

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

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Revision Summary			
Author	Date	Version	Comments
Microsoft Corporation	April 4, 2008	0.1	Initial Availability.
Microsoft Corporation	April 25, 2008	0.2	Revised and updated property names and other technical content.
Microsoft Corporation	June 27, 2008	1.0	Initial Release.

Microsoft Corporation	August 6, 2008	1.01	Updated references to reflect date of initial release.
Microsoft Corporation	September 3, 2008	1.02	Revised and edited technical content.
Microsoft Corporation	October 1, 2008	1.03	Revised and edited technical content.
Microsoft Corporation	December 3, 2008	1.04	Revised and edited technical content.

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# 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-OXGLOS]:

**address book**  
**ANSI character set**  
**ASCII**  
**big-endian**  
**blind carbon copy (Bcc) recipient**  
**body part**  
**carbon copy (Cc) recipient**  
**Coordinated Universal Time (UTC)**  
**Drafts folder**  
**EntryID**  
**folder associated information (FAI)**  
**folder ID (FID)**  
**Folder object**  
**from properties**  
**GUID**  
**handle**  
**Hypertext Markup Language (HTML)**  
**Inbox folder**  
**Inter-Personal Mail (IPM)**  
**little-endian**  
**Logon object**  
**message ID (MID)**  
**Message object**  
**MIME**  
**non-delivery receipt (NDR)**  
**Outbox folder**  
**Post Office Protocol -Version 3 (POP3)**  
**primary recipient**  
**property (3)**

**property ID**  
**recipient**  
**remote operation (ROP)**  
**remote procedure call (RPC)**  
**Rich Text Format (RTF)**  
**ROP request buffer**  
**ROP response buffer**  
**search folder**  
**sender properties**  
**Sent Items folder**  
**Simple Mail Transfer Protocol (SMTP)**  
**spam**  
**store**  
**Store object**  
**subobject**  
**To recipient**  
**Transport Neutral Encapsulation Format (TNEF)**  
**Unicode**

The following terms are specific to this document:

**conversation thread:** A series of messages and their responses (usually related by subject).

**E-mail object:** A **Message object** that represents an e-mail message in a messaging **store** and that adheres to the **property** specifications in this document. An **E-mail object** models the electronic equivalent of mail.

**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 the sending or receipt of mail.

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

**recipient properties:** A group of properties that identify an intended **recipient** or **recipients** of a **message**.

**resend message:** A message that is submitted for message delivery after it has 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 has been encoded by using the uuencode utility, as defined 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

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

[MS-OXCADATA] Microsoft Corporation, "Data Structures Protocol Specification", June 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, Allow and Block Lists 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-OXGLOS] Microsoft Corporation, "Exchange Server Protocols Master Glossary", June 2008.

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

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

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

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

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

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

## 1.2.2 Informative References

None.

## 1.3 Protocol 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 specified 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 E-Mail Objects

### 1.3.1.1 Creating, Opening, and Saving E-Mail Objects

**E-mail objects** adhere to the specifications in [MS-OXCMMSG].

### 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**. Nonread 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. Nondelivery receipt 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 Nonread Receipt

A nonread receipt is generated during e-mail message deletion operations, as specified in [MS-OXCFCOLD], at the expiration of a time limit, or according to client-specific criteria. A

nonread 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 **Nondelivery Receipt**

A nondelivery 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**. Nondelivery receipts are sent automatically unless a request is made to suppress them.

### 1.3.2.5 **Voting and Tracking**

Voting and tracking capabilities are an extension of the **E-mail object**. When composing a survey-type e-mail message, a client can add voting options to the e-mail message by setting voting verb properties as specified in section 2.2.1.60 on an outgoing message and send it to **recipients**. 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 2.2.1.61.

## 1.3.3 **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 **POP3** messages), it can inform the server of the new mail through **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 **MUST** 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 **MUST** 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 **MUST** return an error and ignore any request to change the value of that property.

### 2.2.1 E-Mail Object Properties

The following properties are specific to **E-mail objects**.

#### 2.2.1.1 PidTagBlockStatus

Type: **PtypInteger32**

Indicates the user's preference for viewing external content (such as links to images on an HTTP server) in the message body. A client MAY 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 UTC. Apply the following formula:

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

where *floor(x)* returns the largest integer  $\leq x$ .

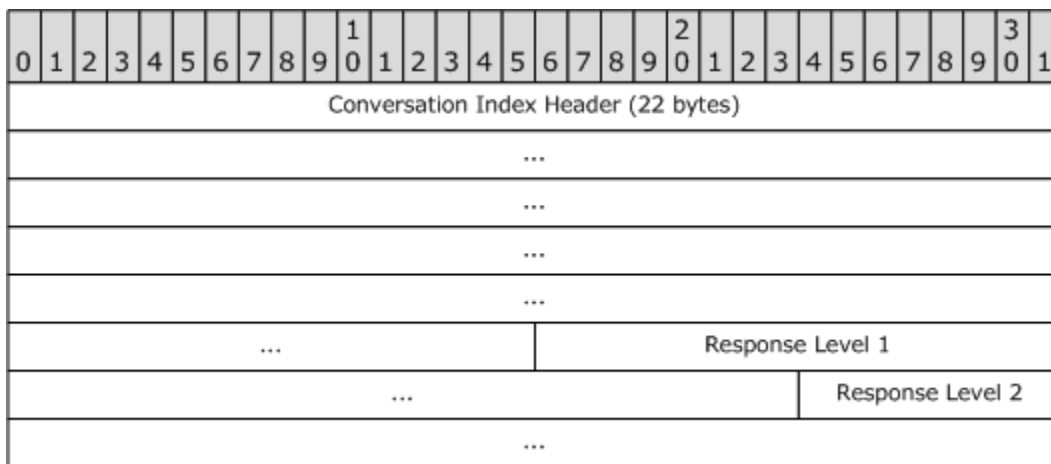
Convert the **PtypDouble** value *result* to a 32-bit integer *computedvalue*.

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 one or less.

### 2.2.1.2 PidTagConversationIndex

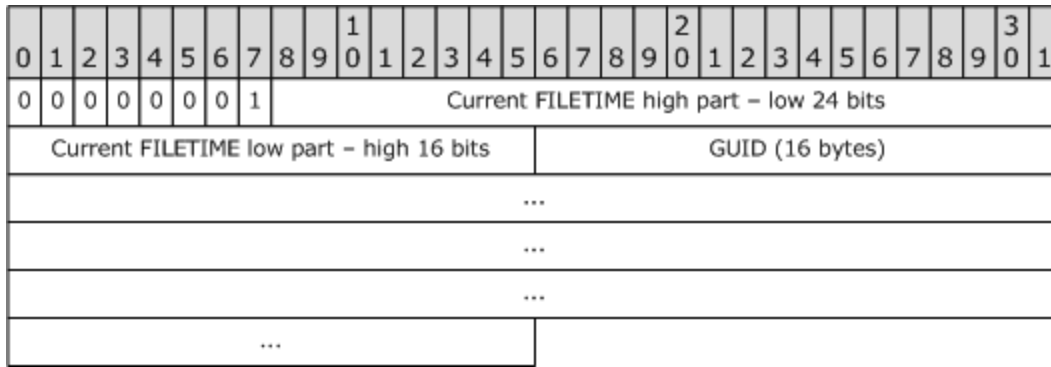
Type: **PtypBinary**

Indicates the relative position of this message within a **conversation thread**. It MUST be set according to the description in the following diagram.



**Conversation Index Header (22 bytes)**: MUST be set according to the description in the following diagram.





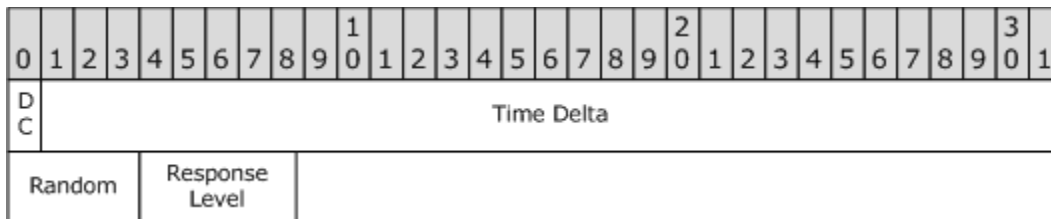
**Current FILETIME:** The current time in UTC expressed as a **PtypTime** is obtained, where only the 24 low bits of the high part and the 16 high bits of the low part of the FILETIME are included in **Current FILETIME high part** and **Current FILETIME low part**, as shown in the following table.

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.

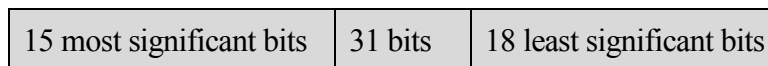
**Guid (16 Bytes, PtypGuid):** Generated for each new conversation thread. The **Data1**, **Data2**, and **Data3** fields are stored in big-endian format in the packet.

**Response Levels (5 bytes each):** MUST be 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.



Excluded	Included	Excluded
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- 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 non-zero), 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 (4 bits):** Random value generated by using an implementation-specific algorithm.

**Response level (4 bits):** This field SHOULD always be set to all 0s (zeros).

### 2.2.1.3 PidTagConversationTopic

Type: **PtypString**

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

### 2.2.1.4 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, the property MUST have the same value as **PidTagDeferredSendTime**, as specified in section 2.2.3.4<1>.

### 2.2.1.5 PidTagDisplayBcc

Type: **PtypString**

MUST be 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** MUST contain an empty string, as specified in [MS-OXCMSG]. This property is read-only for the client.

### 2.2.1.6 PidTagDisplayCc

Type: **PtypString**

MUST be 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** MUST contain an empty string, as specified in [MS-OXCMSG]. This property is read-only for the client.

#### 2.2.1.7 PidTagDisplayTo

Type: **PtypString**

MUST be set to a list of the **primary recipient** display names, separated by semicolons, if an e-mail message has primary recipients. Otherwise, this **property** MUST contain an empty string, as specified in [MS-OXCMSG]. This property is read-only for the client.

#### 2.2.1.8 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 MAY <2> 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**). Table 2 shows examples of **PidTagIconIndex** values.

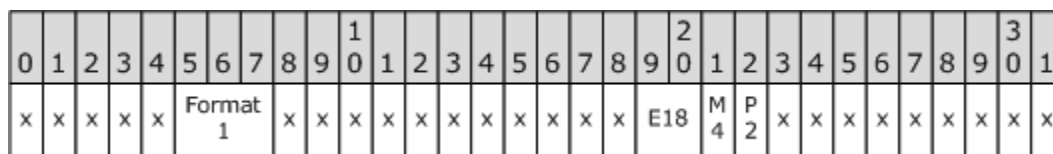
Mail Item State	Mail Item Icon Index
New mail	0xFFFFFFFF
Read mail	0x00000100
Unread mail	0x00000101
Submitted mail	0x00000102
Unsent mail	0x00000103
Receipt mail	0x00000104
Replied mail	0x00000105
Forwarded mail	0x00000106
Remote mail	0x00000107
Delivery Receipt	0x00000108
Read Receipt	0x00000109
Nondelivery Receipt	0x0000010A

Mail Item State	Mail Item Icon Index
Nonread Receipt	0x0000010B
Recall_S mails	0x0000010C
Recall_F mail	0x0000010D
Tracking mail	0x0000010E
Out of Office mail	0x0000011B
Recall mail	0x0000011C
Tracked mail	0x00000130

### 2.2.1.9 PidTagInternetMailOverrideFormat

Type: **PtypInteger32**

Indicates the encoding method and **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):** MUST be 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 <b>MIME</b> format with text/plain and text/html <b>body parts</b> .
0x2	The message is sent as plain text with <b>UUENCODED attachments</b> .
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):** MUST be ignored if **Format1** == 0; otherwise, indicates the preference, as follows.

Value	Meaning
0	Ignore <b>M4</b> .
1	Use <b>M4</b> to determine encoding.

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

Value	Meaning
0	Use UUENCODE, and ignore <b>E18</b> .
1	Use MIME encoding, and use <b>E18</b> to determine body inclusions.

**E18 (2 bits):** MUST be ignored if **Format1** = 0 or **P2** = 0 or **M4** = 0. Otherwise, MUST be 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.

#### 2.2.1.10 **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].

#### 2.2.1.11 **PidTagInReplyToId**

Type: **PtypString**

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

### 2.2.1.12 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
SilentInvite	NOTEIVERB_SILENTINVITE	0x00000519
SilentCancel	NOTEIVERB_SILENTCANCEL	0x00000520

Verb name	Alternate name	Property value
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

Verb name	Alternate name	Property value
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
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_SILENTIN VITE	0x00000575
SeriesCancellationUpdateToPartialAttendeeList	NOTEIVERB_PARTIALRECIP_SILENTCA NCEL	0x00000576

### 2.2.1.13 PidTagLastVerbExecutionTime

Type: **PtypTime**

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



#### 2.2.1.14 **PidTagMessageClass**

Type: **PtypString**

Contains the object type classification. This **property** MUST be set to "IPM.Note" on **E-mail objects**. The value of **PidTagMessageClass** for report objects is specified in section 2.2.2 of this document.

#### 2.2.1.15 **PidTagMessageToMe**

Type: **PtypBoolean**

Indicates that the receiving mailbox owner is one of the **primary recipients** of this e-mail message. This **property** MAY be absent; if so, the default value of "0x00" is used. If the property is present, it MUST be 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.

#### 2.2.1.16 **PidTagMessageCcMe**

Type: **PtypBoolean**

Indicates that the receiving mailbox owner is a **carbon copy (Cc) recipient** of this e-mail message. This **property** MAY be absent; if so, the default value of "0x00" is used. If the property is present, it MUST be 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.

#### 2.2.1.17 **PidTagMessageRecipientMe**

Type: **PtypBoolean**

Indicates that the receiving mailbox owner is a primary or a **carbon copy (Cc) recipient** of this e-mail message. This **property** MAY be absent; if so, the default value of "0x00" is used. If the property is present, it MUST be 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.

#### 2.2.1.18 **PidTagOriginatorDeliveryReportRequested**

Type: **PtypBoolean**

Indicates whether an e-mail sender requests an e-mail delivery receipt from the messaging system. This **property** MUST be 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.

#### 2.2.1.19 **PidTagOriginatorNonDeliveryReportRequested**

Type: **PtypBoolean**

Specifies whether an e-mail sender requests suppression of nondelivery receipts. This **property** MAY be absent; if so, the server automatically generates and sends a nondelivery receipt to the e-mail sender. If this property is present, it MUST be set to either "0x00", in which case the e-mail sender requests suppression of nondelivery receipt; or "0x01", in which case the nondelivery receipt is generated and sent.

#### 2.2.1.20 **PidTagOriginalSensitivity**

Type: **PtypInteger32**

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

#### 2.2.1.21 **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 ([MS-OXCDATA] section 2.10.3.2) and section 2.2.4.3 of this document. If the receiving mailbox owner receives the e-mail message on his or her own behalf, this **property** MUST be set to the value of **PidTagReceivedByAddressType** (section 2.2.1.27).

#### 2.2.1.22 **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 2.10.3.2). If the receiving mailbox owner receives the e-mail message on his or her own behalf, this **property** MUST be set to the value of **PidTagReceivedByEmailAddress** (section 2.2.1.28).

#### 2.2.1.23 **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 2.10.3.2). If the receiving mailbox owner receives the e-mail message on his or her own behalf, this **property** MUST be set to the value of **PidTagReceivedByEntryId** (section 2.2.1.29).

#### 2.2.1.24 **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-OXCADATA] section 2.10.3.2). If the receiving mailbox owner receives the e-mail on his or her own behalf, this **property** MUST be set to the value of **PidTagReceivedByName** (section 2.2.1.30).

#### 2.2.1.25 **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-OXCADATA] section 2.10.3.2). 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 MUST be set to a value that is identical to the value of **PidTagReceivedBySearchKey** (section 2.2.1.31).

#### 2.2.1.26 **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. This **property** MAY be absent, in which case, no read receipt is sent to the e-mail's sender. If the property is present, it MUST be 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 nonread receipt is generated and sent to the e-mail message's sender or designated receipt recipient.

#### 2.2.1.27 **PidTagReceivedByAddressType**

Type: **PtypString**

MUST contain the e-mail message receiver's e-mail address type, as specified by the **RecipientRow AddressType** field ([MS-OXCADATA] section 2.10.3.2) and section 2.2.4.3 of this document.

#### 2.2.1.28 **PidTagReceivedByEmailAddress**

Type: **PtypString**

MUST contain the e-mail message receiver's e-mail address, as specified by the **RecipientRow EmailAddress** field ([MS-OXCADATA] section 2.10.3.2).

#### 2.2.1.29 **PidTagReceivedByEntryId**

Type: **PtypBinary**

Identifies an **address book EntryID** that **MUST** contain 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 2.10.3.2).

#### 2.2.1.30 **PidTagReceivedByName**

Type: **PtypString**

**MUST** contain the e-mail message receiver's display name, as specified by the **RecipientRow DisplayName** field ([MS-OXCDATA] section 2.10.3.2).

#### 2.2.1.31 **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** **MUST** be 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 2.10.3.2).

#### 2.2.1.32 **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 **MUST** be set to "0x00" or be absent, meaning that adding additional or different recipients to the e-mail message is allowed. If the **E-mail object's PidTagSensitivity** is set to "0x00000001" (personal) or "0x00000002" (private), this property **MUST** be set "0x01" to prevent adding additional or different recipients of this e-mail through forwarding.

#### 2.2.1.33 **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. This **property** **MAY** be absent, in which case, a reply is sent only to the user identified by **PidTagSenderEntryId**. If present, the property **MUST** be 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.

#### 2.2.1.34 **PidTagReplyRecipientNames**

Type: **PtypString**

Contains a list of display names for **recipients** that are to get a reply. The **property** MAY be absent, in which case, a reply is sent only to the user identified by **PidTagSenderName**. If present, the property MUST be set to one string, with the **address book** entry's recipient display names separated by semicolons.

#### 2.2.1.35 **PidTagReplyRequested**

Type: **PtypBoolean**

Specifies whether a reply to the e-mail message is requested by the e-mail message's sender. The **property** MAY be absent, in which case, the reply to the e-mail message is not requested. If the property is present, it MUST be 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.

#### 2.2.1.36 **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 2.2.1.60 of this document). This **property** MAY be absent; if so, the default value "0x00" is used. If present, it MUST be 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.

#### 2.2.1.37 **PidTagSendRichInfo**

Type: **PtypBoolean**

Specifies whether the sender can receive all message content, including **Rich Text Format (RTF)** and OLE objects. This **property** MAY be absent, in which case the default value of "0x00" is used. If the property is present, this property MUST be 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.

#### 2.2.1.38 **PidTagSenderAddressType**

Type: **PtypString**

MUST contain the sending mailbox owner's e-mail address type, as specified by the **RecipientRow AddressType** field ([MS-OXCADATA] section 2.10.3.2) and section 2.2.4.3 of this document.

#### 2.2.1.39 **PidTagSenderEmailAddress**

Type: **PtypString**

MUST contain the sending mailbox owner's e-mail address, as specified by the **RecipientRow EmailAddress** field ([MS-OXCDATA] section 2.10.3.2).

#### 2.2.1.40 **PidTagSenderEntryId**

Type: **PtypBinary**

Identifies an **address book EntryID** that MUST contain the sending mailbox owner's address book EntryID, as specified by the **Address Book EntryID** ([MS-OXCDATA] section 2.2.4.2).

#### 2.2.1.41 **PidTagSenderName**

Type: **PtypString**

MUST contain the sending mailbox owner's display name, as specified by the **RecipientRow DisplayName** field ([MS-OXCDATA] section 2.10.3.2).

#### 2.2.1.42 **PidTagSenderSearchKey**

Type: **PtypBinary**

Identifies an **address book** search key that MUST contain 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 2.10.3.2).

#### 2.2.1.43 **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**.

#### 2.2.1.44 **PidTagSentRepresentingEmailAddress**

Type: **PtypString**

Contains an e-mail address, as specified by the **RecipientRow EmailAddress** field ([MS-OXCDATA] section 2.10.3.2), 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** MUST be set to the value of **PidTagSenderEmailAddress**.

#### 2.2.1.45 **PidTagSentRepresentingEntryId**

Type: **PtypBinary**

Identifies an address book **EntryID**, as specified by the **Address Book EntryID** ([MS-OXCDATA] section 2.2.4.2), 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** MUST be set to the value of **PidTagSenderEntryId**.

#### 2.2.1.46 **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**.

#### 2.2.1.47 **PidTagSentRepresentingSearchKey**

Type: **PtypBinary**

Identifies an **address book** search key, as specified by the **RecipientRow SearchKey** field ([MS-OXCDATA] section 2.10.3.2), 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** MUST be set to the value of **PidTagSenderSearchKey**.

#### 2.2.1.48 **PidTagSubjectPrefix**

Type: **PtypString**

Specified in [MS-OXCMSG] section 2.2.1.9. On an **E-mail object**, this **property** typically represents an action on the e-mail message, such as "RE: " for replying and "FW: " for forwarding. This property MAY be absent, in which case, there is no subject prefix for the e-mail message.

#### 2.2.1.49 **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, the client MUST set this **property**, and for incoming messages from a sender who has an SMTP address type, the server 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**).

#### 2.2.1.50 **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.

#### 2.2.1.51 **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.

#### 2.2.1.52 **PidTagPrimarySendAccount**

Type: **PtypString**

Specifies the first server that a client SHOULD attempt 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.

#### 2.2.1.53 **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.

#### 2.2.1.54 **PidLidUseTnef**

Type: **PtypBoolean**

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

#### 2.2.1.55 **Attachments**

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

#### 2.2.1.56 **Categories and Keywords**

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



### 2.2.1.57 **Contacts**

The client MAY set the contacts on an e-mail message as specified in [MS-OXOCNTC] and [MS-OXCMSG] section 2.2.1.21.2.

### 2.2.1.58 **Flags**

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

### 2.2.1.59 **Reminders**

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

### 2.2.1.60 **Recipients**

The client MUST add **recipients** to an e-mail message by using **RopModifyRecipients**, as specified in [MS-OXCMSG] section 2.2.3.5. **PidTagRecipientType** MUST be 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 2.10.3.

### 2.2.1.61 **PidLidAutoProcessState**

Type: **PtypInteger32**

Specifies the options used in automatic processing of e-mail messages. The **property** MAY be absent, in which case the default value of "0x00000000" is used. If set, this property MUST be set to one of the values in the following table.

Value	Description
0x00000000	Do not auto-process the message.
0x00000001	Process the message automatically or when the message is opened.
0x00000002	Process the message only when the message is opened.

### 2.2.1.62 **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.

0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1		
Version										Count																							
...										VoteOption1 (variable)																							
...																																	
VoteOptionN (variable)																																	
...																																	
Version2										VoteOptionsExtras1 (variable)																							
...																																	
VoteOptionsExtras2 (variable)																																	
...																																	

**Version (WORD):** MUST be 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 2.2.1.62.1.

**VoteOptionN (variable length structure):** The last **VoteOption** structure specified in section 2.2.1.62.1.

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

**VoteOptionExtras1 (variable length structure):** The first **VoteOptionExtras** structure specified in section 2.2.1.62.2.

**VoteOptionExtrasN (variable length structure):** The last **VoteOptionExtras** structure specified in section 2.2.1.62.2.

### 2.2.1.62.1 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.

0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1
VerbType																															
DisplayNameCount										DisplayName (variable)																					
...																															
MsgClsNameCount										MsgClsName (variable)																					
...																															
Internal1StringCount										DisplayNameCount Repeat										DisplayNameRepeat (variable)											
...																															
Internal2																															
Internal3										fUseUSHeaders																					
...										Internal4																					
...										SendBehavior																					
...										Internal5																					
...										ID																					
...										Internal6																					
...																															

**VerbType (DWORD):** MUST be 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. MUST be 8 (0x08).

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

**Internal1StringCount (1 byte):** Count of characters in the following string. MUST be "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):** MUST be 0 (0x00000000).

**Internal3 (1 byte):** MUST be "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 **MUST** be either "0x00000001", using U.S. style reply header, or "0x00000000" otherwise.

**Internal4 (DWORD):** **MUST** be "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 **MUST** be 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):** **MUST** be 2 (0x00000002).

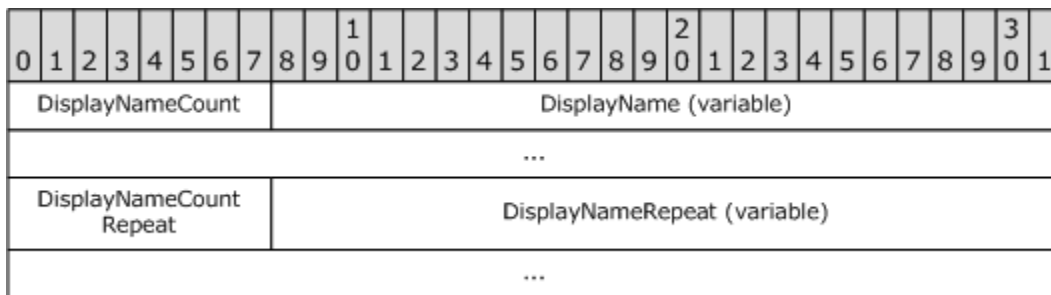
**ID (DWORD):** Specifies a numeric identifier for this voting option. The client **SHOULD** specify 1 for the first **VoteOption**, and monotonically increase this value for each subsequent **VoteOptions**.

**Internal6 (DWORD):** **MUST** be -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.

### 2.2.1.62.2 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**.

#### 2.2.1.63 **PidLidVerbResponse**

Type: **PtypString**

Specifies the voting option that a respondent has selected. This **property** SHOULD be set to one of the voting button display names on which the respondent votes.

#### 2.2.1.64 **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**

#### 2.2.2.1 **PidTagMessageClass**

Type: **PtypString**

Contains a **Message object** class name. For report messages, the **property** MUST be 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 receipt

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 . I PM . NOTE . I PNRN
Nonread Receipt	REPORT . I PM . NOTE . I PNNRN
Delivery Receipt	REPORT . I PM . NOTE . DR
Nondelivery Receipt	REPORT . I PM . NOTE . NDR

#### 2.2.2.2 **PidTagOriginalDeliveryTime**

Type: **PtypTime**

MUST be set on read/nonread Report objects or replying/forwarding **Message objects** by using the value of **PidTagMessageDeliveryTime** from the original message.

#### 2.2.2.3 **PidTagOriginalDisplayTo**

Type: **PtypString**

MUST be set on report messages by using the value of **PidTagDisplayTo** from the original message, if present.

#### 2.2.2.4 **PidTagOriginalDisplayCc**

Type: **PtypString**

MUST be set on report messages by using the value of **PidTagDisplayCc** from the original message, if present.

#### 2.2.2.5 **PidTagOriginalDisplayBcc**

Type: **PtypString**

MUST be 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**

MUST be 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 2.10.3.2).

#### 2.2.2.7 **PidTagOriginalSenderEmailAddress**

Type: **PtypString**

MUST be set on delivery report messages to the value of the original message sender's **PidTagSenderEmailAddress** property, as specified in section 2.2.1.37.

#### 2.2.2.8 **PidTagOriginalSenderEntryId**

Type: **PtypBinary**

Contains an **address book EntryID** that MUST be set on delivery report messages to the value of the **PidTagSenderEntryId** property from the original e-mail message, as specified in section 2.2.1.38.

#### 2.2.2.9 **PidTagOriginalSenderName**

Type: **PtypString**

MUST be set on delivery report messages to the value of the original message sender's **PidTagSenderName** property, as specified in section 2.2.1.39.

#### 2.2.2.10 **PidTagOriginalSenderSearchKey**

Type: **PtypBinary**

Contains an **address book** search key that MUST be set on delivery report messages to the value of the **PidTagSenderSearchKey** property of the original e-mail message, as specified in section 2.2.1.40.

#### 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 MUST be set to the value of the **PidTagSentRepresentingAddressType property** of the original e-mail message, as specified in section 2.2.1.41.

#### 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 MUST be set to the value of the **PidTagSentRepresentingEmailAddress property** of the original e-mail message, as specified in section 2.2.1.42.

#### 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 MUST be set to the value of the **PidTagSentRepresentingEntryId property** of the original message, as specified in section 2.2.1.43.

#### 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; **MUST** be set to the value of the **PidTagSentRepresentingName property** of the original e-mail message, as specified in section 2.2.1.44.

#### 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 **MUST** be set to the value of the **PidTagSentRepresentingSearchKey property** of the original message, as specified in section 2.2.1.45.

#### 2.2.2.16 **PidTagOriginalSubject**

Type: **PtypString**

Specifies the subject of the original message and **MUST** be 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 **MUST** be 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 **MUST** set the **property** on the report message to the value of the **PidTagSearchKey property** of the original e-mail message, as specified in [MS-OXCMMSG].

#### 2.2.2.19 **PidTagReportTag**

Type: **PtypBinary**

Contains the data that is used to correlate the report and the original message. The **property** **MAY** 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", the **property** **MUST** be set on the original E-mail object by using the following format.



0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1
Cookie																															
...																															
...																Version															
...																StoreEntryIdSize															
...																StoreEntryId (variable)															
FolderEntryIdSize																															
FolderEntryId (variable)																															
MessageEntryIdSize																															
MessageEntryId (variable)																															
SearchFolderEntryIdSize																															
SearchFolderEntryId (variable)																															
MessageSearchKeySize																															
MessageSearchKey (variable)																															
Ansi Text Size																															
Ansi Text (variable)																															

**Cookie (9 bytes: string):** Nine characters used for validation; MUST be "PCDFEB09".

**Version (4 bytes):** MUST be either **CurrentVersion** (0x00010002) or **NoSearchFolderVersion** (0x00010001).

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

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

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

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

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

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

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

**SearchFolderEntryId (variable length of bytes):** If **SearchFolderEntryIdSize** is not zero, this field **MUST** be the specified number of bytes of **SearchFolderEntryId**. Otherwise, if size is zero, this field **MUST** be omitted.

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

**MessageSearchKey (variable length of bytes):** **MUST** be set to the specified number of bytes.

**Ansi Text Size (4 bytes):** Number of characters in the **Ansi Text** field.

**Ansi Text (variable bytes):** The subject of the original message.

#### 2.2.2.20 **PidTagReportText**

Type: **PtypString**

Contains the optional text for a report message. This **property** **MAY** be absent, in which case, there is no report text from the server. If this property present, the server **MUST** set it to the text string in response to a report type from the underlying messaging system.

#### 2.2.2.21 **PidTagReadReceiptEntryId**

Type: **PtypBinary**

Contains an address book **EntryID**, as specified in [MS-OXCDATA] section 2.2.4.2, 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 **MAY** 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.

#### 2.2.2.22 **PidTagReadReceiptSearchKey**

Type: **PtypBinary**

Contains an **address book** search key, as specified in [MS-OXCDATA] section 2.10.3.2, 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 **MAY** 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.

#### 2.2.2.23 **PidTagSubjectPrefix**

Specified in section 2.2.1.46.<3>

### 2.2.3 E-Mail 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.

#### 2.2.3.1 PidTagRecipientType

Type: **PtypInteger32**

Represents the **recipient** type of a recipient on the message. This property **MUST** be 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 <b>primary recipient</b> .
0x00000002	The recipient is a <b>carbon copy (Cc) recipient</b>
0x00000003	The recipient is a <b>blind carbon copy (Bcc) recipient</b> .

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 <b>resend message</b> by setting the <b>mfResend</b> bit (0x00000080) in the <b>PidTagMessageFlags</b> property.  Combining this flag with the value of the <b>PidTagRecipientType</b> property indicates that the server <b>MUST</b> 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 <b>MUST NOT</b> 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 **MUST** be 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 SHOULD be multiplied by. For more details about the **PidTagDeferredSendTime** property, see section 2.2.3.4. If set, **PidTagDeferredSendUnits** MUST have one of the values listed in the following table.

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

### 2.2.3.4 **PidTagDeferredSendTime**

Type: **PtypTime**

MAY 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.

$$\text{PidTagDeferredSendTime} = \text{PidTagClientSubmitTime} + \text{PidTagDeferredSendNumber} * \text{TimeOf}(\text{PidTagDeferredSendUnits})$$

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 MUST be set between "0x0000000" 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** MUST be 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**

MAY 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.

$$\text{PidTagExpiryTime} = \text{PidTagClientSubmitTime} + \text{PidTagExpiryNumber} * \text{TimeOf}(\text{PidTagExpiryUnits})$$

### 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".

### 2.2.3.9 **PidTagMessageDeliveryTime**

Type: **PtypTime**

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

### 2.2.3.10 PidTagSentMailSvrEID

Type: **PtypBinary**

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 **MUST** be created in the specified folder after the message is sent.

### 2.2.3.11 PidTagClientSubmitTime

Type: **PtypTime**

The server **MUST** set 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] sections 2.2.6.1 and 2.2.6.2 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 **MUST** be 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** (X bytes): When the client submits the message, the **SubmitFlags** value indicates how the message **SHOULD** 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

**Return Value** (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 <b>handle</b> 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 <b>recipients</b> 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 <b>folder associated information (FAI)</b> 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 <b>store's spooler queue</b> .
ecNotSupported	0x80040102	The server object associated with the input <b>handle</b> index in the server object table is not of type logon or the current logon session is a public logon.
ecNotFound	0x8004010F	The parent <b>folder ID (FID)</b> or <b>message ID (MID)</b> 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 SHOULD be the **Logon object**. However, in this **ROP** request, the server object is ignored by the server.

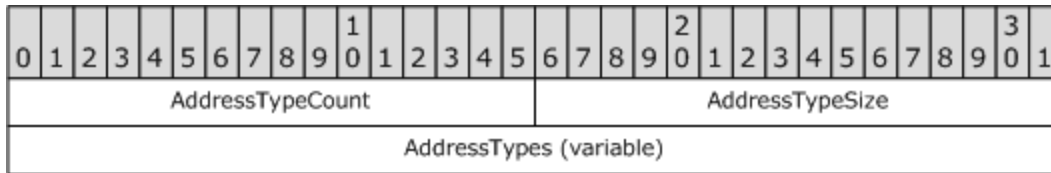
#### 2.2.4.3.1 ResponseBuffer

**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.
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.

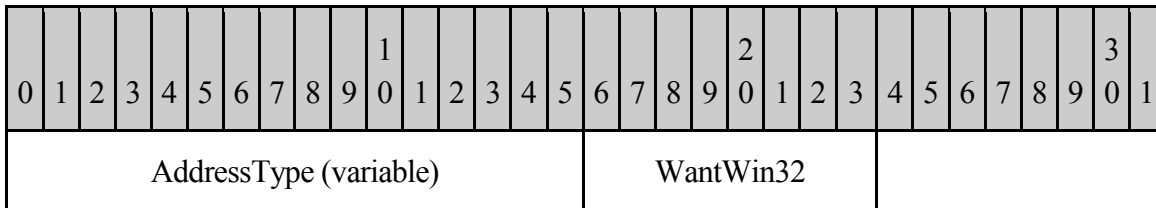
**AddressTypeSize (2 bytes):** The total length of the **AddressTypes** that follows.

**AddressTypes (variable):** An array of NULL terminated **ASCII** strings, each of which represents an address type.<4>

#### 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 [MS-OXCROPS].

##### 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.

0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1
Reserved										OptionsInfoSize												OptionsInfo (variable)									
...																								HelpFileSize							
...										HelpFile (variable)																					
HelpFileName (variable, optional)																															

**Reserved (1 byte):** Reserved. This value MUST be "0x01".

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

**OptionsInfo (variable):** Array of bytes. This field MUST contain the same number of bytes as specified in the **OptionsInfoSize** field. This array contains opaque data from the server that MAY be ignored by the client.

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

**HelpFile (variable):** Array of bytes. This field MUST contain 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 MUST be present if **HelpFileSize** is non-zero and MUST NOT be present otherwise. This string specifies the name that is associated with the help for this address type.

## 2.2.5 E-Mail 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 2.2.6.4. This section specifies the syntax and semantics of various fields that are not fully specified in the [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.
ecLoginFailure	0x80040111	The <b>Logon object handle</b> is not valid.

**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 the [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 <b>MUST</b> move or delete the message based on the presence of the <b>PidTagSentMailSvrEID</b> and <b>PidTagDeleteAfterSubmit</b> properties on the message, as specified in sections 2.2.3.8 and 2.2.3.10 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.

0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1		
NoPropertiesReturned										PropertyValueCount										PropertyValues (variable)													
...																																	

**NoPropertiesReturned (X bytes):** "0x00" if properties are returned; otherwise, "0x01".

**PropertyValueCount (X 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 2.12. 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 MUST contain **PropertyValueCount** tags.

### 2.2.5.5 RopTransportNewMail

The **RopTransportNewMail** request is used to 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

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								MessageId							
...																															
...																								FolderId							
...																															
...																								MessageClass (variable)							
...																								MessageFlags							
...																															

**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] <b>RecipientRow</b> structure, [MS-OXOABK]
<b>Store</b>	[MS-OXCSTOR]
<b>Folder</b>	[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 <b>Inter-Personal Mail (IPM)</b> folder within a <b>Store object</b> .	<b>Drafts folder</b>
Submitted	A send note that is marked to be sent by the server.	<b>Outbox folder</b>
Sent	A send note that has been claimed by the <b>messaging transport</b> for delivery to another messaging user.	<b>Sent Items folder</b>

E-mail state	Description	Special folder
Received	A receive note that has been placed in the default receive folder by the server.	<b>Inbox folder</b> (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.

#### 3.1.1.2.2 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**



#### 3.1.1.2.2.1 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**

#### 3.1.1.2.3 Recipients Sub-object

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**.

##### 3.1.1.2.3.1 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**

##### 3.1.1.2.3.2 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**

#### 3.1.1.2.3.3 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**

#### 3.1.1.2.4 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**

#### 3.1.1.2.5 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

None.

#### 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 MAY 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 MAY 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 **MUST** move 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 **MAY** 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 2.2.1.60, 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 MUST set the **PidLidVerbStream** property as specified in section 2.2.1.60.

#### 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 MUST ignore the existence of that **VotingOption**. <5>

#### 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 2.2.1.61).

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 user MUST be displayed with the appropriate user interface 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. <6>

#### 3.1.5.2 Controlling the Sending of Mail

When a client wants to control the specific server that sends a message, the message MUST be 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 <7>, 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 MUST set 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 **MUST** determine 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 receipt (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-OXCMMSG]).

#### 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
<b>FAI</b> message is submitted.	ecAccessDenied	0x80000009
Embedded message is submitted.	ecNotSupported	0x80040102
Upper limit of <b>recipients</b> 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** **MUST** be 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 **MUST** be 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 **MUST** be deleted after the message is sent.

#### 3.2.5.1.2.3 PidTagClientSubmitTime

**PidTagClientSubmitTime** **MUST** be set to the current time in **UTC**.

#### 3.2.5.1.2.4 PidTagContentFilterSpamConfidenceLevel

The server **SHOULD** set **PidTagContentFilterSpamConfidenceLevel** to "0xFFFFFFFF" (-1). A client **MAY** 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 will ignore this recipient; if a recipient's **PidTagRecipientType** has the "0x10000000" bit set, the server will try to re-deliver the message to this recipient.

#### 3.2.5.1.2.8 PidTagTargetEntryId<8>

When working in optimizing send mode and sending a message, a client creates a copy of the message in a server folder and MAY 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 MUST keep 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 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). For more details, see [MS-OXCSYNC] section 3.1.5.2.2.1.2.

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

Property	Value
<b>PidTagEntryId</b>	Contains the same value as <b>PidTagTargetEntryId</b> , if present. Otherwise, a new ID is generated by the server.
<b>PidTagMessageFlags</b>	The <b>mfUnsent</b> and <b>mfRead</b> bits MUST be cleared.
<b>PidTagInternetMessageId</b>	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 MUST be set and the **mfSubmitted** bit of the message's **PidTagMessageFlags** property MUST be cleared. Even if the message's **PidTagDeferredSendTime** property has been set, the client will not be notified of the defer send event.

**RopAbortSubmit** MAY fail at the server's discretion. When **RopAbortSubmit** fails, the message MAY 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 an **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
<b>lstLock</b>	Locks the message for the client that is sending the request. The request MUST fail if the message is locked by some other client.
<b>lstUnlock</b>	Unlock the message.
<b>lstFinish</b>	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 **MUST** set 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**)

**LogonIndex:** 0x00

**HandleIndex:** 0x02

**SubmitFlags:** 0x00 (None)

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

**HandleIndex:** 0x02

**ReturnValue:** 0x00000000 (ecNone)

The response's **HandleIndex** is the same as the **HandleIndex** 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**)

**LogonIndex:** 0x01

**HandleIndex:** 0x01

**Size:** 0x000E

**PropertyCount:** 0x0001

**PropertyTag:** 0x3FEF0040 (**PidTagDeferredSendTime**)

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

...

**RopId:** 0x32 (**RopSubmitMessage**)

**LogonIndex:** 0x01

**HandleIndex:** 0x01

**SubmitMessageFlags:** 0x00 (None)

The **PidTagDeferredSendTime** value of the message (identified by a **HandleIndex** 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 00
```

The composition of the response buffer is as follows:

**RopId:** 0x0A (**RopSetProperties**)

**HandleIndex:** 0x01

**ReturnValue:** 0x00000000 (ecNone)

**ProblemPropertyTagCount:** 0x0000

**RopId:** 0x32 (**RopSubmitMessage**)

**HandleIndex:** 0x01

**ReturnValue:** 0x00000000 (ecNone)

The response messages to both **RopSetProperties** and **RopSubmitMessage** indicate that the two **remote procedure operations** 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**)

**LogonIndex:** 0x00

**HandleIndex:** 0x00

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

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

The message identified by the **HandleIndex** "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**)

**HandleIndex:** 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 E-Mail Message from a Messaging User to Another Messaging User

Consider the following scenario: Joe Healy needs to send a high importance e-mail message to inform his customer, Ed Banti, that the order request form that Ed sent needs to be signed. Joe also wants to get a read receipt when Ed read 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
<b>PidTagBody</b>	0x1000	0x001f ( <b>PtypString</b> )	"Please sign the order request.\LF\CR"
<b>PidTagMessageClass</b>	0x001A	0x001F ( <b>PtypString</b> )	"IPM.Note"
<b>PidTagMessageFlags</b>	0x0E07	0x0003 ( <b>PtypInteger32</b> )	mfUnsent
<b>PidTagConversationTopic</b>	0x0070	0x001f ( <b>PtypString</b> )	"Order Request"
<b>PidTagConversationIndex</b>	0x0071	0x0102 ( <b>PtypBinary</b> )	22 bytes 01 c8 74 0b 0f 9c 35 2c 02 17 93 af 43 a9 8b b4 c1 bb ef 97 7d 4f
<b>PidTagImportance</b>	0x0017	0x0003 ( <b>PtypInteger32</b> )	0x00000002 High Importance
<b>PidTagMessageDeliveryTime</b>	0x0E06	0x0040 ( <b>PtypTime</b> )	2008/02/20 21:53:00.000
<b>PidTagReadReceiptRequested</b>	0x0029	0x000B ( <b>PtypBoolean</b> )	0x01 (TRUE)
<b>PidTagSentMailSvrEID</b>	0x6740	0x00FB ( <b>PtypUnspecified</b> )	21 bytes 01 01 00 00 00 00 f0 e7 c1 00 00 00 00 00 00 00 00 00 00 00 00

Property	Property ID	Type	Value
<b>PidTagIconIndex</b>	0x1080	0x0003 (PtypInteger32)	0xFFFFFFFF
<b>PidTagMessageEditorFormat</b>	0x5909	0x0003 (PtypInteger32)	0x00000001 Plain Text
<b>PidTagPrimarySendAccount</b>	0x0E28	0x001F (PtypString)	000000023659R9-A11/o=First Organization/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=JoeHealy Microsoft Exchange
<b>PidTagNextSendAcct</b>	0x0E29	0x001F (PtypString)	000000023659R9-A11/o=First Organization/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=JoeHealy Microsoft Exchange
<b>PidTagMessageLocaleId</b>	0x3FF1	0x0003 (PtypInteger32)	1033 (en-us)
<b>PidTagReportTag</b>	0x0031	0x0102 (PtypBinary)	100 bytes (See Note 1 below)

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 **RopAddRecipients**. The following table lists the values of the **RecipientRow** elements.

RecipientRow element	Value	Description
<b>RowID</b>	0x00000001	Row ID number
<b>RecipientType</b>	0x00000001	Primary recipient
<b>DataSize</b>	399	
<b>RecipientFlag</b>	0x0651	AddressType.EXCH DisplayName XmitSameAsDisplay StandardPropsUnicode SimpleDisplayName
<b>DNPrefixLen</b>	0x5A (90)	
<b>EX-Address.Type</b>	0x00000000	DT_MAILUSER
<b>EX-Address.EmailAddress</b>	edbanti	
<b>DisplayName</b>	Ed Banti	
<b>SimpleDisplayName</b>	Ed Banti	

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

Property	PropertyID	Type	Value
<b>PidTagObjectType</b>	0x0FFE	0x0003 ( <b>PtypInteger32</b> )	0x00000006 (MAILUSER)

Property	PropertyID	Type	Value
<b>PidTagDisplayType</b>	0x3900	0x0003 ( <b>PtypInteger32</b> )	0x00000000 DT_MAILUSER
<b>PidTag7BitDisplayName</b>	0x39FF	0x001F ( <b>PtypString</b> )	Ed Banti
<b>PidTagSmtAddress</b>	0x39FE	0x001F ( <b>PtypString</b> )	edbanti@example.com
<b>PidTagSendInternetEncoding</b>	0x3A71	0x0003 ( <b>PtypInteger32</b> )	0x00000000
<b>PidTagNickname</b>	0x6001	0x001F ( <b>PtypString</b> )	edbanti@example.com
<b>PidTagAccount</b>	0x3A00	0x001F ( <b>PtypString</b> )	edbanti
<b>PidTagDisplayTypeEx</b>	0x3905	0x0003 ( <b>PtypInteger32</b> )	1073741824
<b>PidTagRecipientTrackStatus</b>	0x5FFF	0x0003 ( <b>PtypInteger32</b> )	0x00000000
<b>PidTagRecipientResourceState</b>	0x5FDE	0x0003 ( <b>PtypInteger32</b> )	0x00000000
<b>PidTagRecipientFlags</b>	0x5FFD	0x0003 ( <b>PtypInteger32</b> )	0x00000001
<b>PidTagRecipientDisplayName</b>	0x5FF6	0x001F ( <b>PtypString</b> )	Ed Banti
<b>PidTagRecipientEntryId</b>	0x5FF7	0x0102	126 bytes

Property	PropertyID	Type	Value
		(PtypBinary)	(see the sample value for <b>PidTagRecipientEntryId</b> following this table)
<b>PidTagRecipientOrder</b>	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
<b>PidTagSubjectPrefix</b>	0x0003	0x001F (PtypString)	Empty string
<b>PidTagNormalizedSubject</b>	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 [MS-OXOMSG] section 2.2.4. 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 **MUST** construct the message to contain a **PidLidVerbStream** as specified in section 2.2.1.60.

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 2.2.1.60.

```
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 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"  
**Internal1:** 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.<9> 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.<10> 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 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	<b>PidTagProviderSubmitTime</b>	<b>PtypTime</b>	2008/05/06 17:46:09.035
0x0047000A	<b>PidTagMessageSubmissionId</b>	<b>PtypErrorCode</b>	Error: 0x8004010f (MAPI_E_NOT_FOUND)
0x0C1A001E	<b>PidTagSenderName</b>	<b>PtypString8</b>	"user1"
0x0C190102	<b>PidTagSenderEntryId</b>	<b>PtypBinary</b>	See <b>PidTagSenderEntryId</b> data following the table(1).
0x0C1D0102	<b>PidTagSenderSearchKey</b>	<b>PtypBinary</b>	See <b>PidTagSenderSearchKey</b> data following the table (2).
0x0042001E	<b>PidTagSentRepresentingName</b>	<b>PtypString8</b>	"user1"
0x00410102	<b>PidTagSentRepresentingEntryId</b>	<b>PtypBinary</b>	See <b>PidTagSentRepresentingEntryId</b> data following the table (3).
0x003B0102	<b>PidTagSentRepresentingSearchKey</b>	<b>PtypBinary</b>	See <b>PidTagSentRepresentingSearchKey</b> 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 MINISTERIAL 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.

### idTagSenderSearchKey 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 MINISTERIAL 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 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 the [MS-OXOMSG] protocol. General security considerations pertaining to the underlying RPC-based transport apply ([MS-OXCROPS]).

### 5.2 Index of Security Parameters

None.

## 6 Appendix A: Office/Exchange Behavior

The information in this specification is applicable to the following versions of Office/Exchange:

- Office 2003 with Service Pack 3 applied
- Exchange 2003 with Service Pack 2 applied
- Office 2007 with Service Pack 1 applied
- Exchange 2007 with Service Pack 1 applied

Exceptions, if any, are noted below. Unless otherwise specified, any statement of optional behavior in this specification prescribed using the terms SHOULD or SHOULD NOT implies Office/Exchange behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies Office/Exchange does not follow the prescription.

---

<1> Section 2.2.1.4: The **PidTagDeferredDeliveryTime** property is can be handled by Exchange Server 2003 SP2. In Exchange 2007 SP1, only **PidTagDeferredSendTime** is used. A client should set both **PidTagDeferredDeliveryTime** and **PidTagDeferredSendTime** for deferred delivery message before submission.

<2> Section 2.2.1.8: Outlook 2003 SP3 and Outlook 2007 SP1 compute this value most of the time, and do not store the result on the object.

<3> Section 2.2.2.23: On report messages, the value of the **PidTagSubjectPrefix** property is typically set as :

Delivery receipts: *"Delivered: "*

Read receipts: *"Read:"*

Sender Response on read receipt request: *"Approved:"*

Non-deliverable receipts: *"Undeliverable:"*

Non-read receipts: *"Not Read:""read:"*

<4> Section 2.2.4.3.1: Examples of address types are: "EX", "MAPIPD", "SMTP", "MHS", "PROFS", "X400". It is possible that there are other custom address types that are generated by third-party applications.

<5> Section 3.1.5.1.2: Outlook 2007 SP1 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, Outlook 2007 SP1 ignores **VoteOption** structures with unknown **VerbTypes**.

<6> Section 3.1.5.1.4: Outlook 2007 SP1 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.

<7> Section 3.1.5.3: Outlook 2003 SP3 and Outlook 2007 SP1 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.

<8> Section 3.2.5.1.2.8: **PidTagTargetEntryId** is optimized and supported by Outlook 2007 SP1 and Exchange 2007 SP1.

<9> Section 4.6.2: The mail spooler provided in Outlook 2003 SP3 and Outlook 2007 SP1 use the value of **PidTagNextSendAcct** to determine the desired mail transport.

<10> Section 4.6.3: Outlook 2003 SP2 and Outlook 2007 SP1 examine the property **PidTagNextSendAcct**.



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