[MS-OXODOC]:
Document Object Protocol

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1 Introduction

The Document Object Protocol enables representation of an ordinary file, such as a document generated by a word-processing application, in a mail folder for later retrieval. This protocol extends the Message and Attachment Object Protocol, which is described in [MS-OXCMSG].

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]:

handle

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

Attachment object
Document object
mailbox
Message object
public folder
remote operation (ROP)
site mailbox
Uniform Resource Locator (URL)

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 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. We will assist you in finding the relevant information.

[MS-OXCDATA] Microsoft Corporation, "Data Structures".

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

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

[MS-OXCPRPT] Microsoft Corporation, "Property and Stream Object Protocol".

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

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[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

1.2.2 Informative References

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

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

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

[MS-OXPROTO] Microsoft Corporation, "Exchange Server Protocols System Overview".

1.3 Overview

The Document Object Protocol allows a user to store an ordinary file, such as a document generated by a word-processing application, in a mail folder. For example, a user might store a few files in mail folders so that the files can be accessed on any computer that provides access to the user's e-mail. To represent the stored file, this protocol defines a **Document object**. The stored file is embedded within the Document object; the embedded file is referred to as an attachment.

The Document Object Protocol extends the Message and Attachment Object Protocol, described in [MS-OXCMSG], by defining new properties for a **Message object** and by adding constraints to existing properties of Message object.

1.4 Relationship to Other Protocols

The Document Object Protocol relies on the same protocols as the Message and Attachment Object Protocol, which the Document Object Protocol extends. For more information about the Message and Attachment Object Protocol, see [MS-OXCMSG].

For conceptual background information and overviews of the relationships and interactions between this and other protocols, see [MS-OXPROTO].

1.5 Prerequisites/Preconditions

The Document Object Protocol has the same prerequisites and preconditions as the Message and Attachment Object Protocol, as specified in [MS-OXCMSG].

1.6 Applicability Statement

The client can use this protocol to store ordinary files in a user's mail folders and to expose the files that are stored in the mail folders.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

This protocol provides no extensibility beyond what is already specified in [MS-OXCMSG].

1.9 Standards Assignments

None.

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2 Messages

2.1 Transport

The Document Object Protocol uses the same underlying transport as that used by the Message and Attachment Object Protocol, as specified in [MS-OXCMSG].

2.2 Message Syntax

A Document object can be created and modified by both clients and servers. Except where noted, this section defines constraints under which both clients and servers operate.

Clients operate on a Document object by using the Message and Attachment Object Protocol, as specified in [MS-OXCMSG], and by using the Property and Stream Object Protocol, as specified in [MS-OXCPRPT]. The manner in which a server operates on a Document object is implementation-dependent, but the results of any such operations MUST be exposed to clients in a manner that is that is consistent with the Document Object Protocol.

Unless otherwise stated in sections 2.2.1 and 2.2.2, a Document object MUST adhere to all property constraints specified in both [MS-OXPROPS] and [MS-OXCMSG].

2.2.1 Document-Specific Properties

A Document object encapsulates the behavior of the attached file. As such, properties on the file can be promoted as properties on the Message object. Document object-specific properties that can be set on the Message object are specified in section 2.2.1.1 through section 2.2.1.34.

2.2.1.1 PidNameTitle Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameTitle** property ([MS-OXPROPS] section 2.472) specifies the title of the file attached to the Document object.

2.2.1.2 PidNameSubject Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameSubject** property ([MS-OXPROPS] section 2.469) specifies the subject of the file attached to the Document object.

2.2.1.3 PidNameAuthor Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameAuthor** property ([MS-OXPROPS] section 2.371) specifies the original author of the file attached to the Document object.

2.2.1.4 PidNameKeywords Property

Type: **PtypMultipleString** ([MS-OXCDATA] section 2.11.1)

The **PidNameKeywords** property ([MS-OXCMSG] section 2.2.1.17) specifies the categories of the file attached to the Document object.

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2.2.1.5 PidNameComments Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameComments** property ([MS-OXPROPS] section 2.404) specifies the comments of the file attached to the Document object.

2.2.1.6 PidNameTemplate Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameTemplate** property ([MS-OXPROPS] section 2.470) specifies the template of the file attached to the Document object.

2.2.1.7 PidNameLastAuthor Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameLastAuthor** property ([MS-OXPROPS] section 2.445) specifies the most recent author of the file attached to the Document object.

2.2.1.8 PidNameRevisionNumber Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameRevisionNumber** property ([MS-OXPROPS] section 2.464) specifies the revision number of the file attached to the Document object.

2.2.1.9 PidNameApplicationName Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameApplicationName** property ([MS-OXPROPS] section 2.367) specifies the application that can be used to open the file attached to the Document object.

2.2.1.10 PidNameEditTime Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameEditTime** property ([MS-OXPROPS] section 2.417) specifies the time that the file was last edited.

2.2.1.11 PidNameLastPrinted Property

Type: **PtypTime** ([MS-OXCDATA] section 2.11.1)

The **PidNameLastPrinted** property ([MS-OXPROPS] section 2.446) specifies the time that the file was last printed.

2.2.1.12 PidNameCreateDateTimeReadOnly Property

Type: **PtypTime** ([MS-OXCDATA] section 2.11.1)

The **PidNameCreateDateTimeReadOnly** property ([MS-OXPROPS] section 2.409) specifies the time that the file was created.

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2.2.1.13 PidNameLastSaveDateTime Property

Type: **PtypTime** ([MS-OXCDATA] section 2.11.1)

The **PidNameLastSaveDateTime** property ([MS-OXPROPS] section 2.447) specifies the time that the file was last saved.

2.2.1.14 PidNamePageCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNamePageCount** property ([MS-OXPROPS] section 2.459) specifies the number of pages in the file attached to the Document object.

2.2.1.15 PidNameWordCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameWordCount** property ([MS-OXPROPS] section 2.473) specifies the number of words in the file attached to the Document object.

2.2.1.16 PidNameCharacterCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameCharacterCount** property ([MS-OXPROPS] section 2.403) specifies the number of characters in the file attached to the Document object.

2.2.1.17 PidNameSecurity Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameSecurity** property ([MS-OXPROPS] section 2.467) specifies the security level of the file attached to the Document object.

2.2.1.18 PidNameCategory Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameCategory** property ([MS-OXPROPS] section 2.402) specifies the category of the file attached to the Document object.

2.2.1.19 PidNamePresentationFormat Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNamePresentationFormat** property ([MS-OXPROPS] section 2.462) specifies the presentation format of the file attached to the Document object.

2.2.1.20 PidNameManager Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameManager** property ([MS-OXPROPS] section 2.451) specifies the manager of the file attached to the Document object.

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2.2.1.21 PidNameCompany Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidNameCompany** property ([MS-OXPROPS] section 2.405) specifies the company for which the file was created.

2.2.1.22 PidNameByteCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameByteCount** property ([MS-OXPROPS] section 2.373) specifies the size, in bytes, of the file attached to the Document object.

2.2.1.23 PidNameLineCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameLineCount** property ([MS-OXPROPS] section 2.448) specifies the number of lines in the file attached to the Document object.

2.2.1.24 PidNameParagraphCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameParagraphCount** property ([MS-OXPROPS] section 2.460) specifies the number of paragraphs in the file attached to the Document object.

2.2.1.25 PidNameSlideCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameSlideCount** property ([MS-OXPROPS] section 2.468) specifies the number of slides in the file attached to the Document object.

2.2.1.26 PidNameNoteCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameNoteCount** property ([MS-OXPROPS] section 2.453) specifies the number of notes in the file attached to the Document object.

2.2.1.27 PidNameHiddenCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameHiddenCount** property ([MS-OXPROPS] section 2.437) specifies the hidden value of the file attached to the Document object.

2.2.1.28 PidNameMultimediaClipCount Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidNameMultimediaClipCount** property ([MS-OXPROPS] section 2.452) specifies the number of multimedia clips in the file attached to the Document object.

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2.2.1.29 PidNameDocumentParts Property

Type: **PtypMultipleString** ([MS-OXCDATA] section 2.11.1)

The **PidNameDocumentParts** property ([MS-OXPROPS] section 2.416) specifies the title of each part of the file attached to the Document object.

2.2.1.30 PidNameHeadingPairs Property

Type: **PtypBinary** ([MS-OXCDATA] section 2.11.1)

The **PidNameHeadingPairs** property ([MS-OXPROPS] section 2.436) specifies which group of headings is indented in the file attached to the Document object.

2.2.1.31 PidNameLinksDirty Property

Type: **PtypBoolean** ([MS-OXCDATA] section 2.11.1)

The **PidNameLinksDirty** property ([MS-OXPROPS] section 2.449) indicates whether the links are up-to-date in the file attached to the Document object. The value TRUE indicates that the links are up-to-date; FALSE indicates otherwise.

2.2.1.32 PidNameScale Property

Type: **PtypBoolean** ([MS-OXCDATA] section 2.11.1)

The **PidNameScale** property ([MS-OXPROPS] section 2.466) indicates whether the image attached to the Document object is to be scaled or is to be cropped. The value TRUE indicates thumbnail scaling; FALSE indicates cropping.

2.2.1.33 PidNameThumbnail Property

Type: **PtypBinary** ([MS-OXCDATA] section 2.11.1)

The **PidNameThumbnail** property ([MS-OXPROPS] section 2.471) specifies the data representing the thumbnail image of the file attached to the Document object.

2.2.1.34 PidLidPendingStateForSiteMailboxDocument Property

Type: **PtypInteger32** ([MS-OXCDATA] section 2.11.1)

The **PidLidPendingStateForSiteMailboxDocument** property ([MS-OXPROPS] section 2.201) specifies the synchronization state of the Document object that is in the Document Libraries folder of the **site mailbox**.<1>

The valid values for this property are shown in the following table.

Value	Meaning
0	The document has been uploaded to a shared location.
1	The document has been added to the Document Libraries folder and is waiting to be uploaded to a shared location.

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2.2.2 Additional Property Constraints

Additional property constraints beyond what is specified in [MS-OXCMSG] are specified in section 2.2.2.1 through section 2.2.2.3.

2.2.2.1 PidTagMessageClass Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidTagMessageClass** property ([MS-OXCMSG] section 2.2.1.3) specifies the type of the Message object. For a message to be treated as a Document object by a client, the value of this property MUST be "IPM.document.<FileType>", where the "<FileType>" substring indicates the type of the attached file. The value of the substring that follows "IPM.document." is implementation-dependent.

2.2.2.2 PidTagDisplayName Property

Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidTagDisplayName** property ([MS-OXCFOLD] section 2.2.2.2.2.5) specifies the name of the attachment. A Document object SHOULD have this property set.

2.2.2.3 Attachment to the Message Object

A Document object MUST have at least one attachment and SHOULD NOT have more than one. For details about how attachments are stored within a message, see [MS-OXCMSG].

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3 Protocol Details

3.1 Client Details

The client creates and manipulates a Document object and otherwise operates within the client role as specified in [MS-OXCMSG].

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

This protocol uses the abstract data model that is specified in [MS-OXCMSG] section 3.1.1 with the following adaptations:

- The Document object is an extension of the Message object.
- A Document object is created in the folder chosen by the user.
- A Document object is placed in the Document Libraries folder of the site mailbox to have the attached file of the Document object uploaded to a shared location.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Higher-Layer Triggered Events

3.1.4.1 Creating a Document Object

The client creates a Document object as a Message object with an attachment when the user drags a file from any file folder into either a mail folder of the user's **mailbox** or the Document Libraries folder of the site mailbox.<2> The file is attached to the Document object. For details about the attachment to a Document object, see section 2.2.2.3. For details about the **remote operations (ROPs)** involved in creating a Message object and an **Attachment object**, see [MS-OXCMSG].

The client SHOULD set the **PidTagMessageClass** ([MS-OXCMSG] section 2.2.1.3) and **PidTagDisplayName** ([MS-OXCFOLD] section 2.2.2.2.5) properties as specified in section 2.2.2.1 and section 2.2.2.2. If the Document object is created in the the Document Libraries folder of the site mailbox, the client MUST set the **PidLidPendingStateForSiteMailboxDocument** property (section 2.2.1.34) to 1.

3.1.4.2 Opening a Document Object

When a user opens a message, the client opens the Message object as specified in [MS-OXCMSG] section 3.1.4.1. The client determines the message type by examining the **PidTagMessageClass** property ([MS-OXCMSG] section 2.2.1.3), as specified in section 2.2.2.1.

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If the value of **PidTagMessageClass** does not begin with "IPM.document.", the message is not a Document object, and the client handles the message in a way that is appropriate for that particular type of Message object. If the value of the **PidTagMessageClass** property does begin with "IPM.document.", the message is a Document object, and the client retrieves the attachment as specified in [MS-OXCMSG] section 3.1.4.11. If there are zero attachments, the client displays an error. If there is more than one attachment, the client can either display an error or pick one of the attachments. For details about attachments to a Document object, see section 2.2.2.3. When a Document object is opened, the client can open the message's underlying attachment directly, thereby behaving in the most optimal fashion from a user's perspective.

3.1.4.3 Deleting a Document Object

When a user deletes a Document object from a mail folder, the client deletes the Document object in the same way that it deletes any Message object, as specified in [MS-OXCFOLD].

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 Server Details

The server processes a client's requests regarding a Document object and otherwise operates within the server role as specified in [MS-OXCMSG].

3.2.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

This protocol uses the abstract data model that is specified in [MS-OXCMSG] section 3.2.1 with the following adaptations:

- The Document object is an extension of the Message object.
- A Document object is created in the folder chosen by the user.
- A Document object is placed in the Document Libraries folder of the site mailbox to have the attached file of the Document object uploaded to a shared location.

3.2.2 Timers

None.

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3.2.3 Initialization

None.

3.2.4 Higher-Layer Triggered Events

When a Document object is created in the Document Libraries folder of the site mailbox, as specified in section 3.1.4.1, the server uploads the object's attached file to a shared location and sets properties as follows.<3> The attached file is no longer stored on the server after the server uploads the attached file to the shared location.

- **PidTagAttachMethod** property ([MS-OXCMSG] section 2.2.2.9): Set to **afByReference** (0x00000002).
- **PidTagAttachLongPathname** property ([MS-OXCMSG] section 2.2.2.13): Set to the **URL** of the shared location to which the document is uploaded.
- **PidLidPendingStateForSiteMailboxDocument** property (section 2.2.1.34): Set to 0 (zero).

3.2.5 Message Processing Events and Sequencing Rules

The server responds to client requests as specified in [MS-OXCMSG] section 3.2.5.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

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4 Protocol Examples

4.1 PidTagMessageClass Property Values for Different File Types

The following table shows how the **PidTagMessageClass** property might be set for different file types.

File extension	PidTagMessageClass property value
.doc	IPM.document.Word.document.8
.docx	IPM.document.Word.document.12
.xls	IPM.document.Excel.Sheet.8
.xlsx	IPM.document.Excel.Sheet.12
.ppt	IPM.document.PowerPoint.Show.8
.pptx	IPM.document.PowerPoint.Show.12
.txt	IPM.document.txtfile

4.2 Creating a Document Object

Joe drags a file named testDocObj.txt from his desktop into one of his mail folders. Descriptions of what a client might do to accomplish Joe's intentions and the responses that a server might return are provided in section 4.2.1 through section 4.2.4.

4.2.1 Creating the Document Object

To create a Document object, the client uses the **RopCreateMessage** ROP ([MS-OXCROPS] section 2.2.6.2).

The server returns a success code and a **handle** to a Message object.

4.2.2 Creating the Attachment

The client creates the Attachment object by using the **RopCreateAttachment** ROP ([MS-OXCROPS] section 2.2.6.13). Then, the client writes out the contents of the file into the attachment by using the **RopOpenStream** ROP ([MS-OXCROPS] section 2.2.9.1) and the **RopSetStreamSize** ROP ([MS-OXCROPS] section 2.2.9.6), followed by the **RopWriteStream** ROP ([MS-OXCROPS] section 2.2.9.3).

The client then sets various properties on the attachment by using the **RopSetProperties** ROP ([MS-OXCROPS] section 2.2.8.6). Some of the properties that would be set on the attachment are shown in the following table. The data types are described in [MS-OXCDATA] section 2.11.1.

Property	Property ID	Data type	Value
PidTagAttachLongFilename ([MS-OXCMSG] section 2.2.2.10)	0x3707	0x001F (**PtypString**)	"testDocObj.txt"
PidTagAttachExtension ([MS-OXCMSG] section 2.2.2.12)	0x3703	0x001F	".txt"

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Property	Property ID	Data type	Value
PidTagCreationTime ([MS-OXCMSG] section 2.2.2.3)	0x3007	0x0040 (**PtypTime**)	2008/02/15 19:57:52.557

Now the client saves the attachment by using the **RopSaveChangesAttachment** ROP ([MS-OXCROPS] section 2.2.6.15).

4.2.3 Setting Properties on the Document Object

The protocol client transmits the data to the protocol server by using the **RopSetProperties** ROP ([MS-OXCROPS] section 2.2.8.6). Some of the relevant properties that need to be set for a Document object are shown in the following table. The data types are described in [MS-OXCDATA] section 2.11.1.

Property	Property ID	Data type	Value
PidTagDisplayName ([MS-OXCFOLD] section 2.2.2.2.2.5)	0x3001	0x001F (**PtypString**)	"testDocObj.txt"
PidTagMessageClass ([MS-OXCMSG] section 2.2.1.3)	0x001A	0x001F	"IPM.document.txtfile"

4.2.4 Saving the Document Object

The protocol client commits the properties on the protocol server by using the **RopSaveChangesMessage** ROP ([MS-OXCROPS] section 2.2.6.3) and then releases the object by using the **RopRelease** ROP ([MS-OXCROPS] section 2.2.15.3). The values of some properties will change during the execution of the **RopSaveChangesMessage** ROP, but none of the properties specified in this protocol will change.

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5 Security

5.1 Security Considerations for Implementers

The file that the Document object stores as an attachment can be any file on the hard drive. When a user opens a Document object, one behavior is to open the attached file directly. This file could do harmful things when opened. While this is less of an issue for a user's personal mail folders, it becomes much more of an issue for **public folders**. It is up to the client to choose what kind of behavior to follow when a user opens a Document object.

5.2 Index of Security Parameters

Security parameter	Section
PidNameSecurity property	Section 2.2.1.17

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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 Exchange Server 2013
- Microsoft Office Outlook 2003
- Microsoft Office Outlook 2007
- Microsoft Outlook 2010
- Microsoft Outlook 2013

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 2.2.1.34: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the **PidLidPendingStateForSiteMailboxDocument** property (section 2.2.1.34) and the site mailbox.

<2> Section 3.1.4.1: Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the site mailbox.

<3> Section 3.2.4: Exchange 2003, Exchange 2007, and Exchange 2010 do not support the site mailbox and the **PidLidPendingStateForSiteMailboxDocument** property (section 2.2.1.34).

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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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