

# [MS-OXOSRCH]:

## Search Folder List Configuration Protocol

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## Revision Summary

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# 1 Introduction

The Search Folder List Configuration Protocol enables a client to persist a user's **search folders** on the server. A search folder is a folder that is used to query for items that match specified criteria.

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:

**active search folder:** A **search folder** that has a **search folder container** and is up-to-date with the correct **search criteria**.

**big-endian:** Multiple-byte values that are byte-ordered with the most significant byte stored in the memory location with the lowest address.

**binary large object (BLOB):** A discrete packet of data that is stored in a database and is treated as a sequence of uninterpreted bytes.

**Common Views folder:** A special folder that contains the data for default views that are standard for a message store and can be used by any user of a client that accesses the message store.

**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).

**Deleted Items folder:** A special folder that is the default location for objects that have been deleted.

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

**distribution list:** A collection of users, computers, contacts, or other groups that is used only for email distribution, and addressed as a single recipient.

**Drafts folder:** A special folder that is the default location for **Message objects** that have been saved but not sent.

**FAI contents table:** A table of **folder associated information (FAI)** Message objects that are stored in a Folder object.

**folder associated information (FAI):** A collection of **Message objects** that are stored in a Folder object and are typically hidden from view by email applications. An FAI Message object is used to store a variety of settings and auxiliary data, including forms, views, calendar options, favorites, and category lists.

**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).

**inactive search folder:** A **search folder** that does not have a **search folder container**.

**journal:** A process that generates a Journal-Report for an original-message.

**Junk Email folder:** A special folder that is the default location for **Message objects** that are determined to be junk email by a Junk Email rule.

**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.

**network byte order:** The order in which the bytes of a multiple-byte number are transmitted on a network, most significant byte first (in **big-endian** storage). This may or may not match the order in which numbers are normally stored in memory for a particular processor.

**Outbox folder:** A special folder that contains **Message objects** that are submitted to be sent.

**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.

**search criteria:** A criteria used to determine which messages are included in a folder with specific characteristics. It is composed of a restriction, which is the filter to be applied, and a search scope, which are the folders that contain the content to search.

**search folder:** A **Folder object** that provides a means of querying for items that match certain criteria. The search folder includes the **search folder definition message** and the **search folder container**.

**search folder container:** A **Folder object** that is created according to the specifications in the definition message. It is in the Finder folder of the message database.

**search folder definition message:** A **folder associated information (FAI)** message that persists all the information that defines a search folder. It is in the associated contents table of the **Common Views folder** in the message database.

**Sent Items folder:** A special folder that is the default location for storing copies of **Message objects** after they are submitted or sent.

**skip block:** The block in a **binary large object (BLOB)** that acts as padding, reserving space that can be used by future versions to insert data. The block consists of a ULONG that describes how many additional ULONGs to skip ahead.

**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](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[MS-NSPI] Microsoft Corporation, "[Name Service Provider Interface \(NSPI\) Protocol](#)".

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

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

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

[MS-OXCPERM] 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-EXOABK] Microsoft Corporation, "[Address Book Object Protocol](#)".

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

[MS-OXOCFG] Microsoft Corporation, "[Configuration Information Protocol](#)".

[MS-OXOCNTC] Microsoft Corporation, "[Contact Object Protocol](#)".

[MS-OXOJRN] Microsoft Corporation, "[Journal Object Protocol](#)".

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

[MS-OXONOTE] Microsoft Corporation, "[Note Object Protocol](#)".

[MS-OXOSFLD] Microsoft Corporation, "[Special Folders Protocol](#)".

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

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

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

### 1.2.2 Informative References

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

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



## 1.3 Overview

A **search folder** provides a means of querying for items that match certain criteria. To the user, a search folder appears in the client as a normal folder that populates itself when opened. A search folder uses one of the standard templates or a custom search created by the user to include specific **search criteria**.

This protocol enables a client to persist a user's search folders on the server, thereby allowing the user to access these folders when connecting via a client on another machine. The client maintains search folders within a **mailbox** by using **search folder definition messages**. To create a search folder, the client collects the data that is used to define the search criteria, creates a **search folder container** to contain the results of the search, and creates a search folder definition message to persist the information that defines the search folder. This information includes the search criteria. A search folder definition message is saved as a **folder associated information (FAI)** message in a hidden folder outside the root mailbox and is not directly visible to the user.

## 1.4 Relationship to Other Protocols

The Search Folder List Configuration Protocol relies on other protocols as follows:

- It relies on the Message and Attachment Object Protocol, which is described in [\[MS-OXCMMSG\]](#), to create and delete messages containing **search folder** configuration data.
- It relies on the Folder Object Protocol, which is described in [\[MS-OXCFOLD\]](#), to create **search folder containers** based on the configuration data.
- It relies on the Property and Stream Object Protocol, which is specified in [\[MS-OXCPRPT\]](#), to read and write properties of messages containing search folder configuration data.

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

## 1.5 Prerequisites/Preconditions

This protocol assumes that the client has logged on to the **message store**, as described in [\[MS-OXCSTOR\]](#), with the ability to read and write **Message objects**, **Folder objects**, and their properties.

## 1.6 Applicability Statement

This protocol is applicable for creating user-defined queries that are used for searching a **mailbox**. The queries can be saved for reuse. The saved queries can be modified or deleted.

## 1.7 Versioning and Capability Negotiation

None.

## 1.8 Vendor-Extensible Fields

None.

## 1.9 Standards Assignments

None.

## 2 Messages

### 2.1 Transport

This protocol uses the same transport as that specified in [\[MS-OXCMMSG\]](#), [\[MS-OXCFOLD\]](#), and [\[MS-OXCPRPT\]](#).

### 2.2 Message Syntax

#### 2.2.1 Search Folder Definition Message

A **search folder definition message** is stored as an **FAI** message, as described in [\[MS-OXCMMSG\]](#) section 1.3.2, in the **FAI contents table**, as specified in [\[MS-OXCFOLD\]](#) section 3.1.1.2, of the **Common Views folder**, as specified in [\[MS-OXOSFLD\]](#) section 2.2.1, within a **message store**. A search folder definition message is used to persist a **search folder** within a **mailbox**, thereby enabling the client to maintain the user's search folders across multiple machines and reliably re-create them if needed. A search folder ceases to exist if its search folder definition message is deleted. For more details about how a search folder definition message relates to a search folder and a **search folder container**, see section [2.2.4](#).

A search folder definition message has properties that describe the **search criteria**. These properties are specified in the following subsections.

##### 2.2.1.1 Common Properties

The following subsections provide details about properties that are common to most **Message objects**, including a **search folder definition message**. For general details about properties, see [\[MS-OXPROPS\]](#). The property data types are defined in [\[MS-OXCDATA\]](#) section 2.11.1.

###### 2.2.1.1.1 PidTagMessageClass

Type: **PtypString**

The **PidTagMessageClass** property ([\[MS-OXCMMSG\]](#) section 2.2.1.3) specifies the type of the **Message object**. The value of this property MUST be "IPM.Microsoft.WunderBar.SFInfo" to indicate that the Message object is a **search folder definition message**.

###### 2.2.1.1.2 PidTagDisplayName

Type: **PtypString**

The **PidTagDisplayName** property ([\[MS-OXCFOLD\]](#) section 2.2.2.2.5) specifies the name of the **search folder**. The client SHOULD use this property value as the **display name** of the **search folder container**.

##### 2.2.1.2 Additional Properties

The following subsections provide details about properties that are specific to a **search folder definition message**. For general details about properties, see [\[MS-OXPROPS\]](#). The property data types are defined in [\[MS-OXCDATA\]](#) section 2.11.1.

###### 2.2.1.2.1 PidTagSearchFolderId

Type: **PtypBinary**

The **PidTagSearchFolderId** property ([\[MS-OXPROPS\]](#) section 2.991) contains a **GUID** that identifies the **search folder**. The value of this property MUST NOT change.

The GUID of the **search folder definition message** MUST match the GUID of the corresponding **search folder container**. For details about the relationship between the search folder definition message and the search folder container, see section [2.2.4](#).

#### 2.2.1.2.2 PidTagSearchFolderTemplateId

Type: **PtypInteger32**

The **PidTagSearchFolderTemplateId** property ([\[MS-OXPROPS\]](#) section 2.996) specifies the ID of the template that is being used for the search. For more details about search templates, see section [2.2.3](#).

#### 2.2.1.2.3 PidTagSearchFolderTag

Type: **PtypInteger32**

The **PidTagSearchFolderTag** property ([\[MS-OXPROPS\]](#) section 2.995) contains a 4-byte value that marks the current **search folder**. The value of this property does not have to be unique, but it MUST change with every update of the **search folder definition message**; otherwise, another client accessing the **message store** will not be able to determine whether the search folder has changed.

The tag of the search folder definition message MUST match the tag of the corresponding **search folder container**. For details about the relationship between the search folder definition message and the search folder container, see section [2.2.4](#).

#### 2.2.1.2.4 PidTagSearchFolderLastUsed

Type: **PtypInteger32**

The **PidTagSearchFolderLastUsed** property ([\[MS-OXPROPS\]](#) section 2.992) specifies the last time the **search folder** was accessed. It is formatted as the number of minutes since midnight (**Coordinated Universal Time (UTC)**) January 1, 1601. This property is set to the current time when the **search folder definition message** is created.

#### 2.2.1.2.5 PidTagSearchFolderExpiration

Type: **PtypInteger32**

The **PidTagSearchFolderExpiration** property ([\[MS-OXPROPS\]](#) section 2.990) specifies the time at which the **search folder container** will be stale and has to be updated or re-created. It is formatted as the number of minutes since midnight (**UTC**) January 1, 1601.

#### 2.2.1.2.6 PidTagSearchFolderStorageType

Type: **PtypInteger32**

The **PidTagSearchFolderStorageType** property ([\[MS-OXPROPS\]](#) section 2.994) contains flags that control the presence and content of certain fields within the **PidTagSearchFolderDefinition** property ([section 2.2.1.2.8](#)). These flags are duplicated within the **PidTagSearchFolderDefinition** property. The specific flags to use depend on the template; section [2.2.3](#) specifies the correct flags for each template definition.

The flags are stored as a 4-byte integer. The following table shows the flags in **big-endian** order. (The flags are in **network byte order** within the **PidTagSearchFolderDefinition** property.)

| Flag name | Big-endian bit |
|-----------|----------------|
| B         | 0x00000040     |
| C         | 0x00000020     |
| D         | 0x00000010     |
| E         | 0x00000008     |
| F         | 0x00000004     |
| G         | 0x00000002     |
| H         | 0x00000001     |
| J         | 0x00004000     |
| K         | 0x00002000     |
| L         | 0x00001000     |

#### 2.2.1.2.7 PidTagSearchFolderEfpFlags

Type: **PtypInteger32**

The **PidTagSearchFolderEfpFlags** property ([\[MS-OXPROPS\]](#) section 2.989) contains flags that control how a folder is displayed. The flag settings MAY match the two bits of the **b** field of the **ExtendedFlags** subproperty of the **search folder container**, as specified in section [2.2.2.1.2](#).

#### 2.2.1.2.8 PidTagSearchFolderDefinition

Type: **PtypBinary**

The **PidTagSearchFolderDefinition** property ([\[MS-OXPROPS\]](#) section 2.988) contains data that specifies the **search criteria** and search options. The structure of this property is specified as follows. The presence and specific content of some fields are dependent upon the template that is used for the search. The template ID, specified in the **PidTagSearchFolderTemplateId** property (section [2.2.1.2.2](#)), identifies the template to be used. For details about the templates and how they affect the fields of the **PidTagSearchFolderDefinition** property, see section [2.2.3](#).

|                       |   |   |   |   |   |   |   |                                     |   |    |    |          |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |
|-----------------------|---|---|---|---|---|---|---|-------------------------------------|---|----|----|----------|----|----|----|----|----|----|----|----|----|-----------------------|----|----|----|----|----|----|----|----|----|
| 0                     | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8                                   | 9 | 10 | 11 | 12       | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22                    | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Version               |   |   |   |   |   |   |   |                                     |   |    |    |          |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |
| A                     | B | C | D | E | F | G | H | I                                   | J | K  | L  | Reserved |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |
| NumericalSearch       |   |   |   |   |   |   |   |                                     |   |    |    |          |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |
| TextSearchLength      |   |   |   |   |   |   |   | TextSearchExtendedLength (optional) |   |    |    |          |    |    |    |    |    |    |    |    |    | TextSearch (variable) |    |    |    |    |    |    |    |    |    |
| ...                   |   |   |   |   |   |   |   |                                     |   |    |    |          |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |
| SkipBlock1 (variable) |   |   |   |   |   |   |   |                                     |   |    |    |          |    |    |    |    |    |    |    |    |    |                       |    |    |    |    |    |    |    |    |    |

|                              |                                      |                        |
|------------------------------|--------------------------------------|------------------------|
| ...                          |                                      |                        |
| DeepSearch                   |                                      |                        |
| FolderList1Length            | FolderList1ExtendedLength (optional) | FolderList1 (variable) |
| ...                          |                                      |                        |
| FolderList2Length            |                                      |                        |
| FolderList2 (variable)       |                                      |                        |
| ...                          |                                      |                        |
| Addresses (variable)         |                                      |                        |
| ...                          |                                      |                        |
| SkipBlock2 (variable)        |                                      |                        |
| ...                          |                                      |                        |
| SearchRestriction (variable) |                                      |                        |
| ...                          |                                      |                        |
| AdvancedSearch (variable)    |                                      |                        |
| ...                          |                                      |                        |
| SkipBlock3 (variable)        |                                      |                        |
| ...                          |                                      |                        |

**Version (4 bytes):** A 4-byte value that specifies the version of the data. The value SHOULD be 0x04100000 (**network byte order**).

**A (1 bit):** Unused. This bit MUST be zero (0) when sent and MUST be ignored on receipt.

**B (1 bit):** A value that indicates whether the **FolderList2** field is present. If this field is set to 1, the **FolderList2** field MUST be present.

**C (1 bit):** A value that indicates whether the **FolderList1** field is present. If this field is set to 1, the **FolderList1** field MUST be present.

**D (1 bit):** A value that indicates whether the **AdvancedSearch** field is present. If this field is set to 1, the **AdvancedSearch** field MUST be present.

**E (1 bit):** A value that indicates whether the **SearchRestriction** field is present. If this field is set to 1, the **SearchRestriction** field MUST be present.

**F (1 bit):** A value that indicates whether the **Addresses** field is present. If this field is set to 1, the **Addresses** field MUST be present.

**G (1 bit):** A value that indicates whether the **TextSearch** field is present. If this field is set to 1, the **TextSearch** field MUST be present.

**H (1 bit):** A value that indicates whether the **NumericalSearch** field is used. If this field is set to 1, the **NumericalSearch** field MUST contain a valid value.

**I (1 bit):** Unused. This bit MUST be zero (0) when sent and MUST be ignored on receipt.

**J (1 bit):** A value that indicates whether the **search folder container** is refreshed daily. If this field is set to 1, the search folder container is refreshed daily. In this case, the **PidTagSearchFolderExpiration** property (section [2.2.1.2.5](#)) is set to a value that is one day in the future.

**K (1 bit):** A value that indicates whether the search folder container is refreshed weekly. If this field is set to 1, the search folder container is refreshed weekly. In this case, the **PidTagSearchFolderExpiration** property is set to a value that is one week in the future.

**L (1 bit):** A value that indicates whether the search folder container is refreshed monthly. If this field is set to 1, the search folder container is refreshed monthly. In this case, the **PidTagSearchFolderExpiration** property (section 2.2.1.2.5) is set to a value that is one month in the future.

**Reserved (20 bits):** Unused. This field MUST be set to 0x00000 when sent and MUST be ignored on receipt.

**NumericalSearch (4 bytes):** An integer that specifies either the size or the age of the messages to be searched. If the **H** field is set to zero (0), this field MUST be set to 0x00000000 when sent and MUST be ignored on receipt.

The value of this field has the following format (in **big-endian** order) for specifying age:

- The upper two bytes specify the units as follows:
  - 0x0000: Days
  - 0x0001: Weeks
  - 0x0002: Months
- The lower two bytes specify the amount.

For example, the value 0x0001002A specifies an age of 42 weeks.

**TextSearchLength (1 byte):** An integer that specifies the size, in characters, of the **TextSearch** field. If the **TextSearch** field is longer than 254 characters, this field MUST be set to 255. If the **G** field is set to zero (0), this field MUST be set to zero (0).

**TextSearchExtendedLength (2 bytes):** An integer that specifies the size of the **TextSearch** field when its size is greater than 254 characters. This field MUST NOT be present if the value of the **TextSearchLength** field is less than 255.

**TextSearch (variable):** A string that specifies search criteria. The particular criteria specified depend on the template used. The size of the string, in characters, is specified by the **TextSearchLength** field or the **TextSearchExtendedLength** field. The string MUST NOT be longer than 65,535 characters. If the **G** field is set to zero (0), this field MUST NOT be present.

**SkipBlock1 (variable):** A **skip block** that specifies the number of bytes to skip ahead. This is for future versions to insert new data. If there is no data to skip, the value of this field MUST be zero

(0), and its size is 4 bytes. If there is data to skip, the size of this field MUST be 4 bytes plus the size of the data to be skipped.

**DeepSearch (4 bytes):** A Boolean value that specifies whether the search includes subfolders. If the search includes subfolders, this field is set to TRUE (0x00000001); otherwise, this field is set to FALSE (0x00000000).

**FolderList1Length (1 byte):** An integer that specifies the size, in characters, of the **FolderList1** field. If the **FolderList1** field is longer than 254 characters, this field MUST be set to 255. If the **C** field is set to zero (0), this field MUST be set to zero (0).

**FolderList1ExtendedLength (2 bytes):** An integer that specifies the size of the **FolderList1** field when its size is greater than 254 characters. This field MUST NOT be present if the value of the **FolderList1Length** field is less than 255.

**FolderList1 (variable):** A string that contains the names of the folders to be searched. The size of the string, in characters, is specified by the **FolderList1Length** field or the **FolderList1ExtendedLength** field. The string MUST NOT be longer than 65,535 characters. If the **C** field is set to zero (0), this field MUST NOT be present.

**FolderList2Length (4 bytes):** An integer that specifies the size, in bytes, of the **FolderList2** field. If the **B** field is set to zero (0), this field MUST be set to zero (0).

**FolderList2 (variable):** An **EntryList** structure, as specified in [\[MS-OXCDATA\]](#) section 2.3.1, that contains a list of the folders to be searched. If the **B** field is set to zero (0), this field MUST NOT be present.

**Addresses (variable):** An **AddressList** structure, as specified in section [2.2.1.2.8.1](#), that contains a list of addresses to be included in the search. If the **F** field is set to zero (0), this field MUST NOT be present.

**SkipBlock2 (variable):** A skip block that specifies the number of bytes to skip ahead. This is for future versions to insert new data. If there is no data to skip, the value of this field MUST be zero (0), and its size is 4 bytes. If there is data to skip, the size of this field MUST be 4 bytes plus the size of the data to be skipped.

**SearchRestriction (variable):** A **Restriction** structure, as specified in section [2.2.1.2.8.2](#), that explicitly defines the search criteria. If the **E** field is set to zero (0), this field MUST NOT be present.

**AdvancedSearch (variable):** A low-order 4-byte integer followed by a high-order 4-byte integer, forming a 64-bit value that specifies the number of data bytes contained in this field. The total length of this field is 8 plus the length of the data. The data is implementation-specific. If the **D** field is set to zero (0), this field MUST NOT be present.

**SkipBlock3 (variable):** A skip block that specifies the number of bytes to skip ahead. This is for future versions to insert new data. If there is no data to skip, the value of this field MUST be zero (0), and its size will be 4 bytes. If there is data to skip, the size of this field MUST be 4 bytes plus the size of the data to be skipped.

### 2.2.1.2.8.1 AddressList

The **AddressList** structure contains a list of addresses.

|              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0            | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| AddressCount |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

|                      |
|----------------------|
| Addresses (variable) |
| ...                  |

**AddressCount (4 bytes):** An unsigned integer that indicates the number of **AddressEntry** structures in the **Addresses** field.

**Addresses (variable):** An array of **AddressEntry** structures, as specified in section [2.2.1.2.8.1.1](#).

### 2.2.1.2.8.1.1 AddressEntry

The **AddressEntry** structure contains properties that represent an addressee.

|                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| PropertyCount     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pad               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Values (variable) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ...               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

**PropertyCount (4 bytes):** An unsigned integer that indicates the number of **PropertyValue** structures in the **Values** field.

**Pad (4 bytes):** Ignored. This field can be any value.

**Values (variable):** This field contains an array of **PropertyValue** structures (section [2.2.1.2.8.1.1.1](#)). This field MUST include the properties in the following list. Other properties can be included.

- **PidTagDisplayName** ([\[MS-OXCFOLD\]](#) section 2.2.2.2.2.5)
- **PidTagAddressType** ([\[MS-OXOABK\]](#) section 2.2.3.13)
- **PidTagEntryId** ([\[MS-OXCPERM\]](#) section 2.2.4)
- **PidTagObjectType** ([\[MS-OXCPRPT\]](#) section 2.2.1.7)
- **PidTagDisplayType** ([MS-OXOABK] section 2.2.3.11)
- **PidTagDisplayTypeEx** ([MS-OXOABK] section 2.2.3.12)
- **PidTagEmailAddress** ([MS-OXOABK] section 2.2.3.14)
- **PidTagRecipientType** ([\[MS-OXOMSG\]](#) section 2.2.3.1)

#### 2.2.1.2.8.1.1.1 PropertyValue

The **PropertyValue** structure represents a single property of an addressee.



|                  |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |            |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |
|------------------|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|------------|---|---|---|----|---|---|---|---|---|---|---|---|---|----|---|
| 0                | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6          | 7 | 8 | 9 | 20 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 30 | 1 |
| PropertyType     |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   | PropertyId |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |
| Value (variable) |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |            |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |
| ...              |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |            |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |

**PropertyType (2 bytes):** An integer that specifies the type of data in the **Value** field. The data can be any of the following types. For details about these types, see [\[MS-OXCDATA\]](#) section 2.11.1.

- **PtypInteger32**
- **PtypErrorCode**
- **PtypBoolean**
- **PtypString**
- **PtypString8**
- **PtypTime**
- **PtypBinary**
- **PtypMultipleString8**
- **PtypMultipleBinary**

**PropertyId (2 bytes):** An integer that identifies the data in the **Value** field.

**Value (variable):** The data that is the value of the property. The format of the data depends on the type that is specified in the **PropertyType** field.

#### 2.2.1.2.8.2 Restriction

The **Restriction** structure represents a filter that defines the **search criteria** in a **search folder**.

|                            |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |
|----------------------------|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|----|---|
| 0                          | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 20 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 30 | 1 |
| RestrictionType            |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |
| RestrictionData (variable) |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |
| ...                        |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |    |   |

**RestrictionType (4 bytes):** An integer that specifies the type of structure in the **RestrictionData** field. It can have one of the following values.

| RestrictionType name  | RestrictionType value | RestrictionData specification  |
|-----------------------|-----------------------|--|
| <b>AndRestriction</b> | 0x00000000            | Variable size, a 32-bit count of subrestrictions, followed by the subrestrictions in <b>Restriction</b> format. An object satisfies this filter if and only if all subrestrictions are |

| RestrictionType name                | RestrictionType value | RestrictionData specification   |
|-------------------------------------|-----------------------|---|
|                                     |                       | satisfied.  |
| <b>OrRestriction</b>                | 0x00000001            | Variable size, a 32-bit count of subrestrictions, followed by the subrestrictions in <b>Restriction</b> format. An object satisfies this filter if at least one subrestriction is satisfied.  |
| <b>NotRestriction</b>               | 0x00000002            | Variable size, a subrestriction in <b>Restriction</b> format. An object satisfies this filter if and only if the subrestriction is not satisfied.   |
| <b>ContentRestriction</b>           | 0x00000003            | Variable size, a 32-bit <b>ulFuzzyLevel</b> field, a specified in <a href="#">[MS-NSPI]</a> , followed by a 32-bit <b>PropertyTag</b> structure ( <a href="#">[MS-OXCDATA]</a> section 2.9), followed by the comparand in <b>PropertyValue</b> format (section <a href="#">2.2.1.2.8.1.1.1</a> ). An object satisfies this filter if and only if the given property is equivalent to the given comparand at the specified value of the <b>ulFuzzyLevel</b> field. |
| <b>PropertyRestriction</b>          | 0x00000004            | Variable size, a 32-bit <b>RelOp</b> field, with the three high-order bytes set to zeroes, followed by a 32-bit <b>PropertyTag</b> structure, followed by the comparand in <b>PropertyValue</b> format. An object satisfies this filter if and only if the <b>RelOp</b> value describes the given property's relationship to the comparand, as specified in <a href="#">[MS-OXCDATA]</a> section 2.12.5.1.  |
| <b>ComparePropertiesRestriction</b> | 0x00000005            | 12 bytes, a 32-bit <b>RelOp</b> field, with the three high-order bytes set to zeroes, followed by two 32-bit <b>PropertyTag</b> structures. An object satisfies this filter if and only if the <b>RelOp</b> value describes the first property's relationship to the second property, as specified in <a href="#">[MS-OXCDATA]</a> section 2.12.6.1.  |
| <b>BitMaskRestriction</b>           | 0x00000006            | 12 bytes, a 32-bit <b>BitmapRelOp</b> field, with the three high-order bytes set to zeroes, followed by a 32-bit <b>PropertyTag</b> structure, followed by the comparand as a 32-bit mask. An object satisfies this filter if and only if the bitwise AND of the property with the comparand satisfies the <b>BitmapRelOp</b> value, as specified in <a href="#">[MS-OXCDATA]</a> section 2.12.7.1.   |
| <b>ExistRestriction</b>             | 0x00000008            | 4 bytes, a 32-bit <b>PropertyTag</b> structure. An object satisfies this filter if and only if the given property is set on the object.   |
| <b>CommentRestriction</b>           | 0x0000000A            | Variable size, a 32-bit count of annotations, followed by a subrestriction in <b>Restriction</b> format, followed by the annotations in <b>PropertyValue</b> format. An object satisfies this filter if and only if the object satisfies the subrestriction. The annotations SHOULD be left intact and ignored.   |
| <b>CountRestriction</b>             | 0x0000000B            | Variable size, a subrestriction in <b>Restriction</b> format. An object satisfies this filter if and only if the object satisfies the subrestriction.   |

**RestrictionData (variable):** The contents of this field depend on the value of the **RestrictionType** field. It contains data that is formatted as specified in the table in the description of **RestrictionType** field in this section.

#### 2.2.1.2.9 PidTagSearchFolderRecreateInfo

Type: **PtypBinary**

This property SHOULD NOT be used.

### 2.2.2 Search Folder Container

Although the **search folder definition message** persists, a **search folder container** only exists if the **search folder** is an **active search folder**. If a search folder is inactive, the search folder container will not exist. For more details about active and **inactive search folders**, and the relationship between search folder definition messages and search folder containers, see section [2.2.4](#).

A search folder container is created and modified as described in sections [3.1.4.1](#) and [3.1.4.3](#). A search folder container uses **search criteria**, a feature that is not unique to this protocol. These folders also require the use of several common properties.

#### 2.2.2.1 Common Properties

The following subsections provide details about properties that are common to most **Folder objects**, including a **search folder container**. For general details about properties, see [\[MS-OXPROPS\]](#). The property data types are defined in [\[MS-OXCDATA\]](#) section 2.11.1.

##### 2.2.2.1.1 PidTagContainerClass

Type: **PtypString**

The **PidTagContainerClass** property ([\[MS-OXCFOLD\]](#) section 2.2.2.2.2.3) MUST be set to "IPF.Note" for the **Folder object** to be recognized as a **search folder container**.

##### 2.2.2.1.2 PidTagExtendedFolderFlags

Type: **PtypBinary**

The **PidTagExtendedFolderFlags** property ([\[MS-OXPROPS\]](#) section 2.691) is a **binary large object (BLOB)** that contains subproperties of a **Folder object**. These subproperties control folder configuration that is shared between client and server. Each subproperty is formatted as specified in [\[MS-OXOCFG\]](#) section 2.2.7.1.

The **PidTagExtendedFolderFlags** property of a **search folder container** MUST include at least the **SearchFolderTag**, **SearchFolderID**, and **ExtendedFlags** subproperties with the settings as specified in the following table.

| Subproperty name       | Id field | Cb field | Data field   |
|------------------------|----------|----------|--|
| <b>SearchFolderTag</b> | 0x03     | 0x04     | A 4-byte value that matches the value of the <b>PidTagSearchFolderTag</b> property (section <a href="#">2.2.1.2.3</a> ) of the <b>search folder definition message</b> . |
| <b>SearchFolderID</b>  | 0x02     | 0x10     | A <b>GUID</b> that matches the GUID stored in the <b>PidTagSearchFolderId</b> property (section <a href="#">2.2.1.2.1</a> ) of the search folder definition message.     |
| <b>ExtendedFlags</b>   | 0x01     | 0x04     | A 4-byte value, as specified in  |

| Subproperty name | Id field | Cb field | Data field   |
|------------------|----------|----------|--|
|                  |          |          | [MS-OXOCFG] section 2.2.7.1.2. The two bits of the <b>b</b> field are set to 10 if the value of the <b>PidTagSearchFolderTemplateId</b> property (section 2.2.1.2.2) is 0x00000003 or 0x00000004; otherwise, the two bits of the <b>b</b> field are set to 01. |

### 2.2.3 Search Templates

**Search criteria** are specified by a template. The **PidTagSearchFolderTemplateId** property (section 2.2.1.2.2) on the message that defines the **search folder** identifies its corresponding template. In addition to defining search criteria, a template also defines folders to exclude from the search, defines items to exclude from the search, and specifies the value of the **PidTagSearchFolderStorageType** property (section 2.2.1.2.6). For more details about the folders that are excluded from the search, see [MS-OXOSFLD]. For more details about the item types that are excluded from the search, see the following:

- Appointments - [MS-OXOCAL]
- Contacts - [MS-OXOCNTC]
- Distribution lists - [MS-OXOABK]
- Journal items - [MS-OXOJRNL]
- Sticky notes - [MS-OXONOTE]
- Tasks - [MS-OXOTASK]

The flags set in the **PidTagSearchFolderStorageType** property and in the **PidTagSearchFolderDefinition** property (section 2.2.1.2.8) vary according to template. The fields required in the binary data of **PidTagSearchFolderDefinition** also vary according to template. The following subsections define the templates, including their requirements for **PidTagSearchFolderStorageType** flags and **PidTagSearchFolderDefinition** fields. <1><2>

#### 2.2.3.1 Unread Messages

The template for a search that finds unread messages has the following characteristics and settings:

- Template ID: 2
- Folders excluded: Sync Issues folder, as defined in [MS-OXOSFLD] section 2.2.1, **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**, **Drafts folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section 2.2.1.2.6): 0x00000048 (flags **B** and **E**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section 2.2.1.2.8) are as follows:

- **FolderList2:** An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This search will include all **mailbox** folders, except the ones specifically excluded by this template.
- **SearchRestriction:** A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes unread messages.

### 2.2.3.2 Marked for Follow-Up

The template for a search that finds messages marked for follow-up has the following characteristics and settings:

- Template ID: 3
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**[<3>](#)
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00000048 (flags **B** and **E**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2:** An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction:** A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages marked for follow-up.

### 2.2.3.3 Unread or Marked for Follow-Up

The template for a search that finds both unread messages and messages marked for follow-up has the following characteristics and settings:

- Template ID: 4
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00000048 (flags **B** and **E**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2:** An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction:** A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes unread messages and messages marked for follow-up.

### 2.2.3.4 Important Mail

The template for a search that finds messages marked as important has the following characteristics and settings:

- Template ID: 5
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**, **Drafts folder**[<4>](#)
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00000048 (flags **B** and **E**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure, as specified in section [2.2.1.2.8.2](#), that describes messages marked as important.

### 2.2.3.5 Conversations

The template for a search that finds messages sent to and received from specified people has the following characteristics and settings:

- Template ID: 6
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**, **Drafts folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x0000004E (flags **B**, **E**, **F**, and **G**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages sent to and received from people who are specified by the **Addresses** field.
  - **Addresses**: An **AddressList** structure (section [2.2.1.2.8.1](#)) that contains the addresses by which to filter conversations.
  - **TextSearch**: A list of the names of the people by which to filter conversations.

### 2.2.3.6 From a Specific Person

The template for a search that finds messages received from specified people has the following characteristics and settings:

- Template ID: 7
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**, **Drafts folder**, **Sent Items folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x0000004E (flags **B**, **E**, **F**, and **G**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages received from people who are specified by the **Addresses** field.
  - **Addresses**: An AddressList structure (section [2.2.1.2.8.1](#)) that contains the addresses by which to filter received messages.
  - **TextSearch**: A list of the names of the people by which to filter received messages.

### 2.2.3.7 Sent Directly to Me

The template for a search that finds messages sent to the user has the following characteristics and settings:

- Template ID: 8
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**, **Drafts folder**, **Sent Items folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00000048 (flags **B** and **E**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages sent to the user.

### 2.2.3.8 Sent to a Specific Distribution List

The template for a search that finds messages sent to specified distribution lists has the following characteristics and settings:

- Template ID: 9
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**

- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x0000004E (flags **B**, **E**, **F**, and **G**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages sent to the distribution lists specified by the **Addresses** field.
  - **Addresses**: An AddressList structure (section [2.2.1.2.8.1](#)) that contains the distribution lists by which to filter sent messages.
  - **TextSearch**: A list of the names of the distribution lists by which to filter sent messages.

### 2.2.3.9 Large Messages

The template for a search that finds large messages has the following characteristics and settings:

- Template ID: 10
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x0000004B (flags **B**, **E**, **G**, and **H**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages larger than the size specified by the **NumericalSearch** field.
  - **TextSearch**: A string that specifies **search criteria**.
  - **NumericalSearch**: An integer that specifies the minimum size, in kilobytes, of the messages to search for.

### 2.2.3.10 Old Mail

The template for a search that finds messages older than a specified age has the following characteristics and settings:

- Template ID: 11
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks



- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00004049 (flags **B**, **E**, **H**, and **J**) to indicate daily refresh, 0x00002049 (flags **B**, **E**, **H**, and **K**) to indicate weekly refresh, or 0x00001049 (flags **B**, **E**, **H**, and **L**) to indicate monthly refresh.
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages older than the age specified by the **NumericalSearch** field.
  - **NumericalSearch**: An integer that specifies the age of the messages to search for.

### 2.2.3.11 With Attachments

The template for a search that finds messages having attachments has the following characteristics and settings:

- Template ID: 12
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**, **Drafts folder** [<5>](#)
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00000048 (flags **B** and **E**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2**: An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction**: A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages having file attachments.

### 2.2.3.12 Mail Received This Week

The template for a search that finds messages received during the current week has the following characteristics and settings:

- Template ID: 13
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Drafts folder**, **Outbox folder**, **Sent Items folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00002048 (flags **B**, **E**, and **K**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:

- **FolderList2:** An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
- **SearchRestriction:** A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages received on or after the first day of the current week but no later than seven days after the first day of the week. The first day of the week is determined by computer locale settings but can potentially be overridden by the user.

### 2.2.3.13 With Specific Words

The template for a search that finds messages containing certain words has the following characteristics and settings:

- Template ID: 14
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**, **Outbox folder**, **Drafts folder** [≤6>](#)
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x0000004A (flags **B**, **E**, and **G**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2:** An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.
  - **SearchRestriction:** A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages containing certain words.
  - **TextSearch:** A string that specifies the words for which to search.

### 2.2.3.14 Categorized

The template for a search that finds categorized messages has the following characteristics and settings:

- Template ID: 15
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1), **Deleted Items folder**, **Junk E-mail folder**
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00000048 (flags **B** and **E**) to indicate any category or 0x0000004A (flags **B**, **E**, and **G**) to indicate specific categories.
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **FolderList2:** An **EntryList** structure ([\[MS-OXCDATA\]](#) section 2.3.1) that contains the folders to be searched. This will include all **mailbox** folders, except the ones specifically excluded by this template.

- **SearchRestriction:** A **Restriction** structure (section [2.2.1.2.8.2](#)) that describes messages having a category. If the **G** flag is set in the **PidTagSearchFolderStorageType** property, the **Restriction** structure describes messages that have a category matching the string contained in the **TextSearch** field.
- **TextSearch:** A string that specifies the categories for which to search. This field is present only if the **G** flag is set.

### 2.2.3.15 Custom

The template for a custom search has the following characteristics and settings:

- Template ID: 1
- Folders excluded: Sync Issues folder ([\[MS-OXOSFLD\]](#) section 2.2.1)
- Items excluded: Appointments, contacts, **distribution lists**, **journal** items, sticky notes, tasks
- Value of the **PidTagSearchFolderStorageType** property (section [2.2.1.2.6](#)): 0x00000010 (flag **D**)
- The affected fields of the **PidTagSearchFolderDefinition** property (section [2.2.1.2.8](#)) are as follows:
  - **AdvancedSearch:** Implementation-specific data based on user-specified options.

## 2.2.4 Search Folder Definition Messages and Search Folder Containers

A **search folder** exists only if it has a **search folder definition message**. Each search folder definition message has a **GUID**, which is stored in the **PidTagSearchFolderId** property (section [2.2.1.2.1](#)). This GUID is fixed and MUST NOT change. A **search folder container** also has a GUID, which is stored in the **SearchFolderID** subproperty of the **PidTagExtendedFolderFlags** property (section [2.2.2.1.2](#)). A search folder definition message is associated with a search folder container only if their GUIDs match. If both the search folder container and the search folder definition message exist with matching GUIDs, the search folder is active. If the search folder container does not exist, the search folder is inactive. The client can make an **inactive search folder** active by creating the search folder container as specified in section [3.1.4.1.2](#).

Any update of a search folder definition message requires the search folder container to be synchronized with its search folder definition message. A search folder container is synchronized with its search folder definition message only if the folder's 4-byte tag, which is stored in the **SearchFolderTag** subproperty (section 2.2.2.1.2), is equal to the value of the **PidTagSearchFolderTag** property (section [2.2.1.2.3](#)). For details about how a client can modify a search folder, see section [3.1.4.3](#).

The relationship between a search folder definition message and its search folder container is summarized in the following table.

| Item | Search folder definition message  | Search folder container   | Explanation  |
|------|---|---|--|
| GUID | The <b>PidTagSearchFolderId</b> property (section 2.2.1.2.1) contains the GUID. | The <b>Data</b> field of the <b>SearchFolderID</b> subproperty (section 2.2.2.1.2) contains the GUID. | The GUIDs MUST match to tie the search folder definition message to the search folder container. |
| Tag  | The <b>PidTagSearchFolderTag</b>  | The <b>Data</b> field of the <b>SearchFolderTag</b>   | The tags MUST match to synchronize the search  |

| Item | Search folder definition message               | Search folder container                           | Explanation   |
|------|--|---|---|
|      | property (section 2.2.1.2.3) contains the tag. | subproperty (section 2.2.2.1.2) contains the tag. | folder container with the current search folder definition message. |

## 3 Protocol Details

### 3.1 Client Details

#### 3.1.1 Abstract Data Model

This section specifies 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.

All data necessary for the Search Folder List Configuration Protocol is persisted in the **search folder definition message**, the properties of which are specified in section [2.2.1](#). The data is used to create and maintain **search folder containers**, as specified in section [2.2.2](#).

#### 3.1.2 Timers

None.

#### 3.1.3 Initialization

For this protocol, there is no specific initialization, because all messages use the existing connection assumed in section [1.5](#).

To display the list of existing **search folders** to the user at start-up, the client does the following:

- Return the **FAI** messages that are in the **Common Views folder** of the **message store**. Each **Message object** with the **PidTagMessageClass** property ([\[MS-OXCMSG\]](#) section 2.2.1.3) set to "IPM.Microsoft.Wunderbar.SFInfo" is a **search folder definition message**.
- Load the **Folder objects** that are in the Finder folder, as defined in [\[MS-OXOSFLD\]](#) section 2.2.1. Each folder with the **PidTagFolderType** property ([\[MS-OXCFC\]](#) section 2.2.2.2.7) set to FOLDER\_SEARCH (0x00000002) and **PidTagContainerClass** ([\[MS-OXPROPS\]](#) section 2.642) set to "IPF.Note" is a **search folder container**.
- Examine the **PidTagExtendedFolderFlags** property (section [2.2.2.1.2](#)) of each search folder container. If the **GUID** of the search folder container matches the value of the **PidTagSearchFolderId** property (section [2.2.1.2.1](#)) of the search folder definition message, that Folder object is associated with that search folder definition message.
- Delete any search folder container that does not have a corresponding search folder definition message.

#### 3.1.4 Higher-Layer Triggered Events

##### 3.1.4.1 Creating a Search Folder

To create a **search folder**, the client completes three steps:

1. Obtain data to define the **search criteria**.
2. Create the **search folder container** to contain the search results.
3. Create the **search folder definition message** to persist the search folder.

The details for each of these steps are specified in the following subsections.

#### 3.1.4.1.1 Obtaining Data

The client SHOULD do the following:

- Obtain a name for the **search folder**. The manner in which the client obtains the name is implementation-dependent.
- Identify which template to use for the search folder. The manner in which the client identifies the template is implementation-dependent. For details about search templates, see section [2.2.3](#).
- Obtain specific data needed by the chosen template. The manner in which the client obtains the data for the template is implementation-dependent.

#### 3.1.4.1.2 Creating a New Search Folder Container

The client creates a **search folder container** in the Finder folder ([\[MS-OXOSFLD\]](#) section 2.2.1) of the **message store**. The new search folder container MUST have the **PidTagContainerClass** (section [2.2.2.1.1](#)) and **PidTagExtendedFolderFlags** (section [2.2.2.1.2](#)) properties.

To create a search folder container, the client creates a folder as specified in [\[MS-OXCFOLD\]](#) section 3.1.4.2, with the **FolderType** field of the **RopCreateFolder remote operation (ROP)** ([\[MS-OXCROPS\]](#) section 2.2.4.2) set to 0x02. The **DisplayName** field of the **RopCreateFolder** ROP is set to the name of the **search folder**. After the search folder container is created, the client sets the **search criteria** by using the **RopSetSearchCriteria** ROP ([\[MS-OXCROPS\]](#) section 2.2.4.4), as specified in [\[MS-OXCFOLD\]](#) section 3.1.4.4.

The **GUIDs** of the search folder container and the **search folder definition message** MUST match, and the 4-byte tags of the search folder container and the search folder definition message MUST match. For details, see section [2.2.4](#).

#### 3.1.4.1.3 Creating a New Definition Message

The client creates a new **search folder definition message** in the **FAI contents table** of the **Common Views folder** of the **message store**. To create a search folder definition message, the client creates an **FAI** message by using the **RopCreateMessage ROP** ([\[MS-OXCROPS\]](#) section 2.2.6.2), as specified in [\[MS-OXCMSG\]](#). The new search folder definition message MUST have the properties that are specified in section [2.2.1.1](#) and section [2.2.1.2](#).

The **GUIDs** of the **search folder container** and the search folder definition message MUST match, and the 4-byte tags of the search folder container and the search folder definition message MUST match. For details, see section [2.2.4](#).

#### 3.1.4.2 Opening a Search Folder

If the **search folder** is not active, the client MUST create the folder in the Finder folder ([\[MS-OXOSFLD\]](#) section 2.2.1) of the **message store**, as specified in section [3.1.4.1](#).

If the current date/time is later than the value of the **PidTagSearchFolderExpiration** property (section [2.2.1.2.5](#)), the client SHOULD re-create the **search criteria** and update the **search folder definition message** and the **search folder container**.

After the **Folder object** is updated, or if the search folder was active already, the client can open the search folder as specified in [\[MS-OXCFOLD\]](#) section 3.1.4.1. When the search folder is opened, the client SHOULD set the value of the **PidTagSearchFolderLastUsed** property (section [2.2.1.2.4](#)) to the current time.

### 3.1.4.3 Modifying a Search Folder

Any changes to the **search folder** MUST be made to the **search folder definition message** in the **FAI contents table** of the **Common Views folder**. The **search folder container** (if one exists) MUST be updated or deleted. If it is deleted, it MUST be updated or re-created when the search folder is accessed. In addition to any change:

- The **PidTagSearchFolderTag** property (section [2.2.1.2.3](#)) of the **Message object** and the **SearchFolderTag** subproperty (section [2.2.2.1.2](#)) of the search folder container MUST be updated. These new values MUST be equal.
- The **PidTagSearchFolderLastUsed** property (section [2.2.1.2.4](#)) is set to the current time.

### 3.1.4.4 Deleting a Search Folder

To delete a **search folder**, the client MUST delete the **Message object** from the **FAI contents table** of the **Common Views folder** and delete the **Folder object** from the Finder folder ([\[MS-OXOSFLD\]](#) section 2.2.1). For details about deleting a Folder object, see [\[MS-OXCFOLD\]](#) section 3.1.4.3.

If the **GUID** of a **search folder container** does not match the GUID of any **search folder definition message**, that search folder container is deleted. For more details about the relationship between the search folder container and the search folder definition message, see section [2.2.4](#).

### 3.1.4.5 Current Time Exceeds the Specified Time

When the current time passes the time specified in the **PidTagSearchFolderExpiration** property (section [2.2.1.2.5](#)), the client SHOULD delete (mark inactive) the **Folder objects** that are in the Finder folder ([\[MS-OXOSFLD\]](#) section 2.2.1).

## 3.1.5 Message Processing Events and Sequencing Rules

In the event that messages with potentially conflicting changes arrive close to one another, this protocol follows the standard messaging behavior specified in [\[MS-OXCMSG\]](#) and [\[MS-OXCFOLD\]](#).

### 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 **search folder** and a **search folder definition message** and in all other ways operates within the server role as specified in [\[MS-OXCFOLD\]](#) and [\[MS-OXCMSG\]](#).

### 3.2.1 Abstract Data Model

None.

### 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 requests from the client as specified in [\[MS-OXCFOLD\]](#) section 3.2.5 and [\[MS-OXCMSG\]](#) section 3.2.5.

### **3.2.6 Timer Events**

None.

### **3.2.7 Other Local Events**

None.



## 4 Protocol Examples

## 4.1 Search Folder Message Object

This example shows the **search folder definition message** for a **search folder** that contains unread messages. To create this search folder definition message, the client creates a **Message object** having the property values shown in the following tables. For information about how to create a Message object, see [\[MS-OXCMSG\]](#).

[illegible]

| Property name  | Value  |
|--|--|
|  | 0000050000000201090E0201090E2E00<br>000000000A19D6BCC8B44A4CBF5DF63A<br>922E170C010014E20014EE879243A1A8<br>29B0620DBD890000020DD13300000400<br>0000050000000201090E0201090E2E00<br>000000000A19D6BCC8B44A4CBF5DF63A<br>922E170C010014E20014EE879243A1A8<br>29B0620DBD890000020DEFAC00000400<br>0000050000000201090E0201090E2E00<br>000000000A19D6BCC8B44A4CBF5DF63A<br>922E170C010014E20014EE879243A1A8<br>29B0620DBD8900000210B4D200000400<br>0000050000000201090E0201090E2E00<br>000000000A19D6BCC8B44A4CBF5DF63A<br>922E170C010014E20014EE879243A1A8<br>29B0620DBD8900000210B4D300000400<br>0000050000000201090E0201090E2E00<br>000000000A19D6BCC8B44A4CBF5DF63A<br>922E170C010014E20014EE879243A1A8<br>29B0620DBD8900000210B4D400000400<br>0000050000000201090E0201090E2E00<br>000000000A19D6BCC8B44A4CBF5DF63A<br>922E170C010014E20014EE879243A1A8<br>29B0620DBD8900000210B4D100000100<br>00000200000006000000000000000300<br>070E010000000600000001000000030097100100000000000000 |
| <b>PidTagSearchFolderStorageType</b><br>(section <a href="#">2.2.1.2.6</a> ) | 72<br>(0x48, Flags <b>B</b> and <b>E</b> )   |
| <b>PidTagSearchFolderTag</b> (section <a href="#">2.2.1.2.3</a> )            | 1045439171   |
| <b>PidTagSearchFolderEfpFlags</b><br>(section <a href="#">2.2.1.2.7</a> )    | 0  |

The value of the **PidTagSearchFolderDefinition** property is interpreted as described in section 2.2.1.2.8:

| Field name     | Value  |
|----------------|--|
| <b>Version</b> | 0x00001004   |
| <b>A</b>       | 0  |
| <b>B</b>       | 1<br>(The <b>FolderList2</b> field contains data.)   |
| <b>C</b>       | 0  |
| <b>D</b>       | 0  |
| <b>E</b>       | 1<br>(The <b>SearchRestriction</b> field exists and contains data that defines the <b>search criteria</b> .) |
| <b>F</b>       | 0  |
| <b>G</b>       | 0  |
| <b>H</b>       | 0  |

| Field name               | Value  |
|--------------------------|--|
| <b>I</b>                 | 0  |
| <b>J</b>                 | 0  |
| <b>K</b>                 | 0  |
| <b>L</b>                 | 0  |
| <b>Reserved</b>          | 0x00000  |
| <b>NumericalSearch</b>   | 0x00000000   |
| <b>TextSearchLength</b>  | 0x00   |
| <b>SkipBlock1</b>        | 0x00000000   |
| <b>DeepSearch</b>        | 0x00000001   |
| <b>FolderList1Length</b> | 0x00   |
| <b>FolderList2Length</b> | 0x0000003E   |
| <b>FolderList2</b>       | <p>01000000BCCD87182E000000C4CD8718000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD8900000020DEFA80000</p> <p><b>EntryList</b> structure (<a href="#">[MS-OXCDATA]</a> section 2.3.1):</p> <ul style="list-style-type: none"> <li>▪ <b>EntryCount:</b> 0x00000001</li> <li>▪ <b>Pad:</b> 0x1887CDBC</li> <li>▪ <b>EntryLength:</b> 0x0000002E, 0x1887CDC4</li> <li>▪ <b>EntryIDs:</b> 000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD8900000020DEFA80000</li> </ul>   |
| <b>SkipBlock2</b>        | 0x00000000   |
| <b>SearchRestriction</b> | <p>00000000200000000000000070000000200000003000000020001001E001A001E001A00100049504D2E4170706F696E746D656E740002000000030000000020001001E001A001E001A000C0049504D2E436F6E746163740002000000030000000020001001E001A001E001A000D0049504D2E446973744C6973740002000000030000000020001001E001A001E001A000D0049504D2E41637469766974790002000000030000000020001001E001A001E001A000F0049504D2E537469636B794E6F74650002000000030000000000001001E001A001E001A00090049504D2E5461736B0002000000030000000020001001E001A001E001A000A0049504D2E5461736B2E00000000000200000000000000800000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD8900000020DEFAE000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C01004A0BB9D92C2CA846B335575CBBF05492000001640002000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD8900000020DD133000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD8900000020DEFAC000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD89000000210B4D2000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD89000000210B4D3000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD89000000210B4D4000004000000050000000201090E0201090E2E00000000000A19D6BCC8B44A4CBF5DF63A922E170C010014E20014EE879243A1A829B0620DBD89000000210B4D100000100000002000000060000000000</p> |

| Field name        | Value   |
|-------------------|---|
|                   | 00000300070E0100000000600000000100000000300971001000000<br>(The <b>Restriction</b> structure, as described in section <a href="#">2.2.1.2.8.2</a> ) |
| <b>SkipBlock3</b> | 0x00000000  |

## 5 Security

### 5.1 Security Considerations for Implementers

There are no security considerations beyond those specified in [\[MS-OXCMSG\]](#) and [\[MS-OXCFOLD\]](#).

### 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 updates to those products.

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

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

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

[<1> Section 2.2.3](#): The Mail Received This Week template is not supported in Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016, and Outlook 2019.

[<2> Section 2.2.3](#): The Categorized template is not supported in Office Outlook 2003.

[<3> Section 2.2.3.2](#): In Office Outlook 2003, the following folders are excluded by the Marked for Followup template: Sync Issues folder, **Deleted Items folder**, and **Junk E-mail folder**.

[<4> Section 2.2.3.4](#): In Office Outlook 2003, the following folders are excluded by the Important Mail template: Sync Issues folder, Deleted Items folder, Junk E-mail folder, Drafts folder, **Outbox folder**, and **Sent Items folder**.

[<5> Section 2.2.3.11](#): In Office Outlook 2003, the following folders are excluded by the With Attachments template: Sync Issues folder, Deleted Items folder, Junk E-mail folder, **Drafts folder**, Outbox folder, and Sent Items folder.

[<6> Section 2.2.3.13](#): In Office Outlook 2003, the following folders are excluded by the With Specific Words template: Sync Items folder, Deleted Items folder, Junk E-mail folder, Drafts folder, Outbox folder, and Sent Items folder.

## 7 Change Tracking

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

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

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

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

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

The changes made to this document are listed in the following table. For more information, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com).

| Section  | Description                         | Revision class |
|--|-------------------------------------|----------------|
| <a href="#">6</a> Appendix A: Product Behavior | Updated list of supported products. | major          |

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