[MS-OXOMSG]:

Email Object Protocol

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Revision Summary

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4/4/2008	0.1	New	Initial Availability.
4/25/2008	0.2	Minor	Revised and updated property names and other technical content.
6/27/2008	1.0	Major	Initial Release.
8/6/2008	1.01	Minor	Updated references to reflect date of initial release.
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7/15/2009	3.0	Major	Revised and edited for technical content.
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1/20/2012	10.0	Major	Significantly changed the technical content.
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11/18/2013	15.0	Major	Significantly changed the technical content.
2/10/2014	15.0	None	No changes to the meaning, language, or formatting of the technical content.
4/30/2014	16.0	Major	Significantly changed the technical content.
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5/26/2015	18.0	Major	Significantly changed the technical content.
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6/13/2016	18.0	None	No changes to the meaning, language, or formatting of the technical content.
9/14/2016	18.0	None	No changes to the meaning, language, or formatting of the technical content.
10/17/2016	18.1	Minor	Clarified the meaning of the technical content.
7/24/2018	19.0	Major	Significantly changed the technical content.
10/1/2018	20.0	Major	Significantly changed the technical content.
4/22/2021	21.0	Major	Significantly changed the technical content.
8/17/2021	22.0	Major	Significantly changed the technical content.

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1 Introduction

The Email Object Protocol enables the creation, transmission and storage of e-mail messages by representing e-mails as **Message objects**. The Email Object Protocol extends the Message and Attachment Object Protocol in that it defines new properties and adds restrictions to the properties that are described in [MS-OXCMSG].

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

address book: A collection of Address Book objects, each of which are contained in any number of address lists.

address type: An identifier for the type of email address, such as **SMTP** and EX.

American National Standards Institute (ANSI) character set: A character set defined by a code page approved by the American National Standards Institute (ANSI). The term "ANSI" as used to signify Windows code pages is a historical reference and a misnomer that persists in the Windows community. The source of this misnomer stems from the fact that the Windows code page 1252 was originally based on an ANSI draft, which became International Organization for Standardization (ISO) Standard 8859-1 [ISO/IEC-8859-1]. In Windows, the ANSI character set can be any of the following code pages: 1252, 1250, 1251, 1253, 1254, 1255, 1256, 1257, 1258, 874, 932, 936, 949, or 950. For example, "ANSI application" is usually a reference to a non-**Unicode** or code-page-based application. Therefore, "ANSI character set" is often misused to refer to one of the character sets defined by a Windows code page that can be used as an active system code page; for example, character sets defined by code page 1252 or character sets defined by code page 950. Windows is now based on **Unicode**, so the use of ANSI character sets is strongly discouraged unless they are used to interoperate with legacy applications or legacy data.

ASCII: The American Standard Code for Information Interchange (ASCII) is an 8-bit character-encoding scheme based on the English alphabet. ASCII codes represent text in computers, communications equipment, and other devices that work with text. ASCII refers to a single 8-bit ASCII character or an array of 8-bit ASCII characters with the high bit of each character set to zero.

Attachment object: A set of properties that represents a file, **Message object**, or structured storage that is attached to a Message object and is visible through the attachments table for a Message object.

big-endian: Multiple-byte values that are byte-ordered with the most significant byte stored in the memory location with the lowest address.

blind carbon copy (Bcc) recipient: An addressee on a **Message object** that is not visible to recipients of the Message object.

body part: A part of an Internet message, as described in [RFC2045].

carbon copy (Cc) recipient: An address on a **Message object** that is visible to recipients of the Message object but is not necessarily expected to take any action.

conversation thread: A series of messages and responses to those messages, typically related by subject.

Coordinated Universal Time (UTC): A high-precision atomic time standard that approximately tracks Universal Time (UT). It is the basis for legal, civil time all over the Earth. Time zones around the world are expressed as positive and negative offsets from UTC. In this role, it is also referred to as Zulu time (Z) and Greenwich Mean Time (GMT). In these specifications, all references to UTC refer to the time at UTC-0 (or GMT).

delegate rule: A server-side rule that is used to send mail to delegates on behalf of a delegator.

delivery receipt: A report message that is generated and sent by a client or server to the sender of a message or another designated recipient when an email message is received by an intended recipient.

display name: A text string that is used to identify a principal or other object in the user interface. Also referred to as title.

distribution list: A collection of users, computers, contacts, or other groups that is used only for email distribution, and addressed as a single recipient.

Domain Name System (DNS): A hierarchical, distributed database that contains mappings of domain names to various types of data, such as IP addresses. DNS enables the location of computers and services by user-friendly names, and it also enables the discovery of other information stored in the database.

Email object: A **Message object** that represents an email message in a message store and adheres to the property descriptions that are described in in [MS-OXOMSG].

Embedded Message object: A **Message object** that is stored as an **Attachment object** within another Message object.

entry ID: See **EntryID**.

EntryID: A sequence of bytes that is used to identify and access an object.

flags: A set of values used to configure or report options or settings.

folder associated information (FAI): A collection of **Message objects** that are stored in a Folder object and are typically hidden from view by email applications. An FAI Message object is used to store a variety of settings and auxiliary data, including forms, views, calendar options, favorites, and category lists.

Folder object: A messaging construct that is typically used to organize data into a hierarchy of objects containing Message objects and **folder associated information (FAI)** Message objects.

globally unique identifier (GUID): A term used interchangeably with universally unique identifier (UUID) in Microsoft protocol technical documents (TDs). Interchanging the usage of these terms does not imply or require a specific algorithm or mechanism to generate the value. Specifically, the use of this term does not imply or require that the algorithms described in [RFC4122] or [C706] must be used for generating the **GUID**. See also universally unique identifier (UUID).

handle: Any token that can be used to identify and access an object such as a device, file, or a window.

header: A name-value pair that supplies structured data in an Internet email message or MIME entity.

Help file: A file that contains the documentation for a specific product or technology.

Hypertext Markup Language (HTML): An application of the Standard Generalized Markup Language (SGML) that uses tags to mark elements in a document, as described in [HTML].

Hypertext Transfer Protocol (HTTP): An application-level protocol for distributed, collaborative, hypermedia information systems (text, graphic images, sound, video, and other multimedia files) on the World Wide Web.

Internet Message Access Protocol - Version 4 (IMAP4): A protocol that is used for accessing email and news items from mail servers, as described in [RFC3501].

Inter-Personal Mail (IPM): Typical user messaging items, such as email and calendar items.

language code identifier (LCID): A 32-bit number that identifies the user interface human language dialect or variation that is supported by an application or a client computer.

little-endian: Multiple-byte values that are byte-ordered with the least significant byte stored in the memory location with the lowest address.

locale: A collection of rules and data that are specific to a language and a geographical area. A locale can include information about sorting rules, date and time formatting, numeric and monetary conventions, and character classification.

Logon object: A **Server object** that provides access to a private **mailbox** or a public folder. A client obtains a Logon object by issuing a RopLogon **remote operation (ROP)** to a server.

mail spooler: A program or function that receives requests to send mail to and deliver mail for a user. It determines which mail transport handles sending or receiving mail.

mailbox: A **message store** that contains email, calendar items, and other **Message objects** for a single recipient.

message body: The main message text of an email message. A few properties of a **Message object** represent its message body, with one property containing the text itself and others defining its code page and its relationship to alternative body formats.

message class: A property that loosely defines the type of a message, contact, or other Personal Information Manager (PIM) object in a mailbox.

Message object: A set of properties that represents an email message, appointment, contact, or other type of personal-information-management object. In addition to its own properties, a Message object contains recipient properties that represent the addressees to which it is addressed, and an attachments table that represents any files and other Message objects that are attached to it.

message store: A unit of containment for a single hierarchy of Folder objects, such as a mailbox or public folders.

message transfer agent (MTA): An **SMTP** server that accepts mail from a client or another MTA and delivers the mail or relays it to another MTA.

messaging object: An object that exists in a **mailbox**. It can be only a **Folder object** or a **Message object**.

messaging transport: A networking protocol that facilitates the transfer of messages between a messaging client and a messaging server.

Multipurpose Internet Mail Extensions (MIME): A set of extensions that redefines and expands support for various types of content in email messages, as described in [RFC2045], [RFC2046], and [RFC2047].

non-delivery report: A report message that is generated and sent by a server to the sender of a message if an email message could not be received by an intended recipient.

non-read receipt: A message that is generated when an email message is deleted at the expiration of a time limit or due to other client-specific criteria.

Object Linking and Embedding (OLE): A technology for transferring and sharing information between applications by inserting a file or part of a file into a compound document. The inserted file can be either embedded or linked. See also embedded object and linked object.

Out of Office (OOF): One of the possible values for the free/busy status on an appointment. It indicates that the user will not be in the office during the appointment.

permission: A rule that is associated with an object and that regulates which users can gain access to the object and in what manner. See also rights.

plain text: Text that does not have markup. See also plain text message body.

Post Office Protocol - Version 3 (POP3): A protocol that is used for accessing email from mail servers, as described in [RFC1939].

primary recipient: A person for whom a message is directly intended.

read receipt: An email message that is sent to the sender of a message to indicate that a message recipient received the message.

recipient: (1) An entity that can receive email messages.

(2) An entity that is in an address list, can receive email messages, and contains a set of attributes. Each attribute has a set of associated values.

recipient table: The part of a **Message object** that represents users to whom a message is addressed. Each row of the table is a set of properties that represents one **recipient (2)**.

reminder: A generally user-visible notification that a specified time has been reached. A reminder is most commonly related to the beginning of a meeting or the due time of a task but it can be applied to any object type.

remote operation (ROP): An operation that is invoked against a server. Each ROP represents an action, such as delete, send, or query. A ROP is contained in a ROP buffer for transmission over the wire.

remote procedure call (RPC): A communication protocol used primarily between client and server. The term has three definitions that are often used interchangeably: a runtime environment providing for communication facilities between computers (the RPC runtime); a set of request-and-response message exchanges between computers (the RPC exchange); and the single message from an RPC exchange (the RPC message). For more information, see [C706].

report message: A message that presents status information about a sent message. A report message is sent to the sender of the message.

resend message: A message that is submitted for message delivery after it failed to be sent to all or some of its **recipients (1)**.

Rich Text Format (RTF): Text with formatting as described in [MSFT-RTF].

ROP request: See **ROP request buffer**.

ROP request buffer: A ROP buffer that a client sends to a server to be processed.

ROP response: See **ROP response buffer**.

ROP response buffer: A ROP buffer that a server sends to a client to be processed.

search folder: A **Folder object** that provides a means of querying for items that match certain criteria. The search folder includes the search folder definition message and the search folder container.

search key: A binary-comparable key that identifies related objects for a search.

Sent Items folder: A special folder that is the default location for storing copies of **Message objects** after they are submitted or sent.

server object: A class of object in the configuration naming context (config NC). A **server object** can have an nTDSDSA object as a child.

Simple Mail Transfer Protocol (SMTP): A member of the TCP/IP suite of protocols that is used to transport Internet messages, as described in [RFC5321].

spam: An unsolicited email message.

spooler queue: A series of outgoing messages that are ready for delivery to **recipients (1)**.

subobject: For a folder, the messages and subfolders that are contained in that folder. For a message, the **recipients (2)** and attachments to that message. For an attachment, the **Embedded Message object** for that attachment.

To recipient: See **primary recipient**.

Transport Neutral Encapsulation Format (TNEF): A binary type-length-value encoding that is used to encode properties for transport, as described in [MS-OXTNEF].

Unicode: A character encoding standard developed by the Unicode Consortium that represents almost all of the written languages of the world. The **Unicode** standard [UNICODE5.0.0/2007] provides three forms (UTF-8, UTF-16, and UTF-32) and seven schemes (UTF-8, UTF-16, UTF-16 BE, UTF-16 LE, UTF-32, UTF-32 LE, and UTF-32 BE).

Uniform Resource Identifier (URI): A string that identifies a resource. The URI is an addressing mechanism defined in Internet Engineering Task Force (IETF) Uniform Resource Identifier (URI): Generic Syntax [RFC3986].

UTF-16: A standard for encoding Unicode characters, defined in the Unicode standard, in which the most commonly used characters are defined as double-byte characters. Unless specified otherwise, this term refers to the UTF-16 encoding form specified in [UNICODE5.0.0/2007] section 3.9.

UUEncoded attachment: A file that is attached to an email message that was encoded by using the uuencode utility, as described in [IEEE1003.1].

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

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the Errata.

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-DTYP] Microsoft Corporation, "Windows Data Types".

[MS-OXBBODY] Microsoft Corporation, "Best Body Retrieval Algorithm".

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

[MS-OXCFXICS] Microsoft Corporation, "Bulk Data Transfer Protocol".

[MS-OXCMAIL] Microsoft Corporation, "RFC 2822 and MIME to Email Object Conversion Algorithm".

[MS-OXCMAPIHTTP] Microsoft Corporation, "Messaging Application Programming Interface (MAPI) Extensions for HTTP".

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

[MS-OXCNOTIF] Microsoft Corporation, "Core Notifications Protocol".

[MS-OXCPERM] Microsoft Corporation, "Exchange Access and Operation Permissions Protocol".

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

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

[MS-OXCRPC] Microsoft Corporation, "Wire Format Protocol".

[MS-OXCSPAM] Microsoft Corporation, "Spam Confidence Level Protocol".

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

[MS-OXOCAL] Microsoft Corporation, "Appointment and Meeting Object Protocol".

[MS-OXOCFG] Microsoft Corporation, "Configuration Information Protocol".

[MS-OXOCNTC] Microsoft Corporation, "Contact Object Protocol".

[MS-OXODLGT] Microsoft Corporation, "Delegate Access Configuration Protocol".

[MS-OXOFLAG] Microsoft Corporation, "Informational Flagging Protocol".

[MS-OXORMDR] Microsoft Corporation, "Reminder Settings Protocol".

[MS-OXORULE] Microsoft Corporation, "Email Rules Protocol".

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

[RFC1321] Rivest, R., "The MD5 Message-Digest Algorithm", RFC 1321, April 1992, http://www.ietf.org/rfc/rfc1321.txt

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

[RFC2369] Neufeld, G., and Baer, J., "The Use of URLs as Meta-Syntax for Core Mail List Commands and their Transport through Message Header Fields", RFC 2369, July 1998, http://www.rfc-editor.org/rfc/rfc2369.txt

[RFC2821] Klensin, J., "Simple Mail Transfer Protocol", RFC 2821, April 2001, http://www.ietf.org/rfc/rfc2821.txt

[RFC2822] Resnick, P., Ed., "Internet Message Format", RFC 2822, April 2001, http://www.ietf.org/rfc/rfc2822.txt

[RFC3464] Moore, K., and Vaudreuil, G., "An Extensible Message Format for Delivery Status Notifications", RFC 3464, January 2003, http://www.rfc-editor.org/rfc/rfc3464.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

[IEEE1003.1] The Open Group, "IEEE Std 1003.1, 2004 Edition", 2004, http://www.unix.org/version3/ieee_std.html

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

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

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

[MS-OXTNEF] Microsoft Corporation, "Transport Neutral Encapsulation Format (TNEF) Data Algorithm".

1.3 Overview

An **E-mail object** represents a single e-mail message. The properties that are specific to an E-mail object facilitate retaining information about the e-mail message's sender, **recipients (1)**, subject, message content, and all the options associated with this e-mail that are set by the sender or recipient (1). An E-mail object is stored in a **Folder object**. This protocol also specifies how an E-mail object is used to represent a **report message**, which is a special type of message that is generated to report the status of a sent message, either at the sender's request or at the request of the system administrator.

1.3.1 E-Mail Objects

1.3.1.1 Creating, Opening, and Saving E-Mail Objects

An **E-mail object** is created, opened, and saved in the same way that any **Message object** is created, opened, and saved, as described in [MS-OXCMSG].

1.3.1.2 Sending Messages

A client submits a request to a server to send an e-mail message to another messaging user. The server can defer or reject the request based on the properties and **permissions** that are associated with the **E-mail object**.

While the message is queued in the server, the client can abort the send operation.

1.3.1.3 Replying and Forwarding Messages

Replying to a message or forwarding a message is identical to sending a message except that both actions have an expanded set of properties. These properties are specified in section 2.2.1.

1.3.2 Report Messages

Report messages are an extension of the **E-mail object**. Report messages present status information about a sent message to its sender. The following are the two general types of reports:

- Read status reports. **Read receipt** reporting occurs when the sent e-mail message is read/opened by the **recipient (1)**. **Non-read receipt** reporting occurs when the sent e-mail message is not read before it is deleted or expired.
- Delivery status reports. **Delivery receipt** reporting occurs when the sent e-mail message is delivered to the recipient (1). **Non-delivery report** reporting occurs when the sent e-mail message cannot be delivered.

1.3.2.1 Read Receipt

A **read receipt** report indicates that a sent e-mail message was read or opened by a **recipient (1)**.

Read receipts are not generated automatically. Senders who want to receive read receipts explicitly request them.

1.3.2.2 Non-Read Receipt

A **non-read receipt** is generated during e-mail message deletion operations, as described in [MS-OXCFOLD], at the expiration of a time limit or according to client-specific criteria. A non-read receipt is sent to the e-mail's sender or a designated **recipient (1)** by the e-mail sender's request.

1.3.2.3 Delivery Receipt

A **delivery receipt** is generated by an e-mail client or server and sent to the e-mail's sender or designated **recipient (1)** when an e-mail has reached its intended recipient (1).

1.3.2.4 Non-Delivery Report

A **non-delivery report** receipt is generated by an e-mail client or server and sent to the e-mail's sender when an e-mail could not reach an intended **recipient (1)**. Non-delivery report receipts are sent automatically unless a request is made to suppress them.

1.3.3 Voting and Tracking

Voting and tracking capabilities are an extension of the **E-mail object**. A client can add voting options to an e-mail message through the use of voting verb properties, as specified in section 2.2.1.74. The client of a **recipient (2)** can respond to the voting survey by setting response properties on a reply message. The sender's client processes the reply message and maintains the response tracking information in the original message's recipient (2) tracking status properties, as specified in section 2.2.1.75.

1.3.4 Controlling Sending and Delivery of Mail

If a client is connected to several e-mail servers at once (not necessarily using the same protocol), it can choose to control how mail is sent by manipulating the **spooler queue** of the **message store**. If a client delivers mail into a folder on the server (such as delivering **Post Office Protocol - Version 3 (POP3)** messages), it can inform the server of the new mail through **remote operation (ROP)** requests.

1.4 Relationship to Other Protocols

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

1.6 Applicability Statement

The Email Object Protocol is designed to facilitate the exchange of interpersonal mail and messages.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

The **ROP request buffers** and **ROP response buffers** specified by this protocol are respectively sent to and received from the server by using the underlying **remote procedure call (RPC)** transport, as specified in [MS-OXCROPS].

2.2 Message Syntax

An **E-mail object** can be created and modified by clients and servers. Except where noted, this section defines constraints to which both clients and servers adhere when operating on E-mail objects.

Clients operate on E-mail objects by using the Message and Attachment Object Protocol, which is specified in [MS-OXCMSG]. How a server operates on E-mail objects is implementation-dependent, but the results of any such operations are to be exposed to clients in a manner that is consistent with the Email Object Protocol.

Unless otherwise specified, E-mail objects adhere to all property constraints specified in [MS-OXPROPS] and all property constraints specified in [MS-OXCMSG]. An E-mail object can also contain other properties, as specified in [MS-OXPROPS], but these properties have no impact on this protocol.

When a property is referred to as "read-only for the client", the server returns an error and ignores any request to change the value of that property.

Message senders are identified by the from properties and the sender properties on an E-mail object. In general, the from properties and the sender properties will identify the same messaging user; for example, the e-mail message appears to have been sent by the actual sender of the e-mail message. In some cases, however, an e-mail message is sent by one user (the actual sender) on behalf of another user (the represented sender). In this case, the from properties identify the represented sender, and the sender properties identify the actual sender.

Message object properties can be considered as belonging to certain groups based on the type of messaging sub-object they represent. The first four groups represent actual senders, represented senders, represented recipients, and actual recipients. Other properties correspond to the Body and Subject sub-objects of a message. A separate class of properties is used to specify the **To recipients**, **carbon copy (Cc) recipients**, and **blind carbon copy (Bcc) recipients** of an e-mail message. The remaining properties that do not fall under these groups are used to specify either other **subobjects** related to message management, or to control the method or timing of message delivery.

An actual recipient is the owner of the **mailbox** that receives the e-mail message. The following properties are associated with actual recipients:

- **PidTagMessageRecipientMe** (section 2.2.1.19)
- **PidTagReceivedByAddressType** (section 2.2.1.36)
- **PidTagReceivedByEmailAddress** (section 2.2.1.37)
- **PidTagReceivedByEntryId** (section 2.2.1.38)
- **PidTagReceivedByName** (section 2.2.1.39)
- **PidTagReceivedBySearchKey** (section 2.2.1.40)
- **PidTagRecipientType** (section 2.2.3.1)

The represented sender of an e-mail message is the messaging user or user agent on whose behalf the e-mail message was sent (or will be sent). The following from properties are associated only with the represented sender:

- **PidTagSentRepresentingAddressType** (section 2.2.1.54)
- **PidTagSentRepresentingEmailAddress** (section 2.2.1.55)
- **PidTagSentRepresentingEntryId** (section 2.2.1.56)
- **PidTagSentRepresentingName** (section 2.2.1.57)
- **PidTagSentRepresentingSearchKey** (section 2.2.1.58)
- **PidTagOriginalSentRepresentingAddressType** (section 2.2.2.11)
- **PidTagOriginalSentRepresentingEmailAddress** (section 2.2.2.12)
- **PidTagOriginalSentRepresentingEntryId** (section 2.2.2.13)
- **PidTagOriginalSentRepresentingName** (section 2.2.2.14)
- **PidTagOriginalSentRepresentingSearchKey** (section 2.2.2.15)

The actual sender is the owner of the mailbox that sent (or will send) the e-mail message. The following from properties are associated with the actual sender:

- **PidTagSenderAddressType** (section 2.2.1.48)
- **PidTagSenderEmailAddress** (section 2.2.1.49)
- **PidTagSenderEntryId** (section 2.2.1.50)
- **PidTagSenderName** (section 2.2.1.51)
- **PidTagSenderSearchKey** (section 2.2.1.52)
- **PidTagOriginalSenderAddressType** (section 2.2.2.6)
- **PidTagOriginalSenderEmailAddress** (section 2.2.2.7)
- **PidTagOriginalSenderEntryId** (section 2.2.2.8)
- **PidTagOriginalSenderName** (section 2.2.2.9)
- **PidTagOriginalSenderSearchKey** (section 2.2.2.10)

The **recipients (2)** subobject is a collection of recipients (2), each of which is a messaging user to whom e-mail messages will be (or have been) delivered. As with senders, there are two types of recipients (2): represented recipients and actual recipients. Within each of these types, there are three subclasses of recipients (2) for an e-mail message: To recipients, Cc recipients, and Bcc recipients.

A represented recipient is the messaging user or user agent on whose behalf the e-mail message is being received. The following recipient properties are associated with represented recipients:

- **PidTagReceivedRepresentingAddressType** (section 2.2.1.23)
- **PidTagReceivedRepresentingEmailAddress** (section 2.2.1.24)
- **PidTagReceivedRepresentingEntryId** (section 2.2.1.25)
- **PidTagReceivedRepresentingName** (section 2.2.1.26)

- **PidTagReceivedRepresentingSearchKey** (section 2.2.1.27)

Another set of from properties is used to identify three subclasses of recipients (2) for an e-mail message: To recipients, Cc recipients, and Bcc recipients.

The following from properties are associated with To recipients:

- **PidTagDisplayTo** (section 2.2.1.9)
- **PidTagMessageToMe** (section 2.2.1.17)
- **PidTagOriginalDisplayTo** (section 2.2.2.3)

The following from properties are associated with Cc recipients:

- **PidTagDisplayCc** (section 2.2.1.8)
- **PidTagMessageCcMe** (section 2.2.1.18)
- **PidTagOriginalDisplayCc** (section 2.2.2.4)

The following from properties are associated with Bcc recipients:

- **PidTagDisplayBcc** (section 2.2.1.7)
- **PidTagOriginalDisplayBcc** (section 2.2.2.5)

The Subject subobject is a short text string that is intended to inform a recipient (1) as to the contents or purpose of the e-mail message. The following properties are associated with the subject:

- **PidTagNormalizedSubject** ([MS-OXCMSG] section 2.2.1.10)
- **PidTagSubjectPrefix** (section 2.2.1.60)
- **PidTagOriginalSubject** (section 2.2.2.16)

The Body subobject, as specified in [MS-OXBBODY], contains the main contents of the e-mail message. The following properties are associated with the body:

- **PidTagBlockStatus** (section 2.2.1.1)
- **PidTagBody** ([MS-OXCMSG] section 2.2.1.56.1)
- **PidTagBodyHtml** ([MS-OXCMSG] section 2.2.1.56.3)
- **PidTagRtfCompressed** ([MS-OXCMSG] section 2.2.1.56.4)
- **PidTagRtfInSync** ([MS-OXCMSG] section 2.2.1.56.5)
- **PidTagMessageEditorFormat** (section 2.2.1.78)

Many properties that are not associated with the preceding core E-mail objects are included with an e-mail message in support of other particular subobjects. The following subobjects, along with their associated properties, fall into this category:

- Conversations
  - **PidTagConversationIndex** ([MS-OXOCFG] section 2.2.8.8)
  - **PidTagConversationTopic** (section 2.2.1.5)

If an e-mail message in the **conversation thread** is given a new subject, this e-mail message starts the new conversation thread with a new value for both the **PidTagConversationTopic** and **PidTagConversationIndex** properties.

- Client Options
  - **PidTagIconIndex** (section 2.2.1.10)
  - **PidTagMessageClass** ([MS-OXCMSG] section 2.2.1.3)
  - **PidTagReadReceiptRequested** (section 2.2.1.29)
  - **PidTagReadReceiptEntryId** (section 2.2.2.26)
  - **PidTagReadReceiptSearchKey** (section 2.2.2.28)
  - **PidTagOriginalSensitivity** (section 2.2.1.22)
  - **PidTagRecipientReassignmentProhibited** (section 2.2.1.42)
  - **PidTagReplyRequested** (section 2.2.1.45)
  - **PidTagResponseRequested** (section 2.2.1.46)
  - **PidTagReplyRecipientEntries** (section 2.2.1.43)
  - **PidTagReplyRecipientNames** (section 2.2.1.44)
  - **PidLidAutoProcessState** (section 2.2.1.73)
  - **PidLidVerbStream** (section 2.2.1.74)
  - **PidLidVerbResponse** (section 2.2.1.75)

Finally, the following properties are set by an e-mail client or server to control how messages are delivered:

- **PidTagExpiryTime** (section 2.2.3.7)
- **PidTagInternetMessageId** (section 2.2.1.12)
- **PidTagOriginatorDeliveryReportRequested** (section 2.2.1.20)
- **PidTagOriginatorNonDeliveryReportRequested** (section 2.2.1.21)
- **PidTagSendRichInfo** ([MS-OXOABK] section 2.2.3.18)
- **PidTagTransportMessageHeaders** (section 2.2.1.61)
- **PidTagOriginalDeliveryTime** (section 2.2.2.2)
- **PidTagOriginalSubmitTime** (section 2.2.2.17)
- **PidTagParentKey** (section 2.2.2.18)
- **PidTagReportTag** (section 2.2.2.22)
- **PidTagReportText** (section 2.2.2.23)
- **PidTagMessageFlags** ([MS-OXCMSG] section 2.2.1.6)
- **PidTagMessageDeliveryTime** (section 2.2.3.9)

- **PidTagDeferredSendNumber** (section 2.2.3.2)
- **PidTagDeferredSendUnits** (section 2.2.3.3)
- **PidTagDeferredSendTime** (section 2.2.3.4)
- **PidTagExpiryNumber** (section 2.2.3.5)
- **PidTagExpiryUnits** (section 2.2.3.6)

2.2.1 E-Mail Object Properties

The properties in the sub-sections of this section are specific to **E-mail objects**.

2.2.1.1 PidTagBlockStatus Property

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

The **PidTagBlockStatus** property ([MS-OXPROPS] section 2.617) indicates whether the user's preference for viewing external content (such as links to images on a **Hypertext Transfer Protocol (HTTP)** server) is allowed or blocked in the **message body**.

A client can ignore this property and always allow or always block external content based on factors that are determined by the implementer. For example, a client can always allow or always block external content based on whether the sender is on a safe senders list. For information about the safe senders list, see the description of the **PidTagJunkAddRecipientsToSafeSendersList** property in [MS-OXCSPAM] section 2.2.2.1.

Valid values for this property are given in the following table.

Value	Meaning
0x00000000	Default value. Block external content.
Variable nonzero value	Allow or block external content, as described following this table.

If this property is used, the default (0x00000000) is to block the external content. However, if the value of this property falls within a specific range, as described in this section, viewing external content is allowed. The allowed value is computed from the **PidTagMessageDeliveryTime** property (section 2.2.3.9): because the sender of a message does not have knowledge of this value, the sender cannot reliably set the value of the **PidTagBlockStatus** property to the allowed values.

To compute the allowed values, convert the value of the **PidTagMessageDeliveryTime** property to a **PtypFloatingTime** ([MS-OXCDATA] section 2.11.1) type (floatdate), where the date is represented as the number of days from 00:00:00, December 30, 1899, **Coordinated Universal Time (UTC)**. Apply the following formula.

result = ((floatdate - floor(floatdate)) * 100000000) + 3;

where floor(x) returns the largest integer ≤ x.

Convert the value result to a 32-bit integer computed value.

When a client first receives the message, it SHOULD set the value of the **PidTagBlockStatus** property to this computed value to allow external content. However, when determining whether to accept external content, clients SHOULD allow external content if the absolute value of the difference between the computed value and the value of the **PidTagBlockStatus** property is 1 or less. After the message is received and the value of the **PidTagBlockStatus** property has been calculated, clients SHOULD persist the value of this property for future reference.

The server MUST NOT alter the value of this property.

2.2.1.2 PidTagConversationId Property

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

The **PidTagConversationId** property<1> ([MS-OXPROPS] section 2.649) is a computed value, derived from other conversation-related properties, that identifies a message as belonging to a specific conversation. This property is computed by the application, server or client. The computed value of the **PidTagConversationId** property SHOULD be derived from the values of the following properties.

If the value of the **PidTagConversationIndexTracking** property (section 2.2.1.4) is set to 0x01 (TRUE), and the value of the **PidTagConversationIndex** property (section 2.2.1.3) is at least 22 bytes long and the first byte of the value of the **PidTagConversationIndex** property is 0x01, then the value of the **PidTagConversationId** property MUST be the **GUID** portion of the **PidTagConversationIndex** property.

Otherwise, if the **PidTagConversationTopic** property (section 2.2.1.5) is set, the value of the **PidTagConversationId** property MUST be computed as follows:

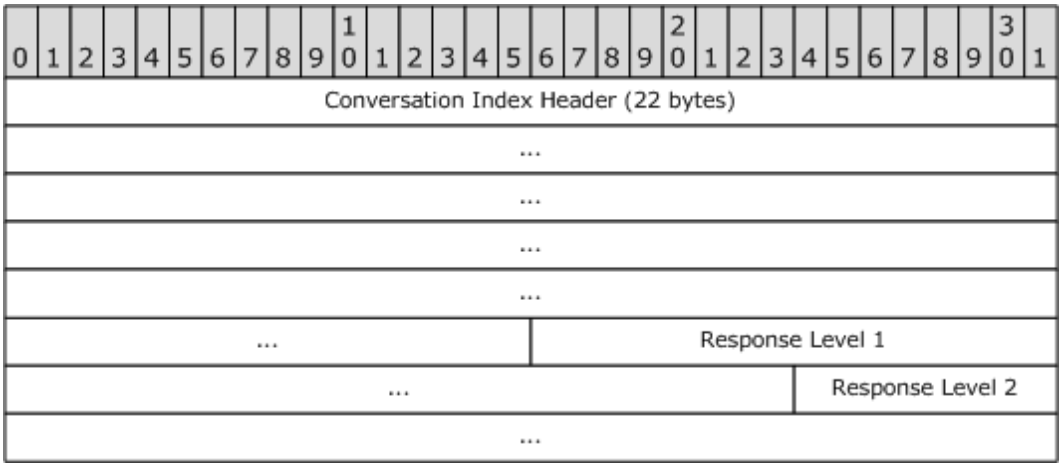
1. The application MUST use up to 255 of the first nonzero characters of the **little-endian UTF-16** representation of the **PidTagConversationTopic** property.
2. The application MUST convert the characters to their upper-case forms, mapping "i" to "I" regardless of the user's **locale**.
3. The application MUST perform an MD5 hash, as specified in [RFC1321], on the characters and use the resulting 16-byte hash as the value of the **PidTagConversationId** property.

Otherwise, if none of the above conditions were met, the **PidTagConversationId** property MUST NOT be set, in which case it will be undefined for the **Message object**.

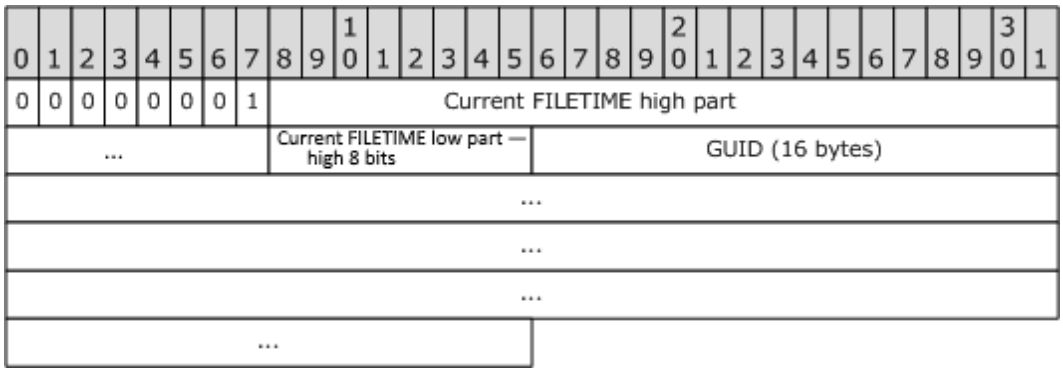
2.2.1.3 PidTagConversationIndex Property

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

The **PidTagConversationIndex** property ([MS-OXPROPS] section 2.650) indicates the relative position of this message within a **conversation thread**. It is set according to the description in the following diagram.



Conversation Index Header (22 bytes): Set according to the description in the following diagram.



Reserved (8 bits): Set to 0x01.

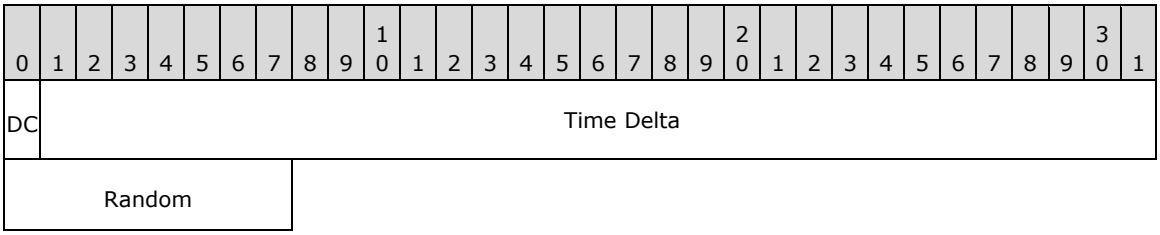
Current FILETIME (40 bits): The time of delivery in **UTC** expressed as a **PtypTime** type ([MS-OXCDATA] section 2.11.1) is obtained, where the 32 bits of the high part and the 8 high bits of the low part of the **FILETIME** ([MS-DTYP]) are included in **Current FILETIME high part** and **Current FILETIME low part**, as shown in the following table.<2>

40 bits	24 least significant bits
Included	Excluded

The data is stored in **big-endian** format: the five bytes of the time are written from most significant byte to least significant byte.

GUID (16 bytes): A **PtypGuid** type ([MS-OXCDATA] section 2.11.1) that is generated for each new conversation thread. The **Data1**, **Data2**, and **Data3** fields are stored in big-endian format in the packet.

Response Levels (5 bytes each): Set according to the description in the following diagram.



DC (Delta code) (1 bit) and **Time Delta (31 bits):** Calculated based on **TimeDiff**, a 64-bit value representing the difference between the current time and the time stored in the conversation index header:<3>

- If the difference is less than 1.7 years (high order part of the delta file time bitwise AND with 0x00FE0000 resulting in "0"), the **Delta Code** field is 0 and the **Time Delta** field is the least significant 31 bits of the **TimeDiff** value remaining after the 18 least significant bits are excluded. The following table depicts which portion of the **TimeDiff** value is included in the **Time Delta** field in this scenario.

15 most significant bits	31 bits	18 least significant bits
Excluded	Included	Excluded

- If the difference is greater than or equal to 1.7 years (high order part of the delta file time bitwise AND with 0x00FE0000 resulting in nonzero), the **Delta Code** field is 1 and the **Time Delta** field is

the least significant 31 bits of the **TimeDiff** value remaining after the 23 least significant bits are excluded. The following table depicts which portion of the **TimeDiff** value is included in the **Time Delta** field in this scenario.

10 most significant bits	31 bits	23 least significant bits
Excluded	Included	Excluded

For both cases, **Time Delta** is stored in big-endian format.

Random (8 bits): Random value generated by using an implementation-specific algorithm.

2.2.1.4 PidTagConversationIndexTracking Property

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

The **PidTagConversationIndexTracking** property ([MS-OXPROPS] section 2.651) is set to 0x01 (TRUE) if the **GUID** portion of the value of the **PidTagConversationIndex** property (section 2.2.1.3) will be used to compute the value of the **PidTagConversationId** property (section 2.2.1.2), assuming the client or server application implements the **PidTagConversationId** property. Otherwise, this property is set to 0x00 (FALSE).

2.2.1.5 PidTagConversationTopic Property

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

The **PidTagConversationTopic** property ([MS-OXPROPS] section 2.652) contains an unchanging copy of the original subject.<4> The property is set to the same value as the **PidTagNormalizedSubject** property ([MS-OXCMSG] section 2.2.1.10) on an **E-mail object** when it is submitted.

2.2.1.6 PidTagDeferredDeliveryTime Property

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

The **PidTagDeferredDeliveryTime** property ([MS-OXPROPS] section 2.662) contains the date and time, in **UTC**, at which the sender prefers the message to be delivered. This property MAY be included in the response. If the property is absent, the message is delivered as soon as possible. If it is present, the property SHOULD have the same value as the **PidTagDeferredSendTime** property (section 2.2.3.4).

A client sets both the **PidTagDeferredDeliveryTime** property and the **PidTagDeferredSendTime** property for deferred delivery of a message before submission.<5>

2.2.1.7 PidTagDisplayBcc Property

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

The **PidTagDisplayBcc** property ([MS-OXPROPS] section 2.674) is set to a list of **Bcc recipient display names**, separated by semicolons, if an e-mail message has Bcc recipients. Otherwise, this property contains an empty string, as specified in [MS-OXCMSG] section 3.2.5.2. This property is read-only for the client.

2.2.1.8 PidTagDisplayCc Property

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

The **PidTagDisplayCc** property ([MS-OXPROPS] section 2.675) is set to a list of **Cc recipient display names**, separated by semicolons, if an e-mail message has Cc recipients. Otherwise, this property contains an empty string, as specified in [MS-OXCMSG] section 3.2.5.2. This property is read-only for the client.

2.2.1.9 PidTagDisplayTo Property

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

The **PidTagDisplayTo** property ([MS-OXPROPS] section 2.678) is set to a list of the **primary recipient display names**, separated by semicolons, if an e-mail message has primary recipients. Otherwise, this property contains an empty string, as specified in [MS-OXCMSG] section 3.2.5.2. This property is read-only for the client.

2.2.1.10 PidTagIconIndex Property

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

The **PidTagIconIndex** property ([MS-OXPROPS] section 2.737) specifies the icon to be used by the user interface when displaying a group of **E-mail objects**. This property, if it exists, is a hint to the client: it can ignore the value of this property and use another method of determining what icon to display to the user, such as using the values of the **PidTagMessageClass** property ([MS-OXCMSG] section 2.2.1.3) or the **PidTagMessageFlags** property ([MS-OXCMSG] section 2.2.1.6). Examples of values for the **PidTagIconIndex** property are shown in the following table.

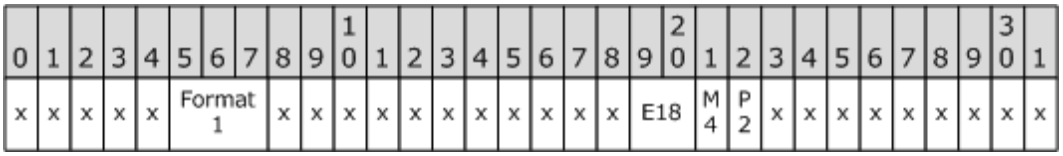
Mail item state	Mail item icon index
New mail	0xFFFFFFFF
Read mail	0x00000100
Unread mail	0x00000101
Submitted mail	0x00000102
Unsent mail	0x00000103
Receipt mail	0x00000104
Replied mail	0x00000105
Forwarded mail	0x00000106
Remote mail	0x00000107
Delivery receipt	0x00000108
Read receipt	0x00000109
Non-delivery report	0x0000010A
Non-read receipt	0x0000010B
Recall_S mails	0x0000010C
Recall_F mail	0x0000010D
Tracking mail	0x0000010E
Out of Office mail	0x0000011B

Mail item state	Mail item icon index
Recall mail	0x0000011C
Tracked mail	0x00000130

2.2.1.11 PidTagInternetMailOverrideFormat Property

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

The **PidTagInternetMailOverrideFormat** property ([MS-OXPROPS] section 2.747) indicates the encoding method and **Hypertext Markup Language (HTML)** inclusion for attachments and SHOULD be set on an outgoing e-mail message. This property is broken up into subportions, as shown in the following table. Note that "X" indicates that the bit is not to be set, and if set, the bit is to be ignored; the format of the diagram is **little-endian**.



Format1 (3 bits): Set to one of the values listed in the following table.

Value	Meaning
0x0	Default value. The mail system chooses the default encoding scheme, based on other fields in this property value.
0x1	The message is sent in **MIME** format with text/plain and text/HTML **body parts**.
0x2	The message is sent as **plain text** with **UUEncoded attachments**.
0x4	The message is sent in MIME format with text/plain and text/HTML body parts. This value is treated the same as the 0x1 value.

E18 (2 bits): Ignored if **Format1** = 0 or **P2** = 0 or **M4** = 0. Otherwise, set to one of the following values to indicate the HTML inclusion.

Value	Meaning
0x0	Text/plain only.
0x1	Text/plain and text/HTML.
0x2	Text/plain and text/HTML. This value is treated the same as the 0x1 value.

M4 (1 bit): Ignored if **Format1** = 0 or **P2** = 0; otherwise, indicates the encoding, as shown in the following table.

Value	Meaning
0	Use the uuencode algorithm as described in [IEEE1003.1], and ignore the value of the **E18** field.
1	Use MIME encoding, and use the value of the **E18** field to determine body inclusions.

P2 (1 bit): Ignored if **Format1** = 0; otherwise, indicates the preference, as shown in the following table.

Value	Meaning
0	Ignore the value of the **M4** field.
1	Use the value of the **M4** field to determine encoding.

2.2.1.12 PidTagInternetMessageId Property

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

The **PidTagInternetMessageId** property ([MS-OXPROPS] section 2.748) corresponds to the **Message-id** field, as specified in [RFC2822]. This property SHOULD be present on all e-mail messages. More details about the conversion between this property and the **Message-id** field are specified in [MS-OXCMAIL] section 2.1.3.2.11.

2.2.1.13 PidTagInReplyToId Property

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

The **PidTagInReplyToId** property ([MS-OXPROPS] section 2.742) corresponds to the **in-reply-to** field, as specified in [RFC2822], and contains the value of the original message's **PidTagInternetMessageId** property (section 2.2.1.12). This property is set on all message replies.

2.2.1.14 PidTagLastVerbExecuted Property

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

The **PidTagLastVerbExecuted** property ([MS-OXPROPS] section 2.767) specifies the last verb executed for the message item to which it is related. This property is used by the client to display the last operation performed on the item. The possible values for the **PidTagLastVerbExecuted** property are shown in the following table.

Verb name	Alternate name	Value
Open	NOTEIVERB_OPEN	0
ReplyToSender	NOTEIVERB_REPLYTOSENDER	102
ReplyToAll	NOTEIVERB_REPLYTOALL	103
Forward	NOTEIVERB_FORWARD	104
Print	NOTEIVERB_PRINT	105
Save as	NOTEIVERB_SAVEAS	106
ReplyToFolder	NOTEIVERB_REPLYTOFOLDER	108
Save	NOTEIVERB_SAVE	500
Properties	NOTEIVERB_PROPERTIES	510
Followup	NOTEIVERB_FOLLOWUP	511

Verb name	Alternate name	Value
Accept	NOTEIVERB_ACCEPT	512
Tentative	NOTEIVERB_TENTATIVE	513
Reject	NOTEIVERB_REJECT	514
Decline	NOTEIVERB_DECLINE	515
Invite	NOTEIVERB_INVITE	516
Update	NOTEIVERB_UPDATE	517
Cancel	NOTEIVERB_CANCEL	518
SilentInvite	NOTEIVERB_SILENTINVITE	519
SilentCancel	NOTEIVERB_SILENTCANCEL	520
RecallMessage	NOTEIVERB_RECALL_MESSAGE	521
ForwardResponse	NOTEIVERB_FORWARD_RESPONSE	522
ForwardCancel	NOTEIVERB_FORWARD_CANCEL	523
FollowupClear	NOTEIVERB_FOLLOWUPCLEAR	524
ForwardAppointment	NOTEIVERB_FORWARD_APPT	525
OpenResend	NOTEIVERB_OPENRESEND	526
StatusReport	NOTEIVERB_STATUSREPORT	527
JournalOpen	NOTEIVERB_JOURNALOPEN	528
JournalOpenLink	NOTEIVERB_JOURNALOPENLINK	529
ComposeReplace	NOTEIVERB_COMPOSEREPLACE	530
Edit	NOTEIVERB_EDIT	531
DeleteProcess	NOTEIVERB_DELETEPROCESS	532
TentativeAppointmentTime	NOTEIVERB_TENTPNTIME	533
EditTemplate	NOTEIVERB_EDITTEMPLATE	534
FindInCalendar	NOTEIVERB_FINDINCALENDAR	535
ForwardAsFile	NOTEIVERB_FORWARDASFILE	536
ChangeAttendees	NOTEIVERB_CHANGE_ATTENDEES	537
RecalculateTitle	NOTEIVERB_RECALC_TITLE	538
PropertyChange	NOTEIVERB_PROP_CHANGE	539
ForwardAsVcal	NOTEIVERB_FORWARD_AS_VCAL	540
ForwardAsIcal	NOTEIVERB_FORWARD_AS_ICAL	541
ForwardAsBusinessCard	NOTEIVERB_FORWARD_AS_BCARD	542
DeclineAppointmentTime	NOTEIVERB_DECLPNTIME	543

Verb name	Alternate name	Value
Process	NOTEIVERB_PROCESS	544
OpenWithWord	NOTEIVERB_OPENWITHWORD	545
OpenInstanceOfSeries	NOTEIVERB_OPEN_INSTANCE_OF_SERIES	546
FilloutThisForm	NOTEIVERB_FILLOUT_THIS_FORM	547
FollowupDefault	NOTEIVERB_FOLLOWUP_DEFAULT	548
ReplyWithMail	NOTEIVERB_REPLY_WITH_MAIL	549
ToDoToday	NOTEIVERB_TODO_TODAY	566
ToDoTomorrow	NOTEIVERB_TODO_TOMORROW	567
ToDoThisWeek	NOTEIVERB_TODO_THISWEEK	568
ToDoNextWeek	NOTEIVERB_TODO_NEXTWEEK	569
ToDoThisMonth	NOTEIVERB_TODO_THISMONTH	570
ToDoNextMonth	NOTEIVERB_TODO_NEXTMONTH	571
ToDoNoDate	NOTEIVERB_TODO_NODATE	572
FollowupComplete	NOTEIVERB_FOLLOWUPCOMPLETE	573
CopyToPostFolder	NOTEIVERB_COPYTOPOSTFOLDER	574
SeriesInvitationUpdateToPartialAttendeeList	NOTEIVERB_PARTIALRECIP_SILENTINVITE	579
SeriesCancellationUpdateToPartialAttendeeList	NOTEIVERB_PARTIALRECIP_SILENTCANCEL	580

2.2.1.15 PidTagLastVerbExecutionTime Property

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

The **PidTagLastVerbExecutionTime** property ([MS-OXPROPS] section 2.768) contains the date and time, in **UTC**, during which the operation represented by the value of the **PidTagLastVerbExecuted** property (section 2.2.1.14) took place.

2.2.1.16 PidTagMessageClass Property

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

The **PidTagMessageClass** property ([MS-OXCMSG] section 2.2.1.3) contains the object type classification. This property is set to "IPM.Note" on **E-mail objects**. The value of the **PidTagMessageClass** property for report objects is specified in section 2.2.2.1 of this document.

2.2.1.17 PidTagMessageToMe Property

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

The **PidTagMessageToMe** property ([MS-OXPROPS] section 2.800) is an optional property indicating that the receiving **mailbox** owner is one of the **primary recipients** of an e-mail message. If this property is present, it is set to either 0x01, in which case, the receiving mailbox owner is specifically

named as a primary recipient of an e-mail message and is not part of a **distribution list**; or 0x00, in which case the receiving mailbox owner is not a primary recipient of an e-mail message. The default is 0x00.

2.2.1.18 PidTagMessageCcMe Property

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

The **PidTagMessageCcMe** property ([MS-OXPROPS] section 2.786) is an optional property indicating that the receiving **mailbox** owner is a **Cc recipient** of an e-mail message. If this property is present, it is set to either 0x01, in which case the receiving mailbox owner is specifically named as a Cc recipient of an e-mail message and is not part of a **distribution list**; or 0x00, in which case the receiving mailbox owner is not a Cc recipient of an e-mail message. The default is 0x00.

2.2.1.19 PidTagMessageRecipientMe Property

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

The **PidTagMessageRecipientMe** property ([MS-OXPROPS] section 2.794) is an optional property indicating that the receiving **mailbox** owner is a primary or a **Cc recipient** of an e-mail message. If this property is present, it is set to either 0x01, in which case the receiving mailbox owner is specifically named as a primary or a Cc recipient of an e-mail message and is not part of a **distribution list**, or 0x00, in which case the receiving mailbox owner is not a primary and not a Cc recipient of an e-mail message. The default is 0x00.

2.2.1.20 PidTagOriginatorDeliveryReportRequested Property

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

The **PidTagOriginatorDeliveryReportRequested** property ([MS-OXPROPS] section 2.845) indicates whether an e-mail sender requests an e-mail **delivery receipt** from an e-mail client or server. This property is set to either 0x01, in which case the sender requests the delivery report be sent to the e-mail sender or designated report receiver when the e-mail message is delivered, or 0x00 if the e-mail sender does not want to receive the delivery receipt.

2.2.1.21 PidTagOriginatorNonDeliveryReportRequested Property

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

The **PidTagOriginatorNonDeliveryReportRequested** property ([MS-OXPROPS] section 2.846) specifies whether an e-mail sender requests suppression of **non-delivery reports**. If this property is absent, the server automatically generates and sends a non-delivery report to the e-mail sender. If this property is present, it is set to either 0x00, in which case the e-mail sender requests suppression of non-delivery reports, or 0x01, in which case the non-delivery report is generated and sent.

2.2.1.22 PidTagOriginalSensitivity Property

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

The **PidTagOriginalSensitivity** property ([MS-OXPROPS] section 2.837) contains the sensitivity value of the original e-mail message. This property is set on replying and forwarding e-mail messages by using the value of the **PidTagSensitivity** property ([MS-OXCMSG] section 2.2.1.13) of the original message.

2.2.1.23 PidTagReceivedRepresentingAddressType Property

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

The **PidTagReceivedRepresentingAddressType** property ([MS-OXPROPS] section 2.893) contains the e-mail **address type** for the end user represented by the receiving **mailbox** owner, as specified in the **AddressType** field of the **RecipientRow** structure (section 2.2.4.3 and [MS-OXCDATA] section 2.8.3.2). If the receiving mailbox owner receives the e-mail message on his or her own behalf, this property is set to the value of the **PidTagReceivedByAddressType** property (section 2.2.1.36).

2.2.1.24 PidTagReceivedRepresentingEmailAddress Property

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

The **PidTagReceivedRepresentingEmailAddress** property ([MS-OXPROPS] section 2.894) contains the e-mail address for the end user represented by the receiving **mailbox** owner, as specified in the **EmailAddress** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2). If the receiving mailbox owner receives the e-mail message on his or her own behalf, this property is set to the value of the **PidTagReceivedByEmailAddress** property (section 2.2.1.37).

2.2.1.25 PidTagReceivedRepresentingEntryId Property

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

The **PidTagReceivedRepresentingEntryId** property ([MS-OXPROPS] section 2.895) contains an **address book EntryID** that identifies the end user represented by the receiving **mailbox** owner, as specified in the **EntryID** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2). If the receiving mailbox owner receives the e-mail message on his or her own behalf, this property is set to the value of the **PidTagReceivedByEntryId** property (section 2.2.1.38).

2.2.1.26 PidTagReceivedRepresentingName Property

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

The **PidTagReceivedRepresentingName** property ([MS-OXPROPS] section 2.896) contains the **display name** for the end user represented by the receiving **mailbox** owner, as specified by the **DisplayName** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2). If the receiving mailbox owner receives the e-mail on his or her own behalf, this property is set to the value of the **PidTagReceivedByName** property (section 2.2.1.39).

2.2.1.27 PidTagReceivedRepresentingSearchKey Property

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

The **PidTagReceivedRepresentingSearchKey** property ([MS-OXPROPS] section 2.897) identifies an **address book search key** that contains a binary-comparable key of the end user represented by the receiving **mailbox** owner, as specified by the **SearchKey** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2). This property is computed in the same way that the value of the **PidTagReceivedBySearchKey** property (section 2.2.1.40) is computed. If the receiving mailbox owner receives the e-mail message on his or her own behalf, this property is set to a value that is identical to the value of the **PidTagReceivedBySearchKey** property.

2.2.1.28 PidTagReceivedRepresentingSmtpAddress Property

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

The **PidTagReceivedRepresentingSmtpAddress** property ([MS-OXPROPS] section 2.898) contains the **SMTP** email address of the user represented by the receiving **mailbox** owner.

2.2.1.29 PidTagReadReceiptRequested Property

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

The **PidTagReadReceiptRequested** property ([MS-OXPROPS] section 2.883) specifies whether the e-mail sender requests a **read receipt** from all **recipients (1)** when this e-mail message is read or opened. If this property is absent, no read receipt is sent to the e-mail's sender. If the property is present, it is set to either 0x01, in which case the e-mail message's sender requests the read receipt from an e-mail client or server, or 0x00, in which case no read receipt is requested by the e-mail message's sender.

If an **E-mail object** that has its **PidTagReadReceiptRequested** property set to 0x01 is deleted, or it expires due to the time limit set by the **PidTagExpiryTime** property (section 2.2.3.7) before the read receipt for this e-mail is generated, a **non-read receipt** is generated and sent to the e-mail message's sender or designated receipt recipient (1).

2.2.1.30 PidTagReadReceiptSmtpAddress Property

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

The **PidTagReadReceiptSmtpAddress** property ([MS-OXPROPS] section 2.885) contains the **SMTP** email address of the user to whom a **read receipt** is directed.

2.2.1.31 PidTagNonReceiptNotificationRequested Property

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

The **PidTagNonReceiptNotificationRequested** property ([MS-OXPROPS] section 2.811) specifies whether the e-mail sender requests a **non-read receipt** from all **recipients (1)** if this message is deleted without being read. This property is set to 0x01 if the e-mail sender requests a non-read receipt from all recipients; otherwise, it is set to 0x00.

2.2.1.32 PidTagOriginalAuthorEntryId Property

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

The **PidTagOriginalAuthorEntryId** property ([MS-OXPROPS] section 2.823) contains an **Address Book** EntryID structure ([MS-OXCDATA] section 2.2.5.2) and is defined in report messages to identify the user who sent the original message.

2.2.1.33 PidTagOriginalAuthorName Property

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

The **PidTagOriginalAuthorName** property ([MS-OXPROPS] section 2.824) contains the display name of the sender of the original message referenced by a report message.

2.2.1.34 PidTagReportDisposition Property

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

The **PidTagReportDisposition** property ([MS-OXPROPS] section 2.920) contains a string indicating whether the original message was displayed to the user or deleted. It is only defined on report messages. Valid values for this property are as follows.

Value	Description
displayed	The message was viewed by the user.
deleted	The message was erased by the user without being read.

2.2.1.35 PidTagReportDispositionMode Property

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

The **PidTagReportDispositionMode** property ([MS-OXPROPS] section 2.921) contains a description of the action that a client has performed on behalf of a user (report messages only). Valid values for this property are as follows,

Value	Description
manual-action/ MDN-sent-manually	The client displayed a prompt to the user before sending the report message.
manual-action/ MDN-sent-automatically	The client did not display a prompt to the user before sending the report message.

2.2.1.36 PidTagReceivedByAddressType Property

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

The **PidTagReceivedByAddressType** property ([MS-OXPROPS] section 2.887) contains the e-mail message receiver's e-mail **address type**, as specified by the **AddressType** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.37 PidTagReceivedByEmailAddress Property

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

The **PidTagReceivedByEmailAddress** property ([MS-OXPROPS] section 2.888) contains the e-mail message receiver's e-mail address, as specified by the **EmailAddress** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.38 PidTagReceivedByEntryId Property

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

The **PidTagReceivedByEntryId** property ([MS-OXPROPS] section 2.889) identifies an **address book EntryID** that contains the e-mail message receiver of the **E-mail object**. The address book EntryID data format is specified by the **EntryID** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.39 PidTagReceivedByName Property

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

The **PidTagReceivedByName** property ([MS-OXPROPS] section 2.890) contains the e-mail message receiver's **display name**, as specified by the **DisplayName** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.40 PidTagReceivedBySearchKey Property

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

The **PidTagReceivedBySearchKey** property ([MS-OXPROPS] section 2.891) identifies an **address book search key** that contains a binary-comparable key that is used to identify correlated objects for a search. This property is computed and set by concatenating the message receiver's **AddressType** and **EmailAddress** with a colon in between (for example, <TYPE>:<E-MAIL ADDRESS>), as specified by the **SearchKey** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.41 PidTagReceivedBySmtpAddress Property

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

The **PidTagReceivedBySmtpAddress** property ([MS-OXPROPS] section 2.892) contains the email message receiver's **SMTP** email address.

2.2.1.42 PidTagRecipientReassignmentProhibited Property

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

The **PidTagRecipientReassignmentProhibited** property ([MS-OXPROPS] section 2.906) specifies whether adding additional or different **recipients (1)**, when forwarding the message, is prohibited for the e-mail message. This property is set based on the value of the e-mail message's **PidTagSensitivity** property ([MS-OXCMSG] section 2.2.1.13). If the **PidTagSensitivity** property is set to 0x00000000 (normal) or 0x00000003 (confidential), this property is set to 0x00 or is absent, meaning that adding additional or different recipients (1) to the e-mail message is allowed. If the **PidTagSensitivity** property of the **E-mail object** is set to 0x00000001 (personal) or 0x00000002 (private), this property is set to 0x01 to prevent adding additional or different recipients (1) of this e-mail message through forwarding.

2.2.1.43 PidTagReplyRecipientEntries Property

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

The **PidTagReplyRecipientEntries** property ([MS-OXPROPS] section 2.915) identifies a **FlatEntryList** structured array of **address book EntryIDs** for **recipients (2)** that will receive a reply. When the **PidTagReplyRecipientEntries** property and the **PidTagReplyRecipientNames** property (section 2.2.1.44) are defined, the reply is sent to all the recipients (2) identified by these two properties. If this property is absent, a reply is sent only to the user identified by the **PidTagSenderEntryId** property (section 2.2.1.50). If present, the property is set to a **FlatEntryList** structure of recipient (2) EntryIDs, as specified in [MS-OXCDATA] section 2.3.3.

The **PidTagReplyRecipientEntries** property and the **PidTagReplyRecipientNames** property MUST be set in a way that they contain the same number of recipients (2) in the same order.

2.2.1.44 PidTagReplyRecipientNames Property

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

The **PidTagReplyRecipientNames** property ([MS-OXPROPS] section 2.916) contains a list of **display names** for **recipients (1)** that are to get a reply. If this property is absent, a reply is sent only to the user identified by the **PidTagSenderName** property (section 2.2.1.51). If present, the property is set

to one string containing the **address book** entry's recipient (2) display names separated by semicolons.

2.2.1.45 PidTagReplyRequested Property

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

The **PidTagReplyRequested** property ([MS-OXPROPS] section 2.917) specifies whether a reply to the e-mail message is requested by the e-mail message's sender. If this property is absent, the reply to the e-mail message is not requested. If the property is present, it is set to either 0x01 if an e-mail sender requests a reply to the e-mail from **recipients (1)** or 0x00, which is the same handling as if the property is absent.

2.2.1.46 PidTagResponseRequested Property

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

The **PidTagResponseRequested** property ([MS-OXPROPS] section 2.930) specifies whether an e-mail sender requests a response to a meeting request, as specified in [MS-OXOCAL] section 2.2.1.36, or requests a voting response (section 2.2.1.75). If present, this property is set to either 0x01, in which case the response to the e-mail message is requested, or 0x00, in which case the response to the e-mail message is not requested. The default is 0x00.

2.2.1.47 PidTagSendRichInfo Property

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

The **PidTagSendRichInfo** property ([MS-OXOABK] section 2.2.3.18) specifies whether the sender can receive all message content, including **Rich Text Format (RTF)** and **Object Linking and Embedding (OLE)** objects. If this property is present, this property is set to either 0x01, indicating that the sender can receive all message contents, or 0x00, indicating that the sender of the e-mail message is using a different type of e-mail client. The default is 0x00.

2.2.1.48 PidTagSenderAddressType Property

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

The **PidTagSenderAddressType** property ([MS-OXPROPS] section 2.1000) contains the sending **mailbox** owner's e-mail **address type**, as specified by the **AddressType** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2 and section 2.2.4.3).

2.2.1.49 PidTagSenderEmailAddress Property

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

The **PidTagSenderEmailAddress** property ([MS-OXPROPS] section 2.1001) contains the sending **mailbox** owner's e-mail address, as specified by the **EmailAddress** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.50 PidTagSenderEntryId Property

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

The **PidTagSenderEntryId** property ([MS-OXPROPS] section 2.1002) identifies an **address book EntryID** that contains the sending **mailbox** owner's address book EntryID, as specified by the address book EntryID ([MS-OXCDATA] section 2.2.5.2).

2.2.1.51 PidTagSenderName Property

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

The **PidTagSenderName** property ([MS-OXPROPS] section 2.1004) contains the sending **mailbox** owner's **display name**, as specified by the **DisplayName** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.52 PidTagSenderSearchKey Property

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

The **PidTagSenderSearchKey** property ([MS-OXPROPS] section 2.1005) identifies an **address book search key** that contains a binary-comparable key computed by concatenating the value of the sending **mailbox** owner's **PidTagAddressType** property ([MS-OXOABK] section 2.2.3.13) and **PidTagEmailAddress** property ([MS-OXOABK] section 2.2.3.14) with a colon in between (for example, <TYPE>:<E_MAIL ADDRESS>), as specified by the **SearchKey** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.1.53 PidTagSenderSmtpAddress Property

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

The **PidTagSenderSmtpAddress** property ([MS-OXPROPS] section 2.1006) contains the **Simple Mail Transfer Protocol (SMTP)** e-mail address format of the e-mail address of the sending **mailbox** owner.

2.2.1.54 PidTagSentRepresentingAddressType Property

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

The **PidTagSentRepresentingAddressType** property ([MS-OXPROPS] section 2.1012) contains an e-mail **address type** (section 2.2.4.3) for the end user represented by the sending **mailbox** owner. If the sending mailbox owner is sending on his or her own behalf, this property MUST be set to the value of the **PidTagSenderAddressType** property (section 2.2.1.48).

2.2.1.55 PidTagSentRepresentingEmailAddress Property

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

The **PidTagSentRepresentingEmailAddress** property ([MS-OXPROPS] section 2.1013) contains an e-mail address, as specified by the **EmailAddress** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2), for the end user who is represented by the sending **mailbox** owner. If a sending mailbox owner is sending on his or her own behalf, this property is set to the value of the **PidTagSenderEmailAddress** property (section 2.2.1.49).

2.2.1.56 PidTagSentRepresentingEntryId Property

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

The **PidTagSentRepresentingEntryId** property ([MS-OXPROPS] section 2.1014) identifies an **address book EntryID**, as specified by the address book EntryID ([MS-OXCDATA] section 2.2.5.2), that contains the identifier of the end user who is represented by the sending **mailbox** owner. If the sending mailbox owner is sending on his or her own behalf, this property is set to the value of the **PidTagSenderEntryId** property (section 2.2.1.50).

2.2.1.57 PidTagSentRepresentingName Property

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

The **PidTagSentRepresentingName** property ([MS-OXPROPS] section 2.1016) contains the **display name** for the end user who is represented by the sending **mailbox** owner. If a sending mailbox owner is sending on his or her own behalf, this property MUST be set to the value of the **PidTagSenderName** property (section 2.2.1.51).

2.2.1.58 PidTagSentRepresentingSearchKey Property

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

The **PidTagSentRepresentingSearchKey** property ([MS-OXPROPS] section 2.1017) identifies an **address book search key**, as specified by the **SearchKey** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2), that contains a binary-comparable key that represents the end user who is represented by the sending **mailbox** owner. If a sending mailbox owner sends on his or her own behalf, this property is set to the value of the **PidTagSenderSearchKey** property (section 2.2.1.52).

2.2.1.59 PidTagSentRepresentingSmtpAddress Property

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

The **PidTagSentRepresentingSmtpAddress** property ([MS-OXPROPS] section 2.1018) contains the **SMTP** e-mail address of the end user who is represented by the sending **mailbox** owner.

2.2.1.60 PidTagSubjectPrefix Property

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

On an **E-mail object**, the **PidTagSubjectPrefix** property ([MS-OXCMSG] section 2.2.1.9) represents an action on the e-mail message, such as "RE: " for replying and "FW: " for forwarding. If this property is absent, there is no subject prefix for the e-mail message.

On **report messages**, the value of the **PidTagSubjectPrefix** property is set as follows for the specified types of reports and responses:

- **Delivery receipts**: "Delivered: "
- **Read receipts**: "Read: "
- Sender response on read receipt requests: "Approved: "
- **Non-delivery reports**: "Undeliverable: "
- **Non-read receipts**: "Not Read: " or "read: "

2.2.1.61 PidTagTransportMessageHeaders Property

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

The **PidTagTransportMessageHeaders** property ([MS-OXPROPS] section 2.1050) contains transport-specific message envelope information for e-mail, as specified in [RFC2821]. For outgoing messages with **recipients (1)** who have an **SMTP address type**, and for incoming messages from a sender who has an SMTP address type, the client and server respectively MUST set this property to a copy of the beginning of the message stream as received from SMTP, up to the first blank line (double CRLF, as specified in [RFC5234].).

2.2.1.62 PidLidInternetAccountName Property

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

The **PidLidInternetAccountName** property ([MS-OXPROPS] section 2.152) specifies the user-visible e-mail account name through which the e-mail message is sent. The format of this string is implementation-dependent. This property can be used by the client to determine which server to direct the mail to but is optional and the value has no meaning to the server.

2.2.1.63 PidLidInternetAccountStamp Property

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

The **PidLidInternetAccountStamp** property ([MS-OXPROPS] section 2.153) specifies the e-mail account ID through which the e-mail message is sent. The format of this string is implementation-dependent. This property can be used by the client to determine which server to direct the mail to but is optional and the value has no meaning to the server.

2.2.1.64 PidTagPrimarySendAccount Property

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

The **PidTagPrimarySendAccount** property ([MS-OXPROPS] section 2.869) specifies the first server to be used by a client to send the mail with. The format of this property is implementation-dependent. This property can be used by the client to determine which server to direct the mail to but is optional and the value has no meaning to the server.

2.2.1.65 PidTagNextSendAcct Property

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

The **PidTagNextSendAcct** property ([MS-OXPROPS] section 2.806) specifies the server that a client is currently attempting to use to send mail. The format of this property is implementation-dependent. This property can be used by the client to determine which server to direct the mail to but is optional and the value has no meaning to the server.

2.2.1.66 PidLidUseTnef Property

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

The **PidLidUseTnef** property ([MS-OXPROPS] section 2.347) is set to 0x01 (TRUE) if **Transport Neutral Encapsulation Format (TNEF)** is included on a message when the message is converted from TNEF to **MIME** or **SMTP** format. Otherwise, this property is set to 0x00 (FALSE). If this property is absent, implementers of this protocol MUST NOT include TNEF on the message.

This property is set by either the client or the server, depending on which one is performing the conversion. For information about conversions involving TNEF and MIME, see [MS-OXTNEF] and [MS-OXCMAIL].

2.2.1.67 Attachments

The client can use attachment properties as specified in [MS-OXCMSG] section 2.2.2.

2.2.1.68 Categories and Keywords

The client can set categories or keywords on an e-mail message as specified in [MS-OXCMSG] section 2.2.1.17.

2.2.1.69 Contacts

The client can set the contacts on an e-mail message as specified in [MS-OXOCNTC] and [MS-OXCMSG] section 2.2.1.57.2.

2.2.1.70 Flags

The client can set **flags** as specified in [MS-OXOFLAG].

2.2.1.71 Reminders

The client can set **reminders** as specified in [MS-OXORMDR].

2.2.1.72 Recipients

The client adds **recipients (2)** to an e-mail message by using the **RopModifyRecipients ROP** ([MS-OXCROPS] section 2.2.6.5), as specified in [MS-OXCMSG] section 2.2.3.5. For each recipient (2), the client sets the **PidTagRecipientType** property (section 2.2.3.1) to 0x00000001 for a **primary recipient**, 0x00000002 for a **Cc recipient**, or 0x00000003 for a **Bcc recipient**. For details about the **RecipientRow** structure, which is used in the **RopModifyRecipients ROP request buffer**, see [MS-OXCDATA] section 2.8.3.2.

2.2.1.73 PidLidAutoProcessState Property

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

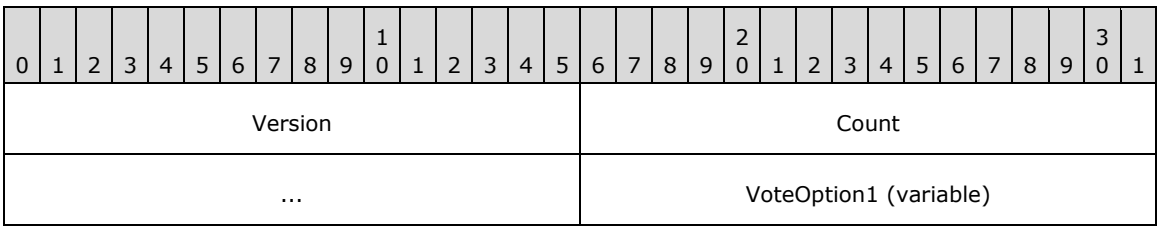
The **PidLidAutoProcessState** property ([MS-OXPROPS] section 2.40) specifies the options used in the processing of voting and tracking for e-mail messages. The property can be absent, in which case the default value of 0x00000000 is used. If set, this property is set to one of the values in the following table.

Value	Meaning
0x00000000	The client will not process the voting and tracking for the message.
0x00000001	The client will process the voting and tracking when the message is received or opened.
0x00000002	The client will process the voting and tracking only when the message is opened.

2.2.1.74 PidLidVerbStream Property

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

The **PidLidVerbStream** property ([MS-OXPROPS] section 2.350) specifies what voting responses the user can make in response to the message. The format is of this property is shown in the following diagram.



...	
VoteOptionN (variable)	
...	
Version2	VoteOptionExtras1 (variable)
...	
VoteOptionExtrasN (variable)	
...	

Version (WORD): Set to 0x0102.

Count (DWORD): Specifies the count of the **VoteOption** structures plus the count of the **VoteOptionExtras** structures to follow.

VoteOption1 (variable length): The first **VoteOption** structure specified in section 2.2.1.74.1.

VoteOptionN (variable length): The last **VoteOption** structure specified in section 2.2.1.74.1, where the 'N' in the field name represents the count of all the **VoteOption** structures in the **PidLidVerbStream**.

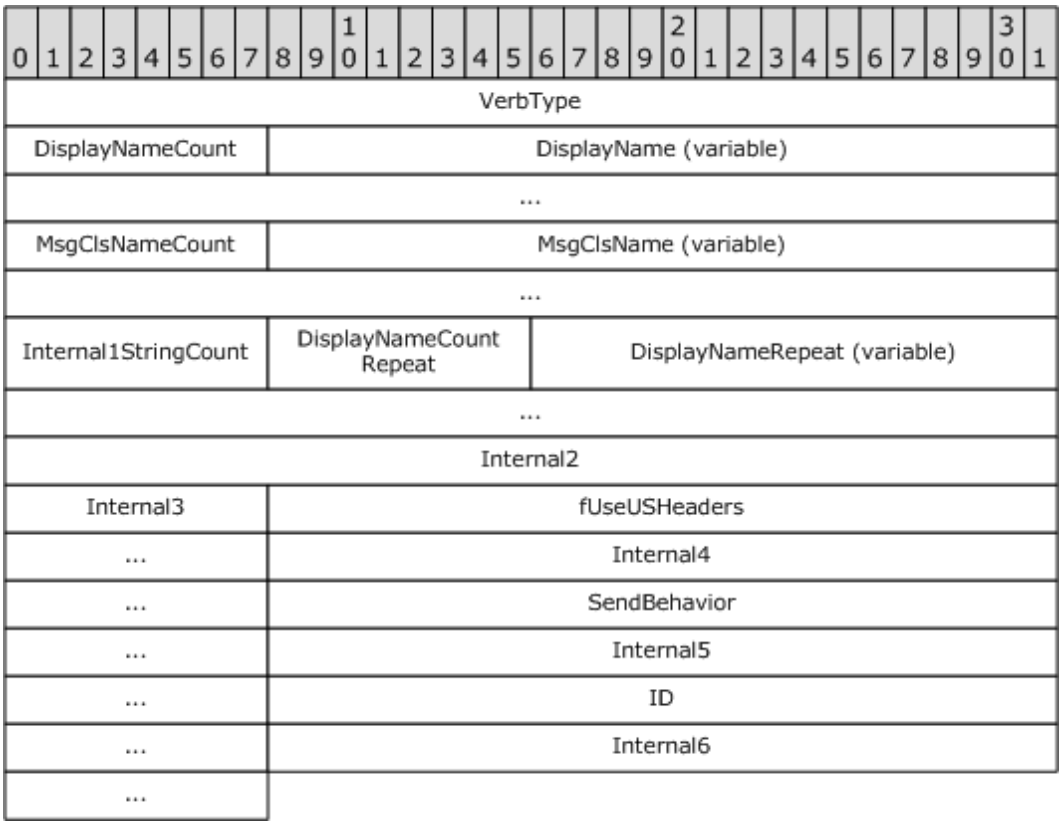
Version2 (WORD): MUST be set to 0x0104.

VoteOptionExtras1 (variable length): The first **VoteOptionExtras** structure specified in section 2.2.1.74.2.

VoteOptionExtrasN (variable length): The last **VoteOptionExtras** structure specified in section 2.2.1.74.2, where the 'N' in the field name represents the count of all the **VoteOptionExtras** structures in the **PidLidVerbStream**.

2.2.1.74.1 VoteOption Structure

The verb stream contains two parallel arrays of **VoteOption** and **VoteOptionExtra** structures. Each element in these two arrays, when combined, describes a single voting option that can be taken by the user in response to the message. The format of the **VoteOption** structure is shown in the following diagram.



VerbType (DWORD): The verb used by this structure. Set to 4 (0x00000004).

DisplayNameCount (1 byte): The count of characters in the **DisplayName** field.

DisplayName (variable): The localized **display name** of the voting option (for example, "Yes") as an ANSI string, without the null terminating character.

MsgClsNameCount (1 byte): The count of characters in the **MsgClsName** field. Set to 8 (0x08).

MsgClsName (variable): Set to "IPM.Note", without the null terminating character.

Internal1StringCount (1 byte): The count of characters in the following string. Set to 0x00 for voting options.

Internal1String (variable): MUST NOT be present, as **Internal1StringCount** is 0x00 for a voting option.

DisplayNameCountRepeat (1 byte): MUST have the same value as the **DisplayNameCount** field.

DisplayNameRepeat (variable): MUST have the same value as the **DisplayName** field.

Internal2 (DWORD): Set to 0x00000000.

Internal3 (1 byte): Set to 0x00.

fUseUSHeaders (DWORD): Indicates that a U.S. style reply header is to be used in the response message (as opposed to a localized response header). The value is set to either 0x00000001, using U.S. style reply header, or 0x00000000 otherwise.

Internal4 (DWORD): Set to 0x00000001.

SendBehavior (DWORD): Indicates the behavior on send. When a user chooses a voting option, **SendBehavior** specifies whether the user is to be prompted to edit the response mail or whether the client automatically sends it on behalf of the user. The value of this field is one of the values defined in the following table.

Value	Meaning
0x00000001	Automatically send the voting response message.
0x00000002	Prompt the user to specify whether he or she would like to automatically send or edit the voting response first.

Internal5 (DWORD): Set to 0x00000002.

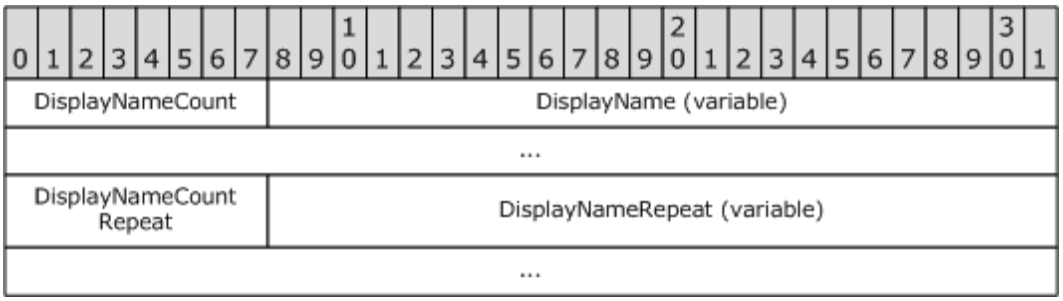
ID (DWORD): Specifies a numeric identifier for this voting option. The client SHOULD specify 1 for the first **VoteOption** structure and monotonically increase this value for each subsequent **VoteOption** structure.

Internal6 (DWORD): Set to "-1" (0xFFFFFFFF).

Note that because the **DisplayNameCount** field (and the **DisplayNameCountRepeat** field) is 1 byte long and contains the **COUNT** of characters in the **DisplayName** field (and the **DisplayNameRepeat** field), this implies a length limit of 255 characters in the **DisplayName** field of any voting option.

2.2.1.74.2 VoteOptionExtras Structure

Each element contains additional information about the corresponding **VoteOption** structure (section 2.2.1.74.1). The format is shown in the following diagram.



DisplayNameCount (1 byte):The **COUNT** ([MS-OXCDATA] section 2.11.1) of **Unicode** characters (not bytes) in the **DisplayName** field.

DisplayName (variable): The **display name** of this voting option, as a Unicode string without a null terminator.

DisplayNameCountRepeat (1 byte): The **COUNT** of characters in the **DisplayNameRepeat** field. MUST have the same value as the **DisplayNameCount** field.

DisplayNameRepeat (variable): A duplicate instance of the display name, as a Unicode string without a null terminator. MUST have the same value as the **DisplayName** field.

2.2.1.75 PidLidVerbResponse Property

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

The **PidLidVerbResponse** property ([MS-OXPROPS] section 2.349) specifies the voting option that a respondent has selected. Corresponds to one of the values of the **DisplayName** field in the

VoteOption structure (section 2.2.1.74.1). If present, this property MUST be set to the textual description of the user interface element selected by the user.

2.2.1.76 PidTagTargetEntryId Property

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

The **PidTagTargetEntryId** property ([MS-OXPROPS] section 2.1039) is used in conjunction with an optimizing send client. The semantics of an optimizing send are specified in section 3.2.4.4 and section 3.3.5.1.3.

2.2.1.77 PidTagAutoResponseSuppress Property

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

The **PidTagAutoResponseSuppress** property ([MS-OXPROPS] section 2.615) specifies whether a client or server application can forego sending automated replies in response to this message. Valid values are given in the following table.

Value	Meaning
-1	Suppress all automatic replies.
0	Do not suppress any automatic replies.
Values greater than 0	Suppress those replies indicated by the bits set on this value, as specified in the following table.

When the value of this property is greater than 0, it is interpreted as a bitwise OR of one or more of the following values.

Value	Meaning
0x00000001	Suppress delivery reports.
0x00000002	Suppress **non-delivery reports**.
0x00000004	Suppress read notifications from clients that receive the message.
0x00000008	Suppress non-read notifications from clients that receive the message.
0x00000010	Suppress **Out of Office (OOF)** messages.
0x00000020	Suppress all auto-reply messages other than OOF notifications.

2.2.1.78 PidTagMessageEditorFormat Property

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

The **PidTagMessageEditorFormat** property ([MS-OXPROPS] section 2.790) specifies the format that an e-mail editor can use for editing the **message body**. Valid values are listed in the following table.

Value name	Value	Meaning

Value name	Value	Meaning
EditorFormatDontKnow	0x00	The format for the editor to use is unknown.
EditorFormatPlainText	0x01	The optimal editing format is **plain text**.
EditorFormatHtml	0x02	The optimal editing format is **HTML**.
EditorFormatRtf	0x03	The optimal editing format is **RTF**.

2.2.1.79 PidTagMessageSubmissionId Property

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

The **PidTagMessageSubmissionId** property ([MS-OXPROPS] section 2.799) contains a unique identifier that indicates where the message originated. This property is optionally set, at the implementer's discretion, by a **message transfer agent (MTA)**.

2.2.1.80 PidTagSenderIdStatus Property

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

The **PidTagSenderIdStatus** property ([MS-OXPROPS] section 2.1003) contains the results reported by the Sender ID agent, which compares the IP address of the message sender against the domain (called the purported responsible domain) of the sender's e-mail address. The value of this property indicates the likelihood that the current message is **spam**. Valid values are given in the following table.

Value	Meaning
0x00000001	Neutral. The verification check was inconclusive.
0x00000002	Pass. The IP address and the purported responsible domain match.
0x00000003	Fail. The IP address and the purported responsible domain do not match.
0x00000004	Soft fail. It is possible that the IP address does not belong to the purported responsible domain. A soft fail indicates less confidence in the message's authenticity than a value of Neutral (0x00000001).
0x00000005	None. No data could be obtained from the **Domain Name System (DNS)**.
0x00000006	Temporary error. There was a transient error (such as the unavailability of DNS) that prevented this value from being computed.
0x00000007	Permanent error. There was an unrecoverable error that prevented this value from being computed.

2.2.1.81 PidTagListHelp Property

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

The **PidTagListHelp** property ([MS-OXPROPS] section 2.769) contains a **Uniform Resource Identifier (URI)** that provides detailed help information for the mailing list from which this e-mail message was sent. This property corresponds to the **List-Help** **header** in **MIME**, which is specified in [RFC2369]. Conversion between this property and the **List-Help** header is specified in [MS-OXCMAIL] section 2.1.3.2.15.

2.2.1.82 PidTagListSubscribe Property

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

The **PidTagListSubscribe** property ([MS-OXPROPS] section 2.770) contains the **URI** that subscribes a **recipient (2)** to the message's associated mailing list. This property corresponds to the **List-Subscribe** **header** in **MIME**, which is specified in [RFC2369]. Conversion between this property and the **List-Subscribe** header is specified in [MS-OXCMAIL] section 2.1.3.2.15.

2.2.1.83 PidTagListUnsubscribe Property

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

The **PidTagListUnsubscribe** property ([MS-OXPROPS] section 2.771) contains the **URI** that unsubscribes a **recipient (2)** from the message's associated mailing list. This property corresponds to the **List-Unsubscribe** **header** in **MIME**, which is specified in [RFC2369]. Conversion between this property and the **List-Unsubscribe** header is specified in [MS-OXCMAIL] section 2.1.3.2.15.

2.2.1.84 PidTagDelegatedByRule Property

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

The **PidTagDelegatedByRule** property ([MS-OXPROPS] section 2.666) specifies whether the message was resent due to the triggering of a **delegate rule**. This property is set to 0x01 (TRUE) if the message was resent; otherwise, it is set to 0x00 (FALSE). Delegate rules are specified in [MS-OXODLGT] section 2.2.3.

2.2.1.85 PidTagOriginalMessageId Property

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

The **PidTagOriginalMessageId** property ([MS-OXPROPS] section 2.831) is included in reply or resend messages to designate the message ID of the original message.

2.2.1.86 PidTagOriginalMessageClass Property

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

The **PidTagOriginalMessageClass** property ([MS-OXPROPS] section 2.830) is included in reply or resend messages to designate the value of the **PidTagMessageClass** property ([MS-OXCMSG] section 2.2.1.3) from the original message.

2.2.2 Message Status Reports Properties

2.2.2.1 PidTagMessageClass Property

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

The **PidTagMessageClass** property ([MS-OXCMSG] section 2.2.1.3) contains a **Message object** class name. For **report messages**, the property is set to the value in the form "REPORT.X.<receipt-

type>", where X is the original **message class** name, such as "IPM.NOTE" for an **E-mail object**, and <receipt-type> is one of the following receipt types:

- **IPNRN**: **Read receipt**
- **IPNNRN**: **Non-read receipt**
- **DR**: **Delivery receipt**
- **NDR**: **Non-delivery report**

Therefore, the report messages of the IPM.NOTE message class name are as listed in the following table.

Report type	Message class name (PtypString)
Read receipt	REPORT.IPM.NOTE.IPNRN
Non-read receipt	REPORT.IPM.NOTE.IPNNRN
Delivery receipt	REPORT.IPM.NOTE.DR
Non-delivery report	REPORT.IPM.NOTE.NDR

2.2.2.2 PidTagOriginalDeliveryTime Property

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

The **PidTagOriginalDeliveryTime** property ([MS-OXPROPS] section 2.825) is set on **read receipt**/**non-read receipt** objects or replying/forwarding **Message objects** by using the value of the **PidTagMessageDeliveryTime** property (section 2.2.3.9) from the original message.

2.2.2.3 PidTagOriginalDisplayTo Property

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

The **PidTagOriginalDisplayTo** property ([MS-OXPROPS] section 2.828) is set on **report messages** by using the value of the **PidTagDisplayTo** property (section 2.2.1.9) from the original message, if present.

2.2.2.4 PidTagOriginalDisplayCc Property

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

The **PidTagOriginalDisplayCc** property ([MS-OXPROPS] section 2.827) is set on **report messages** by using the value of the **PidTagDisplayCc** property (section 2.2.1.8) from the original message, if present.

2.2.2.5 PidTagOriginalDisplayBcc Property

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

The **PidTagOriginalDisplayBcc** property ([MS-OXPROPS] section 2.826) is set on **report messages** by using the value of the **PidTagDisplayBcc** property (section 2.2.1.7) from the original message, if present.

2.2.2.6 PidTagOriginalSenderAddressType Property

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

The **PidTagOriginalSenderAddressType** property ([MS-OXPROPS] section 2.832) is set on delivery **report messages** by using the value of the original message sender's **PidTagSenderAddressType** property (section 2.2.1.48), as specified by **AddressType** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2).

2.2.2.7 PidTagOriginalSenderEmailAddress Property

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

The **PidTagOriginalSenderEmailAddress** property ([MS-OXPROPS] section 2.833) is set on delivery **report messages** to the value of the original message sender's **PidTagSenderEmailAddress** property (section 2.2.1.49).

2.2.2.8 PidTagOriginalSenderEntryId Property

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

The **PidTagOriginalSenderEntryId** property ([MS-OXPROPS] section 2.834) contains an **address book EntryID** that is set on delivery **report messages** to the value of the **PidTagSenderEntryId** property (section 2.2.1.50) from the original e-mail message.

2.2.2.9 PidTagOriginalSenderName Property

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

The **PidTagOriginalSenderName** property ([MS-OXPROPS] section 2.835) is set on delivery **report messages** to the value of the original message sender's **PidTagSenderName** property (section 2.2.1.51).

2.2.2.10 PidTagOriginalSenderSearchKey Property

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

The **PidTagOriginalSenderSearchKey** property ([MS-OXPROPS] section 2.836) contains an **address book search key** that is set on delivery **report messages** to the value of the **PidTagSenderSearchKey** property (section 2.2.1.52) of the original e-mail message.

2.2.2.11 PidTagOriginalSentRepresentingAddressType Property

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

The **PidTagOriginalSentRepresentingAddressType** property ([MS-OXPROPS] section 2.838) contains the **address type** of the end user who is represented by the original e-mail message sender. It is set to the value of the **PidTagSentRepresentingAddressType** property (section 2.2.1.54) of the original e-mail message.

2.2.2.12 PidTagOriginalSentRepresentingEmailAddress Property

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

The **PidTagOriginalSentRepresentingEmailAddress** property ([MS-OXPROPS] section 2.839) contains the e-mail address of the end user who is represented by the original e-mail message sender.

It is set to the value of the **PidTagSentRepresentingEmailAddress** property (section 2.2.1.55) of the original e-mail message.

2.2.2.13 PidTagOriginalSentRepresentingEntryId Property

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

The **PidTagOriginalSentRepresentingEntryId** property ([MS-OXPROPS] section 2.840) identifies an **address book EntryID** that contains the entry identifier of the end user who is represented by the original message sender. It is set to the value of the **PidTagSentRepresentingEntryId** property (section 2.2.1.56) of the original message.

2.2.2.14 PidTagOriginalSentRepresentingName Property

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

The **PidTagOriginalSentRepresentingName** property ([MS-OXPROPS] section 2.841) contains the **display name** of the end user who is represented by the original e-mail message sender; set to the value of the **PidTagSentRepresentingName** property (section 2.2.1.57) of the original e-mail message.

2.2.2.15 PidTagOriginalSentRepresentingSearchKey Property

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

The **PidTagOriginalSentRepresentingSearchKey** property ([MS-OXPROPS] section 2.842) identifies an **address book search key** that contains the value of the **SearchKey** field of the **RecipientRow** structure ([MS-OXCDATA] section 2.8.3.2) for the end user who is represented by the original message sender. It is set to the value of the **PidTagSentRepresentingSearchKey** property (section 2.2.1.58) of the original message.

2.2.2.16 PidTagOriginalSubject Property

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

The **PidTagOriginalSubject** property ([MS-OXPROPS] section 2.843) specifies the subject of the original message and is set to the concatenated values of the **PidTagSubjectPrefix** property (section 2.2.1.60) and the **PidTagNormalizedSubject** property ([MS-OXCMSG] section 2.2.1.10) of the original message.

2.2.2.17 PidTagOriginalSubmitTime Property

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

The **PidTagOriginalSubmitTime** property ([MS-OXPROPS] section 2.844) specifies the original e-mail message's submission date and time and is set to the value of the **PidTagClientSubmitTime** property (section 2.2.3.11). The property is used in reports only, and once set, it MUST NOT be changed.

2.2.2.18 PidTagParentKey Property

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

The **PidTagParentKey** property ([MS-OXPROPS] section 2.860) contains the search key that is used to correlate the original message and the reports about the original message. The server sets the

property on the **report message** to the value of the **PidTagSearchKey** property ([MS-OXCPRPT] section 2.2.1.9) of the original e-mail message.

2.2.2.19 PidTagReportEntryId Property

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

The **PidTagReportEntryId** property ([MS-OXPROPS] section 2.922) is an optional property that can appear on a **report message**. This property contains an **address book EntryID**, as specified in [MS-OXCDATA] section 2.2.5.2, that represents the application that generated the report message.

2.2.2.20 PidTagReportName Property

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

The **PidTagReportName** property ([MS-OXPROPS] section 2.924) is an optional property that can appear on a **report message**. This property contains the **display name** for the application that generated the report message.

2.2.2.21 PidTagReportSearchKey Property

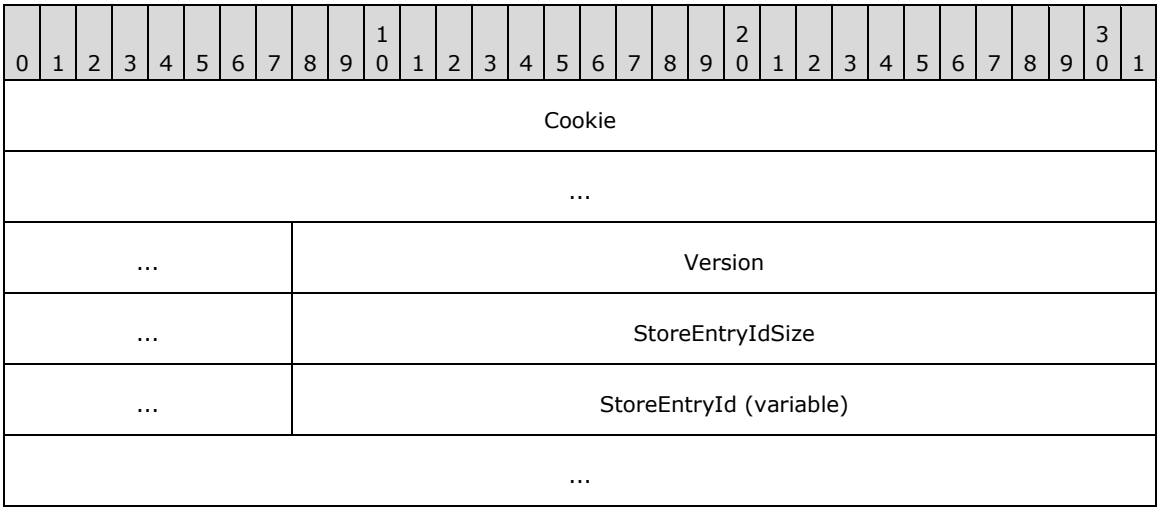
Type: **PtypBinary** ([MS-OXCDATA] section 2.11.1)

The **PidTagReportSearchKey** property ([MS-OXPROPS] section 2.925) is an optional property that can appear on a **report message**. This property contains an **address book search key**, as specified in [MS-OXCDATA] section 2.8.3.2, representing the application that generated the report message.

2.2.2.22 PidTagReportTag Property

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

The **PidTagReportTag** property ([MS-OXPROPS] section 2.926) contains the data that is used to correlate the report and the original message. The property can be absent if the sender does not request a reply or response to the original e-mail message. If the original **E-mail object** has either the **PidTagResponseRequested** property (section 2.2.1.46) set to 0x01 or the **PidTagReplyRequested** property (section 2.2.1.45) set to 0x01, then the property is set on the original E-mail object by using the following format.



FolderEntryIdSize
FolderEntryId (variable)
...
MessageEntryIdSize
MessageEntryId (variable)
...
SearchFolderEntryIdSize
SearchFolderEntryId (variable)
...
MessageSearchKeySize
MessageSearchKey (variable)
...
ANSITextSize
ANSIText (variable)
...

Cookie (9 bytes): A null-terminated string of nine characters used for validation; set to "PCDFEB09".

Version (4 bytes): This field specifies the version. If the **SearchFolderEntryId** field is present, this field MUST be set to 0x00020001; otherwise, this field MUST be set to 0x00010001.

StoreEntryIdSize (4 bytes): Size of the **StoreEntryId** field.

StoreEntryId (variable length of bytes): This field specifies the **entry ID** of the **mailbox** that contains the original message. If the value of the **StoreEntryIdSize** field is 0x00000000, this field is omitted. If the value is not zero, this field is filled with the number of bytes specified by the **StoreEntryIdSize** field.

FolderEntryIdSize (4 bytes): Size of the **FolderEntryId** field.

FolderEntryId (variable): This field specifies the entry ID of the folder that contains the original message. If the value of the **FolderEntryIdSize** field is 0x00000000, this field is omitted. If the value is not zero, the field is filled with the number of bytes specified by the **FolderEntryIdSize** field.

MessageEntryIdSize (4 bytes): Size of the **MessageEntryId** field.

MessageEntryId (variable): This field specifies the entry ID of the original message. If the value of the **MessageEntryIdSize** field is 0x00000000, this field is omitted. If the value is not zero, the field is filled with the number of bytes specified by the **MessageEntryIdSize** field.

SearchFolderEntryIdSize (4 bytes): Size of the **SearchFolderEntryId** field.

SearchFolderEntryId (variable): This field specifies the entry ID of an alternate folder that contains the original message. If the value of the **SearchFolderEntryIdSize** field is 0x00000000, this field is omitted. If the value is not zero, the field is filled with the number of bytes specified by the **SearchFolderEntryIdSize** field.

MessageSearchKeySize (4 bytes): Size of the **MessageSearchKey** field.

MessageSearchKey (variable): This field specifies the **search key** of the original message. If the value of the **MessageSearchKeySize** field is 0x00000000, this field is omitted. If the value is not zero, the **MessageSearchKey** field is filled with the number of bytes specified by the **MessageSearchKeySize** field.

ANSITextSize (4 bytes): Number of characters in the **ANSI Text** field.

ANSIText (variable): The subject of the original message. If the value of the **ANSITextSize** field is 0x00000000, this field is omitted. If the value is not zero, the field is filled with the number of bytes specified by the **ANSITextSize** field.

2.2.2.23 PidTagReportText Property

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

The **PidTagReportText** property ([MS-OXPROPS] section 2.927) contains the optional text for a **report message**. If this property is present, the server sets it to the user-readable text of the report message.

2.2.2.24 PidTagReadReceiptAddressType Property

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

The **PidTagReadReceiptAddressType** property ([MS-OXPROPS] section 2.879) contains the **address type** of the end user to whom a **read receipt** is directed.

2.2.2.25 PidTagReadReceiptEmailAddress Property

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

The **PidTagReadReceiptEmailAddress** property ([MS-OXPROPS] section 2.880) contains the e-mail address of the user to whom a **read receipt** is directed.

2.2.2.26 PidTagReadReceiptEntryId Property

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

The **PidTagReadReceiptEntryId** property ([MS-OXPROPS] section 2.881) contains an **address book EntryID**, as specified in [MS-OXCDATA] section 2.2.5.2, that represents the user to whom a **read receipt** is directed. This property is only used and validated if the **PidTagReadReceiptRequested** property (section 2.2.1.29) is set to 0x01. This property can be absent, in which case, the value of the **PidTagReportEntryId** property (section 2.2.2.19) is used as an alternative value. If neither property is present, the value of the **PidTagSenderEntryId** property (section 2.2.1.50) is used to identify the user who receives the read receipt.

2.2.2.27 PidTagReadReceiptName Property

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

The **PidTagReadReceiptName** property ([MS-OXPROPS] section 2.882) contains the **display name** for the end user to whom a **read receipt** is directed.

2.2.2.28 PidTagReadReceiptSearchKey Property

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

The **PidTagReadReceiptSearchKey** property ([MS-OXPROPS] section 2.884) contains an **address book search key**, as specified in [MS-OXCDATA] section 2.8.3.2, that represents the user to whom a **read receipt** is directed. This property is only used and validated if the **PidTagReadReceiptRequested** property (section 2.2.1.29) is set to 0x01. The property can be absent, in which case the **PidTagReportSearchKey** property (section 2.2.2.21) is used as an alternative. If neither property is present, the **PidTagSenderSearchKey** property (section 2.2.1.52) is used to identify the user who receives the read receipt.

2.2.2.29 PidTagDeliverTime Property

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

The **PidTagDeliverTime** property ([MS-OXPROPS] section 2.671) contains the delivery time for a **report message**.

2.2.2.30 PidTagNonDeliveryReportDiagCode Property

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

The **PidTagNonDeliveryReportDiagCode** property ([MS-OXPROPS] section 2.808) contains a diagnostic code for a **non-delivery report**. For more details, see [MS-OXCMAIL] section 2.2.3.7.1.3.

2.2.2.31 PidTagNonDeliveryReportReasonCode Property

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

The **PidTagNonDeliveryReportReasonCode** property ([MS-OXPROPS] section 2.809) contains a value that provides information on the reason for a **non-delivery report**, as specified in [MS-OXCMAIL] section 2.2.3.7.1.3.

2.2.2.32 PidTagNonDeliveryReportStatusCode Property

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

The **PidTagNonDeliveryReportStatusCode** property ([MS-OXPROPS] section 2.810) contains a value derived from the **Status** header on a **non-delivery report**, as specified in [MS-OXCMAIL] section 2.2.3.7.1.3.

2.2.2.33 PidTagReceiptTime Property

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

The **PidTagReceiptTime** property ([MS-OXPROPS] section 2.886) contains the sent time for a **read receipt**.

2.2.2.34 PidTagRemoteMessageTransferAgent Property

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

The **PidTagRemoteMessageTransferAgent** property ([MS-OXPROPS] section 2.913) contains the name of the server that reported delivery status that resulted in a **delivery receipt** or **non-delivery report**. The value of this property corresponds to the value of the **Remote-MTA** header, as specified in [RFC3464].

2.2.2.35 PidTagReportingMessageTransferAgent Property

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

The **PidTagReportingMessageTransferAgent** property ([MS-OXPROPS] section 2.923) contains the name of the server that generated the **delivery receipt** or **non-delivery report**. The value of this property corresponds to the value of the **Reporting-MTA** header, as specified in [RFC3464].

2.2.2.36 PidTagSupplementaryInfo Property

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

The **PidTagSupplementaryInfo** property ([MS-OXPROPS] section 2.1035) contains supplementary information about a **delivery receipt** or a **non-delivery report**. For more details, see [MS-OXCMAIL] section 2.2.3.7.1.2.

2.2.3 E-Mail Submission Properties

The following are properties of the **recipients (2)** identified in the **recipient table**. These properties are used to control server behavior during message submission.

2.2.3.1 PidTagRecipientType Property

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

The **PidTagRecipientType** property ([MS-OXPROPS] section 2.909) represents the type of a **recipient (2)** on the message. This property is set on each recipient (2). Valid values for this property are as follows.

Value	Meaning
0x00000000	The recipient (2) is the message originator.
0x00000001	The recipient (2) is a **primary recipient**.
0x00000002	The recipient (2) is a **Cc recipient**.
0x00000003	The recipient (2) is a **Bcc recipient**.

Additionally, the following flags apply to a **resend message**. These flags can be combined with the values listed in the previous table by using a bitwise **OR**. For details about resending a message, see section 3.2.4.5.

Flag	Meaning
0x10000000	Indicates that the resend message needs to be delivered to the recipient (1).
0x80000000	Indicates that the resend message does not need to be delivered to the recipient (1).

2.2.3.2 PidTagDeferredSendNumber Property

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

When sending a message is deferred, the **PidTagDeferredSendNumber** property ([MS-OXPROPS] section 2.663) SHOULD be set along with the **PidTagDeferredSendUnits** property (section 2.2.3.3) if the **PidTagDeferredSendTime** property (section 2.2.3.4) is absent. The value is set between 0x00000000 and 0x000003E7 (0 and 999).

The **PidTagDeferredSendNumber** property is used to compute the value of the **PidTagDeferredSendTime** property when the **PidTagDeferredSendTime** property is not present.

2.2.3.3 PidTagDeferredSendUnits Property

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

The **PidTagDeferredSendUnits** property ([MS-OXPROPS] section 2.665) specifies the unit of time by which the value of the **PidTagDeferredSendNumber** property (section 2.2.3.2) is multiplied. If set, the **PidTagDeferredSendUnits** property has one of the values listed in the following table.

Value	Meaning
0x00000000	Minutes; for example, 60 seconds.
0x00000001	Hours; for example, 60x60 seconds.
0x00000002	Day; for example, 24x60x60 seconds.
0x00000003	Week; for example, 7x24x60x60 seconds.

2.2.3.4 PidTagDeferredSendTime Property

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

The **PidTagDeferredSendTime** property ([MS-OXPROPS] section 2.664) can be present if a client would like to defer sending the message after a specific amount of time, as determined by the implementation.

If the **PidTagDeferredSendUnits** property (section 2.2.3.3) and the **PidTagDeferredSendNumber** property (section 2.2.3.2) are present, the value of this property is recomputed by using the following formula and the original value is ignored. In this formula, **TimeOf(PidTagDeferredSendUnits)** converts the property into the appropriate multiplier based on its value, as specified for the **PidTagDeferredSendUnits** property.

```
PidTagDeferredSendTime = PidTagClientSubmitTime +
PidTagDeferredSendNumber *
TimeOf(PidTagDeferredSendUnits)
```

If the value of the **PidTagDeferredSendTime** property is earlier than the current time (in **UTC**), the message is sent immediately.

2.2.3.5 PidTagExpiryNumber Property

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

The **PidTagExpiryNumber** property ([MS-OXPROPS] section 2.688) is used with the **PidTagExpiryUnits** property (section 2.2.3.6) to define the expiry send time. If this property is present, the value is set between 0x00000000 and 0x000003E7 (0 and 999).

2.2.3.6 PidTagExpiryUnits Property

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

The **PidTagExpiryUnits** property ([MS-OXPROPS] section 2.690) is used to describe the unit of time that the value of the **PidTagExpiryNumber** property (section 2.2.3.5) multiplies. If set, the following are the valid values of this property.

Value	Meaning
0x00000000	Minutes; for example, 60 seconds.
0x00000001	Hours; for example, 60 × 60 seconds.
0x00000002	Days; for example, 24 × 60 × 60 seconds.
0x00000003	Weeks; for example, 7 × 24 × 60 × 60 seconds.

2.2.3.7 PidTagExpiryTime Property

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

The **PidTagExpiryTime** property ([MS-OXPROPS] section 2.689) can be present when a client requests to receive an expiry event if the message arrives late.

If the **PidTagExpiryNumber** property (section 2.2.3.5) and the **PidTagExpiryUnits** property (section 2.2.3.6) are both present, the value of this property is recomputed by the following formula; the original value is ignored.

```
PidTagExpiryTime = PidTagClientSubmitTime +
PidTagExpiryNumber *
TimeOf(PidTagExpiryUnits)
```

2.2.3.8 PidTagDeleteAfterSubmit Property

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

The **PidTagDeleteAfterSubmit** property ([MS-OXPROPS] section 2.668) indicates whether the original message is deleted after the message is sent. If the property is not present, the server uses the value 0x00.

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

Value	Meaning
0x00	Do not delete the original message after it is sent.

Value	Meaning
0x01	Delete the original message after it is sent.

2.2.3.9 PidTagMessageDeliveryTime Property

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

The server sets the value of the **PidTagMessageDeliveryTime** property ([MS-OXPROPS] section 2.789) to the current time (in **UTC**) when it receives a message.

2.2.3.10 PidTagSentMailSvrEID Property

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

The **PidTagSentMailSvrEID** property ([MS-OXPROPS] section 2.1011) represents the **Sent Items folder** for the message. This folder MUST NOT be a **search folder**. The server requires write **permission** on the folder so that the sent e-mail message can be copied to the Sent Items folder.

If this property is present, a copy of the message is created in the specified folder after the message is sent.

2.2.3.11 PidTagClientSubmitTime Property

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

The server sets the value of the **PidTagClientSubmitTime** property ([MS-OXPROPS] section 2.635) to the current time (in **UTC**) when the e-mail message is submitted.

2.2.4 Message Delivery ROPs

2.2.4.1 RopSubmitMessage ROP

The **RopSubmitMessage ROP request** ([MS-OXCROPS] section 2.2.7.1) sends an **E-mail object** to its designated **recipients (2)**.

The message is identified by the **handle** index, which is maintained by both the server and client for the **Message object**. The handle index is acquired by a previous call to the **RopOpenMessage ROP** ([MS-OXCROPS] section 2.2.6.1) or the **RopCreateMessage** ROP ([MS-OXCROPS] section 2.2.6.2).

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.4.1.1 RopSubmitMessage ROP Request Buffer

The following description defines a valid field for the **RopSubmitMessage ROP request buffer** ([MS-OXCROPS] section 2.2.7.1.1).

SubmitFlags (1 byte): An integer flag that indicates how the message is to be delivered. Possible values are listed in the following table.

Value name	Value	Meaning
None	0x00	No special behavior is specified.
PreProcess	0x01	The message needs to be preprocessed by the server.
NeedsSpooler	0x02	The message is to be processed by a client spooler.

2.2.4.1.2 RopSubmitMessage ROP Response Buffer

This protocol adds no additional information to the fields for the **RopSubmitMessage** **ROP response buffer** ([MS-OXCROPS] section 2.2.7.1).

2.2.4.2 RopAbortSubmit ROP

The **RopAbortSubmit** **ROP** ([MS-OXCROPS] section 2.2.7.2) is sent before an **E-mail object** is actually processed by the server or a client **mail spooler** in an attempt to abort the submission.

If the operation succeeds, the message currently queued on the server will be removed from the server. Unless the message is submitted for sending again, the message will not be delivered to its **recipients (1)**.

The message to be aborted is identified by the **FolderId** and **MessageId** fields in the request buffer. The **RopSubmitMessage** ROP MUST have been invoked on this message previously.

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.4.2.1 RopAbortSubmit ROP Request Buffer

This protocol adds no additional information to the fields for the **RopAbortSubmit** **ROP request buffer** ([MS-OXCROPS] section 2.2.7.2.1).

2.2.4.2.2 RopAbortSubmit ROP Response Buffer

This protocol adds no additional information to the fields for the **RopAbortSubmit** **ROP response buffer** ([MS-OXCROPS] section 2.2.7.2.2).

2.2.4.3 RopGetAddressTypes ROP

The **RopGetAddressTypes** **ROP** ([MS-OXCROPS] section 2.2.7.3) retrieves the **address types** of **recipients (2)** that are supported by the server.

In the request, the **Server object** that is associated with the **InputHandleIndex** field in the Server object table is the **Logon object**. However, in this **ROP request**, the Server object is ignored by the server.

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.4.3.1 RopGetAddressTypes ROP Request Buffer

This protocol adds no additional information to the fields for the **RopGetAddressTypes** **ROP request buffer** ([MS-OXCROPS] section 2.2.7.3.1).

2.2.4.3.2 RopGetAddressTypes ROP Response Buffer

The following descriptions define valid fields for the **RopGetAddressTypes** **ROP response buffer** ([MS-OXCROPS] section 2.2.7.3.2).

AddressTypeCount (2 bytes): The number of **address types** that are returned.

AddressTypeSize (2 bytes): The total length of the **AddressTypes** field.

AddressTypes (variable): An array of null-terminated **ASCII** strings, each of which represents an address type. Examples of address types are "EX", "MAPIPDL", "SMTP", "MHS", "PROFS", and "X400". The server processes address types it recognizes and leaves other address types to transports outside of the scope of this protocol.

2.2.4.4 RopOptionsData ROP

The **RopOptionsData** **ROP** ([MS-OXCROPS] section 2.2.7.9) retrieves the options data that is associated with an **address type** of **recipients (2)** supported by the server.<6>

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.4.4.1 RopOptionsData ROP Request Buffer

The following descriptions define valid fields for the **RopOptionsData** **ROP request buffer** ([MS-OXCROPS] section 2.2.7.9.1).

AddressType (variable): A null-terminated **ASCII** string. This value specifies the **address type** for which to return options. For details about address types, see section 2.2.4.3.2.

WantWin32 (1 byte): An 8-bit **Boolean**. This value specifies whether the **Help file** data to be returned is in a format suited for 32-bit machines. Valid values are listed in the following table.

Value	Meaning
0x00	Help file data is not required to be in a format suited for 32-bit machines.
Any nonzero value	Help file data returned is required to be in a format suited for 32-bit machines.

2.2.4.4.2 RopOptionsData ROP Response Buffer

The following descriptions define valid fields for the **RopOptionsData** **ROP response buffer** ([MS-OXCROPS] section 2.2.7.9.2).

Reserved (1 byte): Reserved. This value is set to 0x01.

OptionsInfoSize (2 bytes): An unsigned 16-bit integer. This value specifies the size of the **OptionsInfo** field.

OptionsInfo (variable): An array of bytes. This field contains the same number of bytes as specified in the **OptionsInfoSize** field. This array contains opaque data from the server. Clients SHOULD ignore this field. Servers MAY return this field as an empty array.

HelpFileSize (2 bytes): An unsigned 16-bit integer. This value specifies the size of the **HelpFile** field.

HelpFile (variable, optional): An array of bytes. This field contains the same number of bytes as specified in the **HelpFileSize** field. This array specifies the help that is associated with an **address type**. This field is optional and MAY be included in a response.

HelpFileName (variable, optional): A null-terminated multibyte string. This string is present if **HelpFileSize** is nonzero and is not present otherwise. This string specifies the name that is associated with the help for this address type.

2.2.5 Spooler and Transport ROPs

The following **ROPs** can be used by a client to control the receipt of mail that is not delivered directly to the server, or the sending of mail from an e-mail account that is not supported on the server.

2.2.5.1 RopSetSpooler ROP

The **RopSetSpooler ROP** ([MS-OXCROPS] section 2.2.7.4) signals to the server that the client will act as a **mail spooler**. Multiple clients can act as spoolers.

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.5.1.1 RopSetSpooler ROP Request Buffer

For the **RopSetSpooler ROP request buffer** ([MS-OXCROPS] section 2.2.7.4.1), the **InputHandleIndex** field represents a **Logon object handle**.

This protocol adds no additional information to the fields for the **RopSetSpooler** ROP request buffer.

2.2.5.1.2 RopSetSpooler ROP Response Buffer

This protocol adds no additional information to the fields for the **RopSetSpooler ROP response buffer** ([MS-OXCROPS] section 2.2.7.4.2).

2.2.5.2 RopGetTransportFolder ROP

The **RopGetTransportFolder ROP** ([MS-OXCROPS] section 2.2.7.8) retrieves the folder ID (FID) ([MS-OXCDATA] section 2.2.1.1) of the transport folder. Outgoing messages can be stored in this folder before a **RopTransportSend ROP request** ([MS-OXCROPS] section 2.2.7.6) is issued.

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.5.2.1 RopGetTransportFolder ROP Request Buffer

For the **RopGetTransportFolder ROP request buffer** ([MS-OXCROPS] section 2.2.7.8.1), the **InputHandleIndex** field is a **Logon object handle**.

This protocol adds no additional information to the fields for the **RopGetTransportFolder** ROP request buffer.

2.2.5.2.2 RopGetTransportFolder ROP Response Buffer

The following description defines a valid field for the **RopGetTransportFolder ROP response buffer** ([MS-OXCROPS] section 2.2.7.8.2).

FolderID: Contains the FID ([MS-OXCDATA] section 2.2.1.1) of the transport folder.

2.2.5.3 RopSpoolerLockMessage ROP

The **RopSpoolerLockMessage ROP** ([MS-OXCROPS] section 2.2.7.5) locks the specified message for spooling.

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.5.3.1 RopSpoolerLockMessage ROP Request Buffer

For the **RopSpoolerLockMessage ROP request buffer** ([MS-OXCROPS] section 2.2.7.5.1), the **InputHandleIndex** field represents a **Logon object handle**.

The following descriptions define valid fields for the **RopSpoolerLockMessage** ROP request buffer.

MessageId (8 bytes): An integer that specifies the message to be locked.

LockState (1 byte): An integer flag that specifies a status to set on the message. Valid values are listed in the following table.

Value name	Value	Meaning
lstLock	0x00	Mark the message as locked.
lstUnlock	0x01	Mark the message as unlocked.
lstFinished	0x02	Mark the message as ready for processing by the server.

2.2.5.3.2 RopSpoolerLockMessage ROP Response Buffer

This protocol adds no additional information to the fields for the **RopSpoolerLockMessage ROP response buffer** ([MS-OXCROPS] section 2.2.7.5.2).

2.2.5.4 RopTransportSend ROP

The **RopTransportSend ROP** ([MS-OXCROPS] section 2.2.7.6) requests that the server send an e-mail message to **recipients (1)**. The message to be sent is identified by the **InputHandleIndex** field, which is maintained by both the server and the client.

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.5.4.1 RopTransportSend ROP Request Buffer

For the **RopTransportSend ROP request buffer** ([MS-OXCROPS] section 2.2.7.6.1), the **InputHandleIndex** field represents a **Logon object handle**.

This protocol adds no additional information to the fields for the **RopTransportSend** ROP request buffer.

2.2.5.4.2 RopTransportSend ROP Response Buffer

The following descriptions define valid fields for the **RopTransportSend ROP response buffer** ([MS-OXCROPS] section 2.2.7.6.2).

NoPropertiesReturned (1 byte): A Boolean integer that specifies whether any properties are included in the response. Set to 0x00 if properties are returned; otherwise, set to 0x01.

PropertyValueCount (2 bytes): The number of properties in the following **PropertyValues** array. Only exists if the value of the **NoPropertiesReturned** field is 0x00.

PropertyValues (variable): An array of **TaggedPropertyValue** structures, as specified in [MS-OXCDATA] section 2.11.4. This field contains the properties set on the message by the server in the process of sending the message. This field exists only if the value of the **NoPropertiesReturned** field is 0x00. This field contains the number of tags specified by the **PropertyValueCount** field.

2.2.5.5 RopTransportNewMail ROP

The **RopTransportNewMail** **ROP** ([MS-OXCROPS] section 2.2.7.7.1) notifies the server that new mail has been delivered to the **message store**.

The complete syntax of the ROP request and response buffers for this ROP is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS].

2.2.5.5.1 RopTransportNewMail ROP Request Buffer

For the **RopTransportNewMail** **ROP request buffer** ([MS-OXCROPS] section 2.2.7.7.1), the **InputHandleIndex** field represents a **Logon object handle**.

The following descriptions define valid fields for the **RopTransportNewMail** ROP request buffer.

MessageId (8 bytes): An integer that specifies the message ID (MID) ([MS-OXCDATA] section 2.2.1.2) of the new message.

FolderId (8 bytes): An integer that specifies the location of the new message.

MessageClass (variable): A zero-terminated **ANSI character set** string that specifies the value of the **PidTagMessageClass** property ([MS-OXCMSG] section 2.2.1.3) of the message.

MessageFlags (4 bytes): A flag field that specifies the value of the **PidTagMessageFlags** property ([MS-OXCMSG] section 2.2.1.6) of the message.

2.2.5.5.2 RopTransportNewMail ROP Response Buffer

This protocol adds no additional information to the fields for the **RopTransportNewMail** **ROP response buffer** ([MS-OXCROPS] section 2.2.7.7.2).

3 Protocol Details

3.1 Common Details

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.

The following abstract data model (ADM) data types are defined in this section:

Global

Mailbox

Message

Send State

3.1.1.1 Per Global

The following ADM elements are common to both client and server:

Global.Handle, as specified in [MS-OXCRPC] section 3.1.1.1.

Session context cookie, as specified in [MS-OXCMAPIHTTP] section 3.1.1.<7>

3.1.1.2 Per Mailbox

Mailboxes are represented by the **Mailbox** ADM object type. The following ADM object is maintained for each **Mailbox** ADM object type.

Mailbox.MessageObject: An abstract representation of a Message object.

3.1.1.3 Per Message Object

A Message object is represented by the **MessageObject** ADM type. The following ADM objects are maintained for each **MessageObject** ADM object type.

Mailbox.MessageObject.Recipients: The intended recipients of the message.

Mailbox.MessageObject.Sender: The user who is sending the message.

Mailbox.MessageObject.Subject: The topic to which the message pertains.

Mailbox.MessageObject.Body: The content of the message.

Mailbox.MessageObject.Attachments: A list of one or more files that are included with the e-mail message.

Mailbox.MessageObject.VotingOptions: A list of possible responses to a question asked by the sender of an e-mail message.

3.1.1.4 Per Send State

A Message object's send state is represented by the **SendState** ADM type. The following abstract element is maintained for each **SendState**:

SendState.State: The delivery status of the message. The following **SendState.State** values identify the current send state:

- **Saved**: A send note stored within an **Inter-Personal Mail (IPM)** folder within a **message store**.
- **Submitted**: A send note that is marked to be sent by the server.
- **Sent**: A send note that has been claimed by the **messaging transport** for delivery to another messaging user.
- **Received**: A receive note that has been placed in the default Receive folder by the server.

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

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.

No ADM types other than those specified in section 3.1.1 are defined for the client.

3.2.2 Timers

None.

3.2.3 Initialization

A client can control how e-mail messages are sent to the mail transport by implementing its own **mail spooler**. To do so, the client sends the **RopSetSpooler ROP request** ([MS-OXCROPS] section 2.2.7.4) after logging on to the server by using the **RopLogon ROP** ([MS-OXCROPS] section 2.2.3.1). The client also needs to save the FID ([MS-OXCDATA] section 2.2.1.1) of the **spooler queue** folder retrieved from the **RopLogon** ROP request for later use.

3.2.4 Higher-Layer Triggered Events

3.2.4.1 Sending a Message

A client sends an e-mail message by sending a **RopSubmitMessage ROP request** ([MS-OXCROPS] section 2.2.7.1) to the server. The client can specify the submit flags for sending the message, as specified in section 2.2.4.1. The client can also set the sender information of the message by using the **RopSetProperties ROP** ([MS-OXCROPS] section 2.2.8.6) to instruct the server on how to properly process the message.

3.2.4.1.1 Sending the Message as a Represented Sender

The represented sender properties SHOULD be set by the client to represent the sender the message is intended to be sent from.

3.2.4.1.2 Sending the Message as the Actual Sender

Actual sender properties MUST be set to represent the sending **mailbox** owner.

3.2.4.1.3 Sending the Message as the Sender Itself

When a user intends to represent himself or herself as the actual sender of a message, and if the represented sender properties are present, they MUST be set to the values that represent the user.

3.2.4.1.4 Sending the Message on Behalf of Another Person

If a user sends the message on behalf of another user, the represented sender properties MUST be set to the user that the actual sender intends to represent.

3.2.4.2 Deferring Message Send

To send a message at a later time, a client sets the **PidTagDeferredSendTime** property (section 2.2.3.4).

If both the **PidTagDeferredSendNumber** property (section 2.2.3.2) and the **PidTagDeferredSendUnits** property (section 2.2.3.3) are present, the **PidTagDeferredSendTime** property SHOULD be computed from the values of the **PidTagDeferredSendNumber** and **PidTagDeferredSendUnits** properties.

3.2.4.3 Sending a Message with Expiry Time

To set an expiration time on a message, a client sets the **PidTagExpiryTime** property (section 2.2.3.7).

If both the **PidTagExpiryNumber** property (section 2.2.3.5) and the **PidTagExpiryUnits** property (section 2.2.3.6) are present, the **PidTagExpiryTime** property SHOULD be computed from the values of the **PidTagExpiryNumber** and **PidTagExpiryUnits** properties.

3.2.4.4 Optimizing Send

When a messaging client sends a message in a client implementation of an optimization, the client can set the value of the **PidTagTargetEntryId** property (section 2.2.1.76) to the value of the **PidTagEntryId** property ([MS-OXCPERM] section 2.2.4) of the message being submitted. If this is done, the client moves the sent message to its local **Sent Items folder** after submission. Eventually, when the client imports its local Sent Mail folder changes to server, on the server side, the server can make use of the **PidTagTargetEntryId** property to optimize the operation by moving a copy of the submitted **Message object** to the Sent Items folder instead of requiring the client to upload the Message object content again. For more details about the server operation, see section 3.3.5.1.3.

3.2.4.5 Resending a Message

If a message fails to be delivered to all **recipients (1)**, a client can mark this message as a **resend message** by setting **mfResend** in the **PidTagMessageFlags** property ([MS-OXCMSG] section 2.2.1.6). A client MUST also set the value of the **PidTagOriginalMessageClass** property (section 2.2.1.86) to resend the message.

The client sets the flags in the **PidTagRecipientType** property (section 2.2.3.1) of a recipient (1) to indicate whether that recipient is to receive the resend message. The server will attempt to redeliver the message only to the recipients (1) indicated.

3.2.4.6 Soliciting Votes from Voters

To enable voting on a message and solicit votes from voters, a client sets a specific set of properties on a message. An overview of the sequence of events is as follows:

1. A client (sender) sends a voting message to a variety of **recipients (1)** (voters). This message contains a well-formed **PidLidVerbStream** property (section 2.2.1.74) but is otherwise identical to a nonvoting message.

2. The voters, upon receiving the message and displaying it to the user, detect the existence of the **PidLidVerbStream** property and use the property information to display an additional voting user interface to the user.

3. If and when a voter selects a voting option, a specifically crafted response mail is generated and addressed to the sender.

4. The sender, upon receiving response messages, aggregates them for display to the user.

It is important to note that at each point in this process, the messages that are sent are identical to nonvoting messages except for the presence of both the **PidLidVerbStream** property and the **PidLidVerbResponse** property (section 2.2.1.75).

3.2.4.6.1 Associating Options with a Voting Message

To associate a series of voting options with a message, a client sets the **PidLidVerbStream** property (section 2.2.1.74).

3.2.4.6.2 Interpreting a Voting Message

When a client receives a message, it MUST check the **PidLidVerbStream** property (section 2.2.1.74). If the client encounters a **VoteOption** structure that does not have 0x00000004 set for the **VerbType** field, the client ignores the existence of that **VoteOption** structure.<8>

3.2.4.6.3 Crafting a Voting Response Message

To craft a voting response message, a client MUST set the following properties on a **Message object**:

- The **PidTagSubjectPrefix** property (section 2.2.1.60) set to the **display name** of the voting option chosen by the user.
- The **PidLidVerbResponse** property (section 2.2.1.75) set to the voting option chosen by the user.

Otherwise, the message MUST be formatted as a regular reply e-mail message addressed to the initial voting sender, respecting all user preferences that are applicable to such.

The client MUST honor the **SendBehavior** field of the **VoteOption** structure. If the **SendBehavior** field specifies 0x00000002 (prompt before sending), and if the user selects "Edit", the user interface (as determined by the implementation) is displayed to allow the user to edit the automatically generated response.

3.2.4.6.4 Aggregating Voting Responses

The exact method for aggregating and displaying voting responses is a client implementation detail.<9>

3.2.4.7 Sending Mail Through a Specific Server

To control the specific server that sends a message, a client sends the message by using the **RopSubmitMessage ROP request** ([MS-OXCROPS] section 2.2.7.1) with the **NeedsSpooler** flag (0x02) set. The message is then put into the **spooler queue** folder of the **message store** on the server. The messages that are placed in the spooler queue are processed as specified in section 3.2.4.8.

3.2.4.8 Processing E-mail Objects in the Spooler Queue

When the client finds an **E-mail object** in the **spooler queue** folder that the client can handle,<10> it takes control of the message by sending the **RopSpoolerLockMessage ROP request** ([MS-OXCROPS] section 2.2.7.5) with the **LockState** field set to **lstLock**. The client then performs any implementation-dependent processing. If the client determines that the message can be handled by a particular server, it sends the **RopGetTransportFolder** ROP request ([MS-OXCROPS] section 2.2.7.8) to retrieve the FID ([MS-OXCDATA] section 2.2.1.1) of a folder where temporary transport objects can be stored (clients can cache the returned FID and avoid having to send the request multiple times), creates the message to be sent to the folder, and then sends the **RopTransportSend** ROP request ([MS-OXCROPS] section 2.2.7.6) to have that server deliver the message. If the client handles delivering the mail itself, it sets the **R** flag of the **RecipientFlags** field, as specified in [MS-OXCDATA] section 2.8.3.1, of each **recipient (2)** in the **recipient table** that it successfully delivers mail to.

After completing the previous steps, the client sends a **RopSpoolerLockMessage** ROP request ([MS-OXCROPS] section 2.2.7.5) with the **LockState** field set to **lstFinished** if the message has been sent to all recipients (2) or to **lstUnlock** if some recipients (2) have not yet been sent the message. If some recipients (2) have yet to be processed, the client determines whether another server can deliver the e-mail message. If another server is found, the client attempts to resubmit the message to the remaining recipients (2). If no remaining transports can deliver the mail, the client SHOULD generate a **non-delivery report** or notify the user of the error.

3.2.4.9 Delivering Mail to the Server

When a message is delivered to an account on the server by the client, such as a message received from a **POP3** server that is set to deliver the message into a folder on the server, it SHOULD send a

RopTransportNewMail ROP request ([MS-OXCROPS] section 2.2.7.7) for each mail delivered to inform the server of the new mail so that the server can process new mail.

3.2.4.10 Sending Read Receipts and Non-Read Receipts

To send a **read receipt**, a client first checks to see whether the **PidTagReadReceiptRequested** property (section 2.2.1.29) is set. To send a **non-read receipt**, a client checks to see whether the **PidTagNonReceiptNotificationRequested** property (section 2.2.1.31) is set.

If the **PidTagNonReceiptNotificationRequested** property is set to 0x00 and the **PidTagReadReceiptRequested** property (section 2.2.1.29) is set to 0x01, the client SHOULD send a non-read receipt if the message is deleted without being read.

The client SHOULD also set the following properties on the **Message object** representing the receipt for both read receipt and non-read receipt messages:

- **PidTagInReplyToId** (section 2.2.1.13)
- **PidTagReportTag** (section 2.2.2.22)
- **PidTagReportText** (section 2.2.2.23)
- **PidTagMessageClass** ([MS-OXCMSG] section 2.2.1.3)
- **PidTagReportTime** ([MS-OXCSPAM] section 2.2.2.6)
- **PidTagOriginalAuthorEntryId** (section 2.2.1.32)
- **PidTagOriginalAuthorName** (section 2.2.1.33)
- **PidTagReportDisposition** (section 2.2.1.34)
- **PidTagReportDispositionMode** (section 2.2.1.35)
- **PidTagOriginalDeliveryTime** (section 2.2.2.2)
- **PidTagParentKey** (section 2.2.2.18)
- **PidTagDeleteAfterSubmit** (section 2.2.3.8)
- **PidTagOriginalSubject** (section 2.2.2.16)
- **PidTagReceivedRepresentingName** (section 2.2.1.26)
- **PidTagSentRepresentingName** (section 2.2.1.57)
- **PidTagSentRepresentingEntryId** (section 2.2.1.56)
- **PidTagOriginalSubmitTime** (section 2.2.2.17)
- **PidTagOriginalDisplayTo** (section 2.2.2.3)
- **PidTagOriginalDisplayCc** (section 2.2.2.4)
- **PidTagOriginalDisplayBcc** (section 2.2.2.5)

3.2.5 Message Processing Events and Sequencing Rules

3.2.5.1 Sending a RopSubmitMessage ROP Request

If a client calling the **RopSubmitMessage ROP** ([MS-OXCROPS] section 2.2.7.1) has set the **PidTagTargetEntryId** property (section 2.2.1.76) on the **E-mail object**, it SHOULD set the following properties at the same time.

Property	Value
PidTagEntryId ([MS-OXCPERM] section 2.2.4)	SHOULD contain the same value as the **PidTagTargetEntryId** property, if present.
PidTagMessageFlags ([MS-OXCMSG] section 2.2.1.6)	The **mfUnsent** and **mfRead** flags MUST be cleared.
PidTagInternetMessageId (section 2.2.1.12)	The value SHOULD be copied from the original message.

3.2.5.2 Sending a RopAbortSubmit ROP Request

The **RopSubmitMessage ROP** ([MS-OXCROPS] section 2.2.7.1) MUST have been invoked on a message before calling the **RopAbortSubmit** ROP ([MS-OXCROPS] section 2.2.7.2).

3.2.5.3 Sending a RopSpoolerLockMessage ROP Request

The client sends a **RopSpoolerLockMessage ROP request** ([MS-OXCROPS] section 2.2.7.5) after determining, through an implementation-dependent mechanism, that it can handle the message.<11>

After a client makes a successful request to mark the message as locked, it MUST subsequently make a request to mark the message as unlocked or finished.

3.2.5.4 Sending a RopTransportNewMail ROP Request

The client MUST call the **RopSetSpooler ROP** ([MS-OXCROPS] section 2.2.7.4) before calling the **RopTransportNewMail** ROP ([MS-OXCROPS] section 2.2.7.7).

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

3.3 Server Details

3.3.1 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.

The following ADM data types are defined in this section.

MessageObject

EmailObject

User

3.3.1.1 Per Message Object

Messaging objects are represented by the **MessageObject** ADM data type. The following ADM elements are maintained for each **MessageObject** ADM data type:

MessageObject.Mid: An identifier for a **Mailbox.MessageObject** ADM data type that is a **Message object** or **Attachment object**.

MessageObject.FolderId: An identifier for a **Mailbox.MessageObject** ADM data type that is a **Folder object**.

MessageObject.EmailObject: A **Mailbox.MessageObject** ADM data type that represents an e-mail message.

3.3.1.2 Per E-mail Object

E-mail objects are represented by the **EmailObject** ADM data type. The following ADM element is maintained for each **MessageObject**.**EmailObject** ADM data type:

LockState: A state that identifies whether the **MessageObject.EmailObject** ADM data type has been locked by a user acting as a **mail spooler**. This state has the following possible values:

- **Locked**. The **MessageObject.EmailObject** ADM data type is locked by the **User** ADM data type, or by another **User** ADM data type.
- **Unlocked**. The current **MessageObject.EmailObject** ADM data type is not locked. The current **User** ADM data type is permitted to change its state to **Locked**.

3.3.1.3 Per User

A logged-in user is represented by the **User** ADM data type. The following ADM element is maintained for each **User** ADM data type:

IsSpooler: A Boolean state that indicates whether the **User** ADM data type is acting as a **mail spooler**. Valid values for this state are:

- **True**. The **User** ADM data type is acting as a mail spooler.
- **False**. The **User** ADM data type is not acting as a mail spooler.

The default is **False**.

3.3.2 Timers

None.

3.3.3 Initialization

None.

3.3.4 Higher-Layer Triggered Events

None.

3.3.5 Message Processing Events and Sequencing Rules

3.3.5.1 Receiving a RobSubmitMessage ROP Request

When an e-mail message is submitted using the **RopSubmitMessage ROP** ([MS-OXCROPS] section 2.2.7.1), any pending changes on the message are saved to the server.

The following specific error codes apply to the **RopSubmitMessage** ROP.

Error code name	Value	Meaning
ecShutoffQuotaExceeded	0x000004DD	Indicates that the maximum storage shut-off quota, determined by the server implementer or server administrator, has been exceeded.
ecQuotaExceeded	0x000004D9	Indicates that the storage quota, determined by the server implementer or server administrator, is exceeded for the **mailbox**, but the user can still receive mail.
ecNotSupported	0x80040102	Indicates that the **Server object** that is associated with the **InputHandleIndex** field in the Server object table is not a **Message object**, or that the current logon session is a public logon.
ecTooManyRecips	0x00000505	Indicates that the number of **recipients (2)** on the message exceeds the allowed limit, which is determined by the server implementer or server administrator. If this error occurs, none of the recipients (2) will receive this message.
ecAccessDenied	0x80070005	Indicates that the message is a **folder associated information (FAI)** message.
ecRequiresRefResolve	0x0000047E	Indicates that the path specified in the **PidTagAttachLongFilename** property ([MS-OXCMSG] section 2.2.2.10) to the attachment is not valid.

The server performs the operations specified in sections 3.3.5.1.1 through 3.3.5.1.4 on receipt of the **RopSubmitMessage ROP request**.

3.3.5.1.1 Permission Check

There are restrictions on the e-mail messages that can be submitted with a **RopSubmitMessage ROP request** ([MS-OXCROPS] section 2.2.7.1). The server checks the submitted messages against the restrictions and returns the corresponding error code if any of the conditions listed in the following table are met.

Condition	Error code name	Value
FAI message is submitted.	ecAccessDenied	0x80070005
Embedded Message object is submitted.	ecNotSupported	0x80040102
Upper limit of **recipients (2)** is exceeded.	ecTooManyRecips	0x00000505

Condition	Error code name	Value
Mailbox is running out of quota.	ecQuotaExceeded	0x000004D9
No write **permission** on the message.	ecAccessDenied	0x80070005

Further, the server MUST check that the sender has sufficient permissions to send this message on behalf of the actual sender that the current sender intends to represent.

If the message is sent by another user or user agent, the represented sender properties are set to the user that the actual sender intends to display on the message.

3.3.5.1.2 Delivering Mail on a RopSubmitMessage or RopTransportSend Request

When a client sends either the **RopSubmitMessage ROP request** ([MS-OXCROPS] section 2.2.7.1) with the **NeedsSpooler** flag (0x02) not set or the **RopTransportSend** ROP request ([MS-OXCROPS] section 2.2.7.6), the server is to attempt to send the e-mail message to the intended **recipients (2)**. For each recipient (2) in the **recipient table** that it can send the e-mail message to, it sets the **R** flag of the **RecipientFlags** field ([MS-OXCDATA] section 2.8.3.1).

When the **NeedsSpooler** flag is set, the server MUST place the message into the **spooler queue** folder.

3.3.5.1.3 Properties Read and/or Set Upon Submission

The following properties are checked and modified by the server on a message submitted with the **RopSubmitMessage ROP request** ([MS-OXCROPS] section 2.2.7.1).

- **PidTagSentMailSvrEID** (section 2.2.3.10): If this property is present, the message is copied to the folder identified by this property after the message is sent out.
- **PidTagDeleteAfterSubmit** (section 2.2.3.8): If this property is set to 0x01, the message is deleted after the message is sent.
- **PidTagClientSubmitTime** (section 2.2.3.11): The **PidTagClientSubmitTime** property is set to the current time in **UTC**.
- **PidTagContentFilterSpamConfidenceLevel** ([MS-OXCSPAM] section 2.2.1.3): The server SHOULD set this property to 0xFFFFFFFF (-1). A client can use this value as part of junk e-mail or **spam** filtering.
- **PidTagMessageLocaleId** ([MS-OXCMSG] section 2.2.1.5): The server SHOULD set this property to the current user logon's **language code identifier (LCID)**.
- **PidTagMessageFlags** ([MS-OXCMSG] section 2.2.1.6): If the **mfResend** flag in this property is set, the message is considered a **resend message** and the server will try to redeliver the message only to those **recipients (1)** who failed to receive it previously.
- **PidTagRecipientType** (section 2.2.3.1): If a message is a resend message, and if this property of a recipient (2) has the 0x80000000 bit set, the server ignores this recipient (2); if the **PidTagRecipientType** property of a recipient (2) has the 0x10000000 bit set, the server tries to redeliver the message to this recipient (2).
- **PidTagTargetEntryId** (section 2.2.1.76): When working in optimizing send mode and sending a message, a client creates a copy of the message in a server folder and can set the value of the new message's **PidTagTargetEntryId** property equal to the value of the **PidTagEntryId** property ([MS-OXCPERM] section 2.2.4) on the original message. Upon the invocation of the **RopSubmitMessage ROP** ([MS-OXCROPS] section 2.2.7.1), the server creates a copy of the submitted message and sets the value of the **PidTagEntryId** property to the value obtained from

the **PidTagTargetEntryId** property. If the client sets the **PidTagTargetEntryId** property, the client keeps a copy of the submitted message in the **Sent Items folder** after submission. Eventually, the client will import the move in its local Sent Mail folder to the server. The server will find the matching item because the value of the **PidTagEntryId** property already exists on the server. Instead of requiring the client to upload the message content again, the server completes the operation by moving the copy of the submitted message already persisted on the server to the Sent Items folder (server side). More details about message moves are specified in [MS-OXCFXICS] section 3.3.4.3.3.2.1.1.

- **PidTagEntryId**: If the client has set the **PidTagTargetEntryId** property and not set the **PidTagEntryId** property, the server SHOULD generate a new ID value and assign it to the **PidTagEntryId** property.

3.3.5.1.3.1 Represented Sender Properties

If the user or user agent who is sending the e-mail message is the **mailbox** owner and the represented sender properties are currently not present, the following represented sender properties MUST be set to the mailbox owner:

- **PidTagSentRepresentingAddressType** (section 2.2.1.54)
- **PidTagSentRepresentingEmailAddress** (section 2.2.1.55)
- **PidTagSentRepresentingEntryId** (section 2.2.1.56)
- **PidTagSentRepresentingName** (section 2.2.1.57)
- **PidTagSentRepresentingSearchKey** (section 2.2.1.58)

3.3.5.1.3.2 Actual Sender Properties

If the e-mail message is sent on behalf of another user and the represented sender properties represent a public folder or a **distribution list**, the actual sender properties MUST NOT be set. Otherwise, the following actual sender properties MUST be set by using the values of the **mailbox** owner:

- **PidTagSenderAddressType** (section 2.2.1.48)
- **PidTagSenderEmailAddress** (section 2.2.1.49)
- **PidTagSenderEntryId** (section 2.2.1.50)
- **PidTagSenderName** (section 2.2.1.51)
- **PidTagSenderSearchKey** (section 2.2.1.52)

3.3.5.1.3.3 Deferred Properties

When an e-mail message arrives with the deferred send properties set, the server MUST honor the deferred send time.

For a message with both the **PidTagDeferredSendNumber** property (section 2.2.3.2) and the **PidTagDeferredSendUnits** property (section 2.2.3.3) present, the server will recompute the value of the **PidTagDeferredSendTime** property (section 2.2.3.4) from the **PidTagDeferredSendNumber** and **PidTagDeferredSendUnits** properties during message submission.

3.3.5.1.3.4 Expiry Properties

When an e-mail message arrives with the expiry properties set, the server MUST honor the expiry time.

For a message with both the **PidTagExpiryNumber** property (section 2.2.3.5) and the **PidTagExpiryUnits** property (section 2.2.3.6) present, the server will recompute the value of the **PidTagExpiryTime** property from the **PidTagExpiryNumber** and **PidTagExpiryUnits** properties during message submission.

3.3.5.1.4 Rule Processing

When an e-mail message is submitted or delivered, it is subject to further processing by rules, as specified in [MS-OXORULE].

3.3.5.2 Receiving a RopAbortSubmit ROP Request

When an e-mail message is submitted and is still queued on the server pending delivery, the submission can be terminated by sending a **RopAbortSubmit ROP request** ([MS-OXCROPS] section 2.2.7.2).

If the **mfSubmitted** bit of a submitted message's **PidTagMessageFlags** property ([MS-OXCMSG] section 2.2.1.6) has not been set yet, sending the **RopAbortSubmit** ROP request indicates to the server that it SHOULD stop delivering the message by removing the message from the **spooler queue**. The **mfUnsent** bit of the message's **PidTagMessageFlags** property is set and the **mfSubmitted** bit of the message's **PidTagMessageFlags** property is cleared. Even if the message's **PidTagDeferredSendTime** property (section 2.2.3.4) has been set, the client will not be notified that the message has been deferred.

The **RopAbortSubmit ROP** can fail at the server's discretion. When the **RopAbortSubmit** ROP fails, the message can still be sent.

When a message is locked using the **RopSpoolerLockMessage** ROP ([MS-OXCROPS] section 2.2.7.5), the server MUST deny **RopAbortSubmit** ROP requests, as well as other requests to lock or access the message.

The following error codes can be returned by this ROP.

Error code name	Value	Meaning
ecUnableToAbort	0x80040114	The operation cannot be aborted.
ecNotInQueue	0x80040601	The message is no longer in the **spooler queue** of the **message store**.
ecNotSupported	0x80040102	The **Server object** associated with the **InputHandleIndex** field in the Server object table is not a **Logon object**, or the current logon session is a public logon.
ecNotFound	0x8004010F	The parent FID ([MS-OXCDATA] section 2.2.1.1) or MID ([MS-OXCDATA] section 2.2.1.2) is invalid.

3.3.5.3 Receiving a RopGetAddressTypes ROP Request

The following error codes can be returned by the **RopGetAddressTypes ROP** ([MS-OXCROPS] section 2.2.7.3).

Error code name	Value	Meaning
ecBufferTooSmall	0x0000047D	The response buffer is not large enough to hold the results.
ecNullObject	0x000004B9	An object **handle** reference in the **RPC** buffer could not be resolved.<12>

Error code name	Value	Meaning
ecNotSupported	0x80040102	The server does not support returning **address types**.

3.3.5.4 Receiving a RopSetSpooler ROP Request

When the **RopSetSpooler** **ROP request** ([MS-OXCROPS] section 2.2.7.4) is received, the server marks the user logon to indicate that this is a spooler logon.

3.3.5.5 Receiving a RopGetTransportFolder ROP Request

In response to a **RopGetTransportFolder** **ROP request** ([MS-OXCROPS] section 2.2.7.8), the server MUST return a FID ([MS-OXCDATA] section 2.2.1.1) that identifies a folder that the client can use to temporarily store messages to be sent.

The following error code can be returned in the response.

Error code name	Value	Meaning
ecNullObject	0x000004B9	The **InputHandleIndex** field is not valid.<13>

3.3.5.6 Receiving a RopSpoolerLockMessage ROP Request

On receipt of a **RopSpoolerLockMessage** **ROP request** ([MS-OXCROPS] section 2.2.7.5), a server MUST take the actions listed in the following table based on the value of the **LockState** field.

Value name	Action
lstLock	Locks the message for the client that is sending the request. The request fails if the message is locked by some other client.
lstUnlock	Unlocks the message.
lstFinished	Unlocks the message and completes post-processing of sent mail according to the **PidTagSentMailSvrEID** property (section 2.2.3.10) and the **PidTagDeleteAfterSubmit** property (section 2.2.3.8) on the message.

The following error codes can be returned in the response.

Error code name	Value	Meaning
ecNotSupported	0x80040102	The server does not support sent message processing, or the client is not the spooler.
ecNotInQueue	0x80040601	An attempt was made to lock an already locked message, or the message is not in the **spooler queue**.<14>

3.3.5.7 Receiving a RopTransportSend ROP Request

If there was a failure to submit the message, the **RopTransportSend ROP** ([MS-OXCROPS] section 2.2.7.6) does not fail; in this case, the server generates a **non-delivery report** to the message instead.

The following error code can be returned in a **RopTransportSend ROP response**.

Error code name	Value	Meaning
ecNotSupported	0x80040102	The server could not handle the message and the message was not sent. The client SHOULD try another server if one is available.

3.3.5.8 Receiving a RopTransportNewMail ROP Request

When a server receives a **RopTransportNewMail ROP request** ([MS-OXCROPS] section 2.2.7.7), it MUST notify all clients that are connected to the **mailbox** of the receipt of new mail by using the **RopNotify ROP** ([MS-OXCROPS] section 2.2.14.2) and a **NewMail** event, as specified in [MS-OXCNOTIF] section 2.2.1.4.1.1.

The following error code can be returned in a **RopTransportNewMail ROP response**.

Error code name	Value	Meaning
ecNotSupported	0x80040102	The server did not receive a valid corresponding call for the **RopSetSpooler** ROP ([MS-OXCROPS] section 2.2.7.4).

3.3.5.9 Receiving a RopOptionsData ROP Request

The following error code can be returned in a **RopOptionsData ROP response** ([MS-OXCROPS] section 2.2.7.9).

Error code name	Value	Meaning
ecNullObject	0x000004B9	The **InputHandleIndex** field does not refer to a valid **Server object**.<15>

3.3.6 Timer Events

None.

3.3.7 Other Local Events

None.

4 Protocol Examples

This section includes examples of **Message object** operations that use sequences of **ROP requests** and **ROP responses** that a client and a server might exchange. Note that the examples listed here only show the relevant portions of the specified **ROPs**; this is not the final byte sequence that gets transmitted over the wire. Also note that the data for multibyte fields appears in **little-endian** format, with the bytes in the field presented from least significant to most significant. Generally speaking, these ROP requests are packed with other ROP requests and then compressed and packed in one or more **RPC** calls, as described in [MS-OXCROPS]. These examples assume that the client has already successfully logged on to the server and has the appropriate **permissions** to the Message objects that the operations are being performed on.

4.1 Submitting a Message

In this example, the client has created a new **Message object** in the **mailbox** and is ready to submit the Message object. The client previously set a few message properties to values that are not of interest to this example and are not documented here.

4.1.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 32 00 02 00
```

The composition of the bytes is as follows:

RopId: 0x32 (**RopSubmitMessage ROP** ([MS-OXCROPS] section 2.2.7.1))

LogonId: 0x00

InputHandleIndex: 0x02

SubmitFlags: 0x00 (None)

The first three bytes refer to the **RopId**, **LogonId**, and **InputHandleIndex** fields, which are the same for all ROPs described in [MS-OXCROPS]. The value of the **SubmitFlags** field is None. The message identified by an **InputHandleIndex** value of 0x02 was submitted.

4.1.2 ROP Response Buffer

The **ROP response buffer** in this example resembles the following.

```
0000: 32 02 00 00 00 00
```

The composition of the response buffer is as follows:

RopId: 0x32 (**RopSubmitMessage ROP** ([MS-OXCROPS] section 2.2.7.1))

InputHandleIndex: 0x02

ReturnValue: 0x00000000 (ecNone)

The value of the response's **InputHandleIndex** field is the same as the value of the **InputHandleIndex** field of the **RopSubmitMessage** ROP, and the return value of 0x00000000

indicates success. From the response, the client is aware that the message was submitted successfully.

4.2 Submitting a Deferred Message

In this example of submitting a deferred message, the client has created a new **Message object** in the **mailbox** and wants to submit the Message object. The client sets properties related to a deferred send. The client also sets other message properties that are not described in section 4.2.1, but the properties are not relevant to this example and are not included.

4.2.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 0A 01 01 0E 00 01 00 40 00 EF 3F 96 3F 7F F4 5E
0010: 6F C8 01
...
00xx: 32 01 01 00
```

The composition of the bytes is as follows:

RopId: 0x0A (**RopSetProperties** **ROP** ([MS-OXCROPS] section 2.2.8.6))

LogonId: 0x01

InputHandleIndex: 0x01

PropertyValueSize: 0x000E

PropertyValueCount: 0x0001

PropertyValues[0].PropertyTag: 0x3FEF0040 (**PidTagDeferredSendTime** property (section 2.2.3.4))

PropertyValues[0].PropertyValue: 0x01C86F5EF47F3F96 (**UTC** FILETIME: 11:11:39PM 02/14/2008)

...

RopId: 0x32 (**RopSubmitMessage** ROP ([MS-OXCROPS] section 2.2.7.1))

LogonId: 0x01

InputHandleIndex: 0x01

SubmitFlags: 0x00 (None)

The value of the **PidTagDeferredSendTime** property of the message (identified by the value 0x01 in the **InputHandleIndex** field) was set to 11:11:39 P.M. 02/14/2008 (UTC). The client intends to defer the submission until 11:11:39 P.M. on 02/14/2008.

4.2.2 ROP Response Buffer

The **ROP response buffer** in this example resembles the following.

```
0000: 0A 01 00 00 00 00 00 00
...
0000: 32 01 00 00 00 00
```

The composition of the response buffer is as follows:

RopId: 0x0A (**RopSetProperties** **ROP** ([MS-OXCROPS] section 2.2.8.6))

InputHandleIndex: 0x01

ReturnValue: 0x00000000 (ecNone)

PropertyProblemCount: 0x0000

RopId: 0x32 (**RopSubmitMessage** ROP ([MS-OXCROPS] section 2.2.7.1))

InputHandleIndex: 0x01

ReturnValue: 0x00000000 (ecNone)

The response messages to both the **RopSetProperties** ROP and the **RopSubmitMessage** ROP indicate that the two ROPs succeeded.

If the **RopSubmitMessage** ROP is issued after **UTC** time 11:11:39 P.M. 02/14/2008, the message is submitted immediately. If the **RopSubmitMessage** ROP is issued before this time, the message is deferred for submission until the current time is equal to or is later than the deferred send time.

4.3 Aborting a Message Submission

In this example of aborting a message submission, a client has submitted a **Message object**. While the message is still queued on the server, the client would like to terminate the submission.

4.3.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 34 00 00 01 00 00 03 b4-79 ca 47 01 00 00 03 b7 4
0010: e6 5f a7
```

The composition of the request buffer is as follows:

RopId: 0x34 (**RopAbortSubmit** **ROP** ([MS-OXCROPS] section 2.2.7.2))

LogonId: 0x00

InputHandleIndex: 0x00

FolderId: 0001-0003b479ca47 (the FID ([MS-OXCDATA] section 2.2.1.1) of the parent folder)

MessageId: 0001-0003b7e65fa7 (the MID ([MS-OXCDATA] section 2.2.1.2) of the message submitted)

The message identified by the value 0x00 in the **InputHandleIndex** field was submitted previously. While the message is still queued in the server, the client sends the **RopAbortSubmit** ROP request related to this message to terminate the submission.

4.3.2 ROP Response Buffer

The **ROP response buffer** in this example would look like the following.

```
0000: 34 00 00 00 00 00
```

The composition of the response buffer is as follows:

RopId: 0x34 (**RopAbortSubmit ROP** ([MS-OXCROPS] section 2.2.7.2))

InputHandleIndex: 0x00

ReturnValue: 0x00000000 (ecNone)

The response message indicates that the **RopAbortSubmit** ROP succeeded. The message has been removed from the server. The **mfUnsent** bit is set (restored) and the **mfSubmitted** bit is cleared on the message's **PidTagMessageFlags** property ([MS-OXCMSG] section 2.2.1.6). Unless another **RopSubmitMessage** ROP ([MS-OXCROPS] section 2.2.7.1) is issued on this **Message object**, the message will not be sent.

4.4 Sending an E-Mail Message from a Messaging User to Another Messaging User

Consider the following scenario: Joe Healy needs to send a high importance e-mail message to inform his customer, Ed Banti, that the order request form that Ed sent needs to be signed. Joe also wants to get a **read receipt** when Ed reads this e-mail message. The following is a description of what a client might do to accomplish Joe's intentions and the responses a server might return.

To create an **E-mail 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**. Joe types the e-mail subject and message text (**plain text** format), sets the e-mail message to high importance, and requests a read receipt. The client then uses the **RopSetProperties** ROP ([MS-OXCROPS] section 2.2.8.6) to transmit Joe's e-mail message data to the server. The values of each of the properties set by the **RopSetProperties** ROP are listed in the following table. The types in the table are described in [MS-OXCDATA] section 2.11.1.

Property	Property ID	Type	Value
PidTagBody ([MS-OXCMSG] section 2.2.1.56.1)	0x1000	0x001f (**PtypString**)	"Please sign the order request.\LF\CR"
PidTagMessageClass ([MS-OXCMSG] section 2.2.1.3)	0x001A	0x001F (**PtypString**)	"IPM.Note"
PidTagMessageFlags ([MS-OXCMSG] section 2.2.1.6)	0x0E07	0x0003 (**PtypInteger32**)	**mfUnsent**
PidTagConversationTopic (section 2.2.1.5)	0x0070	0x001f (**PtypString**)	"Order Request"
PidTagConversationIndex (section 2.2.1.3)	0x0071	0x0102 (**PtypBinary**)	22 bytes 01 c8 74 0b 0f 9c 35 2c 02 17 93 af 43 a9 8b b4 c1 bb ef 97 7d 4f
PidTagImportance ([MS-OXCMSG] section 2.2.1.11)	0x0017	0x0003 (**PtypInteger32**)	0x00000002 High Importance
PidTagMessageDeliveryTime (section 2.2.3.9)	0x0E06	0x0040 (**PtypTime**)	2008/02/20 21:53:00.000
PidTagReadReceiptRequested (section 2.2.1.29)	0x0029	0x000B (**PtypBoolean**)	0x01 (TRUE)
PidTagSentMailSvrEID (section 2.2.3.10)	0x6740	0x00FB (**PtypServerId**)	21 bytes 01 01 00 00 00 00 f0 e7

Property	Property ID	Type	Value
			c1 00 00 00 00 00 00 00 00 00 00 00 00
PidTagIconIndex (section 2.2.1.10)	0x1080	0x0003 (**PtypInteger32**)	0xFFFFFFFF
PidTagMessageEditorFormat ([MS-OXPROPS] section 2.790)	0x5909	0x0003 (**PtypInteger32**)	0x00000001 plain text
PidTagPrimarySendAccount (section 2.2.1.64)	0x0E28	0x001F (**PtypString**)	000000023659R9-A11/o=First Organization/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/ CN=recipients/CN=JoeHealy Microsoft Exchange
PidTagNextSendAcct (section 2.2.1.65)	0x0E29	0x001F (**PtypString**)	000000023659R9-A11/o=First Organization/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/ CN=recipients/CN=JoeHealy Microsoft Exchange
PidTagMessageLocaleId ([MS-OXCMSG] section 2.2.1.5)	0x3FF1	0x0003 (**PtypInteger32**)	1033 (en-us)
PidTagReportTag (section 2.2.2.22)	0x0031	0x0102 (**PtypBinary**)	100 bytes (See the explanation that follows this table.)

The value of the **PidTagReportTag** property is as follows:

```
0000: 50 43 44 46 45 42 30 39-00 01 00 02 00 00 00 00
0010: 00 00 00 00 00 00 00 00-00 2e 00 00 00 00 00 00
0020: 00 1a f8 62 55 f6 35 01-4f b0 20 ce 17 75 e8 64
0030: 0b 01 00 61 2a 7b ab 49-f6 4e 4b 9c 52 db fb 5a
0040: 53 aa 1c 00 00 00 f0 e7-c1 00 00 10 00 00 00 fd
0050: 02 6f a5 55 15 2a 41 ab-1f 64 5d 1b da 0c 38 01
0060: 00 00 00 00
```

Joe then addresses this e-mail message to Ed Banti as the **primary recipient**. The client locates Ed Banti's address data from the client's **address book** and adds Ed Banti's address data to the **recipient table** of this E-mail object by using the **RopModifyRecipients** ROP ([MS-OXCROPS] section 2.2.6.5). The values of the **RecipientRow** elements are listed in the following table.

RecipientRow element	Value	Description
RowID	0x00000001	Row ID number
RecipientType	0x00000001	Primary recipient
DataSize	399	
RecipientFlag	0x0651	AddressType.EXCH DisplayName XmitSameAsDisplay StandardPropsUnicode SimpleDisplayName

RecipientRow element	Value	Description
DNPrefixLen	0x5A (90)	
EX-Address.Type	0x00000000	DT_MAILUSER
EX-Address.EmailAddress	edbanti@example.com	
DisplayName	Ed Banti	
SimpleDisplayName	Ed Banti	

The client adds the following additional properties to the **RecipientRow** structure.

Property	PropertyID	Type	Value
PidTagObjectType ([MS-OXCPRPT] section 2.2.1.7)	0x0FFE	0x0003 (**PtypInteger32**)	0x00000006 (MAILUSER)
PidTagDisplayType ([MS-OXOABK] section 2.2.3.11)	0x3900	0x0003 (**PtypInteger32**)	0x00000000 DT_MAILUSER
PidTagAddressBookDisplayNamePrintable ([MS-OXCMSG] section 2.2.1.30)	0x39FF	0x001F (**PtypString**)	Ed Banti
PidTagSmtpAddress ([MS-OXOABK] section 2.2.3.21)	0x39FE	0x001F (**PtypString**)	edbanti@example.com
PidTagSendInternetEncoding ([MS-OXOABK] section 2.2.3.19)	0x3A71	0x0003 (**PtypInteger32**)	0x00000000
PidTagAccount ([MS-OXOCNTC] section 2.2.1.10.11)	0x3A00	0x001F (**PtypString**)	edbanti
PidTagDisplayTypeEx ([MS-OXOABK] section 2.2.3.12)	0x3905	0x0003 (**PtypInteger32**)	0x40000000
PidTagRecipientTrackStatus ([MS-OXOCAL] section 2.2.4.10.2)	0x5FFF	0x0003 (**PtypInteger32**)	0x00000000
Unspecified property	0x5FDE	0x0003 (**PtypInteger32**)	0x00000000
PidTagRecipientFlags ([MS-OXOCAL] section 2.2.4.10.1)	0x5FFD	0x0003 (**PtypInteger32**)	0x00000001
PidTagRecipientDisplayName ([MS-OXPROPS] section 2.899)	0x5FF6	0x001F (**PtypString**)	Ed Banti
PidTagRecipientEntryId ([MS-OXPROPS] section 2.900)	0x5FF7	0x0102 (**PtypBinary**)	126 bytes (see the sample value for the **PidTagRecipientEntryId** property following this table)
PidTagRecipientOrder ([MS-OXCMSG] section 2.2.1.40)	0x5FDF	0x0003 (**PtypInteger32**)	0x00000000

The value of the **PidTagRecipientEntryId** property is as follows:

```
0000: 00 00 00 00 dc a7 40 c8-c0 42 10 1a b4 b9 08 00
```

```
0010: 2b 2f e1 82 01 00 00 00-00 00 00 2f 6f 3d 46
0020: 69 72 73 74 20 4f 72 67-61 6e 69 7a 61 74 69 6f
0030: 6e 2f 6f 75 3d 45 78 63-68 61 6e 67 65 20 41 64
0040: 6d 69 6e 69 73 74 72 61-74 69 76 65 20 47 72 6f
0050: 75 70 20 28 46 59 44 49-42 4f 48 46 32 33 53 50
0060: 44 4c 54 29 2f 63 6e 3d-52 65 63 69 70 69 65 6e
0070: 74 73 2f 63 6e 3d 65 64-62 61 6e 74 69 00
```

Last, Joe sends the e-mail message. The client sets the following calculated subject properties on the E-mail object based on the subject text on Joe's submitted message by using the **RopSetProperties** ROP.

Property	PropertyID	Type	Value
PidTagSubjectPrefix (section 2.2.1.60)	0x0003	0x001F (**PtypString**)	Empty string
PidTagNormalizedSubject ([MS-OXCMSG] section 2.2.1.10)	0x0E1D	0x001F (**PtypString**)	"Order Form Issue"

The client then sends a **RopSubmitMessage** **ROP request** ([MS-OXCROPS] section 2.2.7.1) to ask the server to deliver this e-mail message to Ed Banti and sends a **RopRelease** ROP request ([MS-OXCROPS] section 2.2.15.3) to release the E-mail object.

For more details about the ROPs used in this example, see [MS-OXCROPS], [MS-OXCMSG], and section 2.2.4 of this document. For more details about a client's offline e-mail address book and **recipient (2)** address data entry, see [MS-OXOAB] and [MS-OXOABK].

4.5 Sending a Message with Voting Options

In this example, a user wants to send a message that has "Yes", "No", and "Maybe" voting options. To do so, the client constructs the message to contain a **PidLidVerbStream** property (section 2.2.1.74).

The complete contents of the **PidLidVerbStream** property in this example are shown in the following stream. The other properties of the message are not specific to voting and are omitted.

```
0000: 02 01 03 00 00 00 04 00-00 00 03 59 65 73 08 49
0010: 50 4D 2E 4E 6F 74 65 00-03 59 65 73 00 00 00 00
0020: 00 00 00 00 00 01 00 00-00 02 00 00 00 02 00 00
0030: 00 01 00 00 00 FF FF FF-FF 04 00 00 00 02 4E 6F
0040: 08 49 50 4D 2E 4E 6F 74-65 00 02 4E 6F 00 00 00
0050: 00 00 00 00 00 00 01 00-00 00 02 00 00 00 02 00
0060: 00 00 02 00 00 00 FF FF-FF FF 04 00 00 00 05 4D
0070: 61 79 62 65 08 49 50 4D-2E 4E 6F 74 65 00 05 4D
0080: 61 79 62 65 00 00 00 00-00 00 00 00 00 01 00 00
0090: 00 02 00 00 00 02 00 00-00 03 00 00 00 FF FF FF
00A0: FF 04 01 03 59 00 65 00-73 00 03 59 00 65 00 73
00B0: 00 02 4E 00 6F 00 02 4E-00 6F 00 05 4D 00 61 00
00C0: 79 00 62 00 65 00 05 4D-00 61 00 79 00 62 00 65
00D0: 00
```

The first six bytes contain the **Version** and **Count** fields specified in section 2.2.1.74.

```
0000: 02 01 03 00 00 00
```

Version: 0x0102

Count: 0x00000003

This indicates that the structure contains three **VoteOption** structures. The first **VoteOption** structure begins at byte 0x0006.

```
0006: 04 00 00 00 03 59 65 73-08 49 50 4D 2E 4E 6F 74
0016: 65 00 03 59 65 73 00 00-00 00 00 00 00 00 00 01
0026: 00 00 00 02 00 00 00 02-00 00 00 01 00 00 00 FF
0036: FF FF FF
```

VerbType: 0x00000004

DisplayNameCount: 0x03

DisplayName: ANSI string (not null-terminated): "Yes"

MsgClsNameCount: 0x08

MsgClsName: ANSI string (not null-terminated): "IPM.Note"

Internal1StringCount: 0x00

DisplayNameCountRepeat: 0x03

DisplayNameRepeat: ANSI string (not null-terminated): "Yes"

Internal2: 0x00000000

Internal3: 0x00

fUseUSHeaders: False (0x00000000)

Internal4: 0x00000001

SendBehavior: 0x00000002 (prompt before sending)

Internal5: 0x00000002

ID: 0x00000001

Internal6: 0xFFFFFFFF

The second and third **VoteOption** structures (for "No" and "Maybe") begin at bytes 0x0039 and 0x006A respectively. The third **VoteOption** structure concludes at byte 0x00A0, and byte 0x00A1 begins the **Version2** field.

```
00A1: 04 01
```

Version2: 0x0104

This is followed by three **VoteOptionExtras** structures — a parallel array that contains additional information about the three **VoteOption** structures seen earlier. The first begins at byte 0x00A3.

```
00A3: 03 59 00 65 00 73 00 03-59 00 65 00 73 00
```

DisplayNameCount: 0x03

DisplayName: **Unicode** string (not null-terminated): "Yes"

DisplayNameCountRepeat: 0x03

DisplayNameRepeat: Unicode String (not null-terminated): "Yes"

The second and third **VoteOptionExtras** structures (for "No" and "Maybe") begin at bytes 0x00B1 and 0x00BB, respectively, and constitute the remainder of the buffer.

4.6 Sending Mail to a Specific Server

Ellen Adams is using a mail client that is connected to both her work and personal e-mail accounts. Her personal e-mail account is accessed through a mail protocol such as **Internet Message Access Protocol - Version 4 (IMAP4)** or **POP3** and not using the protocol described in this and related documents. Her personal e-mail is set to deliver e-mail messages to a folder in her work account.

4.6.1 Initialization

When the mail client first initializes, it sends a **RopSetSpooler** **ROP request** ([MS-OXCROPS] section 2.2.7.4) to inform the server that the client wants to be responsible for routing e-mail messages to the **messaging transport**.

4.6.1.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 47 06 00
```

The composition of the bytes is as follows:

RopId: 0x47 (**RopSetSpooler** **ROP** ([MS-OXCROPS] section 2.2.7.4))

LogonID: 0x06

InputHandleIndex: 0x00 (**handle** to the **Logon object**)

4.6.1.2 ROP Response Buffer

The server then returns a **ROP response buffer** that resembles the following.

```
0000: 47 00 00 00 00 00
```

The composition of the response buffer is as follows:

RopId: 0x47 (**RopSetSpooler** **ROP** ([MS-OXCROPS] section 2.2.7.4))

InputHandleIndex: 0x00

ReturnValue: ecNone (Success)

4.6.2 Submitting the Message to the Spooler Queue Folder

Ellen then sends an e-mail message from her work account. The client follows the example in section 4.1, except that it sets the **NeedsSpooler** (0x2) bit in the **SubmitFlags** field, as well as setting a property or somehow informing the spooler which mail transport to use.

The server places the message in the **spooler queue** folder (the FID ([MS-OXCDATA] section 2.2.1.1) of this folder is returned in the response buffer of a **RopLogon ROP request** ([MS-OXCROPS] section 2.2.3.1)).

4.6.3 Locking the Message in the Spooler Queue Folder for Processing

Next, the client finds that an e-mail message has been placed in the **spooler queue** folder. After determining that it can handle the message, the client sends the **RopSpoolerLockMessage ROP request** ([MS-OXCROPS] section 2.2.7.5) to lock the message.

4.6.3.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 48 06 00 01 00 00 03 BB-97 31 A7 00
```

The composition of the bytes is as follows:

RopId: 0x48 (**RopSpoolerLockMessage ROP** ([MS-OXCROPS] section 2.2.7.5))

LogonID: 0x06

InputHandleIndex: 0x00 (**handle** to the **Logon object**)

MessageId: 0001-0003BB9731A7

LockState: 0x00 (lock)

4.6.3.2 ROP Response Buffer

The server then returns a **ROP response buffer** that resembles the following.

```
0000: 48 00 00 00 00 00
```

The composition of the response buffer is as follows:

RopId: 0x48 (**RopSpoolerLockMessage ROP** ([MS-OXCROPS] section 2.2.7.5))

InputHandleIndex: 0x00

ReturnValue: ecNone (success) (0x00000000)

4.6.4 Determining the Transport Folder

The client determines which server to route the e-mail message to (Ellen's work server). The server can be the same as or different from the server that is holding the **spooler queue**. The client sends a **RopGetTransportFolder ROP request** ([MS-OXCROPS] section 2.2.7.8) to request the location of a temporary folder for transport.

4.6.4.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 6D 07 01
```

The composition of the bytes is as follows:

RopId: 0x6D (**RopGetTransportFolder** **ROP** ([MS-OXCROPS] section 2.2.7.8))

LogonID: 0x07

InputHandleIndex: 0x01 (**handle** to the **Logon object**)

4.6.4.2 ROP Response Buffer

The server then returns a **ROP response buffer** with the FID ([MS-OXCDATA] section 2.2.1.1) of a folder that can be used to store temporary transport objects.

```
0000: 6D 01 00 00 00 00 01 00-00 00 00 00 00 25
```

The composition of the response buffer is as follows:

RopId: 0x6D (**RopGetTransportFolder** **ROP** ([MS-OXCROPS] section 2.2.7.8))

InputHandleIndex: 0x01

ReturnValue: ecNone (success) (0x00000000)

FolderId: 0001-000000000025

4.6.5 Sending the Message

The client examines the locked e–mail message, performs any required processing (for example, it determines whether there are any **recipients (1)** that the server cannot deliver to), and creates a copy of the message to be delivered in the folder just retrieved by using the **RopCreateMessage** **ROP request** ([MS-OXCROPS] section 2.2.6.2).

The client then sends a **RopTransportSend** ROP request ([MS-OXCROPS] section 2.2.7.6) to have the server send the message.

4.6.5.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 4A 07 00
```

The composition of the bytes is as follows:

RopId: 0x4A (**RopTransportSend** **ROP** ([MS-OXCROPS] section 2.2.7.6))

LogonID: 0x07

InputHandleIndex: 0x00 (**handle** to the message from the **RopCreateMessage** ROP ([MS-OXCROPS] section 2.2.6.2))

4.6.5.2 ROP Response Buffer

The server then returns the following **ROP response buffer**.

```
0000: 4A 00 00 00 00 00 00 08-00 40 00 48 00 B0 5D 07
0010: 11 A1 AF C8 01 0A 00 47-00 0F 01 04 80 1E 00 1A
```

```
0020: 0C 75 73 65 72 31 00 02-01 19 0C 7C 00 00 00 00
0030: 00 DC A7 40 C8 C0 42 10-1A B4 B9 08 00 2B 2F E1
0040: 82 01 00 00 00 00 00 00-2F 4F 3D 46 49 52 53
0050: 54 20 4F 52 47 41 4E 49-5A 41 54 49 4F 4E 2F 4F
0060: 55 3D 45 58 43 48 41 4E-47 45 20 41 44 4D 49 4E
0070: 49 53 54 52 41 54 49 56-45 20 47 52 4F 55 50 20
0080: 28 46 59 44 49 42 4F 48-46 32 33 53 50 44 4C 54
0090: 29 2F 43 4E 3D 52 45 43-49 50 49 45 4E 54 53 2F
00a0: 43 4E 3D 55 53 45 52 31-00 02 01 1D 0C 63 00 45
00b0: 58 3A 2F 4F 3D 46 49 52-53 54 20 4F 52 47 41 4E
00c0: 49 5A 41 54 49 4F 4E 2F-4F 55 3D 45 58 43 48 41
00d0: 4E 47 45 20 41 44 4D 49-4E 49 53 54 52 41 54 49
00e0: 56 45 20 47 52 4F 55 50-20 28 46 59 44 49 42 4F
00f0: 48 46 32 33 53 50 44 4C-54 29 2F 43 4E 3D 52 45
0100: 43 49 50 49 45 4E 54 53-2F 43 4E 3D 55 53 45 52
0110: 31 00 1E 00 42 00 75 73-65 72 31 00 02 01 41 00
0120: 7C 00 00 00 00 00 DC A7-40 C8 C0 42 10 1A B4 B9
0130: 08 00 2B 2F E1 82 01 00-00 00 00 00 00 00 2F 4F
0140: 3D 46 49 52 53 54 20 4F-52 47 41 4E 49 5A 41 54
0150: 49 4F 4E 2F 4F 55 3D 45-58 43 48 41 4E 47 45 20
0160: 41 44 4D 49 4E 49 53 54-52 41 54 49 56 45 20 47
0170: 52 4F 55 50 20 28 46 59-44 49 42 4F 48 46 32 33
0180: 53 50 44 4C 54 29 2F 43-4E 3D 52 45 43 49 50 49
0190: 45 4E 54 53 2F 43 4E 3D-55 53 45 52 31 00 02 01
01a0: 3B 00 63 00 45 58 3A 2F-4F 3D 46 49 52 53 54 20
01b0: 4F 52 47 41 4E 49 5A 41-54 49 4F 4E 2F 4F 55 3D
01c0: 45 58 43 48 41 4E 47 45-20 41 44 4D 49 4E 49 53
01d0: 54 52 41 54 49 56 45 20-47 52 4F 55 50 20 28 46
01e0: 59 44 49 42 4F 48 46 32-33 53 50 44 4C 54 29 2F
01f0: 43 4E 3D 52 45 43 49 50-49 45 4E 54 53 2F 43 4E
0200: 3D 55 53 45 52 31 00
```

The composition of the response buffer is as follows:

RopId: 0x4A (**RopTransportSend** **ROP** ([MS-OXCROPS] section 2.2.7.6))

InputHandleIndex: 0x00

ReturnValue: ecNone (success) (0x00000000)

NoPropertiesReturned: 0x00 (FALSE)

PropertyValueCount: 0x08

PropertyValues: The properties that are included in the response buffer are described in the following table. The types in the following table are described in [MS-OXCDATA] section 2.11.1.

Property ID	Property name	Type	Data
0x00480040	Unspecified property	**PtypTime**	2008/05/06 17:46:09.035
0x00470102	**PidTagMessageSubmissionId** (section 2.2.1.79)	**PtypBinary**	Error: 0x8004010f (MAPI_E_NOT_FOUND)
0x0C1A001E	**PidTagSenderName** (section 2.2.1.51)	**PtypString8**	"user1"
0x0C190102	**PidTagSenderEntryId** (section 2.2.1.50)	**PtypBinary**	See the data for the **PidTagSenderEntryId** property following the table (1).
0x0C1D01	**PidTagSenderSearchKey**	**PtypBinary**	See the data for the

Property ID	Property name	Type	Data
02	(section 2.2.1.52)		**PidTagSenderSearchKey** property following the table (2).
0x0042001E	**PidTagSentRepresentingName** (section 2.2.1.57)	**PtypString8**	"user1"
0x00410102	**PidTagSentRepresentingEntryId** (section 2.2.1.56)	**1. PtypBinary**	See the data for the **PidTagSentRepresentingEntryId** property following the table (3).
0x003B0102	**PidTagSentRepresentingSearchKey** (section 2.2.1.58)	**2. PtypBinary**	See the data for the **PidTagSentRepresentingSearchKey** property following the table (4).

Data for the **PidTagSenderEntryId** property (1)

Size: 124

```
0000: 00 00 00 00 DC A7 40 C8-C0 42 10 1A B4 B9 08 00 ......@..B......
0010: 2B 2F E1 82 01 00 00 00-00 00 00 00 2F 4F 3D 46 +/........../O=F
0020: 49 52 53 54 20 4F 52 47-41 4E 49 5A 41 54 49 4F IRST ORGANIZATIO
0030: 4E 2F 4F 55 3D 45 58 43-48 41 4E 47 45 20 41 44 N/OU=EXCHANGE AD
0040: 4D 49 4E 49 53 54 52 41-54 49 56 45 20 47 52 4F MINISTRATIVE GRO
0050: 55 50 20 28 46 59 44 49-42 4F 48 46 32 33 53 50 UP (FYDIBOHF23SP
0060: 44 4C 54 29 2F 43 4E 3D-52 45 43 49 50 49 45 4E DLT)/CN=RECIPIEN
0070: 54 53 2F 43 4E 3D 55 53-45 52 31 00             TS/CN=USER1.
```

Data for the **PidTagSenderSearchKey** property (2)

Size: 99

```
0000: 45 58 3A 2F 4F 3D 46 49-52 53 54 20 4F 52 47 41 EX:/O=FIRST ORGA
0010: 4E 49 5A 41 54 49 4F 4E-2F 4F 55 3D 45 58 43 48 NIZATION/OU=EXCH
0020: 41 4E 47 45 20 41 44 4D-49 4E 49 53 54 52 41 54 ANGE ADMINISTRAT
0030: 49 56 45 20 47 52 4F 55-50 20 28 46 59 44 49 42 IVE GROUP (FYDIB
0040: 4F 48 46 32 33 53 50 44-4C 54 29 2F 43 4E 3D 52 OHF23SPDLT)/CN=R
0050: 45 43 49 50 49 45 4E 54-53 2F 43 4E 3D 55 53 45 ECIPIENTS/CN=USE
0060: 52 31 00                                        R1.
```

Data for the **PidTagSentRepresentingEntryId** property (3)

Size: 124

```
0000: 00 00 00 00 DC A7 40 C8-C0 42 10 1A B4 B9 08 00 ......@..B......
0010: 2B 2F E1 82 01 00 00 00-00 00 00 00 2F 4F 3D 46 +/........../O=F
0020: 49 52 53 54 20 4F 52 47-41 4E 49 5A 41 54 49 4F IRST ORGANIZATIO
0030: 4E 2F 4F 55 3D 45 58 43-48 41 4E 47 45 20 41 44 N/OU=EXCHANGE AD
0040: 4D 49 4E 49 53 54 52 41-54 49 56 45 20 47 52 4F MINISTRATIVE GRO
0050: 55 50 20 28 46 59 44 49-42 4F 48 46 32 33 53 50 UP (FYDIBOHF23SP
0060: 44 4C 54 29 2F 43 4E 3D-52 45 43 49 50 49 45 4E DLT)/CN=RECIPIEN
0070: 54 53 2F 43 4E 3D 55 53-45 52 31 00             TS/CN=USER1.
```

Data for the **PidTagSentRepresentingSearchKey** property (4)

Size: 99

```
0000: 45 58 3A 2F 4F 3D 46 49-52 53 54 20 4F 52 47 41 EX:/O=FIRST ORGA
0010: 4E 49 5A 41 54 49 4F 4E-2F 4F 55 3D 45 58 43 48 NIZATION/OU=EXCH
0020: 41 4E 47 45 20 41 44 4D-49 4E 49 53 54 52 41 54 ANGE ADMINISTRAT
0030: 49 56 45 20 47 52 4F 55-50 20 28 46 59 44 49 42 IVE GROUP (FYDIB
0040: 4F 48 46 32 33 53 50 44-4C 54 29 2F 43 4E 3D 52 OHF23SPDLT)/CN=R
0050: 45 43 49 50 49 45 4E 54-53 2F 43 4E 3D 55 53 45 ECIPIENTS/CN=USE
0060: 52 31 00                                        R1.
```

4.6.6 Marking the Message as Ready for Post-Send Server Processing

Finally, the client sends the **RopSpoolerLockMessage** **ROP request** ([MS-OXCROPS] section 2.2.7.5) with the finish flag to the server to have it perform any postprocessing on the sent message.

4.6.6.1 ROP Request Buffer

The **ROP request buffer** in this example resembles the following.

```
0000: 48 06 00 01 00 00 03 BB-97 31 A7 02
```

The composition of the bytes is as follows:

RopId: 0x48 (**RopSpoolerLockMessage** **ROP** ([MS-OXCROPS] section 2.2.7.5))

LogonID: 0x06

InputHandleIndex: 0x00 (**handle** to the **Logon object**)

MessageId: 0001-0003BB9731A7

LockState: 0x02 (finish)

4.6.6.2 ROP Response Buffer

The server then returns a **ROP response buffer** that resembles the following.

```
0000: 48 00 00 00 00 00
```

The composition of the response buffer is as follows:

RopId: 0x48 (**RopSpoolerLockMessage** **ROP** ([MS-OXCROPS] section 2.2.7.5))

InputHandleIndex: 0x00

ReturnValue: ecNone (success) (0x00000000)

5 Security

5.1 Security Considerations for Implementers

There are no security considerations specific to this protocol. General security considerations pertaining to the underlying **RPC**-based transport apply as described in [MS-OXCROPS].

5.2 Index of Security Parameters

None.

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 updates to those products.

- Microsoft Exchange Server 2003
- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010
- Microsoft Exchange Server 2013
- Microsoft Exchange Server 2016
- Microsoft Exchange Server 2019
- Microsoft Office Outlook 2003
- Microsoft Office Outlook 2007
- Microsoft Outlook 2010
- Microsoft Outlook 2013
- Microsoft Outlook 2016
- Microsoft Outlook 2019
- Microsoft Outlook 2021

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates 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 2.2.1.2: The computation of the value of the **PidTagConversationId** property is not supported by Exchange 2003, Exchange 2007, Office Outlook 2003, and Office Outlook 2007.

<2> Section 2.2.1.3: Exchange 2007, Exchange 2010, Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016, and Outlook 2019 compute the **PidTagConverationIndex** property for messages using a different algorithm. When computing the **Current FILETIME** field, the 24 low bits of the high part and the 16 high bits of the low part of the **FILETIME** are included in **Current FILETIME high part** and **Current FILETIME low part**, as shown in the following table.

Eight most significant bits	40 bits	16 least significant bits
Excluded	Included	Excluded

<3> Section 2.2.1.3: Exchange 2013, Exchange 2016, and Exchange 2019 set the **Delta Code** field to 1 and do not calculate the **Time Delta** field based on **TimeDiff**.

<4> Section 2.2.1.5: Exchange 2003 and Exchange 2007 do not set the **PidTagConversationTopic** property (section 2.2.1.5).

<5> Section 2.2.1.6: Exchange 2003 uses only the **PidTagDeferredDeliveryTime** property. Exchange 2007, Exchange 2010, Exchange 2013, Exchange 2016, and Exchange 2019 use only the **PidTagDeferredSendTime** property (section 2.2.3.4).

<6> Section 2.2.4.4: Outlook 2010, Outlook 2013, Outlook 2016, and Outlook 2019 do not send a **RopOptionsData** **ROP request** ([MS-OXCROPS] section 2.2.7.9).

<7> Section 3.1.1.1: Exchange 2003, Exchange 2007, Exchange 2010, the initial release version of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release version of Outlook 2013 do not support the **session context cookie**. The **session context cookie** was introduced in Microsoft Exchange Server 2013 Service Pack 1 (SP1) and Microsoft Outlook 2013 Service Pack 1 (SP1).

<8> Section 3.2.4.6.2: Office Outlook 2007 also uses the **PidLidVerbStream** property (section 2.2.1.74) for actions unrelated to voting that are not covered by this protocol. Each of these actions has a specific **VerbType** associated with it. The format of the **VoteOption** structure is identical for these actions that are unrelated to voting; however, the internal values that are specific in the structure will vary. Future versions of Outlook might further define additional **VerbTypes**; it is therefore advised that clients ignore **VoteOption** structures that do not specify **VerbTypes** that they understand. Likewise, Microsoft Office Outlook 2007 Service Pack 1 ignores **VoteOption** structures with unknown **VerbTypes**.

<9> Section 3.2.4.6.4: Office Outlook 2007 uses a system similar to meeting responses in order to track voting options. When it receives a voting response, it finds the initial voting message in the **Sent Items folder**. It then updates the **recipient table** for the **recipient (2)** who sent the response to store the index of their response. If the user opens a voting message from the Sent Items folder, it then sums the total of each response received thus far from the recipient table and displays it to the user.

<10> Section 3.2.4.8: Office Outlook 2003 and Office Outlook 2007 set the **PidTagNextSendAcct** property (section 2.2.1.65) to a user-specified value before submitting the message by using the **RopSubmitMessage** **ROP** ([MS-OXCROPS] section 2.2.7.1) to inform the spooler of the desired mail transport to use.

<11> Section 3.2.5.3: Office Outlook 2003 and Office Outlook 2007 examine the **PidTagNextSendAcct** property (section 2.2.1.65).

<12> Section 3.3.5.3: Microsoft Exchange Server 2007 Service Pack 2 (SP2) returns ecNone (0x00000000) instead of ecNullObject when an invalid object **handle** reference is passed to the **RopGetAddressTypes** ROP ([MS-OXCROPS] section 2.2.7.3).

<13> Section 3.3.5.5: On Exchange 2003 and Exchange 2007, the **RopGetTransportFolder** ROP ([MS-OXCROPS] section 2.2.7.8) returns ecNone instead of ecNullObject when an invalid input handle is provided.

<14> Section 3.3.5.6: Exchange 2010, Exchange 2013, Exchange 2016, and Exchange 2019 will return Success (0x00000000) for the **RopSpoolerLockMessage** ROP ([MS-OXCROPS] section 2.2.7.5) even if the message is not in the **spooler queue**.

<15> Section 3.3.5.9: Exchange 2007 returns Success (0x00000000) for the **RopOptionsData** ROP ([MS-OXCROPS] section 2.2.7.9) regardless of whether the call succeeds or fails.

7 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements.
- A document revision that captures changes to protocol functionality.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

Section	Description	Revision class
6 Appendix A: Product Behavior	Updated list of supported products.	major

8 Index

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