

[MS-OXOTASK]:

Task-Related Objects Protocol

Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation (“this documentation”) for protocols, file formats, data portability, computer languages, and standards support. Additionally, overview documents cover inter-protocol relationships and interactions.
- **Copyrights.** This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you can make copies of it in order to develop implementations of the technologies that are described in this documentation and can distribute portions of it in your implementations that use these technologies or in your documentation as necessary to properly document the implementation. You can also distribute in your implementation, with or without modification, any schemas, IDLs, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications documentation.
- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.
- **Patents.** Microsoft has patents that might cover your implementations of the technologies described in the Open Specifications documentation. Neither this notice nor Microsoft's delivery of this documentation grants any licenses under those patents or any other Microsoft patents. However, a given Open Specifications document might be covered by the Microsoft [Open Specifications Promise](#) or the [Microsoft Community Promise](#). If you would prefer a written license, or if the technologies described in this documentation are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting iplg@microsoft.com.
- **Trademarks.** The names of companies and products contained in this documentation might be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit www.microsoft.com/trademarks.
- **Fictitious Names.** The example companies, organizations, products, domain names, email addresses, logos, people, places, and events that are depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

Reservation of Rights. All other rights are reserved, and this notice does not grant any rights other than as specifically described above, whether by implication, estoppel, or otherwise.

Tools. The Open Specifications documentation does not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments, you are free to take advantage of them. Certain Open Specifications documents are intended for use in conjunction with publicly available standards specifications and network programming art and, as such, assume that the reader either is familiar with the aforementioned material or has immediate access to it.

Revision Summary

| Date | Revision History | Revision Class | Comments |
|------------|------------------|----------------|---|
| 4/4/2008 | 0.1 | New | Initial Availability. |
| 4/25/2008 | 0.2 | Minor | Revised and updated property names and other technical content. |
| 6/27/2008 | 1.0 | Major | Initial Release. |
| 8/6/2008 | 1.01 | Minor | Revised and edited technical content. |
| 9/3/2008 | 1.02 | Minor | Revised and edited technical content. |
| 12/3/2008 | 1.03 | Minor | Updated IP notice. |
| 4/10/2009 | 2.0 | Major | Updated technical content and applicable product releases. |
| 7/15/2009 | 3.0 | Major | Revised and edited for technical content. |
| 11/4/2009 | 4.0.0 | Major | Updated and revised the technical content. |
| 2/10/2010 | 5.0.0 | Major | Updated and revised the technical content. |
| 5/5/2010 | 5.0.1 | Editorial | Revised and edited the technical content. |
| 8/4/2010 | 6.0 | Major | Significantly changed the technical content. |
| 11/3/2010 | 6.1 | Minor | Clarified the meaning of the technical content. |
| 3/18/2011 | 6.1 | None | No changes to the meaning, language, and formatting of the technical content. |
| 8/5/2011 | 7.0 | Major | Significantly changed the technical content. |
| 10/7/2011 | 7.1 | Minor | Clarified the meaning of the technical content. |
| 1/20/2012 | 8.0 | Major | Significantly changed the technical content. |
| 4/27/2012 | 8.1 | Minor | Clarified the meaning of the technical content. |
| 7/16/2012 | 8.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 10/8/2012 | 8.2 | Minor | Clarified the meaning of the technical content. |
| 2/11/2013 | 8.2 | None | No changes to the meaning, language, or formatting of the technical content. |
| 7/26/2013 | 8.3 | Minor | Clarified the meaning of the technical content. |
| 11/18/2013 | 8.3 | None | No changes to the meaning, language, or formatting of the technical content. |
| 2/10/2014 | 8.3 | None | No changes to the meaning, language, or formatting of the technical content. |
| 4/30/2014 | 8.3 | None | No changes to the meaning, language, or formatting of the technical content. |
| 7/31/2014 | 8.3 | None | No changes to the meaning, language, or formatting of the technical content. |

| Date | Revision History | Revision Class | Comments |
|-------------|-------------------------|-----------------------|--|
| 10/30/2014 | 8.4 | Minor | Clarified the meaning of the technical content. |
| 3/16/2015 | 9.0 | Major | Significantly changed the technical content. |
| 5/26/2015 | 10.0 | Major | Significantly changed the technical content. |
| 9/14/2015 | 10.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 6/13/2016 | 10.0 | None | No changes to the meaning, language, or formatting of the technical content. |

Table of Contents

| | | |
|------------|---|-----------|
| 1 | Introduction | 6 |
| 1.1 | Glossary | 6 |
| 1.2 | References | 8 |
| 1.2.1 | Normative References | 8 |
| 1.2.2 | Informative References | 8 |
| 1.3 | Overview | 9 |
| 1.4 | Relationship to Other Protocols | 9 |
| 1.5 | Prerequisites/Preconditions | 9 |
| 1.6 | Applicability Statement | 9 |
| 1.7 | Versioning and Capability Negotiation | 9 |
| 1.8 | Vendor-Extensible Fields | 9 |
| 1.9 | Standards Assignments..... | 9 |
| 2 | Messages..... | 10 |
| 2.1 | Transport..... | 10 |
| 2.2 | Message Syntax..... | 10 |
| 2.2.1 | Folder Properties | 10 |
| 2.2.1.1 | PidTagOrdinalMost Property..... | 10 |
| 2.2.2 | Task Object Properties | 10 |
| 2.2.2.1 | Additional Property Constraints | 10 |
| 2.2.2.1.1 | PidTagMessageClass Property | 10 |
| 2.2.2.1.2 | Body Properties..... | 10 |
| 2.2.2.1.3 | PidLidCommonStart Property | 11 |
| 2.2.2.1.4 | PidLidCommonEnd Property | 11 |
| 2.2.2.1.5 | PidTagIconIndex Property..... | 11 |
| 2.2.2.2 | Task Object Specific Properties | 11 |
| 2.2.2.2.1 | PidLidTaskMode Property | 11 |
| 2.2.2.2.2 | PidLidTaskStatus Property | 11 |
| 2.2.2.2.3 | PidLidPercentComplete Property | 12 |
| 2.2.2.2.4 | PidLidTaskStartDate Property | 12 |
| 2.2.2.2.5 | PidLidTaskDueDate Property | 12 |
| 2.2.2.2.6 | PidLidTaskResetReminder Property | 12 |
| 2.2.2.2.7 | PidLidTaskAccepted Property..... | 13 |
| 2.2.2.2.8 | PidLidTaskDeadOccurrence Property | 13 |
| 2.2.2.2.9 | PidLidTaskDateCompleted Property..... | 13 |
| 2.2.2.2.10 | PidLidTaskLastUpdate Property..... | 13 |
| 2.2.2.2.11 | PidLidTaskActualEffort Property | 13 |
| 2.2.2.2.12 | PidLidTaskEstimatedEffort Property..... | 14 |
| 2.2.2.2.13 | PidLidTaskVersion Property | 14 |
| 2.2.2.2.14 | PidLidTaskState Property | 14 |
| 2.2.2.2.15 | PidLidTaskRecurrence Property..... | 14 |
| 2.2.2.2.16 | PidLidTaskAssigners Property | 14 |
| 2.2.2.2.17 | PidLidTaskStatusOnComplete Property | 15 |
| 2.2.2.2.18 | PidLidTaskHistory Property | 15 |
| 2.2.2.2.19 | PidLidTaskUpdates Property | 16 |
| 2.2.2.2.20 | PidLidTaskComplete Property | 16 |
| 2.2.2.2.21 | PidLidTaskFCreator Property | 16 |
| 2.2.2.2.22 | PidLidTaskOwner Property | 16 |
| 2.2.2.2.23 | PidLidTaskMultipleRecipients Property | 16 |
| 2.2.2.2.24 | PidLidTaskAssigner Property | 16 |
| 2.2.2.2.25 | PidLidTaskLastUser Property | 17 |
| 2.2.2.2.26 | PidLidTaskOrdinal Property | 17 |
| 2.2.2.2.27 | PidLidTaskLastDelegate Property | 17 |
| 2.2.2.2.28 | PidLidTaskFRecurring Property | 17 |
| 2.2.2.2.29 | PidLidTaskOwnership Property | 17 |

| | | |
|------------|--|-----------|
| 2.2.2.2.30 | PidLidTaskAcceptanceState Property | 18 |
| 2.2.2.2.31 | PidLidTaskFFixOffline Property..... | 18 |
| 2.2.2.2.32 | PidLidTaskGlobalId Property..... | 18 |
| 2.2.2.2.33 | PidLidTaskCustomFlags Property | 18 |
| 2.2.2.2.34 | PidLidTaskRole Property | 19 |
| 2.2.2.2.35 | PidLidTaskNoCompute Property | 19 |
| 2.2.2.2.36 | PidLidTeamTask Property | 19 |
| 2.2.3 | Task Communications Properties | 19 |
| 2.2.3.1 | PidTagProcessed Property | 19 |
| 2.2.3.2 | PidLidTaskMode Property | 19 |
| 2.2.3.3 | Additional Property Constraints..... | 20 |
| 2.2.3.3.1 | PidTagMessageClass Property | 20 |
| 2.2.3.3.2 | PidTagIconIndex Property..... | 20 |
| 3 | Protocol Details | 21 |
| 3.1 | Client Details..... | 21 |
| 3.1.1 | Abstract Data Model..... | 21 |
| 3.1.2 | Timers | 21 |
| 3.1.3 | Initialization | 21 |
| 3.1.4 | Higher-Layer Triggered Events | 21 |
| 3.1.4.1 | Creating a Task Object and a Task Communication | 21 |
| 3.1.4.2 | Modifying a Task Object and a Task Communication | 22 |
| 3.1.4.3 | Embedding a Task Object..... | 22 |
| 3.1.4.4 | Sending a Task Communication | 22 |
| 3.1.4.5 | Receiving a Task Communication | 23 |
| 3.1.4.6 | Generating Instances of Recurring Tasks..... | 23 |
| 3.1.4.6.1 | Determining Whether to Generate a New Instance..... | 23 |
| 3.1.4.6.2 | New Instance Dates..... | 24 |
| 3.1.4.6.3 | Archive Instances | 24 |
| 3.1.5 | Message Processing Events and Sequencing Rules | 25 |
| 3.1.6 | Timer Events..... | 25 |
| 3.1.7 | Other Local Events..... | 25 |
| 3.2 | Server Details..... | 25 |
| 3.2.1 | Abstract Data Model..... | 26 |
| 3.2.2 | Timers | 26 |
| 3.2.3 | Initialization | 26 |
| 3.2.4 | Higher-Layer Triggered Events | 26 |
| 3.2.5 | Message Processing Events and Sequencing Rules | 26 |
| 3.2.6 | Timer Events..... | 26 |
| 3.2.7 | Other Local Events..... | 26 |
| 4 | Protocol Examples | 27 |
| 4.1 | Sending a Task Request..... | 30 |
| 4.2 | Processing a Task Update..... | 32 |
| 5 | Security | 36 |
| 5.1 | Security Considerations for Implementers | 36 |
| 5.2 | Index of Security Parameters | 36 |
| 6 | Appendix A: Product Behavior | 37 |
| 7 | Change Tracking..... | 38 |
| 8 | Index..... | 39 |

1 Introduction

The Task-Related Objects Protocol enables a user to assign a task to another user and track the progress. 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:

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

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

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

contents table: A Table object whose rows represent the **Message objects** that are contained in a **Folder object**.

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

delegate: A user or resource that has permissions to act on behalf of another user or resource.

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

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

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

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

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

long ID (LID): A 32-bit quantity that, in combination with a GUID, defines a **named property**.

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

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

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

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

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

property ID: A 16-bit numeric identifier of a specific attribute (1). A property ID does not include any property type information.

property name: A string that, in combination with a property set, identifies a **named property**.

public folder: A **Folder object** that is stored in a location that is publicly available.

recipient: An entity that is in an address list, can receive email messages, and contains a set of attributes (1). Each attribute has a set of associated values.

recurrence pattern: Information for a repeating event, such as the start and end time, the number of occurrences, and how occurrences are spaced, such as daily, weekly, or monthly.

recurring task: A series of **Task objects** that are described by a recurrence pattern.

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.

restriction: A filter used to map some domain into a subset of itself, by passing only those items from the domain that match the filter. Restrictions can be used to filter existing Table objects or to define new ones, such as search folder (2) or rule criteria.

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

ROP request: See ROP request buffer.

tagged property: A property that is defined by a 16-bit property ID and a 16-bit property type. The property ID for a tagged property is in the range 0x001 – 0x7FFF. Property IDs in the range 0x8000 – 0x8FFF are reserved for assignment to **named properties**.

task acceptance: A **Message object** that is used to convey acceptance of a task assignment.

task assignee: A user to whom a task has been assigned.

task assigner: A user who assigns a task to another user.

task communication: Collectively, a **task request**, a **task acceptance** or **task rejection**, and a **task update**.

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

task owner: The user who is responsible for updating a task. For unassigned tasks, the local user is the owner. For assigned tasks, the **task assignee** is the owner.

task rejection: A **Message object** that is used to convey the rejection of a task assignment.

task request: A **Message object** that is used to issue a task assignment.

task update: A **Message object** that is used by a task assignee to send task changes to a task assigner.

Tasks folder: A **Folder object** that contains **Task objects**.

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

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-OXCADATA] Microsoft Corporation, "[Data Structures](#)".

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

[MS-OXCPRM] Microsoft Corporation, "[Exchange Access and Operation Permissions Protocol](#)".

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

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

[MS-OXCTABL] Microsoft Corporation, "[Table Object Protocol](#)".

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

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

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

[MS-OXORMDR] Microsoft Corporation, "[Reminder Settings 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-OXCFOLD] Microsoft Corporation, "[Folder Object Protocol](#)".

[MS-OXCXICS] Microsoft Corporation, "[Bulk Data Transfer Protocol](#)".

1.3 Overview

The Task-Related Objects Protocol defines a **Task object** to represent a task that the user wants to accomplish. The properties of a Task object specify the due date, assignment status, and anticipated work effort, among other things. A Task object is created in the **Tasks folder** of a **message store**. Once a Task object is created, the task can be assigned. Task assignments are made, confirmed, and updated through the use of **task communications**, which include **task requests**, **task acceptances**, **task rejections**, and **task updates**. The Task-Related Objects Protocol also allows a series of tasks to be generated from a single Task object with a **recurrence pattern**.

This protocol extends the Message and Attachment Object Protocol, as described in [\[MS-OXCMSG\]](#), in that it defines new properties on a **Message object** and adds constraints to the existing properties of a Message object.

1.4 Relationship to Other Protocols

The Task-Related Objects Protocol extends the Message and Attachment Object Protocol, as described in [\[MS-OXCMSG\]](#), and, therefore, has the same dependencies.

The Task-Related Objects Protocol also depends on the Email Object Protocol, as described in [\[MS-OXOMSG\]](#), for sending a task communication.

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

1.5 Prerequisites/Preconditions

The Task-Related Objects Protocol has the same prerequisites and preconditions as the Message and Attachment Object Protocol, as described in [\[MS-OXCMSG\]](#).

1.6 Applicability Statement

A client can use this protocol to manage a user's tasks in the user's **mailbox**.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

This protocol provides no vendor extensibility beyond what is specified in [\[MS-OXCMSG\]](#).

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

The Task-Related Objects Protocol uses the same underlying transport as that used by the Message and Attachment Object Protocol, as specified in [\[MS-OXCMSG\]](#).

2.2 Message Syntax

A Task object and a task communication can be created and modified by clients and servers. Except where noted, this section defines constraints under which both clients and servers operate.

Clients operate on a Task object and a task communication by using the Message and Attachment Object Protocol, as specified in [\[MS-OXCMSG\]](#). How a server operates on a Task object and a task communication is implementation-dependent, but the results of any such operations MUST be exposed to clients in a manner that is consistent with the Task-Related Objects Protocol.

Unless otherwise specified in sections [2.2.1](#) through [2.2.3](#), a Task object and a task communication MUST adhere to all property constraints specified in [\[MS-OXPROPS\]](#) and [\[MS-OXCMSG\]](#).

2.2.1 Folder Properties

The property in section [2.2.1.1](#) is set on the **Folder object** that represents the Tasks folder. Task objects are stored in the Tasks folder.

2.2.1.1 PidTagOrdinalMost Property

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

The **PidTagOrdinalMost** property ([\[MS-OXPROPS\]](#) section 2.812) contains a positive number whose negative is less than or equal to the value of the **PidLidTaskOrdinal** property (section [2.2.2.2.26](#)) of all Task objects in the folder. This property MUST be updated to maintain this condition whenever the **PidLidTaskOrdinal** property of any Task object in the folder changes in a way that would violate the condition.

This property provides an efficient way to identify Task objects as being in the same folder.

2.2.2 Task Object Properties

Section [2.2.2.1](#) and section [2.2.2.2](#) specify requirements for properties of a Task object.

2.2.2.1 Additional Property Constraints

In some cases, the Task object has specific requirements for properties that are otherwise inherited. These specific requirements are specified in sections [2.2.2.1.1](#) through [2.2.2.1.5](#).

2.2.2.1.1 PidTagMessageClass Property

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

The **PidTagMessageClass** property ([\[MS-OXCMSG\]](#) section 2.2.1.3) specifies the type of the Message object. The value MUST be "IPM.Task" or begin with "IPM.Task.". The string is case-insensitive.

2.2.2.1.2 Body Properties

The properties specified in [\[MS-OXCMSG\]](#) section 2.2.1.56 are used to specify **Rich Text Format (RTF)** for the body of a Task object.

2.2.2.1.3 PidLidCommonStart Property

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

The **PidLidCommonStart** property ([\[MS-OXCMSG\]](#) section 2.2.1.18) specifies the **Coordinated Universal Time (UTC)** equivalent of the **PidLidTaskStartDate** property ([section 2.2.2.2.4](#)).

2.2.2.1.4 PidLidCommonEnd Property

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

The **PidLidCommonEnd** property ([\[MS-OXCMSG\]](#) section 2.2.1.19) specifies the UTC equivalent of the **PidLidTaskDueDate** property ([section 2.2.2.2.5](#)).

2.2.2.1.5 PidTagIconIndex Property

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

The **PidTagIconIndex** property ([\[MS-OXOMSG\]](#) section 2.2.1.10) specifies which icon is to be used by a user interface to represent the Task object. If this property exists, its value is a hint to the client's user interface. The user interface can ignore the value and use another method of determining which icon to display to the user. The behavior of the user interface and the method of determining which icon to display are implementation-dependent.

The value is one of the following.

| Value | Meaning |
|------------|--|
| 0x00000501 | The Task object has not been assigned and is a recurring task . |
| 0x00000502 | The Task object is the task assignee's copy of the Task object. |
| 0x00000503 | The Task object is the task assigner's copy of the Task object. |
| 0x00000500 | None of the other conditions apply. |

2.2.2.2 Task Object Specific Properties

2.2.2.2.1 PidLidTaskMode Property

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

The **PidLidTaskMode** property ([\[MS-OXPROPS\]](#) section 2.324) on a Task object has no meaning and is set to zero. For details about the **PidLidTaskMode** property on a task communication, see [section 2.2.3.2](#).

2.2.2.2.2 PidLidTaskStatus Property

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

The **PidLidTaskStatus** property ([\[MS-OXPROPS\]](#) section 2.335) specifies the status of the user's progress on the task. The value is one of the following.

| Value | Meaning |
|------------|--|
| 0x00000000 | The user has not started work on the Task object. If the property is set to this value, the value of the PidLidPercentComplete property (section 2.2.2.2.3) MUST be 0.0. |
| 0x00000001 | The user's work on this Task object is in progress. If the property is set to this value, the value of the PidLidPercentComplete property MUST be greater than 0.0 and less than 1.0. |
| 0x00000002 | The user's work on this Task object is complete. If the property is set to this value, the value of the PidLidPercentComplete property MUST be 1.0, the value of the PidLidTaskDateCompleted property (section 2.2.2.2.9) MUST be the current date, and the value of the PidLidTaskComplete property (section 2.2.2.2.20) MUST be 0x01. |
| 0x00000003 | The user is waiting on somebody else. |
| 0x00000004 | The user has deferred work on the Task object. |

2.2.2.2.3 PidLidPercentComplete Property

Type: **PtypFloating64** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidPercentComplete** property ([\[MS-OXPROPS\]](#) section 2.202) indicates the progress the user has made on a task. The value MUST be a number greater than or equal to 0.0 and less than or equal to 1.0, where 1.0 indicates that work is completed and 0.0 indicates that work has not begun.

2.2.2.2.4 PidLidTaskStartDate Property

Type: **PtypTime** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskStartDate** property ([\[MS-OXPROPS\]](#) section 2.333) specifies the date on which the user expects work on the task to begin. The date is in the user's local time zone. The task has no start date if this property is unset or is set to 0x5AE980E0 (1,525,252,320). If the task has a start date, the value MUST have a time component of 12:00 midnight, and the **PidLidTaskDueDate** property (section [2.2.2.2.5](#)) and the **PidLidCommonStart** property (section [2.2.2.1.3](#)) MUST also be set.

2.2.2.2.5 PidLidTaskDueDate Property

Type: **PtypTime** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskDueDate** property ([\[MS-OXPROPS\]](#) section 2.314) specifies the date by which the user expects work on the task to be complete. The date is in the user's local time zone. The task has no due date if this property is unset or is set to 0x5AE980E0 (1,525,252,320). However, a due date is optional only if no start date is indicated in the **PidLidTaskStartDate** property (section [2.2.2.2.4](#)). If the task has a due date, the value MUST have a time component of 12:00 midnight, and the **PidLidCommonEnd** property (section [2.2.2.1.4](#)) MUST also be set. If the **PidLidTaskStartDate** property has a start date, then the value of this property MUST be greater than or equal to the value of the **PidLidTaskStartDate** property.

2.2.2.2.6 PidLidTaskResetReminder Property

Type: **PtypBoolean** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskResetReminder** property ([\[MS-OXPROPS\]](#) section 2.331) indicates whether future recurring tasks need reminders, even though the value of the **PidLidReminderSet** property ([\[MS-OXORMDR\]](#) section 2.2.1.1) is zero (FALSE). The **PidLidTaskResetReminder** property is set to nonzero (TRUE) when the task's reminder is dismissed, and is set to zero (FALSE) otherwise. If this property is left unset, the value zero (FALSE) is assumed.

As specified in [MS-OXORMDR], the **PidLidReminderSet** property indicates whether a reminder is set on the Task object. However, the **PidLidReminderSet** property indicates only the presence of a reminder on a single Task object. It cannot be used alone to determine whether a future recurring task needs a reminder.

This is best understood by example. Suppose that the user wants reminders for a series of recurring tasks. The client creates a Task object and sets the **PidLidReminderSet** property to nonzero (TRUE). At the appropriate time, the client presents the user with a reminder. When the user dismisses the reminder, the client sets the **PidLidReminderSet** property to zero (FALSE) and sets the **PidLidTaskResetReminder** property to nonzero (TRUE). Later, the user completes the task, and the client creates a new recurring task. As stated, the user wanted the new recurring task to have a reminder, but the last known value of the **PidLidReminderSet** property was zero (FALSE). The client uses the nonzero (TRUE) value of the **PidLidTaskResetReminder** property to determine that the user had set and dismissed a reminder on a previous recurring task. If the value of the **PidLidTaskResetReminder** property had been zero (FALSE), the client would determine that the user had never set a reminder on the task at all. The client sets a new reminder, as specified in [MS-OXORMDR], if the value of either **PidLidReminderSet** or **PidLidTaskResetReminder** is nonzero (TRUE).

2.2.2.2.7 PidLidTaskAccepted Property

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

The **PidLidTaskAccepted** property ([MS-OXPROPS] section 2.306) indicates whether a task assignee has replied to a task request for this Task object. The client sets this property to zero (FALSE) for a new Task object and to nonzero (TRUE) when a Task object is either accepted or rejected. If left unset, a value of zero (FALSE) is assumed.

2.2.2.2.8 PidLidTaskDeadOccurrence Property

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

The **PidLidTaskDeadOccurrence** property ([MS-OXPROPS] section 2.313) indicates whether a new recurring task remains to be generated. The client sets this property to zero (FALSE) on a new Task object. The client sets this property to nonzero (TRUE) when it generates the last recurring task.

2.2.2.2.9 PidLidTaskDateCompleted Property

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

The **PidLidTaskDateCompleted** property ([MS-OXPROPS] section 2.312) specifies the date when the user completed work on the task. This property can be left unset; if set, this property MUST have a time component of 12:00 midnight in the local time zone, converted to UTC.

2.2.2.2.10 PidLidTaskLastUpdate Property

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

The **PidLidTaskLastUpdate** property ([MS-OXPROPS] section 2.322) specifies the date and time of the most recent change made to the Task object. The most recent change is specified by the **PidLidTaskHistory** property (section 2.2.2.2.18). The value is in UTC.

2.2.2.2.11 PidLidTaskActualEffort Property

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

The **PidLidTaskActualEffort** property ([MS-OXPROPS] section 2.307) specifies the number of minutes that the user actually spent working on a task. The value MUST be greater than or equal to

zero and less than 0x5AE980DF (1,525,252,319), where 480 minutes equal one day and 2400 minutes equal one week (8 hours in a work day and 5 work days in a work week).

2.2.2.2.12 PidLidTaskEstimatedEffort Property

Type: **PtypInteger32** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskEstimatedEffort** property ([\[MS-OXPROPS\]](#) section 2.315) specifies the number of minutes that the user expects to work on a task. The value MUST be greater than or equal to zero and less than 0x5AE980DF (1,525,252,319), where 480 minutes equal one day and 2400 minutes equal one week (8 hours in a work day and 5 work days in a work week).

2.2.2.2.13 PidLidTaskVersion Property

Type: **PtypInteger32** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskVersion** property ([\[MS-OXPROPS\]](#) section 2.338) indicates which copy is the latest update of a Task object. An update with a lower version than the Task object is ignored. When embedding a Task object in a task communication, the client sets the current version of the embedded Task object on the task communication as well.

The initial value of this property is 1. The value is incremented only when the Task object is owned by the user. The Task object is owned by the user when the **PidLidTaskState** property (section [2.2.2.2.14](#)) is set to 0x00000001, 0x00000002, or 0x00000004.

2.2.2.2.14 PidLidTaskState Property

Type: **PtypInteger32** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskState** property ([\[MS-OXPROPS\]](#) section 2.334) indicates the current assignment state of the Task object. The value is one of the following.

| Value | Meaning |
|------------|---|
| 0x00000001 | The Task object is not assigned. |
| 0x00000002 | The Task object is the task assignee's copy of an assigned Task object. |
| 0x00000003 | The Task object is the task assigner's copy of an assigned Task object. |
| 0x00000004 | The Task object is the task assigner's copy of a rejected Task object. |
| 0x00000000 | This Task object was created to correspond to a Task object that was embedded in a task rejection but could not be found locally. |

2.2.2.2.15 PidLidTaskRecurrence Property

Type: **PtypBinary** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskRecurrence** property ([\[MS-OXPROPS\]](#) section 2.330) contains a **RecurrencePattern** structure, as specified in [\[MS-OXOCAL\]](#) section 2.2.1.44.1, that provides information about recurring tasks. Both the **DeletedInstanceCount** field and the **ModifiedInstanceCount** field of the **RecurrencePattern** structure MUST be set zero.

2.2.2.2.16 PidLidTaskAssigners Property

Type: **PtypBinary** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskAssigners** property ([\[MS-OXPROPS\]](#) section 2.309) contains a stack of entries, each representing a task assigner. The most recent task assigner (that is, the top of the stack) appears at the end.

The format of this property is shown in the following table. Unless otherwise indicated, the types are specified in ([\[MS-OXCADATA\]](#) section 2.11.1).

| Size in bytes | Type | Name | Description |
|--|--|----------------------|---|
| 4 | PtypInteger32 | <i>cAssigners</i> | Number of task assigners. |
| 4 | PtypInteger32 | <i>cbAssigner</i> | Size of the task assigner data to follow, in bytes. |
| Variable | Address Book EntryID structure ([MS-OXCADATA] section 2.2.5.2) | <i>EID</i> | A structure that represents the task assigner. |
| Variable | PtypString8 | <i>szDisplayName</i> | The task assigner's display name , using multibyte characters. |
| Variable | PtypString | <i>wzDisplayName</i> | The task assigner's display name, using Unicode characters. |
| Next task assigner's data begins here. | | | |

2.2.2.2.17 PidLidTaskStatusOnComplete Property

Type: **PtypBoolean** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskStatusOnComplete** property ([\[MS-OXPROPS\]](#) section 2.336) indicates whether the task assignee has been requested to send an e-mail status report, which is an e-mail message with "Task Completed" as the subject, when the task assignee completes the assigned task. The client sets this property to nonzero (TRUE) when the task assignee has been requested to send an e-mail status report; otherwise, this property is set to zero (FALSE).

2.2.2.2.18 PidLidTaskHistory Property

Type: **PtypInteger32** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskHistory** property ([\[MS-OXPROPS\]](#) section 2.320) indicates the type of change that was last made to the Task object. When the value of this property is set, the **PidLidTaskLastUpdate** property (section [2.2.2.2.10](#)) MUST also be set to the current time.

The value is one of the following (listed in order of decreasing priority).

| Value | Meaning |
|------------|---|
| 0x00000004 | The PidLidTaskDueDate property (section 2.2.2.2.5) changed. |
| 0x00000003 | Another property was changed. |
| 0x00000001 | The task assignee accepted this Task object. |
| 0x00000002 | The task assignee rejected this Task object. |
| 0x00000005 | The Task object has been assigned to a task assignee. |
| 0x00000000 | No changes were made. |

2.2.2.2.19 PidLidTaskUpdates Property

Type: **PtypBoolean** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskUpdates** property ([\[MS-OXPROPS\]](#) section 2.337) indicates whether the task assignee has been requested to send a task update when the assigned Task object changes. The client sets this property to nonzero (TRUE) when the task assignee has been requested to send a task update; otherwise, this property is set to zero (FALSE).

2.2.2.2.20 PidLidTaskComplete Property

Type: **PtypBoolean** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskComplete** property ([\[MS-OXPROPS\]](#) section 2.310) indicates whether the task has been completed. The client sets this property to nonzero (TRUE) when the task has been completed; otherwise, this property is set to zero (FALSE).

2.2.2.2.21 PidLidTaskFCreator Property

Type: **PtypBoolean** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskFCreator** property ([\[MS-OXPROPS\]](#) section 2.316) indicates that the Task object was originally created by the action of the current user or user agent instead of by the processing of a task request. The client sets this property to nonzero (TRUE) when the user creates the task and to zero (FALSE) when the task was assigned by another user. If this property is left unset, a value of nonzero (TRUE) is assumed.

2.2.2.2.22 PidLidTaskOwner Property

Type: **PtypString** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskOwner** property ([\[MS-OXPROPS\]](#) section 2.328) specifies the name of the **task owner**.

2.2.2.2.23 PidLidTaskMultipleRecipients Property

Type: **PtypInteger32** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskMultipleRecipients** property ([\[MS-OXPROPS\]](#) section 2.325) specifies optimization hints about the **recipients** of a Task object.

This property can be left unset; if set, it MUST be set to a bitwise OR of zero or more of the following flags. Any other settings MUST be ignored.

| Flag name | Value | Meaning |
|-----------|------------|---|
| Sent | 0x00000001 | The Task object has multiple primary recipients . |
| Received | 0x00000002 | Although the "Sent" flag was not set, the client detected that the Task object has multiple primary recipients. |

2.2.2.2.24 PidLidTaskAssigner Property

Type: **PtypString** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskAssigner** property ([\[MS-OXPROPS\]](#) section 2.308) specifies the name of the user that last assigned the task. If the task has not been assigned, this property is left unset.

Because this property is set by the client after the task assignee receives a task request, the property will not be set on the task assigner's copy of the Task object.

When the client adds or removes a task assigner from the stack of task assigners listed in the **PidLidTaskAssigners** property (section [2.2.2.2.16](#)), this property is set to the added or removed task assigner.

2.2.2.2.25 PidLidTaskLastUser Property

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

The **PidLidTaskLastUser** property ([\[MS-OXPROPS\]](#) section 2.323) specifies the name of the most recent user to have been the task owner.

Before a client sends a task request, it sets this property to the name of the task assigner.

Before a client sends a task acceptance, it sets this property to the name of the task assignee.

Before a client sends a task rejection, it sets this property to the name of the task assigner.

2.2.2.2.26 PidLidTaskOrdinal Property

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

The **PidLidTaskOrdinal** property ([\[MS-OXPROPS\]](#) section 2.327) specifies a number that aids custom sorting of Task objects. This property can be left unset; if set, its value **MUST** be greater than 0x800186A0 (-2,147,383,648) and less than 0x7FFE7960 (2,147,383,648) and **MUST** be unique among Task objects in the same folder.

Whenever the client sets this property to a number less than the negative of the current value of the **PidTagOrdinalMost** property (section [2.2.1.1](#)) of the folder, the client **MUST** also update the **PidTagOrdinalMost** property on the folder.

2.2.2.2.27 PidLidTaskLastDelegate Property

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

The **PidLidTaskLastDelegate** property ([\[MS-OXPROPS\]](#) section 2.321) specifies the name of the mailbox's **delegate** who most recently assigned the task. This property contains an empty string if there is no delegate. For details about delegates, see [\[MS-OXODLGT\]](#).

2.2.2.2.28 PidLidTaskFREcurring Property

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

The **PidLidTaskFREcurring** property ([\[MS-OXPROPS\]](#) section 2.318) indicates whether the task includes a recurrence pattern. If this property is unset or is set to zero (FALSE), the task does not include a recurrence pattern. If set to nonzero (TRUE), the **PidLidTaskRecurrence** (section [2.2.2.2.15](#)) and **PidLidTaskDeadOccurrence** (section [2.2.2.2.8](#)) properties **MUST** also be set.

2.2.2.2.29 PidLidTaskOwnership Property

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

The **PidLidTaskOwnership** property ([\[MS-OXPROPS\]](#) section 2.329) indicates the role of the current user relative to the Task object. The value is one of the following.

| Value | Meaning |
|------------|---|
| 0x00000000 | The Task object is not assigned. |
| 0x00000001 | The Task object is the task assigner's copy of the Task object. |
| 0x00000002 | The Task object is the task assignee's copy of the Task object. |

2.2.2.2.30 PidLidTaskAcceptanceState Property

Type: **PtypInteger32** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskAcceptanceState** property ([\[MS-OXPROPS\]](#) section 2.305) indicates the acceptance state of the task. The value is one of the following.

| Value | Meaning |
|------------|--|
| 0x00000000 | The Task object is not assigned. |
| 0x00000001 | The Task object's acceptance status is unknown. |
| 0x00000002 | The task assignee has accepted the Task object. This value is set when the client processes a task acceptance. |
| 0x00000003 | The task assignee has rejected the Task object. This value is set when the client processes a task rejection. |

2.2.2.2.31 PidLidTaskFFixOffline Property

Type: **PtypBoolean** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskFFixOffline** property ([\[MS-OXPROPS\]](#) section 2.317) indicates whether the value of the **PidLidTaskOwner** property (section [2.2.2.2.22](#)) is correct. The value zero (FALSE) indicates that the value of the **PidLidTaskOwner** property is correct. A nonzero value (TRUE) indicates that the client cannot determine an accurate value for the **PidLidTaskOwner** property.

When the client sets this property to a nonzero (TRUE) value, the client can also set the **PidLidTaskOwner** property to a generic owner name, such as "Unknown". When the client changes the value of the **PidLidTaskOwner** property, the client updates the **PidLidTaskFFixOffline** property accordingly.

2.2.2.2.32 PidLidTaskGlobalId Property

Type: **PtypBinary** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskGlobalId** property ([\[MS-OXPROPS\]](#) section 2.319) specifies a unique **GUID** for this task, used to locate an existing task upon receipt of a task response or task update. This property **MUST** be set for assigned tasks, but it can be left unset for unassigned tasks.

2.2.2.2.33 PidLidTaskCustomFlags Property

Type: **PtypInteger32** ([\[MS-OXCADATA\]](#) section 2.11.1)

The **PidLidTaskCustomFlags** property ([\[MS-OXPROPS\]](#) section 2.311) is not used. The client can set this property, but it has no impact on the Task-Related Objects Protocol and is ignored by the server.

2.2.2.2.34 PidLidTaskRole Property

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

The **PidLidTaskRole** property ([\[MS-OXPROPS\]](#) section 2.332) is not used. The client can set this property, but it has no impact on the Task-Related Objects Protocol and is ignored by the server.

2.2.2.2.35 PidLidTaskNoCompute Property

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

The **PidLidTaskNoCompute** property ([\[MS-OXPROPS\]](#) section 2.326) is not used. The client can set this property, but it has no impact on the Task-Related Objects Protocol and is ignored by the server.

2.2.2.2.36 PidLidTeamTask Property

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

The **PidLidTeamTask** property ([\[MS-OXPROPS\]](#) section 2.339) is not used. The client can set this property, but it has no impact on the Task-Related Objects Protocol and is ignored by the server.

2.2.3 Task Communications Properties

The property requirements specified in sections [2.2.3.1](#) through [2.2.3.2](#) are specific to task requests, task acceptances, task rejections, and task updates (collectively, task communications).

2.2.3.1 PidTagProcessed Property

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

The **PidTagProcessed** property ([\[MS-OXPROPS\]](#) section 2.863) indicates whether a client has already processed a received a task communication. This property is left unset until processing has completed and then is set to nonzero (TRUE).

2.2.3.2 PidLidTaskMode Property

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

The **PidLidTaskMode** property ([\[MS-OXPROPS\]](#) section 2.324) specifies the assignment status of the Task object that is embedded in the task communication. The following table specifies the valid values for this property.

| Value | Meaning |
|-------|--|
| 0 | The Task object is not assigned. |
| 1 | The Task object is embedded in a task request. |
| 2 | The Task object has been accepted by the task assignee. |
| 3 | The Task object was rejected by the task assignee. |
| 4 | The Task object is embedded in a task update. |
| 5 | The Task object was assigned to the task assigner (self-delegation). |

2.2.3.3 Additional Property Constraints

In some cases, the task communication has specific requirements for properties that are otherwise inherited. This section specifies these specific requirements.

2.2.3.3.1 PidTagMessageClass Property

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

The **PidTagMessageClass** property ([\[MS-OXCMSG\]](#) section 2.2.1.3) specifies the type of the Message object. The value is one of the following strings and is case-insensitive.

| String | Type of task communication |
|---------------------------|----------------------------|
| "IPM.TaskRequest" | Task request |
| "IPM.TaskRequest.Accept" | Task acceptance |
| "IPM.TaskRequest.Decline" | Task rejection |
| "IPM.TaskRequest.Update" | Task update |

2.2.3.3.2 PidTagIconIndex Property

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

The **PidTagIconIndex** property ([\[MS-OXOMSG\]](#) section 2.2.1.10) specifies which icon is to be used by a user interface to represent the task communication. If this property exists, its value is a hint to the client's user interface. The user interface can ignore the value and use another method of determining which icon to display to the user.

The value is one of the following.

| Value | Type of task communication |
|------------|----------------------------|
| 0x00000504 | Task request |
| 0x00000505 | Task acceptance |
| 0x00000506 | Task rejection |
| 0x00000500 | Task update |
| 0xFFFFFFFF | Unspecified |

3 Protocol Details

3.1 Client Details

The client creates and manipulates a Task object and a task communication and in all other ways 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 document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

This protocol uses the abstract data model that is specified in [\[MS-OXCMSG\]](#) section 3.1.1 with the following adaptations:

- The Task object and the task communications are extensions of the Message object.
- A Task object is created in the Tasks folder, which is a Folder object, unless the end user or user agent explicitly specifies another folder.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Higher-Layer Triggered Events

3.1.4.1 Creating a Task Object and a Task Communication

To create a Task object, the client creates a Message object as specified in [\[MS-OXCMSG\]](#) section 3.1.4.2. The client adds a user as a **carbon copy (Cc) recipient** if that user is to receive task updates. The client adds a user as a **blind carbon copy (Bcc) recipient** and sets the **PidLidTaskStatusOnComplete** property (section [2.2.2.2.17](#)) to nonzero (TRUE) if that user is to receive an e-mail status report when the task is completed. The client sets properties in accordance with the requirements in section [2.2.2](#) of this document and saves the Message object as specified in [\[MS-OXCMSG\]](#).

Although Task objects support recipients, the client does not submit a Task object to the server for delivery to other users. Instead, the client submits a task communication. To create a task communication, the client creates a Message object as specified in [\[MS-OXCMSG\]](#) section 3.1.4.2, sets properties in accordance with the requirements in section [2.2.3](#) of this document, and saves the Message object as specified in [\[MS-OXCMSG\]](#) section [3.1.4.3](#). The client embeds a copy of the Task object as an **Attachment object** within the task communication (the embedding object). For details about embedding a Task object, see section 3.1.4.3. A Task object that is in a **public folder** is not assigned. Therefore, the client MUST NOT create a task request for a Task object that is in a public folder.

3.1.4.2 Modifying a Task Object and a Task Communication

To modify a Task object or a task communication, the client opens a Message object as specified in [\[MS-OXCMSG\]](#) section 3.1.4.1, modifies any of the properties in accordance with the requirements in section [2.2.2](#) and section [2.2.3](#) of this document, and saves the Message object as specified in [\[MS-OXCMSG\]](#) section 3.1.4.3. The updated Task object is embedded in the task update as specified in section [3.1.4.3](#).

When the client changes a Task object, it sends a task update to all of the Cc recipients. For details about sending a task update, see section [3.1.4.4](#).

When the client marks a Task object as complete by setting the **PidLidTaskStatus** property (section [2.2.2.2](#)), it sends an e-mail message with "Task Completed" as the subject to all of the Bcc recipients if the value of the **PidLidTaskStatusOnComplete** property (section [2.2.2.17](#)) is nonzero (TRUE).

3.1.4.3 Embedding a Task Object

Before a task can be assigned, the client embeds a copy of the Task object as an Attachment object within the task communication (the embedding object). To embed a Task object, the client MUST complete the following steps in the order specified:

1. Create an Attachment object on the embedding object, as specified in [\[MS-OXCMSG\]](#) section 3.1.4.18. This Attachment object MUST be the first Attachment object created on the embedding object.
2. Set the **PidTagAttachMethod** property ([\[MS-OXCMSG\]](#) section 2.2.2.9) to afEmbeddedMessage (0x00000005), the **PidTagRenderingPosition** property ([\[MS-OXCMSG\]](#) section 2.2.2.16) to 0xFFFFFFFF, and the **PidTagAttachmentHidden** property ([\[MS-OXCMSG\]](#) section 2.2.2.24) to 0x01, as specified in [\[MS-OXCMSG\].<1>](#)
3. Open the Attachment object as an **Embedded Message object**, as specified in [\[MS-OXCMSG\]](#) section 3.1.4.16.
4. Set the appropriate properties of the Embedded Message object (the embedded Task object) as specified throughout this document.
5. If the original Task object has a **PidLidTaskGlobalId** property (section [2.2.2.32](#)), copy it to the embedded Task object. Otherwise, set the value of the **PidLidTaskGlobalId** property of the embedded Task object to a new, unique GUID.
6. Save the Embedded Message object, as specified in [\[MS-OXCMSG\]](#) section 3.1.4.19.
7. Release the Message object by using the **RopRelease remote operation (ROP)** ([\[MS-OXCROPS\]](#) section 2.2.15.3).
8. Release the Attachment object by using the **RopRelease** ROP.

3.1.4.4 Sending a Task Communication

The client creates a task communication, as specified in section [3.1.4.1](#), and then adds the recipients and saves the Message object, as specified in [\[MS-OXCMSG\]](#). The client then performs other actions, which are dependent on the particular type of task communication that will be sent. To send the task communication, the client submits the task communication for delivery, as specified in [\[MS-OXOMSG\]](#).

Task request: Before the client sends a task request, it computes the name of the new owner of the task by retrieving the primary recipients from the Task object. If there is only one primary recipient, its display name is the name of the new owner. If there are multiple primary recipients, the new owner name is derived by concatenating the display names of all the primary recipients, separated

with semicolons (";"). A task can be assigned to only one task assignee. If a Task object has more than one primary recipient, the task is shared, not assigned. A Task object that is in a public folder is not assigned. The client sets the value of the **PidLidTaskOwner** property (section [2.2.2.2.22](#)) of the Task object with this new owner name. The client also sets the value of the **PidLidTaskGlobalId** property (section [2.2.2.2.32](#)) of the Task object to a new, unique GUID if it does not already have one.

Task acceptance: When the client sends a task acceptance, the client creates a local Task object and copies to it the relevant properties from the embedded Task object of the task request. Then, the client sets the recipient to the last task assigner listed in the **PidLidTaskAssigners** property (section [2.2.2.2.16](#)) of the Task object. The stack of task assigners is deleted from the **PidLidTaskAssigners** property, leaving only the most recent task assigner. The client sets the **PidLidTaskOwnership** property (section [2.2.2.2.29](#)) to 0x00000002. The client does not send a task acceptance when the Task object has more than one primary recipient.

Task rejection: When the client sends a task rejection, it removes the last entry from the **PidLidTaskAssigners** property of the Task object. The client sets the value of the **PidLidTaskOwner** property of the Task object to the name from this last entry. Then, the client sets the recipient to the last task assigner listed in the **PidLidTaskAssigners** property of the Task object. The client does not send a task rejection when the Task object has more than one primary recipient.

Task update: When the client changes a Task object, it sends a task update to all Cc recipients of the Task object if the **PidLidTaskUpdates** property (section [2.2.2.2.19](#)) is set to nonzero (TRUE). The revised Task object is embedded in the task update, as specified in section [3.1.4.3](#). When the client sends a task update, it sets the recipient to the last task assigner listed in the **PidLidTaskAssigners** property of the Task object. The client does not send a task update when the Task object has more than one primary recipient.

3.1.4.5 Receiving a Task Communication

When the client receives a task communication, the client's handling of the task communication depends on the type of task communication that is received.

Task request: When the client receives a task request, it appends an entry that represents the sender of the task request to the **PidLidTaskAssigners** property (section [2.2.2.2.16](#)) of the Task object and sets the value of the **PidLidTaskOwner** property (section [2.2.2.2.22](#)) of the Task object to the name of the task assignee. The client also adds the sender to the Bcc recipients of the Task object if the value of the **PidLidTaskUpdates** property (section [2.2.2.2.19](#)) of the Task object is nonzero.

Task acceptance, task rejection, or task update: A task acceptance, task rejection, or task update contains an embedded Task object that is an update to the client's local Task object. When the client receives a task acceptance, task rejection, or task update, the client locates the local Task object by using the **PidLidTaskGlobalId** property (section [2.2.2.2.32](#)) of the embedded Task object along with a **restriction**. For details about using a restriction to find a Message object, see [\[MS-OXCTABL\]](#). If the client can locate the local Task object, it copies any relevant properties from the embedded Task object to the local Task object. If the client cannot locate the local Task object, the client SHOULD [<2>](#) create one.

3.1.4.6 Generating Instances of Recurring Tasks

The client does not generate all instances of a recurring task at once. It begins by generating an initial instance only. In many cases, this instance will already exist when a recurrence pattern is added to it.

3.1.4.6.1 Determining Whether to Generate a New Instance

The client determines whether to generate a new instance of the recurring task when the prior instance (a) is completed — that is, the **PidLidTaskStatus** property (section [2.2.2.2.2](#)) is marked as Complete; (b) is deleted; or (c) is given a new recurring start date or due date.

While determining whether to generate a new instance of a recurring task, the client does not generate a new instance if the value of the **PidLidTaskFRecurring** property (section [2.2.2.28](#)) is 0x00 or if the value of the **PidLidTaskDeadOccurrence** property (section [2.2.2.8](#)) is 0x01.

The client also considers the criteria specified in the recurrence pattern. For details about recurrence patterns, see [\[MS-OXOCAL\]](#). If the recurrence pattern specifies a valid end date and a positive count of occurrences, the client decrements the count of occurrences, saves the new recurrence pattern, and generates a new instance. If the occurrence count reaches 0, the client sets the value of the **PidLidTaskDeadOccurrence** property to 0x01.

3.1.4.6.2 New Instance Dates

Some recurrence patterns are sliding. In such cases, the recurrence pattern does not specify the absolute date of each occurrence. Rather, the recurrence pattern specifies a date that is relative to the completion date of the prior instance. The client computes the date of the new instance accordingly.

Having determined from the recurrence pattern the appropriate date for a new instance, the client determines and sets the values for the start date and due date properties of the new instance. The new values of these properties are determined by combining the values of these properties from the prior instance with the newly calculated instance date, as follows: If the prior instance does not have a start date, the new instance does not have a start date, and the new due date is the newly calculated instance date. Otherwise, the new start date is the newly calculated instance date and the new instance and the new due date is the sum of the new start date and the difference between the old due date and the old start date. In other words, new due date = new start date + (old due date - old start date).

Finally, the client sets the reminder properties of the new instance, as specified in [\[MS-OXORMDR\]](#). In particular, the client sets the **PidLidReminderSet** property ([MS-OXORMDR] section 2.2.1.1) of the new instance to 0x01 if the reminder time has not already passed and (a) the **PidLidReminderSet** property of the prior instance is 0x01, or (b) the **PidLidTaskResetReminder** property (section [2.2.2.6](#)) of the prior instance is 0x01. If the reminder time has already passed but either condition (a) or (b) applies, the client sets **PidLidTaskResetReminder** to 0x01 so that future instances can continue to follow the same logic.

3.1.4.6.3 Archive Instances

If a new instance is warranted, the client does not create a new Task object for the new instance. A new Task object would have distinct values for properties such as **PidTagSearchKey** ([\[MS-OXCPRPT\]](#) section 2.2.1.9), **PidTagEntryId** ([\[MS-OXCPRPT\]](#) section 2.2.4), and others that might affect later efforts to locate and identify the Task object. Instead, the client updates the properties of the existing Task object and uses it as the new instance. If preferred, the client first creates a new Task object to represent the now-completed task.

To create a Task object to represent the now-completed task, the client creates a new Task object, as usual. Then, the client copies any relevant recipients, attachments, and properties, as specified in [\[MS-OXCMSG\]](#), from the prior Task object to the new Task object, with these exceptions.

| Property | Action |
|--|--------------------------|
| PidLidTaskOwnership (section 2.2.2.29) | Set to 0, not assigned. |
| PidLidTaskAcceptanceState (section 2.2.2.30) | Set to 0, not assigned. |
| PidLidTaskState (section 2.2.2.14) | Set to 1, not assigned. |
| PidLidTaskMode (section 2.2.2.1) | Set to 0. |
| PidLidTaskOrdinal (section 2.2.2.26) | Set to a unique ordinal. |

| Property | Action |
|--|--------------------------|
| PidTagReadReceiptRequested ([MS-OXOMSG] section 2.2.1.29) | Set to 0x00. |
| PidTagOriginatorDeliveryReportRequested ([MS-OXOMSG] section 2.2.1.20) | Set to 0x00. |
| PidLidTaskAssigner (section 2.2.2.24) | Set to "", empty string. |
| PidTagSenderName ([MS-OXOMSG] section 2.2.1.51) | Delete. |
| PidTagSenderEmailAddress ([MS-OXOMSG] section 2.2.1.49) | Delete. |
| PidTagSenderAddressType ([MS-OXOMSG] section 2.2.1.48) | Delete. |
| PidTagSenderEntryId ([MS-OXOMSG] section 2.2.1.50) | Delete. |
| PidTagSenderSearchKey ([MS-OXOMSG] section 2.2.1.52) | Delete. |
| PidTagSentRepresentingName ([MS-OXOMSG] section 2.2.1.57) | Delete. |
| PidTagSentRepresentingEmailAddress ([MS-OXOMSG] section 2.2.1.55) | Delete. |
| PidTagSentRepresentingAddressType ([MS-OXOMSG] section 2.2.1.54) | Delete. |
| PidTagSentRepresentingEntryId ([MS-OXOMSG] section 2.2.1.56) | Delete. |
| PidTagSentRepresentingSearchKey ([MS-OXOMSG] section 2.2.1.58) | Delete. |
| PidLidTaskAssigners (section 2.2.2.16) | Delete. |
| PidLidTaskFFixOffline (section 2.2.2.31) | Set to 0x00. |
| PidLidTaskDeadOccurrence (section 2.2.2.8) | Set to 0x01. |
| PidLidTaskStatus (section 2.2.2.2) | Set to 2, complete. |
| PidLidTaskComplete (section 2.2.2.20) | Set to 0x01. |
| PidLidPercentComplete (section 2.2.2.3) | Set to 1.0, 100%. |

3.1.5 Message Processing Events and Sequencing Rules

None.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

3.2 Server Details

The server processes a client's requests regarding a Task object and a task communication 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 document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

This protocol uses the abstract data model that is specified in [\[MS-OXCMSG\]](#) section 3.2.1 with the following adaptations:

- The Task object and the task communications are extensions of the Message object.
- A Task object is created in the Tasks folder, which is a Folder object, unless the end user or user agent explicitly specifies another folder.

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.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

4 Protocol Examples

The examples in sections [4.1](#) and [4.2](#) use both **named properties** and **tagged properties**. The **property ID** of a named property is provided by the server. Therefore, before setting or reading any properties of a Task object, the client asks the server to perform a mapping from **property names** or **long IDs (LIDs)** to property IDs by using the **RopGetPropertyIdsFromNames** ROP ([\[MS-OXCROPS\]](#) section 2.2.8.1).

The following table lists all of the named properties that are used in the examples.

| Property | Property set GUID | LID |
|---|--|------------|
| PidLidTaskComplete (section 2.2.2.2.20) | {00062003-0000-0000-C000-000000000046} | 0x0000811C |
| PidLidTaskStatus (section 2.2.2.2.2) | {00062003-0000-0000-C000-000000000046} | 0x00008101 |
| PidLidPercentComplete (section 2.2.2.2.3) | {00062003-0000-0000-C000-000000000046} | 0x00008102 |
| PidLidTaskActualEffort (section 2.2.2.2.11) | {00062003-0000-0000-C000-000000000046} | 0x00008110 |
| PidLidTaskEstimatedEffort (section 2.2.2.2.12) | {00062003-0000-0000-C000-000000000046} | 0x00008111 |
| PidLidTaskUpdates (section 2.2.2.2.19) | {00062003-0000-0000-C000-000000000046} | 0x0000811B |
| PidLidTaskStatusOnComplete (section 2.2.2.2.17) | {00062003-0000-0000-C000-000000000046} | 0x00008119 |
| PidLidTaskFFixOffline (section 2.2.2.2.31) | {00062003-0000-0000-C000-000000000046} | 0x0000812C |
| PidLidTaskOwnership (section 2.2.2.2.29) | {00062003-0000-0000-C000-000000000046} | 0x00008129 |
| PidLidTaskAcceptanceState (section 2.2.2.2.30) | {00062003-0000-0000-C000-000000000046} | 0x0000812A |
| PidLidTaskState (section 2.2.2.2.14) | {00062003-0000-0000-C000-000000000046} | 0x00008113 |
| PidLidTaskOrdinal (section 2.2.2.2.26) | {00062003-0000-0000-C000-000000000046} | 0x00008123 |
| PidLidTaskHistory (section 2.2.2.2.18) | {00062003-0000-0000-C000-000000000046} | 0x0000811A |
| PidLidTaskLastUpdate (section 2.2.2.2.10) | {00062003-0000-0000-C000-000000000046} | 0x00008115 |
| PidLidTaskLastUser (section 2.2.2.2.25) | {00062003-0000-0000-C000-000000000046} | 0x00008122 |
| PidLidTaskLastDelegate (section 2.2.2.2.27) | {00062003-0000-0000-C000-000000000046} | 0x00008125 |
| PidLidTaskVersion (section 2.2.2.2.13) | {00062003-0000-0000-C000-000000000046} | 0x00008112 |

| Property | Property set GUID | LID |
|---|--|------------|
| PidLidTaskOwner (section 2.2.2.2.22) | {00062003-0000-0000-C000-000000000046} | 0x0000811F |
| PidLidTaskFRecurring (section 2.2.2.2.28) | {00062003-0000-0000-C000-000000000046} | 0x00008126 |
| PidLidTaskMode (section 2.2.3.2) | {00062008-0000-0000-C000-000000000046} | 0x00008518 |
| PidLidTaskGlobalId (section 2.2.2.2.32) | {00062008-0000-0000-C000-000000000046} | 0x00008519 |
| PidLidTaskDueDate (section 2.2.2.2.5) | {00062003-0000-0000-C000-000000000046} | 0x00008105 |
| PidLidTaskStartDate (section 2.2.2.2.5) | {00062003-0000-0000-C000-000000000046} | 0x00008104 |
| PidLidTaskDateCompleted (section 2.2.2.2.9) | {00062003-0000-0000-C000-000000000046} | 0x0000810F |
| PidLidTaskAccepted (section 2.2.2.2.7) | {00062003-0000-0000-C000-000000000046} | 0x00008108 |
| PidLidTaskResetReminder (section 2.2.2.2.6) | {00062003-0000-0000-C000-000000000046} | 0x00008107 |
| PidLidTaskMultipleRecipients (section 2.2.2.2.23) | {00062003-0000-0000-C000-000000000046} | 0x00008120 |
| PidLidTaskDeadOccurrence (section 2.2.2.2.8) | {00062003-0000-0000-C000-000000000046} | 0x00008109 |
| PidLidTaskRole (section 2.2.2.2.34) | {00062003-0000-0000-C000-000000000046} | 0x00008127 |
| PidLidTaskAssigners (section 2.2.2.2.16) | {00062003-0000-0000-C000-000000000046} | 0x00008117 |
| PidLidTaskRecurrence (section 2.2.2.2.15) | {00062003-0000-0000-C000-000000000046} | 0x00008116 |
| PidLidTaskAssigner (section 2.2.2.2.24) | {00062003-0000-0000-C000-000000000046} | 0x00008121 |
| PidLidTaskFCreator (section 2.2.2.2.21) | {00062003-0000-0000-C000-000000000046} | 0x0000811E |
| PidLidCommonStart (section 2.2.2.1.3) | {00062008-0000-0000-C000-000000000046} | 0x00008516 |
| PidLidCommonEnd (section 2.2.2.1.4) | {00062008-0000-0000-C000-000000000046} | 0x00008517 |

The server might respond with the following property IDs, which will be used in the examples (the actual property IDs are at the discretion of the server).

| Property | Property ID |
|---------------------------|-------------|
| PidLidTaskComplete | 0x8149 |
| PidLidTaskStatus | 0x8146 |

| Property | Property ID |
|-------------------------------------|--------------------|
| PidLidPercentComplete | 0x8147 |
| PidLidTaskActualEffort | 0x814D |
| PidLidTaskEstimatedEffort | 0x814E |
| PidLidTaskUpdates | 0x82C3 |
| PidLidTaskStatusOnComplete | 0x82C4 |
| PidLidTaskFFixOffline | 0x8156 |
| PidLidTaskOwnership | 0x8154 |
| PidLidTaskAcceptanceState | 0x8151 |
| PidLidTaskState | 0x8148 |
| PidLidTaskOrdinal | 0x815D |
| PidLidTaskHistory | 0x8150 |
| PidLidTaskLastUpdate | 0x8153 |
| PidLidTaskLastUser | 0x8152 |
| PidLidTaskLastDelegate | 0x82C5 |
| PidLidTaskVersion | 0x8158 |
| PidLidTaskOwner | 0x801B |
| PidLidTaskFRecurring | 0x814B |
| PidLidTaskMode | 0x8212 |
| PidLidTaskGlobalId | 0x8211 |
| PidLidTaskDueDate | 0x8145 |
| PidLidTaskStartDate | 0x8144 |
| PidLidTaskDateCompleted | 0x814A |
| PidLidTaskAccepted | 0x82C2 |
| PidLidTaskResetReminder | 0x815C |
| PidLidTaskMultipleRecipients | 0x814F |
| PidLidTaskDeadOccurrence | 0x814C |
| PidLidTaskRole | 0x8157 |
| PidLidTaskAssigners | 0x82C8 |
| PidLidTaskRecurrence | 0x815B |
| PidLidTaskAssigner | 0x8159 |
| PidLidTaskFCreator | 0x82CA |
| PidLidCommonStart | 0x81BD |

| Property | Property ID |
|-----------------|-------------|
| PidLidCommonEnd | 0x81BC |

4.1 Sending a Task Request

Mary Kay Andersen assigns a task to her coworker, Paul West. The following is a description of what a client might do to accomplish Mary's intentions.

The client begins by obtaining property IDs from the server, as described in section 4. The property types specified in the following tables are described in [\[MS-OXCDATA\]](#) section 2.11.1.

To create the task request, the client uses the **RopCreateMessage** ROP ([\[MS-OXCROPS\]](#) section 2.2.6.2). The server returns a success code and a **handle** to a Message object. The client uses the **RopSetProperties** ROP ([\[MS-OXCROPS\]](#) section 2.2.8.6) to transmit Mary's data to the server.

| Property | Property ID | Type | Value |
|---|-------------|---------------------------------|-------------------|
| PidTagMessageClass (section 2.2.3.3.1) | 0x001A | 0x001F (PtypString) | "IPM.TaskRequest" |
| PidTagIconIndex (section 2.2.3.3.2) | 0x1080 | 0x0003 (PtypInteger32) | 0xFFFFFFFF |
| PidLidTaskMode (section 2.2.2.2.1) | 0x8212 | 0x0003 (PtypInteger32) | 0x00000001 |

The client provides the actual Task object in an Embedded Message object. The protocol creates an Attachment object into which it will embed the Task object by using the **RopCreateAttachment** ROP ([\[MS-OXCROPS\]](#) section 2.2.6.13), which returns a handle to the new Attachment object. The client then uses this handle with the **RopSetProperties** ROP to set the **PidTagAttachMethod** property ([\[MS-OXPROPS\]](#) section 2.592) to afEmbeddedMessage (0x00000005).

| Property | Property ID | Type | Value |
|---|-------------|---------------------------------|--------------------------------|
| PidTagAttachMethod ([MS-OXCMSG] section 2.2.2.9) | 0x3705 | 0x0003 (PtypInteger32) | 0x00000005 (afEmbeddedMessage) |
| PidTagRenderingPosition ([MS-OXCMSG] section 2.2.2.16) | 0x370B | 0x0003 (PtypInteger32) | 0xFFFFFFFF |
| PidTagAttachmentHidden ([MS-OXCMSG] section 2.2.2.24) | 0x7FFE | 0x000B (PtypBoolean) | 0x01 |

The client acquires the handle to the Embedded Message object within the Attachment object by using the **RopOpenEmbeddedMessage** ROP ([\[MS-OXCROPS\]](#) section 2.2.6.16), which can be used as a Task object. The client sets the properties that it wants for this Task object or copies them from a local Task object by using the **RopSetProperties** ROP.

| Property | Property ID | Type | Value |
|--|-------------|---------------------------------|------------------------------|
| PidTagMessageClass | 0x001A | 0x001F (PtypString) | "IPM.Task" |
| PidTagIconIndex | 0x1080 | 0x0003 (PtypInteger32) | 0x00000503 (assigner's task) |
| PidLidTaskComplete (section 2.2.2.2.20) | 0x8149 | 0x000B (PtypBoolean) | 0x00 |

| Property | Property ID | Type | Value |
|---|-------------|-------------------------------------|--|
| PidLidPercentComplete (section 2.2.2.2.3) | 0x8147 | 0x0005 (PtypFloating64) | 0.0 |
| PidLidTaskStatus (section 2.2.2.2.2) | 0x8146 | 0x0003 (PtypInteger32) | 0 (Not started) |
| PidLidTaskActualEffort (section 2.2.2.2.11) | 0x814D | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskEstimatedEffort (section 2.2.2.2.12) | 0x814E | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskUpdates (section 2.2.2.2.19) | 0x82C3 | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskStatusOnComplete (section 2.2.2.2.17) | 0x82C4 | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskFFixOffline (section 2.2.2.2.31) | 0x8156 | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskOwnership (section 2.2.2.2.29) | 0x8154 | 0x0003 (PtypInteger32) | 1 (assigner's copy) |
| PidLidTaskAcceptanceState (section 2.2.2.2.30) | 0x8151 | 0x0003 (PtypInteger32) | 1 (unknown) |
| PidLidTaskState (section 2.2.2.2.14) | 0x8148 | 0x0003 (PtypInteger32) | 3 (assigner's copy) |
| PidLidTaskOrdinal (section 2.2.2.2.26) | 0x815D | 0x0003 (PtypInteger32) | -1000 |
| PidLidTaskHistory (section 2.2.2.2.18) | 0x8150 | 0x0003 (PtypInteger32) | 0x00000005 (sent with a task request) |
| PidLidTaskLastUpdate (section 2.2.2.2.10) | 0x8153 | 0x0040 (PtypTime) | 2008/02/19 07:00 |
| PidLidTaskLastUser (section 2.2.2.2.25) | 0x8152 | 0x001F (PtypString) | "Mary Kay Andersen" |
| PidLidTaskLastDelegate (section 2.2.2.2.27) | 0x82C5 | 0x001F (PtypString) | "Mary Kay Andersen" |
| PidLidTaskVersion (section 2.2.2.2.13) | 0x8158 | 0x0003 (PtypInteger32) | 2 |
| PidLidTaskOwner (section 2.2.2.2.22) | 0x801B | 0x001F (PtypString) | "Paul West" |
| PidLidTaskFRecurring (section 2.2.2.2.28) | 0x814B | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskMode (section 2.2.3.2) | 0x8212 | 0x0003 (PtypInteger32) | 1 (embedded in a task request) |
| PidLidTaskGlobalId (section 2.2.2.2.32) | 0x8211 | 0x0102 (PtypBinary) | 0E B0 1E 03 85 02 EF 4B 9A 14 50 83 B3 BB 4D E9 |

The client then sets other Attachment object properties, as described in [MS-OXCMSG].

The client saves and closes the Embedded Message object by using, in order, the following operations: **RopSaveChangesMessage** ([MS-OXCROPS] section 2.2.6.3) with the handle to the embedded Task object, **RopSaveChangesAttachment** ([MS-OXCROPS] section 2.2.6.15) with the handle to the Attachment object, **RopRelease** ([MS-OXCROPS] section 2.2.15.3) with the handle to the embedded Task object, and **RopRelease** with the handle to the Attachment object.

The client uses the **RopModifyRecipients** ROP ([MS-OXCROPS] section 2.2.6.5) to add Paul's recipient information to the task request.

When Mary is ready to send her task request, the client uses the **RopSetProperties** ROP to commit the properties to the server, the **RopSubmitMessage** ROP ([MS-OXCROPS] section 2.2.7.1) to send it, and then the **RopRelease** ROP to release the task request object.

4.2 Processing a Task Update

Russell King assigned a task to Scott Bishop. Scott updated some of the task properties, such as percent completed, and sent an update. Russell has now received a task update, and Scott's changes need to be merged into his own copy of the task. The following is a description of what a client might do to process the update.

The client begins by obtaining property IDs from the server as described in section 4.

The client obtains a handle to the task update by using the **RopOpenMessage** ROP ([MS-OXCROPS] section 2.2.6.1). The updated task information is part of the Task object that is embedded within the first Attachment object of the task update. To get the attachment, the client uses the handle to the task update with the **RopOpenAttachment** ROP ([MS-OXCROPS] section 2.2.6.12). The client gets a handle to the Embedded Message object from this Attachment object by using the **RopOpenEmbeddedMessage** ROP ([MS-OXCROPS] section 2.2.6.16), which can then be used as the Task object. The client reads properties from the embedded Task object by using the **RopGetPropertiesSpecific** ROP ([MS-OXCROPS] section 2.2.8.3).

The property types in the following tables are described in [MS-OXCADATA] section 2.11.1.

| Property | Property ID | Type | Value obtained from server |
|--|-------------|-------------------------------------|----------------------------|
| PidLidTaskStatus (section 2.2.2.2.2) | 0x8146 | 0x0003 (PtypInteger32) | 0 (Not started) |
| PidLidPercentComplete (section 2.2.2.2.3) | 0x8147 | 0x0005 (PtypFloating64) | 0.0 (0%) |
| PidLidTaskDueDate (section 2.2.2.2.5) | 0x8145 | 0x0040 (PtypTime) | <not found> |
| PidLidTaskStartDate (section 2.2.2.2.5) | 0x8144 | 0x0040 (PtypTime) | <not found> |
| PidLidTaskActualEffort (section 2.2.2.2.11) | 0x814D | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskEstimatedEffort (section 2.2.2.2.12) | 0x814E | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskDateCompleted (section 2.2.2.2.9) | 0x814A | 0x0040 (PtypTime) | <not found> |
| PidLidTaskAccepted (section 2.2.2.2.7) | 0x82C2 | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskResetReminder (section 2.2.2.2.6) | 0x815C | 0x000B (PtypBoolean) | <not found> |

| Property | Property ID | Type | Value obtained from server |
|---|-------------|---------------------------|----------------------------|
| PidLidTaskMultipleRecipients (section 2.2.2.2.23) | 0x814F | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskUpdates (section 2.2.2.2.19) | 0x82C3 | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskStatusOnComplete (section 2.2.2.2.17) | 0x82C4 | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskDeadOccurrence (section 2.2.2.2.8) | 0x814C | 0x000B (PtypBoolean) | <not found> |
| PidLidTaskComplete (section 2.2.2.2.20) | 0x8149 | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskFFixOffline (section 2.2.2.2.31) | 0x8156 | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskOwnership (section 2.2.2.2.29) | 0x8154 | 0x0003 (PtypInteger32) | 2 (task assignee's copy) |
| PidLidTaskAcceptanceState (section 2.2.2.2.30) | 0x8151 | 0x0003 (PtypInteger32) | 0 (Not assigned) |
| PidLidTaskHistory (section 2.2.2.2.18) | 0x8150 | 0x0003 (PtypInteger32) | 3 (Updated) |
| PidLidTaskLastUpdate (section 2.2.2.2.10) | 0x8153 | 0x0040 (PtypTime) | 2008/02/19 |
| PidLidTaskLastUser (section 2.2.2.2.25) | 0x8152 | 0x001F (PtypString) | "Scott Bishop" |
| PidLidTaskLastDelegate (section 2.2.2.2.27) | 0x82C5 | 0x001F (PtypString) | "Scott Bishop" |
| PidLidTaskVersion (section 2.2.2.2.13) | 0x8158 | 0x0003 (PtypInteger32) | 4 |
| PidLidTaskState (section 2.2.2.2.14) | 0x8148 | 0x0003 (PtypInteger32) | 2 (task assignee's copy) |
| PidLidTaskAssigners (section 2.2.2.2.16) | 0x82C8 | 0x0102 (PtypBinary) | <binary data> |
| PidLidTaskRecurrence (section 2.2.2.2.15) | 0x815B | 0x0102 (PtypBinary) | <not found> |
| PidLidTaskAssigner (section 2.2.2.2.24) | 0x8159 | 0x001F (PtypString) | "Russell King" |
| PidLidTaskOwner (section 2.2.2.2.22) | 0x801B | 0x001F (PtypString) | "Scott Bishop" |
| PidLidTaskFCreator (section 2.2.2.2.21) | 0x82CA | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskOrdinal (section 2.2.2.2.26) | 0x815D | 0x0003 (PtypInteger32) | -1000 |
| PidLidTaskFRecurring (section 2.2.2.2.28) | 0x814B | 0x000B (PtypBoolean) | 0x00 |

| Property | Property ID | Type | Value obtained from server |
|---|-------------|------------------------------|--|
| PidLidCommonStart (section 2.2.2.1.3) | 0x81BD | 0x0040 (PtypTime) | <not found> |
| PidLidCommonEnd (section 2.2.2.1.4) | 0x81BC | 0x0040 (PtypTime) | <not found> |
| PidLidTaskGlobalId (section 2.2.2.2.32) | 0x8211 | 0x0102 (PtypBinary) | 0E B0 1E 03 85 02 EF 4B 9A 14 50 83 B3 BB 4D E9 |

The client will use the value of the **PidLidTaskGlobalId** property to locate the Task object locally and will then use the values of the other properties to copy to the local Task object.

The client uses a handle to the Tasks folder and the **RopGetContentsTable** ROP ([MS-OXCROPS] section 2.2.4.14) to get a handle to the **contents table** of the folder. Using this handle, the client uses the **RopSetColumns** ROP ([MS-OXCROPS] section 2.2.5.1).

| Property | Property ID | Type |
|---|-------------|---------------------------------|
| PidTagFolderId ([MS-OXCFOLD] section 2.2.2.2.1.6) | 0x6748 | 0x0014 (PtypInteger64) |
| PidTagMid ([MS-OXCFXICS] section 2.2.1.2.1) | 0x674A | 0x0014 (PtypInteger64) |

With the proper column set, the client can now search for the local Task object whose **PidLidTaskGlobalId** property matches the one found in the embedded Task object. The client performs the search with the **RopFindRow** ROP ([MS-OXCROPS] section 2.2.5.13).

| Condition type | Relational operator | Property ID | Property data |
|---------------------|---------------------|--------------------------------------|--|
| 0x04 (RES_PROPERTY) | 0x04 (RELOP_EQ) | 0x8211 (PidLidTaskGlobalId) | 0E B0 1E 03 85 02 EF 4B 9A 14 50 83 B3 BB 4D E9 |

Having completed the search, the client releases the handle to the contents table by using the **RopRelease** ROP ([MS-OXCROPS] section 2.2.15.3).

If the search succeeded, the client will have located the **PidTagFolderId** and **PidTagMid** properties for the local Task object. The client uses these values to open a handle to the local Task object by using the **RopOpenMessage** ROP ([MS-OXCROPS] section 2.2.6.1). The client will now use the **RopSetProperties** ROP ([MS-OXCROPS] section 2.2.8.6) to update the properties of the local Task object, copying the properties from the embedded Task object, as appropriate.

| Property | Property ID | Type | Value |
|----------------------------------|-------------|----------------------------------|-----------------|
| PidLidTaskStatus | 0x8146 | 0x0003 (PtypInteger32) | 0 (Not started) |
| PidLidPercentComplete | 0x8147 | 0x0005 (PtypFloating64) | 0.0 (0%) |
| PidLidTaskActualEffort | 0x814D | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskEstimatedEffort | 0x814E | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskAccepted | 0x82C2 | 0x000B (PtypBoolean) | 0x01 |

| Property | Property ID | Type | Value |
|-------------------------------------|-------------|---------------------------|---|
| PidLidTaskMultipleRecipients | 0x814F | 0x0003 (PtypInteger32) | 0 |
| PidLidTaskUpdates | 0x82C3 | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskStatusOnComplete | 0x82C4 | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskComplete | 0x8149 | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskFFixOffline | 0x8156 | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskOwnership | 0x8154 | 0x0003 (PtypInteger32) | 1 (task assigner's copy) |
| PidLidTaskAcceptanceState | 0x8151 | 0x0003 (PtypInteger32) | 2 (Accepted) |
| PidLidTaskHistory | 0x8150 | 0x0003 (PtypInteger32) | 1 (Accepted) |
| PidLidTaskLastUpdate | 0x8153 | 0x0040 (PtypTime) | 2008/02/19 |
| PidLidTaskLastUser | 0x8152 | 0x001F (PtypString) | "Scott Bishop" |
| PidLidTaskLastDelegate | 0x82C5 | 0x001F (PtypString) | "Scott Bishop" |
| PidLidTaskVersion | 0x8158 | 0x0003 (PtypInteger32) | 4 |
| PidLidTaskState | 0x8148 | 0x0003 (PtypInteger32) | 3 (task assigner's copy of an accepted Task object) |
| PidLidTaskAssigner | 0x8159 | 0x001F (PtypString) | "" |
| PidLidTaskOwner | 0x801B | 0x001F (PtypString) | "Scott Bishop" |
| PidLidTaskFCreator | 0x82CA | 0x000B (PtypBoolean) | 0x01 |
| PidLidTaskOrdinal | 0x815D | 0x0003 (PtypInteger32) | -1000 |
| PidLidTaskFREcurring | 0x814B | 0x000B (PtypBoolean) | 0x00 |
| PidLidTaskGlobalId | 0x8211 | 0x0102 (PtypBinary) | 0E B0 1E 03 85 02 EF 4B 9A 14 50 83 B3 BB 4D E9 |

The client saves and closes the local Task object, embedded Task object, and Attachment object by using, in order, the following operations: **RopSaveChangesMessage** ([MS-OXCROPS] section 2.2.6.3) with the handle to the local Task object, **RopRelease** with the handle to the embedded Task object, **RopRelease** with the handle to the Attachment object, and **RopRelease** with the handle to the local Task object.

5 Security

5.1 Security Considerations for Implementers

There are no special security considerations specific to the Task-Related Objects Protocol. General security considerations pertaining to the underlying transport apply, as described in [\[MS-OXCMSG\]](#).

5.2 Index of Security Parameters

None.

6 Appendix A: Product Behavior

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

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

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

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

[<1> Section 3.1.4.3](#): Office Outlook 2003, Office Outlook 2007, Outlook 2010, Outlook 2013, and Outlook 2016 set the rendering position and hidden flag in a separate **RopSetProperties ROP request** ([\[MS-OXCROPS\]](#) section 2.2.8.6) after opening the embedded message.

[<2> Section 3.1.4.5](#): Office Outlook 2007, Outlook 2010, Outlook 2013, and Outlook 2016 do not create the local Task object when it cannot locate the local Task object.

7 Change Tracking

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

8 Index

A

Abstract data model
[client](#) 21
[server](#) 26
[additional task communications property constraints](#)
20
[Applicability](#) 9

C

[Capability negotiation](#) 9
[Change tracking](#) 38
Client
[abstract data model](#) 21
[initialization](#) 21
[message processing](#) 25
[other local events](#) 25
[overview](#) 21
[sequencing rules](#) 25
[timer events](#) 25
[timers](#) 21
Client - higher layer triggered events
[creating a Task object and a task communication](#)
21
[embedding a Task object](#) 22
[generating instances of recurring tasks](#) 23
[modifying a Task object and a task communication](#)
22
[receiving a task communication](#) 23
[sending a task communication](#) 22

D

Data model - abstract
[client](#) 21
[server](#) 26

E

Examples
[processing a task update](#) 32
[sending a task request](#) 30
[Examples overview](#) 27

F

[Fields - vendor-extensible](#) 9
[Folder properties - PidTagOrdinalMost](#) 10
[Folder Properties message](#) 10

G

[Glossary](#) 6

H

Higher layer triggered events - client
[creating a Task object and a task communication](#)
21
[embedding a Task object](#) 22
[generating instances of recurring tasks](#) 23

[modifying a Task object and a task communication](#)
22
[receiving a task communication](#) 23
[sending a task communication](#) 22
Higher-layer triggered events
[server](#) 26

I

[Implementer - security considerations](#) 36
[Index of security parameters](#) 36
[Informative references](#) 8
Initialization
[client](#) 21
[server](#) 26
[Introduction](#) 6

M

Message processing
[client](#) 25
[server](#) 26
[Message syntax](#) 10
Messages
[Folder Properties](#) 10
[Task Communications Properties](#) 19
[Task Object Properties](#) 10
[transport](#) 10

N

[Normative references](#) 8

O

Other local events
[client](#) 25
[server](#) 26
[Overview \(synopsis\)](#) 9

P

[Parameters - security index](#) 36
[PidLidTaskMode task communications property](#) 19
[PidTagOrdinalMost folder property](#) 10
[PidTagProcessed task communications property](#) 19
[Preconditions](#) 9
[Prerequisites](#) 9
[Processing a task update example](#) 32
[Product behavior](#) 37

R

[References](#) 8
[informative](#) 8
[normative](#) 8
[Relationship to other protocols](#) 9

S

Security
[implementer considerations](#) 36

- [parameter index](#) 36
- [Sending a task request example](#) 30
- Sequencing rules
 - [client](#) 25
 - [server](#) 26
- Server
 - [abstract data model](#) 26
 - [higher-layer triggered events](#) 26
 - [initialization](#) 26
 - [message processing](#) 26
 - [other local events](#) 26
 - [overview](#) 25
 - [sequencing rules](#) 26
 - [timer events](#) 26
 - [timers](#) 26
- [Standards assignments](#) 9

T

- Task communications properties
 - [additional property constraints](#) 20
 - [PidLidTaskMode property](#) 19
 - [PidTagProcessed property](#) 19
- [Task Communications Properties message](#) 19
- [Task Object Properties message](#) 10
- Timer events
 - [client](#) 25
 - [server](#) 26
- Timers
 - [client](#) 21
 - [server](#) 26
- [Tracking changes](#) 38
- [Transport](#) 10
- Triggered events - client
 - [creating a Task object and a task communication](#) 21
 - [embedding a Task object](#) 22
 - [generating instances of recurring tasks](#) 23
 - [modifying a Task object and a task communication](#) 22
 - [receiving a task communication](#) 23
 - [sending a task communication](#) 22
- Triggered events - higher-layer
 - [server](#) 26

V

- [Vendor-extensible fields](#) 9
- [Versioning](#) 9