

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

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## Revision Summary

Date	Revision History	Revision Class	Comments
07/15/2009	1.0	Major	Initial Availability.
11/04/2009	1.0.1	Editorial	Revised and edited the technical content.
02/10/2010	1.2.0	Minor	Updated the technical content.
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08/04/2010	1.3	Minor	Clarified the meaning of the technical content.

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# 1 Introduction

This document specifies the Mailbox Contents Synchronization Web Service protocol, which is responsible for providing the necessary information to keep a local **mailbox** store synchronized with the server mailbox store. Clients use the SOAP protocol [[SOAP1.1](#)] to contact the synchronization service.

## 1.1 Glossary

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

**base64 encoding**  
**folder associated information (FAI)**  
**Hypertext Transfer Protocol (HTTP)**  
**Hypertext Transfer Protocol over Secure Socket Layers (HTTPS)**  
**mailbox**  
**SOAP body**  
**SOAP fault**  
**SOAP header**  
**SOAP message**  
**store**  
**Web Services Description Language (WSDL)**  
**WSDL message**  
**WSDL port type**  
**XML**  
**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

### 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](mailto: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](#)", July 2009.

[MS-OXWSCONT] Microsoft Corporation, "[Contacts Web Service Protocol Specification](#)", July 2009.

[MS-OXWSCORE] Microsoft Corporation, "[Core Items Web Service Protocol Specification](#)", July 2009.

[MS-OXWSFOLD] Microsoft Corporation, "[Folders and Folder Permissions Web Service Protocol Specification](#)", July 2009.

[MS-OXWSMSG] Microsoft Corporation, "[E-Mail Message Types Web Service Protocol Specification](#)", July 2009.

- [MS-OXWSMTGS] Microsoft Corporation, "[Calendaring Web Service Protocol Specification](#)", July 2009.
- [MS-OXWSPOST] Microsoft Corporation, "[Post Items Web Service Protocol Specification](#)", July 2009.
- [MS-OXWSSRCH] Microsoft Corporation, "[Mailbox Search Web Service Protocol Specification](#)", July 2009.
- [MS-OXWSTASK] Microsoft Corporation, "[Tasks Web Service Protocol Specification](#)", July 2009.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.ietf.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 Languages", BCP 47, 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", W3C Note, May 2000, <http://www.w3.org/TR/2000/NOTE-SOAP-20000508/>
- [WSDL] Christensen, E., Curbera, F., Meredith, G., and Weerawarana, S., "Web Services Description Language (WSDL) 1.1", W3C Note, March 2001, <http://www.w3.org/TR/2001/NOTE-wsdl-20010315>
- [XMLNS] Bray, T., Hollander, D., Layman, A., Eds., et al., "Namespaces in XML 1.0 (Third Edition)", December 2009, <http://www.w3.org/TR/REC-xml-names/>
- [XMLSCHEMA1] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>
- [XMLSCHEMA2] Biron, P., 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

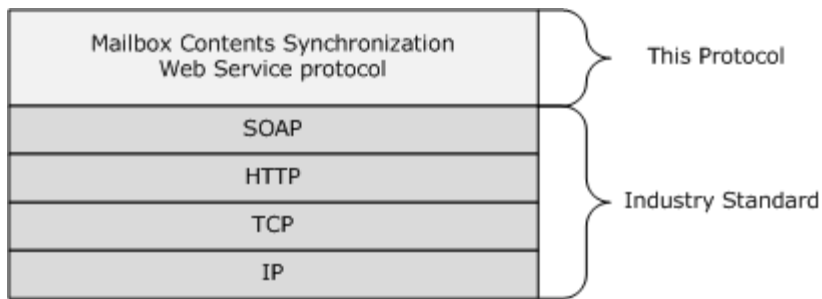
- [MS-OXGLOS] Microsoft Corporation, "[Exchange Server Protocols Master Glossary](#)", April 2008.

## 1.3 Overview

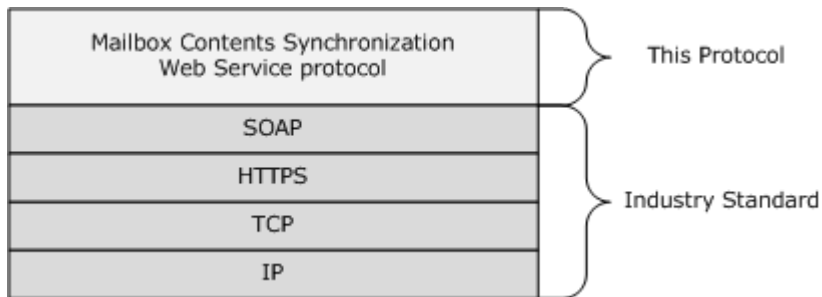
The Mailbox Contents Synchronization Web Service protocol enables clients to synchronize a local data store with the contents of a mailbox on a server. It provides operations to return synchronization information for mailbox folders and the items in those folders. It provides synchronization state so that clients can request synchronization changes from the last synchronization request.

## 1.4 Relationship to Other Protocols

The Mailbox Synchronization Web Service protocol uses SOAP over **HTTP** [[RFC2616](#)] and SOAP over **HTTPS** [[RFC2818](#)], as shown in the following figures.



**Figure 1: Mailbox Synchronization Web Service protocol HTTP stack**



**Figure 2: Mailbox Synchronization Web Service protocol HTTPS stack**

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

- Common Web Service Data Types protocol [\[MS-OXWSCDATA\]](#)
- Contracts Web Service protocol [\[MS-OXWSCONT\]](#)
- E-Mail Message Types Web Service protocol [\[MS-OXWSMSG\]](#)
- Calendaring Web Service protocol [\[MS-OXWSMTGS\]](#)
- Post Items Web Service protocol [\[MS-OXWSPOST\]](#)
- Mailbox Search Web Service protocol [\[MS-OXWSSRCH\]](#)
- Tasks Web Service protocol [\[MS-OXWSTASK\]](#)

## 1.5 Prerequisites/Preconditions

None.

## 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.
- **Security and Authentication Methods:** This protocol relies on the Web server that is hosting it to perform authentication.
- **Capability Negotiation:** None.

## 1.8 Vendor-Extensible Fields

None.

## 1.9 Standards Assignments

None.



## 2 Messages

### 2.1 Transport

The SOAP version supported is SOAP 1.1. For details, see [\[SOAP1.1\]](#).

### 2.2 Common Message Syntax

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

#### 2.2.1 Namespaces

This specification defines and references various **XML namespaces** using the mechanisms specified in [XMLNS]. Although this specification associates a specific XML namespace prefix for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and not significant for interoperability.

Prefix	Namespace URI	Reference
soap	<a href="http://schemas.xmlsoap.org/wsdl/soap/">http://schemas.xmlsoap.org/wsdl/soap/</a>	<a href="#">[SOAP1.1]</a>
tns	<a href="http://schemas.microsoft.com/exchange/services/2006/messages">http://schemas.microsoft.com/exchange/services/2006/messages</a>	
s	<a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>	<a href="#">[XMLSCHEMA1]</a>
targetNamespace	<a href="http://schemas.microsoft.com/exchange/services/2006/messages">http://schemas.microsoft.com/exchange/services/2006/messages</a>	
wsdl	<a href="http://schemas.xmlsoap.org/wsdl/">http://schemas.xmlsoap.org/wsdl/</a>	<a href="#">[WSDL]</a>
t	<a href="http://schemas.microsoft.com/exchange/services/2006/types">http://schemas.microsoft.com/exchange/services/2006/types</a>	

#### 2.2.2 Simple Types

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

#### 2.2.3 Complex Types

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

Complex Type	Description
<b>SyncFolderHierarchyResponseMessageType</b> (section <a href="#">2.2.3.1</a> )	Specifies the status and results of a single call to the <b>SyncFolderHierarchy</b> operation (section <a href="#">3.1.4.1</a> ).
<b>SyncFolderItemsResponseMessageType</b> (section <a href="#">2.2.3.2</a> )	Specifies the status and results of a single call to the <b>SyncFolderItems</b> operation (section <a href="#">3.1.4.2</a> ).
<b>SyncFolderHierarchyChangesType</b> (section <a href="#">2.2.3.3</a> )	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
<b>SyncFolderHierarchyCreateOrUpdateType</b> (section <a href="#">2.2.3.4</a> )	Specifies a single folder to create or update in the client data <b>store</b> .
<b>SyncFolderHierarchyDeleteType</b> (section <a href="#">2.2.3.5</a> )	Specifies a folder to delete from the client data store.
<b>SyncFolderItemsChangesType</b> (section <a href="#">2.2.3.6</a> )	Specifies a sequenced array of change types that describe the differences between the items on the client and the items on the server.
<b>SyncFolderItemsCreateOrUpdateType</b> (section <a href="#">2.2.3.7</a> )	Specifies a single item to create or update in the client data store.
<b>SyncFolderItemsDeleteType</b> (section <a href="#">2.2.3.8</a> )	Specifies an item to remove from the client data store.
<b>SyncFolderItemsReadFlagType</b> (section <a href="#">2.2.3.9</a> )	Specifies whether an item on the server has been read.

### 2.2.3.1 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 2.2.3.52).

```
<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>
```

#### Child Elements

Element	Type	Description
SyncState	xs:string	Specifies a <b>base64-encoded</b> form of the synchronization data that is used to identify the synchronization state. Can be present.
IncludesLastFolderInRange	xs:boolean	Specifies a Boolean value that indicates whether the last folder to synchronize is included in the response. Can be present.
Changes	<a href="#">t:SyncFolderHierarchyChangesType</a>	Specifies the differences between the folders on the client and the folders on the server. Can be present.

### 2.2.3.2 m:SyncFolderItemsResponseMessageType Complex Type

The **SyncFolderItemsResponseMessageType** complex type specifies the status and results of a single call to the **SyncFolderHierarchy** operation (section [3.1.4.1](#)). The **SyncFolderItemsResponseMessageType** complex type extends the **ResponseMessageType** complex type ([\[MS-OXWSCDATA\]](#) section 2.2.3.52).

```
<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="IncludesLastFolderInRange"
          type="xs:boolean"
          minOccurs="0"
        />
        <xs:element name="Changes"
          type="t:SyncFolderItemsChangesType"
          minOccurs="0"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

#### Child Elements

Element	Type	Description
SyncState	xs:string	Specifies a base64-encoded form of the synchronization data that is used to identify the synchronization state.

Element	Type	Description
		Can be present.
IncludesLastFolderInRange	xs:boolean	Specifies a Boolean value that indicates whether the last item to synchronize is included in the response. Can be present.
Changes	<a href="#">t:SyncFolderItemsChangesType</a>	Specifies the differences between the items on the client and the items on the server. Can be present.

### 2.2.3.3 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>
```

#### Child Elements

Element	Type	Description
Create	<a href="#">t:SyncFolderHierarchyCreateOrUpdateType</a>	Specifies a folder that has been created on the server and has to be created on the client.
Update	<b>t:SyncFolderHierarchyCreateOrUpdateType</b>	Specifies a folder that has been changed on the server and has to be changed on the client.
Delete	<a href="#">t:SyncFolderHierarchyDeleteType</a>	Specifies a folder that has been deleted on the server and has to be deleted on the client.

### 2.2.3.4 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>
```

#### Child Elements

Element	Type	Description
Folder	<a href="#">t:FolderType</a>	Specifies a regular folder to create or update in the client data store.
CalendarFolder	<a href="#">t:CalendarFolderType</a>	Specifies a calendar folder to create or update in the client data store.
ContactsFolder	<a href="#">t:ContactsFolderType</a>	Specifies a contacts folder to create or update in the client data store.
SearchFolder	<a href="#">t:SearchFolderType</a>	Specifies a search folder to create or update in the client data store.
TasksFolder	<a href="#">t:TasksFolderType</a>	Specifies a tasks folder to create or update in the client data store.

### 2.2.3.5 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>
```

#### Child Elements

Element	Type	Description
FolderId	<a href="#">t:FolderIdType</a>	Specifies the identifier of the folder to delete from the client data store.

### 2.2.3.6 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>
```

#### Child Elements

Element	Type	Description
Create	<a href="#">t:SyncFolderItemsCreateOrUpdateType</a>	Specifies an item that has been created on the server and has to be created on the client.
Update	<b>t:SyncFolderItemsCreateOrUpdateType</b>	Specifies an item that has been changed on the server and has to be changed on the client.
Delete	<a href="#">t:SyncFolderItemsDeleteType</a>	Specifies an item that has been deleted on the server and has to be deleted on the client.
ReadFlagChange	<a href="#">t:SyncFolderItemsReadFlagType</a>	Specifies an item that has been marked as read on the server and has to be

Element	Type	Description
		marked as read on the client.

### 2.2.3.7 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>
```

#### Child Elements

Element	Type	Description
Item	<a href="#">t:ItemType</a>	Specifies an item to create or update in the client data store.
Message	<a href="#">t:MessageType</a>	Specifies a message to create or update

Element	Type	Description
		in the client data store.
CalendarItem	<a href="#">t:CalendarItemType</a>	Specifies a calendar item to create or update in the client data store.
Contact	<a href="#">t:ContactItemType</a>	Specifies a contact to create or update in the client data store.
DistributionList	<a href="#">t:DistributionListType</a>	Specifies a distribution list to create or update in the client data store.
MeetingMessage	<a href="#">t:MeetingMessageType</a>	Specifies a meeting message to create or update in the client data store.
MeetingRequest	<a href="#">t:MeetingRequestMessageType</a>	Specifies a meeting request message to create or update in the client data store.
MeetingResponse	<a href="#">t:MeetingResponseMessageType</a>	Specifies a meeting response message to create or update in the client data store.
MeetingCancellation	<a href="#">t:MeetingCancellationMessageType</a>	Specifies a meeting cancellation message to create or update in the client data store.
Task	<a href="#">t:TaskType</a>	Specifies a task to create or update in the client data store.
PostItem	<a href="#">t:PostItemType</a>	Specifies a post item to create or update in the client data store.

### 2.2.3.8 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>
```

Child Elements

Element	Type	Description
ItemId	<a href="#">t:ItemIdType</a>	Specifies the identifier of the item to delete from the client data store.

### 2.2.3.9 t:SyncFolderItemsReadFlagType Complex Type

The **SyncFolderItemsReadFlagType** complex 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>

```

#### Child Elements

Element	Type	Description
ItemID	<a href="#">t:ItemIdType</a>	Specifies the identifier of the read item.
IsRead	xs:boolean	Specifies a Boolean value that indicates whether the item has been read.

#### 2.2.4 Elements

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

#### 2.2.5 Attributes

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

#### 2.2.6 Groups

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

#### 2.2.7 Attribute Groups

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

#### 2.2.8 Messages

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

## 3 Protocol Details

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

Operation	Description
<a href="#">SyncFolderHierarchy</a>	Synchronizes the hierarchical list of folders in the mailbox.
<a href="#">SyncFolderItems</a>	Synchronizes the items in a mailbox folder.

#### 3.1.1 Abstract Data Model

The Mailbox Contents Synchronization Web Service protocol is a stateless protocol.

#### 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
<b>SyncFolderHierarchy</b> (section <a href="#">3.1.4.1</a> )	Synchronizes the hierarchical list of folders in the mailbox.
<b>SyncFolderItems</b> (section <a href="#">3.1.4.2</a> )	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.

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

Request

Message Format	Description
<a href="#">tns:SyncFolderHierarchySoapIn</a>	Specifies the <b>SOAP message</b> that requests the folder synchronization information.

Response

Message Format	Description
<a href="#">tns:SyncFolderHierarchySoapOut</a>	Specifies the SOAP message that is returned by the server in response.

### 3.1.4.1.1 Complex Types

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

#### 3.1.4.1.1.1 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 2.2.3.14).

```
<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>
```

Child Elements

Element	Type	Description
FolderShape	<a href="#">t:FolderResponseShapeType</a>	Specifies the properties that are returned in the response.
SyncFolderId	<a href="#">t:TargetFolderIdType</a>	Specifies the target folder for the operation. Can be present.

Element	Type	Description
SyncState	xs:string	Specifies the synchronization state of a previous synchronization for an incremental synchronization call. If this element is not specified, all synchronization information is returned. Can be present.

### 3.1.4.1.1.2 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 2.2.3.15).

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

### 3.1.4.1.2 Elements

The following **XML schema** element definitions are specific to this 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 Messages

The following **WSDL message** definitions are specific to this operation.

### 3.1.4.1.3.1 tns:SyncFolderHierarchySoapIn Message

The **SyncFolderHierarchySoapIn** message contains five parts, as described in the following table.

Part Name	Element/Type	Description
request	<a href="#">tns:SyncFolderHierarchy</a>	Specifies the request.
Impersonation	<a href="#">t:ExchangeImpersonation</a>	Specifies the user whom the client application is impersonating.
MailboxCulture	<a href="#">t:MailboxCulture</a>	Specifies the culture to use for accessing the mailbox. The cultures are defined by <a href="#">[RFC3066]</a> .
RequestVersion	<a href="#">t:RequestServerVersion</a>	Specifies the schema version for the request.

### 3.1.4.1.3.2 tns:SyncFolderHierarchySoapOut

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

Part Name	Element/Type	Description
SyncFolderHierarchyResult	<a href="#">tns:SyncFolderHierarchyResponse</a>	Specifies the response.
ServerVersion	<a href="#">t:ServerVersionInfo</a>	Specifies the server version for the response.

### 3.1.4.2 SyncFolderItems

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

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

Request

Message Format	Description
<a href="#">tns:SyncFolderItemsSoapIn</a>	Specifies the SOAP message that requests the item synchronization information.

Response

Message Format	Description
<a href="#">tns:SyncFolderItemsSoapOut</a>	Specifies the SOAP message that is returned by the server in response.

### 3.1.4.2.1 Simple Types

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

#### 3.1.4.2.1.1 t:MaxSyncChangesReturnedType Simple Type

The **MaxSyncChangesReturnedType** simple type specifies the size of the range of responses that can be 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>
```

#### 3.1.4.2.1.2 t:SyncFolderItemsScopeType Simple Type

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

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

#### Enumeration

The following values 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.

### 3.1.4.2.2 Complex Types

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

#### 3.1.4.2.2.1 m:SyncFolderItemsResponseType Complex Type Complex Type

The **SyncFolderItemsResponseType** complex type specifies the response from the **SyncFolderItems** operation (section 3.1.4.2). The **SyncFolderItemsResponseType** complex type extends the **BaseResponseMessageType** complex type ([\[MS-OXWSCDATA\]](#) section 2.2.3.15).

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

#### 3.1.4.2.2.2 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 2.2.3.14).

```
<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"
        maxOccurs="0"
      />
    </xs:sequence>
  </xs:extension>
</xs:complexContent>
```

</xs:complexType>

#### Child Elements

Element	Type	Description
ItemShape	<a href="#">t:ItemResponseShapeType</a>	Specifies the item properties that are returned in the response message.
SyncFolderId	<a href="#">t:TargetFolderIdType</a>	Specifies the identity of the folder that contains the items to synchronize.
SyncState	xs:string	Specifies the synchronization state of a previous synchronization for an incremental synchronization call. If this element is not specified, all synchronization information is returned. Can be present.
Ignore	<a href="#">t:ArrayOfBaseItemIdsType</a>	Specifies an array of items to skip for synchronization. Can be present.
MaxChangesReturned	<a href="#">t:MaxSyncChangesReturnedType</a>	Specifies the maximum number of changes that can be returned in a synchronization response. MUST be set between 1 and 512, inclusive.
SyncScope	<a href="#">t:SyncFolderItemsScopeType</a>	Specifies whether just items or items and folder associated information are returned. Can be present.

#### 3.1.4.2.2.3 t:ArrayOfBaseItemIdsType Complex Type

The **ArrayOfBaseItemIdsType** complex type specifies zero or more <ItemIdType> elements ([\[MS-OXWSCORE\]](#) section 2.2.3.13).

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

#### Child Elements

Element	Type	Description
ItemId	<a href="#">t:ItemIdType</a>	Specifies the item identifier of the array member.



### 3.1.4.2.3 Elements

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

#### 3.1.4.2.3.1 SyncFolderItemsResponse Element

The <SyncFolderItemsResponse> element specifies the response message for the **SyncFolderItems** operation (section [3.1.4.2](#)).

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

#### 3.1.4.2.3.2 SyncFolderItems Element

The <SyncFolderItems> element specifies the base element for the **SyncFolderItems** operation (section [3.1.4.2](#)).

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

### 3.1.4.2.4 Messages

The following WSDL message definitions are specific to this operation.

#### 3.1.4.2.4.1 tns:SyncFolderItemsSoapIn Message

The **SyncFolderItemsSoapIn** message contains five parts, as described in the following table.

Part Name	Element/Type	Description
request	<a href="#">tns:SyncFolderItems</a>	Specifies the request.
Impersonation	<a href="#">t:ExchangeImpersonation</a>	Specifies the user whom the client application is impersonating.
MailboxCulture	<a href="#">t:MailboxCulture</a>	Specifies the culture to use for accessing the mailbox. The cultures are defined by <a href="#">[RFC3066]</a> .
RequestVersion	<a href="#">t:RequestServerVersion</a>	Specifies the schema version for the request.

#### 3.1.4.2.4.2 tns:SyncFolderItemsSoapOut

The **SyncFolderItemsSoapOut** message contains two parts.

Part Name	Element/Type	Description
SyncFolderItemsResult	<a href="#">tns:SyncFolderItemsResponse</a>	Specifies the response.
ServerVersion	<a href="#">t:ServerVersionInfo</a>	Specifies the server version for the

Part Name	Element/Type	Description
		response.

### 3.1.5 Timer Events

None.

### 3.1.6 Other Local Events

None.

## 3.2 Client Details

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

### 3.2.1 Abstract Data Model

None.

### 3.2.2 Timers

None.

### 3.2.3 Initialization

None.

### 3.2.4 Message Processing Events and Sequencing Rules

None.

### 3.2.5 Timer Events

None.

### 3.2.6 Other Local Events

None.

## 4 Protocol Examples

None.

## **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.	<a href="#">6.1</a>
MS-OXWSSYNC-types.xsd	Contains the XML schema type definitions that are used in this protocol.	<a href="#">6.2</a>
MS-OXWSSYNC-messages.xsd	Contains the XML schema message definitions that are used in this protocol.	<a href="#">6.3</a>

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.

### 6.1 WSDL

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

MS-OXWSSYNC.wsdl 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-OXWSCDATA-messages.xsd	<a href="#">[MS-OXWSCDATA]</a> section 6.2

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:s="http://www.w3.org/2001/XMLSchema" xmlns:wSDL="http://schemas.xmlsoap.org/wsdl/"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages">
  <wsdl:types>
    <xs:schema id="messages" elementFormDefault="qualified" version="Exchange2010"
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="Exchange2010"
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:definitions>
```

```

</wsdl:types>
<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: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:definitions>

```

## 6.2 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	<a href="#">[MS-OXWSFOLD]</a> section 6.2

```

<?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="Exchange2010" 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:choice>

```



```

        <xs:element name="Task" type="t:TaskType"/>
        <xs:element name="PostItem" type="t:PostItemType"/>
    </xs:choice>
</xs:complexType>
</xs:schema>

```

### 6.3 Messages Schema

This section contains the contents of the MS-OXWSDLGM-messages.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 in the folder that contains the WSDL, types schema, and messages schema files for this protocol.

File name	Defining specification
MS-OXWSCDATA-messages.xsd	<a href="#">[MS-OXWSCDATA]</a> section 6.2

```

<?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="Exchange2010" 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: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 Appendix B: Product Behavior

The information in this specification is applicable to the following Microsoft products:

- Microsoft® Exchange Server 2010

Exceptions, if any, are noted below. If a service pack number appears with the product version, behavior changed in that service pack. 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 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 product does not follow the prescription.

## 8 Change Tracking

This section identifies changes that were made to the [MS-OXWSSYNC] protocol document between the May 2010 and August 2010 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

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

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

- A document revision that incorporates changes to interoperability requirements or functionality.
- An extensive rewrite, addition, or deletion of major portions of content.
- The removal of a document from the documentation set.
- Changes made for template compliance.

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

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

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

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

- New content added.
- Content updated.
- Content removed.
- New product behavior note added.
- Product behavior note updated.
- Product behavior note removed.
- New protocol syntax added.
- Protocol syntax updated.
- Protocol syntax removed.
- New content added due to protocol revision.
- Content updated due to protocol revision.
- Content removed due to protocol revision.
- New protocol syntax added due to protocol revision.

- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- Obsolete document removed.

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

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

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.
- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact [protocol@microsoft.com](mailto:protocol@microsoft.com).

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
<a href="#">1.1 Glossary</a>	56243 Added "base64 encoding" to the list of terms defined in [MS-OXGLOS].	N	New content added.
<a href="#">1.2.1 Normative References</a>	55751 Moved [MS-OXGLOS] from Normative References section to Informative References section.	N	Content update.
<a href="#">1.2.1 Normative References</a>	Added reference information for [MS-OXWSCORE] and [MS-OXWSFOLD]. Removed reference to [XMLSCHEMA0].	N	Content update.
<a href="#">1.2.1 Normative References</a>	Removed reference to [RFC2396].	N	Content update.

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