[MS-OXWSSYNC]:
Mailbox Contents Synchronization Web Service Protocol

Revision Summary

Date	Revision History	Revision Class	Comments
07/15/2009	1.0	Major	Initial Availability.
11/04/2009	1.0.1	Editorial	Revised and edited the technical content.
02/10/2010	1.2.0	Minor	Updated the technical content.
05/05/2010	1.2.1	Editorial	Revised and edited the technical content.
08/04/2010	1.3	Minor	Clarified the meaning of the technical content.
11/03/2010	2.0	Major	Significantly changed the technical content.
03/18/2011	3.0	Major	Significantly changed the technical content.
08/05/2011	3.1	Minor	Clarified the meaning of the technical content.
10/07/2011	3.1	No change	No changes to the meaning, language, or formatting of the technical content.
01/20/2012	4.0	Major	Significantly changed the technical content.
04/27/2012	4.0	No change	No changes to the meaning, language, or formatting of the technical content.
07/16/2012	4.0	No change	No changes to the meaning, language, or formatting of the technical content.
10/08/2012	5.0	Major	Significantly changed the technical content.
02/11/2013	6.0	Major	Significantly changed the technical content.

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1 Introduction

The Mailbox Contents Synchronization Web Service Protocol is used for providing the necessary information to keep a local data **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 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

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

> **Hypertext Transfer Protocol (HTTP)**
> **Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**
> **XML**

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

> **base64 encoding**
> **endpoint**
> **folder associated information (FAI)**
> **mailbox**
> **Sent Items folder**
> **Simple Object Access Protocol (SOAP)**
> **SOAP action**
> **SOAP body**
> **SOAP header**
> **SOAP message**
> **store**
> **Uniform Resource Locator (URL)**
> **web server**
> **Web Services Description Language (WSDL)**
> **WSDL message**
> **WSDL port type**
> **XML namespace**
> **XML schema**

The following terms are specific to this document:

> **MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as described in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the technical documents, which are updated frequently. References to other documents include a publishing year when one is available.

1.2.1   Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

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

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

[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, http://www.rfc-editor.org/rfc/rfc2119.txt

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

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

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

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

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

[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, http://www.w3.org/TR/2009/REC-xml-names-20091208/

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

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

1.2.2   Informative References

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

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

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

[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 data 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 (4)** 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.
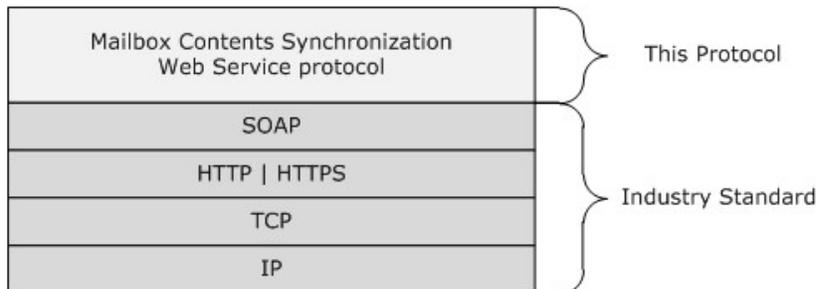
Figure 1: This protocol in relation to other protocols

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 (4) **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 (4) 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 data 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 2.2.5.9, and the version of the server responding to the request is identified by using the **t:ServerVerstionInfo** element, as described in [MS-OXWSCDATA] section 2.2.5.10.

- **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   Server 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 2.2.4.16).

3.1.4.1.1 Messages

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

Message	Description
SyncFolderHiearchySoapIn	Specifies the **SOAP message** that requests synchronization information.

Message	Description
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 2.2.5.3)	Specifies a **SOAP header** that identifies the user whom the client application is impersonating.
MailboxCulture	**t:MailboxCulture** ([MS-OXWSCDATA] section 2.2.5.6)	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 2.2.5.9)	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 **SyncFolderHiearchy** operation request.
ServerVersion	**t:ServerVersionInfo** ([MS-OXWSCDATA] section 2.2.5.10)	Specifies a SOAP header that identifies the server version for the response to a **SyncFolderHiearchy** 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 **SyncFolderHieararchy** operation.
SyncFolderHierarchyResponse	Specifies the response message from the **SyncFolderHiearchy** 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.

Complex type	Description
SyncFolderHierarchyCreateOrUpdateType	Specifies a single folder to create or update in the client data store.
SyncFolderHierarchyDeleteType	Specifies a folder to delete from the client data store.
SyncFolderHierarchyResponseMessageType	Specifies the status and results of a single call to the **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.

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 data 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 2.2.4.10)	Specifies a regular folder to create or update in the client data store.
CalendarFolder	**t:CalendarFolderType** ([MS-OXWSMTGS] section 2.2.4.3)	Specifies a calendar folder to create or update in the client data store.
ContactsFolder	**t:ContactsFolderType** ([MS-OXWSCONT] section 3.1.4.1.2.2)	Specifies a contacts folder to create or update in the client data store.
SearchFolder	**t:SearchFolderType** ([MS-OXWSSRCH] section 2.2.4.26)	Specifies a search folder to create or update in the client data store.
TasksFolder	**t:TasksFolderType** ([MS-OXWSTASK] section 2.2.4.2)	Specifies a tasks folder to create or update in the client data store.

3.1.4.1.3.3 t:SyncFolderHierarchyDeleteType Complex Type

The **SyncFolderHierarchyDeleteType** complex type specifies a folder to delete from the client data 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] section 2.2.4.31)	Specifies the identifier of the folder to delete from the client data 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 2.2.4.57).

```
<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 **SyncFolderHieracrchyResponseMessageType** 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

Element	Type	Description
		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 always "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 2.2.4.16).

```
<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 data store. The **SyncFolderHierarchyType** complex type extends the **BaseRequestType** complex type ([MS-OXWSCDATA] section 2.2.4.15).

```
<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 2.2.4.32)	Specifies the properties that are returned in the response.
SyncFolderId	**t:TargetFolderIdType** ([MS-OXWSFOLD] section 2.2.4.14)	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 2.2.5.3)	Specifies a SOAP header that identifies the user whom the client application is impersonating.
MailboxCulture	**t:MailboxCulture** ([MS-OXWSCDATA] section 2.2.5.6)	Specifies a SOAP header that identifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066].

Part name	Element/type	Description
RequestVersion	**t:RequestServerVersion** ([MS-OXWSCDATA] section 2.2.5.9)	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 **SyncFoldersItems** 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 2.2.5.10)	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 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 data store.
SyncFolderItemsDeleteType	Specifies an item to delete from the client data store.
SyncFolderItemsReadFlagType	Specifies whether an item on the server has been read.
SyncFolderItemsType	Specifies a request to the **SyncFolderItems** operation.
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 data store.

3.1.4.2.3.1 t:ArrayOfBaseItemIdsType Complex Type

The **ArrayOfBaseItemIdsType** complex type specifies zero or more **ItemIdType** types ([MS-OXWSCORE] section 2.2.4.19).

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

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

Element	Type	Description
ItemId	**t:ItemIdType** ([MS-OXWSCORE] section 2.2.4.19)	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.
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 data 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:choice>
</xs:complexType>
```

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

Element	Type	Description
Item	**t:ItemType** ([MS-OXWSCORE] section 2.2.4.8)	Specifies an item to create or update in the client data store.<1>
Message	**t:MessageType** ([MS-OXWSMSG] section 2.2.4.1)	Specifies a message to create or update in the client data store.

Element	Type	Description
CalendarItem	**t:CalendarItemType** ([MS-OXWSMTGS] section 2.2.4.4)	Specifies a calendar item to create or update in the client data store.
Contact	**t:ContactItemType** ([MS-OXWSCONT] section 2.2.4.2)	Specifies a contact to create or update in the client data store.
DistributionList	**t:DistributionListType** ([MS-OXWSDLIST] section 2.2.4.3)	Specifies a distribution list to create or update in the client data store.
MeetingMessage	**t:MeetingMessageType** ([MS-OXWSMTGS] section 2.2.4.12)	Specifies a meeting message to create or update in the client data store.
MeetingRequest	**t:MeetingRequestMessageType** ([MS-OXWSMTGS] section 2.2.4.13)	Specifies a meeting request message to create or update in the client data store.
MeetingResponse	**t:MeetingResponseMessageType** ([MS-OXWSMTGS] section 2.2.4.14)	Specifies a meeting response message to create or update in the client data store.
MeetingCancellation	**t:MeetingCancellationMessageType** ([MS-OXWSMTGS] section 2.2.4.11)	Specifies a meeting cancellation message to create or update in the client data store.
Task	**t:TaskType** ([MS-OXWSTASK] section 2.2.4.3)	Specifies a task to create or update in the client data store.
PostItem	**t:PostItemType** ([MS-OXWSPOST] section 2.2.4.1)	Specifies a post item to create or update in the client data store.

3.1.4.2.3.4   t:SyncFolderItemsDeleteType Complex Type

The **SyncFolderItemsDeleteType** complex type specifies an item to delete from the client data 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 2.2.4.19)	Specifies the identifier of the item to delete from the client data 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 2.2.4.19)	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 2.2.4.57).

```
<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 2.2.4.16).

```
<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 data store. The **SyncFolderItemsType** complex type extends the
BaseRequestType complex type ([MS-OXWSCDATA] section 2.2.4.15).

```
<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: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 2.2.4.38)	Specifies the item properties that are returned in a response message.
SyncFolderId	**t:TargetFolderIdType** ([MS-OXWSFOLD] section 2.2.4.14)	Specifies the identity of the folder that contains the items to synchronize.
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.

Element	Type	Description
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. <2>

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>
```

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```
                <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
<?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="Exchange2013"
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="Exchange2013"
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="Exchange2013" 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"/>
```

```xml
                        <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: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
<?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="Exchange2013" 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"/>
```

```xml
                    <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: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 released service packs:

- Microsoft Exchange Server 2007

- Microsoft Exchange Server 2010

- Microsoft Exchange Server 2013

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

<1> Section 3.1.4.2.3.3: Exchange 2007 SP1, Exchange 2010, and Exchange 2013 do not support the **ItemType** complex type. If a client creates an item of this type, a **MessageType** complex type is returned.

<2> 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 the [MS-OXWSSYNC] protocol document between the October 2012 and February 2013 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

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

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements or functionality.

- An extensive rewrite, addition, or deletion of major portions of content.

- The removal of a document from the documentation set.

- Changes made for template compliance.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

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

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

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

- New content added.

- Content updated.

- Content removed.

- New product behavior note added.

- Product behavior note updated.

- Product behavior note removed.

- New protocol syntax added.

- Protocol syntax updated.

- Protocol syntax removed.

- New content added due to protocol revision.

- Content updated due to protocol revision.

- Content removed due to protocol revision.

- New protocol syntax added due to protocol revision.

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- Protocol syntax updated due to protocol revision.

- Protocol syntax removed due to protocol revision.

- New content added for template compliance.

- Content updated for template compliance.

- Content removed for template compliance.

- Obsolete document removed.

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

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

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.

- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

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

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
2.2.4 Complex Types	Moved the complex types to the operations that use them.	Y	Content updated.
3.1.4.1.3 Complex Types	Moved the SyncFolderHierarchyChangesType, SyncFolderHierarchyCreateOrUpdateType e, SyncFolderHierarchyDeleteType, and SyncFolderHierarchyResponseMessageTy pe complex types from Common Message Syntax.	Y	Content updated.
3.1.4.1.3.1 t:SyncFolderHierarchyChangesType Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.1.3.2 t:SyncFolderHierarchyCreateOrUpdateType Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.1.3.3 t:SyncFolderHierarchyDeleteType Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.1.3.4 m:SyncFolderHierarchyResponseMessageTy pe Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.1.3.4	Updated description of	Y	Content

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
m:SyncFolderHierarchyResponseMessageType Complex Type	IncludesLastFolderInRange to specify that the value is always "true".		updated.
3.1.4.1.3.5 m:SyncFolderHierarchyResponseType Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.1.3.6 m:SyncFolderHierarchyType Complex Type	Specified that not including SyncState returns all items in their current state.	N	Content updated.
3.1.4.2.3 Complex Types	Moved SyncFolderItemsChangesType, SyncFolderItemsCreateOrUpdateType, SyncFolderItemsDeleteType, SyncFolderItemsReadFlagType, and SyncFolderItemsResponseMessageType from Common Message Syntax.	Y	Content updated.
3.1.4.2.3.3 t:SyncFolderItemsCreateOrUpdateType Complex Type	Added product behavior note for ItemType complex type.	Y	New product behavior note added.
3.1.4.2.3.5 t:SyncFolderItemsReadFlagType Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.2.3.6 m:SyncFolderItemsResponseMessageType Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.2.3.8 m:SyncFolderItemsType Complex Type	Added product behavior note to describe support of SyncScope element.	Y	New product behavior note added.
3.1.4.2.3.8 m:SyncFolderItemsType Complex Type	Moved type from Common Message Syntax section.	Y	Content updated.
3.1.4.2.3.8 m:SyncFolderItemsType Complex Type	Specified that not including SyncState returns all items in their current state.	N	Content updated.

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10 Index