

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

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1 Introduction

This document specifies a new structure format.

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)**. This document specifies the Offline Address Book (OAB) Public Folder Retrieval protocol, which is how OAB version 2 and OAB version 4 are retrieved from public folders. This protocol 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 specified in [MS-OXOAB].

1.1 Glossary

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

- address book**
- Address Book object**
- address list**
- code page**
- distinguished name (DN)**
- entry ID**
- GUID**
- offline address book (OAB)**
- offline address list (OAL)**
- property**
- public folder**
- template**

The following terms are specific to this document:

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

OAL data sequence number: The integer number that is associated with **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

[FIP180-1] Federal Information Processing Standards Publication, "Secure Hash Standard", FIPS PUB 180-1, April 1995, <http://www.itl.nist.gov/fipspubs/fip180-1.htm>.

[MS-LCID] Microsoft Corporation, "Windows Language Code Identifier (LCID) Reference", March 2007, <http://go.microsoft.com/fwlink/?LinkId=112265>.

[MS-NSPI] Microsoft Corporation, "Name Service Provider Interface (NSPI) Protocol Specification", June 2008.

[MS-OXCFOLD] Microsoft Corporation, "Folder Object Protocol Specification", June 2008.

[MS-OXCMSG] Microsoft Corporation, "Message and Attachment Object Protocol Specification", June 2008.

[MS-OXCSTOR] Microsoft Corporation, "Store Object Protocol Specification", June 2008.

[MS-OXGLOS] Microsoft Corporation, "Exchange Server Protocols Master Glossary", June 2008.

[MS-OXOAB] Microsoft Corporation, "Offline Address Book (OAB) Format and Schema Protocol Specification", June 2008.

[MS-OXOABK] Microsoft Corporation, "Address Book Object Protocol Specification", June 2008.

[MS-OXOABKT] Microsoft Corporation, "Address Book User Interface Templates Protocol Specification", June 2008.

[MS-OXPROPS] Microsoft Corporation, "Exchange Server Protocols Master Property List Specification", June 2008.

[MS-OXWOAB] Microsoft Corporation, "Offline Address Book (OAB) Retrieval Protocol Specification", June 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>.

[RFC4234] Crocker, D., Ed. and Overell, P., "Augmented BNF for Syntax Specifications: ABNF", RFC 4234, October 2005, <http://www.ietf.org/rfc/rfc4234.txt>.

1.2.2 Informative References

None.

1.3 Protocol Overview

The Offline Address Book (OAB) Format and Schema protocol is specified in [MS-OXOAB].

The OAB Public Folder Retrieval protocol specifies how **OAB** data is 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, as specified in [MS-OXWOAB]. The **OAL data sequence number** as specified in [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

- The OAB Public Folder Retrieval protocol extends the Message and Attachment Object protocol, as specified 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 specified in [MS-OXOAB].
- Clients that use this protocol rely on the Store Object protocol, as specified in [MS-OXCSTOR], to obtain the ID of the **offline address book** data folder of the local site from the server when they log on to the **public folder** by using **RopLogon**.

1.5 Prerequisites/Preconditions

The OAB Public Folder Retrieval protocol assumes that the server is configured to support **public folders**<1>.

1.6 Applicability Statement

Clients use the OAB Public Folder Retrieval protocol for **OAB** files. Clients that do not support the OAB Retrieval protocol, or clients that connect to servers that do not support the OAB Retrieval protocol, will use the OAB Public Folder Retrieval protocol to retrieve OAB data.

1.7 Versioning and Localization

None.

1.8 Vendor-Extensible Fields

None.

2 Messages

2.1 Transport

The OAB Public Folder Retrieval protocol uses the protocols that are defined in [MS-OXCMSG] as its primary transport mechanism.

2.2 Message Syntax

2.2.1 All 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-EXOAB]. 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

See [MS-OXPROPS] for details.<2>

2.2.1.9 PidTagEntryId

See [MS-OXPROPS] for details.<3>

2.2.2 Full OAB Messages

2.2.2.1 Properties and Attachments Specific to Full OAB Messages

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

Attached to the version 2 full **OAB** message are multiple compressed files, 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
Template	L	*

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

```
"Lng" 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	*

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

```
"Lng" LocaleIdentifier ".oab"
```

```
LocaleIdentifier = non-zero-hexdigit *HEX
```

```
(for example, 409 and cc08 but not 0409)
```

LocaleIdentifier is a value from [MS-LCID], 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.

2.2.2.2 Properties and Attachments Specific to Differential OAB Messages

2.2.2.2.1 PidTagOfflineAddressBookMessageClass

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

2.2.2.2.2 Differential OAB Message Attachments – Version 2

Attached to the version 2 differential **OAB** message is one compressed file, as specified in [MS-OXOAB]. This is a Changes file.

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

2.2.2.2.2.1 PidTagAttachFilename

See [MS-OXPROPS] for details.

Value SHOULD be "changes.oab."

2.2.2.2.2.2 PidTagAttachMethod

This **property** MUST be set to 1 (ATTACH_BY_VALUE). See [MS-OXPROPS] for details.

2.2.2.2.3 Diff OAB Message Attachments – Version 4

One or more compressed files are attached to the version 4 differential **OAB** message, as specified in [MS-OXOAB]. These are zero or one Changes file, and zero or more Templates files.

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.

2.2.2.2.3.1 PidTagAttachFilename

See [MS-OXPROPS] for details. This **property** is set to the value corresponding to each file, as shown in the following table.

OAB file	PidTagAttachFilename value MUST start with	PidTagAttachFilename value SHOULD be
Differential Patch	*N/A	binpatch.oab
Template	1	*

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

```
"Lng" LocaleIdentifier ".oab"
```

```
LocaleIdentifier = non-zero-hexdigit *HEX
```

```
(for example, 409 and cc08, but not 0409)
```

2.2.2.2.3.2 PidTagAttachMethod

This **property** MUST be set to 1 (ATTACH_BY_VALUE). See [MS-OXPROPS] for details.

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 is contained in it.

The server MUST publish the **entry ID** of the OAB folder in the offline address book data folder **property** of the local site 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" or "OAB version 4." The messages that contain OAB files are posted to the appropriate folder.

The folder SHOULD be secure in such a way that users cannot add, change, or delete the content in the folder. 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 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.<5>

3.2 Client Details

Before using this protocol, the client SHOULD use [MS-OXWOAB], if it is available.<6>

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.

4 Structure Examples

The following is an example of **OAB public folder** content. The **offline address book** 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.

	1	2	3	4	5	6
PidTagOfflineAddressBookName	\Global Address List	Same as 1	\All Rooms	Same as 3	Same as 3	Same as 3
PidTagOfflineAddressBookSequence	2	2	4	4	3	2
PidTagOfflineAddressBookContainerGuid	{00010203-0405-0607-0809-0A0B0C0D0E0F }	Same as 1	{10111213-1415-1617-1819-1A1B1C1D1E1F}	Same as 3	Same as 3	Same as 3
PidTagOfflineAddressBookDistinguishedName	/	Same as 1	/guid=aa65bfa24602544d9d71a5f36ce1b7f3	Same as 3	Same as 3	Same as 3
PidTagSortLocaleId	0x0409	0x409	0x409	0x409	0x409	0x409
PidTagOfflineAddressBookMessageClass	1	2	1	2	2	2
Attachment Table	Browse2.oab, rdndex2.oab, anrdex.oab, details.oab, lng409.oab,	Changes.oab	Browse2.oab, rdndex2.oab, anrdex.oab, details.oab, lng409.oab, lng411.oab	Changes.oab	Changes.oab	Changes.oab

	Ing411.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.

	1	2	3	4	5	6
PidTagOfflineAddressBookName	\Global Address List	Same as 1	\All Rooms	Same as 3	Same as 3	3
PidTagOfflineAddressBookSequence	2	2	4	4	3	2
PidTagOfflineAddressBookContainerGuid	{20212223-2425-2627-2829-2A2B2C2D2E2F }	Same as 1	{30313233-3435-3637-3839-3A3B3C3D3E3F}	Same as 3	Same as 3	Same as 3
PidTagOfflineAddressBookDistinguishedName	/	Same as 1	/guid=aa65bfa24602544d9d71a5f36ce1b7f3	Same as 3	Same as 3	Same as 3
PidTagSortLocaleId	0x0409	0x409	0x409	0x409	0x409	0x409

PidTagOfflineAddressBookMessageClass	1	2	1	2	2	2
AttachmentTable	data.oab, lng409.oab, lng411.oab	binpat ch.oab	data.oab, lng409.oab, lng411.oab	binpat ch.oab	binpat ch.oab	binpat ch.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.

6 Appendix A: Office/Exchange Behavior

The information in this specification is applicable to the following versions of Office/Exchange:

- 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. Unless otherwise specified, any statement of optional behavior in this specification prescribed using the terms **SHOULD** or **SHOULD NOT** implies Office/Exchange behavior in accordance with the **SHOULD** or **SHOULD NOT** prescription. Unless otherwise specified, the term **MAY** implies Office/Exchange does not follow the prescription.

<1> **Public folders** are supported by default on Exchange 2003, but they might have to be configured explicitly on an Exchange 2007 or Exchange 2010 server.

<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.

<3> 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> 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> Exchange 2003, Exchange 2007, and Exchange 2010 remove messages that have been stored and not modified for 30 days.

<6> Outlook 2003 does not use the OAB Retrieval protocol. Outlook 2007 and Outlook 2010 examine the `rgwServerVersion` that is returned by **EcDoConnectEx** 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.

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