

[MS-OXORMDR]: Reminder Settings Protocol Specification

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1 Introduction

This document specifies a protocol for discovering and acting upon **Message objects** that have a deadline. This includes upcoming (or past) appointments, tasks, messages, or contacts for which follow-up is necessary, or any other Message object for which the properties specified in this document have been set.

The Reminder Settings protocol specifies the following:

- Methods by which a client can add, remove, or modify reminders on a Message object.
- Methods by which a client can dismiss or snooze a reminder.
- Details that allow the client to process overdue reminders.

1.1 Glossary

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

appointment
binary large object (BLOB)
Calendar object
Draft Message object
exception
Exception Attachment object
Exception Embedded Message object
folder
handle
meeting-related object
message
Message object
property
recurrence pattern
Recurring Calendar object
recurring series
recurring task
reminder
search folder
single instance
signal time
special folder
store
table
Task object

UTC

The following data types are defined in [MS-OXCADATA]:

PtypBinary
PtypBoolean
PtypInteger32
PtypString
PtypTime

The following terms are specific to this document:

active reminder: A **reminder** that is enabled on an object. An **active reminder** is either pending or overdue, depending on whether the **signal time** has passed.

dismiss: To disable an **overdue reminder**. After a **reminder** is **dismissed**, it is no longer considered overdue and is, therefore, no longer signaled/displayed to the user and/or any agents acting on behalf of the user.

due time: The time after which a user is considered late, such as the start time of an appointment or the time at which a work item is expected to be completed.

full domain: See **full reminder domain**.

full reminder domain: The maximum scope a client can use when searching for objects that have **reminders** enabled. A **full reminder domain** client is a client that includes all folders when searching for objects with an enabled **reminder** (for example, a recursive search starting at the top of personal folders, as specified in [MS-OXOSFLD]). The **full reminder domain** typically includes all such folders except the following: Deleted Items, Junk E-mail, Drafts, Outbox, Conflicts, Local Failures, Server Failures, and Sync Issues. (See [MS-OXOSFLD] for details about how to identify these folders.)

minimal domain: See **minimal reminder domain**.

minimal reminder domain: The smallest scope a client is allowed to use when searching for objects that have an **active reminder**. The **minimal reminder domain** includes the following folders: Inbox, primary Contacts, primary Calendar, and primary Tasks. (See [MS-OXOSFLD] for details about how to identify these folders.) The **minimal reminder domain** does not include sub-folders.

overdue reminder: An **active reminder** whose **signal time** has passed.

pending reminder: An **active reminder** whose **signal time** is in the future.

recurrence BLOB: The **BLOB** encoding of a **recurrence pattern**, a **recurrence range**, and **exceptions**.

recurrence range: The range of time for which a **recurrence pattern** continues.

Recurring object: A **Recurring Calendar object** or a **Recurring Task object**.

Recurring Task object: A **Task object** that represents a **recurring task**.

reminder domain: The set of folders that are searched for objects that have an **active reminder**.

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 the **reminder** is to be signaled or displayed.

reminder queue: A sorted list of objects in the **reminder domain** that have been stamped with properties that imply they could have an **active reminder**.

single instance Calendar object: A **Calendar object** that represents a **single instance**.

single instance object: A **single instance Calendar object** or a **single instance Task object**, or an object of a type that does not support recurrences.

single instance Task object: A **Task object** that does not represent a **recurring task**.

snooze: To delay an **overdue reminder** by a specified interval of time at the end of which it will become an **overdue reminder** once again.

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-OXCDATA] Microsoft Corporation, "Data Structures Protocol Specification", June 2008.

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

[MS-OXCTABL] Microsoft Corporation, "Table Object Protocol Specification", June 2008.

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

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

[MS-OXOCFG] Microsoft Corporation, "Configuration Information Protocol Specification", June 2008.

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

[MS-OXOMSG] Microsoft Corporation, "E-mail Object Protocol Specification", June 2008.

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

[MS-OXOSRCH] Microsoft Corporation, "Search Folder List Configuration Protocol Specification", June 2008.

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

1.2.2 Informative References

None.

1.3 Protocol Overview

This protocol allows the user or an agent who is acting on behalf of the user to associate a **reminder** with a given **Message object** with the intention that a client will somehow signal the user or agent when the **signal time** is reached.

1.3.1 Creating, Modifying, and Removing Reminders

The client creates, modifies, or removes **reminders** by setting **reminder properties** on objects, as specified in section 3.1.4. The client can specify such things as when to signal a reminder, the due time for the object about which the user is to be reminded, whether to play a sound when the reminder is signaled, which sound to play, and whether the reminder is enabled. On a **Draft Message object**, reminders for the recipient or recipients can be specified independently from those for the sender.

1.3.2 Processing Overdue Reminders

The client processes overdue **reminders**, as specified in section 3.1.4.5. Before signaling an **overdue reminder**, the client is responsible for deciding which reminders to ignore and which reminders to automatically **dismiss**.

1.3.3 Dismissing and Snoozing Reminders

The client can **dismiss** or **snooze overdue reminders**, as specified in sections 3.1.4.6 and 3.1.4.7.

1.4 Relationship to Other Protocols

The Reminder Setting protocol extends the Message and Attachment Object protocol and relies on an understanding of how to work with **folders**, **messages**, and **tables**. For details, see [MS-OXCADATA], [MS-OXPROPS], [MS-OXOMSG], [MS-OXCFCOLD], [MS-OXCTABL], [MS-OXOSFLD], [MS-OXOSRCH], [MS-OXOCFG], [MS-OXOCAL], [MS-OXOTASK], and [MS-OXOFLAG].

1.5 Prerequisites/Preconditions

For requesting and configuring **reminders**, the Reminder Settings protocol assumes that the client has previously logged on to the server and has acquired a **handle** to the object for which it intends to create or update **reminder properties** [MS-OXCFCOLD] [MS-OXCMSG].

For discovering **Message objects** that have reminders, the Reminder Settings protocol assumes that the client has previously logged on to the server and has acquired a handle to the mailbox **store** in which it intends to search[MS-OXCSTOR].

1.6 Applicability Statement

The Reminder Settings protocol is used to specify and raise time-specific notifications to a user or an agent who is acting on behalf of a user.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

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

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

This protocol uses the transport specified in [MS-OXCMSG].

2.2 Message Syntax

Reminders can be created and modified, on any type of **Message object**, by clients and servers. Except where noted, this section defines constraints to which both clients and servers adhere when operating on the reminder properties of message objects.

Clients operate on the **reminder properties** of Message objects by using the Message and Attachment Object protocol, as specified in [MS-OXCMSG]. How a server operates on the reminder properties of Message objects is implementation-dependent. The results of any such operation are exposed to clients in a manner that is consistent with the Reminder Settings protocol.

2.2.1 Properties Used to Specify and/or Decode Reminders

The following properties are used to specify the **reminder** for a given object. These properties are set by the client to ensure that the user is notified in the manner and at the time that is preferred.

2.2.1.1 PidLidReminderSet

Type: **PtypBoolean**.

Specifies whether a **reminder** is set on the object.

If a **Recurring Calendar object** has **PidLidReminderSet** set to **TRUE**, the client can override this value for exceptions. See the definition of **PidLidAppointmentRecur** in [MS-OXOCAL] for details.

If **PidLidReminderSet** is **FALSE** on a Recurring Calendar object, reminders are disabled for the entire series, including **exceptions**.

For **recurring task objects**, the **PidLidReminderSet** property cannot be overridden by exceptions (see [MS-OXOCAL] and [MS-OXOTASK] for details).

2.2.1.2 PidLidReminderSignalTime

Type: **PtypTime**.

Specifies the point in time when a **reminder** transitions from pending to overdue. This property **MUST** be set if **PidLidReminderSet** is **TRUE**. Clients **MUST** set the value in **UTC**.

This property is not overridden by **exceptions**; there is a single **signal time** per **Recurring Calendar object**.

2.2.1.3 PidLidReminderDelta

Type: **PtypInteger32**.

This property **MUST** be set on **Calendar objects** and specifies the interval, in minutes, between the time at which the reminder first becomes overdue and the start time of the Calendar object. For all non-Calendar objects, this property **SHOULD** be set to 0x00000000 and is ignored.

When a reminder is dismissed for one instance of a **Recurring Calendar object**, the value of this property is used in the calculation of the signal time for the next instance. See [MS-OXOCAL] for details about Calendar object creation.

2.2.1.4 PidLidReminderTime

Type: **PtypTime**.

For non-Calendar objects, this property specifies the initial **signal time**. For **Calendar objects**, this property represents the time after which the user would be late; that is, the start time of the **appointment**. Clients **MUST** set the value in **UTC**.

2.2.1.5 PidLidReminderOverride

Type: **PtypBoolean**.

If set to **TRUE**, specifies that the client **SHOULD**<1> respect the values **PidLidReminderPlaySound** and **PidLidReminderFileParameter**. Otherwise, a client **MAY** use default values in place of the values of **PidLidReminderPlaySound** and **PidLidReminderFileParameter**.

2.2.1.6 PidLidReminderPlaySound

Type: **PtypBoolean**.

If set to **TRUE**, specifies that the client SHOULD<2> play a sound when the **reminder** becomes overdue.

2.2.1.7 PidLidReminderFileParameter

Type: **PtypString**.

Specifies the filename of the sound<3> that a client SHOULD<4> play when the **reminder** for that object becomes overdue. If this property is not present, the client MAY use a default value.

2.2.1.8 PidTagReplyTime

Type: **PtypTime**.

Upon receipt of a **Message object**, specifies the **due time** that the sender wants, presumably for an associated work item, and is otherwise ignored. Clients MUST set the value in **UTC**. See [MS-OXOFLAG] for additional details.

2.2.1.9 PidLidReminderType

Type: **PtypInteger32**.

SHOULD NOT<5> be set, and MUST be ignored.

2.2.2 Shared Properties

These properties are set at **reminder** configuration time and/or processed and/or presented to the user (or an agent who is acting on behalf of the user) as described in the following sections.

2.2.2.1 Properties Shared with the Message and Attachment Object Protocol

The following properties are shared by this protocol and the Message and Attachment Object protocol [MS-OXCMSG]:

- **PidTagAttachDataObject**
- **PidTagMessageClass**
- **PidTagMessageFlags**

The semantics and accepted values are identical to those specified in [MS-OXCMSG].

2.2.2.2 Properties Shared with the Informational Flagging Protocol

The following properties are shared by this protocol and the Informational Flagging protocol [MS-OXOFLAG]:

- **PidTagSwappedToDoData**
- **PidTagSwappedToDoStore**

The semantics and accepted values are identical to those specified in [MS-OXOFLAG].

2.2.2.3 Properties Shared with the Task-Related Objects Protocol

The following properties are shared by this protocol and the Task-Related Objects protocol [MS-OXOTASK]:

- **PidLidTaskDueDate**
- **PidLidTaskRecurrence**
- **PidLidTaskResetReminder**

Unless noted, the semantics and accepted values are identical to those specified in [MS-OXOTASK].

2.2.2.3.1 *PidLidTaskDueDate*

Type: **PtypTime**.

SHOULD<6> also be set when creating a **reminder** on an object that is neither a **Task object** nor a **Calendar object**.

2.2.2.4 Properties Shared with the Appointment and Meeting Object Protocol

The following properties are shared by this protocol and the Appointment and Meeting Object protocol [MS-OXOCAL]:

- **PidLidAppointmentRecur**
- **PidLidAutoStartCheck<7>**
- **PidLidConferencingCheck<8>**

The semantics and accepted values are identical to those specified in [MS-OXOCAL].

2.2.3 Properties Used to Specify User Preferences that are Roamed on the Server

The following property is used to specify global state with respect to **reminders**. This property uses the protocol defined in [MS-OXOCFG] as a transport.

2.2.3.1 piReminderUpgradeTime

A 32-bit integer value (specified in number of minutes since midnight, January 1, 1601), stored in the Calendar Options Dictionary (see [MS-OXOCFG] for details), that specifies the first time a **full reminder domain** client was used on the mailbox. The time is interpreted in the user's current time zone, not **UTC**.

3 Protocol Details

Except where noted, this section defines behavioral constraints to which both clients and servers **MUST** adhere when operating on the reminder properties of **Message objects**.

3.1 Client and Server Details

The server fulfills the server role in the following protocols.

- Office Exchange Protocols Master Property List Specification [MS-OXPROPS]
- E-mail Object Protocol Specification [MS-OXOMSG]
- Folder Object Protocol Specification [MS-OXCFOLD]
- Table Object Protocol Specification [MS-OXCTABL]
- Special Folders Protocol Specification [MS-OXOSFLD]
- Search Folder List Configuration Protocol Specification [MS-OXOSRCH]
- Configuration Information Protocol Specification [MS-OXOCFG]
- Appointment and Meeting Object Protocol Specification [MS-OXOCAL]
- Task-Related Objects Protocol Specification [MS-OXOTASK]
- Informational Flagging Protocol Specification [MS-OXOFLAG]

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.

Messages with **active reminders** can be discovered by using a persistent **search folder** as specified in [MS-OXCFOLD]. Those messages can then be loaded into a list, referred to as the **reminder queue**, that holds the relevant information in memory for **pending** and/or **overdue reminders** and is sorted by the property **PidLidReminderSignalTime**.

Objects can be in one of the following states:

- No active reminder
- Pending reminder
- Overdue reminder

The **reminder queue** only contains **Message objects** that have a pending or overdue **reminder**.

3.1.2 Timers

None.

3.1.3 Initialization

3.1.3.1 Populating the Reminder Queue

3.1.3.1.1 Scope

Two approaches are typically used to scope the search for **active reminders** in the **reminder queue**: **minimal reminder domain** or **full reminder domain**.

Clients SHOULD use a **full domain** scope strategy but MAY use any strategy<9>. Using multiple clients that use different scope strategies to access the same mailbox is not recommended<10>.

3.1.3.1.1.1 Requirements for Clients Using a Full Reminder Domain

Clients that use a **full domain** scope strategy MUST ensure that **piReminderUpgradeTime** is set. If **piReminderUpgradeTime** does not exist, the client MUST set it. The value SHOULD<11> correspond to the current local time, to reflect the time of upgrade to the expanded scope strategy of the newer client. The property **piReminderUpgradeTime** SHOULD<12> only be set once. If **piReminderUpgradeTime** is already set, it SHOULD NOT be changed as it represents the first time an "upgraded" client was used.

3.1.3.1.2 Loading/Processing

When populating or updating the **reminder queue** with **Message objects** found in the **reminder domain**, the client SHOULD<13>:

- Ignore certain objects. For details, see section 3.1.4.5.1.

- Auto-**dismiss** certain objects. For details, see section 3.1.4.5.2.
- Include any remaining objects that have **active reminders** (**pending** or **overdue reminders**).

3.1.4 Higher-Layer Triggered Events

3.1.4.1 Setting a Reminder

In addition to the behaviors specified in this section, the client **MUST** set **PidLidReminderSet** to **TRUE** on an object to enable the signaling of a **reminder**. Also, the client **MUST** set **PidLidReminderSignalTime** to the specified time the reminder becomes overdue, and **PidLidReminderTime** **MUST** be set.

3.1.4.1.1 Reminders on Task Objects

The client **MUST** set **PidLidReminderTime** to the specified time at which the **reminder** becomes overdue.

3.1.4.1.2 Reminders on Neither Calendar nor Task Objects

The client **MUST** set **PidLidReminderTime** and **MUST**<14> set **PidTagReplyTime** to the specified **signal time**.

In summary, the client sets the following properties (or ensures that they are already set <15> for objects that are neither **Calendar objects** nor **Task objects**):

Property	Value
PidLidReminderSet	MUST be TRUE .
PidLidReminderTime	MUST be the specified signal time .
PidLidReminderSignalTime	MUST be the specified signal time.
PidTagReplyTime	MUST be the specified signal time.

3.1.4.1.3 Reminders on Calendar Objects

The client **MUST** set **PidLidReminderTime**, and the value **SHOULD**<16> correspond to the **appointment** start time (see [MS-OXOCAL] for details).

For **Calendar objects**, the client **MUST** set **PidLidReminderDelta** to reflect the specified interval, in minutes, between the signal time of the **reminder** and the start time of the Calendar object.

In summary, the client sets the following properties (or otherwise ensures that the properties are already set):

Property	Value
PidLidReminderSet	MUST be TRUE .
PidLidReminderTime	MUST be set, and SHOULD <17> be the appointment start time.
PidLidReminderDelta	MUST be the interval, in minutes, between signal time and the appointment start time.
PidLidReminderSignalTime	MUST be the signal time in UTC .

3.1.4.1.4 Reminders on Recurring Calendar Objects

For Recurring **Calendar objects**, the client also sets or modifies the **recurrence BLOB (PidLidAppointmentRecur)** on the **Recurring Calendar object**, and the **Exception Embedded Message Object (PidTagAttachDataObject)** on the **Exception Attachment object**, as specified in the following paragraphs.

To modify the **reminder** for specific instances in a recurring series, the client MUST create an **exception** if one does not already exist for that instance, and then modify the recurrence BLOB and Exception Embedded Message object, to store whichever properties are different from the Recurring Calendar object, such as **StartTime**, **ReminderDelta**, or **ReminderSet**. See [MS-OXOCAL] for details about the recurrence BLOB (**PidLidAppointmentRecur**), and the Exception Attachment object, and see [MS-OXCMSG] for details about accessing the Exception Embedded Message object, which is stored in **PidTagAttachDataObject**.

Setting **PidLidReminderSet** to **FALSE** on the Recurring Calendar object MUST take precedence over any reminders that are specified for exceptions. To disable reminders for the entire series, including all exceptions, **PidLidReminderSet** MUST be set to **FALSE** on the Recurring Calendar object.

If one or more instances, but not all instances, need a reminder, **PidLidReminderSet** MUST be set to **TRUE** on the Recurring Calendar object. Then the client MUST set the **ReminderSet** field to **FALSE** in the recurrence BLOB for each instance that does not have a reminder, and MUST set the property **PidLidReminderSet** on the **Exception Embedded Message Object** to **FALSE**, creating exceptions as appropriate (see [MS-OXOCAL] and [MS-OXCMSG] for details).

3.1.4.1.5 Setting Reminders on Draft Message Objects

By using the same mechanism that allows the client to set flagging properties for the sender of a **Message object** independently from the flagging properties that are sent to **recipients** [MS-

OXOFLAG], a client can set the **reminder properties** for the sender of a Message object independently from the reminder properties that are sent to recipients.

If either a sender or recipient reminder is specified by a client that supports sender reminders, **PidTagSwappedToDoStore** MUST be set to enable post-transmit processing (see [MS-OXOFLAG] for details). The remaining work to process recipient and sender reminders is covered during post-transmit processing as specified in [MS-OXOFLAG].

3.1.4.1.5.1 Setting a Reminder for all Recipients

To set a **recipient reminder** on a **Draft Message object**, the client MUST set **PidLidReminderSet** to **TRUE** and set **PidLidReminderTime**, **PidLidReminderSignalTime**, and **PidTagReplyTime** to the required signal time.

3.1.4.1.5.2 Setting a Reminder for the Sender

The client MUST set the field **rtmReminder** to the required signal time and the field **fReminderSet** to **TRUE** in the **PtypBinary** property **PidTagSwappedToDoData**. The client MUST also set the corresponding validity bits (0x00000040 and 0x00000080) to 1 in the **dwFlags** field in **PidTagSwappedToDoData**. See [MS-OXOFLAG] for the **PidTagSwappedToDoData** property definition.

3.1.4.2 Post-Transmit Processing

The post-transmit processing required by the Reminder Settings protocol is identical to the post-transmit processing specified in [MS-OXOFLAG].

3.1.4.3 Post-Receive Processing

For received **Message objects** that are not time flagged objects [MS-OXOFLAG], if the property **PidTagReplyTime** exists, the value of **PidTagReplyTime** SHOULD<18> be copied into **PidLidReminderTime** and **PidLidReminderSignalTime**, and **PidLidReminderSet** SHOULD be set to **TRUE**.

3.1.4.4 Removing a Reminder

3.1.4.4.1 Single Instance Objects

The client MUST set **PidLidReminderSet** to **FALSE**.

If the object is neither a **Task object** nor a **Calendar object**, the client MAY<19> clear **PidLidReminderTime** and **PidLidReminderSignalTime** and SHOULD clear **PidTagReplyTime**.

If the object is a **Calendar object**, the client SHOULD<20> set **PidLidAutoStartCheck** to **FALSE**.

3.1.4.4.2 *Recurring Calendar Objects*

To remove the **reminder** for all instances, including any **exceptions**, the client **MUST** set **PidLidReminderSet** to **FALSE** on the **Recurring Calendar object**.

To remove the reminder for a single instance, the client **MUST** ensure that an exception exists for the instance, set the value of the **ReminderSet** field for the corresponding exception in the recurrence **BLOB** to **FALSE**, and set the property **PidLidReminderSet** on the **Exception Embedded Message object** to **FALSE**, and SHOULD<21> set the property **PidLidAutoStartCheck** on the **Exception Embedded Message object** to **FALSE**. See [MS-OXOCAL] for details about how to modify the **appointment recurrence BLOB (PidLidAppointmentRecur)** and the **Exception Attachment object**, and see [MS-OXCMSG] for details about accessing the **Exception Embedded Message object**, which is stored in **PidTagAttachDataObject**.

3.1.4.4.3 *Recurring Task Objects*

To remove the **reminder** for all instances, the client **MUST** set **PidLidReminderSet** to **FALSE** on the recurring **Task object**, and SHOULD<22> ensure that **PidLidTaskResetReminder** is either not present or has the value **FALSE**.

Removing the reminder for a single instance of a **Recurring Task object** is not possible, because Recurring Task objects do not support **exceptions**. Therefore, the reminder can only be enabled or disabled for the entire recurrence pattern.

3.1.4.5 **When a Reminder Becomes Overdue**

3.1.4.5.1 *Reminders That Are Ignored When They Become Overdue*

Minimal domain clients SHOULD<23> ignore reminders for the following types of objects, and **full domain** clients **MUST** ignore reminders for the following types of objects:

- Meeting-related objects - any object where the **PtypString** property **PidTagMessageClass** contains the prefix "IPM.Schedule." <24>
- Unsent mail - any object that contains the **PtypInteger32** property **PidTagMessageFlags** with the flag set corresponding to MSGFLAG_UNSENT (see [MS-OXCMSG] for details about message flags, and the definition of MSGFLAG_UNSENT).
- Objects that have the **PtypBinary** property **PidTagSwappedToDoStore** set. See [MS-OXOFLAG] for details.

3.1.4.5.2 *Reminders That Are Auto-Dismissed When Overdue*

Clients following the **full reminder domain** scope strategy, as specified in section 3.1.3.1.1, SHOULD<25> auto-**dismiss** any objects found outside the **minimal domain**, which also

have a **signal time** (**PidLidReminderSignalTime**) that is earlier than the upgrade time (**piReminderUpgradeTime**), so that the objects never have to be considered again. A reminder is auto-dismissed by setting **PidLidReminderSet** to **FALSE**.

3.1.4.5.3 Actions for Overdue Reminders That Are Not Ignored or Auto-Dismissed

When a **reminder** becomes overdue, the client commonly prompts the user to take action, such as **dismissing** or **snoozing**. To identify the reminder to the user (or user agent), the client MAY<26> use any properties, in addition to the following properties that the client SHOULD use to determine the **due time** for displaying how long until the object is due, or how much time has passed since the object became due.

When DueIn time is displayed, it is calculated from the Due time, as summarized in the following table:

Case	Due time
For non-Calendar objects (tasks and flagged objects<27>)	If the property PidLidTaskDueDate exists, the client SHOULD use "TaskDueDate + default End-of-Day<28> time", otherwise use PidLidReminderTime as the due time.
For single instance Calendar objects	PidLidReminderTime
For Recurring Calendar objects	The client SHOULD use the start time of the latest instance with enabled reminder for which the time defined by evaluating the expression (StartTime – ReminderDelta) is less than or equal to the time encoded in PidLidReminderSignalTime on the Recurring Calendar object. See [MS-OXOCAL]. NOTE: StartTime and ReminderDelta could be overridden by exceptions .

If **PidLidReminderOverride** is set to **FALSE**, or not set, the client SHOULD<29> play the default reminder sound.

If **PidLidReminderOverride** is set to **TRUE**, the client SHOULD<30> use the play sound and **PidLidReminderFileParameter** from the reminder properties of the given object.

If **PidLidReminderPlaySound** is **TRUE**, the client SHOULD<31> use **PidLidReminderFileParameter** to locate the specified sound file, and then play it.

If **PidLidReminderPlaySound** is **FALSE**, the client SHOULD NOT<32> play a reminder sound.

If the client uses **PidLidReminderFileParameter** for purposes of playing a sound, and it does not represent a full path, the client MAY search for a matching file name.

3.1.4.5.3.1 Starting a Conference

If **PidLidConferencingCheck** and **PidLidAutoStartCheck** are both set to **TRUE**, the client MAY<33> launch the conference. For details, see [MS-OXOCAL].

3.1.4.6 Dismissing a Reminder

3.1.4.6.1 Dismissing for Single Instance Objects

For all **single instance objects**, the client MUST set **PidLidReminderSet** to **FALSE**.

In addition, for **single instance task objects**, the client MAY<34> follow the guidance in the following section for **dismissing a Recurring Task object**.

3.1.4.6.2 Dismissing for Recurring Calendar Objects

If there is a future instance (including **exceptions**) with a pending **reminder** (in other words, not disabled individually on all future instances), the client MUST set **PidLidReminderSignalTime** on the **Recurring Calendar object** based on **PidLidReminderDelta** and the start of that instance (that is, **NextInstanceStartTime** - **PidLidReminderDelta**). If no more instances (including exceptions) have a pending reminder, the client SHOULD NOT <35> set **PidLidReminderSet** to **FALSE**, and the client MUST set **PidLidReminderSignalTime** to the **PtypTime** value "Midnight (UTC) January 1, 4501" (value Low:0xA3DD4000 High:0x0CB34557).

NOTE: Instances never "turn into" exceptions as a result of **dismissing/snoozing**.

3.1.4.6.3 Dismissing for Recurring Task Objects

The client MUST set **PidLidReminderSet** to **FALSE**, and SHOULD<36> set **PidLidTaskResetReminder** to **TRUE** to **dismiss the reminder**.

For task objects, if **PidLidReminderTime** is in the future, the client SHOULD<37> set **PidLidReminderSignalTime** to the same value as **PidLidReminderTime** so that the reminder will be signaled at the appropriate time for the next instance.

3.1.4.7 Snoozing a Reminder

3.1.4.7.1 Snoozing for Single Instance Objects

The client MUST set **PidLidReminderSignalTime** to the time specified by the user (or user agent).

3.1.4.7.2 Snoozing for Recurring Objects

The client **MUST** set **PidLidReminderSignalTime** to either the specified time, or the signal time for the next instance with an **active reminder** (for example, NextInstanceStart - ReminderDelta), whichever is earlier.

NOTE: Instances never "turn into" exceptions as a result of **dismissing/snoozing**.

3.1.4.8 Generating Instances for Recurring Task Objects

In addition to the details related to the semantics and the use of **PidLidTaskResetReminder** specified in [MS-OXOTASK], the following applies to generating instances for **Recurring Task objects**:

When a Recurring Task object is updated after one instance of the task is marked complete, if the **PtypBoolean** property **PidLidTaskResetReminder** is **TRUE**, or **PidLidReminderSet** is **TRUE**, a **reminder SHOULD<38>** be set on the Recurring Task object by setting both **PidLidReminderTime** and **PidLidReminderSignalTime** to the next **signal time**. These values **SHOULD<39>** correspond to the same time as the previous reminder, but on a different day, such that the difference between the new signal time and the new task due date is the same as the difference between the old signal time and old task due date values.

After an instance of a recurring task that has an **active** reminder is complete, the future instance **MUST** have **PidLidReminderSet** set to **TRUE**, and **PidLidTaskResetReminder SHOULD NOT<40>** be **TRUE**. The now-completed instance **MUST** have **PidLidReminderSet** set to **FALSE**, and **PidLidTaskResetReminder SHOULD NOT<41>** be **TRUE**.

3.1.5 Message Processing Events and Sequencing Rules

None.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

4 Protocol Examples

Before adding, removing, or modifying a **reminder** on any **Message objects**, the client has to ask the server to perform a mapping from named properties to property identifiers by using **RopGetPropertyIDsOfNames**, as follows:

Property	Property Set GUID	Name or ID
PidLidReminderSet	{00062008-0000-0000-C000-000000000046}	0x8503
PidLidReminderTime	{00062008-0000-0000-C000-000000000046}	0x8502
PidLidReminderDelta	{00062008-0000-0000-C000-000000000046}	0x8501
PidLidReminderSignalTime	{00062008-0000-0000-C000-000000000046}	0x8560
PidLidTaskDueDate	{00062003-0000-0000-C000-000000000046}	0x8105
PidLidTaskResetReminder	{00062003-0000-0000-C000-000000000046}	0x8107
PidLidAppointmentRecur	{00062002-0000-0000-C000-000000000046}	0x8216
PidLidAutoStartCheck	{00062002-0000-0000-C000-000000000046}	0x8244
PidLidFExceptionalAttendees	{00062002-0000-0000-C000-000000000046}	0x822B

The server might respond with the following identifiers, which will be used in the examples that follow (the actual identifiers are at the discretion of the server):

Property	Property Identifier
PidLidReminderSet	0x8004
PidLidReminderTime	0x8005
PidLidReminderDelta	0x81FF
PidLidReminderSignalTime	0x8006
PidLidTaskDueDate	0x8144
PidLidTaskResetReminder	0x815B

PidLidAppointmentRecur	0x81AE
PidLidAutoStartCheck	0x82E0
PidLidFExceptionalAttendees	0x82D7

4.1 Set a Reminder on a Single Instance Appointment

John has an existing **appointment** for "Dinner with Robin Counts" at Coho Vineyard on February 15, 2008 from 6:00 P.M. to 7:00 P.M. Pacific Standard Time. Around 11:44 A.M., John sets a **reminder** on the appointment for 30 minutes.

Before John modified the object, some of the properties were as follows:

Property Name	Property Identifier	Property Type	Data	Value
PidTagNormalizedSubject	0x0E1D	PtypString	44 00 69 00 6E 00 6E 00 65 00 72 00 20 00 77 00 69 00 74 00 68 00 20 00 52 00 6F 00 62 00 69 00 6E 00 20 00 43 00 6F 00 75 00 6E 00 74 00 73 00 00 00	"Dinner with Robin Counts"
PidLidLocation	0x8009	PtypString	43 00 6F 00 68 00 6F 00 20 00 56 00 69 00 6E 00 65 00 79 00 61 00 72 00 64 00 00 00	"Coho Vineyard"
PidTagStartDate	0x0060	PtypTime	00 10 00 A3 3F 70 C8 01	2008/02/16 02:00:00.000
PidTagEndDate	0x0061	PtypTime	00 78 C4 04 48 70 C8 01	2008/02/16 03:00:00.000
PidLidReminderSet	0x8004	PtypBoolean	00	FALSE
PidLidReminderTime	0x8005	PtypTime	00 10 00 A3 3F 70 C8 01	2008/02/16 02:00:00.000
PidLidReminderSignalTime	0x8006	PtypTime	00 F6 8E 8A 3D 70 C8 01	2008/02/16 01:45:00.000
PidLidReminderDelta	0x81FF	PtypInteger32	0F 00 00 00	15 minutes

The client sends a **RopOpenMessage** request and waits for the server to respond. The server response contains a **handle** to the **Message object**.

The client then sends a **RopSetProperties** request with the following properties in response to user-entered data:

Property	Property Identifier	Property Type	Data	Value
PidLidReminderSet	0x8004	PtypBoolean	01	TRUE
PidLidReminderDelta	0x81FF	PtypInteger32	1E 00 00 00	30 minutes
PidLidReminderSignalTime	0x8006	PtypTime	00 DC 1D 72 3B 70 C8 01	2008/02/16 01:30:00.000

Finally, the client sends a **RopSaveChangesMessage** request to persist the object on the server, and a **RopRelease** request to release the object.

4.2 Set a Reminder on a Message Object

John, who is currently working in the Pacific Standard time zone, has an existing **message** titled "Important Project Information" that was previously flagged for follow-up by February 14, 2008. To ensure that it is not forgotten, John sets a reminder for 6:00 P.M.

Before John modified the object, some of its properties were as follows:

Property Name	Property Identifier	Property Type	Data	Value
PidTagNormalizedSubject	0x0E1D	PtypString	49 00 6D 00 70 00 6F 00 72 00 74 00 61 00 6E 00 74 00 20 00 50 00 72 00 6F 00 6A 00 65 00 63 00 74 00 20 00 49 00 6E 00 66 00 6F 00 72 00 6D 00 61 00 74 00 69 00 6F 00 6E 00 00 00	"Important Project Information"
PidLidTaskStartDate	0x8143	PtypTime	00 C0 A3 8A 9C 6E C8 01	2008/02/14 00:00:00.000
PidLidTaskDueDate	0x8144	PtypTime	00 C0 A3 8A 9C 6E C8 01	2008/02/14 00:00:00.000
PidLidReminderSet	0x8004	PtypBoolean	00	FALSE

Property Name	Property Identifier	Property Type	Data	Value
PidLidReminderTime	0x8005	PtypTime	Cleared	N/A
PidLidReminderSignalTime	0x8006	PtypTime	Cleared	N/A

The client sends a **RopOpenMessage** request and waits for the server to respond. The server response contains a **handle** to the **Message object**.

The client then sends a **RopSetProperties** request with the following properties in response to user-entered data:

Property	Property Identifier	Property Type	Data	Value
PidLidReminderTime	0x8005	PtypTime	00 50 96 78 76 6f c8 01	2008/02/15 02:00:00.000
PidLidReminderSignalTime	0x8006	PtypTime	00 50 96 78 76 6f c8 01	2008/02/15 02:00:00.000
PidLidReminderSet	0x8004	PtypBoolean	01	TRUE
PidTagReplyTime	0x0030	PtypTime	00 50 96 78 76 6f c8 01	2008/02/15 02:00:00.000
PidTagReplyRequested	0x0C17	PtypBoolean	01	TRUE
PidTagResponseRequested	0x0063	PtypBoolean	01	TRUE
PidTagFlagStatus	0x1090	PtypInteger32	02 00 00 00	follow-up marked

Next, the client sends a **RopDeletePropertiesNoReplicate** request for the following properties:

Property	Property Identifier	Property Type
PidTagFlagCompleteTime	0x1091	PtypTime

Finally, the client sends a **RopSaveChangesMessage** request to persist the object on the server, and a **RopRelease** request to release the object.

4.3 Dismiss a Reminder on a Task

John had previously created a Task object titled "Prepare for Contoso presentation", with a **reminder** that was signaled on February 15, 2008, at 11:30 A.M. Pacific Standard Time. Because he is done, John **dismisses** the reminder at 11:31 A.M.

Before John dismissed the reminder, some of its properties were as follows:

Property Name	Property Identifier	Property Type	Data	Value
PidTagNormalizedSubject	0x0E1D	PtypString	50 00 72 00 65 00 70 00 61 00 72 00 65 00 20 00 66 00 6F 00 72 00 20 00 43 00 6F 00 6E 00 74 00 6F 00 73 00 6F 00 20 00 70 00 72 00 65 00 73 00 65 00 6E 00 74 00 61 00 74 00 69 00 6F 00 6E 00 00 00	"Prepare for Contoso presentation"
PidLidTaskStartDate	0x8143	PtypTime	00 80 0D B5 65 6F C8 01	2008/02/15 00:00:00.000
PidLidTaskDueDate	0x8144	PtypTime	00 80 0D B5 65 6F C8 01	2008/02/15 00:00:00.000
PidLidReminderSet	0x8004	PtypBoolean	01	TRUE
PidLidReminderTime	0x8005	PtypTime	00 6C 83 27 09 70 C8 01	2008/02/15 19:30:00.000
PidLidReminderSignalTime	0x8006	PtypTime	00 6C 83 27 09 70 C8 01	2008/02/15 19:30:00.000
PidLidTaskResetReminder	0x815B	PtypBoolean	Cleared	N/A

The client sends a **RopOpenMessage** request and waits for the server to respond. The server response contains a **handle** to the **Message object**.

The client then sends a **RopSetProperties** request with the following properties in response to user-entered data:

Property	Property Identifier	Property Type	Data	Value
PidLidReminderSet	0x8004	PtypBoolean	00	FALSE
PidLidTaskResetReminder	0x815B	PtypBoolean	01	TRUE

Finally, the client sends a **RopSaveChangesMessage** request to persist the object on the server, and a **RopRelease** request to release the object.

4.4 Dismiss a Reminder on a Recurring Calendar Object

John has a recurring **appointment** for lunch with Ben Smith every Friday at noon Pacific Standard Time, with a 20 minute reminder. The reminder for the first instance is displayed, and John **dismisses** the reminder before leaving for the Coho Winery.

Before John dismissed the object, some of its properties were as follows:

Property Name	Property Identifier	Property Type	Data	Value
PidTagNormalizedSubject	0x0E1D	PtypString	4C 00 75 00 6E 00 63 00 68 00 20 00 77 00 69 00 74 00 68 00 20 00 42 00 65 00 6E 00 20 00 53 00 6D 00 69 00 74 00 68 00 00 00	"Lunch with Ben Smith"
PidLidLocation	0x8009	PtypString	43 00 6F 00 68 00 6F 00 20 00 57 00 69 00 6E 00 65 00 72 00 79 00 00 00	"Coho Winery"
PidTagStartDate	0x0060	PtypTime	00 A0 65 58 0D 70 C8 01	2008/02/15 20:00:00.000
PidTagEndDate	0x0061	PtypTime	00 08 2A BA 15 70 C8 01	2008/02/15 21:00:00.000
PidLidReminderSet	0x8004	PtypBoolean	01	TRUE
PidLidReminderTime	0x8005	PtypTime	00 A0 65 58 0D	2008/02/15

Property Name	Property Identifier	Property Type	Data	Value
			70 C8 01	20:00:00.000
PidLidReminderSignalTime	0x8006	PtypTime	00 28 24 8D 0A 70 C8 01	2008/02/15 19:40:00.000
PidLidReminderDelta	0x81FF	PtypInteger32	14 00 00 00	20 minutes
PidLidAppointmentRecur	0x81AE	PtypBinary	Cb: 50 00 Lpb: See below	Cb: 80 bytes Lpb: See [MS-OXOCAL]

The value of **PidLidAppointmentRecur** is as follows:

Cb: 50 00

Lpb:

```

0x0000: 04 30 04 30 0B 20 01 00-00 00 C0 21 00 00 01 00
0x0010: 00 00 00 00 00 00 20 00-00 00 23 20 00 00 0A 00
0x0020: 00 00 00 00 00 00 00 00-00 00 00 00 00 00 40 4A
0x0030: C3 0C DF 80 E9 5A 06 30-00 00 09 30 00 00 D0 02
0x0040: 00 00 0C 03 00 00 00 00-00 00 00 00 00 00 00 00

```

See [MS-OXOCAL] for details about interpreting the data.

The client sends a **RopOpenMessage** request and waits for the server to respond. The server response contains a **handle** to the **Message object**.

The client then sends a **RopSetProperties** request with the following properties in response to user-entered data:

Property	Property Identifier	Property Type	Data	Value
PidLidReminderSignalTime	0x8006	PtypTime	00 68 08 B6 8A 75 C8 01	2008/02/22 19:40:00.000

Finally, the client sends a **RopSaveChangesMessage** request to persist the object on the server, and a **RopRelease** request to release the object.

4.5 Snooze a Reminder on a Contact Object

John has an existing **Contact object** for Adam Barr with a reminder set so he is reminded to call on February 15, 2008 at 11:15 A.M., Pacific Standard Time. The **reminder** is displayed, but John is still in the middle of a project, so around 11:18 A.M., John **snoozes** the reminder for 1 hour.

Before John snoozed the object, some of its properties were as follows:

Property Name	Property Identifier	Property Type	Data	Value
PidTagNormalizedSubject	0x0E1D	PtypString	41 00 64 00 61 00 6D 00 20 00 42 00 61 00 72 00 72 00 00 00	"Adam Barr"
PidLidTaskStartDate	0x8143	PtypTime	00 80 0D B5 65 6F C8 01	2008/02/15 00:00:00.000
PidLidTaskDueDate	0x8144	PtypTime	00 80 0D B5 65 6F C8 01	2008/02/15 00:00:00.000
PidLidReminderSet	0x8004	PtypBoolean	01	TRUE
PidLidReminderTime	0x8005	PtypTime	00 52 12 0F 07 70 C8 01	2008/02/15 19:15:00.000
PidLidReminderSignalTime	0x8006	PtypTime	00 52 12 0F 07 70 C8 01	2008/02/15 19:15:00.000

The client sends a **RopOpenMessage** request and waits for the server to respond. The server response contains a **handle** to the **Message object**.

The client then sends a **RopSetProperties** request with the following properties in response to user-entered data:

Property	Property Identifier	Property Type	Data	Value
PidLidReminderSignalTime	0x8006	PtypTime	00 8C 20 DC 0F 70 C8 01	2008/02/15 20:18:00.000

Finally, the client sends a **RopSaveChangesMessage** request to persist the object on the server, and a **RopRelease** request to release the object.

4.6 Remove a Reminder From an Instance of a Recurring Calendar Object

John has an existing **recurring appointment** for lunch on Fridays at noon, Pacific Standard Time, but the instance for next week, which occurs on February 22, 2008, was previously changed to 11:00 A.M. (that is, the next instance already has an exception). John opens that instance, sets the **signal time** to none, and saves the object, disabling the **reminder** for just that instance.

Before John modified the object, some of the properties on the **Recurring Calendar object** were as follows:

Property Name	Property Identifier	Property Type	Data	Value
PidTagNormalizedSubject	0x0E1D	PtypString	4C 00 75 00 6E 00 63 00 68 00 20 00 77 00 69 00 74 00 68 00 20 00 42 00 65 00 6E 00 20 00 53 00 6D 00 69 00 74 00 68 00 00 00	"Lunch with Ben Smith"
PidTagStartDate	0x0060	PtypTime	00 A0 65 58 0D 70 C8 01	2008/02/15 20:00:00.000
PidTagEndDate	0x0061	PtypTime	00 08 2A BA 15 70 C8 01	2008/02/15 21:00:00.000
PidLidReminderSet	0x8004	PtypBoolean	01	TRUE
PidLidReminderTime	0x8005	PtypTime	00 A0 65 58 0D 70 C8 01	2008/02/15 20:00:00.000
PidLidReminderSignalTime	0x8006	PtypTime	00 00 44 54 82 75 C8 01	2008/02/22 06:40:00.000
PidLidAppointmentRecur	0x81AE	PtypBinary	Cb: 72 00	Cb: 114 bytes Lpb: See [MS-

Property Name	Property Identifier	Property Type	Data	Value
			Lpb: See below	OXOCAL]

The value of **PidLidAppointmentRecur** is as follows:

Cb: 72 00

Lpb:

```

0x0000: 04 30 04 30 0B 20 01 00-00 00 C0 21 00 00 01 00
0x0010: 00 00 00 00 00 00 20 00-00 00 23 20 00 00 0A 00
0x0020: 00 00 00 00 00 00 01 00-00 00 A0 71 C3 0C 01 00
0x0030: 00 00 A0 71 C3 0C 40 4A-C3 0C DF 80 E9 5A 06 30
0x0040: 00 00 09 30 00 00 D0 02-00 00 0C 03 00 00 01 00
0x0050: 34 74 C3 0C 70 74 C3 0C-70 74 C3 0C 00 00 00 00
0x0060: 00 00 04 00 00 00 00 00-00 00 00 00 00 00 00 00
0x0070: 00 00

```

See [MS-OXOCAL] for details about interpreting the data.

Some properties from the **Exception Attachment Object** are listed in the following table.

Property Name	Property Identifier	Property Type	Data	Value
PidTagAttachmentSize	0x0E20	PtypInteger32	DC 0E 00 00	3804 bytes
PidTagLastModificationTime	0x3008	PtypTime	62 BC D2 86 20 70 C8 01	2008/02/15 22:17:18.328

The client sends a **RopOpenMessage** request and waits for the server to respond. The server response contains a **handle** to the **Recurring Calendar object**.

Then the client sends a **RopOpenAttachment** request and waits for the server to respond. The server response contains a handle to the **Exception Attachment object**. See [MS-OXOCAL]

for details about using the **attachment** table to find the attachment that corresponds to a given **exception**.

Then the client sends a **RopOpenEmbeddedMessage** request and waits for the server to respond. The server response contains a handle to the **Exception Embedded Message object**.

Next, the client sends a **RopSetProperties** request with the following properties in response to the user-entered data for the Exception Embedded Message object (followed by a **RopSaveChangesMessage** request to persist the object on the server):

Property Name	Property Identifier	Property Type	Data	Value
PidLidAutoStartCheck	0x82E0	PtypBoolean	00	FALSE
PidLidReminderSet	0x8004	PtypBoolean	00	FALSE

Next, the client sends a **RopSetProperties** request with the following properties in response to user-entered data for the **Exception Attachment object** (followed by a **RopSaveChangesAttachment** request to persist the object on the server):

Property Name	Property Identifier	Property Type	Data	Value
PidTagAttachmentMethod	0x3705	PtypInteger32	05 00 00 00	5
PidTagRenderingPosition	0x370B	PtypInteger32	FF FF FF FF	-1
PidTagExceptionStartTime	0x7FFB	PtypTime	00 38 62 11 42 75 c8 01	2008/02/22 11:00:00.000
PidTagAttachmentEncoding	0x3702	PtypBinary	00 00	Size: 0 bytes
PidTagExceptionEndTime	0x7FFC	PtypTime	00 a0 26 73 4a 75 c8 01	2008/02/22 12:00:00.000
PidTagAttachmentFlags	0x7FFD	PtypInteger32	02 00 00 00	Exception to a recurrence

Property Name	Property Identifier	Property Type	Data	Value
PidTagDisplayName	0x3001	PtypString	55 00 6e 00 74 00 69 00 74 00 6c 00 65 00 64 00 00 00	"Untitled"
PidTagAttachmentLinkId	0x7FFA	PtypInteger32	00 00 00 00	0
PidTagAttachmentFlags	0x3714	PtypInteger32	00 00 00 00	0
PidTagAttachmentHidden	0x7FFE	PtypBoolean	01	TRUE
PidTagAttachmentContactPhoto	0x7FFF	PtypBoolean	00	FALSE

Next, the client sends a **RopSetProperties** request with the following properties in response to user-entered data for the Recurring Calendar object (followed by a **RopSaveChangesMessage** request to persist the object on the server):

Property Name	Property Identifier	Property Type	Data	Value
PidLidAppointmentRecur	0x81AE	PtypBinary	Cb: 76 00 Lpb: See below	Cb: 118 bytes Lpb: See below
PidLidFEexceptionalAttendees	0x82D7	PtypBoolean	00	FALSE
PidLidReminderSignalTime	0x8006	PtypTime	00 A8 EC DE 0A 7B C8 01	2008/02/29 19:40:00.000

Then the client sends a **RopRelease** request to release the **Exception Embedded Message object**, and a **RopRelease** request to release the **Exception Attachment object**.

Finally, the client sends a **RopRelease** request to release the **attachment table**, and a **RopRelease** request to release the Recurring Calendar object.

The value of **PidLidAppointmentRecur** is as follows:

Cb: 76 00

Lpb:

```

0x0000: 04 30 04 30 0B 20 01 00-00 00 C0 21 00 00 01 00
0x0010: 00 00 00 00 00 00 20 00-00 00 23 20 00 00 0A 00
0x0020: 00 00 00 00 00 00 01 00-00 00 A0 71 C3 0C 01 00
0x0030: 00 00 A0 71 C3 0C 40 4A-C3 0C DF 80 E9 5A 06 30
0x0040: 00 00 09 30 00 00 D0 02-00 00 0C 03 00 00 01 00
0x0050: 34 74 C3 0C 70 74 C3 0C-70 74 C3 0C 08 00 00 00
0x0060: 00 00 00 00 00 00 04 00-00 00 00 00 00 00 00 00
0x0070: 00 00 00 00 00 00

```

This corresponds to the following table, in which the **OverrideFlags** and **fReminder** fields for the first exception are the only two fields that changed within the **PtypBinary** property **PidLidAppointmentRecur**. In this specific case, the 2 byte value, starting at the 93rd byte (Flags), was changed from 0x0000 to 0x0008, and a 4 byte value representing **FALSE** (0x00000000) was inserted between the 94th and 95th bytes, extending the size of the property from 114 bytes to 118 bytes. See [MS-OXOCAL] for details about how to determine the byte position in other cases.

Name	Type	Size	Data	Description
ReaderVersion	WORD	2	04 30	This field MUST be set to 0x3004.
WriterVersion	WORD	2	04 30	This field MUST be set to 0x3004.
UIGroup	WORD	2	0b 20	The pattern of the recurrence is weekly (0x200b).
PatternType	WORD	2	01 00	The pattern type is weekly (0x0001).
CalendarType	WORD	2	00 00	The calendar type is Gregorian (0x0000).
FirstDateTime	ULONG	4	c0 21 00 00	See [MS-OXOCAL] for details about how this property was calculated based on the StartDate.

Name	Type	Size	Data	Description
Period	ULONG	4	01 00 00 00	The recurrence occurs every week (0x00000001).
SlidingFlag	ULONG	4	00 00 00 00	The recurring instances do not rely on completion of the previous instances.
PatternTypeSpecific	Byte Array	Varies (4 bytes, in this case, for Weekly pattern)	20 00 00 00	The recurring appointment occurs on Friday. See [MS-OXOCAL] for details about how the value is determined.
EndType	ULONG	4	23 20 00 00	No End. (0x00002023)
OccurrenceCount	ULONG	4	0A 00 00 00	Ignored, because recurrence does not have an end.
FirstDOW	ULONG	4	00 00 00 00	The first day of the week on the calendar is Sunday (the default value).
DeletedInstanceCount	ULONG	4	01 00 00 00	One deleted instance.
Deleted Instance Start	ULONG	4	A0 71 C3 0C	0x0CC371A0 == February 22, 2008 at 00:00 in UTC.
ModifiedInstanceCount	ULONG	4	01 00 00 00	One modified instance.
Modified Instance Start	ULONG	4	A0 71 C3 0C	0x0CC371A0 == February 22, 2008 at 00:00 in UTC.

Name	Type	Size	Data	Description
StartDate of entire series	ULONG	4	40 4A C3 0C	The start date of the recurrence given in minutes since midnight January 1, 1601 corresponds to February 15, 2008 12:00:00 A.M. 0x0CC34A40
EndDate of entire series	ULONG	4	DF 80 E9 5A	The end date of the recurrence given in minutes since midnight January 1, 1601, however, since there is no end date, this value corresponds to the "last valid" date: December 31, 4500 11:59 P.M. (0x5AE980DF)
ReaderVersion2	ULONG	4	06 30 00 00	This value MUST be set to 0x00003006.
WriterVersion2	ULONG	4	09 30 00 00	This value SHOULD be set to 0x00003009.<42>
StartTimeOffset	ULONG	4	D0 02 00 00	The hexadecimal start time of the recurrence is 0x000002D0, which corresponds to 720 in decimal. 720 minutes is 12 hours, which is 12 P.M.
EndTimeOffset	ULONG	4	0C 03 00 00	The hexadecimal end time of the recurrence is 0x0000030C, which corresponds to 780 minutes, which is 1:00 P.M.
ExceptionCount	WORD	2	01 00	There is one exception in this recurrence BLOB .
ExceptionInfo block for exception 1:				
Start Date Time	ULONG	4	34 74 C3 0C	0x0CC37434 == February 22, 2008 at 11:00 A.M.
End Date Time	ULONG	4	70 74 C3 0C	0x0CC37470 == February 22, 2008 at 12:00 P.M.
Original Start Time	ULONG	4	70 74 C3 0C	0x0CC37470 == February 22, 2008 at 12:00 P.M.
OverrideFlags	WORD	2	08 00	0x0008 corresponds to the "fReminderSet" flag, meaning just that field is specified for this exception.
fReminderSet	ULONG	4	00 00 00 00	0x00000000 == FALSE, meaning ReminderSet is overridden with the value FALSE for this exception.

Name	Type	Size	Data	Description
ReservedBlock1Size	ULONG	4	00 00 00 00	There is no data in the reserved block.
ExtendedException block for exception 1:				
ChangeHighlight	Byte Array	Varies	04 00 00 00 00 00 00 00	The size of the ChangeHighlight is 4. The value of the PidLidChangeHighlight property is zero for this exception.
ReservedBlockEE1Size	ULONG	4	00 00 00 00	There is no data in the reserved block.
ReservedBlock2Size	ULONG	4	00 00 00 00	There is no data in the reserved block.

5 Security

5.1 Security Considerations for Implementers

There are no special security considerations specific to the Reminder Settings protocol. General security considerations pertaining to the underlying transport apply, as specified in [MS-OXCMSG] and [MS-OXCPRPT].

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 2.2.1.5: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not honor or set the property **PidLidReminderOverride**.

<2> Section 2.2.1.6: The Exchange Server 2003 SP2 and Exchange Server 2007 SP1 User Interfaces do not honor or set the property **PidLidReminderPlaySound**.

<3> Section 2.2.1.7: Outlook 2003 SP3 and Outlook 2007 SP1 support whatever the Windows API WINMM!PlaySound is able to play.

<4> Section 2.2.1.7: The Exchange Server 2003 SP2 and Exchange Server 2007 SP1 User Interfaces do not honor or set the property **PidLidReminderFileParameter**.

<5> Section 2.2.1.9: Outlook 2003 SP3 and Outlook 2007 SP1 preserve the value if already set.

<6> Section 2.2.2.3.1: Outlook 2003 SP3 does not set **PidLidTaskDueDate** for non-Task objects, so when a reminder signals for a flagable object, the "due in" time is calculated based on **PidLidReminderTime**. Outlook 2007 SP1 does set **PidLidTaskDueDate** for flaggable objects, so has a more intuitive "due in" time when the reminder signals. Outlook 2003 SP3 and Outlook 2007 SP1 do not set **PidLidTaskDueDate** for tasks, when the user only specifies a **reminder** on a **Task object** without also specifying a **due date**. In other words, this property MAY be set on a Task object in the context of setting a due date, but is not required within the context of setting a reminder on a Task object. The task due date is independent of the **signal time**. See [MS-OXOTASK] for complete details about the conditions where **PidLidTaskDueDate** is set on a Task object.

<7> Section 2.2.2.4: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not honor or set the property **PidLidAutoStartCheck**.

<8> Section 2.2.2.4: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not honor or set the property **PidLidConferencingCheck**.

<9> Section 3.1.3.1.1: Outlook 2003 SP3 follows the **minimal reminder domain** scope strategy, while Outlook 2007 SP1 and the Exchange Server 2007 SP1 User Interface follow the **full domain** scope strategy. The Exchange Server 2003 SP2 User Interface signals **reminders** only from the Calendar and Tasks folders.

<10> Section 3.1.3.1.1: Using multiple clients that use different **reminder** domains can lead to inconsistent reminder signaling behavior. For example, such an environment might have different overdue reminders signaled in different clients, which can lead to unexpectedly missed reminders when using the client with the smaller reminder domain.

<11> Section 3.1.3.1.1.1: **piReminderUpgradeTime** is used to identify long **overdue reminders** that have not been signaled because they were previously located outside of the reminder domain. Such overdue reminders can then undergo special-purpose processing to avoid flooding the system with unexpected reminders.

<12> Section 3.1.3.1.1.1: Outlook 2007 SP1 sets **piReminderUpgradeTime** to 0, when the "cleanreminders" feature is invoked, via command-line parameter, to clean the **reminders search folder**, after which all reminders would be eligible to signal again. Under normal operation, Outlook does not change **piReminderUpgradeTime** after the value is initialized; it does this only when the "cleanreminders" command-line option is used with Outlook 2007 SP1.

<13> Section 3.1.3.1.2: Outlook 2003 SP3 and Outlook 2007 SP1, as an optimization, only load or process objects for the next 24-hour period.

<14> Section 3.1.4.1.2: Outlook 2003 SP3, Outlook 2007 SP1, and the Exchange Server 2007 User Interface set the property **PidTagReplyTime** when setting a **reminder** on an already-flagged object. Setting **PidTagReplyTime** is not required for reminders to signal locally, but this property is used to transmit a reminder on a sent **message**. The Exchange Server 2003 User Interface does not expose a way to set reminders on objects that are neither **Calendar objects** nor **Task objects**, so this constraint does not apply.

<15> Section 3.1.4.1.2: Outlook 2003 SP3 and Outlook 2007 SP1, for example, do not set all the specified properties at "reminder creation" time, because some of the properties were set in a previous operation (such as object creation or flagging for follow-up), or are set independent of the reminder itself (such as for **Task objects** and **PidLidTaskDueDate**), and the values did not change during the reminder creation process. Because Outlook 2003 SP3 and Outlook 2007 SP1 do not expose UI to just set a reminder on an e-mail message without also flagging, some properties such as **PidLidRequest** happen to get set by Outlook when a reminder is added to an e-mail message. These properties are not required for the reminder to function, but are listed for completeness.

<16> Section 3.1.4.1.3: The Exchange Server 2007 SP1 User Interface sets the property **PidLidReminderTime** to the start time for the next instance with an active reminder that has an end date in the future. This is true regardless of whether the **Recurring Calendar object** is created where part of the instances occur in the past, or when **dismissing a reminder**. When a reminder is dismissed (or a recurrence is created where part of the recurrence is in the past), **PidLidReminderTime** is updated to match the start time of the next instance with an **active reminder**. Outlook 2003 SP3, Outlook 2007 SP1, and the Exchange Server 2003 SP2 User Interface set **PidLidReminderTime** to the start time of the first instance, and do not modify the **PidLidReminderTime** property during **snooze** or dismiss operations after the property is set on a Recurring Calendar object, even if the value has been modified. To clarify, Outlook 2003 SP3, Outlook 2007 SP1, and the Exchange Server 2003 SP2 User Interface only set the **PidLidReminderTime** property when creating the Recurring Calendar object or modifying the series such that the series start date changes, and otherwise do not modify the property. In other words, the property **PidLidReminderTime** cannot be assumed to have a specific value for recurring objects.

<17> Section 3.1.4.1.3: The Exchange Server 2007 SP1 User Interface sets the property **PidLidReminderTime** to the start time for the next instance with an active **reminder** that has an end date in the future. This is true regardless of whether the **Recurring Calendar object** is created where part of the instances occur in the past, or when **dismissing** a reminder. When a reminder is dismissed (or a recurrence is created where part of the recurrence is in the past), **PidLidReminderTime** is updated to match the start time of the next instance with an **active reminder**. Outlook 2003 SP3, Outlook 2007 SP1, and the Exchange Server 2003 SP2 User Interface set **PidLidReminderTime** to the start time of the first instance, and do not modify the **PidLidReminderTime** property during **snooze** or dismiss operations after the property is set on a Recurring Calendar object, even if the value has been modified. To clarify, Outlook 2003 SP3, Outlook 2007 SP1, and the Exchange Server 2003 SP2 User Interface only set the **PidLidReminderTime** property when creating the Recurring Calendar object or modifying the series such that the series start date changes, and otherwise do not modify the property. In other words, the property **PidLidReminderTime** cannot be assumed to have a specific value for recurring objects.

<18> Section 3.1.4.3: Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 do not perform this processing.

<19> Section 3.1.4.4.1: Setting **PidLidReminderSet** to **FALSE** is the only requirement for disabling a reminder. However, Outlook 2003 SP3 also deletes **PidTagReplyTime** for an object that is neither a **Calendar object** nor a **Task object**. Outlook 2007 SP1 deletes the properties **PidLidReminderTime** and **PidLidReminderSignalTime** and **PidTagReplyTime** when removing the reminder from an object that is neither a Calendar object nor a Task object. For the remaining cases, Outlook 2003 SP3 and Outlook 2007 SP1 do not delete the properties **PidLidReminderTime** or **PidLidReminderSignalTime** when removing the reminder for Calendar or Task objects; this is for user convenience to persist the **signal time** values even when the **reminder** is disabled.

<20> Section 3.1.4.4.1: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not honor or set the property **PidLidAutoStartCheck**.

<21> Section 3.1.4.4.2: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not honor or set the property **PidLidAutoStartCheck**.

<22> Section 3.1.4.4.3: The Exchange 2003 SP2 and the Exchange 2007 SP1 User Interfaces do not honor or set **PidLidTaskResetReminder**.

<23> Section 3.1.4.5.1: Outlook 2003 SP3 does not ignore objects that have **PidTagSwappedToDoStore** set. Outlook 2003 SP3 also does not ignore meeting-related objects, but this is not a problem because it uses the **minimal reminder domain**, which does not include **special folders** like sent items. This requirement to ignore certain objects is more important when a larger domain is used, such as **full domain**, which includes the Sent Items folder, which could inadvertently signal **reminders** for objects like sent meeting requests. Outlook 2007 SP1 ignores these objects, if they appear in the **reminder queue**.

<24> Section 3.1.4.5.1: The Exchange Server 2007 SP1 User Interface uses stricter criteria when ignoring meeting-related objects, by ignoring messages with **PidTagMessageClass** prefixed with "IPM.Schedule.Meeting". Outlook 2007 SP1 uses slightly more lenient criteria: "IPM.Schedule" (note the missing trailing dot).

<25> Section 3.1.4.5.2: Exchange Server 2003 SP2 and Exchange Server 2007 SP1 never read the property **piReminderUpgradeTime**. Exchange Server 2003 SP2 does not auto-dismiss reminders that appear outside the **minimal reminder domain**. Exchange Server 2007 SP1 does auto-dismiss said reminders, but only on initial transition to using the **full reminder domain** on a given mailbox store.

<26> Section 3.1.4.5.3: Outlook 2003 SP3 and Outlook 2007 SP1 use the properties **PidTagNormalizedSubject**, **PidLidRequest**, and **PidLidLocation**. Outlook 2007 SP1 also uses **PidLidTaskDueDate**.

<27> Section 3.1.4.5.3: Outlook 2003 SP3 displays DueIn "Now" when first signaling a **reminder** for a task or flagged object, but Outlook 2007 SP1 displays a more intuitive time-until-DueDate value for these object types. Outlook 2007 SP1 uses the property **PidLidTaskDueDate** and the "end of workday" values to determine the **due time**. Outlook 2003 SP3, the Exchange Server 2003 SP2 User Interface, and the Exchange Server 2007 SP1 User Interface use the property **PidLidReminderTime** as the due time.

<28> Section 3.1.4.5.3: Outlook 2003 SP3 uses the **signal time** as the "due time". Outlook 2007 SP1 uses end-of-day (see [MS-OXOCFG] for details about end-of-day).

<29> Section 3.1.4.5.3: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not use **PidLidReminderOverride**, **PidLidReminderPlaySound**, or **PidLidReminderFileParameter**.

<30> Section 3.1.4.5.3: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not use **PidLidReminderOverride**, **PidLidReminderPlaySound**, or **PidLidReminderFileParameter**.

<31> Section 3.1.4.5.3: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not use **PidLidReminderOverride**, **PidLidReminderPlaySound**, or **PidLidReminderFileParameter**.

<32> Section 3.1.4.5.3: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not use **PidLidReminderOverride**, **PidLidReminderPlaySound**, or **PidLidReminderFileParameter**.

<33> Section 3.1.4.5.3.1: Outlook 2003 SP3 and Outlook 2007 SP1 launch NetMeeting (if **PidLidConferencingType** is confNetMeeting), and use the properties **PidLidConferencingCheck**, **PidLidConferencingType**, **PidLidOrganizationAlias**, **PidLidDirectory**, **PidTagConversationTopic**, **PidLidCollaborateDocument**, **PidLidNetShowURL**, and **PidLidAppointmentStateFlags**.

<34> Section 3.1.4.6.1: Though not strictly necessary, Outlook 2003 SP3 and Outlook 2007 SP1 apply this logic to single instance **Task objects**.

<35> Section 3.1.4.6.2: Outlook 2003 SP3 and Outlook 2007 SP1 do not set **PidLidReminderSet** to **FALSE** when dismissing **reminders** for **Recurring Calendar Objects**, even when no more instances require a reminder to signal. This is to preserve the user's intent to signal reminders, in case the **recurrence** is extended at a later date, to include instances in the future.

<36> Section 3.1.4.6.3: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces do not set **PidLidTaskResetReminder** when **dismissing a reminder** on a **Task object**; this means that Exchange 2003 SP2 and Exchange 2007 SP1 do not support dismissing reminders on single instances of **Recurring Task Objects**. Outlook 2003 SP3 and Outlook 2007 SP1 do set **PidLidTaskResetReminder**.

<37> Section 3.1.4.6.3: The Exchange 2007 SP1 User Interface does not set **PidLidReminderSignalTime** when **dismissing Task objects**.

<38> Section 3.1.4.8: The Exchange Server 2003 SP2 and the Exchange Server 2007 SP1 User Interfaces only set these properties if **PidLidReminderSet** is **TRUE**.

<39> Section 3.1.4.8: Outlook 2003 SP3 and Outlook 2007 SP1 adjust for Daylight Saving Time when necessary (if a change in DST occurs between the current and next instance), so the **reminder** signals at the same time of day.

<40> Section 3.1.4.8: The Exchange 2003 SP2 and the Exchange 2007 SP1 User Interfaces do not honor or set **PidLidTaskResetReminder**.

<41> Section 3.1.4.8: The Exchange 2003 SP2 and the Exchange 2007 SP1 User Interfaces do not honor or set **PidLidTaskResetReminder**.

<42 > Section 4.6: May be set to 0x00003008 for Office 2003 SP3.

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