNDXBBHcEFGdhxlUvFWbp52Zc1UajJ3bz9mZ0x1Vp5GZvd3ccxUaiJXYylWZzxFRvNWdtVmb0NnLslmYyFm
c51SbzBAiDAAAMAAAgSBAfgVDawC8h4LUDhIszdG/W+OPzCAAA0KA7+6k78JAEAAAAAAAtAAAAEzUQN1cDVuC+OUrPVI5
pxthzgpbRAAAAsAAAAALAAAA8//AAAAAAAABBAAAEzUQNFMxXytvfkGQUa8CAGjeuOrlAAAAoAAAAAfAAAAkAAAAgUA
EEANBQQA4EABBgUAMDAAAAAAAAAAAQLAAAAxMFUTpDp969s3M4QReORYqdKVuaEAAAADAAAAAwEAAAAAAAAAAAAAAAAA
AAAAwKAMcAFzFXSFUTB5UQSNDXVNXZyNHANl2Yy92cvZGdg4UZ0d3bytGAAIAAMBQMAAAAAAgK+AsmQAQVzVmczAAOAgA
AEAw7+qiP5qpK+AsmqAAAAwiAAAAAA8DAAAAAAAAAAAAAAAAAAAAQVAMHAlBgcAMDAAAAFAIFAxAAAAAAAq4juaKBABBHc
EFGdhBAPAgAAEAw7+qiP5qpK+ormqAAAAUWBAAAAAwBAAAAAAAAAAAAAAAAAAAAAQQAAHAwBARAEGA0BQYAAAAWAgUAEDAA
AAAAoiPlsIEAI1bh1WaudGA8AACAQAAv7rK+krmq4TuaqCAAAgZFAAAAAATAAAAAAAAAAAAAAAAAAAAASBwbAEGAtBQaA4
GAnBAAAYBAYBQMAAAAAAgK+0+mUAQTJNkUPNlfxAAAABACAQAAv7rK+krmq4T7bqCAAAwZFAAAAAwKAAAAAAAAAAAAAAAA
AAAAANBQaAMGAyBwbAMHAvBgZAQHAAAAGAIFAxAAAAAAAq4z6aCBAXlmbk92dzBAPAgAAEAw7+qiP5qpK+sumqAAAAgWB
AAAAA4CAAAAAAAAAAAAAAAAAAAAAwVAkGAuBAZA8GA3BwcAAAAWAAWAEDAAAAAAoiPxxZEAwUSCJVQS5XMAAAQAgAAEAw7+
qiPArpK+EHnqAAAAgjBAAAAA0BAAAAAAAAAAAAAAAAAAAAATAkGAiBgcAEGAyBQaAUGAzBAAAgBAaCgMAMjDAAgK+AHngA
ARPNUVNVkfx4CTJJEAA4HAIAABA8uvq4DwaqiPwxpKAAAAIdAAAAAAUAAAAAAAAAAAAQFAAAAAAQEAvBwYAUHAtBQZA4G
A0BwcA4CAsBQaAIGAyBQYAIHA5BQLA0GAzBAAAAEAzBAaAUGAsBAbAMDAyAgLAQGAsBAbAwCAtAwMAQDA1AwNAUDAAAAH
AAAAGOAAAkAAAAqeDAAAxMFUTJuiYZEvMhzQ7y/ETaCmt5cHAAAACAAAAAASAAAAJY0GRu36U3ktVZZtUcD1tG0AAAwAA
AAAAEBEAAwLDAAAUAwHQB+TQDi66kGEiiNCAsCMw0ZGA8yQ6wFAAAAAAAAAAAAAAAAAAAAAAAAA0BQMAAAAAgK+krmRA
QVzVmczBAYAgAAEAw7+qiPG3jK+krmqAAAAsHLAAAAA4AAAAAAAAAAAAgNAAAAAAQVAMHAlBgcAMHAAAAQAMHAoBQZAwG
AsBwMAIDAuAAZAwGAsBALA0CAyAQMAgDAxAwMAAAAUAATAEDAAAAAAoiPArJEAU1clJ3MAgDAIAABA8uvq4TuaqiPArpK
AAAAsIAAAAAA/AAAAAAAAAAAAAAAAAAAAAUFAzBQZAIHAzAAAAQBASBQMAAAAAAgK+ormSAQQwBHRhRXYAwDAIAABA8uvq
4TuaqiP6qpKAAAAlVAAAAAAcAAAAAAAAAAAAAAAAAAAAAEEAwBAcAQEAhBAdAEGAAAgFAIFAxAAAAAAAq4TJLCBAS9WYtl
mbnBAPAgAAEAw7+qiP5qpK+krmqAAAAYWBAAAAAwEAAAAAAAAAAAAAAAAAAAAgUA8GAhBQbAkGAuBwZAAAAWAAWAEDAAAA
AAoiPtvJFA0USDJ1TT5XMAAAQAgAAEAw7+qiP5qpK+0+mqAAAAcWBAAAAAsCAAAAAAAAAAAAAAAAAAAAAQTAkGAjBgcA8GA
zBwbAYGA0BAAAgBASBQMAAAAAAgK+sumQAwVp5GZvd3cAwDAIAABA8uvq4TuaqiPrrpKAAAAoVAAAAAAuAAAAAAAAAAAA
AAAAAAAAcFApBgbAQGAvBwdAMHAAAgFAgFAxAAAAAAAq4TccGBAMlkQSFkU+FDAAAEAIAABA8uvq4DwaqiPxxpKAAAA4Y
AAAAAAdAAAAAAAAAAAAAAAAAAAAAwEApBgYAIHAhBgcAkGAlBwcAAAAYAgmAIDAz4AAAoiPwxJIAQ0TDVVTF5XMuwUSCBA
A+BACAQAAv7rK+Asmq4DccqCAAAASHAAAAAAFAAAAAAAAAAAAAUBAAAAAAEBwbAMGA1BQbAUGAuBAdAMHAuAAbAkGAiBgc
AEGAyBQeA0CAtBwcAAAAABwcAgGAlBAbAwGAzAgMA4CAkBAbAwGAsAQLAMDA0AQNAcDA1AAAAwBAAAAAAAAAAAAAAAAYA
AAADAAAgiFAAAAAAAAAyFWbh5WYyNDAAAAAAAAAAAYBUMPRbHc/Sy2G3HIG2MWWpd2MuuzB4R04FAQhIX54YWAFzT02B3v
kstx9BihNjlVanNjr7cAeENeBAUIyVOOGAAAAA</sl>        <ul>          <u>           <s>S-1-11-96-
3623454863-58364-18864-2661722203-1597581903-1555942514-2007325574-4116307836-2518318601-
3450682263</s>          </u>          <u>            <s>S-1-11-96-3623454863-58364-18864-
2661722203-1597581903-1847293483-3855340794-256571992-1330011019-2935621724</s>          </u>
</ul>      </i>    </dil>
 </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
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
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
```

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 updates to those products.

- Windows 7 operating system
- Windows Home Server 2011 server software
- Windows 8 operating system
- Windows 8.1 operating system
- Windows 10 operating system

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent 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 1.3: This protocol is disabled in Windows 10 v1803 operating system.

6 Change Tracking

This section identifies changes that were made to this document since 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.

Section	Description	Revision class
1.3 Overview	Updated for this version of Windows Client.	Major

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