[MS-OXOFLAG]:

Informational Flagging Protocol

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Revision Summary

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4/25/2008	0.2	Minor	Revised and updated property names and other technical content.
6/27/2008	1.0	Major	Initial Release.
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1 Introduction

The Informational Flagging Protocol allows a **Message object** to be marked for either follow-up or categorization. This protocol extends the Message and Attachment Object Protocol, which is described in [MS-OXCMSG].

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

1.1 Glossary

This document uses the following terms:

Appointment object: A Calendar object that has an organizer but no attendees.

basic flag: A flag on a **Message object** that indicates that the object has an associated work item or shares a defining characteristic with other Message objects with such flags.

color flag: A flag that extends the concept of a **basic flag** by associating one of a chosen set of color values with a flagged **Message object**.

complete flag: A flag on a messaging object that indicates that the associated work item has been completed.

consolidated to-do list: A list of all tasks and flagged **Message objects** that are in a user's **mailbox**.

Contact object: A **Message object** that contains properties pertaining to a contact.

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

Draft Message object: A **Message object** that has not been sent.

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

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

Journal object: A **Message object** that represents an entry in a journal or log and adheres to the property descriptions that are described in in [MS-OXOJRNL].

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

meeting-related object: A **Message object** that represents a relay of information between a meeting organizer and an attendee. It can be any of the following: Meeting Request object, Meeting Update object, Meeting Cancellation object, or Meeting Response object.

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

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named property: A property that is identified by both a GUID and either a string name or a 32-bit identifier.

Note object: A **Message object** that represents a simple text note in a messaging store and that adheres to the property descriptions that are described in [MS-OXONOTE]. A Note object functions as an electronic equivalent of a paper sticky note.

primary flag storage location: The typical location that is used to store flagging properties, as opposed to the **secondary flag storage location**.

property ID: A 16-bit numeric identifier of a specific attribute. A property ID does not include any property type information.

recipient: An entity that can receive email messages.

recipient flag: A collection of property values indicating that a draft **Message object** is marked such that it will appear as flagged with a **basic flag** to recipients.

recipient reminder: A collection of property values indicating that a **Draft Message object** is marked such that it will have an active reminder for the recipients of the Message Object.

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

reminder properties: A set of properties that specify the attributes of a reminder. These attributes include the time at which and the method by which a reminder is signaled or displayed.

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

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

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

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

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

secondary flag storage location: A binary property that is used to encode a second set of flagging properties, which do not affect the flagged state of a **Message object**.

sender flag: A collection of property values that indicate that a **Draft Message object** has been marked such that the copy of the **Message object** that is saved in the sender's mailbox after the message is sent will appear flagged to the sender.

sender reminder: A collection of property values that indicate that a **Draft Message object** has been marked such that the copy of the Message object that is saved in the sender's **mailbox** after the message is sent will have an active reminder.

Task object: A **Message object** that represents an assignment to be completed.

time flag: A flag that extends the concept of a **basic flag** by associating time-related properties, such as start and due dates, with the flag information on a **Message object**. A time flagged Message object is also marked with a red **color flag**, but it is not considered to be color flagged by definition.

Unicode: A character encoding standard developed by the Unicode Consortium that represents almost all of the written languages of the world. The **Unicode** standard [UNICODE5.0.0/2007]

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provides three forms (UTF-8, UTF-16, and UTF-32) and seven schemes (UTF-8, UTF-16, UTF-16 BE, UTF-16 LE, UTF-32, UTF-32 LE, and UTF-32 BE).

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

1.2 References

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

1.2.1 Normative References

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

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

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

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

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

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

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

[MS-OXOMSG] Microsoft Corporation, "Email Object Protocol".

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

[MS-OXOTASK] Microsoft Corporation, "Task-Related Objects Protocol".

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

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

1.2.2 Informative References

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

1.3 Overview

The Informational Flagging Protocol allows a user to mark an item for either follow-up or categorization. The marker is referred to as a flag. By flagging an item for follow up, the user can track the progress and completion of an associated work item. Categorizing items with flags enables a user to organize items in the user's **mailbox**. For example, users can assign start dates and due dates to their flagged items to prioritize their work, or they can assign a flag color to group related items.

This protocol specifies a set of properties that identify a **Message object** as being flagged. There are six different types of flags: **basic flag**, **color flag**, **time flag**, **complete flag**, **recipient flag**, and **sender flag**. A Message object that is delivered to a **recipient** and the sender's copy of that Message object can have their flag-related properties set independently of each other.

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This protocol extends the Message and Attachment Object Protocol, described in [MS-OXCMSG], in that it adds capability for flagging a Message object.

1.4 Relationship to Other Protocols

The Informational Flagging Protocol has the same dependencies as the Message and Attachment Object Protocol, which is described in [MS-OXCMSG]. A **sender flag** is closely related to a **sender reminder**, which is described in [MS-OXORMDR].

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

1.5 Prerequisites/Preconditions

This protocol assumes that the client has previously logged on to the server, as specified in [MS-OXCSTOR], and has acquired a **handle** to the **Message object** on which it intends to operate.

1.6 Applicability Statement

A client can use the Informational Flagging Protocol to set various flags on a **Message object**. This protocol is intended to be a complement, and not a substitute, for full task management, which is described in [MS-OXOTASK].

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

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2 Messages

2.1 Transport

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

2.2 Message Syntax

A **Message object** can have its flag state changed by the client. Constraints for setting flags on a Message object are defined in section 2.2.1 through section 2.2.3.

When a value is specified as not present, the property MUST NOT exist on the Message object, and if it exists, it MUST be deleted. Setting a property to 0 or to a zero-length string does not delete the property from the Message object.

2.2.1 Properties Specific to the Informational Flagging Protocol

2.2.1.1 PidTagFlagStatus Property

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

The **PidTagFlagStatus** property ([MS-OXPROPS] section 2.697) specifies the flag state of the **Message object**. This property is present on the Message object only if the object has been flagged and is not present otherwise. It MUST NOT exist on a **meeting-related object**, and it SHOULD NOT<1> exist on a **Task object**. When acting on other Message objects, this property is set to one of the following values.

Numeric value	Name	Meaning
0x00000001	**followupComplete**	The object is flagged as complete. This value is valid only for a **complete flag**.
0x00000002	**followupFlagged**	The object is flagged for follow-up. This value is valid for a **basic flag**, a **color flag**, a **time flag**, and a **recipient flag**.

2.2.1.2 PidTagFollowupIcon Property

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

The **PidTagFollowupIcon** property ([MS-OXPROPS] section 2.703) specifies the color of the flag that is set on the **Message object**. The flag will appear with the specified color in the UI. This property SHOULD NOT<2> exist on a **Task object**. When acting on other Message objects, this property is set to one of the following values. If this property is not present on a flagged object, the flag has no color. This property can be set to any of these values for a **color flag**, but it MUST be set to 0x00000006 for a **time flag** and a **recipient flag**.

Numeric value	Meaning
0x00000001	Purple flag
0x00000002	Orange flag

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Numeric value	Meaning
0x00000003	Green flag
0x00000004	Yellow flag
0x00000005	Blue flag
0x00000006	Red flag

2.2.1.3 PidTagFlagCompleteTime Property

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

The **PidTagFlagCompleteTime** property ([MS-OXPROPS] section 2.696) specifies the date and time, in **Coordinated Universal Time (UTC)**, that the **Message object** was flagged as completed. The time's smallest resolution MUST be minutes, and the value MUST be a multiple of 600,000,000. This property is present on the Message object only if the object's **PidTagFlagStatus** property (section 2.2.1.1) is set to 0x00000001. This property MUST NOT exist on a **meeting-related object**; it SHOULD NOT<3> exist on a **Task object**.

2.2.1.4 PidTagReplyRequested Property

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

The **PidTagReplyRequested** property ([MS-OXOMSG] section 2.2.1.45) indicates whether a reply is requested by the message's sender. This property SHOULD NOT be changed on a **meeting-related object** because this property has a specialized meaning for meeting-related objects, as specified in [MS-OXOCAL]. This property SHOULD NOT<4> exist on a **Task object**. For a **Message object** that is neither a meeting-related object nor a Task object, this property SHOULD be set as follows for flags:<5>

- For a **basic flag**, **color flag**, **time flag**, or a **recipient flag**: 0x01 (TRUE)
- For a **complete flag**: 0x00 (FALSE)
- For a **sender flag**: the **PidTagReplyRequested** property is not present

The server does not set the **PidTagReplyRequested** property.

2.2.1.5 PidTagResponseRequested Property

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

The **PidTagResponseRequested** property ([MS-OXOMSG] section 2.2.1.46) has identical values and semantics to the **PidTagReplyRequested** property ([MS-OXOMSG] section 2.2.1.45) in terms of this protocol, and therefore, the client updates these values in an identical manner.

The server does not set the **PidTagResponseRequested** property.

2.2.1.6 PidTagToDoItemFlags Property

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

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The **PidTagToDoItemFlags** property ([MS-OXPROPS] section 2.1048) specifies the type of flag that is set on a **Message object**.<6> The possible bit values are as follows. All bits not specified in the table are reserved. They MUST be ignored but SHOULD be preserved if they are set.

Bit	Bit name	Meaning
0x00000001	**todoTimeFlagged**	A **time flag** or a **complete flag** is set.
0x00000008	**todoRecipientFlagged**	A **recipient flag** or a **sender flag** is set. This bit SHOULD be set only on a **Draft Message object**.

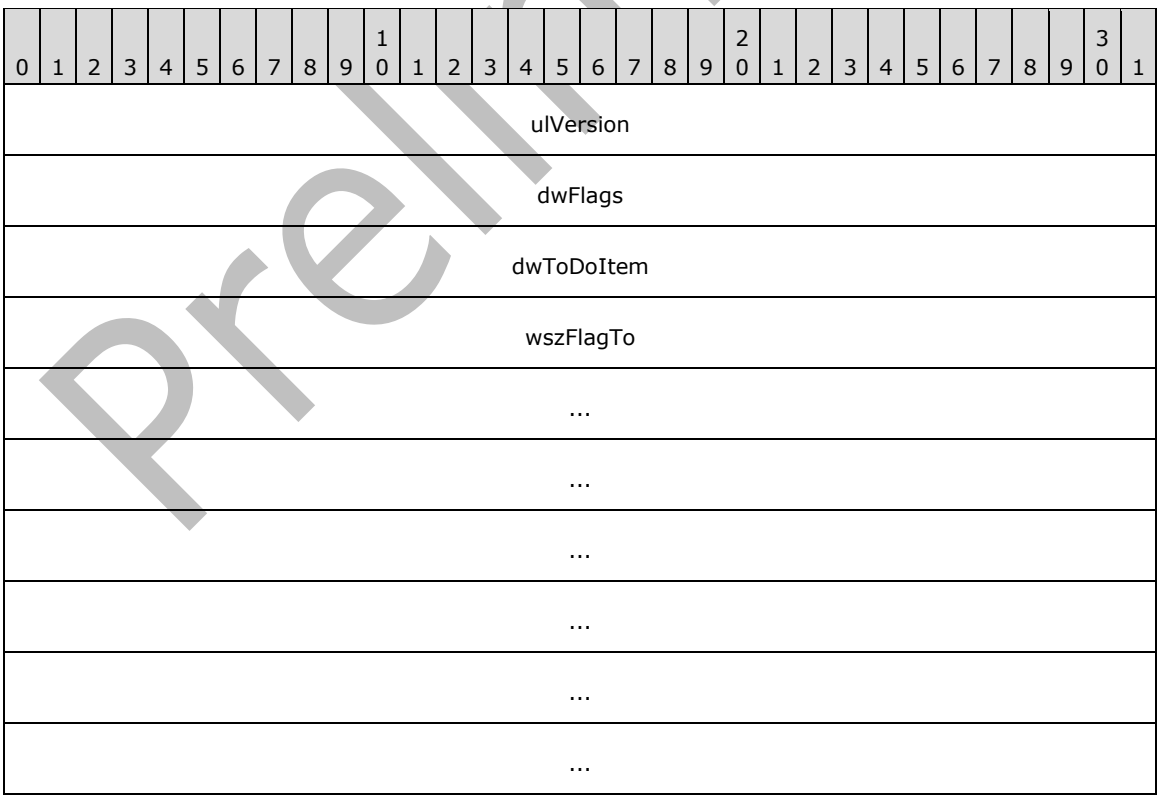
2.2.1.7 PidTagSwappedToDoData Property

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

The **PidTagSwappedToDoData** property ([MS-OXPROPS] section 2.1037) acts as the **secondary flag storage location** if **sender flags** or **sender reminders** are supported.<7> This secondary storage location can be used by the client to maintain a second set of the flagging-related property values that do not affect the flag state of the **Message object**.

Properties for a sender flag or a sender reminder can be stored in the **PidTagSwappedToDoData** property without exposing the sender flag or sender reminder information to the **recipients** of the message. Similarly, properties for a **recipient flag** or a **recipient reminder** can be stored in the **PidTagSwappedToDoData** property for informational purposes on a previously sent message. For details about **reminders**, see [MS-OXORMDR].

The **PidTagSwappedToDoData** property contains the following fields. The mapping of these fields to the **primary flag storage location** is specified in each field description.



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...
(wszFlagTo cont'd for 120 rows)
rtmStartDate
rtmDueDate
rtmReminder
fReminderSet

ulVersion (4 bytes): An integer that specifies the version of the **PidTagSwappedToDoData** property. This protocol specifies only version 0x00000001. The contents of the **PidTagSwappedToDoData** property MUST be ignored if the version number is not 0x00000001.

dwFlags (4 bytes): A set of bits that indicate the validity of the six member fields that correspond to properties. The bits specified in the following table are combined by using a bitwise OR operation.

Bit	Meaning
0x00000001	The **dwToDoItem** field contains valid data.
0x00000008	The **rtmStartDate** field contains valid data.
0x00000010	The **rtmDueDate** field contains valid data.
0x00000020	The **wszFlagTo** field contains valid data.
0x00000040	The **fReminderSet** field contains valid data.
0x00000080	The **rtmReminder** field contains valid data.

dwToDoItem (4 bytes): An integer that corresponds to the **PidTagToDoItemFlags** property (section 2.2.1.6).

wszFlagTo (512 bytes): A string of **Unicode** characters that corresponds to the **PidLidFlagRequest** property (section 2.2.1.9).

rtmStartDate (4 bytes): An integer that corresponds to the **PidLidTaskStartDate** property ([MS-OXOTASK] section 2.2.2.2.4).

rtmDueDate (4 bytes): An integer that corresponds to the **PidLidTaskDueDate** property ([MS-OXOTASK] section 2.2.2.2.5).

rtmReminder (4 bytes): An integer that corresponds to the **PidLidReminderTime** ([MS-OXORMDR] section 2.2.1.4), **PidLidReminderSignalTime** ([MS-OXORMDR] section 2.2.1.2), and **PidTagReplyTime** (section 2.2.3.1) properties.

When the contents of the primary flag storage location and secondary flag storage location are swapped, the contents of the **rtmReminder** field are written to the **PidLidReminderTime**, **PidLidReminderSignalTime**, and **PidTagReplyTime** properties, and the data in the **PidLidReminderTime** property is written to the **rtmReminder** field. For details about **reminder properties**, see [MS-OXORMDR] section 2.2.1.

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fReminderSet (4 bytes): A Boolean value that corresponds to the **PidLidReminderSet** property ([MS-OXORMDR] section 2.2.1.1).

The value in the **rtmStartDate**, **rtmDueDate**, and **rtmReminder** fields is stored as a 4-byte integer that is expressed as the number of minutes since 00:00:00 on January 1, 1601, in **UTC**. To indicate no date and time, the **rtmStartDate**, **rtmDueDate**, and **rtmReminder** fields are set to the value 0x5AE980E0.

2.2.1.8 PidTagSwappedToDoStore Property

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

The **PidTagSwappedToDoStore** property ([MS-OXPROPS] section 2.1038) specifies a binary value that is used to determine the need for post-transmit processing of an e-mail message, as specified in section 3.1.4.3. If the **PidTagSwappedToDoData** property (section 2.2.1.7) is set on a **Draft Message object**, then the **PidTagSwappedToDoStore** property is set to the value of the **PidTagStoreEntryId** property ([MS-OXCMSG] section 2.2.1.44) of the **E-mail object**; otherwise, the **PidTagSwappedToDoStore** property is not set.

2.2.1.9 PidLidFlagRequest Property

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

The **PidLidFlagRequest** property ([MS-OXPROPS] section 2.136) specifies user-supplied text to be associated with the flag that is set on the **Message object**. If the user does not supply a value, this property is set to "Follow up". This property SHOULD NOT exist on a **meeting-related object**.

The client ignores the **PidLidFlagRequest** property if the **PidLidFlagString** property (section 2.2.1.10) is set to a nonzero value. The server always uses the **PidLidFlagRequest** property.

2.2.1.10 PidLidFlagString Property

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

The **PidLidFlagString** property ([MS-OXPROPS] section 2.137) contains an integer that identifies a predefined text string to be associated with the flag. This property MUST NOT exist on **meeting-related objects** and is optional on other **Message objects**. Setting this property is optional for the client. The server does not read or set this property. If this property is either not present on the object or set to 0x00000000, the client associates the value of the **PidLidFlagRequest** property (section 2.2.1.9) with the flag; otherwise, the client uses the text identified by this property.

The predefined text strings and their associated integer identifiers are specified in the following tables. All strings can be translated into the user's language, if appropriate.

The predefined text strings for **Contact objects** are as follows.

Value	English string
0x0000006E	"Follow up"
0x0000006F	"Call"
0x00000070	"Arrange Meeting"
0x00000071	"Send E-mail"
0x00000072	"Send Letter"

The predefined text strings for all other Message objects are as follows.

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Value	English string
0x00000001	"Call"
0x00000002	"Do not Forward"
0x00000003	"Follow up"
0x00000004	"For Your Information"
0x00000005	"Forward"
0x00000006	"No Response Necessary"
0x00000007	"Read"
0x00000008	"Reply"
0x00000009	"Reply to All"
0x0000000A	"Review"

2.2.1.11 PidLidValidFlagStringProof Property

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

The **PidLidValidFlagStringProof** property ([MS-OXPROPS] section 2.348) MUST NOT exist on **meeting-related objects**. On objects that are not sendable (received mail and objects that are not mail), this property is optional. If present, this property is set equal to the **PidTagMessageDeliveryTime** property ([MS-OXOMSG] section 2.2.3.9) when modifying the **PidLidFlagRequest** property (section 2.2.1.9). Setting this property is optional for the client. The server does not read or set this property.

This property can be used to validate whether the **PidLidFlagRequest** property was set by an agent with knowledge of the value of the **PidTagMessageDeliveryTime** property. Since the value of the **PidTagMessageDeliveryTime** property cannot be predicted by the sender, if the value of the **PidLidValidFlagStringProof** property is equal to the value of the **PidTagMessageDeliveryTime** property, it is reasonably certain that the value of the **PidLidFlagRequest** property did not originate from the sender of the message. A client can decide how to present the value of the **PidLidFlagRequest** property to the end user based on the result of this comparison in accordance with the specific security policy of the client.

If the client ignores the **PidLidFlagRequest** property due to the value of the **PidLidFlagString** property (section 2.2.1.10), the client also ignores the **PidLidValidFlagStringProof** property.

2.2.1.12 PidLidToDoTitle Property

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

The **PidLidToDoTitle** property ([MS-OXPROPS] section 2.346) specifies user-supplied text to identify the **Message object** in a **consolidated to-do list**. The **PidLidToDoTitle** property MUST NOT be set on a **Task object**.

To indicate an empty property, the **PidLidToDoTitle** property SHOULD NOT be set to the zero-length string and instead SHOULD be deleted. If this property does not exist on an object, a client SHOULD<8> set this property to the value of the **PidTagNormalizedSubject** property ([MS-OXCMSG] section 2.2.1.10).

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On a **Draft Message object**, if the client implements **sender flags**, this property SHOULD be set to the value of the **PidLidFlagRequest** property (section 2.2.1.9).

2.2.1.13 PidLidToDoOrdinalDate Property

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

The **PidLidToDoOrdinalDate** property ([MS-OXPROPS] section 2.344) specifies the time that an object is flagged. When an object is flagged, this property SHOULD<9> be set to the current time in **UTC**.

This property SHOULD be used to determine the order of objects in a **consolidated to-do list**. If the client allows a user to reorder tasks within the consolidated to-do list via dragging or other mechanisms, the client can use any suitable algorithm to determine the new value of this property such that the task appears in the correct place when this property is used as a sorting field. When this property is used to sort objects and two or more of the objects have the same value for this property, the objects with the matching values will tie for placement in the list. In this case, the **PidLidToDoSubOrdinal** property (section 2.2.1.14) is used to break the tie.

2.2.1.14 PidLidToDoSubOrdinal Property

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

The **PidLidToDoSubOrdinal** property ([MS-OXPROPS] section 2.345) specifies a string that is used to break a tie for placement within a sorted list of **Message objects**. When the **PidLidToDoOrdinalDate** property (section 2.2.1.13) is used to sort objects and two or more of the objects have the same value for this property, the objects with the matching values tie for placement in the list. In this case, the **PidLidToDoSubOrdinal** property is used to break the tie. If used, this property MUST be sorted lexicographically.

The component characters of the string consist of only the numerals 0 through 9. This property SHOULD be initially set to "5555555". The length of this property MUST NOT exceed 254 characters (excluding the terminating null character).

2.2.2 Properties Shared with the Task-Related Object Protocol

The following properties are shared by this protocol and the Task-Related Object Protocol, which is specified in [MS-OXOTASK]:

- **PidLidTaskStartDate** ([MS-OXOTASK] section 2.2.2.2.4)
- **PidLidTaskDueDate** ([MS-OXOTASK] section 2.2.2.2.5)
- **PidLidTaskDateCompleted** ([MS-OXOTASK] section 2.2.2.2.9)
- **PidLidTaskComplete** ([MS-OXOTASK] section 2.2.2.2.20)
- **PidLidTaskStatus** ([MS-OXOTASK] section 2.2.2.2.2)
- **PidLidPercentComplete** (section 2.2.2.3)
- **PidLidCommonStart** ([MS-OXCMSG] section 2.2.1.18)
- **PidLidCommonEnd** ([MS-OXCMSG] section 2.2.1.19)

Unless noted in section 2.2.2.1 through section 2.2.2.3, the semantics and accepted values of these shared properties are identical to those specified in [MS-OXOTASK].

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2.2.2.1 PidLidTaskStatus Property

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

The **PidLidTaskStatus** property ([MS-OXOTASK] section 2.2.2.2.2) is set on a **Message object** as follows for flags:<10>

- For a **time flag** and a **recipient flag**: 0x00000000
- For a **complete flag**: 0x00000002
- For other flags: the **PidLidTaskStatus** property is not present.

The server does not set this property.

2.2.2.2 PidLidTaskComplete Property

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

The **PidLidTaskComplete** property ([MS-OXOTASK] section 2.2.2.2.20) is set on a **Message object** as follows for flags:<11>

- For a **time flag** and a **recipient flag**: 0x00 (FALSE)
- For a **complete flag**: 0x01 (TRUE)
- For other flags: the **PidLidTaskComplete** property is not present.

The server does not set this property.

2.2.2.3 PidLidPercentComplete Property

Type: **PtypFloating64** ([MS-OXCDATA] section 2.11.1)

The **PidLidPercentComplete** property ([MS-OXPROPS] section 2.202) is set on a **Message object** as follows for flags:<12>

- For a **time flag** and a **recipient flag**: 0.0
- For a **complete flag**: 1.0
- For other flags: the **PidLidPercentComplete** property is not present.

The server does not set this property.

2.2.3 Properties Shared with the Reminder Settings Protocol

The following properties are shared by this protocol and the Reminder Settings Protocol, as specified in [MS-OXORMDR]:

- **PidLidReminderSet** ([MS-OXORMDR] section 2.2.1.1)
- **PidLidReminderTime** ([MS-OXORMDR] section 2.2.1.4)
- **PidLidReminderSignalTime** ([MS-OXORMDR] section 2.2.1.2)
- **PidTagReplyTime** (section 2.2.3.1)

Unless noted in section 2.2.3.1, the semantics and accepted values of these properties are identical to those specified in [MS-OXORMDR].

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2.2.3.1 PidTagReplyTime Property

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

On a **Draft Message object**, if the sender desires to set a deadline for the **recipient**, the **PidTagReplyTime** property ([MS-OXPROPS] section 2.919) is set to the desired deadline, in **UTC**.

The server does not set the **PidTagReplyTime** property.

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3 Protocol Details

3.1 Client Details

The client sets flags on a **Message object** and operates within the client role as specified in [MS-OXCMSG].

3.1.1 Abstract Data Model

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

A **Message object** is always considered to be in one of the following states with respect to this protocol:

- Unflagged
- Basic-flagged
- Color-flagged
- Time-flagged
- Flagged as complete
- Recipient-flagged
- Sender-flagged

Otherwise, the abstract data model of the Informational Flagging Protocol does not differ significantly from the abstract data model of the Message object to which this protocol is being applied. For details about the abstract data model of the Message object for the client, see [MS-OXCMSG] section 3.1.1.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Higher-Layer Triggered Events

3.1.4.1 Flagging a Message Object

To flag a **Message object**, the client opens the object by sending a **RopOpenMessage** **remote operation (ROP)** request ([MS-OXCROPS] section 2.2.6.1). Message objects, other than **Appointment objects**, **Journal objects**, and **Note objects**, can be flagged.<13>

The client then sets properties on the object by using the property ROPs that are specified in [MS-OXCPRPT]. The properties that are set depend on the particular flag used, as specified in section 3.1.4.1.1 through section 3.1.4.1.6. In addition, some properties are not set on some Message

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objects. For details about property constraints, see the property definitions in section 2.2.1 through section 2.2.3.

3.1.4.1.1 Setting a Color Flag

The client sets the following properties to flag a **Message object** with a **color flag**.<14> Some of these properties cannot be set on a **meeting-related object** or a **Task object**. For details, see the property definitions in section 2.2.1.

- **PidTagFollowupIcon** (section 2.2.1.2)
- **PidLidFlagRequest** (section 2.2.1.9)
- **PidLidFlagString** (section 2.2.1.10)
- **PidLidValidFlagStringProof** (section 2.2.1.11)
- **PidTagFlagStatus** (section 2.2.1.1)
- **PidTagReplyRequested** (section 2.2.1.4)
- **PidTagResponseRequested** (section 2.2.1.5)

3.1.4.1.2 Setting a Basic Flag

A **basic flag** is identical to the **color flag** specified in section 3.1.4.1 except that the **PidTagFollowupIcon** property (section 2.2.1.2) is not set.<15> **Meeting-related objects** cannot have a basic flag.

3.1.4.1.3 Setting a Time Flag

The client sets the following properties to flag a **Message object** with a **time flag**.<16> Some of these properties cannot be set on a **meeting-related object** or a **Task object**. For details, see the property definitions in section 2.2.1.

- **PidTagFollowupIcon** (section 2.2.1.2)
- **PidTagToDoItemFlags** (section 2.2.1.6)
- **PidLidToDoOrdinalDate** (section 2.2.1.13)—set only if it does not already exist on the object
- **PidLidToDoSubOrdinal** (section 2.2.1.14)
- **PidLidToDoTitle** (section 2.2.1.12)
- **PidLidFlagRequest** (section 2.2.1.9)—set only if it does not already exist on the object
- **PidLidFlagString** (section 2.2.1.10)—set only if it does not already exist on the object
- **PidLidValidFlagStringProof** (section 2.2.1.11)—set only if it does not already exist on the object
- **PidTagFlagStatus** (section 2.2.1.1)
- **PidTagReplyRequested** (section 2.2.1.4)
- **PidTagResponseRequested** (section 2.2.1.5)
- **PidLidTaskDueDate** ([MS-OXOTASK] section 2.2.2.2.5)
- **PidLidTaskStartDate** ([MS-OXOTASK] section 2.2.2.2.4)

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- **PidLidCommonStart** ([MS-OXCMSG] section 2.2.1.18)
- **PidLidCommonEnd** ([MS-OXCMSG] section 2.2.1.19)
- **PidLidTaskComplete** (section 2.2.2.2)
- **PidLidTaskStatus** (section 2.2.2.1)
- **PidLidPercentComplete** (section 2.2.2.3)

Even if the user does not specify dates for the **PidLidTaskStartDate** and the **PidLidTaskDueDate** properties, the flag is still considered a time flag if the **PidTagToDoItemFlags** property is set to **todoTimeFlagged** (0x00000001).

3.1.4.1.4 Setting a Complete Flag

The client sets the following properties to flag a **Message object** with a **complete flag**.<17> Some of these properties cannot be set on a **meeting-related object** or a **Task object**. For details, see the property definitions in section 2.2.1.

- **PidTagToDoItemFlags** (section 2.2.1.6)
- **PidLidToDoOrdinalDate** (section 2.2.1.13)—set only if it does not already exist on the object
- **PidLidToDoSubOrdinal** (section 2.2.1.14)
- **PidLidToDoTitle** (section 2.2.1.12)
- **PidLidFlagRequest** (section 2.2.1.9)—set only if it does not already exist on the object
- **PidLidFlagString** (section 2.2.1.10)—set only if it does not already exist on the object
- **PidLidValidFlagStringProof** (section 2.2.1.11)—set only if it does not already exist on the object
- **PidTagFlagStatus** (section 2.2.1.1)
- **PidTagFlagCompleteTime** (section 2.2.1.3)
- **PidTagReplyRequested** (section 2.2.1.4)
- **PidTagResponseRequested** (section 2.2.1.5)
- **PidLidTaskDateCompleted** ([MS-OXOTASK] section 2.2.2.2.9)
- **PidLidTaskComplete** (section 2.2.2.2)
- **PidLidTaskStatus** (section 2.2.2.1)
- **PidLidPercentComplete** (section 2.2.2.3)

3.1.4.1.5 Setting a Recipient Flag

The client sets the following properties to flag a **Draft Message object** with a **recipient flag**. When a recipient flag arrives in the **recipient's mailbox**, it appears as a **basic flag**.

- **PidTagFlagStatus** (section 2.2.1.1)
- **PidTagReplyRequested** (section 2.2.1.4)
- **PidTagResponseRequested** (section 2.2.1.5)
- **PidLidFlagRequest** (section 2.2.1.9)

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- **PidLidFlagString** (section 2.2.1.10)
- **PidTagToDoItemFlags** (section 2.2.1.6)
- **PidLidTaskComplete** (section 2.2.2.2)
- **PidLidTaskStatus** (section 2.2.2.1)
- **PidLidPercentComplete** (section 2.2.2.3)

If the client supports **sender flags**, the **PidTagSwappedToDoStore** property (section 2.2.1.8) is set to trigger the post-transmit processing specified in section 3.1.4.3.

3.1.4.1.6 Setting a Sender Flag

The client sets the following properties to flag a **Draft Message object** with a **sender flag**.<18>

- **PidTagSwappedToDoData** property (section 2.2.1.7)—acts as the **secondary flag storage location**
- **PidTagSwappedToDoStore** property (section 2.2.1.8)—triggers post-transmit processing, as specified in section 3.1.4.3

The **recipient flag** properties are stored in the **primary flag storage location**, as specified in section 3.1.4.1.5, whereas the sender flag properties are stored in the secondary flag storage location (the **PidTagSwappedToDoData** property).

3.1.4.2 Clearing a Flag on a Message Object

To clear a flag from a **Message object**, the client opens the object by sending a **RopOpenMessage ROP request buffer** ([MS-OXCROPS] section 2.2.6.1). The client then sets or deletes properties on the object by using the property **ROPs** that are specified in [MS-OXCPRPT]. The properties that are set depend on the particular flag used, as specified in section 3.1.4.1.1 through section 3.1.4.1.6.

3.1.4.2.1 Clearing a Flag on a Meeting-Related Object

Clearing a flag on a **meeting-related object** is identical to clearing a flag on other **Message objects**, as specified in section 3.1.4.2.3, except that the following properties MUST NOT be deleted or altered:

- **PidTagFlagStatus** (section 2.2.1.1)
- **PidTagFlagCompleteTime** (section 2.2.1.3)
- **PidTagReplyRequested** ([MS-OXOMSG] section 2.2.1.45)
- **PidTagResponseRequested** ([MS-OXOMSG] section 2.2.1.46)
- **PidLidFlagRequest** (section 2.2.1.9)
- **PidLidFlagString** (section 2.2.1.10)
- **PidLidValidFlagStringProof** (section 2.2.1.11)

3.1.4.2.2 Clearing a Flag on a Task Object

Flagging a task is a shortcut for the user to change the values of **PidLidTaskStartDate** ([MS-OXOTASK] section 2.2.2.2.4) and **PidLidTaskDueDate** ([MS-OXOTASK] section 2.2.2.2.5). A client can, in this way, always view an uncompleted task as having a **time flag**. Because of this, clearing a flag on a task can be viewed as equivalent to deleting the **Task object**.

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3.1.4.2.3 Clearing a Flag on Other Message Objects

To clear a flag from a **Message object**, the properties that were set for the particular flag SHOULD be deleted, with the following exceptions. These properties are set to the following values.

Property	Value
PidTagToDoItemFlags (section 2.2.1.6)	Set the bit (**todoTimeFlagged** or **todoRecipientFlagged**) for the associated flag to 0.
PidLidTaskComplete (section 2.2.2.2)	0x00 (FALSE)
PidLidTaskStatus (section 2.2.2.1)	0x00000000
PidLidPercentComplete (section 2.2.2.3)	0.0
PidTagReplyRequested (section 2.2.1.4)	0x00 (FALSE)
PidTagResponseRequested (section 2.2.1.5)	0x00 (FALSE)
PidLidFlagRequest (section 2.2.1.9)	Zero-length string
PidLidFlagString (section 2.2.1.10)	0x00000000
PidLidToDoOrdinalDate (section 2.2.1.13)	4501/01/01 00:00:00.000
PidLidToDoSubOrdinal (section 2.2.1.14)	Zero-length string

3.1.4.3 Post-Transmit Processing of a Flagged Message

Once a message that has a value set for the **PidTagSwappedToDoStore** property (section 2.2.1.8) has been sent, a client that supports **sender flags** or **sender reminders** takes the following actions.<19>

- If the value of the **PidTagSwappedToDoStore** property matches the value of the **PidTagStoreEntryId** property ([MS-OXCMSG] section 2.2.1.44) of the **Message object**, the client swaps the contents of the **PidTagSwappedToDoData** property (section 2.2.1.7) and the **primary flag storage location**, with the exception that if the **PidTagToDoItemFlags** property (section 2.2.1.6) is set to **todoRecipientFlagged**, then the **dwToDoItem** field of the **PidTagSwappedToDoData** property is set to **todoTimeFlagged**. After the operation, the previous contents of the primary flag storage location are now in the **secondary flag storage location** and vice versa. In addition, the **PidLidValidFlagStringProof** property (section 2.2.1.11) is set equal to the **PidTagMessageDeliveryTime** property ([MS-OXOMSG] section 2.2.3.9).
- If the value of the **PidTagSwappedToDoStore** property does not match the value of the **PidTagStoreEntryId** property, the client clears the **PidTagSwappedToDoData** property.

In both cases, the **PidTagSwappedToDoStore** property is deleted.

3.1.5 Message Processing Events and Sequencing Rules

None.

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3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

3.2 Server Details

The server processes a client's requests regarding the flagging of a **Message object** and in all other ways operates within the server role as specified in [MS-OXCMSG].

3.2.1 Abstract Data Model

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

A **Message object** is always considered to be in one of the following states with respect to this protocol:

- Unflagged
- Basic-flagged
- Color-flagged
- Time-flagged
- Flagged as complete
- Recipient-flagged
- Sender-flagged

Otherwise, the abstract data model of the Informational Flagging Protocol does not differ significantly from the abstract data model of the Message object to which this protocol is being applied. For details about the abstract data model of the Message object for the server, see [MS-OXCMSG] section 3.2.1.

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

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

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3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

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4 Protocol Examples

All examples in this section assume that the user who is flagging the object resides in the Pacific Standard Time Zone (**UTC** - 8). The following are descriptions of what a client does to accomplish the scenarios and the responses that a server returns.

Before flagging any **Message objects**, the client requests the server to map **named properties** to **property IDs** by using the **RopGetPropertyIDsFromNames ROP** ([MS-OXCROPS] section 2.2.8.1).

Property	Property set GUID	LID
PidLidFlagRequest (section 2.2.1.9)	{00062008-0000-0000-C000-000000000046}	0x8530
PidLidFlagString (section 2.2.1.10)	{00062008-0000-0000-C000-000000000046}	0x85C0
PidLidValidFlagStringProof (section 2.2.1.11)	{00062008-0000-0000-C000-000000000046}	0x85BF
PidLidToDoTitle (section 2.2.1.12)	{00062008-0000-0000-C000-000000000046}	0x85A4
PidLidToDoOrdinalDate (section 2.2.1.13)	{00062008-0000-0000-C000-000000000046}	0x85A0
PidLidToDoSubOrdinal (section 2.2.1.14)	{00062008-0000-0000-C000-000000000046}	0x85A1
PidLidTaskStartDate ([MS-OXOTASK] section 2.2.2.2.4)	{00062003-0000-0000-C000-000000000046}	0x8104
PidLidTaskDueDate ([MS-OXOTASK] section 2.2.2.2.5)	{00062003-0000-0000-C000-000000000046}	0x8105
PidLidCommonStart ([MS-OXCMSG] section 2.2.1.18)	{00062008-0000-0000-C000-000000000046}	0x8516
PidLidCommonEnd ([MS-OXCMSG] section 2.2.1.19)	{00062008-0000-0000-C000-000000000046}	0x8517
PidLidTaskDateCompleted ([MS-OXOTASK] section 2.2.2.2.9)	{00062003-0000-0000-C000-000000000046}	0x810F
PidLidTaskComplete (section 2.2.2.2)	{00062003-0000-0000-C000-000000000046}	0x811C
PidLidTaskStatus (section 2.2.2.1)	{00062003-0000-0000-C000-000000000046}	0x8101
PidLidPercentComplete (section 2.2.2.3)	{00062003-0000-0000-C000-000000000046}	0x8102
PidLidReminderSet ([MS-OXORMDR] section 2.2.1.1)	{00062008-0000-0000-C000-000000000046}	0x8503
PidLidReminderDelta ([MS-OXORMDR] section 2.2.1.3)	{00062008-0000-0000-C000-000000000046}	0x8501
PidLidReminderTime ([MS-OXORMDR] section 2.2.1.4)	{00062008-0000-0000-C000-000000000046}	0x8502
PidLidReminderSignalTime ([MS-OXORMDR] section	{00062008-0000-0000-C000-	0x8560

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Property	Property set GUID	LID
2.2.1.2)	000000000046}	

The server responds with the following property IDs, which will be used in the examples that follow (the actual identifiers are at the discretion of the server).

Property	Property ID
PidLidFlagRequest	0x802A
PidLidFlagString	0x83C0
PidLidValidFlagStringProof	0x83CA
PidLidToDoTitle	0x8018
PidLidToDoOrdinalDate	0x830D
PidLidToDoSubOrdinal	0x830E
PidLidTaskStartDate	0x8143
PidLidTaskDueDate	0x8144
PidLidCommonStart	0x81BC
PidLidCommonEnd	0x81BB
PidLidTaskDateCompleted	0x8149
PidLidTaskComplete	0x8148
PidLidTaskStatus	0x8145
PidLidPercentComplete	0x8146
PidLidReminderSet	0x8004
PidLidReminderDelta	0x81FF
PidLidReminderTime	0x8005
PidLidReminderSignalTime	0x8006

4.1 Color-Flagged Object

Ryan Gregg has a message in his Inbox related to the Woodgrove Bank account, which he has associated to the orange flag. He uses the default request string designated by the client, which is "Follow up". The following is a description of what a client might do to accomplish Ryan's intentions and the responses a server might return.

To open the message to be flagged, the client sends a **RopOpenMessage** **ROP request** ([MS-OXCROPS] section 2.2.6.1) and waits for the server to respond. The server response contains a **handle** to the **Message object**.

To retrieve some properties of the Message object, the client sends a **RopGetPropertiesSpecific** ROP request ([MS-OXCROPS] section 2.2.8.3).

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Property	Property ID	Property type
PidTagMessageDeliveryTime ([MS-OXOMSG] section 2.2.3.9)	0x0E06	0x0040 (**PtypTime** ([MS-OXCDATA] section 2.11.1))

The client receives a **ROP response buffer** from the server with the requested property values.

Property	Property ID	Property type	Value
PidTagMessageDeliveryTime	0x0E06	0x0040	2008/02/11 22:41:24.765

To set the properties for the **color flag**, the client sends a **RopSetProperties** ROP request ([MS-OXCROPS] section 2.2.8.6) with the values that are specified in the following table.

Property	Property ID	Property type	Value
PidTagFlagStatus (section 2.2.1.1)	0x1090	0x0003 (**PtypInteger32** ([MS-OXCDATA] section 2.11.1))	0x00000002
PidTagFollowupIcon (section 2.2.1.2)	0x1095	0x0003	0x00000002
PidTagReplyRequested (section 2.2.1.4)	0x0C17	0x000B (**PtypBoolean** ([MS-OXCDATA] section 2.11.1))	0x01 (TRUE)
PidTagResponseRequested (section 2.2.1.5)	0x0063	0x000B	0x01 (TRUE)
PidLidFlagRequest (section 2.2.1.9)	0x802A	0x001F (**PtypString** ([MS-OXCDATA] section 2.11.1))	"Follow up"
PidLidFlagString (section 2.2.1.10)	0x83C0	0x0003	0x00000003
PidLidValidFlagStringProof (section 2.2.1.11)	0x83CA	0x0040	2008/02/11 22:41:24.765

Finally, to persist the Message object on the server, the client sends a **RopSaveChangesMessage** ROP request ([MS-OXCROPS] section 2.2.6.3), followed by a **RopRelease** ROP request ([MS-OXCROPS] section 2.2.15.3) to release the object.

The above properties are all that is strictly necessary to flag an object with a color flag. Clients can set the other properties discussed in section 2.2.1.7 to appropriate values, if desired.

4.2 Time Flagged Object

Kendall Keil has a message in his Inbox with the subject "Contoso Project", and he wants to be sure to remember to follow up on that message starting on 2008/02/11, and he needs to be done by 2008/02/12. He uses the default request string designated by the client, which is "Follow up". He flags the item on 2008/02/11 22:16:28.177 (**UTC**). The following is a description of what a client might do to accomplish Kendall's intentions and the responses a server might return.

As before, the client first retrieves a **handle** to the **Message object** by sending a **RopOpenMessage ROP request** ([MS-OXCROPS] section 2.2.6.1).

Besides a handle, the server returns the following relevant data in the **RopOpenMessage ROP response** ([MS-OXCROPS] section 2.2.6.1).

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Property	Property ID	Property type	Value
PidTagNormalizedSubject ([MS-OXCMSG] section 2.2.1.10)	0x0E1D	0x001F (**PtypString** ([MS-OXCDATA] section 2.11.1))	"Contoso Project"

To retrieve the state of the Message object, the client sends a **RopGetPropertiesSpecific** ROP request ([MS-OXCROPS] section 2.2.8.3).

Property	Property ID	Property type
PidTagMessageDeliveryTime ([MS-OXOMSG] section 2.2.3.9)	0x0E06	0x0040 (**PtypTime** ([MS-OXCDATA] section 2.11.1))

The client receives a **ROP response buffer** from the server with the requested values.

Property	Property ID	Property type	Value
PidTagMessageDeliveryTime	0x0E06	0x0040	2008/02/11 22:41:24.765

To set the properties for the **time flag**, the client sends a **RopSetProperties** ROP request ([MS-OXCROPS] section 2.2.8.6) with the values that are specified in the following table.

Property	Property ID	Property type	Value
PidTagFlagStatus (section 2.2.1.1)	0x1090	0x0003 (**PtypInteger32** ([MS-OXCDATA] section 2.11.1))	0x00000002
PidTagFollowupIcon (section 2.2.1.2)	0x1095	0x0003	0x00000006
PidTagReplyRequested (section 2.2.1.4)	0x0C17	0x000B (**PtypBoolean** ([MS-OXCDATA] section 2.11.1))	0x01 (TRUE)
PidTagResponseRequested (section 2.2.1.5)	0x0063	0x000B	0x01 (TRUE)
PidTagToDoItemFlags (section 2.2.1.6)	0x0E2B	0x0003	0x00000001
PidLidFlagRequest (section 2.2.1.9)	0x802A	0x001F	"Follow up"
PidLidFlagString (section 2.2.1.10)	0x83C0	0x0003	0x00000003
PidLidValidFlagStringProof (section 2.2.1.11)	0x83CA	0x0040	2008/02/11 22:41:24.765
PidLidToDoTitle (section 2.2.1.12)	0x8018	0x001F	"Contoso Project"
PidLidToDoOrdinalDate (section 2.2.1.13)	0x830D	0x0040	2008/02/11 22:16:28.177
PidLidToDoSubOrdinal (section 2.2.1.14)	0x830E	0x001F	"5555555"
PidLidTaskStartDate ([MS-OXOTASK] section 2.2.2.2.4)	0x8143	0x0040	2008/02/11 00:00:00.000
PidLidTaskDueDate ([MS-OXOTASK] section 2.2.2.2.5)	0x8144	0x0040	2008/02/12 00:00:00.000

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Property	Property ID	Property type	Value
PidLidCommonStart ([MS-OXCMSG] section 2.2.1.18)	0x81BC	0x0040	2008/02/11 08:00:00.000
PidLidCommonEnd ([MS-OXCMSG] section 2.2.1.19)	0x81BB	0x0040	2008/02/12 08:00:00.000

Finally, to persist the Message object on the server, the client sends a **RopSaveChangesMessage** ROP request ([MS-OXCROPS] section 2.2.6.3) followed by a **RopRelease** ROP request ([MS-OXCROPS] section 2.2.15.3) to release the object.

4.3 Completed Object

Kendall Keil is now finished with the work item associated with the message in the example given in section 4.2. The following is a description of what a client might do to accomplish Kendall's intentions and the responses a server might return.

As before, the client first retrieves a **handle** to the **Message object** by sending a **RopOpenMessage ROP request** ([MS-OXCROPS] section 2.2.6.1).

To set the properties for the **complete flag**, the client sends a **RopSetProperties** ROP request ([MS-OXCROPS] section 2.2.8.6) with the values that are specified in the following table.

Property	Property ID	Property type	Value
PidTagFlagStatus (section 2.2.1.1)	0x1090	0x0003 (**PtypInteger32** ([MS-OXCDATA] section 2.11.1))	0x00000001
PidTagFlagCompleteTime (section 2.2.1.3)	0x1091	0x0040 (**PtypTime** ([MS-OXCDATA] section 2.11.1))	2008/02/11 22:23:00.000
PidTagReplyRequested (section 2.2.1.4)	0x0C17	0x000B	0x00 (FALSE)
PidTagResponseRequested (section 2.2.1.5)	0x0063	0x000B	0x00 (FALSE)
PidLidTaskDateCompleted ([MS-OXOTASK] section 2.2.2.9)	0x8149	0x0040	2008/02/11 08:00:00.000
PidLidTaskComplete (section 2.2.2.2)	0x8148	0x000B	0x01 (TRUE)
PidLidTaskStatus (section 2.2.2.1)	0x8145	0x0003	0x00000002
PidLidPercentComplete (section 2.2.2.3)	0x8146	0x0005 (**PtypFloating64** ([MS-OXCDATA] section 2.11.1))	1.0
PidLidReminderSet ([MS-OXORMDR] section 2.2.1.1)	0x8004	0x000B	0x00 (FALSE)

To delete the following property, the client sends a **RopDeletePropertiesNoReplicate** ROP request ([MS-OXCROPS] section 2.2.8.9).

Property	Property ID	Property type
PidTagFollowupIcon (section 2.2.1.2)	0x1095	0x0003

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Finally, to persist the Message object on the server, the client sends a **RopSaveChangesMessage** ROP request ([MS-OXCROPS] section 2.2.6.3) followed by a **RopRelease** ROP request ([MS-OXCROPS] section 2.2.15.3) to release the object.

4.4 Flagging a Draft Message Object for the Sender and Recipient

Randy Byrne is planning to send a contract to a customer on March 7, 2008. He wants his co-worker, Marina Dukhon, to review the contract before he sends it out. He sends a message to Marina with a **sender flag** that has a due date of 2008/03/07 with a request string of "Forward", and a **recipient flag** to Marina with a **reminder** on March 6, 2008, at 4:00 P.M. local time and a request string of "Review". The following is a description of what a client might do to accomplish Randy's intentions and the responses a server might return.

As before, the client first retrieves a **handle** to the **Message object** by sending the **RopOpenMessage ROP request** ([MS-OXCROPS] section 2.2.6.1).

To set the properties for the sender flag and the recipient flag, the client sends a **RopSetProperties** ROP request ([MS-OXCROPS] section 2.2.8.6) with the values that are specified in the following table.

Property	Property ID	Property type	Value
PidTagFlagStatus (section 2.2.1.1)	0x1090	0x0003 (**PtypInteger32** ([MS-OXCDATA] section 2.11.1))	0x00000002
PidTagReplyRequested (section 2.2.1.4)	0x0C17	0x000B (**PtypBoolean** ([MS-OXCDATA] section 2.11.1))	0x01 (TRUE)
PidTagResponseRequested (section 2.2.1.5)	0x0063	0x000B	0x01 (TRUE)
PidTagReplyTime (section 2.2.3.1)	0x0030	0x0040 (**PtypTime** ([MS-OXCDATA] section 2.11.1))	2008/03/07 00:00:00.000
PidTagToDoItemFlags (section 2.2.1.6)	0x0E2B	0x0003	0x00000008
PidTagSwappedToDoData (section 2.2.1.7)	0x0E2D	0x0102 (**PtypBinary** ([MS-OXCDATA] section 2.11.1))	See note 2 following this table
PidTagSwappedToDoStore (section 2.2.1.8)	0xE2C	0x0102	See note 1 following this table
PidLidFlagRequest (section 2.2.1.9)	0x802A	0x001F (**PtypString** ([MS-OXCDATA] section 2.11.1))	"Review"
PidLidFlagString (section 2.2.1.10)	0x83C0	0x0003	0x0000000A
PidLidToDoTitle (section 2.2.1.12)	0x8018	0x001F	"Review"
PidLidTaskStatus (section 2.2.2.1)	0x8145	0x0003	0x00000000
PidLidPercentComplete (section 2.2.2.3)	0x8146	0x0005 (**PtypFloating64** ([MS-OXCDATA] section 2.11.1))	0.0
PidLidTaskComplete (section 2.2.2.2)	0x8148	0x000B	0x00 (FALSE)
PidLidReminderSet ([MS-OXORMDR] section 2.2.1.1)	0x8004	0x000B	0x01 (TRUE)
PidLidReminderDelta ([MS-OXORMDR] section 2.2.1.3)	0x81FF	0x0003	0x00000000

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Property	Property ID	Property type	Value
PidLidReminderTime ([MS-OXORMDR] section 2.2.1.4)	0x8005	0x0040	2008/03/07 00:00:00.000
PidLidReminderSignalTime ([MS-OXORMDR] section 2.2.1.2)	0x8006	0x0040	2008/03/07 00:00:00.000

Note 1: The **PidTagSwappedToDoStore** property is set to the value of the **PidTagStoreEntryId** property ([MS-OXCMSG] section 2.2.1.44) of the Message object.

Note 2: The **PidTagSwappedToDoData** property contains the following binary data.

```
000: 01 00 00 00 79 00 00 00 01 00 00 00 46 00 6F 00
010: 72 00 77 00 61 00 72 00 64 00 00 00 00 00 00 00
020: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
030: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
040: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
050: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
060: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
070: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
080: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
090: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
100: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
110: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
120: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
130: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
140: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
150: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
160: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
170: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
180: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
190: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
200: 00 00 00 00 00 00 00 00 00 00 00 00 E0 80 E9 5A
210: 60 C0 C3 0C 00 00 00 00 00 00 00 00
```

This binary data corresponds to the following values in the fields of the **PidTagSwappedToDoData** property.

Field	Value
ulVersion	0x00000001
dwFlags	0x00000079
dwToDoItem	0x00000001
wszFlagTo	"Forward"
rtmStartDate	0x5AE980E0 (None)

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Field	Value
rtmDueDate	0x0CC3C060 (2008/03/07 00:00:00.000)
rtmReminder	0x00000000
fReminderSet	0x00000000 (FALSE)

Finally, to send the message to the intended **recipients**, the client sends a **RopSubmitMessage** ROP request ([MS-OXCROPS] section 2.2.7.1) followed by a **RopRelease** ROP request ([MS-OXCROPS] section 2.2.15.3) to release the object.

When the above message is sent, the client performs post-transmit processing on the message, as described in both section 3.1.4.3 and the remainder of this section.

The client retrieves a handle to the Message object by sending a **RopOpenMessage** request and gets the relevant flagging properties by sending a **RopGetPropertiesSpecific** ROP request ([MS-OXCROPS] section 2.2.8.3). The values of the properties returned would be identical to the values set above, except for the following property, which is changed by the server during message delivery.

Property	Property ID	Property type	Value
PidTagMessageDeliveryTime ([MS-OXOMSG] section 2.2.3.9)	0x0E06	0x0040	2008/03/03 21:03:00.000

To perform the swap, the client sends a **RopSetProperties** request with the values that are specified in the following table.

Property	Property ID	Property type	Value
PidTagFlagStatus	0x1090	0x0003	0x00000002
PidTagFollowupIcon (section 2.2.1.2)	0x1095	0x0003	0x00000006
PidTagReplyRequested	0x0C17	0x000B	0x01 (TRUE)
PidTagResponseRequested	0x0063	0x000B	0x01 (TRUE)
PidTagToDoItemFlags	0x0E2B	0x0003	0x00000001
PidTagSwappedToDoData	0x0E2D	0x0102	See note 3 following this table.
PidLidFlagRequest	0x802A	0x001F	"Forward"
PidLidFlagString	0x83C0	0x0003	0x00000000
PidLidValidFlagStringProof (section 2.2.1.11)	0x83CA	0x0040	2008/03/03 21:03:00.000
PidLidToDoTitle	0x8018	0x001F	"Contoso Project"
PidLidToDoOrdinalDate (section 2.2.1.13)	0x830D	0x0040	2008/03/03 21:03:29.438
PidLidToDoSubOrdinal (section 2.2.1.14)	0x830E	0x001F	"5555555"
PidLidTaskDueDate ([MS-OXOTASK] section 2.2.2.2.5)	0x8144	0x0040	2008/03/07 00:00:00.000
PidLidCommonEnd ([MS-OXCMSG] section 2.2.1.19)	0x81BB	0x0040	2008/03/07 08:00:00.000

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Property	Property ID	Property type	Value
PidLidTaskComplete	0x8148	0x000B	0x00 (FALSE)
PidLidTaskStatus	0x8145	0x0003	0x00000000
PidLidPercentComplete	0x8146	0x0005	0.0
PidLidReminderSet	0x8004	0x000B	0x00 (FALSE)

Note 3: The **PidTagSwappedToDoData** property contains the following binary data.

```
000: 01 00 00 00 F9 00 00 00 01 00 00 00 52 00 65 00
010: 76 00 69 00 65 00 77 00 00 00 00 00 00 00 00 00
020: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
030: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
040: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
050: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
060: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
070: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
080: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
090: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
100: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
110: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
120: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
130: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
140: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
150: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
160: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
170: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
180: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
190: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1B0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1C0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1E0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1F0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
200: 00 00 00 00 00 00 00 00 00 00 00 00 E0 80 E9 5A
210: E0 80 E9 5A 60 C0 C3 0C 01 00 00 00
```

This binary data corresponds to the following values in the fields of the **PidTagSwappedToDoData** property.

Field	Value
ulVersion	0x00000001
dwFlags	0x000000F9
dwToDoItem	0x00000001
wszFlagTo	"Review"
rtmStartDate	0x5AE980E0 (None)
rtmDueDate	0x5AE980E0 (None)

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Field	Value
rtmReminder	0x0CC3C060 (2008/03/07 00:00:00.000)
fReminderSet	0x00000001 (TRUE)

To delete the following properties, the client sends a **RopDeletePropertiesNoReplicate** ROP request ([MS-OXCROPS] section 2.2.8.9).

Property	Property ID	Property type
PidTagSwappedToDoStore	0xE2C	0x0102
PidLidTaskStartDate ([MS-OXOTASK] section 2.2.2.2.4)	0x8143	0x0040
PidLidCommonStart ([MS-OXCMSG] section 2.2.1.18)	0x81BC	0x0040
PidLidTaskDateCompleted ([MS-OXOTASK] section 2.2.2.2.9)	0x8149	0x0040
PidLidReminderTime	0x8005	0x0040
PidLidReminderSignalTime	0x8006	0x0040
PidTagReplyTime	0x0030	0x0040

Finally, to persist the Message object on the server, the client sends a **RopSaveChangesMessage** ROP request ([MS-OXCROPS] section 2.2.6.3) followed by a **RopRelease** ROP request to release the object.

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5 Security

5.1 Security Considerations for Implementers

There are no security considerations specific to the Informational Flagging Protocol. General security considerations pertaining to the underlying transport apply, as described in [MS-OXCMSG].

5.2 Index of Security Parameters

None.

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6 Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include updates to those products.

- Microsoft Exchange Server 2003
- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010
- Microsoft Exchange Server 2013
- Microsoft Exchange Server 2016
- Microsoft Exchange Server 2019
- Microsoft Office Outlook 2003
- Microsoft Office Outlook 2007
- Microsoft Outlook 2010
- Microsoft Outlook 2013
- Microsoft Outlook 2016
- Microsoft Outlook 2019
- Microsoft Outlook 2021

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

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

<1> Section 2.2.1.1: Office Outlook 2003 does provide a way for the user to set the value of the **PidTagFlagStatus** property (section 2.2.1.1) on a **Task object**.

<2> Section 2.2.1.2: Office Outlook 2003 does provide a way for the user to set the value of the **PidTagFollowupIcon** property (section 2.2.1.2) on a Task object.

<3> Section 2.2.1.3: Office Outlook 2003 does provide a way for the user to set the value of the **PidTagFlagCompleteTime** property (section 2.2.1.3) on a Task object.

<4> Section 2.2.1.4: Office Outlook 2003 does provide a way for the user to set the value of the **PidTagReplyRequested** ([MS-OXOMSG] section 2.2.1.45) and **PidTagResponseRequested** ([MS-OXOMSG] section 2.2.1.46) properties on a Task object.

<5> Section 2.2.1.4: In Office Outlook 2007, when swapping the contents of the **primary flag storage location** and **secondary flag storage location**, the **PidTagReplyRequested** ([MS-OXOMSG] section 2.2.1.45) and **PidTagResponseRequested** ([MS-OXOMSG] section 2.2.1.46) properties do not get updated to the correct value according to the new flagging state of the primary flag storage location.

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<6> Section 2.2.1.6: Exchange 2003 and Office Outlook 2003 do not read or write the **PidTagToDoItemFlags** property (section 2.2.1.6).

<7> Section 2.2.1.7: Exchange 2003 and Office Outlook 2003 do not support **sender flags**.

<8> Section 2.2.1.12: Office Outlook 2007 substitutes the concatenated values of **PidTagSubjectPrefix** ([MS-OXCMSG] section 2.2.1.9) and **PidTagNormalizedSubject** ([MS-OXCMSG] section 2.2.1.10) when displaying a **Message object** without a value in the **PidLidToDoTitle** property.

<9> Section 2.2.1.13: Exchange 2003 and Office Outlook 2003 do not read or write the **PidLidToDoOrdinalDate** property.

<10> Section 2.2.2.1: Office Outlook 2003 does not set the **PidLidTaskStatus** property (section 2.2.2.1).

<11> Section 2.2.2.2: Office Outlook 2003 does not set the **PidLidTaskComplete** property (section 2.2.2.2).

<12> Section 2.2.2.3: Office Outlook 2003 does not set the **PidLidPercentComplete** property (section 2.2.2.3).

<13> Section 3.1.4.1: The default Outlook user interface does not permit users to flag **Appointment objects**, **Journal objects**, or **Note objects**, but it is possible to manipulate the UI in nonstandard ways in order to set flag-related properties on such objects. Flagging Appointment objects, Journal objects, or Note objects will result in undefined behavior.

<14> Section 3.1.4.1.1: Exchange 2007, Exchange 2010, Exchange 2013, Exchange 2016, Exchange 2019, Office Outlook 2007, Microsoft Outlook 2010, Outlook 2013, Outlook 2016, and Outlook 2019 do not support **color flags**.

<15> Section 3.1.4.1.2: Except for receiving a **recipient flag**, as described in section 3.1.4.1.5, **basic flags** are not supported by Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016, and Outlook 2019.

<16> Section 3.1.4.1.3: Exchange 2003 and Office Outlook 2003 do not support **time flags**.

<17> Section 3.1.4.1.4: In addition to the exceptions as noted for individual properties, Exchange 2003 and Office Outlook 2003 do not set the following properties when marking a Message object complete: **PidTagToDoItemFlags** (section 2.2.1.6), **PidLidToDoTitle** (section 2.2.1.12), **PidLidToDoOrdinalDate** (section 2.2.1.13), **PidLidToDoSubOrdinal** (section 2.2.1.14), **PidLidTaskDateCompleted** ([MS-OXOTASK] section 2.2.2.2.9), **PidLidTaskComplete** ([MS-OXOTASK] section 2.2.2.2.20), **PidLidTaskStatus** ([MS-OXOTASK] section 2.2.2.2.2), and **PidLidPercentComplete** (section 2.2.2.3). Becuase Exchange 2003 and Office Outlook 2003 also do not set the **PidTagFlagStatus** property (section 2.2.1.1) for a **meeting-related object**, Exchange 2003 and Office Outlook 2003 do not support **complete flags** for a meeting-related object.

<18> Section 3.1.4.1.6: Office Outlook 2003 does not support sender flags. Only recipient flags can be set in Office Outlook 2003.

<19> Section 3.1.4.3: Exchange 2003 and Office Outlook 2003 do not support sender flags, and thus do not support post-transmit processing of a flagged message.

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7 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements.
- A document revision that captures changes to protocol functionality.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

Section	Description	Revision class
6 Appendix A: Product Behavior	Updated list of supported products.	major

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