Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation ("this documentation") for protocols, file formats, data portability, computer languages, and standards support. Additionally, overview documents cover inter-protocol relationships and interactions.

- **Copyrights.** This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you can make copies of it in order to develop implementations of the technologies that are described in this documentation and can distribute portions of it in your implementations that use these technologies or in your documentation as necessary to properly document the implementation. You can also distribute in your implementation, with or without modification, any schemas, IDLs, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications documentation.

- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.

- **Patents.** Microsoft has patents that might cover your implementations of the technologies described in the Open Specifications documentation. Neither this notice nor Microsoft's delivery of this documentation grants any licenses under those patents or any other Microsoft patents. However, a given Open Specifications document might be covered by the Microsoft Open Specifications Promise or the Microsoft Community Promise. If you would prefer a written license, or if the technologies described in this documentation are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting iplg@microsoft.com.

- **License Programs.** To see all of the protocols in scope under a specific license program and the associated patents, visit the Patent Map.

- **Trademarks.** The names of companies and products contained in this documentation might be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit www.microsoft.com/trademarks.

- **Fictitious Names.** The example companies, organizations, products, domain names, email addresses, logos, people, places, and events that are depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

**Reservation of Rights.** All other rights are reserved, and this notice does not grant any rights other than as specifically described above, whether by implication, estoppel, or otherwise.

**Tools.** The Open Specifications documentation does not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments, you are free to take advantage of them. Certain Open Specifications documents are intended for use in conjunction with publicly available standards specifications and network programming art and, as such, assume that the reader either is familiar with the aforementioned material or has immediate access to it.

**Support.** For questions and support, please contact dochelp@microsoft.com.
### Revision Summary

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision History</th>
<th>Revision Class</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/15/2009</td>
<td>1.0</td>
<td>Major</td>
<td>Initial Availability.</td>
</tr>
<tr>
<td>11/4/2009</td>
<td>1.0.1</td>
<td>Editorial</td>
<td>Revised and edited the technical content.</td>
</tr>
<tr>
<td>2/10/2010</td>
<td>1.2.0</td>
<td>Minor</td>
<td>Updated the technical content.</td>
</tr>
<tr>
<td>5/5/2010</td>
<td>1.2.1</td>
<td>Editorial</td>
<td>Revised and edited the technical content.</td>
</tr>
<tr>
<td>8/4/2010</td>
<td>1.3</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
<tr>
<td>11/3/2010</td>
<td>2.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>3/18/2011</td>
<td>3.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>8/5/2011</td>
<td>3.1</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
<tr>
<td>10/7/2011</td>
<td>3.1</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>1/20/2012</td>
<td>4.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>4/27/2012</td>
<td>4.0</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>7/16/2012</td>
<td>4.0</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>10/8/2012</td>
<td>5.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>2/11/2013</td>
<td>6.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>7/26/2013</td>
<td>6.1</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
<tr>
<td>11/18/2013</td>
<td>6.1</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>2/10/2014</td>
<td>6.1</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>4/30/2014</td>
<td>6.1</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>7/31/2014</td>
<td>6.1</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>10/30/2014</td>
<td>6.1</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>5/26/2015</td>
<td>7.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>9/14/2015</td>
<td>7.1</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
<tr>
<td>6/13/2016</td>
<td>7.2</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
<tr>
<td>9/14/2016</td>
<td>7.2</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>12/15/2016</td>
<td>7.3</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
<tr>
<td>Date</td>
<td>Revision History</td>
<td>Revision Class</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>----------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>7/24/2018</td>
<td>8.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>10/1/2018</td>
<td>9.0</td>
<td>Major</td>
<td>Significantly changed the technical content.</td>
</tr>
<tr>
<td>2/21/2023</td>
<td>9.1</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
<tr>
<td>8/15/2023</td>
<td>9.1</td>
<td>None</td>
<td>No changes to the meaning, language, or formatting of the technical content.</td>
</tr>
<tr>
<td>11/13/2023</td>
<td>9.2</td>
<td>Minor</td>
<td>Clarified the meaning of the technical content.</td>
</tr>
</tbody>
</table>
# Table of Contents

1 Introduction .............................................................................................................. 6
  1.1 Glossary ................................................................................................................. 6
  1.2 References .............................................................................................................. 7
  1.2.1 Normative References ....................................................................................... 7
  1.2.2 Informative References ...................................................................................... 8
  1.3 Overview .................................................................................................................. 8
  1.4 Relationship to Other Protocols ............................................................................ 9
  1.5 Prerequisites/Preconditions ................................................................................... 9
  1.6 Applicability Statement ......................................................................................... 10
  1.7 Versioning and Capability Negotiation ............................................................... 10
  1.8 Vendor-Extensible Fields ....................................................................................... 10
  1.9 Standards Assignments .......................................................................................... 10

2 Messages ................................................................................................................... 11
  2.1 Transport .................................................................................................................. 11
  2.2 Common Message Syntax ...................................................................................... 11
    2.2.1 Namespaces ....................................................................................................... 11
    2.2.2 Messages ........................................................................................................... 11
    2.2.3 Elements ........................................................................................................... 11
    2.2.4 Complex Types ................................................................................................ 12
    2.2.5 Simple Types .................................................................................................... 12
    2.2.6 Attributes ......................................................................................................... 12
    2.2.7 Groups .............................................................................................................. 12
    2.2.8 Attribute Groups .............................................................................................. 12
    2.2.9 Common Data Structures ................................................................................. 12

3 Protocol Details ......................................................................................................... 13
  3.1 ExchangeServicePortType Server Details ......................................................... 13
    3.1.1 Abstract Data Model ....................................................................................... 13
    3.1.2 Timers ................................................................................................................ 13
    3.1.3 Initialization ...................................................................................................... 13
    3.1.4 Message Processing Events and Sequencing Rules .................................... 13
      3.1.4.1 SyncFolderHierarchy ................................................................................. 14
        3.1.4.1.1 Messages ............................................................................................... 14
          3.1.4.1.1.1 tns:SyncFolderHierarchySoapIn Message ......................................... 15
          3.1.4.1.1.2 tns:SyncFolderHierarchySoapOut ................................................... 15
        3.1.4.1.2 Elements ............................................................................................... 16
          3.1.4.1.2.1 SyncFolderHierarchy Element ......................................................... 16
          3.1.4.1.2.2 SyncFolderHierarchyResponse Element ...................................... 16
        3.1.4.1.3 Complex Types ...................................................................................... 16
          3.1.4.1.3.1 t:SyncFolderHierarchyChangesType Complex Type .................... 17
          3.1.4.1.3.2 t:SyncFolderHierarchyCreateOrUpdateType Complex Type .......... 17
          3.1.4.1.3.3 t:SyncFolderHierarchyDeleteType Complex Type ...................... 18
          3.1.4.1.3.4 m:SyncFolderHierarchyResponseMessageType Complex Type .... 19
          3.1.4.1.3.5 m:SyncFolderHierarchyResponseType Complex Type ............... 20
          3.1.4.1.3.6 m:SyncFolderHierarchyType Complex Type ................................ 20
        3.1.4.1.4 Simple Types ......................................................................................... 21
        3.1.4.1.5 Attributes .............................................................................................. 21
        3.1.4.1.6 Groups ................................................................................................... 21
        3.1.4.1.7 Attribute Groups ................................................................................... 21
      3.1.4.2 SyncFolderItems ........................................................................................ 21
        3.1.4.2.1 Messages .............................................................................................. 21
          3.1.4.2.1.1 tns:SyncFolderItemsSoapIn Message .............................................. 22
          3.1.4.2.1.2 tns:SyncFolderItemsSoapOut ......................................................... 22
        3.1.4.2.2 Elements .............................................................................................. 23
3.1.4.2.2.2  SyncFolderItemsResponse Element ........................................... 23
3.1.4.2.3  Complex Types .............................................................................. 23
3.1.4.2.3.1  \texttt{t:ArrayOfBaseItemIdsType} Complex Type ...................... 24
3.1.4.2.3.2  \texttt{t:SyncFolderItemsChangesType} Complex Type .............. 24
3.1.4.2.3.3  \texttt{t:SyncFolderItemsCreateOrUpdateType} Complex Type ...... 25
3.1.4.2.3.4  \texttt{t:SyncFolderItemsDeleteType} Complex Type ................. 27
3.1.4.2.3.5  \texttt{t:SyncFolderItemsReadFlagType} Complex Type ................ 27
3.1.4.2.3.6  \texttt{m:SyncFolderItemsResponseMessageType} Complex Type ... 28
3.1.4.2.3.7  \texttt{m:SyncFolderItemsResponseType} Complex Type .......... 28
3.1.4.2.3.8  \texttt{m:SyncFolderItemsType} Complex Type ............................ 29
3.1.4.2.4  Simple Types ............................................................................... 30
3.1.4.2.4.1  \texttt{t:MaxSyncChangesReturnedType} Simple Type ................ 30
3.1.4.2.4.2  \texttt{t:SyncFolderItemsScopeType} Simple Type .................... 31
3.1.4.2.5  Attributes .................................................................................... 31
3.1.4.2.6  Groups ....................................................................................... 31
3.1.4.2.7  Attribute Groups ........................................................................ 31
3.1.5  Timer Events ...................................................................................... 31
3.1.6  Other Local Events ............................................................................ 31

4  Protocol Examples .................................................................................. 32
4.1  SyncFolderHierarchy Operation ......................................................... 32
4.2  SyncFolderItems Operation ................................................................. 33

5  Security ................................................................................................. 35
5.1  Security Considerations for Implementers .......................................... 35
5.2  Index of Security Parameters .............................................................. 35

6  Appendix A: Full WSDL ....................................................................... 36

7  Appendix B: Full XML Schema ............................................................. 38
7.1  Messages Schema .............................................................................. 38
7.2  Types Schema .................................................................................... 39

8  Appendix C: Product Behavior ............................................................... 42

9  Change Tracking .................................................................................... 43

10 Index ..................................................................................................... 44
1 Introduction

The Mailbox Contents Synchronization Web Service Protocol is used for providing the necessary information to keep a local message store synchronized with the contents of a mailbox on the server. Clients use the SOAP protocol, as described in [SOAP1.1], to contact the synchronization service.

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

- **base64 encoding**: A binary-to-text encoding scheme whereby an arbitrary sequence of bytes is converted to a sequence of printable ASCII characters, as described in [RFC4648].

- **endpoint**: A communication port that is exposed by an application server for a specific shared service and to which messages can be addressed.

- **folder associated information (FAI)**: A collection of Message objects that are stored in a Folder object and are typically hidden from view by email applications. An FAI Message object is used to store a variety of settings and auxiliary data, including forms, views, calendar options, favorites, and category lists.

- **Hypertext Transfer Protocol (HTTP)**: An application-level protocol for distributed, collaborative, hypermedia information systems (text, graphic images, sound, video, and other multimedia files) on the World Wide Web.

- **Hypertext Transfer Protocol Secure (HTTPS)**: An extension of HTTP that securely encrypts and decrypts web page requests. In some older protocols, "Hypertext Transfer Protocol over Secure Sockets Layer" is still used (Secure Sockets Layer has been deprecated). For more information, see [SSL3] and [RFC5246].

- **mailbox**: A message store that contains email, calendar items, and other Message objects for a single recipient.

- **message store**: A unit of containment for a single hierarchy of Folder objects, such as a mailbox or public folders.

- **Sent Items folder**: A special folder that is the default location for storing copies of Message objects after they are submitted or sent.

- **SOAP**: A lightweight protocol for exchanging structured information in a decentralized, distributed environment. SOAP uses XML technologies to define an extensible messaging framework, which provides a message construct that can be exchanged over a variety of underlying protocols. The framework has been designed to be independent of any particular programming model and other implementation-specific semantics. SOAP 1.2 supersedes SOAP 1.1. See [SOAP1.2-1/2003].

- **SOAP action**: The HTTP request header field used to indicate the intent of the SOAP request, using a URI value. See [SOAP1.1] section 6.1.1 for more information.

- **SOAP body**: A container for the payload data being delivered by a SOAP message to its recipient. See [SOAP1.2-1/2007] section 5.3 for more information.

- **SOAP header**: A mechanism for implementing extensions to a SOAP message in a decentralized manner without prior agreement between the communicating parties. See [SOAP1.2-1/2007] section 5.2 for more information.
SOAP message: An XML document consisting of a mandatory SOAP envelope, an optional SOAP header, and a mandatory SOAP body. See [SOAP1.2-1/2007] section 5 for more information.

Uniform Resource Locator (URL): A string of characters in a standardized format that identifies a document or resource on the World Wide Web. The format is as specified in [RFC1738].

web server: A server computer that hosts websites and responds to requests from applications.

Web Services Description Language (WSDL): An XML format for describing network services as a set of endpoints that operate on messages that contain either document-oriented or procedure-oriented information. The operations and messages are described abstractly and are bound to a concrete network protocol and message format in order to define an endpoint. Related concrete endpoints are combined into abstract endpoints, which describe a network service. WSDL is extensible, which allows the description of endpoints and their messages regardless of the message formats or network protocols that are used.

WSDL message: An abstract, typed definition of the data that is communicated during a WSDL operation [WSDL]. Also, an element that describes the data being exchanged between web service providers and clients.

WSDL port type: A named set of logically-related, abstract Web Services Description Language (WSDL) operations and messages.

XML: The Extensible Markup Language, as described in [XML1.0].

XML namespace: A collection of names that is used to identify elements, types, and attributes in XML documents identified in a URI reference [RFC3986]. A combination of XML namespace and local name allows XML documents to use elements, types, and attributes that have the same names but come from different sources. For more information, see [XMLNS-2ED].

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.

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

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

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

[MS-OXWSLIST] Microsoft Corporation, "Distribution List Creation and Usage Web Service Protocol".

[MS-OXWSSYNC] - v20231113
Mailbox Contents Synchronization Web Service Protocol
Copyright © 2023 Microsoft Corporation
Release: November 13, 2023
The Mailbox Contents Synchronization Web Service Protocol enables clients to synchronize a local message store with the contents of a mailbox on a server. This protocol provides operations to return synchronization information for mailbox folders and the items in those folders. It also provides
synchronization states so that clients can request synchronization changes from the last synchronization request.

1.4 Relationship to Other Protocols

A client that implements this protocol can use the Autodiscover Publishing and Lookup SOAP-Based Web Service Protocol, as described in [MS-OXWSADISC], or the Autodiscover Publishing and Lookup Protocol, as described in [MS-OXDSCLI], to identify the target endpoint to use for each operation.

This protocol uses the SOAP Protocol, as described in [SOAP1.1], to specify the structure information exchanged between the client and server. This protocol uses the XML schema, as described in [XMLSCHEMA1] and [XMLSCHEMA2], to describe the message content sent to and from the server.

The Mailbox Synchronization Web Service Protocol uses SOAP over HTTP, as described in [RFC2616], and SOAP over HTTPS, as described in [RFC2818], as shown in the following layering diagram.

![Layering Diagram](image)

**Figure 1: This protocol in relation to other protocols**

The synchronized items are managed by using one of the following protocols:

- Calendaring Web Service Protocol [MS-OXWSMTGS]
- Common Web Service Data Types Protocol [MS-OXWSCDATA]
- Contacts Web Service Protocol [MS-OXWSCONT]
- Email Message Types Web Service Protocol [MS-OXWSMSG]
- Mailbox Search Web Service Protocol [MS-OXWSSRCH]
- Post Items Web Service Protocol [MS-OXWSPOST]
- Tasks Web Service Protocol [MS-OXWSTASK]

For conceptual background information and overviews of the relationships and interactions between this and other protocols, see [MS-OXPROTO].

1.5 Prerequisites/Preconditions

The endpoint URL that is returned by either the Autodiscover Publishing Lookup SOAP-Based Web Service Protocol, as described in [MS-OXWSADISC], or the Autodiscover Publishing and Lookup Protocol, as described in [MS-OXDSCLI], is required to form the HTTP request to the Web server that hosts this protocol. The operations that this protocol defines cannot be accessed unless the correct endpoint is identified in the HTTP Web requests that target this protocol.
1.6 Applicability Statement

This protocol is applicable to client applications that use Web services to synchronize a local message store with mailbox data on a server.

1.7 Versioning and Capability Negotiation

This document covers versioning 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. The WSDL version of the request is identified by using the `t:RequestServerVersion` element, as described in [MS-OXWSCDATA] section 2.2.3.9, and the version of the server responding to the request is identified by using the `t:ServerVersionInfo` element, as described in [MS-OXWSCDATA] section 2.2.3.10.
- **Security and Authentication Methods:** This protocol relies on the Web server that is hosting it to perform authentication.
- **Localization:** None.
- **Capability Negotiation:** This protocol does not support version negotiation.

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. For details, see [SOAP1.1].

This protocol relies on the Web server that hosts the application to perform authentication. The protocol MUST support SOAP over HTTP, as specified in [RFC2616]. The protocol SHOULD use secure communications via HTTPS, as defined in [RFC2818].

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.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Namespace URI</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>soap</td>
<td><a href="http://schemas.xmlsoap.org/wsd/soap/">http://schemas.xmlsoap.org/wsd/soap/</a></td>
<td>[SOAP1.1]</td>
</tr>
<tr>
<td>tns</td>
<td><a href="http://schemas.microsoft.com/exchange/services/2006/messages">http://schemas.microsoft.com/exchange/services/2006/messages</a></td>
<td></td>
</tr>
<tr>
<td>wsd</td>
<td><a href="http://schemas.xmlsoap.org/wsd/">http://schemas.xmlsoap.org/wsd/</a></td>
<td>[WSDL]</td>
</tr>
<tr>
<td>wsi</td>
<td><a href="http://ws-i.org/schemas/conformanceClaim/">http://ws-i.org/schemas/conformanceClaim/</a></td>
<td>[WSIBASIC]</td>
</tr>
<tr>
<td>t</td>
<td><a href="http://schemas.microsoft.com/exchange/services/2006/types">http://schemas.microsoft.com/exchange/services/2006/types</a></td>
<td></td>
</tr>
<tr>
<td>m</td>
<td><a href="http://schemas.microsoft.com/exchange/services/2006/messages">http://schemas.microsoft.com/exchange/services/2006/messages</a></td>
<td></td>
</tr>
<tr>
<td>xs</td>
<td><a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a></td>
<td>[XMLSCHEMA1]</td>
</tr>
</tbody>
</table>

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
This specification does not define any common XML schema complex type definitions.

2.2.5 Simple Types
This specification does not define any common XML schema simple type definitions.

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.

2.2.9 Common Data Structures
This specification does not define any common XML data structures.
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 that are returned by the transport are passed directly back to the higher-layer protocol or application.

3.1 ExchangeServicePortType Server Details

The Mailbox Contents Synchronization Web Service Protocol defines a single port type with two operations. These operations enable client implementations to synchronize folders in a mailbox and to synchronize an item within a mailbox folder.

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that specified in this document.

This protocol enables client applications either to request complete synchronization information from the server or to request incremental synchronization from the last synchronization information request. If the optional SyncState element of the SyncFolderHierarchyType complex type (section 3.1.4.1.3.6) is included in a SyncFolderHierarchy operation (section 3.1.4.1) request, or if the SyncState element of the SyncFolderItemsType complex type (section 3.1.4.2.3.8) is included in a SyncFolderItems operation (section 3.1.4.2), the server MUST return incremental synchronization information from the last synchronization request.

The contents of the SyncState elements are opaque to the client application; the client uses either the SyncState element of the SyncFolderHierarchyResponseMessageType complex type (section 3.1.4.1.3.4) that was returned by the previous SyncFolderHierarchy operation request, or the SyncState element of the SyncFolderItemsResponseMessageType complex type (section 3.1.4.2.3.6).

Client applications that use incremental synchronization for folder hierarchy synchronization MUST store the contents of the SyncState element of the SyncFolderHierarchyResponseMessageType complex type for subsequent requests.

Client applications that use incremental synchronization for item synchronization MUST store the contents of the SyncState element of the SyncFolderItemsResponseMessageType complex type for subsequent requests.

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.
### SyncFolderHierarchy

The **SyncFolderHierarchy** operation gets synchronization information that enables folders to be synchronized between a client and a server.

The following is the **WSDL port type** specification of the **SyncFolderHierarchy** operation.

```xml
<wsdl:operation name="SyncFolderHierarchy">
  <wsdl:input message="tns:SyncFolderHierarchySoapIn" />
  <wsdl:output message="tns:SyncFolderHierarchySoapOut" />
</wsdl:operation>
```

The following is the **WSDL binding specification** of the **SyncFolderHierarchy** operation.

```xml
<soap:operation
  soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/SyncFolderHierarchy"/>
<wsdl:input>
  <soap:header message="tns:SyncFolderHierarchySoapIn" part="Impersonation" use="literal"/>
  <soap:header message="tns:SyncFolderHierarchySoapIn" part="MailboxCulture" use="literal"/>
  <soap:header message="tns:SyncFolderHierarchySoapIn" part="RequestVersion" use="literal"/>
  <soap:body parts="request" use="literal" />
</wsdl:input>
<wsdl:output>
  <soap:header message="tns:SyncFolderHierarchySoapOut" part="ServerVersion" use="literal"/>
  <soap:body parts="SyncFolderHierarchyResult" use="literal" />
</wsdl:output>
</soap:operation>
```

The **SyncFolderHierarchy** operation **MUST** return one **SyncFolderHierarchyResponseMessage** element in the **ResponseMessages** element of the **SyncFolderHierarchyResponse** element (section 3.1.4.1.2.2). The **SyncFolderHierarchyResponse** element is specified by the **SyncFolderHierarchyResponseMessageType** complex type (section 3.1.4.1.3.4). The **ResponseMessages** element is specified as an element of the **BaseResponseMessageType** complex type ([MS-OXWSCDATA] section 2.2.4.18).

### 3.1.4.1.1 Messages

The **WSDL message** definitions listed in the following table are specific to this operation.

<table>
<thead>
<tr>
<th>Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncFolderHierarchySoapIn</td>
<td>Specifies the <strong>SOAP message</strong> that requests synchronization information.</td>
</tr>
<tr>
<td>SyncFolderHierarchySoapOut</td>
<td>Specifies the SOAP message that is returned by the server in response to a request for synchronization information.</td>
</tr>
</tbody>
</table>
3.1.4.1.1.1  tns:SyncFolderHierarchySoapIn Message

The SyncFolderHierarchySoapIn WSDL message specifies the SyncFolderHierarchy operation request to return synchronization information.

```xml
<wSDL:message name="SyncFolderHierarchySoapIn">
  <wSDL:part name="request" element="tns:SyncFolderHierarchy" />
  <wSDL:part name="Impersonation" element="t:ExchangeImpersonation" />
  <wSDL:part name="MailboxCulture" element="t:MailboxCulture" />
  <wSDL:part name="RequestVersion" element="t:RequestServerVersion" />
</wSDL:message>
```

The SyncFolderHierarchySoapIn WSDL message is the input message for the following SOAP action: http://schemas.microsoft.com/exchange/services/2006/messages/SyncFolderHierarchy.

The SyncFolderHierarchySoapIn WSDL message contains four parts, as listed and described in the following table.

<table>
<thead>
<tr>
<th>Part name</th>
<th>Element/type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>request</td>
<td>tns:SyncFolderHierarchy [section 3.1.4.1.2.1]</td>
<td>Specifies the SOAP body of the request to return synchronization information.</td>
</tr>
<tr>
<td>Impersonation</td>
<td>t:ExchangeImpersonation [MS-OXWSCDATA section 2.2.3.3]</td>
<td>Specifies a SOAP header that identifies the user whom the client application is impersonating.</td>
</tr>
<tr>
<td>MailboxCulture</td>
<td>t:MailboxCulture [MS-OXWSCDATA section 2.2.3.6]</td>
<td>Specifies a SOAP header that identifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066].</td>
</tr>
<tr>
<td>RequestVersion</td>
<td>t:RequestServerVersion [MS-OXWSCDATA section 2.2.3.9]</td>
<td>Specifies a SOAP header that identifies the schema version for the request.</td>
</tr>
</tbody>
</table>

3.1.4.1.1.2  tns:SyncFolderHierarchySoapOut

The SyncFolderHierarchySoapOut WSDL message specifies the server response to a SyncFolderHierarchy operation request to return synchronization information.

```xml
<wSDL:message name="SyncFolderHierarchySoapOut">
  <wSDL:part name="SyncFolderHierarchyResult" element="tns:SyncFolderHierarchyResponse" />
  <wSDL:part name="ServerVersion" element="t:ServerVersionInfo" />
</wSDL:message>
```

The SyncFolderHierarchySoapOut WSDL message is the output message for the following SOAP action: http://schemas.microsoft.com/exchange/services/2006/messages/SyncFolderHierarchy.

The SyncFolderHierarchySoapOut WSDL message contains two parts, as listed and described in the following table.

<table>
<thead>
<tr>
<th>Part name</th>
<th>Element/type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncFolderHierarchyResult</td>
<td>tns:SyncFolderHierarchyResponse [section 3.1.4.1.2.2]</td>
<td>Specifies the SOAP body of the response to a SyncFolderHierarchy operation request.</td>
</tr>
</tbody>
</table>
### 3.1.4.1.2 Elements

The **XML schema** element definitions listed in the following table are specific to this operation.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncFolderHierarchy</td>
<td>Specifies the base element for the <strong>SyncFolderHierarchy</strong> operation.</td>
</tr>
<tr>
<td>SyncFolderHierarchyResponse</td>
<td>Specifies the response message from the <strong>SyncFolderHierarchy</strong> operation.</td>
</tr>
</tbody>
</table>

#### 3.1.4.1.2.1 SyncFolderHierarchy Element

The **SyncFolderHierarchy** element specifies the base element for a **SyncFolderHierarchy** operation (section 3.1.4.1).

```xml
<xs:element name="SyncFolderHierarchy" type="m:SyncFolderHierarchyType"/>
```

#### 3.1.4.1.2.2 SyncFolderHierarchyResponse Element

The **SyncFolderHierarchyResponse** element specifies the response message for a **SyncFolderHierarchy** operation (section 3.1.4.1).

```xml
<xs:element name="SyncFolderHierarchyResponse" type="m:SyncFolderHierarchyResponseType"/>
```

#### 3.1.4.1.3 Complex Types

The **XML schema** complex type definitions listed in the following table are specific to this operation.

<table>
<thead>
<tr>
<th>Complex type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncFolderHierarchyChangesType</td>
<td>Specifies a sequenced array of change types that describe the differences between the folders on the client and the folders on the server.</td>
</tr>
<tr>
<td>SyncFolderHierarchyCreateOrUpdateType</td>
<td>Specifies a single folder to create or update in the client message store.</td>
</tr>
<tr>
<td>SyncFolderHierarchyDeleteType</td>
<td>Specifies a folder to delete from the client message store.</td>
</tr>
<tr>
<td>SyncFolderHierarchyResponseMessageType</td>
<td>Specifies the status and results of a single call to the</td>
</tr>
</tbody>
</table>
### 3.1.4.1.3.1  `t:SyncFolderHierarchyChangesType` Complex Type

The `SyncFolderHierarchyChangesType` complex type specifies a sequenced array of change types that describe the differences between the folders on the client and the folders on the server.

```xml
<xs:complexType name="SyncFolderHierarchyChangesType">
  <xs:sequence>
    <xs:choice
      maxOccurs="unbounded"
      minOccurs="0">
      <xs:element name="Create"
        type="t:SyncFolderHierarchyCreateOrUpdateType"/>
      <xs:element name="Update"
        type="t:SyncFolderHierarchyCreateOrUpdateType"/>
      <xs:element name="Delete"
        type="t:SyncFolderHierarchyDeleteType"/>
    </xs:choice>
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the `SyncFolderHierarchyChangesType` complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create</td>
<td><code>t:SyncFolderHierarchyCreateOrUpdateType</code></td>
<td>Specifies a folder that has been created on the server and has to be created on the client.</td>
</tr>
<tr>
<td>Update</td>
<td><code>t:SyncFolderHierarchyCreateOrUpdateType</code></td>
<td>Specifies a folder that has been changed on the server and has to be changed on the client.</td>
</tr>
<tr>
<td>Delete</td>
<td><code>t:SyncFolderHierarchyDeleteType</code> (section 3.1.4.1.3.3)</td>
<td>Specifies a folder that has been deleted from the server and has to be deleted from the client.</td>
</tr>
</tbody>
</table>

#### 3.1.4.1.3.2  `t:SyncFolderHierarchyCreateOrUpdateType` Complex Type

The `SyncFolderHierarchyCreateOrUpdateType` complex type specifies a single folder to create or update in the client message store.

```xml
<xs:complexType name="SyncFolderHierarchyCreateOrUpdateType">
  <xs:choice>
  </xs:choice>
</xs:complexType>
```
The following table lists the child elements of the `SyncFolderHierarchyCreateOrUpdateType` complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Folder</td>
<td><code>t:FolderType</code> ([MS-OXWSFOLD] section 2.2.4.12)</td>
<td>Specifies a regular folder to create or update in the client message store.</td>
</tr>
<tr>
<td>CalendarFolder</td>
<td><code>t:CalendarFolderType</code> ([MS-OXWSMTGS] section 2.2.4.5)</td>
<td>Specifies a calendar folder to create or update in the client message store.</td>
</tr>
<tr>
<td>ContactsFolder</td>
<td><code>t:ContactsFolderType</code> ([MS-OXWSCONT] section 3.1.4.1.1.6)</td>
<td>Specifies a contacts folder to create or update in the client message store.</td>
</tr>
<tr>
<td>SearchFolder</td>
<td><code>t:SearchFolderType</code> ([MS-OXWSSRCH] section 2.2.4.32)</td>
<td>Specifies a search folder to create or update in the client message store.</td>
</tr>
<tr>
<td>TasksFolder</td>
<td><code>t:TasksFolderType</code> ([MS-OXWSTASK] section 2.2.4.5)</td>
<td>Specifies a tasks folder to create or update in the client message store.</td>
</tr>
</tbody>
</table>

### 3.1.4.1.3.3 t:SyncFolderHierarchyDeleteType Complex Type

The `SyncFolderHierarchyDeleteType` complex type specifies a folder to delete from the client message store.

```
<xs:complexType name="SyncFolderHierarchyDeleteType">
  <xs:sequence>
    <xs:element name="FolderId" type="t:FolderIdType"/>
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the `SyncFolderHierarchyDeleteType` complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FolderId</td>
<td><code>t:FolderIdType</code> ([MS-OXWSCDATA] section 2.2.4.35)</td>
<td>Specifies the identifier of the folder to delete from the client message store.</td>
</tr>
</tbody>
</table>
3.1.4.1.3.4  m:SyncFolderHierarchyResponseMessageType Complex Type

The *SyncFolderHierarchyResponseMessageType* complex type specifies the status and results of a single call to the *SyncFolderHierarchy* operation (section 3.1.4.1). The *SyncFolderHierarchyResponseMessageType* complex type extends the *ResponseMessageType* complex type ([MS-OXWSCDATA] section 2.2.4.65).

```xml
<xs:complexType name="SyncFolderHierarchyResponseMessageType">
  <xs:complexContent>
    <xs:extension base="m:ResponseMessageType">
      <xs:sequence>
        <xs:element name="SyncState" type="xs:string" minOccurs="0"/>
        <xs:element name="IncludesLastFolderInRange" type="xs:boolean" minOccurs="0"/>
        <xs:element name="Changes" type="t:SyncFolderHierarchyChangesType" minOccurs="0"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists the child elements of the *SyncFolderHierarchyResponseMessageType* complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncState</td>
<td>xs:string [XMLSCHEMA2]</td>
<td>Specifies a form of the synchronization data, which is encoded with base64 encoding, that is used to identify the synchronization state. This element is optional.</td>
</tr>
<tr>
<td>IncludesLastFolderInRange</td>
<td>xs:boolean [XMLSCHEMA2]</td>
<td>Specifies a Boolean value that indicates whether the last folder to synchronize is included in the response. This element is optional. If this element is included in the response, the value is &quot;true&quot;.</td>
</tr>
<tr>
<td>Changes</td>
<td>t:SyncFolderHierarchyChangesType</td>
<td>Specifies the differences between the folders on the client and the folders on the server. This element is optional.</td>
</tr>
</tbody>
</table>

3.1.4.1.3.5  m:SyncFolderHierarchyResponseType Complex Type
The `SyncFolderHierarchyResponseType` complex type specifies the response from the `SyncFolderHierarchy` operation (section 3.1.4.1). The `SyncFolderHierarchyResponseType` complex type extends the `BaseResponseMessageType` complex type ([MS-OXWSCDATA] section 2.2.4.18).

```xml
<xsd:complexType name="SyncFolderHierarchyResponseType">
  <xsd:complexContent>
    <xsd:extension base="m:BaseResponseMessageType"/>
  </xsd:complexContent>
</xsd:complexType>
```

### 3.1.4.1.3.6 `m:SyncFolderHierarchyType` Complex Type

The `SyncFolderHierarchyType` complex type specifies a request for synchronization information for folders in the server *message store*. The `SyncFolderHierarchyType` complex type extends the `BaseRequestType` complex type ([MS-OXWSCDATA] section 2.2.4.17).

```xml
<xsd:complexType name="SyncFolderHierarchyType">
  <xsd:complexContent>
    <xsd:extension base="m:BaseRequestType">
      <xsd:sequence>
        <xsd:element name="FolderShape" type="t:FolderResponseShapeType"/>
        <xsd:element name="SyncFolderId" type="t:TargetFolderIdType" minOccurs="0"/>
        <xsd:element name="SyncState" type="xsd:string" minOccurs="0"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

The following table lists the child elements of the `SyncFolderHierarchyType` complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FolderShape</td>
<td><code>t:FolderResponseShapeType</code> ([MS-OXWSCDATA] section 2.2.4.36)</td>
<td>Specifies the properties that are returned in the response.</td>
</tr>
<tr>
<td>SyncFolderId</td>
<td><code>t:TargetFolderIdType</code> ([MS-OXWSFOLD] section 2.2.4.16)</td>
<td>Specifies the target folder for the operation. This element is optional.</td>
</tr>
<tr>
<td>SyncState</td>
<td><code>xsd:string</code> ([XMLSCHEMA2])</td>
<td>Specifies the synchronization state of a previous synchronization for an incremental synchronization call. If this element is not specified, all items in their current state are returned as if the items have never been synchronized. This element is optional.</td>
</tr>
</tbody>
</table>

### 3.1.4.1.4 Simple Types
3.1.4.1.5 Attributes
None.

3.1.4.1.6 Groups
None.

3.1.4.1.7 Attribute Groups
None.

3.1.4.2 SyncFolderItems

The **SyncFolderItems** operation gets synchronization information that enables items to be synchronized between a client and a server.

The following is the **WSDL port type** specification of the **SyncFolderItems** operation.

```xml
<wsdl:operation name="SyncFolderItems">
  <wsdl:input message="tns:SyncFolderItemsSoapIn" />
  <wsdl:output message="tns:SyncFolderItemsSoapOut" />
</wsdl:operation>
```

The following is the **WSDL** binding specification of the **SyncFolderItems** operation.

```xml
<wsdl:operation name="SyncFolderItems">
  <wsdl:input>
    <soap:header message="tns:SyncFolderItemsSoapIn" part="Impersonation" use="literal"></soap:header>
    <soap:header message="tns:SyncFolderItemsSoapIn" part="MailboxCulture" use="literal"/>
    <soap:header message="tns:SyncFolderItemsSoapIn" part="RequestVersion" use="literal"/>
    <soap:body parts="request" use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap:body parts="SyncFolderItemsResult" use="literal" />
    <soap:header message="tns:SyncFolderItemsSoapOut" part="ServerVersion" use="literal"/>
  </wsdl:output>
</wsdl:operation>
```

3.1.4.2.1 Messages

The WSDL message definitions listed in the following table are specific to this operation.

<table>
<thead>
<tr>
<th>Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncFolderItemsSoapIn</td>
<td>Specifies the <strong>SOAP message</strong> that requests item synchronization information.</td>
</tr>
<tr>
<td>SyncFolderItemSoapOut</td>
<td>Specifies the SOAP message that is returned by the server in response.</td>
</tr>
</tbody>
</table>

3.1.4.2.1.1 tns:SyncFolderItemsSoapIn Message
The **SyncFolderItemsSoapIn** WSDL message specifies the **SyncFolderItems** operation request to return item synchronization information.

```xml
<wsdl:message name="SyncFolderItemsSoapIn">
  <wsdl:part name="request" element="tns:SyncFolderItems"/>
  <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
  <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
  <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
```

The **SyncFolderItemsSoapIn** WSDL message is the input message for the **SOAP action**: http://schemas.microsoft.com/exchange/services/2006/messages/.

The parts of the **SyncFolderItemsSoapIn** WSDL message are described in the following table.

<table>
<thead>
<tr>
<th>Part name</th>
<th>Element/type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>request</td>
<td>tns:SyncFolderItems (section 3.1.4.2.2.1)</td>
<td>Specifies the SOAP body of the request for item synchronization information.</td>
</tr>
<tr>
<td>Impersonation</td>
<td>t:ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.3.3)</td>
<td>Specifies a SOAP header that identifies the user whom the client application is impersonating.</td>
</tr>
<tr>
<td>MailboxCulture</td>
<td>t:MailboxCulture ([MS-OXWSCDATA] section 2.2.3.6)</td>
<td>Specifies a SOAP header that identifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066].</td>
</tr>
<tr>
<td>RequestVersion</td>
<td>t:RequestServerVersion ([MS-OXWSCDATA] section 2.2.3.9)</td>
<td>Specifies a SOAP header that identifies the schema version for the request.</td>
</tr>
</tbody>
</table>

### 3.1.4.2.1.2  tns:SyncFolderItemsSoapOut

The **SyncFolderItemsSoapOut** WSDL message specifies the response from the **SyncFolderItems** operation.

```xml
<wsdl:message name="SyncFolderItemsSoapOut">
  <wsdl:part name="SyncFolderItemsResult" element="tns:SyncFolderItemsResponse"/>
  <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
```

The **SyncFolderItemsSoapOut** WSDL message is the output message for the following **SOAP action**: http://schemas.microsoft.com/exchange/services/2006/messages/SyncFolderItems.

The **SyncFolderItemsSoapOut** WSDL message contains the two parts listed in the following table.

<table>
<thead>
<tr>
<th>Part name</th>
<th>Element/type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncFolderItemsResult</td>
<td>tns:SyncFolderItemsResponse (section 3.1.4.2.2.2)</td>
<td>Specifies the SOAP body of the response to a <strong>SyncFolderItems</strong> operation request.</td>
</tr>
<tr>
<td>ServerVersion</td>
<td>t:ServerVersionInfo ([MS-OXWSCDATA] section 2.2.3.10)</td>
<td>Specifies a SOAP header that identifies the server version for the response.</td>
</tr>
</tbody>
</table>

### 3.1.4.2.2 Elements

[MS-OXWSSYNC] - v20231113
Mailbox Contents Synchronization Web Service Protocol
Copyright © 2023 Microsoft Corporation
Release: November 13, 2023
The XML schema element definitions listed in the following table are specific to this operation.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncFolderItems</td>
<td>Specifies the base element for requests to the <strong>SyncFolderItems</strong> operation.</td>
</tr>
<tr>
<td>SyncFolderItemsResponse</td>
<td>Specifies the base element for responses from the <strong>SyncFolderItems</strong> operation.</td>
</tr>
</tbody>
</table>

### 3.1.4.2.2.1 SyncFolderItems Element

The **SyncFolderItems** element specifies the base element for the **SyncFolderItems** operation.

```xml
<xs:element name="SyncFolderItems"
    type="m:SyncFolderItemsType"/>
```

### 3.1.4.2.2.2 SyncFolderItemsResponse Element

The **SyncFolderItemsResponse** element specifies the response message for the **SyncFolderItems** operation.

```xml
<xs:element name="SyncFolderItemsResponse"
    type="m:SyncFolderItemsResponseType"/>
```

### 3.1.4.2.3 Complex Types

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

<table>
<thead>
<tr>
<th>Complex type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ArrayOfBaseItemIdsType</td>
<td>Specifies zero or more <strong>ItemIdType</strong> types.</td>
</tr>
<tr>
<td>SyncFolderItemsChangesType</td>
<td>Specifies a sequenced array of change types that describe the differences between the items on the client and the items on the server.</td>
</tr>
<tr>
<td>SyncFolderItemsCreateOrUpdateType</td>
<td>Specifies a single item to create or update in the message store.</td>
</tr>
<tr>
<td>SyncFolderItemsDeleteType</td>
<td>Specifies an item to delete from the client message store.</td>
</tr>
<tr>
<td>SyncFolderItemsReadFlagType</td>
<td>Specifies whether an item on the server has been read.</td>
</tr>
<tr>
<td>SyncFolderItemsResponseMessageType</td>
<td>Specifies the status and results from a single call to the <strong>SyncFolderItems</strong> operation.</td>
</tr>
<tr>
<td>SyncFolderItemsResponseType</td>
<td>Specifies a response from the <strong>SyncFolderItems</strong> operation.</td>
</tr>
<tr>
<td>SyncFolderItemsType</td>
<td>Specifies a request for synchronization information for items in the client message store.</td>
</tr>
</tbody>
</table>

### 3.1.4.2.3.1 t:ArrayOfBaseItemIdsType Complex Type
The **ArrayOfBaseItemIdsType** complex type specifies zero or more **ItemIdType** types ([MS-OXWSCORE] section 2.2.4.25).

```xml
<xs:complexType name="ArrayOfBaseItemIdsType">
  <xs:choice maxOccurs="unbounded" minOccurs="0">
    <xs:element name="ItemId" type="t:ItemIdType" />
  </xs:choice>
</xs:complexType>
```

The following table lists the child elements of the **ArrayOfBaseItemIdsType** complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ItemId</td>
<td>t:ItemIdType ([MS-OXWSCORE] section 2.2.4.25)</td>
<td>Specifies the item identifier of the array member.</td>
</tr>
</tbody>
</table>

### 3.1.4.2.3.2 t:SyncFolderItemsChangesType Complex Type

The **SyncFolderItemsChangesType** complex type specifies a sequenced array of change types that describe the differences between the items on the client and the items on the server.

```xml
<xs:complexType name="SyncFolderItemsChangesType">
  <xs:sequence>
    <xs:choice maxOccurs="unbounded" minOccurs="0">
      <xs:element name="Create" type="t:SyncFolderItemsCreateOrUpdateType" />
      <xs:element name="Update" type="t:SyncFolderItemsCreateOrUpdateType" />
      <xs:element name="Delete" type="t:SyncFolderItemsDeleteType" />
      <xs:element name="ReadFlagChange" type="t:SyncFolderItemsReadFlagType" />
    </xs:choice>
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the **SyncFolderItemsChangesType** complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create</td>
<td>t:SyncFolderItemsCreateOrUpdateType (section 3.1.4.2.3.3)</td>
<td>Specifies an item that has been created on the server and has to be created on the client.</td>
</tr>
<tr>
<td>Update</td>
<td>t:SyncFolderItemsCreateOrUpdateType</td>
<td>Specifies an item that has been</td>
</tr>
<tr>
<td>Element</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Delete</td>
<td>t:SyncFolderItemsDeleteType (section 3.1.4.2.3.4)</td>
<td>Specifies an item that has been deleted on the server and has to be deleted on the client.</td>
</tr>
<tr>
<td>ReadFlagChange</td>
<td>t:SyncFolderItemsReadFlagType (section 3.1.4.2.3.5)</td>
<td>Specifies an item that has been marked as read on the server and has to be marked as read on the client.</td>
</tr>
</tbody>
</table>

3.1.4.2.3.3  t:SyncFolderItemsCreateOrUpdateType Complex Type

The SyncFolderItemsCreateOrUpdateType complex type specifies a single item to create or update in the client message store.

```xml
<xs:complexType name="SyncFolderItemsCreateOrUpdateType">
  <xs:choice>
    <xs:element name="Item" type="t:ItemType"/>
    <xs:element name="Message" type="t:MessageType"/>
    <xs:element name="CalendarItem" type="t:CalendarItemType"/>
    <xs:element name="Contact" type="t:ContactItemType"/>
    <xs:element name="DistributionList" type="t:DistributionListType"/>
    <xs:element name="MeetingMessage" type="t:MeetingMessageType"/>
    <xs:element name="MeetingRequest" type="t:MeetingRequestMessageType"/>
    <xs:element name="MeetingResponse" type="t:MeetingResponseMessageType"/>
    <xs:element name="MeetingCancellation" type="t:MeetingCancellationMessageType"/>
    <xs:element name="Task" type="t:TaskType"/>
    <xs:element name="PostItem" type="t:PostItemType"/>
    <xs:element name="RoleMember" type="t:RoleMemberItemType"/>
    <xs:element name="Network" type="t:NetworkItemType"/>
    <xs:element name="Person" type="t:AbchPersonItemType"/>
    <xs:element name="Booking" type="t:BookingItemType"/>
  </xs:choice>
</xs:complexType>
```
The following table lists the child elements of the `SyncFolderItemsCreateOrUpdateType` complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td><code>t:ItemType</code> ([MS-OXWSCORE] section 2.2.4.24)</td>
<td>Specifies an item to create or update in the client message store. This element SHOULD NOT be used. If a client creates or updates an item of this type, an item of <code>t:MessageType</code> type SHOULD be returned.</td>
</tr>
<tr>
<td>Message</td>
<td><code>t:MessageType</code> ([MS-OXWSMSG] section 2.2.4.3)</td>
<td>Specifies a message to create or update in the client message store.</td>
</tr>
<tr>
<td>CalendarItem</td>
<td><code>t:CalendarItemType</code> ([MS-OXWSMTGS] section 2.2.4.6)</td>
<td>Specifies a calendar item to create or update in the client message store.</td>
</tr>
<tr>
<td>Contact</td>
<td><code>t:ContactItemType</code> ([MS-OXWSCONT] section 2.2.4.3)</td>
<td>Specifies a contact to create or update in the client message store.</td>
</tr>
<tr>
<td>DistributionList</td>
<td><code>t:DistributionListType</code> ([MS-OXWSDLIST] section 2.2.4.1)</td>
<td>Specifies a distribution list to create or update in the client message store.</td>
</tr>
<tr>
<td>MeetingMessage</td>
<td><code>t:MeetingMessageType</code> ([MS-OXWSMTGS] section 2.2.4.15)</td>
<td>Specifies a meeting message to create or update in the client message store.</td>
</tr>
<tr>
<td>MeetingRequest</td>
<td><code>t:MeetingRequestMessageType</code> ([MS-OXWSMTGS] section 2.2.4.17)</td>
<td>Specifies a meeting request message to create or update in the client message store.</td>
</tr>
<tr>
<td>MeetingResponse</td>
<td><code>t:MeetingResponseMessageType</code> ([MS-OXWSMTGS] section 2.2.4.18)</td>
<td>Specifies a meeting response message to create or update in the client message store.</td>
</tr>
<tr>
<td>MeetingCancellation</td>
<td><code>t:MeetingCancellationMessageTyp</code> ([MS-OXWSMTGS] section 2.2.4.14)</td>
<td>Specifies a meeting cancellation message to create or update in the client message store.</td>
</tr>
<tr>
<td>Task</td>
<td><code>t:TaskType</code> ([MS-OXWSTASK] section 2.2.4.6)</td>
<td>Specifies a task to create or update in the client message store.</td>
</tr>
<tr>
<td>PostItem</td>
<td><code>t:PostItemType</code> ([MS-OXWSPOST] section 2.2.4.1)</td>
<td>Specifies a post item to create or update in the client message store.</td>
</tr>
<tr>
<td>RoleMember</td>
<td><code>t:RoleMemberItemType</code> ([MS-OXWSCORE] section 2.2.4.43)</td>
<td>For internal use only. &lt;3&gt;</td>
</tr>
<tr>
<td>Network</td>
<td><code>t:NetworkItemType</code> ([MS-OXWSCORE] section 2.2.4.30)</td>
<td>For internal use only. &lt;4&gt;</td>
</tr>
<tr>
<td>Person</td>
<td><code>t:AbchPersonItemType</code> ([MS-OXWSCONT] section 2.2.4.1)</td>
<td>Specifies a person to create or update in the client message store. &lt;5&gt;</td>
</tr>
<tr>
<td>Booking</td>
<td><code>t:BookingItemType</code> ([MS-OXWSCDATA] section 2.2.4.20)</td>
<td>For internal use only. &lt;6&gt;</td>
</tr>
</tbody>
</table>
3.1.4.2.3.4  t:SyncFolderItemsDeleteType Complex Type

The SyncFolderItemsDeleteType complex type specifies an item to delete from the client message store.

```xml
<xs:complexType name="SyncFolderItemsDeleteType">
  <xs:sequence>
    <xs:element name="ItemId"
                 type="t:ItemIdType"/>
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the SyncFolderItemsDeleteType complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ItemId</td>
<td>t:ItemIdType</td>
<td>Specifies the identifier of the item to delete from the client message store.</td>
</tr>
</tbody>
</table>

3.1.4.2.3.5  t:SyncFolderItemsReadFlagType Complex Type

The SyncFolderItemsReadFlagType complex type specifies whether an item on the server has been read.

```xml
<xs:complexType name="SyncFolderItemsReadFlagType">
  <xs:sequence>
    <xs:element name="ItemID"
                 type="t:ItemIdType"/>
    <xs:element name="IsRead"
                 type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the SyncFolderItemsReadFlagType complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ItemID</td>
<td>t:ItemIdType</td>
<td>Specifies the identifier of the read item.</td>
</tr>
<tr>
<td>IsRead</td>
<td>xs:boolean</td>
<td>Specifies a Boolean value that indicates whether the item has been read.</td>
</tr>
</tbody>
</table>

3.1.4.2.3.6  m:SyncFolderItemsResponseMessageType Complex Type

The SyncFolderItemsResponseMessageType complex type specifies the status and results of a single call to the SyncFolderItems operation (section 3.1.4.2). The SyncFolderItemsResponseMessageType complex type extends the ResponseMessageType complex type ([MS-OXWSCDATA] section 2.2.4.65).
The following table lists the child elements of the `SyncFolderItemsResponseMessageType` complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncState</td>
<td><code>xs:string ([XMLSCHEMA2])</code></td>
<td>Specifies a form of the synchronization data, which is encoded with base64 encoding, that is used to identify the synchronization state. This element is optional.</td>
</tr>
<tr>
<td>IncludesLastItemInRange</td>
<td><code>xs:boolean ([XMLSCHEMA2])</code></td>
<td>Specifies a Boolean value that indicates whether the last item to synchronize is included in the response. This element is optional.</td>
</tr>
<tr>
<td>Changes</td>
<td><code>t:SyncFolderItemsChangesType</code> (section 3.1.4.2.3.2)</td>
<td>Specifies the differences between the items on the client and the items on the server. This element is optional.</td>
</tr>
</tbody>
</table>

### 3.1.4.2.3.7 m:SyncFolderItemsResponseType Complex Type

The `SyncFolderItemsResponseType` complex type specifies a response from the `SyncFolderItems` operation. The `SyncFolderItemsResponseType` complex type extends the `BaseResponseMessageType` complex type ([MS-OXWSCDATA] section 2.2.4.18).

```xml
<xs:complexType name="SyncFolderItemsResponseMessageType">
  <xs:complexContent>
    <xs:extension base="m:ResponseMessageType">
      <xs:sequence>
        <xs:element name="SyncState" type="xs:string" minOccurs="0" />
        <xs:element name="IncludesLastItemInRange" type="xs:boolean" minOccurs="0" />
        <xs:element name="Changes" type="t:SyncFolderItemsChangesType" minOccurs="0" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```
3.1.4.2.3.8  m:SyncFolderItemsType Complex Type

The SyncFolderItemsType complex type specifies a request for synchronization information for items in the server message store. The SyncFolderItemsType complex type extends the BaseRequestType complex type ([MS-OXWSCDATA] section 2.2.4.17).

```xml
<xs:complexType name="SyncFolderItemsType">
  <xs:complexContent>
    <xs:extension base="m:BaseRequestType">
      <xs:sequence>
        <xs:element name="ItemShape" type="t:ItemResponseShapeType" />
        <xs:element name="SyncFolderId" type="t:TargetFolderIdType" />
        <xs:element name="SyncState" type="xs:string" minOccurs="0" />
        <xs:element name="Ignore" type="t:ArrayOfBaseItemIdsType" minOccurs="0" />
        <xs:element name="MaxChangesReturned" type="t:MaxSyncChangesReturnedType" />
        <xs:element name="SyncScope" type="t:SyncFolderItemsScopeType" minOccurs="0" />
        <xs:element name="NumberOfDays" type="xs:int" minOccurs="0" />
        <xs:element name="MaximumCount" type="xs:int" minOccurs="0" />
        <xs:element name="MinimumCount" type="xs:int" minOccurs="0" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists the child elements of the SyncFolderItemsType complex type.

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ItemShape</td>
<td>t:ItemResponseShapeType ([MS-OXWSCDATA] section 2.2.4.42)</td>
<td>Specifies the item properties that are returned in a response message.</td>
</tr>
<tr>
<td>SyncFolderId</td>
<td>t:TargetFolderIdType ([MS-OXWSFOLD])</td>
<td>Specifies the identity of the folder that contains the items to synchronize.</td>
</tr>
<tr>
<td>SyncState</td>
<td>xs:string ([XMLSCHEMA2])</td>
<td>Specifies the synchronization state of a previous synchronization for an incremental synchronization call. If this element is not specified, all items in their current state are</td>
</tr>
<tr>
<td>Element</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ignore</td>
<td>t:ArrayOfBaseItemIdsType (section 3.1.4.2.3.1)</td>
<td>Specifies an array of items to skip for synchronization. This element is optional.</td>
</tr>
<tr>
<td>MaxChangesReturned</td>
<td>t:MaxSyncChangesReturnedType (section 3.1.4.2.4.1)</td>
<td>Specifies the maximum number of changes that can be returned in a synchronization response. This element MUST be set between 1 and 512, inclusive.</td>
</tr>
<tr>
<td>SyncScope</td>
<td>t:SyncFolderItemsScopeType (section 3.1.4.2.4.2)</td>
<td>Specifies whether only items or items and folder associated information (FAI) are returned. This element is optional.</td>
</tr>
<tr>
<td>NumberOfDays</td>
<td>xs:int ([XMLSCHEMA2])</td>
<td>Specifies the time window (expressed in a number of days) of the items to include in a synchronization response.</td>
</tr>
<tr>
<td>MaximumCount</td>
<td>xs:int ([XMLSCHEMA2])</td>
<td>Specifies the maximum number of items (from the latest received time) to include in a synchronization response.</td>
</tr>
<tr>
<td>MinimumCount</td>
<td>xs:int ([XMLSCHEMA2])</td>
<td>Specifies the minimum number of items (from the latest received time) to include in a synchronization response.</td>
</tr>
</tbody>
</table>

### 3.1.4.2.4 Simple Types

The XML schema simple type definitions listed in the following table are specific to this operation.

<table>
<thead>
<tr>
<th>Simple type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxSyncChangesReturnedType</td>
<td>Specifies the size of the range of responses returned by an item synchronization request.</td>
</tr>
<tr>
<td>SyncFolderItemsScopeType</td>
<td>Specifies whether an item synchronization request includes folder associated information (FAI).</td>
</tr>
</tbody>
</table>

#### 3.1.4.2.4.1 t:MaxSyncChangesReturnedType Simple Type

The MaxSyncChangesReturnedType simple type specifies the size of the range of responses returned by an item synchronization operation.

```xml
<xs:simpleType name="MaxSyncChangesReturnedType">
  <xs:restriction base="xs:int">
    <xs:minInclusive value="1"/>
    <xs:maxInclusive value="512"/>
  </xs:restriction>
</xs:simpleType>
```
3.1.4.2.4.2  :SyncFolderItemsScopeType Simple Type

The :SyncFolderItemsScopeType simple type specifies whether a synchronization request is only for items in the folder or includes folder associated information (FAI) as well.

```xml
<xs:simpleType name="SyncFolderItemsScopeType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="NormalItems"/>
    <xs:enumeration value="NormalAndAssociatedItems"/>
  </xs:restriction>
</xs:simpleType>
```

The values listed in the following table are defined by the :SyncFolderItemsScopeType simple type,

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NormalItems</td>
<td>Specifies that only items in the folder are returned.</td>
</tr>
<tr>
<td>NormalAndAssociatedItems</td>
<td>Specifies that folder associated information is returned along with the items in the folder.</td>
</tr>
</tbody>
</table>

3.1.4.2.5 Attributes

None.

3.1.4.2.6 Groups

None.

3.1.4.2.7 Attribute Groups

None.

3.1.5  Timer Events

None.

3.1.6  Other Local Events

None.
4 Protocol Examples

4.1 SyncFolderHierarchy Operation

The following example of a SyncFolderHierarchy operation request, as described in section 3.1.4.1, shows how to synchronize a client folder hierarchy with the server. This example shows a folder hierarchy that has already been synchronized at least one time. The SyncState element of the SyncFolderHierarchyType complex type, as described in section 3.1.4.1.3.6, is not included in the request for the first attempt to synchronize a client with the server. The first request returns all the folders in the mailbox. The SyncState element is returned in the SyncFolderHierarchyResponse element, as described in section 3.1.4.1.2.2. This element is used to synchronize the state for subsequent SyncFolderHierarchy requests.

In this example, the SyncState element data, encoded with base64 encoding, has been shortened to preserve readability.

```xml
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xmlns:xsd="http://www.w3.org/2001/XMLSchema">
 <soap:Header>
  <t:ServerVersionInfo MajorVersion="8" MinorVersion="0"
   MajorBuildNumber="628" MinorBuildNumber="0"
   xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"/>
 </soap:Header>
 <soap:Body>
  <SyncFolderHierarchyResponse
   xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
   xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xmlns:xsd="http://www.w3.org/2001/XMLSchema">
   <ResponseMessages>
    <m:SyncFolderHierarchyResponseMessage ResponseClass="Success">
     <m:ResponseCode>NoError</m:ResponseCode>
     <m:SyncState>H4sIAAA==</m:SyncState>
     <m:IncludesLastFolderInRange>true</m:IncludesLastFolderInRange>
     <m:Changes>
      <t:Create>
       <t:Folder>
        <t:FolderId Id="AQApAHR=" ChangeKey="AQAAABY"/>
        <t:ParentFolderId Id="AQApA=" ChangeKey="AQAAAA=="/>
        <t:FolderClass>IPF.Note</t:FolderClass>
        <t:DisplayName>NewFolder</t:DisplayName>
      </t:Folder>
     </m:Changes>
    </m:SyncFolderHierarchyResponseMessage>
   </ResponseMessages>
  </SyncFolderHierarchyResponseResponse>
 </soap:Body>
</soap:Envelope>
```

The following example shows a successful response to the SyncFolderHierarchy operation request. In this example, a new folder has been synchronized. In this example, the SyncState element data, encoded with base64 encoding, and the folder identifier data have been shortened to preserve readability.

```xml
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xmlns:xsd="http://www.w3.org/2001/XMLSchema">
 <soap:Header>
  <t:ServerVersionInfo MajorVersion="8" MinorVersion="0"
   MajorBuildNumber="628" MinorBuildNumber="0"
   xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"/>
 </soap:Header>
 <soap:Body>
  <SyncFolderHierarchyResponse
   xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
   xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xmlns:xsd="http://www.w3.org/2001/XMLSchema">
   <ResponseMessages>
    <m:SyncFolderHierarchyResponseMessage ResponseClass="Success">
     <m:ResponseCode>NoError</m:ResponseCode>
     <m:SyncState>H4sIAAA==</m:SyncState>
     <m:IncludesLastFolderInRange>true</m:IncludesLastFolderInRange>
     <m:Changes>
      <t:Create>
       <t:Folder>
        <t:FolderId Id="AQApAHR=" ChangeKey="AQAAABY"/>
        <t:ParentFolderId Id="AQApA=" ChangeKey="AQAAAA=="/>
        <t:FolderClass>IPF.Note</t:FolderClass>
        <t:DisplayName>NewFolder</t:DisplayName>
      </t:Folder>
     </m:Changes>
    </m:SyncFolderHierarchyResponseMessage>
   </ResponseMessages>
  </SyncFolderHierarchyResponseResponse>
 </soap:Body>
</soap:Envelope>
```
4.2 SyncFolderItems Operation

The following example of a SyncFolderItems operation request, as described in section 3.1.4.2, shows how to synchronize items in a folder. This example shows a folder item's synchronization that is not the first synchronization to have occurred for the Sent Items folder. The SyncState element of the SyncFolderItemsType complex type, as described in section 3.1.4.2.3.8, is not included in the request for the first attempt to synchronize a client with the server. The first attempt to synchronize the items in a folder hierarchy returns all the items in the mailbox, excluding items that are identified in the Ignore element of the SyncFolderItemsType complex type. This SyncFolderItems operation request tries to synchronize all changes to the folder items since the last synchronization. This request ignores the attempt to synchronize the one item that is identified in the Ignore element.

In this example the SyncState element data, encoded with base64 encoding, and the ItemId element Id attribute have been shortened to preserve readability.

```xml
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
   xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types">
   <soap:Body>
       <SyncFolderItems
           xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
           <ItemShape>
               <t:BaseShape>Default</t:BaseShape>
           </ItemShape>
           <SyncFolderId>
               <t:DistinguishedFolderId Id="sentitems"/>
           </SyncFolderId>
           <SyncState>AEbJ94eMOAAA=</SyncState>
           <Ignore>
               <t:ItemId Id="AQApAHRAA==" ChangeKey="CQAAABY"/>
           </Ignore>
           <MaxChangesReturned>100</MaxChangesReturned>
       </SyncFolderItems>
   </soap:Body>
</soap:Envelope>
```

The following example shows a successful response to the SyncFolderItems operation request. A meeting request is synchronized from the Sent Items folder. In this example the SyncState element data, encoded with base64 encoding, and the ItemId element Id attribute have been shortened to preserve readability.

```xml
<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xmlns:xsd="http://www.w3.org/2001/XMLSchema">
   <soap:Header>
       <t:ServerVersionInfo MajorVersion="8" MinorVersion="0"
           MajorBuildNumber="628" MinorBuildNumber="0"/>
   </soap:Header>
</soap:Envelope>
```
<soap:Body>
 <SyncFolderItemsResponse
   xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
   xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
   xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
   <m:ResponseMessages>
     <m:SyncFolderItemsResponseMessage ResponseClass="Success">
       <m:ResponseCode>NoError</m:ResponseCode>
       <m:SyncState>H4sIAAAAA=</m:SyncState>
       <m:IncludesLastItemInRange>true</m:IncludesLastItemInRange>
       <m:Changes>
         <t:Create>
           <t:ItemId Id="AQApAHrWm==" ChangeKey="CwAAABYA" />
           <t:Subject>Budget Q3</t:Subject>
           <t:Sensitivity>Normal</t:Sensitivity>
           <t:IsOutOfDate>false</t:IsOutOfDate>
           <t:HasBeenProcessed>true</t:HasBeenProcessed>
           <t:ResponseType>NoResponseReceived</t:ResponseType>
           <t:IntendedFreeBusyStatus>Busy</t:IntendedFreeBusyStatus>
           <t:Start>2006-08-02T17:30:00Z</t:Start>
           <t:End>2006-08-02T19:30:00Z</t:End>
           <t:Location>Conference Room 2</t:Location>
           <t:Organizer>
             <t:Mailbox>
               <t:Name>Dan Park</t:Name>
               <t:EmailAddress>dpark@example.com</t:EmailAddress>
               <t:RoutingType>SMTP</t:RoutingType>
             </t:Mailbox>
           </t:Organizer>
         </t:Create>
       </m:Changes>
     </m:SyncFolderItemsResponseMessage>
   </m:ResponseMessages>
 </SyncFolderItemsResponse>
</soap:Body>
5 Security

5.1 Security Considerations for Implementers

The Mailbox Contents Synchronization Web Service Protocol does not use any 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.

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-OXWSSYNC.wsdl</td>
<td>Contains the WSDL for the implementation of this protocol.</td>
<td>6</td>
</tr>
<tr>
<td>MS-OXWSSYNC-messages.xsd</td>
<td>Contains the XML schema message definitions that are used in this protocol.</td>
<td>7.1</td>
</tr>
<tr>
<td>MS-OXWSSYNC-types.xsd</td>
<td>Contains the XML schema type definitions that are used in this protocol.</td>
<td>7.2</td>
</tr>
</tbody>
</table>

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

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

```xml
<?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"
 targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages">
  <wsdl:types>
    <xs:schema id="messages" elementFormDefault="qualified" version="Exchange2016"
 xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
 xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema"
 targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages">
      <xs:include schemaLocation="MS-OXWSSYNC-messages.xsd"/>
      <xs:include schemaLocation="MS-OXWSSYNC-messages.xsd"/>
    </xs:schema>
    <xs:schema id="types" elementFormDefault="qualified" version="Exchange2016"
 xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
 targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types">
      <!-- Add global elements and types from types.xsd -->
      <xs:schema>
        </xs:schema>
      </wsdl:types>
    <wsdl:message name="SyncFolderHierarchySoapIn"/>
    <wsdl:part name="request" element="tns:SyncFolderHierarchy"/>
    <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="SyncFolderHierarchySoapOut">
    <wsdl:part name="SyncFolderHierarchyResult" element="tns:SyncFolderHierarchyResponse"/>
  </wsdl:message>
  <wsdl:message name="ServerVersion" element="t:ServerVersionInfo"/>
  <wsdl:message name="SyncFolderItemsSoapIn">
    <wsdl:part name="request" element="tns:SyncFolderItems"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
  </wsdl:message>
</wsdl:definitions>
```
<wsdl:message name="SyncFolderItemsSoapOut">
  <wsdl:part name="SyncFolderItemsResult" element="tns:SyncFolderItemsResponse" />
  <wsdl:part name="ServerVersion" element="t:ServerVersionInfo" />
</wsdl:message>

<wsdl:portType name="ExchangeServicePortType">
  <wsdl:operation name="SyncFolderHierarchy">
    <wsdl:input message="tns:SyncFolderHierarchySoapIn" />
    <wsdl:output message="tns:SyncFolderHierarchySoapOut" />
  </wsdl:operation>
  <wsdl:operation name="SyncFolderItems">
    <wsdl:input message="tns:SyncFolderItemsSoapIn" />
    <wsdl:output message="tns:SyncFolderItemsSoapOut" />
  </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="SyncFolderHierarchy">
    <soap:operation
      soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/SyncFolderHierarchy" />
    <wsdl:input>
      <soap:header message="tns:SyncFolderHierarchySoapIn" part="Impersonation" use="literal"/>
      <soap:header message="tns:SyncFolderHierarchySoapIn" part="MailboxCulture" use="literal"/>
      <soap:header message="tns:SyncFolderHierarchySoapIn" part="RequestVersion" use="literal"/>
      <soap:body parts="request" use="literal" />
    </wsdl:input>
    <wsdl:output>
      <soap:body parts="SyncFolderHierarchyResult" use="literal"/>
      <soap:header message="tns:SyncFolderHierarchySoapOut" part="ServerVersion" use="literal"/>
    </wsdl:output>
  </wsdl:operation>
  <wsdl:operation name="SyncFolderItems">
    <soap:operation
      soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/SyncFolderItems" />
    <wsdl:input>
      <soap:header message="tns:SyncFolderItemsSoapIn" part="Impersonation" use="literal"/>
      <soap:header message="tns:SyncFolderItemsSoapIn" part="MailboxCulture" use="literal"/>
      <soap:header message="tns:SyncFolderItemsSoapIn" part="RequestVersion" use="literal"/>
      <soap:body parts="request" use="literal" />
    </wsdl:input>
    <wsdl:output>
      <soap:body parts="SyncFolderItemsResult" use="literal"/>
      <soap:header message="tns:SyncFolderItemsSoapOut" part="ServerVersion" use="literal"/>
    </wsdl:output>
  </wsdl:operation>
</wsdl:binding>
7 Appendix B: Full XML Schema

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

<table>
<thead>
<tr>
<th>Schema name</th>
<th>Prefix</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Messages schema</td>
<td>m:</td>
<td>7.1</td>
</tr>
<tr>
<td>Types schema</td>
<td>t:</td>
<td>7.2</td>
</tr>
</tbody>
</table>

These files have to be placed in a common folder in order for the WSDL to validate and operate. Also, any schema files that are included in or imported into the MS-OXWSSYNC-types.xsd or MS-OXWSSYNC-messages.xsd schemas have to be placed in the common folder along with the files listed in the table.

7.1 Messages Schema

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

MS-OXWSSYNC-messages.xsd includes the file listed in the following table. For the schema file to operate correctly, this file has to be in the folder that contains the WSDL, types schema, and messages schema files for this protocol.

<table>
<thead>
<tr>
<th>File name</th>
<th>Defining specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-OXWSCDATA-messages.xsd</td>
<td>[MS-OXWSCDATA] section 7.1</td>
</tr>
</tbody>
</table>

```xml
<?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"
schemaLocation="MS-OXWSSYNC-types.xsd"/>
<xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
<xs:complexType name="SyncFolderHierarchyType">
<xs:complexContent>
<xs:extension base="m:BaseRequestType">
<xs:sequence>
<xs:element name="FolderShape" type="t:FolderResponseShapeType"/>
<xs:element name="SyncFolderId" type="t:TargetFolderIdType" minOccurs="0"/>
<xs:element name="SyncState" type="xs:string" minOccurs="0"/>
</xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
<xs:element name="SyncFolderHierarchy" type="m:SyncFolderHierarchyType"/>
<xs:complexType name="SyncFolderHierarchyResponseMessageType">
<xs:complexContent>
<xs:extension base="m:ResponseMessageType">
<xs:sequence>
<xs:element name="SyncState" type="xs:string" minOccurs="0"/>
<xs:element name="IncludesLastFolderInRange" type="xs:boolean" minOccurs="0"/>
<xs:element name="Changes" type="t:SyncFolderHierarchyChangesType" minOccurs="0"/>
</xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
```
7.2 Types Schema

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

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

<table>
<thead>
<tr>
<th>File name</th>
<th>Defining specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-OWWSFOLD-types.xsd</td>
<td>[MS-OWWSFOLD] section 7.2</td>
</tr>
</tbody>
</table>

<?xml version="1.0" encoding="utf-8"?>
  <xs:include schemaLocation="MS-OWSFSYNC-types.xsd"/>
  <xs:complexType name="ArrayOfBaseItemIdsType">
    <xs:choice minOccurs="0" maxOccurs="unbounded">
      <xs:element name="ItemId" type="t:ItemIdType"/>
    </xs:choice>
  </xs:complexType>
  <xs:complexType name="SyncFolderHierarchyChangesType">
    <xs:sequence>
      <xs:choice minOccurs="0" maxOccurs="unbounded">
        <xs:element name="Create" type="t:SyncFolderHierarchyCreateOrUpdateType"/>
        <xs:element name="Update" type="t:SyncFolderHierarchyCreateOrUpdateType"/>
        <xs:element name="Delete" type="t:SyncFolderHierarchyDeleteType"/>
      </xs:choice>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="SyncFolderItemsChangesType">
    <xs:sequence>
      <xs:choice minOccurs="0" maxOccurs="unbounded">
        <xs:element name="Create" type="t:SyncFolderItemsCreateOrUpdateType"/>
        <xs:element name="Update" type="t:SyncFolderItemsCreateOrUpdateType"/>
        <xs:element name="Delete" type="t:SyncFolderItemsDeleteType"/>
        <xs:element name="ReadFlagChange" type="t:SyncFolderItemsReadFlagType"/>
      </xs:choice>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="SyncFolderItemsDeleteType">
    <xs:sequence>
      <xs:element name="ItemId" type="t:ItemIdType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="SyncFolderItemsReadFlagType">
    <xs:sequence>
      <xs:element name="ItemId" type="t:ItemIdType"/>
      <xs:element name="IsRead" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="SyncFolderItemsScopeType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="NormalItems"/>
      <xs:enumeration value="NormalAndAssociatedItems"/>
    </xs:restriction>
  </xs:complexType>
</xs:schema>
<xs:complexType name="SyncFolderItemsCreateOrUpdateType">
  <xs:choice>
    <xs:element name="Item" type="t:ItemType"/>
    <xs:element name="Message" type="t:Message_Type"/>
    <xs:element name="CalendarItem" type="t:CalendarItemType"/>
    <xs:element name="Contact" type="t:ContactItemType"/>
    <xs:element name="DistributionList" type="t:DistributionListType"/>
    <xs:element name="MeetingMessage" type="t:MeetingMessageType"/>
    <xs:element name="MeetingRequest" type="t:MeetingRequestMessageType"/>
    <xs:element name="MeetingResponse" type="t:MeetingResponseMessageType"/>
    <xs:element name="MeetingCancellation" type="t:MeetingCancellationMessageType"/>
    <xs:element name="Task" type="t:TaskType"/>
    <xs:element name="PostItem" type="t:PostItemType"/>
    <xs:element name="RoleMember" type="t:RoleMemberItemType"/>
    <xs:element name="Network" type="t:NetworkItemType"/>
    <xs:element name="Person" type="t:AbchPersonItemType"/>
  </xs:choice>
</xs:complexType>
8 Appendix C: 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.

- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010
- Microsoft Exchange Server 2013
- Microsoft Exchange Server 2016
- Microsoft Exchange Server 2019

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 3.1.4.1.3.1: Microsoft Exchange Server 2007 Service Pack 3 (SP3) does not specify the Delete element. All other versions of Exchange include this element.

<2> Section 3.1.4.2.3.3: The initial release of Exchange 2007 returns the item of type t:ItemType. Microsoft Exchange Server 2007 Service Pack 1 (SP1) returns the item of type t:ItemType as a t:MessageType type.

<3> Section 3.1.4.2.3.3: Exchange 2007, Exchange 2010, and Exchange 2013 do not support the RoleMember element.

<4> Section 3.1.4.2.3.3: Exchange 2007, Exchange 2010, and Exchange 2013 do not support the Network element.

<5> Section 3.1.4.2.3.3: Exchange 2007, Exchange 2010, and Exchange 2013 do not support the Person element.

<6> Section 3.1.4.2.3.3: Exchange 2007, Exchange 2010, and Exchange 2013 do not support the Booking element.

<7> Section 3.1.4.2.3.8: Exchange 2007 does not support the SyncScope element.
9 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.

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Revision class</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.4.1.3.4 m:SyncFolderHierarchyResponseMessageType Complex Type</td>
<td>Updated 'If this element is included in the response, the value is always &quot;true&quot;' to &quot;If this element is included in the response, the value is &quot;true&quot; for &quot;IncludesLastFolderInRange&quot; description.&quot;</td>
<td>Minor</td>
</tr>
</tbody>
</table>
SyncFolderItems operation example 33
Syntax
messages - overview 11

T
Timer events
server 31
Timers
server 13
Tracking changes 43
Transport 11
Types
complex 12
simple 12

V
Vendor-extensible fields 10
Versioning 10

W
WSDL 36

X
XML schema 38
Messages Schema 38
Types Schema 39