

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

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Preliminary

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# 1 Introduction

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

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

## 1.1 Glossary

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

**Augmented Backus-Naur Form (ABNF)  
code page**

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

**address book**  
**Address Book object**  
**address list**  
**display template**  
**entry ID**  
**local site**  
**OAL data sequence number**  
**offline address book (OAB)**  
**offline address book (OAB) data file**  
**offline address list (OAL)**  
**public folder**  
**remote operation (ROP)**  
**Root folder**  
**store**

The following terms are specific to this document:

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

## 1.2 References

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

### 1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](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](#)".

[MS-OXCFOLD] Microsoft Corporation, "[Folder Object Protocol Specification](#)".

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

[MS-OXCROPS] Microsoft Corporation, "[Remote Operations \(ROP\) List and Encoding Protocol Specification](#)".

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

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

[MS-OXCTABL] Microsoft Corporation, "[Table Object Protocol Specification](#)".

[MS-OXDISCO] Microsoft Corporation, "[Autodiscover HTTP Service Protocol Specification](#)".

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

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

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

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

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

[RFC5234] Crocker, D., Ed., and Overell, P., "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, January 2008, <http://www.rfc-editor.org/rfc/rfc5234.txt>

### 1.2.2 Informative References

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

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

### 1.3 Overview

A collaboration server can 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 in and obtained from a shared location so that it can be retrieved by clients.

Clients can also obtain OAB version 4 files by using the Offline Address Book (OAB) Web Retrieval Protocol [[MS-OXWOAB](#)]. Note that the **OAL data sequence number** [MS-OXWOAB] is also used in **public folder** distribution, and any client use of that number applies to the public folder-distributed OAB as well.

### 1.4 Relationship to Other Protocols

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 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 OAB data folder of the **local site**. The ID is retrieved from the server when it logs on to the public folder by using **RopLogon** property ([\[MS-OXCROPS\]](#) section 2.2.3.1).

### **1.5 Prerequisites/Preconditions**

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

### **1.6 Applicability Statement**

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

### **1.7 Versioning and Capability Negotiation**

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 specified in [\[MS-OXCMSG\]](#), as its 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 <1>](#). 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 the format specified in [\[MS-OXCMSG\]](#).

There are two types of OAB messages — full messages and differential messages — with some additional differences related to the version of the OAB. Full messages contain all of 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 following properties are common to all OAB messages that use public folder retrieval.

- **PidTagOfflineAddressBookName**, as specified in [\[MS-OXOAB\]](#) section 2.12.3.
- **PidTagOfflineAddressBookSequence**, as specified in [\[MS-OXOAB\]](#) section 2.12.4.
- **PidTagOfflineAddressBookContainerGuid**, as specified in [\[MS-OXOAB\]](#) section 2.12.1.
- **PidTagOfflineAddressBookDistinguishedName**, as specified in [\[MS-OXOAB\]](#) section 2.12.2.
- **PidTagSortLocaleId**, as specified in section [2.2.1.1](#).
- **PidTagMessageCodepage**, as specified in section [2.2.1.2](#)
- **PidTagParentEntryId**, as specified in section [2.2.1.4](#).
- **PidTagEntryId**, as specified in section [2.2.1.5](#).

##### 2.2.1.1 PidTagSortLocaleId

The value of this property is the locale identifier, as described in [\[MS-LCID\]](#), that is used in combination with the **PidTagMessageCodepage** property to sort RDN2\_REC and ANR\_REC in OAB version 2 files. For details, see [\[MS-OXPROPS\]](#) section 2.1082 and [\[MS-OXOAB\]](#).

##### 2.2.1.2 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 format. For details, see [\[MS-OXCMSG\]](#) section 2.2.1.4 and [\[MS-OXPROPS\]](#) section 2.855.

##### 2.2.1.3 PidTagMessageSize

This property contains the size of the message on the server. For details about this property, see [\[MS-OXCMSG\]](#) section 2.2.1.7 and [\[MS-OXPROPS\]](#) section 2.863.

#### 2.2.1.4 PidTagParentEntryId

This property contains the **entry ID** for a folder that contains the offline address book (OAB) public folder message. For details, see [\[MS-OXPROPS\]](#) section 2.923.<2>

#### 2.2.1.5 PidTagEntryId

This property contains the entry ID for the OAB public folder message. For details, see [\[MS-OXPROPS\]](#) section 2.752.<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. For details, see [\[MS-OXPROPS\]](#) section 2.882.

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

Multiple compressed files are attached to the OAB version 2 full OAB by using the Offline Address Book (OAB) Format and Schema, 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.

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

##### 2.2.2.1.2.1 PidTagAttachFilename

This property is set to the values that correspond to each of the files listed in the following table. For details about this property, see [\[MS-OXPROPS\]](#) section 2.663.

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	*
Template	m	*

The following **Augmented Backus-Naur Form (ABNF)**, as specified in [\[RFC5234\]](#), defines the constraints of the Template file name.

```
TmpltFilename = ("lng" LocaleIdentifier ".oab") / ("mac" LocaleIdentifier ".oab")
LocaleIdentifier = (%x31-39 / ALPHA) *HEXDIG; 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 "Yomi" properties, as specified in [\[MS-OXOABKT\]](#).

#### 2.2.2.1.2.2 PidTagAttachMethod

This property MUST be set to 1 (**ATTACH\_BY\_VALUE**). For details, see [\[MS-OXPROPS\]](#) section 2.671.<4>

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

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

OAB version 4 attachments have their own properties, which are described in the following subsections.

##### 2.2.2.1.3.1 PidTagAttachFilename

This property is set to the values that correspond to each of the files listed in the following table. For details, see [\[MS-OXPROPS\]](#) section 2.663.

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

##### 2.2.2.1.3.2 PidTagAttachMethod

This property MUST be set to 1 (**ATTACH\_BY\_VALUE**). For details, see [\[MS-OXPROPS\]](#) section 2.671.<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. For details, see [\[MS-OXPROPS\]](#) section 2.882.

### 2.2.3.1.2 Differential OAB Message Attachments – Version 2

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

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

#### 2.2.3.1.2.1 PidTagAttachFilename

The value for this property SHOULD be "changes.oab". For details, see [\[MS-OXPROPS\]](#) section 2.663.

#### 2.2.3.1.2.2 PidTagAttachMethod

This property MUST be set to 1 (**ATTACH\_BY\_VALUE**). For details, see [\[MS-OXPROPS\]](#) section 2.671 for details. [<6>](#)

### 2.2.3.1.3 Differential OAB Message Attachments – Version 4

One compressed file, a Changes file, can be attached to the OAB 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, which are defined in the following subsections.

#### 2.2.3.1.3.1 PidTagAttachFilename

This property is set to the value that corresponds to each of the files listed in the following table. For details, see [\[MS-OXPROPS\]](#) section 2.663.

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**). For details, see [\[MS-OXPROPS\]](#) section 2.671. [<7>](#)

## 3 Protocol Details

### 3.1 Server Details

Offline address book (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) when clients connect to the public folder store, as specified in the public folder IDs of the **RopLogon** request and response syntax (as specified in [\[MS-OXCSTOR\]](#) section 2.2.1.1).

In the folder for each OAB 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 enough such that users cannot add, change, or delete the content in the folders, but administrative users can add, change, or delete the content. The server MUST allow administrative users to customize the security settings to grant read access to administrators or a selected set of users.

The server SHOULD discard old messages when they reach a specified age limit, to prevent the size of the folder from growing without bounds. The server SHOULD allow an administrative user to customize the age limit for 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 OAB folder (the one that contains OAB version 2 and OAB version 4 subfolders) during the **RopLogon** call ([\[MS-OXCSTOR\]](#) section 2.2.1.1) when they connect to the public folder store. This folder is the OAB data folder of the local site, as described in the public folder IDs of the **RopLogon** request and response syntax. The client SHOULD use the OAB data folder of the local site as the **Root folder** to start finding its OAB messages. Note that the client SHOULD first check for the existence of the subfolder "OAB version 4" and use OAB version 4 if that subfolder exists. If it does not exist, the client SHOULD then check for the existence of the subfolder "OAB version 2" and use OAB version 2 if that subfolder exists. The client SHOULD ignore any other subfolders. The client relies on an understanding of the **ROPs** in [\[MS-OXCFOLD\]](#) to open the folder and retrieve the hierarchy or contents table, the **ROPs** in [\[MS-OXCTABL\]](#) to perform table operations on the hierarchy or contents table to find the subfolders with the hard-coded names, and the **ROPs** in [\[MS-OXCMSG\]](#) to retrieve the messages in each of these folders.

### 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 Protocol Examples

The following is an example of offline address book (OAB) public folder content. The 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 with the language **id** value set to "0409" (English), and one with the language **id** value set to "0411" (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, whereas 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 the "OAB version 2" folder:

1. Address list "Global Address List," full OAB version 2 message, sequence number = 2
2. Address list "Global Address List," differential OAB version 2 message, sequence number = 2
3. Address list "All Rooms," full OAB version 2 message, sequence number = 4
4. Address list "All Rooms," differential OAB version 2 message, sequence number = 4
5. Address list "All Rooms," differential OAB version 2 message, sequence number = 3
6. Address list "All Rooms," differential OAB version 2 message, sequence number = 2

The properties of these messages are listed in the following table.

Property	Message 1	Message 2	Message 3	Message 4	Message 5	Message 6
<b>PidTagOfflineAddressBookName</b>	\Global Address List	Same as 1	\All Rooms	Same as 3	Same as 3	Same as 3
<b>PidTagOfflineAddressBookSequence</b>	2	2	4	4	3	2
<b>PidTagOfflineAddressBookContainerGuid</b>	{00010203-0405-0607-0809-0A0B0C0D0E0F}	Same as 1	{10111213-1415-1617-1819-1A1B1C1D1E1F}	Same as 3	Same as 3	Same as 3
<b>PidTagOfflineAddressBook</b>	/	Same	/guid=aa65bfa24602544	Same	Same	Same

Property	Message 1	Message 2	Message 3	Message 4	Message 5	Message 6
<b>kDistinguishedName</b>		as 1	d9d71a5f36ce1b7f3	as 3	as 3	as 3
<b>PidTagSortLocaleId</b>	0x409	0x409	0x409	0x409	0x409	0x409
<b>PidTagOfflineAddressBookMessageClass</b>	1	2	1	2	2	2
<b>AttachmentTable</b>	browse2.oab, rdndex2.oab, anrdex.oab, details2.oab, lng409.oab, lng411.oab	changes.oab	browse2.oab, rdndex2.oab, anrdex.oab, details2.oab, lng409.oab, lng411.oab	changes.oab	changes.oab	changes.oab

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

- "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
<b>PidTagOfflineAddressBookName</b>	\Global Address List	Same as 1	\All Rooms	Same as 3	Same as 3	3
<b>PidTagOfflineAddressBookSequence</b>	2	2	4	4	3	2
<b>PidTagOfflineAddressBookContainerGuid</b>	{20212223-2425-2627-2829-2A2B2C2D2E2F}	Same as 1	{30313233-3435-3637-3839-3A3B3C3D3E3F}	Same as 3	Same as 3	Same as 3
<b>PidTagOfflineAddressBookDistinguishedName</b>	/	Same as 1	/guid=aa65bfa24602544d9d71a5f36ce1b7f3	Same as 3	Same as 3	Same as 3



Property	1	2	3	4	5	6
<b>PidTagSortLocaleId</b>	0x409	0x409	0x409	0x409	0x409	0x409
<b>PidTagOfflineAddressBookMessageClass</b>	1	2	1	2	2	2
<b>AttachmentTable</b>	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

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

### 5.1 Security Considerations for Implementers

None.

### 5.2 Index of Security Parameters

None.

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## 6 Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

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

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

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

[<1> Section 2.2.1:](#) Exchange 2003 supports public folders by default, but public folders might have to be configured explicitly on Exchange 2007 or Exchange 2010.

[<2> Section 2.2.1.4:](#) Office Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point, thus bypassing the use of public folders so that this property will not be sent over the wire.

[<3> Section 2.2.1.5:](#) Office Outlook 2007 and Outlook 2010 download the OAB by using a Web Distribution Point, thus bypassing the use of public folders so that this property will not be sent over the wire.

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

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

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

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

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

<9> [Section 3.2](#): Office Outlook 2003 does not use the OAB Retrieval Protocol as specified in [\[MS-OXWOAB\]](#). Office Outlook 2007 and Outlook 2010 examine the **rgwServerVersion** value (as specified in [\[MS-OXCRPC\]](#) section 3.1.4.11) that is returned by the **EcDoConnectEx** method (as specified in [\[MS-OXCRPC\]](#) section 3.1.4.11) to determine which protocol to use. If the second byte contains a value that is greater than or equal to 8, Office Outlook 2007 and Outlook 2010 use the Autodiscover HTTP Service Protocol (as specified in [\[MS-OXDISCO\]](#)), 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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## 7 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

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