[MS-OXWSDLIST]: Distribution List Creation and Usage Web Service Protocol Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
07/15/2009	1.0	Major	Initial Availability.
11/04/2009	1.0.1	Editorial	Revised and edited the technical content.
02/10/2010	2.0.0	Major	Updated and revised the technical content.
05/05/2010	2.0.1	Editorial	Revised and edited the technical content.
08/04/2010	2.1	Minor	Clarified the meaning of the technical content.
11/03/2010	2.1	No change	No changes to the meaning, language, or formatting of the technical content.
03/18/2011	2.1	No change	No changes to the meaning, language, or formatting of the technical content.
08/05/2011	2.2	Minor	Clarified the meaning of the technical content.
10/07/2011	2.2	No change	No changes to the meaning, language, or formatting of the technical content.
01/20/2012	3.0	Major	Significantly changed the technical content.
04/27/2012	3.0	No change	No changes to the meaning, language, or formatting of the technical content.
07/16/2012	3.1	Minor	Clarified the meaning of the technical content.

Table of Contents

1 Introduction

This document specifies the Distribution List Creation and Usage Web Service protocol.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

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

XML

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

distribution list
mailbox
SOAP message
store
Web server
Web Services Description Language (WSDL)
WSDL message
WSDL port type
XML schema

The following terms are specific to this document:

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 Specifications documentation do not include a publishing year because links are to the latest version of the technical 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.

[MS-OXWSCDATA] Microsoft Corporation, "Common Web Service Data Types".

[MS-OXWSCONT] Microsoft Corporation, "Contacts Web Service Protocol Specification".

[MS-OXWSCORE] Microsoft Corporation, "Core Items Web Service Protocol Specification".

[MS-OXWSFOLD] Microsoft Corporation, "Folders and Folder Permissions Web Service 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

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000, http://www.ietf.org/rfc/rfc2818.txt

[RFC3066] Alvestrand, H., "Tags for the Identification of Language", RFC 3066, January 2001, http://www.ietf.org/rfc/rfc3066.txt

[SOAP1.1] Box, D., Ehnebuske, D., Kakivaya, G., et al., "Simple Object Access Protocol (SOAP) 1.1", May 2000, http://www.w3.org/TR/2000/NOTE-SOAP-20000508/

[WSDL] Christensen, E., Curbera, F., Meredith, G., and Weerawarana, S., "Web Services Description Language (WSDL) 1.1", W3C Note, March 2001, http://www.w3.org/TR/2001/NOTE-wsdl-20010315

[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/

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

1.2.2 Informative References

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

[MS-OXGLOS] Microsoft Corporation, "Exchange Server Protocols Master Glossary".

1.3 Overview

The Distribution List Creation and Usage Web Service protocol provides clients with the ability to query the server for **distribution lists** and to expand a distribution list into the constituent e-mail addresses. In addition, it provides the capability to create, delete, get, move, update, and copy distribution lists.

1.4 Relationship to Other Protocols

The Distribution List Creations and Usage Web Service protocol uses SOAP over HTTP and SOAP over HTTPS [RFC2818], as shown in the following figures.

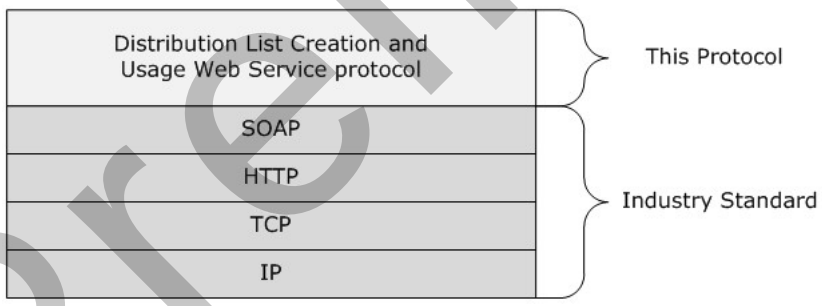

Figure 1: Distribution List Creations and Usage Web Service protocol HTTP stack

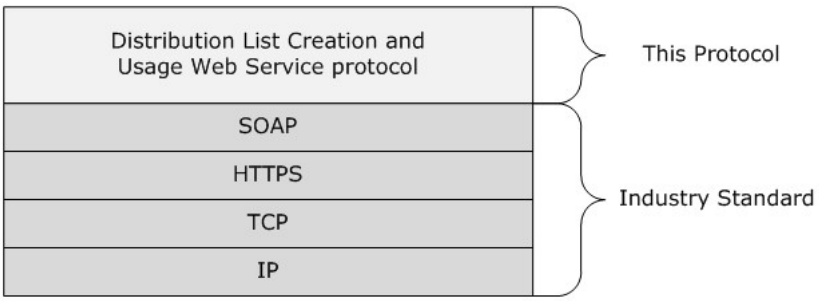

Figure 2: Distribution List Creations and Usage Web Service protocol HTTPS stack

1.5 Prerequisities/Preconditions

None.

1.6 Applicability Statement

This protocol is applicable to client programs that use distribution lists for directing items to multiple e-mail addresses.

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports:** This protocol uses SOAP 1.1, as specified in section 2.1.
- **Protocol Versions:** This protocol specifies only one **WSDL port type** version.
- **Security and Authentication Methods:** This protocol relies on the **Web server** that is hosting it to perform authentication.
- **Localization:** This protocol includes text strings in various messages. Localization considerations for such strings are specified in section 3.1.4.
- **Capability Negotiation:** None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

In the following sections, the schema definition might differ from the processing rules imposed by the protocol. The **WSDL** in this specification provides a base description of the protocol. The schema in this specification provides a base description of the message syntax. The text that specifies the WSDL and schema might specify restrictions that reflect actual protocol behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **not null**, or **present**.

2.1 Transport

The SOAP version supported is SOAP 1.1, as specified in [SOAP1.1].

2.2 Common Message Syntax

This section contains common definitions that are used by this protocol. The syntax of the definitions uses XML schema, as defined in [XMLSCHEMA1] and [XMLSCHEMA2], and Web Services Description Language (WSDL), as defined in [WSDL].

2.2.1 Namespaces

This specification defines and references various XML namespaces using the mechanisms specified in [XMLNS]. Although this specification 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
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
tns	http://schemas.microsoft.com/exchange/services/2006/messages	[MS-OXWSDLIST]
s	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA2]
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA2]
targetNamespace	http://schemas.microsoft.com/exchange/services/2006/messages	[MS-OXWSDLIST]
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
t	http://schemas.microsoft.com/exchange/services/2006/types	[MS-OXWSDLIST]

2.2.2 Messages

This specification does not define any common **WSDL message** definitions.

2.2.3 Elements

This specification does not define any common **XML schema** element definitions.

2.2.4 Complex Types

The following table summarizes the set of common XML schema complex type definitions that are defined by this specification. XML schema complex type definitions that are specific to a particular operation are defined with the operation.

Complex Type	Description
m:ExpandDLResponseMessageType	Contains the status and result of a single **ExpandDL** request.
t:ArrayOfDLExpansionType	Contains an array of **mailboxes** that are contained in a distribution list.
t:DistributionListType	Represents a distribution list.
t:MembersListType	Represents the member type.
t:MemberType	Provides an identifier for a fully resolved e-mail address, and the status of that address on the server.

2.2.4.1 m:ExpandDLResponseMessageType Complex Type

The **ExpandDLResponseMessageType** complex type contains the status and result of a single **ExpandDL** request.

```
<xs:complexType name="ExpandDLResponseMessageType">
  <xs:complexContent>
    <xs:extension
      base="m:ResponseMessageType"
    >
      <xs:sequence>
        <xs:element name="DLExpansion"
          type="t:ArrayOfDLExpansionType"
          minOccurs="0"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Child Elements

Element	Type	Description
DLExpansion	t:ArrayOfDLExpansionType	Contains an array of mailboxes that are contained in a distribution list.

2.2.4.2 t:ArrayOfDLExpansionType Complex Type

The **ArrayOfDLExpansionType** complex type contains an array of mailboxes that are contained in a distribution list.

```
<xs:complexType name="ArrayOfDLExpansionType">
  <xs:sequence>
```

```
      <xs:element name="Mailbox"
        type="t:EmailAddressType"
        maxOccurs="unbounded"
        minOccurs="0"
       />
    </xs:sequence>
    <xs:attributeGroup
      ref="t:FindResponsePagingAttributes"
     />
  </xs:complexType>
```

Child Elements

Element	Type	Description
Mailbox	**t:EmailAddressType** ([MS-OXWSCDATA] section 2.2.4.27)	Represents an e-mail address.

Attribute Groups

Name
t:FindResponsePagingAttributes

2.2.4.3 t:DistributionListType Complex Type

The **DistributionListType** complex type represents a distribution list.

```
<xs:complexType name="DistributionListType">
  <xs:complexContent>
    <xs:extension
      base="t:ItemType"
    >
      <xs:sequence>
        <xs:element name="DisplayName"
          type="xs:string"
          minOccurs="0"
         />
        <xs:element name="FileAs"
          type="xs:string"
          minOccurs="0"
         />
        <xs:element name="ContactSource"
          type="t:ContactSourceType"
          minOccurs="0"
         />
        <xs:element name="Members"
          type="t:MembersListType"
          minOccurs="0"
         />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Child Elements

Element	Type	Description
DisplayName	xs:string	Contains the display name for the distribution list.
FileAs	xs:string	Represents how a distribution list is filed in the Contacts folder.
ContactSource	**t:ContactSourceType** ([MS-OXWSCONT] section 2.2.5.1)	Describes whether the distribution list is located in the messaging server **store** or in the directory service.
Members	t:MembersListType	Contains a list of members in a distribution list.

2.2.4.4 t:MembersListType Complex Type

The **MembersListType** complex type represents the collection of distribution list members.

```
<xs:complexType name="MembersListType">
  <xs:sequence>
    <xs:element name="Member"
      type="t:MemberType"
      maxOccurs="unbounded"
      minOccurs="0"
     />
  </xs:sequence>
</xs:complexType>
```

Child Elements

Element	Type	Description
Member	t:MemberType	Provides information about each member of the members collection.

2.2.4.5 t:MemberType Complex Type

The **MemberType** complex type provides information about each member of the members collection of the distribution list, containing a member's mailbox address, status and optional member's identifier in the collection.

```
<xs:complexType name="MemberType">
  <xs:sequence>
    <xs:element name="Mailbox"
      type="t:EmailAddressType"
      minOccurs="0"
     />
    <xs:element name="Status"
      type="t:MemberStatusType"
      minOccurs="0"
     />
  </xs:sequence>
  <xs:attribute name="Key"
```

```
    type="xs:string"
   />
</xs:complexType>
```

Child Elements

Element	Type	Description
Mailbox	**t:EmailAddressType** ([MS-OXWSCDATA] section 2.2.4.27)	Represents an e-mail address of a member.
Status	t:MemberStatusType	Provides information about the status of a distribution list member in the members' collection.

Attributes

Name	Type	Description
Key	xs:string	Represents a unique identification of the member in the members collection.

2.2.5 Simple Types

The following table summarizes the set of common XML schema simple type definitions defined by this specification. XML schema simple type definitions that are specific to a particular operation are described with the operation.

Simple Type	Description
t:MemberStatusType	Provides information as to the status of a distribution list member on the server.

2.2.5.1 t:MemberStatusType Simple Type

The **MemberStatusType** simple type provides information as to the status of a distribution list member on the server.

```
<xs:simpleType>
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
      value="Unrecognized"
     />
    <xs:enumeration
      value="Normal"
     />
    <xs:enumeration
      value="Demoted"
     />
  </xs:restriction>
</xs:simpleType>
```

Enumeration

The following values are defined by the simple type:

Value	Description
Unrecognized	Member information is invalid or unrecognized.
Normal	Member information in a distribution list is in sync with the referenced object.
Demoted	Referenced object is not available.

2.2.6 Attributes

This specification does not define any common XML schema attribute definitions.

2.2.7 Groups

This specification does not define any common XML schema group definitions.

2.2.8 Attribute Groups

This specification does not define any common XML schema attribute group definitions.

3 Protocol Details

The client side of this protocol is simply a pass-through. That is, no additional timers or other state is required on the client side of this protocol. Calls made by the higher-layer protocol or application are passed directly to the transport, and the results returned by the transport are passed directly back to the higher-layer protocol or application.

3.1 ExchangeServicePortType Server Details

This protocol defines a single port type.

Operation	Description
ExpandDL	Defines a request to expand a distribution list.
GetItem	Defines a request to get an item from a mailbox in the server.
DeleteItem	Defines a request to delete an item from a mailbox in the server.
UpdateItem	Defines a request to update an item in a mailbox.
MoveItem	Defines a request to move an item in the server.
CopyItem	Defines a request to copy an item in a mailbox in the server.
CreateItem	Defines a request to create an item in the server.

3.1.1 Abstract Data Model

This protocol is a stateless protocol.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing Rules

This protocol includes the operations listed in the following table.

Operation	Description
ExpandDL	Expands a distribution list.
GetItem	Gets items in the server.
DeleteItem	Deletes items in the server.
UpdateItem	Updates items in the server
MoveItem	Moves items in the server.
CopyItem	Copies items in the server.

Operation	Description
CreateItem	Creates items in the server.

3.1.4.1 ExpandDL

ExpandDL defines a request to expand a distribution list.

Request

Message Format	Description
tns:ExpandDLSoapIn	Specifies the **SOAP message** that requests an expanded distribution list.

Response

Message Format	Description
tns:ExpandDLSoapOut	Specifies the SOAP message returned by the server in response.

3.1.4.1.1 Complex Types

The following XML schema complex type definitions are specific to this operation.

Type	Description
m:ExpandDLResponseType	Defines a response to a request to expand a distribution list.
m:ExpandDLType	Represents a request to expand a distribution list.

3.1.4.1.1.1 m:ExpandDLResponseType Complex Type

The **ExpandDLResponseType** complex type defines a response to a request to expand a distribution list.

```
<xs:complexType name="ExpandDLResponseType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseResponseMessageType"
     />
  </xs:complexContent>
</xs:complexType>
```

3.1.4.1.1.2 m:ExpandDLType Complex Type

The **ExpandDLType** complex type represents a request to expand a distribution list.

```
<xs:complexType name="ExpandDLType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseRequestType"
    >
```

```
      <xs:sequence>
        <xs:element name="Mailbox"
          type="t:EmailAddressType"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Child Elements

Element	Type	Description
Mailbox	**t:EmailAddressType** ([MS-OXWSCDATA] section 2.2.4.27)	Represents an e-mail address of a distribution list member.

3.1.4.1.2 Elements

The following XML schema element definitions are specific to this operation.

Element	Description
tns:ExpandDL	Contains a request to expand a distribution list.
tns:ExpandDLResponse	Defines a response to a request to expand a distribution list.

3.1.4.1.2.1 ExpandDL Element

The **ExpandDL** element defines a request to expand a distribution list.

```
<xs:element name="ExpandDL"
  type="m:ExpandDLType"
 />
```

3.1.4.1.2.2 ExpandDLResponse Element

The **ExpandDLResponse** element defines a response to a request to expand a distribution list.

```
<xs:element name="ExpandDLResponse"
  type="m:ExpandDLResponseType"
 />
```

3.1.4.1.3 Messages

The following XML schema message definitions are specific to this operation.

Message	Description
tns:ExpandDLSoapIn	Contains the request information, the user whom the client application is

Message	Description
	impersonating, the culture to use for accessing the mailbox, and the schema version for the request.
tns:ExpandDLSoapOut	Contains the response message and the schema version for the response message.

3.1.4.1.3.1 tns:ExpandDLSoapIn

The **ExpandDLSoapIn** message contains four parts, as described in the following table.

Part Name	Element/Type	Description
Request	tns:ExpandDL	Specifies the request.
Impersonation	**t:ExchangeImpersonation** ([MS-OXWSCDATA] section 2.2.5.3)	Specifies the user whom the client application is impersonating.
MailboxCulture	**t:MailboxCulture** ([MS-OXWSCDATA] section 2.2.5.6)	Specifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066].
RequestVersion	**t:RequestServerVersion** ([MS-OXWSCDATA] section 2.2.5.9)	Specifies the schema version for the ExpandDL request.

3.1.4.1.3.2 tns:ExpandDLSoapOut

The **ExpandDLSoapOut** message contains two parts, as described in the following table.

Part Name	Element/Type	Description
ExpandDLResult	tns:ExpandDLResponse	Specifies the response message.
ServerVersion	**t:ServerVersionInfo** ([MS-OXWSCDATA] section 2.2.5.10)	Specifies the schema version for the tns:ExpandDLResponse message.

3.1.4.2 GetItem

This protocol uses the **GetItem** operation specified in [MS-OXWSCORE] section 3.1.4.4 to get distribution list item elements.

```
<wsdl:operation name="GetItem">
          <wsdl:input message="tns:GetItemSoapIn" />
          <wsdl:output message="tns:GetItemSoapOut" />
</wsdl:operation>
```

Request

Message Format	Description
tns:GetItemSoapIn ([MS-OXWSCORE] section 3.1.4.4.1.1)	Specifies the SOAP message that defines the distribution list item to get. The **Items** child element of the **GetItem** ([MS-OXWSCORE] section 3.1.4.4) child element that specifies the **XML** request MUST contain the following elements: **t:ItemResponseShapeType** ([MS-OXWSCDATA] section

Message Format	Description
	2.2.4.38) and **t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.18). All other elements MUST be empty.

Response

Message Format	Description
tns:GetItemSoapOut ([MS-OXWSCORE] section 3.1.4.4.1.2)	Specifies the SOAP message returned by the server in response. The server returns a **t:ItemResponseShapeType** element that contains properties associated with the distribution list item.

3.1.4.3 DeleteItem

This protocol uses the **DeleteItem** operation specified in [MS-OXWSCORE] section 3.1.4.3 to delete distribution list item elements.

```
<wsdl:operation name="DeleteItem">
            <wsdl:input message="tns:DeleteItemSoapIn" />
            <wsdl:output message="tns:DeleteItemSoapOut" />
</wsdl:operation>
```

Request

Message Format	Description
tns:DeleteItemSoapIn ([MS-OXWSCORE] section 3.1.4.3.1.1)	Specifies the SOAP message that defines the distribution list item to delete. The **Items** child element of the **DeleteItem** ([MS-OXWSCORE] section 3.1.4.3) child element that specifies the XML request MUST contain one or more **t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.18) elements. All other elements MUST be empty.

Response

Message Format	Description
tns:DeleteItemSoapOut ([MS-OXWSCORE] section 3.1.4.3.1.2)	Specifies the SOAP message returned by the server in response.

3.1.4.4 UpdateItem

This protocol uses the **UpdateItem** operation specified in [MS-OXWSCORE] section 3.1.4.8 to update distribution list item elements.

```
<wsdl:operation name="UpdateItem">
            <wsdl:input message="tns:UpdateItemSoapIn" />
            <wsdl:output message="tns:UpdateItemSoapOut" />
</wsdl:operation>
```

Request

Message Format	Description
tns:UpdateItemSoapIn ([MS-OXWSCORE] section 3.1.4.8.1.1)	Specifies the SOAP message that defines the distribution list item to update. The **Items** child element of the **UpdateItem** ([MS-OXWSCORE] section 3.1.4.8) child element that specifies the XML request MUST contain one or more t:DistributionListType elements. All other elements MUST be empty.

Response

Message Format	Description
tns:UpdateItemSoapOut ([MS-OXWSCORE] section 3.1.4.8.1.2)	Specifies the SOAP message returned by the server in response.

3.1.4.5 MoveItem

This protocol uses the **MoveItem** operation specified in [MS-OXWSCORE] section 3.1.4.6 to move distribution list item elements.

```
<wsdl:operation name="MoveItem">
            <wsdl:input message="tns:MoveItemSoapIn" />
            <wsdl:output message="tns:MoveItemSoapOut" />
</wsdl:operation>
```

Request

Message Format	Description
tns:MoveItemSoapIn ([MS-OXWSCORE] section 3.1.4.6.1.1)	Specifies the SOAP message that defines the distribution list item to move. The **Items** child element of the **MoveItem** ([MS-OXWSCORE] section 3.1.4.6) child element that specifies the XML request MUST contain the following elements: **t:TargetFolderIdType** ([MS-OXWSFOLD] section 2.2.4.14) and **t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.18). All other elements MUST be empty.

Response

Message Format	Description
tns:MoveItemSoapOut ([MS-OXWSCORE] section 3.1.4.6.1.2)	Specifies the SOAP message returned by the server in response.

3.1.4.6 CopyItem

This protocol uses the **CopyItem** operation specified in [MS-OXWSCORE] section 3.1.4.1 to copy distribution list item elements.

```
<wsdl:operation name="CopyItem">
            <wsdl:input message="tns:CopyItemSoapIn" />
            <wsdl:output message="tns:CopyItemSoapOut" />
</wsdl:operation>
```

Request

Message Format	Description
tns:CopyItemSoapIn ([MS-OXWSCORE] section 3.1.4.1.1.1)	Specifies the SOAP message that defines the distribution list item to copy. The **Items** child element of the **CopyItem** child element that specifies the XML request MUST contain the following elements: **t:TargetFolderIdType** ([MS-OXWSFOLD] section 2.2.4.14) and **t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.18). All other elements MUST be empty.

Response

Message Format	Description
tns:CopyItemSoapOut ([MS-OXWSCORE] section 3.1.4.1.1.2)	Specifies the SOAP message returned by the server in response.

3.1.4.7 CreateItem

This protocol uses the **CreateItem** operation specified in [MS-OXWSCORE] section 3.1.4.2 to create distribution list item elements.

```
<wsdl:operation name="CreateItem">
     <wsdl:input message="tns:CreateItemSoapIn" />
     <wsdl:output message="tns:CreateItemSoapOut" />
</wsdl:operation>
```

Request

Message Format	Description
tns:CreateItemSoapIn ([MS-OXWSCORE] section 3.1.4.2.1.1)	Specifies the SOAP message that defines the distribution list item to create. The **Items** child element of the **CreateItem** child element that specifies the XML request MUST contain one or more t:DistributionListType elements. All other elements MUST be empty.

Response

Message Format	Description
tns:CreateItemSoapOut ([MS-OXWSCORE] section 3.1.4.2.1.2)	Specifies the SOAP message returned by the server in response.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

3.2 Client Details

The client side of this protocol is simply a pass-through. That is, no additional timers or other state is required on the client side of this protocol. Calls made by the higher-layer protocol or application are passed directly to the transport, and the results returned by the transport are passed directly back to the higher-layer protocol or application.

3.2.1 Client Abstract Data Model

None.

3.2.2 Client Timers

None.

3.2.3 Client Initialization

None.

3.2.4 Client Message Processing Events and Sequencing

None.

3.2.5 Client Timer Events

None.

3.2.6 Client Other Local Events

None.

4 Protocol Examples

None.

5 Security

5.1 Security Considerations for Implementers

This protocol does not use additional security mechanisms.

5.2 Index of Security Parameters

None.

6 Appendix A: Full WSDL

The following table lists the XML files that are required to implement the functionality that is specified in this document. The contents of each file are included in this section.

File name	Description	Section
MS-OXWSDLIST.wsdl	Contains the WSDL for the implementation of this protocol.	6.1
MS-OXWSDLIST-types.xsd	Contains the XML schema type definitions that are used in this protocol.	6.2
MS-OXWSDLIST-messages.xsd	Contains the XML schema message definitions that are used in this protocol.	6.3

These files need to be placed in a common folder for the WSDL to validate and operate. Also, any schema files that are included in or imported into the MS-OXWSGTRM-types.xsd or MS-OXWSGTRM-messages.xsd schemas need to be placed in the common folder with these files.

For ease of implementation, the full WSDL and schemas are provided in the following sections.

6.1 WSDL

This section contains the contents of the MS-OXWSDLIST.wsdl file.

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:s="http://www.w3.org/2001/XMLSchema" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages">
  <wsdl:types>
    <xs:schema id="messages" elementFormDefault="qualified" version="Exchange2012"
xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
      <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
schemaLocation="MS-OXWSCORE-types.xsd"/>
      <xs:include schemaLocation="MS-OXWSDLIST-messages.xsd"/>



      <!-- Add global elements and types from messages.xsd -->
    </xs:schema>
    <xs:schema id="types" elementFormDefault="qualified" version="Exchange2012"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
      <!-- Add global elements and types from types.xsd -->
    </xs:schema>
  </wsdl:types>
  <wsdl:portType name="ExchangeServicePortType">
```

```
        <wsdl:operation name="ExpandDL">
            <wsdl:input message="tns:ExpandDLSoapIn" />
            <wsdl:output message="tns:ExpandDLSoapOut" />
        </wsdl:operation>

    <wsdl:operation name="GetItem">
      <wsdl:input message="tns:GetItemSoapIn"/>
      <wsdl:output message="tns:GetItemSoapOut"/>
    </wsdl:operation>
    <wsdl:operation name="CreateItem">
      <wsdl:input message="tns:CreateItemSoapIn"/>
      <wsdl:output message="tns:CreateItemSoapOut"/>
    </wsdl:operation>
    <wsdl:operation name="DeleteItem">
      <wsdl:input message="tns:DeleteItemSoapIn"/>
      <wsdl:output message="tns:DeleteItemSoapOut"/>
    </wsdl:operation>
    <wsdl:operation name="UpdateItem">
      <wsdl:input message="tns:UpdateItemSoapIn"/>
      <wsdl:output message="tns:UpdateItemSoapOut"/>
    </wsdl:operation>
    <wsdl:operation name="MoveItem">
      <wsdl:input message="tns:MoveItemSoapIn"/>
      <wsdl:output message="tns:MoveItemSoapOut"/>
    </wsdl:operation>
    <wsdl:operation name="CopyItem">
      <wsdl:input message="tns:CopyItemSoapIn"/>
      <wsdl:output message="tns:CopyItemSoapOut"/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="ExchangeServiceBinding" type="tns:ExchangeServicePortType">
    <wsdl:documentation>
      <wsi:Claim conformsTo="http://ws-i.org/profiles/basic/1.0" xmlns:wsi="http://ws-
i.org/schemas/conformanceClaim/"/>
    </wsdl:documentation>
    <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="GetItem">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetItem"/>
      <wsdl:input>
        <soap:header message="tns:GetItemSoapIn" part="Impersonation" use="literal"/>
        <soap:header message="tns:GetItemSoapIn" part="MailboxCulture" use="literal"/>
        <soap:header message="tns:GetItemSoapIn" part="RequestVersion" use="literal"/>
        <soap:header message="tns:GetItemSoapIn" part="TimeZoneContext" use="literal"/>
        <soap:body parts="request" use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="GetItemResult" use="literal"/>
        <soap:header message="tns:GetItemSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateItem">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/CreateItem"/>
      <wsdl:input>
        <soap:header message="tns:CreateItemSoapIn" part="Impersonation" use="literal"/>
        <soap:header message="tns:CreateItemSoapIn" part="MailboxCulture" use="literal"/>
        <soap:header message="tns:CreateItemSoapIn" part="RequestVersion" use="literal"/>
```

```
        <soap:header message="tns:CreateItemSoapIn" part="TimeZoneContext" use="literal"/>
        <soap:body parts="request" use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="CreateItemResult" use="literal"/>
        <soap:header message="tns:CreateItemSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteItem">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/DeleteItem"/>
      <wsdl:input>
        <soap:header message="tns:DeleteItemSoapIn" part="Impersonation" use="literal"/>
        <soap:header message="tns:DeleteItemSoapIn" part="MailboxCulture" use="literal"/>
        <soap:header message="tns:DeleteItemSoapIn" part="RequestVersion" use="literal"/>
        <soap:body parts="request" use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="DeleteItemResult" use="literal"/>
        <soap:header message="tns:DeleteItemSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="UpdateItem">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/UpdateItem"/>
      <wsdl:input>
        <soap:header message="tns:UpdateItemSoapIn" part="Impersonation" use="literal"/>
        <soap:header message="tns:UpdateItemSoapIn" part="MailboxCulture" use="literal"/>
        <soap:header message="tns:UpdateItemSoapIn" part="RequestVersion" use="literal"/>
        <soap:header message="tns:UpdateItemSoapIn" part="TimeZoneContext" use="literal"/>
        <soap:body parts="request" use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="UpdateItemResult" use="literal"/>
        <soap:header message="tns:UpdateItemSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="MoveItem">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/MoveItem"/>
      <wsdl:input>
        <soap:header message="tns:MoveItemSoapIn" part="Impersonation" use="literal"/>
        <soap:header message="tns:MoveItemSoapIn" part="MailboxCulture" use="literal"/>
        <soap:header message="tns:MoveItemSoapIn" part="RequestVersion" use="literal"/>
        <soap:body parts="request" use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="MoveItemResult" use="literal"/>
        <soap:header message="tns:MoveItemSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CopyItem">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/CopyItem"/>
      <wsdl:input>
        <soap:header message="tns:CopyItemSoapIn" part="Impersonation" use="literal"/>
        <soap:header message="tns:CopyItemSoapIn" part="MailboxCulture" use="literal"/>
        <soap:header message="tns:CopyItemSoapIn" part="RequestVersion" use="literal"/>
        <soap:body parts="request" use="literal"/>
```

```
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="CopyItemResult" use="literal"/>
        <soap:header message="tns:CopyItemSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
            <wsdl:operation name="ExpandDL">
            <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/ExpandDL" />
            <wsdl:input>
                <soap:header message="tns:ExpandDLSoapIn" part="Impersonation"
use="literal"/>
                <soap:header message="tns:ExpandDLSoapIn" part="MailboxCulture"
use="literal"/>
                <soap:header message="tns:ExpandDLSoapIn" part="RequestVersion"
use="literal"/>
                <soap:body parts="request" use="literal" />
            </wsdl:input>
            <wsdl:output>
                <soap:body parts="ExpandDLResult" use="literal" />
                <soap:header message="tns:ExpandDLSoapOut" part="ServerVersion"
use="literal"/>
            </wsdl:output>
        </wsdl:operation>
  </wsdl:binding>

    <wsdl:message name="ExpandDLSoapIn">
        <wsdl:part name="request" element="tns:ExpandDL" />
        <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
        <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
        <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
    </wsdl:message>
    <wsdl:message name="ExpandDLSoapOut">
        <wsdl:part name="ExpandDLResult" element="tns:ExpandDLResponse" />
        <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
    </wsdl:message>

  <wsdl:message name="GetItemSoapIn">
    <wsdl:part name="request" element="tns:GetItem"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
    <wsdl:part name="TimeZoneContext" element="t:TimeZoneContext"/>
  </wsdl:message>
  <wsdl:message name="GetItemSoapOut">
    <wsdl:part name="GetItemResult" element="tns:GetItemResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:message name="CreateItemSoapIn">
    <wsdl:part name="request" element="tns:CreateItem"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
    <wsdl:part name="TimeZoneContext" element="t:TimeZoneContext"/>
  </wsdl:message>
  <wsdl:message name="CreateItemSoapOut">
    <wsdl:part name="CreateItemResult" element="tns:CreateItemResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
```

```
  <wsdl:message name="DeleteItemSoapIn">
    <wsdl:part name="request" element="tns:DeleteItem"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
  </wsdl:message>
  <wsdl:message name="DeleteItemSoapOut">
    <wsdl:part name="DeleteItemResult" element="tns:DeleteItemResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:message name="UpdateItemSoapIn">
    <wsdl:part name="request" element="tns:UpdateItem"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
    <wsdl:part name="TimeZoneContext" element="t:TimeZoneContext"/>
  </wsdl:message>
  <wsdl:message name="UpdateItemSoapOut">
    <wsdl:part name="UpdateItemResult" element="tns:UpdateItemResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:message name="MoveItemSoapIn">
    <wsdl:part name="request" element="tns:MoveItem"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
  </wsdl:message>
  <wsdl:message name="MoveItemSoapOut">
    <wsdl:part name="MoveItemResult" element="tns:MoveItemResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:message name="CopyItemSoapIn">
    <wsdl:part name="request" element="tns:CopyItem"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
  </wsdl:message>
  <wsdl:message name="CopyItemSoapOut">
    <wsdl:part name="CopyItemResult" element="tns:CopyItemResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
</wsdl:definitions>
```

6.2 Types Schema

This section contains the contents of the MS-OXWSDLIST-types.xsd file and information about additional files that this schema file requires to operate correctly.

For MS-OXWSDLIST-types.xsd to operate correctly the file shown in the following table needs to be present in the folder that contains the WSDL, types schema and messages schema files for this protocol.

Defining specification	File name
[MS-OXWSCDATA] section 7.2	MS-OXWSDATA-types.xsd

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<xs:schema xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
elementFormDefault="qualified" version="Exchange2012" id="messages">
  <xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
  <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
schemaLocation="MS-OXWSCDATA-types.xsd"/>
  <xs:complexType name="ExpandDLType">
    <xs:complexContent>
      <xs:extension base="m:BaseRequestType">
        <xs:sequence>
          <xs:element name="Mailbox" type="t:EmailAddressType"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="ExpandDL" type="m:ExpandDLType"/>
  <xs:complexType name="ExpandDLResponseMessageType">
    <xs:complexContent>
      <xs:extension base="m:ResponseMessageType">
        <xs:sequence>
          <xs:element name="DLExpansion" type="t:ArrayOfDLExpansionType" minOccurs="0"/>
        </xs:sequence>
        <xs:attributeGroup ref="t:FindResponsePagingAttributes"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ExpandDLResponseType">
    <xs:complexContent>
      <xs:extension base="m:BaseResponseMessageType"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="ExpandDLResponse" type="m:ExpandDLResponseType"/>
</xs:schema>
```

6.3 Messages Schema

This section contains the contents of the MS-OXWSDLIST-messages.xsd file and information about additional files that this schema file requires to operate correctly.

For MS-OXWSDLIST-messages.xsd to operate correctly the file shown in the following table needs to be present in the folder that contains the WSDL, types schema and messages schema files for this protocol.

Defining specification	File name
[MS-OXWSCDATA] section 7.1	MS-OXWSCDATA-messages.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
elementFormDefault="qualified" version="Exchange2012" id="types">
  <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
  <xs:include schemaLocation="MS-OXWSCDATA-types.xsd"/>
```

```
  <xs:complexType name="ArrayOfDLExpansionType">
    <xs:sequence>
      <xs:element name="Mailbox" type="t:EmailAddressType" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attributeGroup ref="t:FindResponsePagingAttributes"/>
  </xs:complexType>
  <xs:complexType name="DistributionListType">
    <xs:complexContent>
      <xs:extension base="t:ItemType">
        <xs:sequence>
          <xs:element name="DisplayName" type="xs:string" minOccurs="0"/>
          <xs:element name="FileAs" type="xs:string" minOccurs="0"/>
          <xs:element name="ContactSource" type="t:ContactSourceType" minOccurs="0"/>
          <xs:element name="Members" type="t:MembersListType" minOccurs="0"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="MemberStatusType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Unrecognized"/>
      <xs:enumeration value="Normal"/>
      <xs:enumeration value="Demoted"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="MembersListType">
    <xs:sequence>
      <xs:element name="Member" type="t:MemberType" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="MemberType">
    <xs:sequence>
      <xs:element name="Mailbox" type="t:EmailAddressType" minOccurs="0"/>
      <xs:element name="Status" type="t:MemberStatusType" minOccurs="0"/>
    </xs:sequence>
    <xs:attribute name="Key" type="xs:string" use="optional"/>
  </xs:complexType>
</xs:schema>
```

7 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:

- Microsoft® Exchange Server 2010
- Microsoft® Exchange Server 2013 Preview

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.

8 Change Tracking

This section identifies changes that were made to the [MS-OXWSDLIST] protocol document between the April 2012 and July 2012 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
6.1 WSDL	Updates WSDL.	N	Content updated.
6.2 Types Schema	Updates types schema.	N	Content updated.
6.3 Messages Schema	Updates messages schema.	N	Content updated.

9 Index