[MS-OXWSSYNC]:

Mailbox Contents Synchronization Web Service Protocol

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Revision Summary

Date	Revision History	Revision Class	Comments
7/15/2009	1.0	Major	Initial Availability.
11/4/2009	1.0.1	Editorial	Revised and edited the technical content.
2/10/2010	1.2.0	Minor	Updated the technical content.
5/5/2010	1.2.1	Editorial	Revised and edited the technical content.
8/4/2010	1.3	Minor	Clarified the meaning of the technical content.
11/3/2010	2.0	Major	Significantly changed the technical content.
3/18/2011	3.0	Major	Significantly changed the technical content.
8/5/2011	3.1	Minor	Clarified the meaning of the technical content.
10/7/2011	3.1	None	No changes to the meaning, language, or formatting of the technical content.
1/20/2012	4.0	Major	Significantly changed the technical content.
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9/14/2016	7.2	None	No changes to the meaning, language, or formatting of the technical content.
12/15/2016	7.3	Minor	Clarified the meaning of the technical content.
7/24/2018	8.0	Major	Significantly changed the technical content.

Date	Revision History	Revision Class	Comments
10/1/2018	9.0	Major	Significantly changed the technical content.
2/21/2023	9.1	Minor	Clarified the meaning of the technical content.
8/15/2023	9.1	None	No changes to the meaning, language, or formatting of the technical content.
11/13/2023	9.2	Minor	Clarified the meaning of the technical content.
2/18/2025	9.2	None	No changes to the meaning, language, or formatting of the technical content.
5/20/2025	10.0	Major	Significantly changed the technical content.

Table of Contents

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-OXWSDLIST] Microsoft Corporation, "Distribution List Creation and Usage Web Service Protocol".

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

[MS-OXWSMSG] Microsoft Corporation, "Email Message Types Web Service Protocol".

[MS-OXWSMTGS] Microsoft Corporation, "Calendaring Web Service Protocol".

[MS-OXWSPOST] Microsoft Corporation, "Post Items Web Service Protocol".

[MS-OXWSSRCH] Microsoft Corporation, "Mailbox Search Web Service Protocol".

[MS-OXWSTASK] Microsoft Corporation, "Tasks Web Service Protocol".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, https://www.rfc-editor.org/info/rfc2119

[RFC2616] Fielding, R., Gettys, J., Mogul, J., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999, https://www.rfc-editor.org/info/rfc2616

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000, https://www.rfc-editor.org/info/rfc2818

[RFC3066] Alvestrand, H., "Tags for the Identification of Languages", BCP 47, RFC 3066, January 2001, https://www.rfc-editor.org/info/rfc3066

[SOAP1.1] Box, D., Ehnebuske, D., Kakivaya, G., et al., "Simple Object Access Protocol (SOAP) 1.1", W3C Note, May 2000, https://www.w3.org/TR/2000/NOTE-SOAP-20000508/

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

[WSIBASIC] Ballinger, K., Ehnebuske, D., Gudgin, M., et al., Eds., "Basic Profile Version 1.0", Final Material, April 2004, http://www.ws-i.org/Profiles/BasicProfile-1.0-2004-04-16.html

[XMLNS] Bray, T., Hollander, D., Layman, A., et al., Eds., "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation, December 2009, https://www.w3.org/TR/2009/REC-xml-names-20091208/

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

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

1.2.2 Informative References

[MS-OXDSCLI] Microsoft Corporation, "Autodiscover Publishing and Lookup Protocol".

[MS-OXPROTO] Microsoft Corporation, "Exchange Server Protocols System Overview".

[MS-OXWSADISC] Microsoft Corporation, "Autodiscover Publishing and Lookup SOAP-Based Web Service Protocol".

1.3 Overview

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.
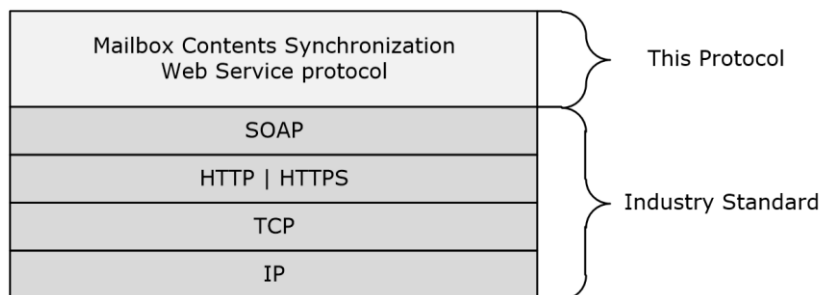
Figure 1: This protocol in relation to other protocols

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:ServerVerstionInfo** 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.

Prefix	Namespace URI	Reference
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
tns	http://schemas.microsoft.com/exchange/services/2006/messages	
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
wsi	http://ws-i.org/schemas/conformanceClaim/	[WSIBASIC]
t	http://schemas.microsoft.com/exchange/services/2006/types	
m	http://schemas.microsoft.com/exchange/services/2006/messages	
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1]

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.

Operation	Description
SyncFolderHierarchy (section 3.1.4.1)	Synchronizes the hierarchical list of folders in the **mailbox**.
SyncFolderItems (section 3.1.4.2)	Synchronized the items in a mailbox folder.

3.1.4.1 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.

```
<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.

```
<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>
      <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>
```

The **SyncFolderHierarchy** operation MUST return one **SyncFolderHierarchyResponseMessage** element in the **ResponseMessages** element of the **SyncFolderHierarchyResponse** element (section 3.1.4.1.2.2). The **SyncFolderHierarchyResponseMessage** 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.

Message	Description
SyncFolderHierarchySoapIn	Specifies the **SOAP message** that requests synchronization information.
SyncFolderHierarchySoapOut	Specifies the SOAP message that is returned by the server in response to a request for synchronization information.

3.1.4.1.1.1   tns:SyncFolderHierarchySoapIn Message

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

```
<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.

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

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.

```
<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.

Part name	Element/type	Description
SyncFolderHierarchyResult	**tns:SyncFolderHierarchyResponse** (section 3.1.4.1.2.2)	Specifies the **SOAP body** of the response to a **SyncFolderHierarchy** operation request.

Part name	Element/type	Description
ServerVersion	**t:ServerVersionInfo** ([MS-OXWSCDATA] section 2.2.3.10)	Specifies a **SOAP header** that identifies the server version for the response to a **SyncFolderHierarchy** operation request.

3.1.4.1.2 Elements

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

Element	Description
SyncFolderHierarchy	Specifies the base element for the **SyncFolderHierarchy** operation.
SyncFolderHierarchyResponse	Specifies the response message from the **SyncFolderHierarchy** operation.

3.1.4.1.2.1   SyncFolderHierarchy Element

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

```
<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).

```
<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.

Complex type	Description
SyncFolderHierarchyChangesType	Specifies a sequenced array of change types that describe the differences between the folders on the client and the folders on the server.
SyncFolderHierarchyCreateOrUpdateType	Specifies a single folder to create or update in the client **message store**.
SyncFolderHierarchyDeleteType	Specifies a folder to delete from the client message store.
SyncFolderHierarchyResponseMessageType	Specifies the status and results of a single call to the

Complex type	Description
	SyncFolderHierarchy operation.
SyncFolderHierarchyResponseType	Specifies the response from the **SyncFolderHierarchy** operation.
SyncFolderHierarchyType	Specifies a request for synchronization information.

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.

```
<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.

Element	Type	Description
Create	**t:SyncFolderHierarchyCreateOrUpdateType** (section 3.1.4.1.3.2)	Specifies a folder that has been created on the server and has to be created on the client.
Update	**t:SyncFolderHierarchyCreateOrUpdateType**	Specifies a folder that has been changed on the server and has to be changed on the client.
Delete	**t:SyncFolderHierarchyDeleteType** (section 3.1.4.1.3.3)	Specifies a folder that has been deleted from the server and has to be deleted from the client.[<1>]

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**.

```
<xs:complexType name="SyncFolderHierarchyCreateOrUpdateType">
```

```
<xs:choice>
  <xs:element name="Folder"
    type="t:FolderType"
    />
  <xs:element name="CalendarFolder"
    type="t:CalendarFolderType"
    />
  <xs:element name="ContactsFolder"
    type="t:ContactsFolderType"
    />
  <xs:element name="SearchFolder"
    type="t:SearchFolderType"
    />
  <xs:element name="TasksFolder"
    type="t:TasksFolderType"
    />
</xs:choice>
</xs:complexType>
```

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

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

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.

Element	Type	Description
FolderId	**t:FolderIdType** ([MS-OXWSCDATA]	Specifies the identifier of the folder to delete from the

Element	Type	Description
	section 2.2.4.35)	client message store.

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).

```
<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.

Element	Type	Description
SyncState	**xs:string** [XMLSCHEMA2]	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.
IncludesLastFolderInRange	xs:boolean [XMLSCHEMA2]	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 "true".
Changes	**t:SyncFolderHierarchyChangesType** (section 3.1.4.1.3.1)	Specifies the differences between the folders on the client and the folders on the server. This element is optional.

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

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

Element	Type	Description
FolderShape	**t:FolderResponseShapeType** ([MS-OXWSCDATA] section 2.2.4.36)	Specifies the properties that are returned in the response.
SyncFolderId	**t:TargetFolderIdType** ([MS-OXWSFOLD] section 2.2.4.16)	Specifies the target folder for the operation. This element is optional.
SyncState	**xs:string** ([XMLSCHEMA2])	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.

3.1.4.1.4 Simple Types

None.

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.

```
<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.

```
<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>
      <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.

Message	Description
SyncFolderItemsSoapIn	Specifies the **SOAP message** that requests item synchronization information.
SyncFolderItemSoapOut	Specifies the SOAP message that is returned by the server in response.

3.1.4.2.1.1 tns:SyncFolderItemsSoapIn Message

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

```
<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.

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

3.1.4.2.1.2 tns:SyncFolderItemsSoapOut

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

```
<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.

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

3.1.4.2.2 Elements

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

Element	Description
SyncFolderItems	Specifies the base element for requests to the **SyncFolderItems** operation.
SyncFolderItemsResponse	Specifies the base element for responses from the **SyncFolderItems** operation.

3.1.4.2.2.1   SyncFolderItems Element

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

```
<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.

```
<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.

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

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).

```
<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.

Element	Type	Description
ItemId	**t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.25)	Specifies the item identifier of the array member.

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.

```
<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.

Element	Type	Description
Create	**t:SyncFolderItemsCreateOrUpdateType** (section 3.1.4.2.3.3)	Specifies an item that has been created on the server and has to be created on the client.

Element	Type	Description
Update	**t:SyncFolderItemsCreateOrUpdateType**	Specifies an item that has been changed on the server and has to be changed on the client.
Delete	**t:SyncFolderItemsDeleteType** (section 3.1.4.2.3.4)	Specifies an item that has been deleted on the server and has to be deleted on the client.
ReadFlagChange	**t:SyncFolderItemsReadFlagType** (section 3.1.4.2.3.5)	Specifies an item that has been marked as read on the server and has to be marked as read on the client.

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**.

```
<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.

Element	Type	Description
Item	**t:ItemType** ([MS-OXWSCORE] section 2.2.4.24)	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 **t:MessageType** type SHOULD<2> be returned.
Message	**t:MessageType** ([MS-OXWSMSG] section 2.2.4.3)	Specifies a message to create or update in the client message store.
CalendarItem	**t:CalendarItemType** ([MS-OXWSMTGS] section 2.2.4.6)	Specifies a calendar item to create or update in the client message store.
Contact	**t:ContactItemType** ([MS-OXWSCONT] section 2.2.4.3)	Specifies a contact to create or update in the client message store.
DistributionList	**t:DistributionListType** ([MS-OXWSDLIST] section 2.2.4.1)	Specifies a distribution list to create or update in the client message store.
MeetingMessage	**t:MeetingMessageType** ([MS-OXWSMTGS] section 2.2.4.15)	Specifies a meeting message to create or update in the client message store.
MeetingRequest	**t:MeetingRequestMessageType** ([MS-OXWSMTGS] section 2.2.4.17)	Specifies a meeting request message to create or update in the client message store.
MeetingResponse	**t:MeetingResponseMessageType** ([MS-OXWSMTGS] section 2.2.4.18)	Specifies a meeting response message to create or update in the client message store.
MeetingCancellation	**t:MeetingCancellationMessageType** ([MS-OXWSMTGS] section 2.2.4.14)	Specifies a meeting cancellation message to create or update in the client message store.
Task	**t:TaskType** ([MS-OXWSTASK] section 2.2.4.6)	Specifies a task to create or update in the client message store.
PostItem	**t:PostItemType** ([MS-OXWSPOST] section 2.2.4.1)	Specifies a post item to create or update in the client message store.
RoleMember	**t:RoleMemberItemType (**[MS-OXWSCORE] section 2.2.4.43**)**	For internal use only.<3>
Network	**t:NetworkItemType (**[MS-OXWSCORE] section 2.2.4.30**)**	For internal use only.<4>
Person	**t:AbchPersonItemType (**[MS-OXWSCONT] section 2.2.4.1**)**	Specifies a person to create or update in the client message store.<5>
Booking	**t:BookingItemType (**[MS-OXWSCDATA] section 2.2.4.20**)**	For internal use only.<6>

3.1.4.2.3.4   t:SyncFolderItemsDeleteType Complex Type

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

```
<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.

Element	Type	Description
ItemId	**t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.25)	Specifies the identifier of the item to delete from the client message store.

3.1.4.2.3.5   t:SyncFolderItemsReadFlagType Complex Type

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

```
<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.

Element	Type	Description
ItemID	**t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.25)	Specifies the identifier of the read item.
IsRead	**xs:boolean** ([XMLSCHEMA2])	Specifies a Boolean value that indicates whether the item has been read.

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).

```
<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>
```

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

Element	Type	Description
SyncState	**xs:string** ([XMLSCHEMA2])	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.
IncludesLastItemInRange	**xs:boolean** ([XMLSCHEMA2])	Specifies a Boolean value that indicates whether the last item to synchronize is included in the response. This element is optional.
Changes	**t:SyncFolderItemsChangesType** (section 3.1.4.2.3.2)	Specifies the differences between the items on the client and the items on the server. This element is optional.

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).

```
<xs:complexType name="SyncFolderItemsResponseType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseResponseMessageType"
     />
  </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).

```
<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.

Element	Type	Description
ItemShape	**t:ItemResponseShapeType** ([MS-OXWSCDATA] section 2.2.4.42)	Specifies the item properties that are returned in a response message.
SyncFolderId	**t:TargetFolderIdType** ([MS-OXWSFOLD] section 2.2.4.16)	Specifies the identity of the folder that contains the items to synchronize.

Element	Type	Description
SyncState	**xs:string** ([XMLSCHEMA2])	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.
Ignore	**t:ArrayOfBaseItemIdsType** (section 3.1.4.2.3.1)	Specifies an array of items to skip for synchronization. This element is optional.
MaxChangesReturned	**t:MaxSyncChangesReturnedType** (section 3.1.4.2.4.1)	Specifies the maximum number of changes that can be returned in a synchronization response. This element MUST be set between 1 and 512, inclusive.
SyncScope	**t:SyncFolderItemsScopeType** (section 3.1.4.2.4.2)	Specifies whether only items or items and **folder associated information (FAI)** are returned. This element is optional. <7>
NumberOfDays	**xs:int** ([XMLSCHEMA2])	Specifies the time window (expressed in a number of days) of the items to include in a synchronization response.
MaximumCount	**xs:int** ([XMLSCHEMA2])	Specifies the maximum number of items (from the latest received time) to include in a synchronization response.
MinimumCount	**xs:int** ([XMLSCHEMA2])	Specifies the minimum number of items (from the latest received time) to include in a synchronization response.

3.1.4.2.4 Simple Types

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

Simple type	Description
MaxSyncChangesReturnedType	Specifies the size of the range of responses returned by an item synchronization request.
SyncFolderItemsScopeType	Specifies whether an item synchronization request includes folder associated information (FAI).

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.

```
<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   t: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.

```
<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,

Value	Description
NormalItems	Specifies that only items in the folder are returned.
NormalAndAssociatedItems	Specifies that folder associated information is returned along with the items in the folder.

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 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>
    <SyncFolderHierarchy
           xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
      <FolderShape>
        <t:BaseShape>AllProperties</t:BaseShape>
      </FolderShape>
      <SyncState>H4sIA=</SyncState>
    </SyncFolderHierarchy>
  </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 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="http://schemas.microsoft.com/exchange/services/2006/messages">
      <m: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:TotalCount>0</t:TotalCount>
                    <t:ChildFolderCount>0</t:ChildFolderCount>
                    <t:UnreadCount>0</t:UnreadCount>
                  </t:Folder>
                </t:Create>
              </m:Changes>
            </m:SyncFolderHierarchyResponseMessage>
          </m:ResponseMessages>
        </SyncFolderHierarchyResponse>
      </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 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 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>
          <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:MeetingRequest>
                      <t:ItemId Id="AQApAHRwA==" 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:MeetingRequest>
                  </t:Create>
                </m:Changes>
              </m:SyncFolderItemsResponseMessage>
            </m:ResponseMessages>
          </SyncFolderItemsResponse>
        </soap:Body>
      </soap:Envelope>
```

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.

File name	Description	Section
MS-OXWSSYNC.wsdl	Contains the **WSDL** for the implementation of this protocol.	6
MS-OXWSSYNC-messages.xsd	Contains the XML schema message definitions that are used in this protocol.	7.1
MS-OXWSSYNC-types.xsd	Contains the XML schema type definitions that are used in this protocol.	7.2

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 version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages">
    <wsdl:types>
        <xs:schema id="messages" elementFormDefault="qualified" version="Exchange2016"
xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
            <xs:include schemaLocation="MS-OXWSSYNC-messages.xsd"/>
            <xs:include schemaLocation="MS-OXWSCDATA-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"
xmlns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
            <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
            <!-- Add global elements and types from types.xsd -->
        </xs:schema>
    </wsdl:types>
    <wsdl: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:part name="ServerVersion" element="t:ServerVersionInfo"/>
    </wsdl:message>
    <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: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>
                    <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>
                    <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>

</wsdl:definitions>
```

7 Appendix B: Full XML Schema

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

Schema name	Prefix	Section
Messages schema	m:	7.1
Types schema	t:	7.2

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.

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

```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"
elementFormDefault="qualified" version="Exchange2016" id="messages">
     <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
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>
            <xs:complexType name="SyncFolderHierarchyResponseType">
                  <xs:complexContent>
                        <xs:extension base="m:BaseResponseMessageType"/>
                  </xs:complexContent>
            </xs:complexType>
            <xs:element name="SyncFolderHierarchyResponse"
 type="m:SyncFolderHierarchyResponseType"/>
            <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>
            <xs:element name="SyncFolderItems" type="m:SyncFolderItemsType"/>
            <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>
            <xs:complexType name="SyncFolderItemsResponseType">
                  <xs:complexContent>
                        <xs:extension base="m:BaseResponseMessageType"/>
                  </xs:complexContent>
            </xs:complexType>
            <xs:element name="SyncFolderItemsResponse" type="m:SyncFolderItemsResponseType"/>
      </xs:schema>
```

7.2   Types Schema

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

MS-OXWSSYNC-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.

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

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

```
<xs:schema xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
elementFormDefault="qualified" version="Exchange2016" id="types">
    <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
    <xs:include schemaLocation="MS-OXWSFOLD-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:simpleType name="MaxSyncChangesReturnedType">
        <xs:restriction base="xs:int">
            <xs:minInclusive value="1"/>
            <xs:maxInclusive value="512"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="SyncFolderHierarchyCreateOrUpdateType">
        <xs:choice>
            <xs:element name="Folder" type="t:FolderType"/>
            <xs:element name="CalendarFolder" type="t:CalendarFolderType"/>
            <xs:element name="ContactsFolder" type="t:ContactsFolderType"/>
            <xs:element name="SearchFolder" type="t:SearchFolderType"/>
            <xs:element name="TasksFolder" type="t:TasksFolderType"/>
        </xs:choice>
    </xs:complexType>
    <xs:complexType name="SyncFolderHierarchyDeleteType">
        <xs:sequence>
            <xs:element name="FolderId" type="t:FolderIdType"/>
        </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:simpleType name="SyncFolderItemsScopeType">
        <xs:restriction base="xs:string">
            <xs:enumeration value="NormalItems"/>
            <xs:enumeration value="NormalAndAssociatedItems"/>
        </xs:restriction>
```

```
        </xs:simpleType>
        <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>
    </xs:schema>
```

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

- Microsoft Exchange Server Subscription Edition

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.

Section	Description	Revision class
7.2 Types Schema	Added element Booking to SyncFolderItemsCreateOrUpdateType complex type.	Minor
8 Appendix C: Product Behavior	Updated list of supported products.	Major

10 Index