

# [MS-OXPFOAB]: Offline Address Book (OAB) Public Folder Retrieval Protocol Specification

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## Revision Summary

Date	Revision History	Revision Class	Comments
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04/25/2008	0.2		Revised and updated property names and other technical content.
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04/10/2009	2.0		Updated applicable product releases.
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11/04/2009	3.1.0	Minor	Updated the technical content.
02/10/2010	4.0.0	Major	Updated and revised the technical content.
05/05/2010	4.1.0	Minor	Updated the technical content.
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# 1 Introduction

This document specifies the Offline Address Book (OAB) Public Folder Retrieval protocol, which provides a mechanism for delivering an offline address book from server to client. An offline address book uses the format and schema structure that is described in [\[MS-OXOAB\]](#).

## 1.1 Glossary

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

**address book**  
**Address Book object**  
**address list**  
**ambiguous name resolution (ANR)**  
**attachments**  
**code page**  
**display template**  
**distinguished name (DN)**  
**entry ID**  
**GUID**  
**message**  
**Name Service Provider Interface (NSPI)**  
**offline address book (OAB)**  
**offline address list (OAL)**  
**property**  
**public folder**  
**relative distinguished name (RDN)**  
**Root folder**  
**template**

The following terms are specific to this document:

**local site:** A directory services unit that defines the local network physical structure or topology.

**OAB data file:** A file that contains the **offline address book (OAB)** version 4–specific data, as described in [\[MS-OXOAB\]](#).

**OAL data sequence number:** The integer number that is associated with the **offline address list (OAL)** data that represents the generation number of this data. The initial sequence number is 1. Every subsequent data generation that produces a data set not identical to the previous one increments the sequence number by one.

**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-LCID] Microsoft Corporation, "Windows Language Code Identifier (LCID) Reference", March 2007, <http://msdn.microsoft.com/en-us/library/cc233965.aspx>

[MS-OXCMSG] Microsoft Corporation, "[Message and Attachment Object Protocol Specification](#)", April 2008.

[MS-OXCRPC] Microsoft Corporation, "[Wire Format Protocol Specification](#)", April 2008.

[MS-OXCSTOR] Microsoft Corporation, "[Store Object Protocol Specification](#)", April 2008.

[MS-OXOAB] Microsoft Corporation, "[Offline Address Book \(OAB\) File Format and Schema](#)", April 2008.

[MS-OXOABKT] Microsoft Corporation, "[Address Book User Interface Templates Protocol Specification](#)", April 2008.

[MS-OXPROPS] Microsoft Corporation, "[Exchange Server Protocols Master Property List](#)", April 2008.

[MS-OXWOAB] Microsoft Corporation, "[Offline Address Book \(OAB\) Retrieval File Format](#)", April 2008.

[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>

## 1.2.2 Informative References

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

## 1.3 Overview

A collaboration server might choose to represent **properties** of known **Address Book objects** and make them available in an **address book** to its clients. When the client cannot reach the server because it is offline or due to high network costs to access the server, the client might keep a local copy of an **offline address book (OAB)**. The Offline Address Book (OAB) Public Folder Retrieval protocol enables OAB data to be located and obtained from a shared location so that it can be retrieved by clients.

OAB version 4 files can also be obtained by using the Offline Address Book (OAB) Web Retrieval protocol [[MS-OXWOAB](#)]. The **OAL data sequence number** [MS-OXWOAB] is also used in **public folder** distribution, and any client use of that number applies identically to the public folder–distributed OAB.

## 1.4 Relationship to Other Protocols and Other Structures

This protocol extends the Message and Attachment Object protocol, as described in [[MS-OXCMSG](#)].

Clients use this protocol to retrieve and consume **OAB data files** that have the Offline Address Book (OAB) Format and Schema protocol structure, as described in [[MS-OXOAB](#)].

Clients that use this protocol rely on the Store Object protocol, as described in [[MS-OXCSTOR](#)], to obtain the ID of the offline address book data folder of the **local site**. The ID is retrieved from the server when it logs on to the public folder by using [RopLogon](#).

## 1.5 Prerequisites/Preconditions

This protocol assumes that the server is configured to support public folders. <1>

## **1.6 Applicability Statement**

Clients use this protocol for OAB files. Clients that do not support the OAB Retrieval protocol, as described in [\[MS-OXWOAB\]](#), or clients that connect to servers that do not support the OAB Retrieval protocol, will use this protocol to retrieve OAB data.

## **1.7 Versioning and Localization**

None.

## **1.8 Vendor-Extensible Fields**

None.

## **1.9 Standards Assignments**

None.

## 2 Messages

### 2.1 Transport

This protocol uses the Message and Attachment Object protocol, as defined in [\[MS-OXCMSG\]](#), as its primary transport mechanism.

### 2.2 Message Syntax

#### 2.2.1 OAB Messages

OAB data is stored as a set of properties and **attachments** on a **message** in the public folders store. The message is referred to as the full OAB message or differential OAB message. The location of this message is specified in section [3](#). Unless otherwise specified, the OAB messages adhere to [\[MS-OXCMSG\]](#). Properties are defined in [\[MS-OXPROPS\]](#).

OAB messages are of two types, full and differential, with some additional differences related to the version of the OAB. Full messages contain all the information that is needed to create a current OAB. Differential messages contain enough information to update a previous OAB to a more current OAB. The properties that are common to all OAB messages are defined in the following subsections.

##### 2.2.1.1 PidTagOfflineAddressBookName

The value of this property is the name of the **address list** that is contained in the OAB message. See [\[MS-OXPROPS\]](#) for details.

##### 2.2.1.2 PidTagOfflineAddressBookSequence

The value of this property is the OAL data sequence number of the attached full or differential **OAL** files, as specified in [\[MS-OXOAB\]](#). See [\[MS-OXPROPS\]](#) for details.

##### 2.2.1.3 PidTagOfflineAddressBookContainerGuid

The value of this property is a **GUID** that identifies a set of full and differential OAL files that form a sequence, ordered by their OAL data sequence numbers. A server **MUST** set this to the same value for every full and differential OAB message in a sequence, but **MUST** set this to a different value for unrelated sequences of files. See [\[MS-OXPROPS\]](#) for details.

##### 2.2.1.4 PidTagOfflineAddressBookDistinguishedName

The value of this property is the **distinguished name (DN)** of the address list that is contained in the OAB message. This is addresslist-x500-DN, as specified in [\[MS-OXOAB\]](#). It **MUST** match the DN that is returned by the **Name Service Provider Interface (NSPI)** protocol for the address list. See [\[MS-OXPROPS\]](#) for details.

##### 2.2.1.5 PidTagSortLocaleId

The value of this property is the Locale Identifier, as described in [\[MS-LCID\]](#), that is used in combination with [PidTagMessageCodepage](#) to sort RDN2\_REC and ANR\_REC in OAB version 2 files. See [\[MS-OXPROPS\]](#) and [\[MS-OXOAB\]](#) for details.

### 2.2.1.6 PidTagMessageCodepage

The value of this property is the **code page** that is used to encode the strings in the message properties in OAB version 2 files. Note that strings in OAB version 4 files are stored in UTF-8. See [\[MS-OXCMSG\]](#) and [\[MS-OXPROPS\]](#) for details.

### 2.2.1.7 PidTagMessageSize

See [\[MS-OXCMSG\]](#) and [\[MS-OXPROPS\]](#) for details.

### 2.2.1.8 PidTagParentEntryId

This property contains the **entry ID** for a folder that contains the offline address book (OAB) public folder message. See [\[MS-OXPROPS\]](#) for details.<2>

### 2.2.1.9 PidTagEntryId

This property contains the entry ID for the OAB public folder message. See [\[MS-OXPROPS\]](#) for details.<3>

## 2.2.2 Full OAB Messages

### 2.2.2.1 Properties and Attachments

#### 2.2.2.1.1 PidTagOfflineAddressBookMessageClass

This property is set to 1 for all full OAB messages. See [\[MS-OXPROPS\]](#) for details.

#### 2.2.2.1.2 Full OAB Message Attachments – Version 2

Multiple compressed files are attached to the version 2 full OAB, by using the Offline Address Book (OAB) Format and Schema protocol as specified in [\[MS-OXOAB\]](#). These are the Browse file, **RDN** Index file, **ANR** Index file, Details file, and one or more **Display Template** files.

Version 2 attachments have their own properties and are described in the following subsections.

##### 2.2.2.1.2.1 PidTagAttachFilename

See [\[MS-OXPROPS\]](#) for details. This property is set to the values that correspond to each file.

OAB File	PidTagAttachFilename value MUST start with	PidTagAttachFilename value SHOULD be
Browse	b	browse2.oab
RDN Index	r	rdindex2.oab
ANR Index	a	anrdex.oab
Details	d	details2.oab
<b>Template</b>	l	*
Template	m	*

\*The Template file MUST have a name in the following format:

```
"lng" LocaleIdentifier ".oab"  
or "mac" LocaleIdentifier ".oab"  
LocaleIdentifier = non-zero-hexdigit *HEX  
(for example, 409 and cc08 but not 0409)
```

LocaleIdentifier is a value from [\[MS-LCID\]](#) but can also have the value 8411 to indicate the special Japanese template with phonetic, or "Yomi" properties, as specified in [\[MS-OXOABKT\]](#).

#### 2.2.2.1.2.2 PidTagAttachMethod

This property MUST be set to 1 (ATTACH\_BY\_VALUE). See [\[MS-OXPROPS\]](#) for details.<4>

#### 2.2.2.1.3 Full OAB Message Attachments – Version 4

Multiple compressed files are attached to the version 4 full OAB, as specified in [\[MS-OXOAB\]](#). These are the Data file, and one or more Display Template files.

Version 4 attachments have their own properties and are described in the subsections that follow.

##### 2.2.2.1.3.1 PidTagAttachFilename

See [\[MS-OXPROPS\]](#) for details. This property is set to the values that correspond to each file, as shown in the following table.

OAB File	PidTagAttachFilename value MUST start with	PidTagAttachFilename value MUST be
Data	d	data.oab
Template	l	*
Template	m	*

\*The Template file MUST have a name in the following format:

```
"lng" LocaleIdentifier ".oab"  
or "mac" LocaleIdentifier ".oab"  
LocaleIdentifier = non-zero-hexdigit *HEX  
(for example, 409 and cc08 but not 0409)
```

LocaleIdentifier is a value from [\[MS-LCID\]](#) section 2.1, but it can also have the value 8411 to indicate the special Japanese template with phonetic, or "Yomi" properties, as specified in [\[MS-OXOABKT\]](#).

##### 2.2.2.1.3.2 PidTagAttachMethod

This property MUST be set to 1 (ATTACH\_BY\_VALUE). See [\[MS-OXPROPS\]](#) for details.<5>

## 2.2.3 Differential OAB Messages

### 2.2.3.1 Properties and Attachments

#### 2.2.3.1.1 PidTagOfflineAddressBookMessageClass

This property MUST be set to 2 for all differential OAB messages. See [\[MS-OXPROPS\]](#) for details.

#### 2.2.3.1.2 Differential OAB Message Attachments – Version 2

One compressed file is attached to the version 2 differential OAB, as specified in [\[MS-OXOAB\]](#). This is a Changes file.

This attachment has its own properties that are defined in the following subsections.

##### 2.2.3.1.2.1 PidTagAttachFilename

See [\[MS-OXPROPS\]](#) for details.

Value SHOULD be "changes.oab."

##### 2.2.3.1.2.2 PidTagAttachMethod

This property MUST be set to 1 (ATTACH\_BY\_VALUE). See [\[MS-OXPROPS\]](#) for details.<6>

#### 2.2.3.1.3 Diff OAB Message Attachments – Version 4

One compressed file, a Changes file, can be attached to the version 4 differential OAB message, as specified in [\[MS-OXOAB\]](#).

The Differential Patch file MUST be the first attachment on this message.

These attachments have their own properties and are defined in the following subsections.

##### 2.2.3.1.3.1 PidTagAttachFilename

See [\[MS-OXPROPS\]](#) for details. This property is set to the value that corresponds to each file, as shown in the following table.

OAB file	PidTagAttachFilename value MUST start with	PidTagAttachFilename value SHOULD be
Differential Patch	b	binpatch.oab

##### 2.2.3.1.3.2 PidTagAttachMethod

This property MUST be set to 1 (ATTACH\_BY\_VALUE). See [\[MS-OXPROPS\]](#) for details.<7>

## 3 Protocol Details

### 3.1 Server Details

OAB messages are kept in folders in the public folder store. There is one folder for each OAB, named for the OAB that it contains.

The server MUST publish the entry ID of the local site's Offline Address Book Data Folder ([\[MS-OXCSTOR\]](#) section 2.2.1.1.4.2) when clients connect to the public folder store, as specified in the public folder IDs of the [RopLogon](#) semantics that are specified in [\[MS-OXCSTOR\]](#).

Under that folder are subfolders that have a fixed name relative to the OAB version that is contained therein, either "OAB version 2", "OAB version 3a", or "OAB version 4". The messages that contain OAB files are posted to the "OAB version 2", "OAB version 3a", or "OAB version 4" folder, depending on their OAB version.

The OAB folders SHOULD be secure in such a way that users cannot add, change, or delete the content in the folder, but still allow administrative users to add, change, and delete the content. The server MUST allow an administrative user to customize the security to grant read access to an administrator or selected set of users.

The server SHOULD discard old messages, an age limit that is determined by the server, to prevent the size of the folder from growing without bounds. The server SHOULD allow an administrative user to customize the age limit of messages. <8>

#### 3.1.1 Abstract Data Model

None.

#### 3.1.2 Timers

None.

#### 3.1.3 Initialization

None.

#### 3.1.4 Higher-Layer Triggered Events

None.

#### 3.1.5 Message Processing Events and Sequencing Rules

None.

#### 3.1.6 Timer Events

None.

#### 3.1.7 Other Local Events

None.

## 3.2 Client Details

Before using this protocol, the client SHOULD use the OAB Retrieval protocol, as specified in [\[MS-OXWOAB\]](#), if it is available. <9>

Clients get the entry ID of their offline address book folder (the one that contains OAB version 2 and OAB version 4 subfolders) during the [RopLogon](#) call when they connect to the public folder store. It is the offline address book data folder of the local site, as described in the public folder IDs of the [RopLogon](#) semantics that are specified in [\[MS-OXCSTOR\]](#). The client SHOULD use the offline address book data folder of the local site as the **Root folder** to start finding its OAB messages. The client SHOULD first check for the existence of the subfolder "OAB version 4" and use OAB version 4 if it exists. If it does not exist, the client SHOULD check for the existence of the subfolder "OAB version 2" and use OAB version 2 if it exists. The client SHOULD ignore any other subfolders.

### 3.2.1 Abstract Data Model

None.

### 3.2.2 Timers

None.

### 3.2.3 Initialization

None.

### 3.2.4 Higher-Layer Triggered Events

None.

### 3.2.5 Message Processing Events and Sequencing Rules

None.

### 3.2.6 Timer Events

None.

### 3.2.7 Other Local Events

None.

## 4 Structure Examples

The following is an example of OAB public folder content. The offline address book OAB contains two address lists: "Global Address List," which is represented by one set of messages, and "All Rooms," which is represented by another set of messages. Both address lists include two templates, one for language with id=0409, or, English, and one for language with id=0411, or, Japanese. Both have full details data files and differential details files. The first OAL, however, has OAL data sequence number 2 and only one differential file. The second OAL has OAL data sequence number 4 and three differential files.

Folders:

NON\_IPM\_SUBTREE

OFFLINE ADDRESS BOOK

/o=First Organization/ou=addrlists/cn=oabs/cn=Offline Address Book

OAB version 2

OAB version 4

The following are the messages in "OAB version 2":

- Address list "Global Address List," full OAB version 2 message, sequence number = 2
- Address list "Global Address List," differential OAB version 2 message, sequence number = 2
- Address list "All Rooms," full OAB version 2 message, sequence number = 4
- Address list "All Rooms," differential OAB version 2 message, sequence number = 4
- Address list "All Rooms," differential OAB version 2 message, sequence number = 3
- Address list "All Rooms," differential OAB version 2 message, sequence number = 2

Properties of these messages are listed in the following table.

Property	1	2	3	4	5	6
<a href="#">PidTagOfflineAddressBookName</a>	\Global Address List	Same as 1	\All Rooms	Same as 3	Same as 3	Same as 3
<a href="#">PidTagOfflineAddressBookSequence</a>	2	2	4	4	3	2
<a href="#">PidTagOfflineAddressBookContainerGuid</a>	{00010203-0405-0607-0809-0A0B0C0D0E0F}	Same as 1	{10111213-1415-1617-1819-1A1B1C1D1E1F}	Same as 3	Same as 3	Same as 3
<a href="#">PidTagOfflineAddressBookDistinguishedName</a>	/	Same as 1	/guid=aa65bfa24602544d9d71a5f36ce1b7f3	Same as 3	Same as 3	Same as 3

Property	1	2	3	4	5	6
<a href="#">PidTagSortLocaleId</a>	0x409	0x409	0x409	0x409	0x409	0x409
<a href="#">PidTagOfflineAddressBookMessageClass</a>	1	2	1	2	2	2
Attachment Table	browse2.oab, rdndex2.oab, anrdex.oab, details.oab, lng409.oab, lng411.oab	change s.oab	browse2.oab, rdndex2.oab, anrdex.oab, details.oab, lng409.oab, lng411.oab	change s.oab	change s.oab	change s.oab

The following are the messages in "OAB version 4":

- "Global Address List" full OAB version 4 message, sequence number = 2
- "Global Address List" differential OAB version 4 message, sequence number = 2
- "All Rooms" full OAB version 4 message, sequence number = 4
- "All Rooms" differential OAB version 4 message, sequence number = 4
- "All Rooms" differential OAB version 4 message, sequence number = 3
- "All Rooms" differential OAB version 4 message, sequence number = 2

Properties of these messages are listed in the following table.

Property	1	2	3	4	5	6
<a href="#">PidTagOfflineAddressBookName</a>	\Global Address List	Same as 1	\All Rooms	Same as 3	Same as 3	3
<a href="#">PidTagOfflineAddressBookSequence</a>	2	2	4	4	3	2
<a href="#">PidTagOfflineAddressBookContainerGuid</a>	{20212223-2425-2627-2829-2A2B2C2D2E2F}	Same as 1	{30313233-3435-3637-3839-3A3B3C3D3E3F}	Same as 3	Same as 3	Same as 3
<a href="#">PidTagOfflineAddressBookDistinguishedName</a>	/	Same as 1	/guid=aa65bfa24602544d9d71a5f36ce1b7f3	Same as 3	Same as 3	Same as 3
<a href="#">PidTagSortLocaleId</a>	0x409	0x409	0x409	0x409	0x409	0x409

Property	1	2	3	4	5	6
<a href="#">PidTagOfflineAddressBookMessageClass</a>	1	2	1	2	2	2
AttachmentTable	data.oab , lng409.oab, lng411.oab	binpatc h.oab	data.oab, lng409.oab, lng411.oab	binpatc h.oab	binpatc h.oab	binpatc h.oab

## **5 Security Considerations**

OAB version 4 messages contain the results of the SHA-1 hashing calculation; however, the SHA-1 hash value is used as an optional means of checksum verification of the downloaded file, and is not intended to be used as security feature.

### **5.1 Security Considerations for Implementers**

None.

### **5.2 Index of Security Parameters**

None.

## 6 Appendix A: Product Behavior

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

- Microsoft® Office Outlook® 2003
- Microsoft® Exchange Server 2003
- Microsoft® Office Outlook® 2007
- Microsoft® Exchange Server 2007
- Microsoft® Outlook® 2010
- 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.

[<1> Section 1.5](#): Exchange 2003 supports public folders by default, but public folders might have to be configured explicitly on Exchange 2007 or Exchange 2010.

[<2> Section 2.2.1.8](#): Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point and bypass using public folders so this property will not be sent over the wire.

[<3> Section 2.2.1.9](#): Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point and bypass using public folders so this property will not be sent over the wire.

[<4> Section 2.2.2.1.2.2](#): Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point and bypass using public folders so this property will not be sent over the wire.

[<5> Section 2.2.2.1.3.2](#): Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point and bypass using public folders so that this property will not be sent over the wire.

[<6> Section 2.2.3.1.2.2](#): Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point and bypass using public folders so that this property will not be sent over the wire.

[<7> Section 2.2.3.1.3.2](#): Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point and bypass using public folders so that this property will not be sent over the wire.

[<8> Section 3.1](#): Exchange 2003, Exchange 2007, and Exchange 2010 remove messages that have been stored and not modified for 30 days.

[<9> Section 3.2](#): Outlook 2003 does not use the OAB Retrieval protocol as specified in [\[MS-OXWOAB\]](#). Outlook 2007 and Outlook 2010 examine the **rgwServerVersion**, as defined in [\[MS-OXCRPC\]](#), that is returned by **EcDoConnectEx**, as defined in [\[MS-OXCRPC\]](#) section 3.1.7.1.1, to determine which protocol to use. If the second byte contains a value that is greater than or equal to 8, Outlook 2007 and Outlook 2010 will use the Autodiscover HTTP Service protocol, which will direct the client to use the OAB Retrieval protocol or the OAB Public Folder Retrieval protocol. If the second byte is less than 8, the client uses the OAB Public Folder Retrieval protocol.

## 7 Change Tracking

This section identifies changes that were made to the [MS-OXPFOAB] 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 Introduction</a>	Updated the introductory text.	N	Content update.
<a href="#">1.1 Glossary</a>	56702 Removed normative language from local glossary term definition.	N	Editorially updated.
<a href="#">1.2.1 Normative References</a>	55751 Moved [MS-OXGLOS] from the Normative References section to the Informative References section.	N	Content update.
<a href="#">1.2.1 Normative References</a>	55921 Changed [FIP180-1] to [FIPS180].	N	Content update.
<a href="#">1.2.1 Normative References</a>	Removed the references [FIPS180], [MS-NSPI], [MS-OXCFCOLD], [MS-OXOABK], and [RFC4234], and added the reference [MS-OXCRPC].	N	Content update.
<a href="#">1.3 Overview</a>	Updated the overview information.	N	Content update.
<a href="#">1.6 Applicability Statement</a>	55999 Added reference to OAB Retrieval protocol.	N	Content update.
<a href="#">1.9 Standards Assignments</a>	51108 Added new section.	Y	New content added for template compliance.

<b>Section</b>	<b>Tracking number (if applicable) and description</b>	<b>Major change (Y or N)</b>	<b>Change type</b>
<a href="#">2.2.1 OAB Messages</a>	55399 Removed "All" from section title.	N	Editorially updated.
<a href="#">2.2.2.1 Properties and Attachments</a>	55399 Modified title to agree with the section's content.	N	Content update.
<a href="#">2.2.3 Differential OAB Messages</a>	55399 Added new section. Content moved from Full OAB Messages section.	Y	Content update.
<a href="#">2.2.3.1 Properties and Attachments</a>	55399 Modified title to agree with the section's content.	N	Content update.
<a href="#">3.1 Server Details</a>	55736 Updated the description to note that administrators can add, update, and delete content.	N	Content update.
<a href="#">3.1 Server Details</a>	55994 Updated the description to include OAB version 3a.	N	Content update.
<a href="#">3.1 Server Details</a>	55818 Updated the description to clarify the definition of old messages.	N	Content update.
<a href="#">3.1 Server Details</a>	55886 Clarified which folders should be secure.	N	Content update.
<a href="#">3.1 Server Details</a>	55885 Added a section reference for the folder location of the OAB folder.	N	Content update.
<a href="#">3.1.1 Abstract Data Model</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.1.2 Timers</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.1.3 Initialization</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.1.4 Higher-Layer Triggered Events</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.1.5 Message Processing Events and Sequencing Rules</a>	55792 Added new section.	N	New content added for template compliance.

<b>Section</b>	<b>Tracking number (if applicable) and description</b>	<b>Major change (Y or N)</b>	<b>Change type</b>
<a href="#">3.1.6 Timer Events</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.1.7 Other Local Events</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.2 Client Details</a>	55999 Added reference to OAB Retrieval protocol.	N	Content update.
<a href="#">3.2.1 Abstract Data Model</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.2.2 Timers</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.2.3 Initialization</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.2.4 Higher-Layer Triggered Events</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.2.5 Message Processing Events and Sequencing Rules</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.2.6 Timer Events</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">3.2.7 Other Local Events</a>	55792 Added new section.	N	New content added for template compliance.
<a href="#">5.1 Security Considerations for Implementers</a>	51108 Added new section.	N	New content added for template compliance.
<a href="#">5.2 Index of Security Parameters</a>	51108 Added new section.	N	New content added for template compliance.

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