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

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Revision Summary

Date	Revision History	Revision Class	Comments
04/04/2008	0.1		Initial Availability.
04/25/2008	0.2		Revised and updated property names and other technical content.
06/27/2008	1.0		Initial Release.
08/06/2008	1.01		Updated references to reflect date of initial release.
09/03/2008	1.02		Revised and edited technical content.
12/03/2008	1.03		Minor editorial fixes.
03/04/2009	1.04		Revised and edited technical content.
04/10/2009	2.0		Updated applicable product releases.
07/15/2009	3.0	Major	Revised and edited for technical content.
11/04/2009	3.1.0	Minor	Updated the technical content.
02/10/2010	4.0.0	Major	Updated and revised the technical content.

Table of Contents

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
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:

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.

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

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

[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, http://go.microsoft.com/fwlink/?LinkID=154742.

[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) File Format and Schema", 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", June 2008.

[MS-OXWOAB] Microsoft Corporation, "Offline Address Book (OAB) Retrieval File Format", 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 Offline Address Book (OAB) Public Folder Retrieval protocol specifies how Offline Address Book (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-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

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	rdndex2.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] 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>

2.2.2.2 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.<6>

2.2.2.2.3   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.

2.2.2.2.3.1   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

2.2.2.2.3.2   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 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 "OAB version 2" or "OAB version 4" folder, depending on their OAB version.

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. <8>

3.2   Client Details

Before using this protocol, the client SHOULD use [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.

4 Structure Examples

The followings 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
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

Property	1	2	3	4	5	6
PidTagSortLocaleId	0x409	0x409	0x409	0x409	0x409	0x409
PidTagOfflineAddressBookMessageClass	1	2	1	2	2	2
Attachment Table	browse2.oab, rdndex2.oab, anrdex.oab, details.oab, lng409.oab, lng411.oab	changes.oab	browse2.oab, rdndex2.oab, anrdex.oab, details.oab, lng409.oab, lng411.oab	changes.oab	changes.oab	changes.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

Release: Friday, February 5, 2010

	1	2	3	4	5	6
PidTagOfflineAddressBookMessageClass	1	2	1	2	2	2
AttachmentTable	data.oab, lng409.oab, lng411.oab	binpatch.oab	data.oab, lng409.oab, lng411.oab	binpatch.oab	binpatch.oab	binpatch.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: Product Behavior

The information in this specification is applicable to the following product versions. References to product versions include released service packs.

- 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.

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: 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> 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 2.2.2.2.2.2: 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 2.2.2.2.3.2: 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. 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 made to [MS-OXPFOAB] protocol documentation between November 2009 and February 2010 releases. Changes are classed as major, minor, or editorial.

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.

- A protocol is deprecated.

- The removal of a document from the documentation set.

- Changes made for template compliance.

Minor changes do not affect protocol interoperability or implementation. Examples are updates to fix technical accuracy or ambiguity at the sentence, paragraph, or table level.

Editorial changes apply to grammatical, formatting, and style issues.

No changes means that the document is identical to its last release.

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

- New content added.

- Content update.

- 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 always have the revision type "Editorially updated."

Some important terms used in revision 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.

Changes are listed in the following table. If you need further information, please contact protocol@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Revision Type
2.2.2.1.3.1 PidTagAttachFilename	51182 Added a section number to the [MS-LCID] reference.	N	Content update.
2.2.2.1.3.2 PidTagAttachMethod	46582 Added a product behavior note that describes Outlook 2007 and Outlook 2010 behavior.	N	New product behavior note added.
2.2.2.2.2.2 PidTagAttachMethod	46582 Added a product behavior note that describes Outlook 2007 and Outlook 2010 behavior.	N	New product behavior note added.
2.2.2.2.3 Diff OAB Message Attachments – Version 4	51167 Removed the statement that says that zero or more Templates files are attached to the OAB message.	N	Content removed.
2.2.2.2.3.1 PidTagAttachFilename	51169 Updated the value for the starting letter of the PidTagAttachFilename for the Differential Patch OAB file.	Y	Content update.
2.2.2.2.3.1 PidTagAttachFilename	51167 Removed the Template file from the table and removed the description of the Template file.	N	Content removed.
2.2.2.2.3.1 PidTagAttachFilename	51182 Added a section number to the [MS-LCID] reference.	N	Content update.
2.2.2.2.3.2 PidTagAttachMethod	46582 Added a product behavior note that describes Outlook 2007 and Outlook 2010 behavior.	N	New product behavior note added.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Revision Type
3.1 Server Details	51155 Clarified the description of where the messages that contain OAB files are posted.	N	Content update.
3.2 Client Details	51159 Added cross-reference information for rgwServerVersion and EcDoConnectEx.	N	Product behavior note updated.

Release: Friday, February 5, 2010

8 Index