[MS-OXOMSG]:
E-Mail Object Protocol Specification

Revision Summary

Date	Revision History	Revision Class	Comments
04/04/2008	0.1		Initial Availability.
04/25/2008	0.2		Revised and updated property names and other technical content.
06/27/2008	1.0		Initial Release.
08/06/2008	1.01		Updated references to reflect date of initial release.
09/03/2008	1.02		Revised and edited technical content.
10/01/2008	1.03		Revised and edited technical content.
12/03/2008	1.04		Revised and edited technical content.
04/10/2009	2.0		Updated technical content and applicable product releases.
07/15/2009	3.0	Major	Revised and edited for technical content.
11/04/2009	4.0.0	Major	Updated and revised the technical content.
02/10/2010	5.0.0	Major	Updated and revised the technical content.
05/05/2010	6.0.0	Major	Updated and revised the technical content.
08/04/2010	6.1	Minor	Clarified the meaning of the technical content.
11/03/2010	6.2	Minor	Clarified the meaning of the technical content.
03/18/2011	6.2	No change	No changes to the meaning, language, and formatting of the technical content.

Table of Contents

1 Introduction

An e-mail client provides the user interface for composing, reading, and sending messages, and for accessing and modifying the message items that are contained in message **stores**. An **E-mail object** represents a single message in a folder of the message store that is used to send or receive e-mail.

This document specifies the following:

- The properties of a **Message object** in the message store **mailbox**.
- The transport features that are specific to an E-mail object.

1.1 Glossary

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

ASCII
big-endian
Coordinated Universal Time (UTC)
GUID
handle
Hypertext Transfer Protocol (HTTP)
little-endian
Network Data Representation (NDR)
remote procedure call (RPC)
Unicode

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

address book
address type
blind carbon copy (Bcc) recipient
body part
carbon copy (Cc) recipient
delivery receipt
distribution list
Drafts folder
E-mail object
EntryID
Folder object
from properties
Hypertext Markup Language (HTML)
Inbox folder
Inter-Personal Mail (IPM)
locale
Logon object
mailbox
message class
Message object
Multipurpose Internet Mail Extensions (MIME)
non-delivery report (NDR)
Outbox folder
permission
Post Office Protocol - Version 3 (POP3)

primary recipient
read receipt
Receive folder
recipient
recipient properties
remote operation (ROP)
Rich Text Format (RTF)
ROP request buffer
ROP response buffer
search folder
Sent Items folder
Server object
Simple Mail Transfer Protocol (SMTP)
spam
store
subobject
To recipient
Transport Neutral Encapsulation Format (TNEF)

The following terms are specific to this document:

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

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.

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

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

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.

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

UUEncoded attachment: A file that is attached to an e-mail 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 described in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site,

http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

[MS-OXBBODY] Microsoft Corporation, "Best Body Retrieval Protocol Specification", June 2008.

[MS-OXCDATA] Microsoft Corporation, "Data Structures", April 2008.

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

[MS-OXCMAIL] Microsoft Corporation, "RFC2822 and MIME to E-Mail Object Conversion Protocol Specification", June 2008.

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

[MS-OXCPRPT] Microsoft Corporation, "Property and Stream Object Protocol Specification", June 2008.

[MS-OXCROPS] Microsoft Corporation, "Remote Operations (ROP) List and Encoding Protocol Specification", June 2008.

[MS-OXCSPAM] Microsoft Corporation, "Spam Confidence Level Protocol Specification", June 2008.

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

[MS-OXCSYNC] Microsoft Corporation, "Mailbox Synchronization Protocol Specification", June 2008.

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

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

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

[MS-OXOCAL] Microsoft Corporation, "Appointment and Meeting Object Protocol Specification", June 2008.

[MS-OXOCNTC] Microsoft Corporation, "Contact Object Protocol Specification", June 2008.

[MS-OXODLGT] Microsoft Corporation, "Delegate Access Configuration Protocol Specification", June 2008.

[MS-OXOFLAG] Microsoft Corporation, "Informational Flagging Protocol Specification", June 2008.

[MS-OXORMDR] Microsoft Corporation, "Reminder Settings Protocol Specification", June 2008.

[MS-OXORULE] Microsoft Corporation, "E-Mail Rules Protocol Specification", June 2008.

[MS-OXOSFLD] Microsoft Corporation, "Special Folders Protocol Specification", June 2008.

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

[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, http://www.ietf.org/rfc/rfc2119.txt

[RFC2821] Klensin, J., "Simple Mail Transfer Protocol", STD 10, RFC 2821, April 2001, http://www.ietf.org/rfc/rfc2821.txt

[RFC2822] Resnick, P., Ed., "Internet Message Format", STD 11, RFC 2822, April 2001, http://www.ietf.org/rfc/rfc2822.txt

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

1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary", March 2007.

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

1.3 Overview

The E-mail Object Protocol specifies the representation of an e-mail message in a messaging store. The E-mail 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].

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**, subject, message content, and all the options associated with this e-mail that are set by the sender or recipient. An E-mail object is stored in a **Folder object**. The E-mail Object 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 EMail Objects

1.3.1.1 Creating, Opening, and Saving EMail Objects

E-mail objects adhere to the descriptions 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. **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. **Non-delivery report (NDR)** 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.

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 by the e-mail sender's request.

1.3.2.3 Delivery Receipt

A delivery receipt is generated and sent by the messaging system to the e-mail's sender or designated recipient when an e-mail has reached its intended recipient.

1.3.2.4 Non-delivery Report

A non-delivery report (NDR) receipt is generated and sent to the e-mail's sender by the messaging system when an e-mail could not reach an intended recipient. 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 2.2.1.64. A recipient's client 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 tracking status properties, as specified in section 2.2.1.65.

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 E-mail Object Protocol has the same dependencies as the Message and Attachment Object Protocol, which it extends. For details about the Message and Attachment Object Protocol, see [MS-OXCMSG].

1.5 Prerequisites/Preconditions

The E-mail Object Protocol Specification is an extension of [MS-OXCMSG], and no further prerequisites or preconditions exist.

1.6 Applicability Statement

The E-mail Object Protocol is used to model 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 E-mail Object Protocol uses the protocols specified in [MS-OXCPRPT] and [MS-OXCMSG] as its primary transport mechanism.

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 [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 E-mail 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.

2.2.1 EMail Object Properties

The following properties are specific to E-mail objects. All property value types (**PtypBinary**, **PtypInteger32**, and so on) are defined in[MS-OXCDATA] section 2.11.1.

2.2.1.1 PidTagBlockStatus

Type: **PtypInteger32**

Indicates the user's preference for viewing external content (such as links to images on a **Hypertext Transfer Protocol (HTTP)** server) in the message body. A client can ignore this value and always allow or block external content based on other factors (such as whether the sender is on a safe list). If this property is used, the default action is to block the external content. However, if the value of this property falls within a certain range, viewing external content is allowed. The allowed value is computed from PidTagMessageDeliveryTime: because the sender of a message does not have knowledge of this value, the sender cannot reliably set PidTagBlockStatus to the allowed values.

To compute the allowed values, convert the value of PidTagMessageDeliveryTime to a PtypDouble, 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 PtypDouble value result to a 32-bit integer computedvalue.

Clients SHOULD set PidTagBlockStatus to computedvalue 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 computedvalue and the value of PidTagBlockStatus is 1 or less.

2.2.1.2 PidTagConversationId

Type: **PtypBinary**

This property<1> is computed by the application, server or client. The computed value of PidTagConversationId SHOULD be derived from PidTagConversationIndexTracking, PidTagConversationIndex, and PidTagConversationTopic:

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

Otherwise, if PidTagConversationTopic is set, PidTagConversationId MUST be computed as follows:

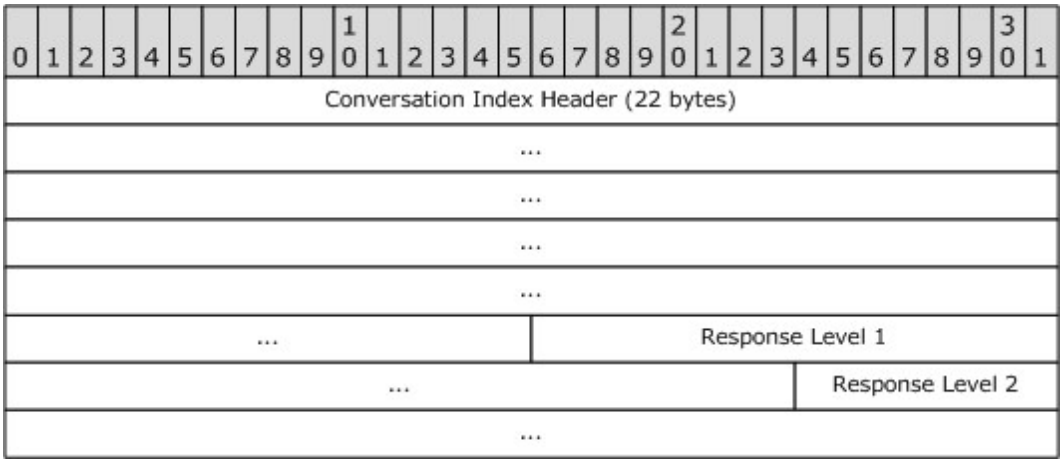
1. The application MUST use up to 255 of the first nonzero characters of the **little-endian** UTF-16 representation of PidTagConversationTopic.
2. The application MUST convert the characters to their upper-case forms, always mapping "i" to "I" regardless of the user's **locale**.
3. The application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

Otherwise, if none of the above conditions were met, PidTagConversationId MUST NOT be set.

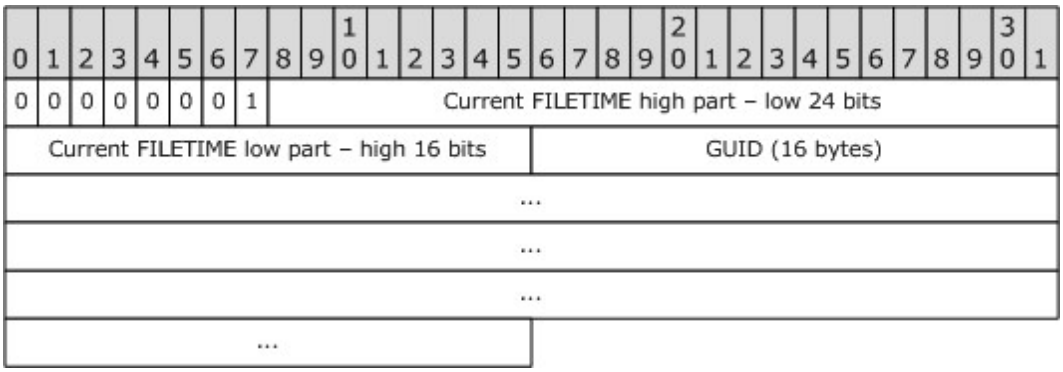
2.2.1.3 PidTagConversationIndex

Type: **PtypBinary**

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.



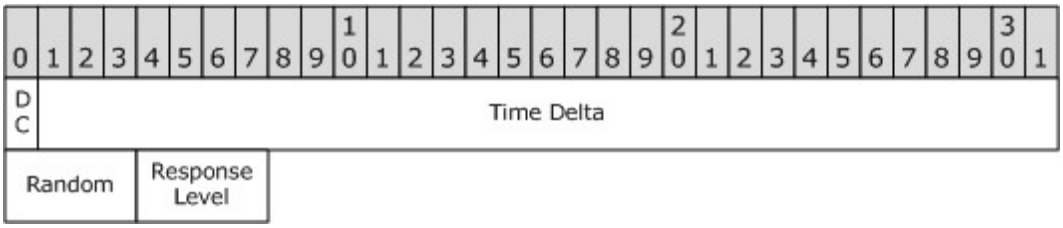
Current FILETIME (40 bit): The current time in UTC expressed as a **PtypTime** is obtained, where only the 24 low bits of the high part and the 16 high bits of the low part of the FILETIME are included in **Current FILETIME high part** and **Current FILETIME low part**, as shown in the following table.

Eight most significant bits	40 bits	16 least significant bits
Excluded	Included	Excluded

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, PtypGuid): 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)** are calculated based on the difference between the current time and the time stored in the conversation index header:

- 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** is "0" and the **Time Delta** is the least significant 31 bits of the difference remaining after the 18 least significant bits are excluded.

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 nonzero), the **Delta Code** is 1 and the **Time Delta** is

the least significant 31 bits of the difference remaining after the 23 least significant bits are excluded.

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

Type: **PtypBoolean**

Indicates whether or not the GUID portion of PidTagConversationIndex is to be used to compute PidTagConversationId, assuming the application implements PidTagConversationId (see section 2.2.1.2).

2.2.1.5 PidTagConversationTopic

Type: **PtypString**

Contains an unchanging copy of the original subject. The property is set to the same value as PidTagNormalizedSubject, as specified in [MS-OXCMSG], on an E-mail object when it is submitted.

2.2.1.6 PidTagDeferredDeliveryTime

Type: **PtypTime**

Contains the date and time, in UTC, at which the sender prefers the message to be delivered. This property MAY be absent; if it is absent, the message is delivered as soon as possible. If it is present, then the property MUST have the same value as PidTagDeferredSendTime, as specified in section 2.2.3.4.

A client sets both PidTagDeferredDeliveryTime and PidTagDeferredSendTime for deferred delivery of a message before submission.<2>

2.2.1.7 PidTagDisplayBcc

Type: **PtypString**

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

2.2.1.8 PidTagDisplayCc

Type: **PtypString**

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

2.2.1.9 PidTagDisplayTo

Type: **PtypString**

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]. This property is read-only for the client.

2.2.1.10 PidTagIconIndex

Type: **PtypInteger32**

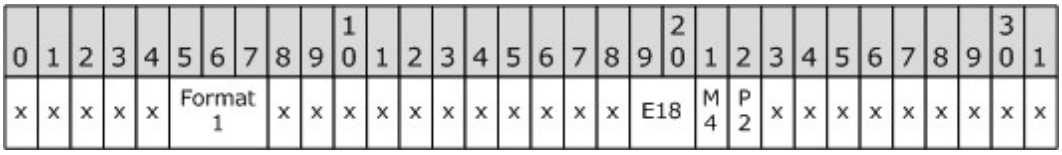
Specifies the icon to be used by the user interface when displaying a group of E-mail objects. This property, if it exists, is a hint to the client: it can ignore the value of this property and use another method of determining what icon to display to the user (such as using the value of PidTagMessageClass or PidTagMessageFlags). The following table shows examples of PidTagIconIndex values.

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
Recall mail	0x0000011C
Tracked mail	0x00000130

2.2.1.11 PidTagInternetMailOverrideFormat

Type: **PtypInteger32**

Indicates the encoding method and **Hypertext Markup Language (HTML)** inclusion for attachments and SHOULD be set on outgoing mail. 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.

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

Value	Meaning
0	Ignore **M4**.
1	Use **M4** to determine encoding.

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

Value	Meaning
0	Use UUENCODE, and ignore **E18**.
1	Use MIME encoding, and use **E18** to determine body inclusions.

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.

2.2.1.12 PidTagInternetMessageId

Type: **PtypString**

Corresponds to the **Message-id** field, as specified in [RFC2822]. The property SHOULD be present on all e-mail messages. For more details about PidTagInternetMessageId, see [MS-OXCMAIL].

2.2.1.13 PidTagInReplyToId

Type: **PtypString**

Corresponds to the **in-reply-to** field, as specified in [RFC2822], and contains the original message's PidTagInternetMessageId value. This property is set on all message replies.

2.2.1.14 PidTagLastVerbExecuted

Type: **PtypInteger32**

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 following table shows possible PidTagLastVerbExecuted values.

Verb name	Alternate name	Property value
Open	NOTEIVERB_OPEN	0x00000000
ReplyToSender	NOTEIVERB_REPLYTOSENDER	0x00000102
ReplyToAll	NOTEIVERB_REPLYTOALL	0x00000103
Forward	NOTEIVERB_FORWARD	0x00000104
Print	NOTEIVERB_PRINT	0x00000105
Save as	NOTEIVERB_SAVEAS	0x00000106
ReplyToFolder	NOTEIVERB_REPLYTOFOLDER	0x00000108
Save	NOTEIVERB_SAVE	0x00000500
Properties	NOTEIVERB_PROPERTIES	0x00000510
Followup	NOTEIVERB_FOLLOWUP	0x00000511
Accept	NOTEIVERB_ACCEPT	0x00000512
Tentative	NOTEIVERB_TENTATIVE	0x00000513
Reject	NOTEIVERB_REJECT	0x00000514
Decline	NOTEIVERB_DECLINE	0x00000515
Invite	NOTEIVERB_INVITE	0x00000516
Update	NOTEIVERB_UPDATE	0x00000517
Cancel	NOTEIVERB_CANCEL	0x00000518

Verb name	Alternate name	Property value
SilentInvite	NOTEIVERB_SILENTINVITE	0x00000519
SilentCancel	NOTEIVERB_SILENTCANCEL	0x00000520
RecallMessage	NOTEIVERB_RECALL_MESSAGE	0x00000521
ForwardResponse	NOTEIVERB_FORWARD_RESPONSE	0x00000522
ForwardCancel	NOTEIVERB_FORWARD_CANCEL	0x00000523
FollowupClear	NOTEIVERB_FOLLOWUPCLEAR	0x00000524
ForwardAppointment	NOTEIVERB_FORWARD_APPT	0x00000525
OpenResend	NOTEIVERB_OPENRESEND	0x00000526
StatusReport	NOTEIVERB_STATUSREPORT	0x00000527
JournalOpen	NOTEIVERB_JOURNALOPEN	0x00000528
JournalOpenLink	NOTEIVERB_JOURNALOPENLINK	0x00000529
ComposeReplace	NOTEIVERB_COMPOSEREPLACE	0x00000530
Edit	NOTEIVERB_EDIT	0x00000531
DeleteProcess	NOTEIVERB_DELETEPROCESS	0x00000532
TentativeAppointmentTime	NOTEIVERB_TENTPNTIME	0x00000533
EditTemplate	NOTEIVERB_EDITTEMPLATE	0x00000534
FindInCalendar	NOTEIVERB_FINDINCALENDAR	0x00000535
ForwardAsFile	NOTEIVERB_FORWARDASFILE	0x00000536
ChangeAttendees	NOTEIVERB_CHANGE_ATTENDEES	0x00000537
RecalculateTitle	NOTEIVERB_RECALC_TITLE	0x00000538
PropertyChange	NOTEIVERB_PROP_CHANGE	0x00000539
ForwardAsVcal	NOTEIVERB_FORWARD_AS_VCAL	0x00000540
ForwardAsIcal	NOTEIVERB_FORWARD_AS_ICAL	0x00000541
ForwardAsBusinessCard	NOTEIVERB_FORWARD_AS_BCARD	0x00000542
DeclineAppointmentTime	NOTEIVERB_DECLPNTIME	0x00000543
Process	NOTEIVERB_PROCESS	0x00000544
OpenWithWord	NOTEIVERB_OPENWITHWORD	0x00000545
OpenInstanceOfSeries	NOTEIVERB_OPEN_INSTANCE_OF_SERIES	0x00000546
FilloutThisForm	NOTEIVERB_FILLOUT_THIS_FORM	0x00000547

Verb name	Alternate name	Property value
FollowupDefault	NOTEIVERB_FOLLOWUP_DEFAULT	0x00000548
ReplyWithMail	NOTEIVERB_REPLY_WITH_MAIL	0x00000549
ToDoToday	NOTEIVERB_TODO_TODAY	0x00000566
ToDoTomorrow	NOTEIVERB_TODO_TOMORROW	0x00000567
ToDoThisWeek	NOTEIVERB_TODO_THISWEEK	0x00000568
ToDoNextWeek	NOTEIVERB_TODO_NEXTWEEK	0x00000569
ToDoThisMonth	NOTEIVERB_TODO_THISMONTH	0x00000570
ToDoNextMonth	NOTEIVERB_TODO_NEXTMONTH	0x00000571
ToDoNoDate	NOTEIVERB_TODO_NODATE	0x00000572
FollowupComplete	NOTEIVERB_FOLLOWUPCOMPLETE	0x00000573
CopyToPostFolder	NOTEIVERB_COPYTOPOSTFOLDER	0x00000574
SeriesInvitationUpdateToPartialAttendeeList	NOTEIVERB_PARTIALRECIP_SILENTINVITE	0x00000575
SeriesCancellationUpdateToPartialAttendeeList	NOTEIVERB_PARTIALRECIP_SILENTCANCEL	0x00000576

2.2.1.15 PidTagLastVerbExecutionTime

Type: **PtypTime**

Contains the date and time, in UTC, during which the operation represented in PidTagLastVerbExecuted took place.

2.2.1.16 PidTagMessageClass

Type: **PtypString**

Contains the object type classification. This property is set to "IPM.Note" on E-mail objects. The value of PidTagMessageClass for report objects is specified in section 2.2.2.1 of this document.

2.2.1.17 PidTagMessageToMe

Type: **PtypBoolean**

An optional property indicating that the receiving mailbox owner is one of the primary recipients of this e-mail message. If the property is present, it is set to either "0x01", in which case, the receiving mailbox owner is specifically named as a primary recipient of this 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 this e-mail message. If not present, the client SHOULD treat it as having a value of "0x00".

2.2.1.18 PidTagMessageCcMe

Type: **PtypBoolean**

An optional property indicating that the receiving mailbox owner is a carbon copy (Cc) recipient of this e-mail message. If the property is present, it is set to either "0x01", in which case, the receiving mailbox owner is specifically named as a Cc recipient of this 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 this e-mail message. If not present, the client SHOULD treat it as having a value of "0x00".

2.2.1.19 PidTagMessageRecipientMe

Type: **PtypBoolean**

An optional property indicating that the receiving mailbox owner is a primary or a carbon copy (Cc) recipient of this e-mail message. If the 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 this 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 this e-mail message. If not present, the client SHOULD treat it as having a value of "0x00".

2.2.1.20 PidTagOriginatorDeliveryReportRequested

Type: **PtypBoolean**

Indicates whether an e-mail sender requests an e-mail delivery receipt from the messaging system. 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

Type: **PtypBoolean**

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

Type: **PtypInteger32**

Contains the sensitivity value of the original e-mail message. This property is set on the replying and forwarding e-mail messages by using the PidTagSensitivity value of the original message, as specified in [MS-OXCMSG] section 2.2.1.13.

2.2.1.23 PidTagReceivedRepresentingAddressType

Type: **PtypString**

Contains the e-mail address type for the end user represented by the receiving mailbox owner, as specified in the **RecipientRow AddressType** field (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 PidTagReceivedByAddressType (section 2.2.1.29).

2.2.1.24 PidTagReceivedRepresentingEmailAddress

Type: **PtypString**

Contains the e-mail address for the end user represented by the receiving mailbox owner, as specified in the **RecipientRow EmailAddress** field ([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 PidTagReceivedByEmailAddress (section 2.2.1.30).

2.2.1.25 PidTagReceivedRepresentingEntryId

Type: **PtypBinary**

Contains an **address book EntryID** that identifies the end user represented by the receiving mailbox owner, as specified in the **RecipientRow EntryID** field ([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 PidTagReceivedByEntryId (section 2.2.1.31).

2.2.1.26 PidTagReceivedRepresentingName

Type: **PtypString**

Contains the display name, for the end user represented by the receiving mailbox owner, as specified by the **RecipientRow DisplayName** field ([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 PidTagReceivedByName (section 2.2.1.32).

2.2.1.27 PidTagReceivedRepresentingSearchKey

Type: **PtypBinary**

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 **RecipientRow SearchKey** field ([MS-OXCDATA] section 2.8.3.2). This property is computed in the same way that PidTagReceivedBySearchKey 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 PidTagReceivedBySearchKey (section 2.2.1.33).

2.2.1.28 PidTagReadReceiptRequested

Type: **PtypBoolean**

Specifies whether the e-mail sender requests a read receipt from all recipients 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 the messaging system; or "0x00", in which case no read receipt is requested by the e-mail message's sender.

If an E-mail object, with PidTagReadReceiptRequested set to "0x01", is deleted, or expires due to the time limit set by PidTagExpiryTime (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.

2.2.1.29 PidTagReceivedByAddressType

Type: **PtypString**

Contains the e-mail message receiver's e-mail address type, as specified by the **RecipientRow AddressType** field ([MS-OXCDATA] section 2.8.3.2) and 2.2.4.3 of this document.

2.2.1.30 PidTagReceivedByEmailAddress

Type: **PtypString**

Contains the e-mail message receiver's e-mail address, as specified by the **RecipientRow EmailAddress** field ([MS-OXCDATA] section 2.8.3.2).

2.2.1.31 PidTagReceivedByEntryId

Type: **PtypBinary**

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 **RecipientRow EntryID** field ([MS-OXCDATA] section 2.8.3.2).

2.2.1.32 PidTagReceivedByName

Type: **PtypString**

Contains the e-mail message receiver's display name, as specified by the **RecipientRow DisplayName** field ([MS-OXCDATA] section 2.8.3.2).

2.2.1.33 PidTagReceivedBySearchKey

Type: **PtypBinary**

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 **RecipientRow SearchKey** field ([MS-OXCDATA] section 2.8.3.2).

2.2.1.34 PidTagRecipientReassignmentProhibited

Type: **PtypBoolean**

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

2.2.1.35 PidTagReplyRecipientEntries

Type: **PtypBinary**

Identifies a **FlatEntryList** of address book EntryIDs for recipients that are to get a reply. When PidTagReplyRecipientEntries and PidTagReplyRecipientNames are defined, the reply is sent to all the recipients identified by these two properties. If this property is absent, a reply is sent only to the

user identified by PidTagSenderEntryId. If present, the property is set to a **FlatEntryList** of recipient EntryIDs, as specified in [MS-OXCDATA] section 2.3.3.

PidTagReplyRecipientEntries and PidTagReplyRecipientNames properties MUST be set in a way that they contain the same number of recipients in the same order.

2.2.1.36 PidTagReplyRecipientNames

Type: **PtypString**

Contains a list of display names for recipients that are to get a reply. If this property is absent, a reply is sent only to the user identified by PidTagSenderName. If present, the property is set to one string containing the address book entry's recipient display names separated by semicolons.

2.2.1.37 PidTagReplyRequested

Type: **PtypBoolean**

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; or "0x00", which is the same handling as if the property is absent.

2.2.1.38 PidTagResponseRequested

Type: **PtypBoolean**

Specifies whether an e-mail sender requests a response to a meeting request, as specified in [MS-OXOCAL] section 2.2.1.36, or a voting response (section 2.2.1.65 of this document). If present, it 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. If this property is absent, the client SHOULD treat it as having a default value of "0x00".

2.2.1.39 PidTagSendRichInfo

Type: **PtypBoolean**

Specifies whether the sender can receive all message content, including **Rich Text Format (RTF)** and OLE objects. If the 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. If this property is absent, the client SHOULD treat it as having a value of "0x00".

2.2.1.40 PidTagSenderAddressType

Type: **PtypString**

Contains the sending mailbox owner's e-mail address type, as specified by the **RecipientRow AddressType** field ([MS-OXCDATA] section 2.8.3.2) and 2.2.4.3 of this document.

2.2.1.41 PidTagSenderEmailAddress

Type: **PtypString**

Contains the sending mailbox owner's e-mail address, as specified by the **RecipientRow EmailAddress** field ([MS-OXCDATA] section 2.8.3.2).

2.2.1.42 PidTagSenderEntryId

Type: **PtypBinary**

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).

2.2.1.43 PidTagSenderName

Type: **PtypString**

Contains the sending mailbox owner's display name, as specified by the **RecipientRow DisplayName** field ([MS-OXCDATA] section 2.8.3.2).

2.2.1.44 PidTagSenderSearchKey

Type: **PtypBinary**

Identifies an address book search key that contains a binary-comparable key computed by concatenating the sending mailbox owner's PidTagAddressType and PidTagEmailAddress with a colon in between (for example, <TYPE>:<E_MAIL ADDRESS>), as specified by the **RecipientRow SearchKey** field ([MS-OXCDATA] section 2.8.3.2).

2.2.1.45 PidTagSentRepresentingAddressType

Type: **PtypString**

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 PidTagSenderAddressType.

2.2.1.46 PidTagSentRepresentingEmailAddress

Type: **PtypString**

Contains an e-mail address, as specified by the **RecipientRow EmailAddress** field ([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 PidTagSenderEmailAddress.

2.2.1.47 PidTagSentRepresentingEntryId

Type: **PtypBinary**

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 PidTagSenderEntryId.

2.2.1.48 PidTagSentRepresentingName

Type: **PtypString**

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 PidTagSenderName.

2.2.1.49 PidTagSentRepresentingSearchKey

Type: **PtypBinary**

Identifies an address book search key, as specified by the **RecipientRow SearchKey** field ([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 PidTagSenderSearchKey.

2.2.1.50 PidTagSubjectPrefix

Type: **PtypString**

Specified in [MS-OXCMSG] section 2.2.1.9. On an E-mail object, this property 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.

2.2.1.51 PidTagTransportMessageHeaders

Type: **PtypString**

Contains transport-specific message envelope information for e-mail, as specified in [RFC2821]. For outgoing messages with recipients who have a **Simple Mail Transfer Protocol (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].).

2.2.1.52 PidLidInternetAccountName

Type: **PtypString**

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.

2.2.1.53 PidLidInternetAccountStamp

Type: **PtypString**

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.

2.2.1.54 PidTagPrimarySendAccount

Type: **PtypString**

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.

2.2.1.55 PidTagNextSendAcct

Type: **PtypString**

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.

2.2.1.56 PidLidUseTnef

Type: **PtypBoolean**

Specifies whether **Transport Neutral Encapsulation Format (TNEF)** is included on a message when the message is converted from TNEF to MIME or SMTP format. If this property is absent, implementers of this protocol MUST NOT include TNEF on the message.

2.2.1.57 Attachments

The client can use attachments as specified in [MS-OXCMSG] section 1.3.4.

2.2.1.58 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.

2.2.1.59 Contacts

The client can set the contacts on an e-mail message as specified in [MS-OXOCNTC] and [MS-OXCMSG] section 2.2.1.45.2.

2.2.1.60 Flags

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

2.2.1.61 Reminders

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

2.2.1.62 Recipients

Type: **PtypInteger32**

The client MUST add recipients to an e-mail message by using RopModifyRecipients, as specified in [MS-OXCMSG] section 2.2.3.5. PidTagRecipientType is set to "0x00000001" for the primary recipients, "0x00000002" for carbon copy (Cc) recipients, or "0x00000003" for blind carbon copy (Bcc) recipients. For details about **RecipientRow**, see [MS-OXCDATA] section 2.8.3.2.

2.2.1.63 PidLidAutoProcessState

Type: **PtypInteger32**

Specifies the options used in automatic processing of 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.

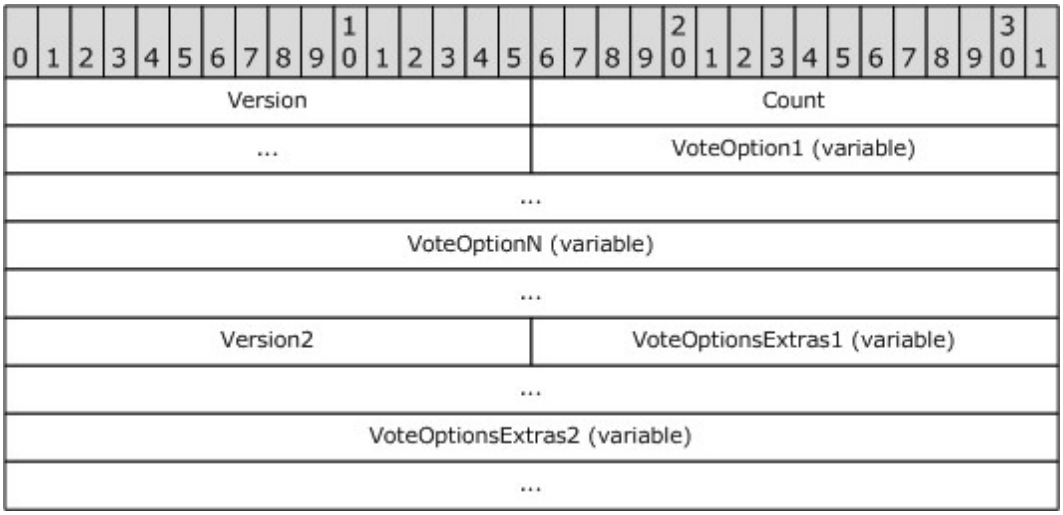
Value	Description
0x00000000	Do not auto-process the message.

Value	Description
0x00000001	Process the message automatically or when the message is opened.
0x00000002	Process the message only when the message is opened.

2.2.1.64 PidLidVerbStream

Type: **PtypBinary**

Specifies what voting responses the user can make in response to the message. For details about client processing of this stream (or the lack of this stream), see section 3.1.5. The format is of this property is shown in the following diagram.



Version (WORD): Set to "0x0102".

COUNT (DWORD): Specifies the number of **VoteOption** and **VoteOptionExtras** to follow.

VoteOption1 (variable length structure): The first **VoteOption** structure specified in section 2.2.1.64.1.

VoteOptionN (variable length structure): The last **VoteOption** structure specified in section 2.2.1.64.1.

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

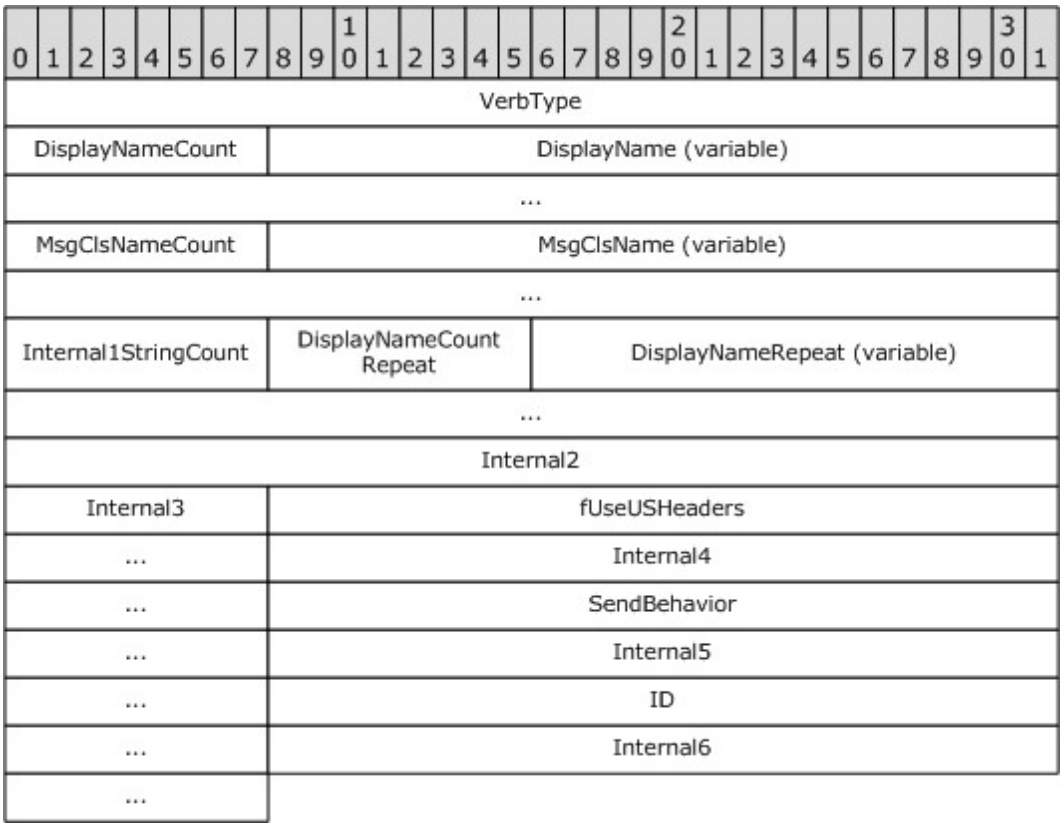
VoteOptionExtras1 (variable length structure): The first **VoteOptionExtras** structure specified in section 2.2.1.64.2.

VoteOptionExtrasN (variable length structure): The last **VoteOptionExtras** structure specified in section 2.2.1.64.2.

2.2.1.64.1 VoteOption Structure

The verb stream contains two parallel arrays of **VoteOption** and **VoteOptionExtra** structures. Each element in these two arrays, when combined, describe 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): Set to 4 (0x00000004).

DisplayNameCount (1 byte): COUNT of characters in the following string.

DisplayName [ANSI String (NOT null terminated)]: The localized display name of the Voting option (for example, "Yes"), without the null terminating character.

MsgClsNameCount (1 byte): COUNT of characters in the following string. Set to 8 (0x08).

MsgClsName [ANSI String (NOT null terminated)]: Set to "IPM.Note", without the null terminating character.

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

Internal1String [ANSI String (NOT null terminated)]: MUST NOT be present, as **Internal1StringCount** is always "0x00" for a voting option.

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

DisplayNameRepeat [ANSI String (NOT null terminated)]: MUST have the same value as **DisplayName**.

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 automatically send it on behalf of the user. The value of this field is one of the values defined in the following table.

Value	Description
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".

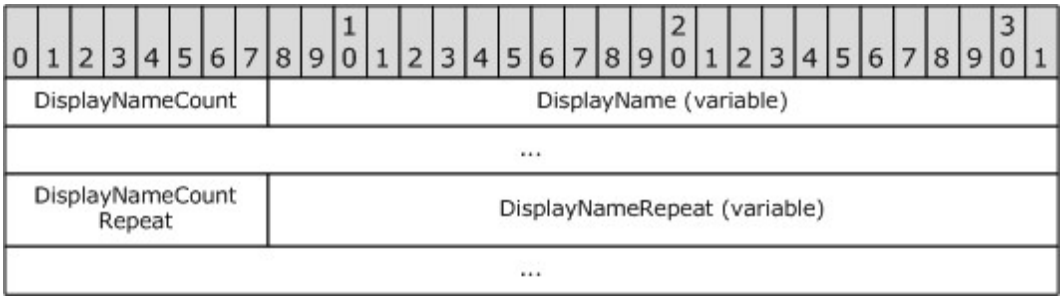
ID (DWORD): Specifies a numeric identifier for this voting option. The client SHOULD specify 1 for the first **VoteOption**, and monotonically increase this value for each subsequent **VoteOptions**.

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

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

2.2.1.64.2 VoteOptionExtras Structure

Each element contains additional information about the corresponding **VoteOptions** entry. The format is shown in the following diagram.



DisplayNameCount (1 byte): COUNT of **Unicode** characters (not bytes) in the following string.

DisplayName [Unicode String (NOT null terminated)]: The display name of this voting option, as a Unicode string, without a null terminator.

DisplayNameCountRepeat (1 byte): COUNT of characters in the following string. MUST have the same value as **DisplayNameCount**.

DisplayNameRepeat [Unicode String (NOT null terminated)]: MUST have the same value as **DisplayName**.

2.2.1.65 PidLidVerbResponse

Type: **PtypString**

Specifies the voting option that a respondent has selected. If present, this property MUST be set to one of the voting button display names on which the respondent votes.

2.2.1.66 PidTagTargetEntryId

Type: **PtypBinary**

Used in conjunction with an optimizing send client. For more details, see sections 3.1.4.4 and 3.2.5.1.2.8.

2.2.2 Message Status Reports Properties

All property value types (**PtypBinary**, **PtypInteger32**, and so on) specified in the following subsections are defined in [MS-OXCDATA] section 2.11.1.

2.2.2.1 PidTagMessageClass

Type: **PtypString**

Contains a Message object class name. For report messages, the property is set to the value in the form: "REPORT.X.<receipt types>" 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 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

Type: **PtypTime**

Set on read receipt/non-read receipt objects or replying/forwarding Message objects by using the value of PidTagMessageDeliveryTime from the original message.

2.2.2.3 PidTagOriginalDisplayTo

Type: **PtypString**

Set on report messages by using the value of PidTagDisplayTo from the original message, if present.

2.2.2.4 PidTagOriginalDisplayCc

Type: **PtypString**

Set on report messages by using the value of PidTagDisplayCc from the original message, if present.

2.2.2.5 PidTagOriginalDisplayBcc

Type: **PtypString**

Set on report messages by using a copy of the PidTagDisplayBcc value from the original message, if present.

2.2.2.6 PidTagOriginalSenderAddressType

Type: **PtypString**

Set on delivery report messages by using the value of the original message sender's PidTagSenderAddressType, as specified by the **RecipientRow AddressType** field ([MS-OXCDATA] section 2.8.3.2).

2.2.2.7 PidTagOriginalSenderEmailAddress

Type: **PtypString**

Set on delivery report messages to the value of the original message sender's PidTagSenderEmailAddress property, as specified in section 2.2.1.41.

2.2.2.8 PidTagOriginalSenderEntryId

Type: **PtypBinary**

Contains an address book EntryID that is set on delivery report messages to the value of the PidTagSenderEntryId property from the original e-mail message, as specified in section 2.2.1.42.

2.2.2.9 PidTagOriginalSenderName

Type: **PtypString**

Set on delivery report messages to the value of the original message sender's PidTagSenderName property, as specified in section 2.2.1.43.

2.2.2.10 PidTagOriginalSenderSearchKey

Type: **PtypBinary**

Contains an address book search key that is set on delivery report messages to the value of the PidTagSenderSearchKey property of the original e-mail message, as specified in section 2.2.1.44.

2.2.2.11 PidTagOriginalSentRepresentingAddressType

Type: **PtypString**

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 of the original e-mail message, as specified in section 2.2.1.45.

2.2.2.12 PidTagOriginalSentRepresentingEmailAddress

Type: **PtypString**

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 of the original e-mail message, as specified in section 2.2.1.46.

2.2.2.13 PidTagOriginalSentRepresentingEntryId

Type: **PtypBinary**

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 of the original message, as specified in section 2.2.1.47.

2.2.2.14 PidTagOriginalSentRepresentingName

Type: **PtypString**

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 of the original e-mail message, as specified in section 2.2.1.48.

2.2.2.15 PidTagOriginalSentRepresentingSearchKey

Type: **PtypBinary**

Identifies an address book search key that contains the **SearchKey** of the end user who is represented by the original message sender. It is set to the value of the PidTagSentRepresentingSearchKey property of the original message, as specified in section 2.2.1.49.

2.2.2.16 PidTagOriginalSubject

Type: **PtypString**

Specifies the subject of the original message and is set to the concatenated values of the PidTagSubjectPrefix and PidTagNormalizedSubject properties of the original message.

2.2.2.17 PidTagOriginalSubmitTime

Type: **PtypTime**

Specifies the original e-mail message's submission date and time and is set to the value of the PidTagClientSubmitTime property. The property is used in reports only and once set, it MUST NOT be changed.

2.2.2.18 PidTagParentKey

Type: **PtypBinary**

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 of the original e-mail message, as specified in [MS-OXCMSG].

2.2.2.19 PidTagReportEntryId

Type: **PtypBinary**

An optional binary property that can appear on a report message. Contains an address book EntryID, as specified in [MS-OXCDATA] section 2.2.5.2, that represents the entity (usually a server agent) that generated the report message.

2.2.2.20 PidTagReportName

Type: **PtypString**

An optional string property that can appear on a report message. Contains the display name for the entity (usually a server agent) that generated the report message.

2.2.2.21 PidTagReportSearchKey

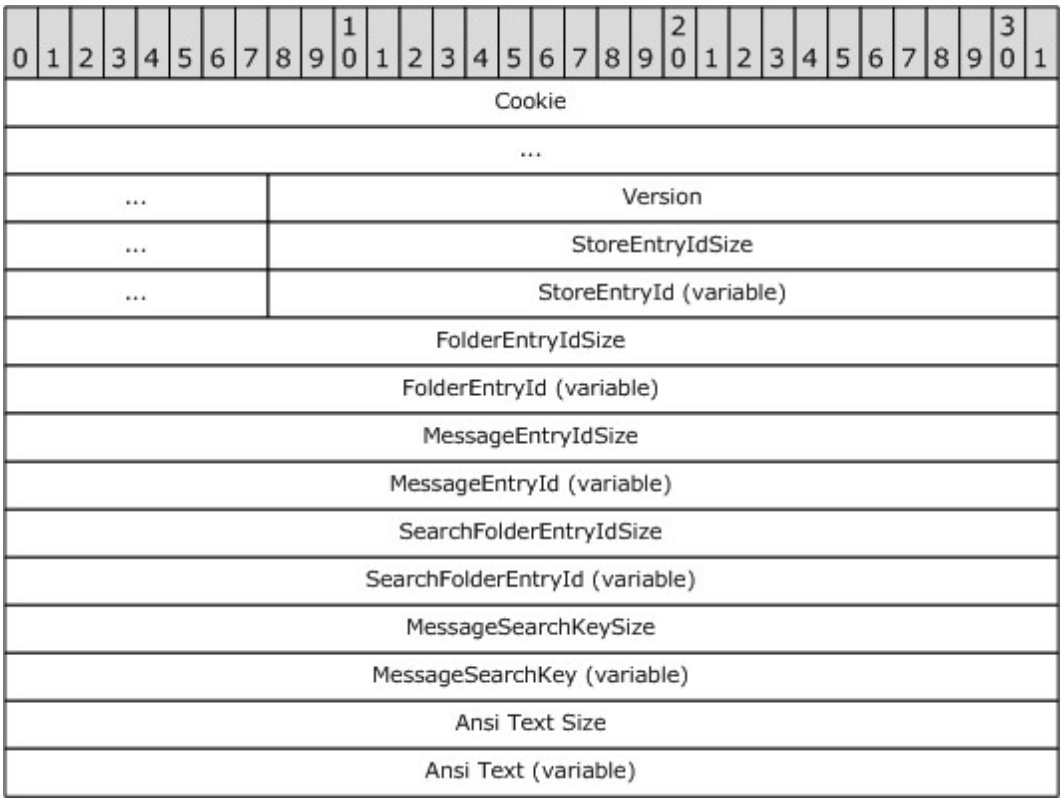
Type: **PtypBinary**

An optional binary property that can appear on a report message. Contains an address book search key, as specified in [MS-OXCDATA] section 2.8.3.2, representing the entity (usually a server agent) that generated the report message.

2.2.2.22 PidTagReportTag

Type: **PtypBinary**

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 set to "0x01" or the PidTagReplyRequested property set to "0x01", then the property is set on the original E-mail object by using the following format.



Cookie (9 bytes: string): Nine characters used for validation; set to "PCDFEB09".

Version (4 bytes): SHOULD be set to **CurrentVersion** (0x00010002), but an application SHOULD also recognize **NoSearchFolderVersion** (0x00010001).

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

StoreEntryId (variable length of bytes): If **StoreEntryIdSize** is "0x00000000", then this field is omitted. If the size is not zero, then this field is filled with the number of bytes specified by **StoreEntryIdSize**.

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

FolderEntryId (variable length of bytes): If **FolderEntryIdSize** is "0x00000000", then this field is omitted. If the size is not zero, then the field is filled with the number of bytes specified by **FolderEntryIdSize**.

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

MessageEntryId (variable length of bytes): If **MessageEntryIdSize** is "0x00000000", then this field is omitted. If the size is not zero, then the field is filled with the number of bytes specified by **MessageEntryIdSize**.

SearchFolderEntryIdSize (4 bytes): If **Version** equals the **CurrentVersion**, then this field is the real size of **SearchFolderEntryId**. Otherwise, this field is set to "0x00000000".

SearchFolderEntryId (variable length of bytes): If **SearchFolderEntryIdSize** is "0x00000000", then this field is omitted. If the size is not zero, then the field is filled with the number of bytes specified by **SearchFolderEntryIdSize**.

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

MessageSearchKey (variable length of bytes): If **MessageSearchKeySize** is "0x00000000", then this field is omitted. If the size is not zero, then the field is filled with the number of bytes specified by **MessageSearchKeySize**.

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

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

2.2.2.23 PidTagReportText

Type: **PtypString**

Contains the optional text for a report message. If this property is present, the server sets it to user-readable text of the report message.

2.2.2.24 PidTagReadReceiptEntryId

Type: **PtypBinary**

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 is set to "0x01". This property can be absent, in which case, the PidTagReportEntryId property is used as an alternative value. If neither property is present, the PidTagSenderEntryId property value is used to identify the user who receives the read receipt.

2.2.2.25 PidTagReadReceiptSearchKey

Type: **PtypBinary**

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 is set to "0x01". The property can be absent, in which case, the PidTagReportSearchKey property value is used as an alternative. If neither property is present, the PidTagSenderSearchKey property value is used to identify the user who receives the read receipt.

2.2.2.26 PidTagSubjectPrefix

Specified in section 2.2.1.50.<3>

2.2.3 EMail Submission Properties

The following properties are specified in [MS-OXPROPS], and are properties of the recipients identified in the recipient table. These properties are used to control server behavior during message submission. All property value types (**PtypBinary**, **PtypInteger32**, and so on) are defined in [MS-OXCDATA] section 2.11.1.

2.2.3.1 PidTagRecipientType

Type: **PtypInteger32**

Represents the recipient type of a recipient on the message. This property is set on each recipient. The format of this property is listed in the following table.

Value	Description
0x00000000	The recipient is the message originator.
0x00000001	The recipient is a primary recipient.
0x00000002	The recipient is a carbon copy (Cc) recipient.
0x00000003	The recipient is a blind carbon copy (Bcc) recipient.

Additionally, the flags in the following table can be combined with the values listed in the previous table.

Flag	Description
0x10000000	If a message failed to be delivered to some recipients, the client can mark the message as a **resend message** by setting the mfResend bit (0x00000080) in the PidTagMessageFlags property. Combining this flag with the value of the PidTagRecipientType property indicates that the server MUST resend the message to the recipient.
0x80000000	On a resend message, the recipient received the message successfully and does not need to receive it again. The server MUST NOT send the resend message to the recipient.

2.2.3.2 PidTagDeferredSendNumber

Type: **PtypInteger32**

When sending a message is deferred, the PidTagDeferredSendNumber property SHOULD be set along with the PidTagDeferredSendUnits property if the PidTagDeferredSendTime property is absent. The value is set between "0x00000000" and "0x000003E7" (0 and 999).

PidTagDeferredSendNumber is used for computing PidTagDeferredSendTime when PidTagDeferredSendTime is not present. For more details about PidTagDeferredSendUnits and PidTagDeferredSendTime, see sections 2.2.3.3 and 2.2.3.4 respectively.

2.2.3.3 PidTagDeferredSendUnits

Type: **PtypInteger32**

Specifies the unit of time that the PidTagDeferredSendNumber property value is multiplied by. For more details about the PidTagDeferredSendTime property, see section 2.2.3.4. If set, PidTagDeferredSendUnits has one of the values listed in the following table.

PidTagDeferredSendUnits	Description
0x00000000	Minutes; for example, 60 seconds.
0x00000001	Hours; for example, 60x60 seconds.

PidTagDeferredSendUnits	Description
0x00000002	Day; for example, 24x60x60 seconds.
0x00000003	Week; for example, 7x24x60x60 seconds.

2.2.3.4 PidTagDeferredSendTime

Type: **PtypTime**

Can be present if a client would like to defer sending the message after a certain amount of time.

If PidTagDeferredSendUnits and PidTagDeferredSendNumber are present, the value of PidTagDeferredSendTime 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 in PidTagDeferredSendUnits.

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

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

2.2.3.5 PidTagExpiryNumber

Type: **PtypInteger32**

Used along with PidTagExpiryUnits to define the expiry send time. If PidTagExpiryNumber is present, the value is set between "0x00000000" and "0x000003E7" (0 and 999).

2.2.3.6 PidTagExpiryUnits

Type: **PtypInteger32**

Used to describe the unit of time that PidTagExpiryNumber multiplies. If set, PidTagExpiryUnits is one of the values listed in the following table.

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

2.2.3.7 PidTagExpiryTime

Type: **PtypTime**

Can be present when a client wants to receive an expiry event if the message arrives late.

If PidTagExpiryNumber and PidTagExpiryUnits are present, the value of PidTagExpiryTime is recomputed by the following formula and the original value is ignored.

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

2.2.3.8 PidTagDeleteAfterSubmit

Type: **PtypBoolean**

Indicates that the original message MUST be 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	Description
0x00	Do not delete the original message after it is sent.
0x01	Delete the original message after it is sent.

2.2.3.9 PidTagMessageDeliveryTime

Type: **PtypTime**

The server sets the value of this property to the current time (in UTC) when it receives a message.

2.2.3.10 PidTagSentMailSvrEID

Type: **PtypServerId**

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 Mail 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

Type: **PtypTime**

The server sets the value of this property to the current time (in UTC) when the e-mail message is submitted.

2.2.4 ROPs Used in Sending Message

The format of the RopSubmitMessage and RopAbortSubmit request and response buffers is specified in [MS-OXCROPS] section 2.2.7.1 and [MS-OXCROPS] section 2.2.7.2 respectively.

2.2.4.1 RopSubmitMessage

A RopSubmitMessage request is sent to the server when the client has an E-mail object to send.

The client MUST log on as a user with sufficient permissions to write messages because the server needs to modify certain properties (section 3.2).

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 RopOpenMessage or RopCreateMessage request.

When a message is submitted, any pending changes on the message are saved to the server.

2.2.4.1.1 Request Buffer

SubmitFlags (1 byte): When the client submits the message, the **SubmitFlags** value indicates how the message is to be delivered. The following table lists the possible values.

Name	Value	Description
None	0x00	None.
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 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return values.

Name	Value	Meaning
ecNone	0x00000000	Success.
ecShutoffQuotaExceeded	0x000004DD	Indicates that the maximum storage shut-off quota has been exceeded.
ecQuotaExceeded	0x000004D9	Indicates that the storage quota is exceeded for the mailbox, but the user can still receive mail.
ecNotSupported	0x80040102	Indicates that the Server object that is associated with the input handle index in the Server object table is not of type message or the current logon session is a public logon.
ecTooManyRecips	0x00000505	Indicates that the number of recipients on the message exceeds the allowed limit. If this error occurs, none of the recipients will receive this message.
ecAccessDenied	0x80070005	Indicates that the message is a folder associated information (FAI) message.
ecRequiresRefResolve	0x0000047E	Indicates that the attachments contain references to paths that are inaccessible to the server and need to be resolved.

2.2.4.2 RopAbortSubmit

Before an E-mail object is actually processed by the server or a client **mail spooler**, a client can send a RopAbortSubmit request 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.

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

2.2.4.2.1 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return values.

Name	Value	Meaning
ecNone	0x00000000	Success.
ecUnableToAbort	0x80040114	The operation cannot be aborted.
ecNotInQueue	0x80040601	The message is no longer in the message store's spooler queue.
ecNotSupported	0x80040102	The **Server object** associated with the input handle index in the Server object table is not of type logon or the current logon session is a public logon.
ecNotFound	0x8004010F	The parent folder ID (FID) or message ID (MID) is invalid.

2.2.4.3 RopGetAddressTypes

A RopGetAddressTypes request is sent by a client to retrieve the address types of recipients that are supported by the server.

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

2.2.4.3.1 ResponseBuffer

ReturnValue (4 bytes): The following table lists the valid return values.

Name	Value	Meaning
ecNone	0x00000000	Success.
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.<4>
ecNotSupported	0x80040102	The server does not support returning address types.

Also in the response buffer, address types are returned in the format specified in the following diagram.

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

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

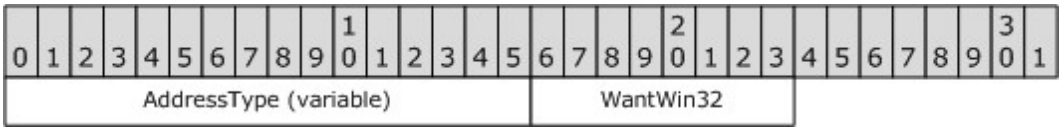
AddressTypes (variable): An array of null-terminated **ASCII** strings, each of which represents an address type. Examples of address types are: "EX", "MAPIPDL", "SMTP", "MHS", "PROFS", "X400".

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

A RopOptionsData request is sent by a client to retrieve the options data that is associated with an address type of recipients supported by the server. For more details about RopOptionsData, see [MS-OXCROPS] section 2.2.7.9.

2.2.4.4.1 Request Buffer



AddressType (variable): Null-terminated ASCII string. This value specifies the address type for which to return options. For details about address types, see section 2.2.4.3.1.

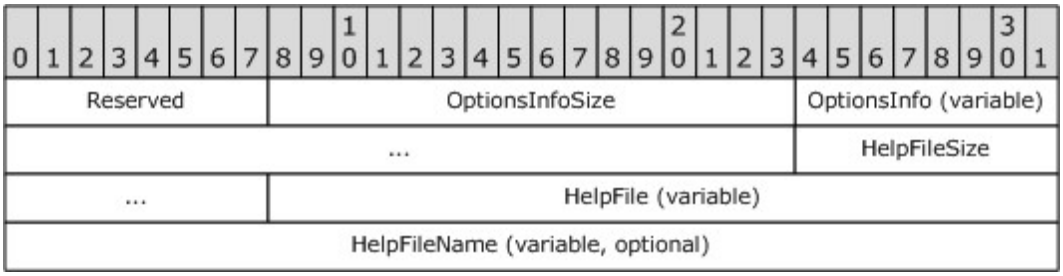
WantWin32 (1 byte): 8-bit **Boolean**. This value specifies whether the help file data to be returned is in a format suited for 32-bit machines.

2.2.4.4.2 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return values.

Name	Value	Meaning
ecNone	0x00000000	Success.
ecRpcFormat	0x000004B6	Buffer does not contain expected data. (server).

Additional fields are returned in the response buffer as specified in the following diagram.



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

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

OptionsInfo (variable): 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 SHOULD return this field as an empty array.<5>

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

HelpFile (variable): 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 MAY NOT be present.

HelpFileName (variable, optional): Null-terminated ASCII 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 EMail Sending and Delivery ROPs

The following ROP requests can be used by a client if it needs 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

The RopSetSpooler request is sent to inform the server that the client intends to act as a mail spooler. The syntax of the RopSetSpooler request and response buffers are specified in [MS-OXCROPS] section 2.2.7.4. This section specifies the syntax and semantics of various fields that are not fully specified in [MS-OXCROPS]. The server allows multiple clients to act as spoolers.

2.2.5.1.1 Request Buffer

InputHandleIndex: The input handle for this operation is a Logon object handle.

2.2.5.1.2 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return value.

Name	Value	Meaning
ecNone	0x00000000	Success.

2.2.5.2 RopGetTransportFolder

The RopGetTransportFolder request is sent to retrieve the FID of the transport folder. Outgoing messages can be stored in this folder before a RopTransportSend request is issued. The syntax of the RopGetTransportFolder request and response buffers 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 Request Buffer

InputHandleIndex: The input handle for this operation is a Logon object handle.

2.2.5.2.2 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return values.

Name	Value	Meaning
ecNone	0x00000000	Success.
ecNullObject	0x000004B9	The input handle is not valid.<6>

Name	Value	Meaning
ecLoginFailure	0x80040111	The Logon object handle is not valid.<7>

FolderID: Contains the FID of the transport folder.

2.2.5.3 RopSpoolerLockMessage

The RopSpoolerLockMessage request is sent to lock the specified message for spooling. When a message is locked, the server MUST deny RopAbortSubmit requests and other requests to lock or access the message. 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. The syntax of the RopSpoolerLockMessage request and response buffers 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 Request Buffer

InputHandleIndex (1 byte): The input handle for this operation is a Logon object handle.

MessageId (8 bytes): Specifies the message to be locked.

LockState (1 byte): Specifies a status to set on the message. The following table lists the valid values.

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. The server moves or deletes the message based on the presence of the PidTagSentMailSvrEID and PidTagDeleteAfterSubmit properties on the message, as specified in sections 2.2.3.10 and 2.2.3.8 respectively.

2.2.5.3.2 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return values.

Name	Value	Meaning
ecNone	0x00000000	Success.
ecNoSupport	0x80040102	The server does not support sent message processing, or if the client is not the spooler.
ecNotInQueue	0x80040601	An attempt was made to lock an already locked message.

2.2.5.4 RopTransportSend

The RopTransportSend request is used to have the server send an e-mail message to recipients. The message to be sent is identified by the handle index, which is maintained by both the server and the client. The syntax of the RopTransportSend request and response buffers is specified in [MS-OXCROPS]. This section specifies the syntax and semantics of various fields that are not fully

specified in [MS-OXCROPS]. If there was a failure to submit the message, the ROP does not fail – in this case, the server generates an **NDR** to the message instead.

2.2.5.4.1 Request Buffer

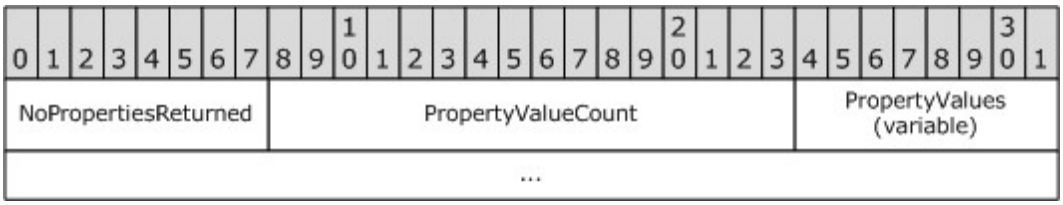
InputHandleIndex (1 byte): The input handle for this operation is the handle of the Message object to be sent.

2.2.5.4.2 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return values.

Name	Value	Meaning
ecNone	0x00000000	Success.
ecNotMe	0x80040502	The server could not handle the message and the message was not sent. The client SHOULD try another server if one is available.

Following the **ReturnValue**, the following fields are returned.



NoPropertiesReturned (1 byte): "0x00" if properties are returned; otherwise, "0x01".

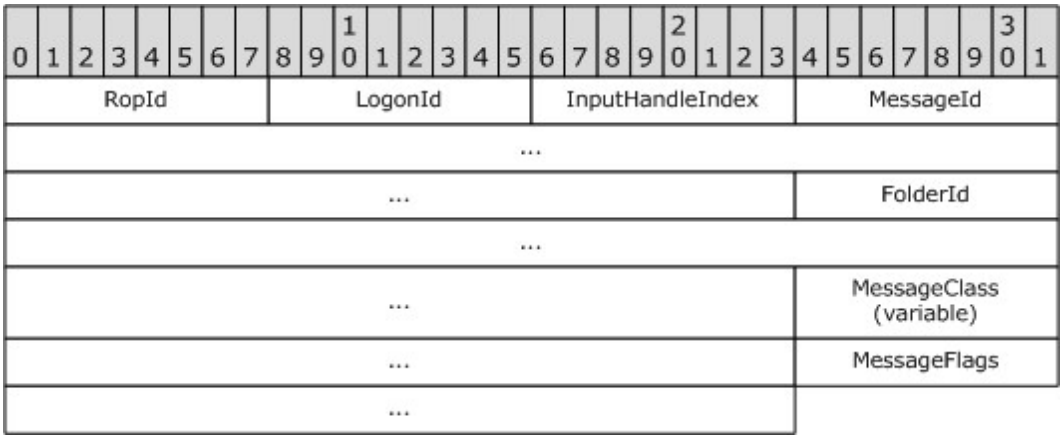
PropertyValueCount (2 bytes): The number of properties in the following **PropertyValues** array. Only exists if **NoPropertiesReturned** is "0x00".

PropertyValues (variable): A **PropertyTagArray**, as specified in [MS-OXCDATA] section 2.11. This field contains the properties set on the message by the server in the process of sending the message. Only exists if **NoPropertiesReturned** is "0x00". This field contains **PropertyValueCount** tags.

2.2.5.5 RopTransportNewMail

The RopTransportNewMail request is used notify the server of new mail delivered to the message store. The syntax of the RopTransportNewMail request and response buffers 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 Request Buffer



InputHandleIndex (1 byte): The input handle for this operation is a Logon object handle.

MessageId (8 bytes): Specifies the MID of the new message.

FolderId (8 bytes): Specifies the location of the new message.

MessageClass (variable): Zero-terminated ANSI string that specifies the value of PidTagMessageClass of the message.

MessageFlags (4 bytes): Specifies the value of PidTagMessageFlags of the message.

2.2.5.5.2 Response Buffer

ReturnValue (4 bytes): The following table lists the valid return value.

Name	Value	Meaning
ecNone	0x00000000	Success.

3 Protocol Details

3.1 Client 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 E-mail Object Protocol abstract data model extends objects specified by other protocols, as listed in the following table.

Object	Protocol
Property Property Bag Messaging Item	[MS-OXPROPS] [MS-OXCMSG]
Messaging User	[MS-OXCDATA] **RecipientRow** structure, [MS-OXOABKT]
Store	[MS-OXCSTOR]
Folder	[MS-OXCFOLD], [MS-OXOSFLD]

An E-mail object is a type of property bag, distinguished from other messaging items and property bag types by its default storage location, its **message class** (the value of its PidTagMessageClass property), and the inclusion of certain **subobjects**, as specified in the following sections.

3.1.1.1 Storage

An E-mail object is a messaging object with a message class of "IPM.Note". By default, a client implementation stores e-mail items in a Folder object that has the Container class of "IPF.Note".

From the point of view of the currently logged on messaging user, an E-mail object is either a send note, meaning that the e-mail is to be or has been sent to an external messaging user or user agent, or it is a receive note, meaning that the e-mail was sent to the current messaging user from an external user or user agent.

Within these groupings, an e-mail exists in one of a small number of abstract states, which determines the default storage location for that particular E-mail object, as specified in the following table.

E-mail State	Description	Special Folder
Saved	A send note stored within an **Inter-Personal Mail (IPM)** folder within a store object.	**Drafts folder**
Submitted	A send note that is marked to be sent by the server.	**Outbox folder**
Sent	A send note that has been claimed by the messaging transport	Sent Items folder

E-mail State	Description	Special Folder
	for delivery to another messaging user.	
Received	A receive note that has been placed in the default **Receive folder** by the server.	**Inbox folder** (default Receive folder)

3.1.1.2 Core Objects

The following are the abstract subobjects that are required for every E-mail object:

- Sender
- Recipients
- Subject
- Body

3.1.1.2.1 Sender Subobject

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 message appears to have been sent by the actual sender of the message. In some cases, however, a 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.

3.1.1.2.1.1 Represented Sender

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

- PidTagSentRepresentingAddressType
- PidTagSentRepresentingEmailAddress
- PidTagSentRepresentingEntryId
- PidTagSentRepresentingName
- PidTagSentRepresentingSearchKey
- PidTagOriginalSentRepresentingAddressType
- PidTagOriginalSentRepresentingEmailAddress
- PidTagOriginalSentRepresentingEntryId
- PidTagOriginalSentRepresentingName
- PidTagOriginalSentRepresentingSearchKey

3.1.1.2.1.2 Actual Sender

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

- PidTagSenderAddressType
- PidTagSenderEmailAddress
- PidTagSenderEntryId
- PidTagSenderName
- PidTagSenderSearchKey
- PidTagOriginalSenderAddressType
- PidTagOriginalSenderEmailAddress
- PidTagOriginalSenderEntryId
- PidTagOriginalSenderName
- PidTagOriginalSenderSearchKey

3.1.1.2.2 Recipients Subobject

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

3.1.1.2.2.1 Represented Recipients

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

- PidTagReceivedRepresentingAddressType
- PidTagReceivedRepresentingEmailAddress
- PidTagReceivedRepresentingEntryId
- PidTagReceivedRepresentingName
- PidTagReceivedRepresentingSearchKey

3.1.1.2.2.2 Actual Recipients

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

- PidTagMessageRecipientMe
- PidTagReceivedByAddressType

- PidTagReceivedByEmailAddress
- PidTagReceivedByEntryId
- PidTagReceivedByName
- PidTagReceivedBySearchKey
- PidTagRecipientType

3.1.1.2.2.3 Other From Properties

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

The following are the from properties that are associated with To recipients:

- PidTagDisplayTo
- PidTagMessageToMe
- PidTagOriginalDisplayTo

The following are the from properties that are associated with Cc recipients:

- PidTagDisplayCc
- PidTagMessageCcMe
- PidTagOriginalDisplayCc

The following are the from properties that are associated with Bcc recipients:

- PidTagDisplayBcc
- PidTagOriginalDisplayBcc

3.1.1.2.3 Subject Subobject

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

- PidTagNormalizedSubject
- PidTagSubjectPrefix
- PidTagOriginalSubject

3.1.1.2.4 Body Subobject

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

- PidTagBlockStatus
- PidTagBody

- PidTagBodyHtml
- PidTagRtfCompressed
- PidTagRtfInSync
- PidTagMessageEditorFormat

3.1.1.3 Other Informational Messaging Properties

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 are the subobjects, along with their associated properties:

- Conversations
- PidTagConversationIndex
- PidTagConversationTopic

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 PidTagConversationTopic and PidTagConversationIndex.

- Client Options
- PidTagIconIndex
- PidTagMessageClass
- PidTagReadReceiptRequested
- PidTagReadReceiptEntryId
- PidTagReadReceiptSearchKey
- PidTagOriginalSensitivity
- PidTagRecipientReassignmentProhibited
- PidTagReplyRequested
- PidTagResponseRequested
- PidTagReplyRecipientEntries
- PidTagReplyRecipientNames
- PidLidAutoProcessState
- PidLidVerbStream
- PidLidVerbResponse

3.1.1.4 Message Delivery Properties

Many properties are set by the messaging system itself or by a client implementation to control the behavior of the messaging system. The following are these properties:

- PidTagExpiryTime

- PidTagInternetMessageId
- PidTagOriginatorDeliveryReportRequested
- PidTagOriginatorNonDeliveryReportRequested
- PidTagSendRichInfo
- PidTagTransportMessageHeaders
- PidTagOriginalDeliveryTime
- PidTagOriginalSubmitTime
- PidTagParentKey
- PidTagReportTag
- PidTagReportText
- PidTagMessageFlags
- PidTagMessageDeliveryTime
- PidTagDeferredSendNumber
- PidTagDeferredSendUnits
- PidTagDeferredSendTime
- PidTagExpiryNumber
- PidTagExpiryUnits

3.1.2 Timers

None.

3.1.3 Initialization

A client can choose to control how mail is sent to the mail transport by implementing its own mail spooler. To do so, the client sends the RopSetSpooler request after logging on to the server by using RopLogon. The client also needs to save the FID of the spooler queue folder retrieved from the RopLogon request for later use.

3.1.4 Higher-Layer Triggered Events

3.1.4.1 Sending a Message

A client sends a message by sending a RopSubmitMessage request 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 to instruct the server on how to properly process the message.

3.1.4.1.1 Represented Sender Properties

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

3.1.4.1.2 Actual Sender Properties

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

3.1.4.1.3 Sending the Message as the Sender Itself

When a user intends to represent him 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 itself.

3.1.4.1.4 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. For more details, see [MS-OXODLGT] section 3.1.4.6.

3.1.4.2 Deferring Sending a Message

A client can set PidTagDeferredSendTime to send a message at a later time.

If both PidTagDeferredSendNumber and PidTagDeferredSendUnits are present, PidTagDeferredSendTime SHOULD be computed from PidTagDeferredSendNumber and PidTagDeferredSendUnits.

3.1.4.3 Sending a Message with Expiry Time

A client can set PidTagExpiryTime to set an expiry time on a message.

If both PidTagExpiryNumber and PidTagExpiryUnits are present, PidTagExpiryTime SHOULD be computed from PidTagExpiryNumber and PidTagExpiryUnits.

3.1.4.4 Optimizing Send

When a messaging client sends a message in a client implementation of an optimization, the client can set the PidTagTargetEntryId value to the PidTagEntryId value 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 PidTagTargetEntryId to optimize the operation by moving a copy of the submitted Message object to the Sent Mail folder instead of requiring the client to upload the Message object content again. For more details about the server operation, see section 3.2.5.1.2.8.

3.1.4.5 Resending a Message

If a message fails to be delivered to all recipients, a client can mark this message as re-send by setting **mfResend** in the PidTagMessageFlags property.

The server will attempt to re-deliver this message only to the recipients who did not get the message in the previous delivery attempt.

3.1.5 Message Processing Events and Sequencing Rules

3.1.5.1 Client-to-Client Interop: Voting

Voting is composed of a specific set of properties on a message that is used to communicate voting options and responses to one another. An overview of the sequence of events is as follows:

- A client (sender) sends a voting message to a variety of recipients (voters). This message contains a well-formed PidLidVerbStream, as specified in section 2.2.1.64, but is otherwise identical to a non-voting message.
- The voters, upon receiving the message and displaying it to the user, take note of the existence of the PidLidVerbStream and use the property information to display an additional voting user interface to the user.
- If and when a voter selects a voting option, a specifically crafted response mail is generated and addressed to the sender.
- 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 non-voting messages except for the presence of the PidLidVerbStream and PidLidVerbResponse properties.

3.1.5.1.1 Sending a Voting Message

A client that wants to associate a series of voting options with a message sets the PidLidVerbStream property as specified in section 2.2.1.64.

3.1.5.1.2 Interpreting a Voting Message

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

3.1.5.1.3 Crafting a Voting Response Message

A voting response message MUST contain all of the following:

- PidTagSubjectPrefix set to the **DisplayName** of the voting option chosen by the user.
- PidLidVerbResponse set to the voting option chosen by the user (section 2.2.1.65).

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 SendPrompt, and if the user selects "Edit", the appropriate user interface (as determined by the implementation) is displayed to allow the user to edit the automatically generated response.

3.1.5.1.4 Aggregating Voting Responses

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

3.1.5.2 Controlling the Sending of Mail

When a client wants to control the specific server that sends a message, the message is sent by using the RopSubmitMessage request with the **NeedsSpooler** flag (0x02) set. The message is then put into the spooler queue folder of the message store on the server.

3.1.5.3 Processing a Mail 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 request 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 request to retrieve the FID 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 request to have that server deliver the message. If the client handles delivering the mail itself, it sets the R flag (0x8000) of the **RecipientFlags** field of each recipient in the recipient table that it successfully delivers mail to.

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

3.1.5.4 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 request for each mail delivered to inform the server of the new mail so that the server can do new mail processing.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

3.2 Server Details

3.2.1 Abstract Data Model

The server role for the E-mail Object Protocol follows the abstract data model specified by the Message and Attachment Object Protocol ([MS-OXCMSG]).

3.2.2 Timers

None.

3.2.3 Initialization

None.

3.2.4 Higher-Layer Triggered Events

None.

3.2.5 Message Processing Events and Sequencing Rules

3.2.5.1 Handling a RopSubmitMessage Request

The server performs the operations specified in the following sections on receipt of the RopSubmitMessage request.

3.2.5.1.1 Permission Check

There are restrictions on the messages that can be submitted. 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	Value
FAI message is submitted.	ecAccessDenied	0x80000009
Embedded message is submitted.	ecNotSupported	0x80040102
Upper limit of recipients is exceeded.	ecTooManyRecips	0x00000505
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.

3.2.5.1.2 Properties Read and/or Set Upon Submission

The following properties are checked and modified by the server on the submitted message.

3.2.5.1.2.1 PidTagSentMailSvrEID

If PidTagSentMailSvrEID is present, the message is copied to the folder identified by this property after the message is sent out.

3.2.5.1.2.2 PidTagDeleteAfterSubmit

If PidTagDeleteAfterSubmit is set to "0x01", the message is deleted after the message is sent.

3.2.5.1.2.3 PidTagClientSubmitTime

PidTagClientSubmitTime is set to the current time in UTC.

3.2.5.1.2.4 PidTagContentFilterSpamConfidenceLevel

The server SHOULD set PidTagContentFilterSpamConfidenceLevel to "0xFFFFFFFF" (-1). A client can use this value as part of junk e-mail or **spam** filtering. For more details, see [MS-OXCSPAM].

3.2.5.1.2.5 PidTagMessageLocaleId

The server SHOULD set PidTagMessageLocaleId to the current user logon's locale ID.

3.2.5.1.2.6 PidTagMessageFlags

If **mfResend** in the PidTagMessageFlags property is set, the message is considered a resend message and the server will only try to re-deliver the message to those recipients who failed to receive it previously. For more details, see section 3.2.5.1.2.7.

3.2.5.1.2.7 PidTagRecipientType

If a message is a resend message, and if a recipient's PidTagRecipientType has the "0x80000000" bit set, the server ignores this recipient; if a recipient's PidTagRecipientType has the "0x10000000" bit set, the server tries to re-deliver the message to this recipient.

3.2.5.1.2.8 PidTagTargetEntryId

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 new message's PidTagTargetEntryId value equal to the value of PidTagEntryId on the original message. Upon the invocation of RopSubmitMessage, the server creates a copy of the submitted message and sets the value of the PidTagEntryId property to the value obtained from PidTagTargetEntryId.

If the client sets the PidTagTargetEntryId property value, 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 PidTagEntryId 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 are specified in [MS-OXCSYNC] section 3.1.5.2.

The following table lists other properties that SHOULD be set at the same time as the PidTagTargetEntryId property.

Property	Value
PidTagEntryId	Contains the same value as PidTagTargetEntryId, if present. Otherwise, a new ID is generated by the server.
PidTagMessageFlags	The **mfUnsent** and **mfRead** bits MUST be cleared.
PidTagInternetMessageId	The value SHOULD be copied from the original message.

3.2.5.1.2.9 Represented Sender Properties

If the user or user agent who is sending the 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
- PidTagSentRepresentingEmailAddress
- PidTagSentRepresentingEntryId
- PidTagSentRepresentingName
- PidTagSentRepresentingSearchKey

3.2.5.1.2.10 Actual Sender Properties

If the 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
- PidTagSenderEmailAddress
- PidTagSenderEntryId
- PidTagSenderName
- PidTagSenderSearchKey

3.2.5.1.2.11 Deferred Properties

When a message arrives with the deferred send properties set, the server MUST honor the deferred send time.

For a message with both the PidTagDeferredSendNumber and PidTagDeferredSendUnits properties present, the server will recompute PidTagDeferredSendTime from PidTagDeferredSendNumber and PidTagDeferredSendUnits during message submission.

3.2.5.1.2.12 Expiry Properties

When a message arrives with the expiry properties set, the server MUST honor the expiry time.

For a message with both the PidTagExpiryNumber and PidTagExpiryUnits properties present, the server will recompute PidTagExpiryTime from PidTagExpiryNumber and PidTagExpiryUnits during message submission.

3.2.5.1.3 Rule Processing

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

3.2.5.2 Handling a RopAbortSubmit Request

When a message is submitted and is still queued on the server pending delivery, the submission can be terminated by sending a RopAbortSubmit request.

If the **mfSubmitted** bit of a submitted message's PidTagMessageFlags property has not been set yet, sending the RopAbortSubmit 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 has been set, the client will not be notified of the defer send event.

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

3.2.5.3 Handling a RopSetSpooler Request

When the RopSetSpooler request is received, the server marks the user logon to indicate that this is a spooler logon.

3.2.5.4 Handling a RopGetTransportFolder Request

The server MUST return a FID that identifies a folder that the client can use to temporarily store messages to be sent.

3.2.5.5 Handling a RopSpoolerLockMessage Request

On receipt of a RopSpoolerLockMessage, a server MUST take the actions listed in the following table based on the value of the **LockState** field.

Value	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"	Unlock the message.
"lstFinish"	Unlock the message and complete post-processing of sent mail as specified in section 2.2.5.3.

3.2.5.6 Delivering Mail on a RopSubmitMessage or RopTransportSend Request

When a client sends either the RopSubmitMessage request with the **NeedsSpooler** flag (0x02) not set, or the RopTransportSend request, the server is to attempt to send the e-mail message to the intended recipients. For each recipient in the recipient table that it can send the e-mail message to, it sets the R flag (0x8000) of the **RecipientFlags** field.

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

3.2.5.7 Handling a RopTransportNewMail Request

When a server receives a RopTransportNewMail request, it MUST notify all clients that are connected to the mailbox of the receipt of new mail by using RopNotify and a **NewMailNotification**, as specified in [MS-OXCDATA] section 2.6.1.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

4 Protocol Examples

This section includes examples of Message object operations that use sequences of ROP requests and 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 multi-byte 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, then compressed and packed in one or more RPC calls, as specified 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 wants 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)

LogonId: 0x00

InputHandleIndex: 0x02

SubmitFlags: 0x00 (None)

The first three bytes refer to the **RopId**, **LogonId**, and **InputHandleIndex**, which are the same for all ROPs specified in [MS-OXCROPS]. The **SubmitFlags** is None. The message identified by a **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)

InputHandleIndex: 0x02

ReturnValue: 0x00000000 (ecNone)

The response's **InputHandleIndex** is the same as the **InputHandleIndex** of the RopSubmitMessage 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, 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 of interest 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)

LogonId: 0x01

InputHandleIndex: 0x01

PropertyValueSize: 0x000E

PropertyValueCount: 0x0001

PropertyValues[0].PropertyTag: 0x3FEF0040 (PidTagDeferredSendTime)

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

...

RopId: 0x32 (RopSubmitMessage)

LogonId: 0x01

InputHandleIndex: 0x01

SubmitFlags: 0x00 (None)

The PidTagDeferredSendTime value of the message (identified by a **InputHandleIndex** of "0x01") 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)

InputHandleIndex: 0x01

ReturnValue: 0x00000000 (ecNone)

PropertyProblemCount: 0x0000

RopId: 0x32 (RopSubmitMessage)

InputHandleIndex: 0x01

ReturnValue: 0x00000000 (ecNone)

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

If the RopSubmitMessage was issued before UTC time 11:11:39 P.M. 02/14/2008, the message would be submitted immediately. If the RopSubmitMessage was issued after 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, 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)

LogonId: 0x00

InputHandleIndex: 0x00

FolderId: 0001-0003b479ca47 (the FID of the parent folder)

MessageId: 0001-0003b7e65fa7 (the MID of the message submitted)

The message identified by the **InputHandleIndex** "0x00" was submitted previously. While the message is still queued in the server, the client sends the RopAbortSubmit 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)

InputHandleIndex: 0x00

ReturnValue: 0x00000000 (ecNone)

The response message indicates that RopAbortSubmit succeeded. The message has been removed from the server. The mfUnsent bit is set (restored) and mfSubmitted bit is cleared on the message's PidTagMessageFlags property. Unless another RopSubmitMessage is issued on this Message object, the message will not be sent.

4.4 Sending an EMail 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 RopCreateMessage. The server returns a success code and a handle to a Message object. Joe types in 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 RopSetProperties to transmit Joe's e-mail message data to the server. The following table lists the values of each of the properties set by RopSetProperties.

Property	Property ID	Type	Value
PidTagBody	0x1000	0x001f (PtypString)	"Please sign the order request.\LF\CR"
PidTagMessageClass	0x001A	0x001F (PtypString)	"IPM.Note"
PidTagMessageFlags	0x0E07	0x0003 (PtypInteger32)	mfUnsent
PidTagConversationTopic	0x0070	0x001f (PtypString)	"Order Request"
PidTagConversationIndex	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	0x0017	0x0003 (PtypInteger32)	0x00000002 High Importance
PidTagMessageDeliveryTime	0x0E06	0x0040	2008/02/20 21:53:00.000

Property	Property ID	Type	Value
		(PtypTime)	
PidTagReadReceiptRequested	0x0029	0x000B (PtypBoolean)	0x01 (TRUE)
PidTagSentMailSvrEID	0x6740	0x00FB (PtypServerId)	21 bytes 01 01 00 00 00 00 f0 e7 c1 00 00 00 00 00 00 00 00 00 00 00 00
PidTagIconIndex	0x1080	0x0003 (PtypInteger32)	0xFFFFFFFF
PidTagMessageEditorFormat	0x5909	0x0003 (PtypInteger32)	0x00000001 plain text
PidTagPrimarySendAccount	0x0E28	0x001F (PtypString)	000000023659R9-A11/o=First Organization/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/ CN=recipients/CN=JoeHealy Microsoft Exchange
PidTagNextSendAcct	0x0E29	0x001F (PtypString)	000000023659R9-A11/o=First Organization/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/ CN=recipients/CN=JoeHealy Microsoft Exchange
PidTagMessageLocaleId	0x3FF1	0x0003 (PtypInteger32)	1033 (en-us)
PidTagReportTag	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 RopModifyRecipients. The following table lists the values of the **RecipientRow** elements.

RecipientRow element	Value	Description
RowID	0x00000001	Row ID number

RecipientRow element	Value	Description
RecipientType	0x00000001	Primary recipient
DataSize	399	
RecipientFlag	0x0651	AddressType.EXCH DisplayName XmitSameAsDisplay StandardPropsUnicode SimpleDisplayName
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	0x0FFE	0x0003 (PtypInteger32)	0x00000006 (MAILUSER)
PidTagDisplayType	0x3900	0x0003 (PtypInteger32)	0x00000000 DT_MAILUSER
PidTag7BitDisplayName	0x39FF	0x001F (PtypString)	Ed Banti
PidTagSmtpAddress	0x39FE	0x001F (PtypString)	edbanti@example.com
PidTagSendInternetEncoding	0x3A71	0x0003 (PtypInteger32)	0x00000000
PidTagNickname	0x6001	0x001F (PtypString)	edbanti@example.com
PidTagAccount	0x3A00	0x001F (PtypString)	edbanti
PidTagDisplayTypeEx	0x3905	0x0003 (PtypInteger32)	0x40000000
PidTagRecipientTrackStatus	0x5FFF	0x0003 (PtypInteger32)	0x00000000
PidTagRecipientResourceState	0x5FDE	0x0003 (PtypInteger32)	0x00000000
PidTagRecipientFlags	0x5FFD	0x0003 (PtypInteger32)	0x00000001

Property	PropertyID	Type	Value
PidTagRecipientDisplayName	0x5FF6	0x001F (PtypString)	Ed Banti
PidTagRecipientEntryId	0x5FF7	0x0102 (PtypBinary)	126 bytes (see the sample value for PidTagRecipientEntryId following this table)
PidTagRecipientOrder	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 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 RopSetProperties.

Property	PropertyID	Type	Value
PidTagSubjectPrefix	0x0003	0x001F (PtypString)	Empty string
PidTagNormalizedSubject	0x0E1D	0x001F (PtypString)	"Order Form Issue"

The client then sends a RopSubmitMessage request to ask server to deliver this e-mail message to Ed Banti and sends a RopRelease request 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 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 with "Yes", "No", and "Maybe" voting options. To do so, the client constructs the message to contain a PidLidVerbStream as specified in section 2.2.1.64.

The complete contents of PidLidVerbStream 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 2.2.1.64.

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

Version: 0x0102

Count: 0x00000003

This indicates that the structure contains three VoteOptions. The first VoteOption 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 (SendPrompt)

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** 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 protocol that is not the Office/Exchange protocol, but through some other standard such as POP3. Her personal e-mail is set to deliver mail to a folder in her work account.

4.6.1 Initialization

When the mail client first initializes, it sends a RopSetSpooler request to inform the server that the client wants to be responsible for routing mail 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)

LogonID: 0x06

InputHandleIndex: 0x00 (handle to the Logon object)

4.6.1.2 ROP Response Buffer

The server then returns a 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)

InputHandleIndex: 0x00

ReturnValue: ecNone (Success)

4.6.2 Submitting the Message to the Spooler Queue Folder

Ellen then sends a mail 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 of this folder is returned in the response buffer of a RopLogon request).

4.6.3 Locking the Message in the Spooler Queue Folder for Processing

Next, the client finds that a message has been placed in the spooler queue folder. Through an implementation-dependent mechanism, it determines that it can handle the message.<11> It sends the RopSpoolerLockMessage request 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)

LogonID: 0x06

InputHandleIndex: 0 (handle to the Logon object)

MessageId: 0001-0003bb9731a7

LockState: 0x00 (lock)

4.6.3.2 ROP Response Buffer

The server then returns a 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)

InputHandleIndex: 0x00

ReturnValue: ecNone (success) (0x00000000)

4.6.4 Determining the Transport Folder

The client determines which server to route the message to (Ellen's work server). The server can be the same as or different than the server that is holding the spooler queue. The client sends a RopGetTransportFolder request 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)

LogonID: 0x07

InputHandleIndex: 0x01 (handle to the Logon object)

4.6.4.2 ROP Response Buffer

The server then returns a response buffer with the FID 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)

InputHandleIndex: 0x01

ReturnValue: ecNone (success) (0x00000000)

FolderId: 0001-000000000025

4.6.5 Sending the Message

The client examines the locked message, performs any required processing (for example, it determines whether there are any recipients that it knows the server cannot deliver to), and creates a copy of the message to be delivered in the folder just retrieved by using the RopCreateMessage request ([MS-OXCMSG] section 2.2.3.2).

The client then sends a RopTransportSend request 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)

LogonID: 0x07

InputHandleIndex: 0x00 (handle to the message from RopCreateMessage)

4.6.5.2 ROP Response Buffer

The server then returns the following 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 00-00 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)

InputHandleIndex: 0x00

ReturnValue: ecNone (success) (0x00000000)

NoPropertiesReturned: 0x00 (FALSE)

PropertyValueCount: 0x08

PropertyValues: The following table describes the properties that are included in the response buffer.

Property ID	Property name	Type	Data
0x00480040	PidTagProviderSubmitTime	PtypTime	2008/05/06 17:46:09.035
0x00470102	PidTagMessageSubmissionId	PtypBinary	Error: 0x8004010f (MAPI_E_NOT_FOUND)
0x0C1A001E	PidTagSenderName	PtypString8	"user1"
0x0C190102	PidTagSenderEntryId	PtypBinary	See PidTagSenderEntryId data following the table (1).
0x0C1D0102	PidTagSenderSearchKey	PtypBinary	See PidTagSenderSearchKey data following the table (2).
0x0042001E	PidTagSentRepresentingName	PtypString8	"user1"
0x00410102	PidTagSentRepresentingEntryId	PtypBinary	See PidTagSentRepresentingEntryId data following the table (3).
0x003B0102	PidTagSentRepresentingSearchKey	PtypBinary	See PidTagSentRepresentingSearchKey data following the table (4).

PidTagSenderEntryId data (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.
```

PidTagSenderSearchKey data (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.
```

PidTagSentRepresentingEntryId data (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.
```

PidTagSentRepresentingSearchKey data (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 request with the finish flag to the server to have it perform any post-processing 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)

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 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)

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 ([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 released service packs:

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

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

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

<1> Section 2.2.1.2: The computed property, PidTagConversationId, is only implemented by Outlook 2010 and Exchange 2010.

<2> Section 2.2.1.6: The PidTagDeferredDeliveryTime property is used by Exchange 2003. In Exchange 2007, only PidTagDeferredSendTime is used.

<3> Section 2.2.2.26: On report messages, the value of the PidTagSubjectPrefix property is set as :Delivery receipts: "Delivered: "Read receipts: "Read:"Sender Response on read receipt request: "Approved:"Non-deliverable reports: "Undeliverable:"Non-read receipts: "Not Read:""read:".

<4> Section 2.2.4.3.1: Exchange 2007 SP2 returns ecNone (0x00000000) instead of ecNullObject when an invalid object handle reference is passed to RopGetAddressTypes.

<5> Section 2.2.4.4.2: Exchange 2003, Exchange 2007, and Exchange 2010 do not return an empty array.

<6> Section 2.2.5.2.2: On Exchange 2003 and Exchange 2007, RopGetTransportFolder returns ecNone instead of ecNullObject when an invalid input handle is provided.

<7> Section 2.2.5.2.2: On Exchange 2003 and Exchange 2007, RopGetTransportFolder returns ecNone instead of ecLoginFailure when an invalid login object handle is provided.

<8> Section 3.1.5.1.2: Office Outlook 2007 also uses PidLidVerbStream for non-voting-related actions 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 non-voting-related actions; 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, Office Outlook 2007 SP1 ignores **VoteOption** structures with unknown **VerbTypes**.

<9> Section 3.1.5.1.4: 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 recipients table for the recipient who sent the response to store the index of their response. If the user opens a voting message from the Sent Mail folder, it then sums the total of each response received thus far from the recipient table and displays it to the user.

<10> Section 3.1.5.3: Office Outlook 2003 and Office Outlook 2007 set the PidTagNextSendAcct property to a user-specified value before submitting the message by using RopSubmitMessage to inform the spooler of the desired mail transport to use.

<11> Section 4.6.3: Office Outlook 2003 and Office Outlook 2007 examine the property PidTagNextSendAcct.

7 Change Tracking

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

8 Index