Contact Object Protocol

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<td>8/17/2021</td>
<td>19.0</td>
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1 Introduction

The Contact Object Protocol serves as the basic organizational unit for the personal information of a user's associates and acquaintances. This protocol also serves as the basic organizational unit for lists of email addresses.

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:

**action**: A discrete operation that is executed on an incoming **Message object** when all **conditions** in the same rule are TRUE. A rule contains one or more actions.

**Address Book object**: An entity in an address book that contains a set of attributes, each attribute with a set of associated values.

**address type**: An identifier for the type of email address, such as **SMTP** and **EX**.

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

**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.

**character set**: The range of characters used to represent textual data within a MIME body part, as described in [RFC2046].

**condition**: A logical expression comparing one or more properties in all incoming **Message objects** against a set of clauses. This logical expression can evaluate to TRUE or FALSE.

**contact**: A person, company, or other entity that is stored in a directory and is associated with one or more unique identifiers and attributes, such as an Internet message address or login name.

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

**Contacts folder**: A **Folder object** that contains **Contact objects**.

**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).

**cyclic redundancy check (CRC)**: An algorithm used to produce a checksum (a small, fixed number of bits) against a block of data, such as a packet of network traffic or a block of a computer file. The CRC is a broad class of functions used to detect errors after transmission or storage. A CRC is designed to catch random errors, as opposed to intentional errors. If errors might be introduced by a motivated and intelligent adversary, a cryptographic hash function should be used instead.

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

**email address**: A string that identifies a user and enables the user to receive Internet messages.

**EntryID**: A sequence of bytes that is used to identify and access an object.
**File Transfer Protocol (FTP):** A member of the TCP/IP suite of protocols that is used to copy files between two computers on the Internet if both computers support their respective FTP roles. One computer is an FTP client and the other is an FTP server.

**flags:** A set of values used to configure or report options or settings.

**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.

**free/busy status:** A property of an appointment that indicates how an appointment on the calendar of an attendee or resource affects their availability.

**Global Address List (GAL):** An address list that conceptually represents the default address list for an address book.

**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.

**Integrated Services Digital Network (ISDN):** A high-speed digital technology that uses existing telephone lines to provide Internet access and digital network services.

**Joint Photographic Experts Group (JPEG):** A raster graphics file format for displaying high-resolution color graphics. JPEG graphics apply a user-specified compression scheme that can significantly reduce the file sizes of photo-realistic color graphics. A higher level of compression results in lower quality, whereas a lower level of compression results in higher quality. JPEG-format files have a .jpg or .jpeg file name extension.

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

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

**locale:** A collection of rules and data that are specific to a language and a geographical area. A locale can include information about sorting rules, date and time formatting, numeric and monetary conventions, and character classification.

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

**mail user:** An Address Book object that represents a person or entity that can receive deliverable messages.

**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.
**multivalue property**: A property that can contain multiple values of the same type.

**one-off EntryID**: A special address object **EntryID** that encapsulates electronic address information, as described in [MS-OXCDATA].

**Personal Distribution List object**: A **Message object** that contains properties pertaining specifically to user-created **distribution lists**.

**point**: A unit of measurement for fonts and spacing. A point is equal to 1/72 of an inch.

**Portable Network Graphics (PNG)**: A bitmap graphics file format that uses lossless data compression and supports variable transparency of images (alpha channels) and control of image brightness on different computers (gamma correction). PNG-format files have a .png file name extension.

**property ID**: A 16-bit numeric identifier of a specific attribute. 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.

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

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

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

**Simple Mail Transfer Protocol (SMTP)**: A member of the TCP/IP suite of protocols that is used to transport Internet messages, as described in [RFC5321].

**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).

**Uniform Resource Locator (URL)**: A string of characters in a standardized format that identifies a document or resource on the World Wide Web. The format is as specified in [RFC1738].

**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.

[ISO/IEC8802-3] ISO/IEC, "Information technology -- Telecommunications and information exchange between systems -- Local and metropolitan area networks -- Specific requirements -- Part 3", Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer.
 specifications, ISO/IEC 8802-3:2000, 
http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm/csnumber=31002

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

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

[MS-OXCICAL] Microsoft Corporation, "iCalendar to Appointment Object Conversion Algorithm".


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


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

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

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


1.2.2 Informative References


[MS-OXWSCOS] Microsoft Corporation, "Unified Contact Store Web Service Protocol".

1.3 Overview

The Contact Object Protocol defines a Contact object for storing and maintaining information about an associate of the user. The properties of a Contact object specify the associate's phone numbers, email addresses, mailing addresses, and other information. Details about all of a user's associates can be easily maintained through the use of Contact objects. This protocol also defines a Personal Distribution List object for storing a collection of email addresses. The Personal Distribution List object simplifies email distribution to multiple recipients. An email that is addressed to the distribution list is sent to all recipients in the distribution list, thereby eliminating the need to address the email to each recipient. A Contact object and a Personal Distribution List object are created within the Contacts folder in a message store.

The Contact Object Protocol extends the Message and Attachment Object Protocol by defining new properties on a Message object and by adding constraints to the existing properties of a Message object. For information about the Message and Attachment Object Protocol, see [MS-OXCMMSG].
1.4 Relationship to Other Protocols

The Contact Object Protocol extends the Message and Attachment Object Protocol, and, therefore, has the same dependencies. For information about the Message and Attachment Object Protocol, see [MS-OXCMSG].

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

1.5 Prerequisites/Preconditions

The Contact Object 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 organize a user's contact information and distribution lists in the user's mailbox.<1>

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

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

1.9 Standards Assignments

None.
2 Messages

2.1 Transport

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

2.2 Message Syntax

**Contact objects** and **Personal Distribution List objects** can be created and modified by clients and servers. Except where noted, this section defines constraints under which both clients and servers operate.

Protocol clients operate on Contact objects and Personal Distribution List objects by using the Message and Attachment Object Protocol, as specified in [MS-OXCMSG], and the Folder Object Protocol, as specified in [MS-OXCFOLD]. The details of how a protocol server operates on Contact objects and Personal Distribution List objects are implementation-dependent, but the results of any such operations MUST be exposed to clients in a manner that is consistent with this protocol.

Unless otherwise specified, a Contact object and a Personal Distribution List object adhere to all property constraints specified in [MS-OXPROPS] and [MS-OXCMSG].

2.2.1 Contact Object Properties

Properties that are used in groups to define components of a **Contact object** are specified in sections 2.2.1.1 through 2.2.1.9. Standalone properties of a Contact object are specified in sections 2.2.1.10 and 2.2.1.11. Each property is set only when user data needs to be stored.

2.2.1.1 Contact Name Properties

Contact Name properties can be set on a **Contact object** to specify the name of the person represented by the **contact**.

2.2.1.1.1 PidTagNickname Property

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

The **PidTagNickname** property ([MS-OXPROPS] section 2.807) specifies the nickname of the **contact**. This property is optional.

2.2.1.1.2 PidTagGeneration Property

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

The **PidTagGeneration** property ([MS-OXPROPS] section 2.713) specifies the generation suffix of the **contact**, such as "Jr.", "Sr.", or "III". This property is optional.

2.2.1.1.3 PidTagDisplayNamePrefix Property

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

The **PidTagDisplayNamePrefix** property ([MS-OXPROPS] section 2.677) specifies the title of the **contact**, such as "Mr." or "Mrs.". This property is optional.

2.2.1.1.4 PidTagSurname Property
The \textit{PidTagSurname} property ([MS-OXPROPS] section 2.1036) specifies the surname (family name) of the contact. This property is optional.

\subsection*{2.2.1.1.5 PidTagMiddleName Property}

The \textit{PidTagMiddleName} property ([MS-OXPROPS] section 2.802) specifies the middle name(s) of the contact. This property is optional.

\subsection*{2.2.1.1.6 PidTagGivenName Property}

The \textit{PidTagGivenName} property ([MS-OXPROPS] section 2.714) specifies the given name (first name) of the contact. This property is optional.

\subsection*{2.2.1.1.7 PidTagInitials Property}

The \textit{PidTagInitials} property ([MS-OXPROPS] section 2.741) specifies the initials of the contact. This property is optional.

\subsection*{2.2.1.1.8 PidTagDisplayName Property}

The \textit{PidTagDisplayName} property ([MS-OXPROPS] section 2.676) specifies the full name of the contact. The full name is formatted according to an implementation-dependent algorithm that uses the values of the \textit{PidTagDisplayNamePrefix} (section 2.2.1.1.3), \textit{PidTagGivenName} (section 2.2.1.1.6), \textit{PidTagMiddleName} (section 2.2.1.1.5), \textit{PidTagSurname} (section 2.2.1.1.4), and \textit{PidTagGeneration} (section 2.2.1.1.2) properties. This property is optional.

\subsection*{2.2.1.1.9 PidLidYomiFirstName Property}

The \textit{PidLidYomiFirstName} property ([MS-OXPROPS] section 2.364) specifies the phonetic pronunciation of the contact's given name. This property is optional.

\subsection*{2.2.1.1.10 PidLidYomiLastName Property}

The \textit{PidLidYomiLastName} property ([MS-OXPROPS] section 2.365) specifies the phonetic pronunciation of the contact's surname. This property is optional.

\subsection*{2.2.1.1.11 PidLidFileUnder Property}

The \textit{PidLidFileUnder} property ([MS-OXPROPS] section 2.132) specifies the name under which to file this contact when displaying a list of contacts. The client SHOULD treat this property as an empty string if it is missing from the Contact object. This property is optional.

\subsection*{2.2.1.1.12 PidLidFileUnderId Property}
Type: PtypInteger32 ([MS-OXCDATA] section 2.11.1)

The PidlFileUnderId property ([MS-OXPROPS] section 2.133) specifies how to format the value of the PidlFileUnder property (section 2.2.1.11) by using the values of other Contact Name properties.

The valid values of the PidlFileUnderId property are shown in the following table. If the PidlFileUnderId property is either missing or set to a value that is not valid, the client can choose its own logic to format the value of the PidlFileUnder property (section 2.2.1.11) as other Contact Name properties change.

In the following table, the notation <PropertyName> is used to represent the value of the property specified by PropertyName. For example, if the value of the PidTagGivenName property (section 2.2.1.1.6) is "Ben", then "<PidTagGivenName>" specifies the string "Ben". Other notation: "\r" specifies a carriage return character, "\n" specifies a line feed character, and <space> represents a space character. The table shows the format of the PidlFileUnder property when all of the Contact Name properties are present. If a Contact Name property is not present, the separator characters surrounding it can be removed by the client.

<table>
<thead>
<tr>
<th>Value of the PidlFileUnderId property</th>
<th>Format of the PidlFileUnder property</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00000000</td>
<td>Empty string.</td>
</tr>
<tr>
<td>0x00003001</td>
<td>&quot;&lt;PidTagDisplayName&gt;&quot;</td>
</tr>
<tr>
<td>0x00003A06</td>
<td>&quot;&lt;PidTagGivenName&gt;&quot;</td>
</tr>
<tr>
<td>0x00003A11</td>
<td>&quot;&lt;PidTagSurname&gt;&quot;</td>
</tr>
<tr>
<td>0x00003A16</td>
<td>&quot;&lt;PidTagCompanyName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008017</td>
<td>&quot;&lt;PidTagSurname&gt;,&lt;space&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008018</td>
<td>&quot;&lt;PidTagCompanyName&gt;&lt;\n&lt;PidTagSurname&gt;,&lt;space&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008019</td>
<td>&quot;&lt;PidTagSurname&gt;,&lt;space&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&lt;\n&lt;PidTagCompanyName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008030</td>
<td>&quot;&lt;PidTagSurname&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008031</td>
<td>&quot;&lt;PidTagSurname&gt;&lt;space&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008032</td>
<td>&quot;&lt;PidTagCompanyName&gt;&lt;\n&lt;PidTagSurname&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008033</td>
<td>&quot;&lt;PidTagCompanyName&gt;&lt;\n&lt;PidTagSurname&gt;&lt;space&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008034</td>
<td>&quot;&lt;PidTagSurname&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&lt;\n&lt;PidTagCompanyName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008035</td>
<td>&quot;&lt;PidTagSurname&gt;&lt;space&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&lt;\n&lt;PidTagCompanyName&gt;&quot;</td>
</tr>
<tr>
<td>0x00008036</td>
<td>&quot;&lt;PidTagSurname&gt;&lt;space&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&lt;space&gt;&lt;PidTagGeneration&gt;&quot;</td>
</tr>
<tr>
<td>0x00008037</td>
<td>&quot;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&lt;space&gt;&lt;PidTagSurname&gt;&lt;space&gt;&lt;PidTagGeneration&gt;&quot;</td>
</tr>
<tr>
<td>Value of the PidlLidFileUnderId property</td>
<td>Format of the PidlLidFileUnder property</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>0x00008038</td>
<td>&quot;&lt;PidTagSurname&gt;&lt;PidTagGivenName&gt;&lt;space&gt;&lt;PidTagMiddleName&gt;&lt;space&gt;&lt;PidTagGeneration&gt;&quot;</td>
</tr>
<tr>
<td>0xFFFFFFFFFD</td>
<td>The client or server uses the current value of the PidlLidFileUnder property and other contact properties to find a best match to one of the previous values in this table.</td>
</tr>
<tr>
<td>0xFFFFFFFFFE</td>
<td>The client or server chooses the default values based on the implementation.</td>
</tr>
<tr>
<td>0xFFFFFFFFFF</td>
<td>The value of the PidlLidFileUnder property is a user-provided string. In this case, the value of the PidlLidFileUnder property is not changed when the value of another Contact Name property changes.</td>
</tr>
</tbody>
</table>

### 2.2.1.13 PidlLidFileUnderList Property

**Type:** PtypMultipleInteger32 ([MS-OXCDATA] section 2.11.1)

The PidlLidFileUnderList property ([MS-OXPROPS] section 2.134) specifies a list of possible values for the PidlLidFileUnderId property (section 2.2.1.1.12). Each value in this multivalue property MUST be one of the allowed values for the PidlLidFileUnderId property. The PidlLidFileUnderList property is set by the client, but it is never used by either the client or the server. This property is optional.

### 2.2.1.2 Electronic Address Properties

The Contact object has built-in properties for up to three different email addresses (Email1, Email2, and Email3) and three different fax addresses (Primary Fax, Business Fax, and Home Fax). Each of these electronic addresses is optional, and each consists of a group of related properties associated with it.

Unless otherwise specified, when creating or modifying a Contact object, all properties in a group MUST be set, changed, or deleted together at the same time. Specifications of similar properties are grouped together in sections 2.2.1.2.1 through section 2.2.1.2.12. The following table specifies the properties in each Electronic Address group.

<table>
<thead>
<tr>
<th>Group name</th>
<th>Description</th>
<th>Properties in group</th>
</tr>
</thead>
</table>
| Email1     | Defines the first email address for a contact. | PidlLidEmail1DisplayName (section 2.2.1.2.1)  
PidLidEmail1AddressType (section 2.2.1.2.2)  
PidLidEmail1EmailAddress (section 2.2.1.2.3)  
PidLidEmail1OriginalDisplayName (section 2.2.1.2.4)  
PidLidEmail1OriginalEntryId (section 2.2.1.2.5) |
| Email2     | Defines the second email address for a contact. | PidlLidEmail2DisplayName (section 2.2.1.2.1)  
PidLidEmail2AddressType (section 2.2.1.2.2)  
PidLidEmail2EmailAddress (section 2.2.1.2.3)  
PidLidEmail2OriginalDisplayName (section 2.2.1.2.4)  
PidLidEmail2OriginalEntryId (section 2.2.1.2.5) |
| Email3     | Defines the third email address for a contact. | PidlLidEmail3DisplayName (section 2.2.1.2.1)  
PidLidEmail3AddressType (section 2.2.1.2.2) |
<table>
<thead>
<tr>
<th>Group name</th>
<th>Description</th>
<th>Properties in group</th>
</tr>
</thead>
</table>
| Primary Fax | Defines the primary fax address for a contact. | PidTagPrimaryFaxNumber (section 2.2.1.2.6)  
PidlFax1AddressType (section 2.2.1.2.7)  
PidlFax1EmailAddress (section 2.2.1.2.8)  
PidlFax1OriginalDisplayName (section 2.2.1.2.9)  
PidlFax1OriginalEntryId (section 2.2.1.2.10) |
| Business Fax| Defines the business fax address for a contact. | PidTagBusinessFaxNumber (section 2.2.1.2.6)  
PidlFax2AddressType (section 2.2.1.2.7)  
PidlFax2EmailAddress (section 2.2.1.2.8)  
PidlFax2OriginalDisplayName (section 2.2.1.2.9)  
PidlFax2OriginalEntryId (section 2.2.1.2.10) |
| Home Fax    | Defines the home fax address for a contact. | PidTagHomeFaxNumber (section 2.2.1.2.6)  
PidlFax3AddressType (section 2.2.1.2.7)  
PidlFax3EmailAddress (section 2.2.1.2.8)  
PidlFax3OriginalDisplayName (section 2.2.1.2.9)  
PidlFax3OriginalEntryId (section 2.2.1.2.10) |

If any of the email addresses are defined for the contact, then the properties PidLidAddressBookProviderArrayType (section 2.2.1.2.12) and PidlAddressBookProviderEmailList (section 2.2.1.2.11) MUST be defined as well.

For each email address, if one property is defined, then the entire set of properties MUST be defined, and PidLidAddressBookProviderArrayType and PidLidAddressBookProviderEmailList MUST be defined as well.

If PidTagPrimaryFaxNumber, PidTagBusinessFaxNumber, or PidTagHomeFaxNumber is defined, then the PidLidAddressBookProviderArrayType and PidlAddressBookProviderEmailList properties SHOULD be defined, as well as the rest of the Primary Fax, Business Fax, or Home Fax properties, respectively. The client sets the PidlAddressBookProviderEmailList and PidLidAddressBookProviderArrayType properties whenever the PidTagPrimaryFaxNumber, PidTagBusinessFaxNumber, or PidTagHomeFaxNumber property is set.<2>

### 2.2.1.2.1 PidLidEmail1DisplayName, PidLidEmail2DisplayName, PidLidEmail3DisplayName Properties

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

The PidLidEmail1DisplayName ([MS-OXPROPS] section 2.101), PidLidEmail2DisplayName ([MS-OXPROPS] section 2.106), and PidLidEmail3DisplayName ([MS-OXPROPS] section 2.111) properties specify the user-readable display name for the email address of the contact.
2.2.1.2.2 PidLidEmail1AddressType, PidLidEmail2AddressType, 
PidLidEmail3AddressType Properties

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

The PidLidEmail1AddressType ([MS-OXPROPS] section 2.100), PidLidEmail2AddressType ([MS-OXPROPS] section 2.105), and PidLidEmail3AddressType ([MS-OXPROPS] section 2.110) properties specify the address type of the electronic address for the contact. If one of these properties is present, the property value MUST be a valid address type. The RopGetAddressTypes remote operation (ROP) ([MS-OXCROPS] section 2.2.7.3) can be used to get a list of the valid address types; a third-party-defined address type is also valid. Address types commonly used by the client and server are "SMTP" and "EX".

2.2.1.2.3 PidLidEmail1EmailAddress, PidLidEmail2EmailAddress, 
PidLidEmail3EmailAddress Properties

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

The PidLidEmail1EmailAddress ([MS-OXPROPS] section 2.102), PidLidEmail2EmailAddress ([MS-OXPROPS] section 2.107), and PidLidEmail3EmailAddress ([MS-OXPROPS] section 2.112) properties specify the email address of the contact. The format of an email address is determined by its address type. Therefore, the values of these properties MUST conform to the address types specified for these email addresses. Address types are specified by the PidLidEmail1AddressType (section 2.2.1.2.2), PidLidEmail2AddressType (section 2.2.1.2.2), and PidLidEmail3AddressType (section 2.2.1.2.2) properties. The client and server commonly use the "SMTP" and "EX" address types. The format of an "SMTP" email address is specified in [RFC5321]; the format of an "EX" email address is specified in [RFC2247].

The address type is intended to provide an avenue for various third-party delivery mechanisms to define their own email address format. A Contact object merely stores the address type and the email address; the address type and the email address have no special meaning in the context of this protocol.

2.2.1.2.4 PidLidEmail1OriginalDisplayName, PidLidEmail2OriginalDisplayName, 
PidLidEmail3OriginalDisplayName Properties

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

The PidLidEmail1OriginalDisplayName ([MS-OXPROPS] section 2.103), PidLidEmail2OriginalDisplayName ([MS-OXPROPS] section 2.108), and PidLidEmail3OriginalDisplayName ([MS-OXPROPS] section 2.113) properties specify the Simple Mail Transfer Protocol (SMTP) email address corresponding to the email address specified in section 2.2.1.2.2 for the Contact object. The format of an email address is determined by its address type. Therefore, the values of these properties MUST conform to the address types specified for these email addresses. Address types are specified by the PidLidEmail1AddressType (section 2.2.1.2.2), PidLidEmail2AddressType (section 2.2.1.2.2), and PidLidEmail3AddressType (section 2.2.1.2.2) properties. The client and server commonly use the "SMTP" and "EX" address types. The format of an "SMTP" email address is specified in [RFC5321]; the format of an "EX" email address is specified in [RFC2247].

2.2.1.2.5 PidLidEmail1OriginalEntryId, PidLidEmail2OriginalEntryId, 
PidLidEmail3OriginalEntryId Properties

Type: PtypBinary ([MS-OXCDATA] section 2.11.1)
2.2.1.2.6 PidTagPrimaryFaxNumber, PidTagBusinessFaxNumber, PidTagHomeFaxNumber Properties

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

The PidTagPrimaryFaxNumber property ([MS-OXOABK] section 2.2.4.29), PidTagBusinessFaxNumber property ([MS-OXOCNTC] section 2.2.1.2.6), and PidTagHomeFaxNumber property ([MS-OXOCNTC] section 2.2.1.2.6) properties specify the fax number for the contact. The string MUST NOT be longer than 255 characters, not including the terminating null character. There are no other restrictions on the format of these properties.

2.2.1.2.7 PidLidFax1AddressType, PidLidFax2AddressType, PidLidFax3AddressType Properties

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

The PidLidFax1AddressType property ([MS-OXOCNTC] section 2.2.1.2.7), PidLidFax2AddressType property ([MS-OXOCNTC] section 2.2.1.2.7), and PidLidFax3AddressType property ([MS-OXOCNTC] section 2.2.1.2.7) properties specify the address type of the electronic address for the contact. These properties, if present, MUST be set to "FAX".

2.2.1.2.8 PidLidFax1EmailAddress, PidLidFax2EmailAddress, PidLidFax3EmailAddress Properties

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

The PidLidFax1EmailAddress property ([MS-OXOCNTC] section 2.2.1.2.8), PidLidFax2EmailAddress property ([MS-OXOCNTC] section 2.2.1.2.8), and PidLidFax3EmailAddress property ([MS-OXOCNTC] section 2.2.1.2.8) properties specify a user-friendly combination of the display name and the corresponding fax number for the contact. These properties, if present, SHOULD each contain a user-readable display name, followed by the "@" character, followed by a fax number.

2.2.1.2.9 PidLidFax1OriginalDisplayName, PidLidFax2OriginalDisplayName, PidLidFax3OriginalDisplayName Properties

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

The PidLidFax1OriginalDisplayName property ([MS-OXOCNTC] section 2.2.1.2.9), PidLidFax2OriginalDisplayName property ([MS-OXOCNTC] section 2.2.1.2.9), and PidLidFax3OriginalDisplayName property ([MS-OXOCNTC] section 2.2.1.2.9) properties specify the normalized subject for the contact. These properties, if present, MUST each be set to the same value as PidTagNormalizedSubject ([MS-OXCMSG] section 2.2.1.10), as specified in section 2.2.1.11.1.

2.2.1.2.10 PidLidFax1OriginalEntryId, PidLidFax2OriginalEntryId, PidLidFax3OriginalEntryId Properties

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

The PidLidFax1OriginalEntryId property ([MS-OXOCNTC] section 2.2.1.2.10), PidLidFax2OriginalEntryId property ([MS-OXOCNTC] section 2.2.1.2.10), and
PidLidFax3OriginalEntryId property ([MS-OXOCNTC] section 2.2.1.2.10) properties specify the one-off EntryID corresponding to this fax address.

### 2.2.1.2.11 PidLidAddressBookProviderEmailList Property

Type: PtypMultipleInteger32 ([MS-OXCDATA] section 2.11.1)

The PidLidAddressBookProviderEmailList property ([MS-OXPROPS] section 2.2) specifies which Electronic Address properties are set on the Contact object. Each PtypInteger32 value in this property MUST be unique in the property and MUST be set to one of the values in the following table. If this property is set, the PidLidAddressBookProviderArrayType property (section 2.2.1.2.12) MUST also be set. These two properties MUST be kept synchronized with each other.

For example, if one of the values in the PidLidAddressBookProviderEmailList property is 0x00000000, then the PidLidAddressBookProviderArrayType property would have the bit 0x00000001 set.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00000000</td>
<td>Email1 is defined for the contact.</td>
</tr>
<tr>
<td>0x00000001</td>
<td>Email2 is defined for the contact.</td>
</tr>
<tr>
<td>0x00000002</td>
<td>Email3 is defined for the contact.</td>
</tr>
<tr>
<td>0x00000003</td>
<td>Business Fax is defined for the contact.</td>
</tr>
<tr>
<td>0x00000004</td>
<td>Home Fax is defined for the contact.</td>
</tr>
<tr>
<td>0x00000005</td>
<td>Primary Fax is defined for the contact.</td>
</tr>
</tbody>
</table>

### 2.2.1.2.12 PidLidAddressBookProviderArrayType Property

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

The PidLidAddressBookProviderArrayType property ([MS-OXPROPS] section 2.1) specifies the state of the contact's electronic addresses and represents a set of bit flags. The value of the PidLidAddressBookProviderArrayType property MUST be a combination of flags that specify the state of the Contact object. Individual flags are specified in the following table. If this property is set, the PidLidAddressBookProviderEmailList property (section 2.2.1.2.11) MUST be set as well. These two properties MUST be kept in sync with each other.

For example, if this property has the bit 0x00000001 set, then one of the values of the PidLidAddressBookProviderEmailList property would be 0x00000000.

<table>
<thead>
<tr>
<th>Bit</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00000001</td>
<td>Email1 is defined for the contact.</td>
</tr>
<tr>
<td>0x00000002</td>
<td>Email2 is defined for the contact.</td>
</tr>
<tr>
<td>0x00000004</td>
<td>Email3 is defined for the contact.</td>
</tr>
<tr>
<td>0x00000008</td>
<td>Business Fax is defined for the contact.</td>
</tr>
<tr>
<td>0x00000010</td>
<td>Home Fax is defined for the contact.</td>
</tr>
<tr>
<td>0x00000020</td>
<td>Primary Fax is defined for the contact.</td>
</tr>
</tbody>
</table>
### 2.2.1.3 Physical Address Properties

The Contact object provides built-in support for three physical addresses: Home Address, Work Address, and Other Address. One of the addresses can be marked as the Mailing Address. Each of these physical addresses is optional, and each consists of a group of related properties.

When creating or modifying a Contact object, all properties in a group MUST be set, changed, or deleted together at the same time, unless otherwise specified in sections 2.2.1.3.1 through section 2.2.1.3.9. Specifications of similar properties are grouped together in sections 2.2.1.3.1 through 2.2.1.3.9.

The following table specifies the properties in each Physical Address group.

<table>
<thead>
<tr>
<th>Group name</th>
<th>Properties in group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Address</td>
<td>PidTagHomeAddressStreet (section 2.2.1.3.1)</td>
</tr>
<tr>
<td></td>
<td>PidTagHomeAddressCity (section 2.2.1.3.2)</td>
</tr>
<tr>
<td></td>
<td>PidTagHomeAddressStateOrProvince (section 2.2.1.3.3)</td>
</tr>
<tr>
<td></td>
<td>PidTagHomeAddressPostalCode (section 2.2.1.3.4)</td>
</tr>
<tr>
<td></td>
<td>PidTagHomeAddressCountry (section 2.2.1.3.5)</td>
</tr>
<tr>
<td></td>
<td>PidLidHomeAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td></td>
<td>PidTagHomeAddressPostOfficeBox (section 2.2.1.3.7)</td>
</tr>
<tr>
<td></td>
<td>PidLidHomeAddress (section 2.2.1.3.8)</td>
</tr>
<tr>
<td>Work Address</td>
<td>PidLidWorkAddressStreet (section 2.2.1.3.1)</td>
</tr>
<tr>
<td></td>
<td>PidLidWorkAddressCity (section 2.2.1.3.2)</td>
</tr>
<tr>
<td></td>
<td>PidLidWorkAddressState (section 2.2.1.3.3)</td>
</tr>
<tr>
<td></td>
<td>PidLidWorkAddressPostalCode (section 2.2.1.3.4)</td>
</tr>
<tr>
<td></td>
<td>PidLidWorkAddressCountry (section 2.2.1.3.5)</td>
</tr>
<tr>
<td></td>
<td>PidLidWorkAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td></td>
<td>PidLidWorkAddressPostOfficeBox (section 2.2.1.3.7)</td>
</tr>
<tr>
<td></td>
<td>PidLidWorkAddress (section 2.2.1.3.8)</td>
</tr>
<tr>
<td>Other Address</td>
<td>PidTagOtherAddressStreet (section 2.2.1.3.1)</td>
</tr>
<tr>
<td></td>
<td>PidTagOtherAddressCity (section 2.2.1.3.2)</td>
</tr>
<tr>
<td></td>
<td>PidTagOtherAddressStateOrProvince (section 2.2.1.3.3)</td>
</tr>
<tr>
<td></td>
<td>PidTagOtherAddressPostalCode (section 2.2.1.3.4)</td>
</tr>
<tr>
<td></td>
<td>PidTagOtherAddressCountry (section 2.2.1.3.5)</td>
</tr>
<tr>
<td></td>
<td>PidLidOtherAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td></td>
<td>PidTagOtherAddressPostOfficeBox (section 2.2.1.3.7)</td>
</tr>
<tr>
<td></td>
<td>PidLidOtherAddress (section 2.2.1.3.8)</td>
</tr>
<tr>
<td>Mailing Address</td>
<td>PidTagStreetAddress (section 2.2.1.3.1)</td>
</tr>
<tr>
<td></td>
<td>PidTagLocality (section 2.2.1.3.2)</td>
</tr>
<tr>
<td></td>
<td>PidTagStateOrProvince (section 2.2.1.3.3)</td>
</tr>
<tr>
<td></td>
<td>PidTagPostalCode (section 2.2.1.3.4)</td>
</tr>
<tr>
<td></td>
<td>PidTagCountry (section 2.2.1.3.5)</td>
</tr>
<tr>
<td></td>
<td>PidLidAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td></td>
<td>PidTagPostOfficeBox (section 2.2.1.3.7)</td>
</tr>
<tr>
<td></td>
<td>PidTagPostalAddress (section 2.2.1.3.8)</td>
</tr>
</tbody>
</table>
2.2.1.3.1 PidLidWorkAddressStreet, PidTagHomeAddressStreet, PidTagOtherAddressStreet, PidTagStreetAddress Properties

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

The PidLidWorkAddressStreet ([MS-OXPROPS] section 2.361), PidTagHomeAddressStreet ([MS-OXOABK] section 2.2.4.20), PidTagOtherAddressStreet ([MS-OXPROPS] section 2.853), and PidTagStreetAddress ([MS-OXOABK] section 2.2.4.14) properties specify the street portion of the contact's Work, Home, Other, or Mailing Address. These properties can also be used to store the post office box part of the address, if it exists.

2.2.1.3.2 PidLidWorkAddressCity, PidTagHomeAddressCity, PidTagOtherAddressCity, PidTagLocality Properties

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

The PidLidWorkAddressCity ([MS-OXPROPS] section 2.355), PidTagHomeAddressCity ([MS-OXPROPS] section 2.725), PidTagOtherAddressCity ([MS-OXPROPS] section 2.848), and PidTagLocality ([MS-OXOABK] section 2.2.4.16) properties specify the city or locality portion of the contact's Work, Home, Other, or Mailing Address.

2.2.1.3.3 PidLidWorkAddressState, PidTagHomeAddressStateOrProvince, PidTagOtherAddressStateOrProvince, PidTagStateOrProvince Properties

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

The PidLidWorkAddressState ([MS-OXPROPS] section 2.360), PidTagHomeAddressStateOrProvince ([MS-OXPROPS] section 2.729), PidTagOtherAddressStateOrProvince ([MS-OXPROPS] section 2.852), and PidTagStateOrProvince ([MS-OXOABK] section 2.2.4.17) properties specify the state or province portion of the contact's Work, Home, Other, or Mailing Address.

2.2.1.3.4 PidLidWorkAddressPostalCode, PidTagHomeAddressPostalCode, PidTagOtherAddressPostalCode, PidTagPostalCode Properties

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

The PidLidWorkAddressPostalCode ([MS-OXPROPS] section 2.358), PidTagHomeAddressPostalCode ([MS-OXPROPS] section 2.727), PidTagOtherAddressPostalCode ([MS-OXPROPS] section 2.850), and PidTagPostalCode ([MS-OXOABK] section 2.2.4.18) properties specify the postal code (ZIP code) portion of the contact's Work, Home, Other, or Mailing Address.

2.2.1.3.5 PidLidWorkAddressCountry, PidTagHomeAddressCountry, PidTagOtherAddressCountry, PidTagCountry Properties

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

The PidLidWorkAddressCountry ([MS-OXPROPS] section 2.356), PidTagHomeAddressCountry ([MS-OXPROPS] section 2.726), PidTagOtherAddressCountry ([MS-OXPROPS] section 2.849), and PidTagCountry ([MS-OXOABK] section 2.2.4.19) properties specify the country or region portion of the contact's Work, Home, Other, or Mailing Address.

2.2.1.3.6 PidLidWorkAddressCountryCode, PidLidHomeAddressCountryCode, PidLidOtherAddressCountryCode, PidLidAddressCountryCode Properties

Type: PtypString ([MS-OXCDATA] section 2.11.1)
The `PidLidWorkAddressCountryCode` ([MS-OXPROPS] section 2.357),  
`PidLidHomeAddressCountryCode` ([MS-OXPROPS] section 2.145),  
`PidLidOtherAddressCountryCode` ([MS-OXPROPS] section 2.198), and  
`PidLidAddressCountryCode` ([MS-OXPROPS] section 2.3) properties specify the country/region code  
portion of the contact's Work, Home, Other, or Mailing Address.

### 2.2.1.3.7 `PidLidWorkAddressPostOfficeBox`, `PidTagHomeAddressPostOfficeBox`,  
`PidTagOtherAddressPostOfficeBox`, `PidTagPostOfficeBox` Properties

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

The `PidLidWorkAddressPostOfficeBox` ([MS-OXPROPS] section 2.359),  
`PidTagHomeAddressPostOfficeBox` ([MS-OXPROPS] section 2.728),  
`PidTagOtherAddressPostOfficeBox` ([MS-OXPROPS] section 2.851), and  
`PidTagPostOfficeBox` ([MS-OXOABK] section 2.2.4.15) properties specify the post office box portion of the contact's Work,  
Home, Other, or Mailing Address. The client and the server do not use these properties when generating the full address or when parsing the full address into components. Instead, they place the post office box data as part of the street address.

When a property in a physical address group is changed, as specified in section 3.1.5.2, these properties do not need to be updated.

### 2.2.1.3.8 `PidLidWorkAddress`, `PidLidHomeAddress`, `PidLidOtherAddress`,  
`PidTagPostalAddress` Properties

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

The `PidLidWorkAddress` ([MS-OXPROPS] section 2.354), `PidLidHomeAddress` ([MS-OXPROPS] section 2.144), `PidLidOtherAddress` ([MS-OXPROPS] section 2.197), and `PidTagPostalAddress` ([MS-OXPROPS] section 2.864) properties specify the complete address of the contact's Work, Home, Other, or Mailing Address. Each of these properties SHOULD be a combination of other Physical Address properties and is based on client locale.

### 2.2.1.3.9 `PidLidPostalAddressId` Property

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

The `PidLidPostalAddressId` property ([MS-OXPROPS] section 2.203) specifies which physical address is the Mailing Address for this contact. If present, the property MUST have one of the values specified in the following table. If not set, the client SHOULD assume that the value is 0x00000000. This property is optional.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| 0x00000000           | No address is selected as the Mailing Address. `PidTagStreetAddress` (section 2.2.1.3.1),  
                       | `PidTagLocality` (section 2.2.1.3.2), `PidTagStateOrProvince` (section 2.2.1.3.3),  
                       | `PidTagPostalCode` (section 2.2.1.3.4), `PidTagCountry` (section 2.2.1.3.5),  
                       | `PidLidAddressCountryCode` (section 2.2.1.3.6), and `PidTagPostalAddress` (section 2.2.1.3.8)  
                       | all MUST NOT be set.                                                    |
| 0x00000001           | The Home Address is the Mailing Address. The values of the `PidTagStreetAddress`, `PidTagLocality`, `PidTagStateOrProvince`,  
                       | `PidTagPostalCode`, `PidTagPostOfficeBox` (section 2.2.1.3.7), `PidTagCountry`,  
                       | `PidLidAddressCountryCode`, and `PidTagPostalAddress` properties MUST be equal to the  
                       | values of the `PidTagHomeAddressStreet` (section 2.2.1.3.1), `PidTagHomeAddressCity`  
                       | (section 2.2.1.3.2), `PidTagHomeAddressStateOrProvince` (section 2.2.1.3.3),  
                       | `PidTagHomeAddressPostalCode` (section 2.2.1.3.4), `PidTagHomeAddressPostOfficeBox`  
                       | (section 2.2.1.3.7), `PidTagHomeAddressCountry` (section 2.2.1.3.5),  
                       | `PidLidHomeAddressCountryCode` (section 2.2.1.3.6), and `PidLidHomeAddress` (section 2.2.1.3.8)  
                       | all MUST NOT be set.                                                    |
### 2.2.1.4 Telephone Properties

Telephone properties specify telephone numbers for the contact. If present, each property MUST NOT exceed a length of 255 characters, excluding the terminating null character. Each property in this section is optional.

#### 2.2.1.4.1 PidTagPagerTelephoneNumber Property

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

The PidTagPagerTelephoneNumber property ([MS-OXOABK] section 2.2.4.28) specifies the pager telephone number for the contact.

#### 2.2.1.4.2 PidTagCallbackTelephoneNumber Property

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

The PidTagCallbackTelephoneNumber property ([MS-OXPROPS] section 2.627) specifies the callback telephone number for the contact.

#### 2.2.1.4.3 PidTagBusinessTelephoneNumber Property

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

The PidTagBusinessTelephoneNumber property ([MS-OXOABK] section 2.2.4.21) specifies the business telephone number for the contact.

#### 2.2.1.4.4 PidTagHomeTelephoneNumber Property

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

The PidTagHomeTelephoneNumber property ([MS-OXOABK] section 2.2.4.22) specifies the home telephone number for the contact.
2.2.1.4.5 PidTagPrimaryTelephoneNumber Property

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

The PidTagPrimaryTelephoneNumber property ([MS-OXPROPS] section 2.870) specifies the primary telephone number for the contact.

2.2.1.4.6 PidTagBusiness2TelephoneNumber Property

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

The PidTagBusiness2TelephoneNumber property ([MS-OXOABK] section 2.2.4.23) specifies the second business telephone number for the contact.

2.2.1.4.7 PidTagMobileTelephoneNumber Property

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

The PidTagMobileTelephoneNumber property ([MS-OXOABK] section 2.2.4.27) specifies the mobile telephone number for the contact.

2.2.1.4.8 PidTagRadioTelephoneNumber Property

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

The PidTagRadioTelephoneNumber property ([MS-OXPROPS] section 2.877) specifies the radio telephone number for the contact.

2.2.1.4.9 PidTagCarTelephoneNumber Property

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

The PidTagCarTelephoneNumber property ([MS-OXPROPS] section 2.629) specifies the car telephone number for the contact.

2.2.1.4.10 PidTagOtherTelephoneNumber Property

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

The PidTagOtherTelephoneNumber property ([MS-OXPROPS] section 2.854) specifies an alternate telephone number for the contact.

2.2.1.4.11 PidTagAssistantTelephoneNumber Property

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

The PidTagAssistantTelephoneNumber property ([MS-OXOABK] section 2.2.4.31) specifies the telephone number of the contact's assistant.

2.2.1.4.12 PidTagHome2TelephoneNumber Property

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

The PidTagHome2TelephoneNumber property ([MS-OXOABK] section 2.2.4.25) specifies a second home telephone number for the contact.

2.2.1.4.13 PidTagTelecommunicationsDeviceForDeafTelephoneNumber Property

Type: PtypString ([MS-OXCDATA] section 2.11.1)
The `PidTagTelecommunicationsDeviceForDeafTelephoneNumber` property ([MS-OXPROPS] section 2.1040) specifies the telephone number for the contact's text telephone (TTY) or telecommunication device for the deaf (TDD).

### 2.2.1.4.14 PidTagCompanyMainTelephoneNumber Property

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

The `PidTagCompanyMainTelephoneNumber` property ([MS-OXPROPS] section 2.638) specifies the company phone number for the contact.

### 2.2.1.4.15 PidTagTelexNumber Property

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

The `PidTagTelexNumber` property ([MS-OXOABK] section 2.2.4.30) specifies the telex number for the contact.

### 2.2.1.4.16 PidTagIsdnNumber Property

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

The `PidTagIsdnNumber` property ([MS-OXPROPS] section 2.756) specifies the Integrated Services Digital Network (ISDN) number for the contact.

### 2.2.1.5 Event Properties

Two events are associated with a contact: a birthday and an anniversary. Each event is defined by two properties: a `PtypTime` property and an object `PtypBinary` property. If one of the two properties is set for an event, the other MUST also be set. If either of the two events is defined for a contact, the `PidLidReferenceEntryId` property (section 2.2.1.10.1) SHOULD be set to the `EntryID` for this Contact object.

#### 2.2.1.5.1 PidTagBirthday Property

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

The `PidTagBirthday` property ([MS-OXPROPS] section 2.616) specifies the birthday of the contact, at 11:59 in Coordinated Universal Time (UTC).

#### 2.2.1.5.2 PidLidBirthdayLocal Property

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

The `PidLidBirthdayLocal` property ([MS-OXPROPS] section 2.44) specifies the birthday of the contact, at 0:00 in the client's local time zone. It is saved without any time zone conversions.

#### 2.2.1.5.3 PidLidBirthdayEventEntryId Property

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

The `PidLidBirthdayEventEntryId` property ([MS-OXPROPS] section 2.43) specifies the object `EntryID` of an optional Appointment object that represents the contact's birthday. The Appointment object specified by the EntryID MUST be linked to this contact by using the `PidLidContactLinkEntry` ([MS-OXCMSG] section 2.2.1.57.1), `PidLidContactLinkSearchKey` ([MS-OXCMSG] section 2.2.1.57.4), and `PidLidContactLinkName` ([MS-OXCMSG] section 2.2.1.57.3) properties, as specified in [MS-OXCMSG] section 2.2.1.57.
For details about Appointment objects, see [MS-OXOCAL].

2.2.1.5.4 PidTagWeddingAnniversary Property
Type: PtypTime ([MS-OXCDATA] section 2.11.1)

The PidTagWeddingAnniversary property ([MS-OXPROPS] section 2.1062) specifies the wedding anniversary of the contact, at 11:59 in Coordinated Universal Time (UTC).

2.2.1.5.5 PidLidWeddingAnniversaryLocal Property
Type: PtypTime ([MS-OXCDATA] section 2.11.1)

The PidLidWeddingAnniversaryLocal property ([MS-OXPROPS] section 2.351) specifies the wedding anniversary of the contact, at 0:00 in the client's local time zone. It is saved without any time zone conversions.

2.2.1.5.6 PidLidAnniversaryEventEntryId Property
Type: PtypBinary ([MS-OXCDATA] section 2.11.1)

The PidLidAnniversaryEventEntryId property ([MS-OXPROPS] section 2.7) specifies the object EntryID of the Appointment object that represents the contact's anniversary. The Appointment object specified by the EntryID MUST be linked to this contact by using PidLidContactLinkEntry ([MS-OXCMSG] section 2.2.1.57.1), PidLidContactLinkSearchKey ([MS-OXCMSG] section 2.2.1.57.4), and PidLidContactLinkName ([MS-OXCMSG] section 2.2.1.57.3), as specified in [MS-OXCMSG] section 2.2.1.57.

For details about Appointment objects, see [MS-OXOCAL].

2.2.1.6 Professional Properties

Professional properties are used to store professional details for the person represented by the contact.

2.2.1.6.1 PidTagName Property
Type: PtypString ([MS-OXCDATA] section 2.11.1)

The PidTagName property ([MS-OXOABK] section 2.2.4.4) specifies the job title of the contact. This property is optional.

2.2.1.6.2 PidTagCompanyName Property
Type: PtypString ([MS-OXCDATA] section 2.11.1)

The PidTagCompanyName property ([MS-OXOABK] section 2.2.4.7) specifies the company that employs the contact. This property is optional.

2.2.1.6.3 PidTagDepartmentName Property
Type: PtypString ([MS-OXCDATA] section 2.11.1)

The PidTagDepartmentName property ([MS-OXOABK] section 2.2.4.6) specifies the name of the department to which the contact belongs. This property is optional.

2.2.1.6.4 PidLidDepartment Property
Type: PtypString ([MS-OXCDATA] section 2.11.1)

The PidLidDepartment property ([MS-OXPROPS] section 2.93) is not used and MUST be ignored by the server. The client MUST set this property to an empty string.

2.2.1.6.5 PidTagOfficeLocation Property

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

The PidTagOfficeLocation property ([MS-OXOABK] section 2.2.4.5) specifies the location of the office that the contact works in. This property is optional.

2.2.1.6.6 PidTagManagerName Property

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

The PidTagManagerName property ([MS-OXPROPS] section 2.779) specifies the name of the contact's manager. This property is optional.

2.2.1.6.7 PidTagAssistant Property

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

The PidTagAssistant property ([MS-OXOABK] section 2.2.4.8) specifies the name of the contact's assistant. This property is optional.

2.2.1.6.8 PidLidYomiCompanyName Property

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

The PidLidYomiCompanyName property ([MS-OXPROPS] section 2.363) specifies the phonetic pronunciation of the contact's company name. This property is optional.

2.2.1.6.9 PidTagProfession Property

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

The PidTagProfession property ([MS-OXPROPS] section 2.873) specifies the profession of the contact. This property is optional.

2.2.1.7 Business Card Properties

Business Card properties can be used to customize the display of contact information in business card format. The business card format is a collection of information about how to display contact data to the user. The server ignores the Business Card properties.

2.2.1.7.1 PidLidBusinessCardDisplayDefinition Property

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

The PidLidBusinessCardDisplayDefinition property ([MS-OXPROPS] section 2.46) property specifies user-customization details for displaying a contact as a business card. This property is optional.

The layout of a business card can be represented as an image and a number of text fields. The image can be either a contact photo, specified in section 2.2.1.8, or a card picture, specified in section 2.2.1.7.2. Text fields consist of a value from another PtypString property set on the Contact object and an optional customized label string provided by the user.
The following diagram specifies the format of the `PidLidBusinessCardDisplayDefinition` property. Note that multiple-byte values are stored in little-endian format in the buffer.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 | 0 | 1 |
| MajorVersion | MinorVersion | TemplateID | CountOfFields |
| FieldInfoSize | ExtraInfoSize | ImageAlignment | ImageSource |
| | | | |
| | | BackgroundColor | |
| | | | |
| ImageArea | Reserved | |
| | | ... | FieldInfoN (variable) |
| | | ... | |
| | | ExtraInfo (variable) | |
| | | ... | |

**MajorVersion (1 byte):** An 8-bit value that specifies the major version number. This field MUST be set to 0x03 or greater.

**MinorVersion (1 byte):** An 8-bit value that specifies the minor version number. This field SHOULD be set to 0x00.

**TemplateID (1 byte):** An 8-bit value that specifies the layout of the business card. The valid values for this field are specified in the following table.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>The image area will be left aligned, stretching the full height of the card vertically; text fields will appear to the right of the image area.</td>
</tr>
<tr>
<td>0x01</td>
<td>The image area will be right aligned, stretching the full height of the card vertically; text fields will appear to the left of the image area.</td>
</tr>
<tr>
<td>0x02</td>
<td>The image area will be aligned to the top, stretching the full width of the card horizontally; text fields will appear under the image area.</td>
</tr>
<tr>
<td>0x03</td>
<td>The image area will be aligned to the bottom, stretching the full width of the card horizontally; text fields will appear above the image area.</td>
</tr>
<tr>
<td>0x04</td>
<td>No image area is included in the card, only text fields are included. In this case, the <code>PidLidBusinessCardCardPicture</code> property (section 2.2.1.7.2) SHOULD NOT be set on the Contact object.</td>
</tr>
<tr>
<td>0x05</td>
<td>The image area will be used as a background for the card, stretching the full height and width of the card. Text fields are displayed on top of the image area.</td>
</tr>
</tbody>
</table>
**CountOfFields (1 byte):** An integer that specifies the number of FieldInfo structures, as specified in section 2.2.1.7.1.1, contained in the FieldInfoN field.

**FieldInfoSize (1 byte):** An integer that specifies the size, in bytes, of each FieldInfo structure that is contained in the FieldInfoN field. This field MUST be set to 16.

**ExtraInfoSize (1 byte):** An integer that specifies the size, in bytes, of the ExtraInfo field.

**ImageAlignment (1 byte):** An 8-bit value that specifies the alignment of the image within the image area. If the value of the TemplateID field is 0x04, indicating a text-only card, this field is ignored. The valid values for this field are specified in the following table.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>Image is stretched to fit.</td>
</tr>
<tr>
<td>0x01</td>
<td>Align top left.</td>
</tr>
<tr>
<td>0x02</td>
<td>Align top center.</td>
</tr>
<tr>
<td>0x03</td>
<td>Align top right.</td>
</tr>
<tr>
<td>0x04</td>
<td>Align middle left.</td>
</tr>
<tr>
<td>0x05</td>
<td>Align middle center.</td>
</tr>
<tr>
<td>0x06</td>
<td>Align middle right.</td>
</tr>
<tr>
<td>0x07</td>
<td>Align bottom left.</td>
</tr>
<tr>
<td>0x08</td>
<td>Align bottom center.</td>
</tr>
<tr>
<td>0x09</td>
<td>Align bottom right.</td>
</tr>
</tbody>
</table>

**ImageSource (1 byte):** An 8-bit value that specifies the source of the image that is used for the business card. The business card can display up to one image on the card. That image can be obtained from either the contact photo, as specified in section 2.2.1.8.1, or the card picture, as specified in section 2.2.1.7.2. If the value of the ImageSource field is 0x00, the contact photo SHOULD be used; otherwise, the card picture SHOULD be used.

If the value of this field is 0x00, the PidLidBusinessCardCardPicture property ([MS-OXPROPS] section 2.45) SHOULD NOT exist on the Contact object. This field MUST NOT be set to 0x00 when the value of the PidLidHasPicture property (section 2.2.1.8.1) is zero (FALSE). If the value of the TemplateID field is 0x04, indicating a text-only card, this field is ignored.

**BackgroundColor (4 bytes):** A 32-bit value that specifies the background color of the business card. This field has the format 0x00BBGGRR, where the high byte is 0x00 and the three lower bytes, represented by BBGGRR, specify blue, green, and red intensities, respectively.

**ImageArea (1 byte):** An integer that specifies the percent of space that the image will occupy on the business card. The value of this field SHOULD be between 4 and 50. The value of this field is ignored for text-only cards (TemplateID field is set to 0x04) and background image cards (TemplateID field is set to 0x05).

**Reserved (4 bytes):** This field MUST be set to zero when sent and MUST be ignored when received.

**FieldInfoN (variable):** An array of zero or more FieldInfo structures (section 2.2.1.7.1.1), each of which contains details about the text field of a business card. Each text field is associated with a
user-customized label that is listed in the ExtraInfo field. The number of FieldInfo structures contained in this field is specified by the CountOffFields field.

ExtraInfo (variable): An array of null-terminated Unicode strings, each of which specifies a business card label that has been provided by the user. Each business card label SHOULD be limited to 16 Unicode characters, including the terminating null character. Each business card label is associated with a text field of the business card and is referenced by the LabelOffset field of one of the FieldInfo structures contained in the FieldInfoN field. The total size, in bytes, of the ExtraInfo field is specified by the ExtraInfoSize field.

2.2.1.7.1.1 FieldInfo Structure

The FieldInfo structure contains details about a text field on the business card. The following diagram specifies the buffer format of the FieldInfo structure.

<table>
<thead>
<tr>
<th>TextPropertyID</th>
<th>TextFormat</th>
<th>LabelFormat</th>
</tr>
</thead>
<tbody>
<tr>
<td>FontSize</td>
<td>Reserved</td>
<td>LabelOffset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ValueFontColor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LabelFontColor</td>
</tr>
</tbody>
</table>

TextPropertyID (2 bytes): A 16-bit value that specifies the property to be used for the text field. The value of the TextPropertyID field MUST be either 0x0000, representing an empty text field, or the property ID of one of the properties specified in section 2.2.1.7.1.1.1.

TextFormat (1 byte): An 8-bit value that specifies the alignment and formatting for the text field. The following diagram shows the bits and their meanings. If none of the bits are set, the text field is displayed as a single line, left-aligned. The Right align and Center align bits MUST be mutually exclusive.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MUST be 0</td>
<td>Center align</td>
<td>Right align</td>
<td>Underline</td>
<td>Italic</td>
<td>Bold</td>
<td>Multiline</td>
</tr>
</tbody>
</table>

Figure 1: TextFormat byte table

LabelFormat (1 byte): An 8-bit value that specifies the alignment of a user-provided label that is associated with the text field. The following diagram shows the bits and their meanings. If none of the bits are set, the text field has no label. The Label to the right and Label to the left bits MUST be mutually exclusive.
Figure 2: LabelFormat byte table

**FontSize (1 byte):** An integer that specifies the font size, in points, of the text field. The font size MUST be between 3 and 32. The font size MUST zero if the text field is displayed as an empty line.

**Reserved (1 byte):** This field MUST be set to zero when sent and MUST be ignored when received.

**LabelOffset (2 bytes):** An integer that specifies the byte offset into the ExtraInfo field of the PidLidBusinessCardDisplayDefinition property (section 2.2.1.7.1). The offset points to the start of the label string in the ExtraInfo field. The offset MUST be less than the value of the ExtraInfoSize field, which specifies the total size of the ExtraInfo field. If the text field does not have a label, the value of the LabelOffset field MUST be 0xFFFE.

**ValueFontColor (4 bytes):** An integer that specifies the color of the text field. The value of the ValueFontColor field has the format 0x00BBGGRR, where the high byte is 0x00, the next highest byte identifies the blue intensity, the next highest byte identifies the green intensity, and the lowest byte identifies the red intensity.

**LabelFontColor (4 bytes):** An integer that specifies the color of the label. The value of the LabelFontColor field has the format 0x00BBGGRR, where the high byte is 0x00, the next highest byte identifies the blue intensity, the next highest byte identifies the green intensity, and the lowest byte identifies the red intensity.

### 2.2.1.7.1.1 Properties Used for a Business Card Text Field

The following properties can be used for the text field of a business card. The property to be used for the text field is specified in the TextPropertyID field of the FieldInfo structure section 2.2.1.7.1.

All properties in the list are PtypString properties ([MS-OXCDATA] section 2.11.1).

- **PidTagDisplayName** (section 2.2.1.8)
- **PidTagTitle** ([MS-OXOABK] section 2.2.4.4)
- **PidTagDepartmentName** ([MS-OXOABK] section 2.2.4.6)
- **PidTagCompanyName** ([MS-OXOABK] section 2.2.4.7)
- **PidTagBusinessTelephoneNumber** ([MS-OXOABK] section 2.2.4.21)
- **PidTagBusiness2TelephoneNumber** ([MS-OXOABK] section 2.2.4.23)
- **PidTagBusinessFaxNumber** (section 2.2.1.6)
- **PidTagCompanyMainTelephoneNumber** (section 2.2.1.4.14)
PidTagHomeTelephoneNumber ([MS-OXOABK] section 2.2.4.22)

PidTagHome2TelephoneNumber ([MS-OXOABK] section 2.2.4.25)

PidTagHomeFaxNumber (section 2.2.1.2.6)

PidTagMobileTelephoneNumber ([MS-OXOABK] section 2.2.4.27)

PidTagAssistantTelephoneNumber ([MS-OXOABK] section 2.2.4.31)

PidTagOtherTelephoneNumber (section 2.2.1.4.10)

PidTagTelecommunicationsDeviceForDeafTelephoneNumber (section 2.2.1.4.13)

PidTagPrimaryTelephoneNumber (section 2.2.1.4.5)

PidTagPrimaryFaxNumber ([MS-OXOABK] section 2.2.4.29)

PidTagPagerTelephoneNumber ([MS-OXOABK] section 2.2.4.28)

PidLidWorkAddress (section 2.2.1.3.8)

PidLidHomeAddress (section 2.2.1.3.8)

PidLidOtherAddress (section 2.2.1.3.8)

PidLidInstantMessagingAddress (section 2.2.1.10.6)

PidTagBusinessHomePage (section 2.2.1.10.14)

PidTagPersonalHomePage (section 2.2.1.10.13)

PidLidContactUserField1 (section 2.2.1.7.3)

PidLidContactUserField2 (section 2.2.1.7.3)

PidLidContactUserField3 (section 2.2.1.7.3)

PidLidContactUserField4 (section 2.2.1.7.3)

PidLidEmail1OriginalDisplayName (section 2.2.1.2.4)

PidLidEmail2OriginalDisplayName (section 2.2.1.2.4)

PidLidEmail3OriginalDisplayName (section 2.2.1.2.4)

2.2.1.7.2 PidLidBusinessCardCardPicture Property

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

The PidLidBusinessCardCardPicture property ([MS-OXPROPS] section 2.45) contains the image to be used on a business card, whose value MUST be either a Portable Network Graphics (PNG) or Joint Photographic Experts Group (JPEG) stream. This property SHOULD be used in conjunction with the PidLidBusinessCardDisplayDefinition property (section 2.2.1.7.1) as follows: the PidLidBusinessCardCardPicture property SHOULD NOT be present on a Contact object if the PidLidBusinessCardDisplayDefinition property is not present. This property also SHOULD NOT be present if the data in the PidLidBusinessCardDisplayDefinition property does not require a card image.

2.2.1.7.3 PidLidContactUserField1, PidLidContactUserField2, PidLidContactUserField3, PidLidContactUserField4 Properties
Type: **PtypString** ([MS-OXCDATA] section 2.11.1)

The **PidLidContactUserField1** ([MS-OXPROPS] section 2.78), **PidLidContactUserField2** ([MS-OXPROPS] section 2.79), **PidLidContactUserField3** ([MS-OXPROPS] section 2.80), and **PidLidContactUserField4** ([MS-OXPROPS] section 2.81) properties can be used to add custom text to a business card representation of a **Contact object**. These properties contain text that is unrelated to any other contact-specific property. These properties are optional.

### 2.2.1.8 Contact Photo Properties

The **PidLidHasPicture** property (section 2.2.1.8.1) and the contact photo attachment specified in section 2.2.1.8.3 are optional and represent an optional photo associated with the **contact**.<4>

#### 2.2.1.8.1 PidLidHasPicture Property

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

The **PidLidHasPicture** property ([MS-OXPROPS] section 2.143) indicates whether a contact photo attachment, specified in section 2.2.1.8.3, exists. If this property is set to nonzero (TRUE), then the contact photo attachment exists and the client uses it as the contact photo. If this property does not exist, or exists and is set to zero (FALSE), then there is no contact photo attachment.

#### 2.2.1.8.2 PidTagAttachmentContactPhoto Property

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

The **PidTagAttachmentContactPhoto** property ([MS-OXPROPS] section 2.597) indicates whether an **Attachment object** is a contact photo attachment. This property is set to nonzero (TRUE) to identify the Attachment object as a contact photo attachment. There SHOULD be only one attachment with the **PidTagAttachmentContactPhoto** property set to TRUE on a **Contact object**. If more than one attachment has this property set to TRUE, the client can use any one of the marked attachments as the contact photo.

#### 2.2.1.8.3 Contact Photo Attachment

The contact photo attachment is a picture attached to the **Contact object**. The **Attachment object** MUST have the **PidTagAttachmentContactPhoto** property (section 2.2.1.8.2) set to nonzero (TRUE). For more details about Attachment objects, see [MS-OXCMSG] section 2.2.2. Additionally, the following properties MUST be set on the Attachment object, as specified in [MS-OXCMSG]:

- The value of the **PidTagAttachDataBinary** property ([MS-OXCMSG] section 2.2.2.7), which is the contents of the attachment, SHOULD be in JPEG format. Support for other formats is as determined by the implementer.
- The **PidTagAttachExtension** property ([MS-OXPROPS] section 2.592) SHOULD be set to ".jpg".
- The **PidTagDisplayName** (section 2.2.1.1.8) and **PidTagAttachFilename** ([MS-OXPROPS] section 2.593) properties SHOULD be set to "ContactPicture.jpg".

### 2.2.1.9 Contact Aggregation Properties

The contact aggregation properties are used for importing external contacts and linking duplicate contacts.<5> The linking of duplicate contacts allows the client to show one representation to the user.

#### 2.2.1.9.1 PidLidContactLinkedGlobalAddressListEntryId Property

Type: **PtypBinary** ([MS-OXCDATA] section 2.11.1)
The `PidLidContactLinkedGlobalAddressListEntryId` property ([MS-OXPROPS] section 2.69) specifies the `EntryID` of the GAL contact to which the duplicate contact is linked. <6>

### 2.2.1.9.2 PidLidContactLinkGlobalAddressListLinkId Property

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

The `PidLidContactLinkGlobalAddressListLinkId` property ([MS-OXPROPS] section 2.71) specifies the `GUID` of the GAL contact to which the duplicate contact is linked. <7>

### 2.2.1.9.3 PidLidContactLinkGlobalAddressListLinkState Property

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

The `PidLidContactLinkGlobalAddressListLinkState` property ([MS-OXPROPS] section 2.72) specifies the state of the linking between the GAL contact and the duplicate contact. <8>

The valid values for this property are specified in the following table.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>The duplicate contact is not linked to the GAL contact or the GAL contact is not downloaded.</td>
</tr>
<tr>
<td>1</td>
<td>The duplicate contact is linked to the GAL contact.</td>
</tr>
<tr>
<td>2</td>
<td>The duplicate contact cannot be automatically linked to the GAL contact.</td>
</tr>
</tbody>
</table>

### 2.2.1.9.4 PidLidContactLinkLinkRejectHistory Property

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

The `PidLidContactLinkLinkRejectHistory` property ([MS-OXPROPS] section 2.73) contains a list of any contacts that were previously rejected for linking with the duplicate contact. <9>

### 2.2.1.9.5 PidLidContactLinkSMTPAddressCache Property

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

The `PidLidContactLinkSMTPAddressCache` property ([MS-OXPROPS] section 2.76) contains a list of the SMTP addresses that are used by the GAL contact that are linked to the duplicate contact. <10>

### 2.2.1.9.6 PidLidIsContactLinked Property

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

The `PidLidIsContactLinked` property ([MS-OXPROPS] section 2.154) specifies whether the contact is linked to other contacts. The value `TRUE` indicates that the contact is linked. <11>

### 2.2.1.9.7 PidTagOscSyncEnabled Property

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

The `PidTagOscSyncEnabled` property ([MS-OXPROPS] section 2.847) specifies whether contact synchronization with an external source (such as a social networking site) is handled by the server. This property is set on a message that is stored in the contacts folder. <12>
2.2.1.10 Other Contact Properties

2.2.1.10.1 PidLidReferenceEntryId Property

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

The PidLidReferenceEntryId property ([MS-OXPROPS] section 2.217) contains a value that is equal to the value of the EntryID of the Contact object unless the Contact object is a copy of an earlier original.

2.2.1.10.2 PidTagHobbies Property

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

The PidTagHobbies property ([MS-OXPROPS] section 2.722) specifies the hobbies of the contact. This property is optional.

2.2.1.10.3 PidTagSpouseName Property

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

The PidTagSpouseName property ([MS-OXPROPS] section 2.1024) specifies the name of the contact's spouse/partner. This property is optional.

2.2.1.10.4 PidTagLanguage Property

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

The PidTagLanguage property ([MS-OXPROPS] section 2.763) specifies the language that the contact uses. This property is optional.

2.2.1.10.5 PidTagLocation Property

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

The PidTagLocation property ([MS-OXPROPS] section 2.776) specifies the location of the contact. For example, this could be the building and office number of the contact. This property is optional.

2.2.1.10.6 PidLidInstantMessagingAddress Property

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

The PidLidInstantMessagingAddress property ([MS-OXPROPS] section 2.150) specifies the contact's instant messaging address. This property is optional.

2.2.1.10.7 PidTagOrganizationalIdNumber Property

Type: PtypString

The PidTagOrganizationalIdNumber property ([MS-OXPROPS] section 2.822) specifies an organizational ID number for the contact, such as an employee ID number. This property is optional.

2.2.1.10.8 PidTagCustomerId Property

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

The PidTagCustomerId property ([MS-OXPROPS] section 2.657) specifies the contact's customer ID number. This property is optional.
2.2.1.10.9  PidTagGovernmentIdNumber Property

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

The PidTagGovernmentIdNumber property ([MS-OXPROPS] section 2.715) specifies the contact's government ID number. This property is optional.

2.2.1.10.10  PidLidFreeBusyLocation Property

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

The PidLidFreeBusyLocation property ([MS-OXPROPS] section 2.141) specifies a Uniform Resource Locator (URL) path from which a client can retrieve free/busy status information for the contact as an iCalendar file, as specified in [MS-OXICAL]. This property is optional.

2.2.1.10.11  PidTagAccount Property

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

The PidTagAccount property ([MS-OXPROPS] section 2.508) specifies the account name of the contact. This property is not used by either the client or the server. This property is optional.

2.2.1.10.12  PidLidHtml Property

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

The PidLidHtml property ([MS-OXPROPS] section 2.146) specifies the contact's business web page URL. The value of this property, if present, SHOULD be the same as the value of the PidTagBusinessHomePage property (section 2.2.1.10.14). This property is optional.

2.2.1.10.13  PidTagPersonalHomePage Property

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

The PidTagPersonalHomePage property ([MS-OXPROPS] section 2.862) specifies the contact's personal web page URL. This property is optional.

2.2.1.10.14  PidTagBusinessHomePage Property

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

The PidTagBusinessHomePage property ([MS-OXPROPS] section 2.625) specifies the contact's business Web page URL. The value of this property, if present, SHOULD be the same as the value of the PidLidHtml property (section 2.2.1.10.12). This property is optional.

2.2.1.10.15  PidTagFtpSite Property

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

The PidTagFtpSite property ([MS-OXPROPS] section 2.710) specifies the contact's File Transfer Protocol (FTP) URL. FTP is a protocol used to transfer data, as specified in [RFC959]. This property is optional.

2.2.1.10.16  PidTagComputerNetworkName Property

Type: PtypString ([MS-OXCDATA] section 2.11.1)
The **PidTagComputerNetworkName** property ([MS-OXPROPS] section 2.640) specifies the name of the network to which the *contact’s* computer is connected. This property is not used by either the client or the server. This property is optional.

### 2.2.1.10.17 PidTagChildrensNames Property

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

The **PidTagChildrensNames** property ([MS-OXPROPS] section 2.633) specifies the names of the *contact’s* children. This property is optional.

### 2.2.1.10.18 PidLidContactCharacterSet Property

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

The **PidLidContactCharacterSet** property ([MS-OXPROPS] section 2.67) specifies the character set used for this *Contact object*. Clients use this property to aid in generating a character-set-dependent list of choices for the properties **PidLidFileUnder** (section 2.2.1.1.11), **PidLidFileUnderList** (section 2.2.1.1.13), and **PidLidFileUnderId** (section 2.2.1.1.12). If the value of the **PidLidContactCharacterSet** property is 0x00000000 or 0x00000001, clients SHOULD treat this property as not being set. For U.S. English, the client sets the value of the **PidLidContactCharacterSet** property to 0x00000100, denoting a Western character set. This property is optional.

### 2.2.1.10.19 PidLidAutoLog Property

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

The **PidLidAutoLog** property ([MS-OXPROPS] section 2.39) specifies to the client whether to create a *Journal object* for each *action* associated with this *Contact object*. This property is optional.

### 2.2.1.10.20 PidTagGender Property

Type: **PtypInteger16** ([MS-OXCDATA] section 2.11.1)

The **PidTagGender** property ([MS-OXPROPS] section 2.712) specifies the gender of the *contact*. If present, the property MUST be one of the following values. This property is optional.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0000</td>
<td>The contact’s gender is unspecified.</td>
</tr>
<tr>
<td>0x0001</td>
<td>The contact is female.</td>
</tr>
<tr>
<td>0x0002</td>
<td>The contact is male.</td>
</tr>
</tbody>
</table>

### 2.2.1.10.21 PidTagReferredBySimpleName Property

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

The **PidTagReferredBySimpleName** property ([MS-OXPROPS] section 2.911) specifies the name of the person who referred this *contact* to the user. This property is optional.

### 2.2.1.10.22 PidLidContactItemData Property

Type: **PtypMultipleInteger32** ([MS-OXCDATA] section 2.11.1)
The `PidLidContactItemData` property ([MS-OXPROPS] section 2.68) can be used to help display the contact information. If present, the property MUST have six entries, each corresponding to a visible field in the client's user interface. This property is optional.

The meaning of each entry in the `PidLidContactItemData` property is defined in the following table.

<table>
<thead>
<tr>
<th>The value MUST be one of the following</th>
<th>Meaning</th>
<th>One-based index into the multivalue property</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00000001</td>
<td>The client SHOULD display the contact's Home Address.</td>
<td>1</td>
</tr>
<tr>
<td>0x00000002 or 0x00000000</td>
<td>The client SHOULD display the contact's Work Address.</td>
<td>1</td>
</tr>
<tr>
<td>0x00000003</td>
<td>The client SHOULD display the contact's Other Address.</td>
<td>1</td>
</tr>
<tr>
<td>0x00008080</td>
<td>The client SHOULD display Email1.</td>
<td>2</td>
</tr>
<tr>
<td>0x00008090</td>
<td>The client SHOULD display Email2.</td>
<td>2</td>
</tr>
<tr>
<td>0x000080A0</td>
<td>The client SHOULD display Email3.</td>
<td>2</td>
</tr>
<tr>
<td>Property ID of any of the Telephone properties specified in section 2.2.1.4 or of any of the fax numbers specified in section 2.2.1.2.6.</td>
<td>The client SHOULD display the corresponding property.</td>
<td>3, 4, 5, 6</td>
</tr>
</tbody>
</table>

### 2.2.1.10.23 PidTagUserX509Certificate Property

Type: `PtypMultipleBinary` ([MS-OXCDATA] section 2.11.1)

The `PidTagUserX509Certificate` property ([MS-OXPROPS] section 2.1054) specifies a list of certificates for the contact. The format and semantics of this property are specified in [MS-OXOABK] section 2.2.4.36. This property is optional.

### 2.2.1.10.24 PidLidBilling Property

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

The `PidLidBilling` property ([MS-OXPROPS] section 2.42) specifies billing information for the contact. This property is optional.

### 2.2.1.11 Additional Property Constraints

Sections 2.2.1.11.1 and 2.2.1.11.2 specify constraints that this protocol adds to Message object properties as they are defined in [MS-OXCMSG].

### 2.2.1.11.1 PidTagNormalizedSubject Property

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

The `PidTagNormalizedSubject` property ([MS-OXCMSG] section 2.2.1.10) specifies a combination of the full name and company name of the contact. This property is computed by the client according to
an implementation-dependent algorithm that uses values of the PidTagGivenName (section 2.2.1.1.6), PidTagMiddleName (section 2.2.1.1.5), PidTagSurname (section 2.2.1.1.4), PidTagGeneration (section 2.2.1.1.2), and PidTagCompanyName (section 2.2.1.6.2) properties. The client uses the value of the PidTagNormalizedSubject property as the caption of the window displaying information about this contact. The value of the very similar PidTagDisplayName property (section 2.2.1.1.8) might contain characters that cannot be displayed as a window caption.

2.2.1.11.2 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. A Contact object MUST have this property set to either "IPM.Contact" or a string prefixed with "IPM.Contact.".

2.2.2 Personal Distribution List Properties

Properties that are used in groups to define components of a Personal Distribution List object are specified in sections 2.2.2.1 and 2.2.2.2. Standalone properties of a Personal Distribution List object are specified in sections 2.2.2.3 and 2.2.2.4. Each property is set only when user data needs to be stored.

2.2.2.1 Personal Distribution List Name Properties

The properties specified in section 2.2.2.1.1 to section 2.2.2.1.4 are used to display the name of the Personal Distribution List object.

2.2.2.1.1 PidTagDisplayName Property

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

The PidTagDisplayName property ([MS-OXPROPS] section 2.676) specifies the user-visible name of the personal distribution list.

2.2.2.1.2 PidLidDistributionListName Property

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

The PidLidDistributionListName property ([MS-OXPROPS] section 2.97) specifies the name of the personal distribution list. The value of this property SHOULD be the same as the value of the PidTagDisplayName property (section 2.2.2.1.1).

2.2.2.1.3 PidLidFileUnder Property

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

The value of the PidLidFileUnder property ([MS-OXPROPS] section 2.132) MUST be the same as the value of the PidTagDisplayName property (section 2.2.2.1.1).

2.2.2.1.4 PidLidFileUnderId Property

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

The PidLidFileUnderId property ([MS-OXPROPS] section 2.133) is not used for Personal Distribution List objects. If present, this property SHOULD be set to 0xFFFFFFFF.
2.2.2.2 Personal Distribution List Member Properties

2.2.2.2.1 PidLidDistributionListMembers Property

Type: PtypMultipleBinary ([MS-OXCDATA] section 2.11.1)

The PidLidDistributionListMembers property ([MS-OXPROPS] section 2.96) specifies the list of EntryIDs of the objects corresponding to the members of the personal distribution list. Members of the personal distribution list can be other personal distribution lists, electronic addresses contained in a contact, Global Address List (GAL) members, or one-off email addresses. The format of each EntryID MUST be either a One-Off EntryID structure ([MS-OXCDATA] section 2.2.5.1) or a WrappedEntryId structure (section 2.2.2.2.4.1.1).

When setting this property, the client or the server MUST ensure its total size is less than 15,000 bytes.

2.2.2.2.2 PidLidDistributionListOneOffMembers Property

Type: PtypMultipleBinary ([MS-OXCDATA] section 2.11.1)

The PidLidDistributionListOneOffMembers property ([MS-OXPROPS] section 2.98) specifies the list of one-off EntryIDs corresponding to the members of the personal distribution list. These one-off EntryIDs encapsulate display names and email addresses of the personal distribution list members.

If the client or the server sets this property, it MUST be synchronized with the PidLidDistributionListMembers property (section 2.2.2.2.1): for each entry in the PidLidDistributionListOneOffMembers property, there MUST be an entry in the same position in the PidLidDistributionListMembers property.

When setting this property, the client or the server MUST ensure that its total size is less than 15,000 bytes.

2.2.2.2.3 PidLidDistributionListChecksum Property

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

The PidLidDistributionListChecksum property ([MS-OXPROPS] section 2.95) specifies the 32-bit cyclic redundancy check (CRC) polynomial checksum, as specified in [ISO/IEC8802-3], calculated on the value of the PidLidDistributionListMembers property (section 2.2.2.2.1), as specified in section 3.1.5.11.

The value of this property can be used to detect when the PidLidDistributionListMembers property was updated without updating the other Personal Distribution List Member properties (by computing the CRC on the existing value of the PidLidDistributionListMembers property and comparing it with the value of the PidLidDistributionListChecksum property). The server does not set or update this property.

2.2.2.2.4 PidLidDistributionListStream Property

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

The PidLidDistributionListStream property ([MS-OXPROPS] section 2.99) specifies the list of EntryIDs and one-off EntryIDs corresponding to the members of the personal distribution list. Members of the personal distribution list can be other personal distribution lists, electronic addresses contained in a contact, GAL members, or one-off email addresses. The format of each EntryID MUST be as specified in section 2.2.2.2.1, and the format for each one-off EntryID MUST be as specified in section 2.2.2.2.
The **PidLidDistributionListStream** property is intended to allow a distribution list to grow past the size limits of the **PidLidDistributionListMembers** property (section 2.2.2.2.1) and the **PidLidDistributionListOneOffMembers** property (section 2.2.2.2.2). This property **SHOULD** be used if the size of either **PidLidDistributionListMembers** or **PidLidDistributionListOneOffMembers** would be greater than 15,000 bytes. If this property is set, the **PidLidDistributionListMembers**, **PidLidDistributionListOneOffMembers**, and **PidLidDistributionListChecksum** (section 2.2.2.2.3) properties **SHOULD** be ignored.

The following diagram specifies the buffer format of the **PidLidDistributionListStream** property.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 | 0 | 1 |
| StreamVersion | Reserved |
| BuildVersion |
| DistListStreamFlags |
| CountOfEntries |
| TotalEntryIDSize |
| TotalOneOffSize |
| TotalExtraSize |
| DistListMemberInfoArray (variable) |
| ... |
| Terminator1 |
| Terminator2 |

**StreamVersion (2 bytes):** A 16-bit value that specifies the version of the stream. This field **MUST** be set to 0x0001.

**Reserved (2 bytes):** This field **MUST** be set to zero when sent and **MUST** be ignored when received.

**BuildVersion (4 bytes):** A 32-bit value that specifies the build version of the stream. The value of this field is the value of the **MajorVersion** field of the **PidLidBusinessCardDisplayDefinition** property (section 2.2.1.7.1) multiplied by 10,000. The value of the **MinorVersion** field of the **PidLidBusinessCardDisplayDefinition** property is then added to the result.

**DistListStreamFlags (4 bytes):** A 32-bit value that contains bits that indicate overall behavior of the personal distribution list. The following table specifies the valid **flags**.
If the Always Use Stream bit is set, a client MUST save the personal distribution list members in the stream, even if the members would normally fit in the \texttt{PidLidDistributionListMembers} and \texttt{PidLidDistributionListOneOffMembers} properties.

When modifying the personal distribution list, a client MUST preserve any data in the Reserved portion of this field. When creating a new personal distribution list, this value MUST set the reserved bits to 0.

\textbf{CountOfEntries (4 bytes)}: An integer that specifies the number of \texttt{DistListMemberInfo} structures, as specified in section 2.2.2.4.1, in the \texttt{DistListMemberInfoArray} field.

\textbf{TotalEntryIDSize (4 bytes)}: An integer that specifies the sum of the sizes (in bytes) of the EntryIDs stored in each \texttt{DistListMemberInfo} structure.

\textbf{TotalOneOffSize (4 bytes)}: An integer that specifies the sum of the sizes (in bytes) of the one-off EntryIDs stored in each \texttt{DistListMemberInfo} structure.

\textbf{TotalExtraSize (4 bytes)}: Not used. This field MUST be set to 0x00000000.

\textbf{DistListMemberInfoArray (variable)}: An array of \texttt{DistListMemberInfo} structures (section 2.2.2.4.1), each of which contains information about one member of the personal distribution list.

\textbf{Terminator1 (4 bytes)}: Not used. This field MUST be set to 0x00000000.

\textbf{Terminator2 (4 bytes)}: Not used. This field MUST be set to 0x00000000.

\textbf{2.2.2.4.1 DistListMemberInfo Structure}

The \texttt{DistListMemberInfo} structure contains information about one member of the personal distribution list. The following table specifies the format of the \texttt{DistListMemberInfo} structure stored in the \texttt{PidLidDistributionListStream} property (section 2.2.2.4).

| 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 |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| EntryIdSize | EntryIdData (variable) | ... | one-offEntryIdSize |
**EntryIdSize (4 bytes):** An integer that specifies the size, in bytes, of the **EntryIdData** field.

**EntryIdData (variable):** An array of bytes that specify the **EntryID** of this member of the personal distribution list. A member can be another personal distribution list, an electronic address contained in a contact, a GAL member, a distribution list, or a one-off email address. The format of the EntryID MUST be either a **One-OffEntryID** structure ([MS-OXCDATA] section 2.2.5.1) or a **WrappedEntryId** structure (section 2.2.2.4.1.1).

**one-offEntryIdSize (4 bytes):** An integer that specifies the size, in bytes, of the one-off **EntryIdData** field. If there is no corresponding one-off EntryID for this member, this value MUST be set to 0x00000000.

**one-offEntryIdData (variable):** An array of bytes that specify the one-off EntryID of this member of the personal distribution list. This one-off EntryID encapsulates the display name and email address of the personal distribution list member.

**ExtraMemberInfoSize (4 bytes):** This field MUST be set to 0.

**ExtraMemberInfoData (variable):** This field is not used by either the client or the server and MUST NOT be present.

### 2.2.2.4.1.1 WrappedEntryId Structure

The **WrappedEntryId** structure specifies the **EntryID** of a member of a personal distribution list. The following diagram specifies the format of the **WrappedEntryId** structure.
Flags (4 bytes): Not used. This field MUST be set to 0x00000000.

ProviderUID (16 bytes): This field MUST contain the value "%x0.91.AD.D3.51.9D.CF.11.A4.A9.00.AA.00.47.FA.A4".

Type (1 byte): An 8-bit value that specifies how the EmbeddedEntryID field is interpreted and MUST be a combination of bits from the following table.

<table>
<thead>
<tr>
<th>Bit mask</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0F</td>
<td>The lower 4 bits of the Type field are interpreted as an unsigned integer value that specifies what type of EntryID is embedded in this Wrapped EntryID structure. These bits MUST be set to one of the following values:</td>
</tr>
<tr>
<td></td>
<td>• A value of 0 designates a one-off EntryID; the EmbeddedEntryID field MUST be a One-Off EntryID structure ([MS-OXCDATA] section 2.2.5.1).</td>
</tr>
<tr>
<td></td>
<td>• A value of 3 designates the EntryID of a Contact object; the EmbeddedEntryID field MUST be a Message EntryID structure ([MS-OXCDATA] section 2.2.4.2).</td>
</tr>
<tr>
<td></td>
<td>• A value of 4 designates the EntryID of a Personal Distribution List object; the EmbeddedEntryID field MUST be a Message EntryID structure ([MS-OXCDATA] section 2.2.4.2).</td>
</tr>
<tr>
<td></td>
<td>• A value of 5 designates the EntryID of a mail user in the GAL; the EmbeddedEntryID field MUST be an Address Book EntryID structure ([MS-OXCDATA] section 2.2.5.2).</td>
</tr>
<tr>
<td></td>
<td>• A value of 6 designates the EntryID of a distribution list in the GAL; the EmbeddedEntryID field MUST be an Address Book EntryID structure ([MS-OXCDATA] section 2.2.5.2).</td>
</tr>
<tr>
<td>0x70</td>
<td>The next 3 bits of the Type field are interpreted as an unsigned integer value. If the EmbeddedEntryID field contains a one-off EntryID, this value MUST be 0. If the EmbeddedEntryID field does not contain the EntryID of a Contact object, this value MUST be 3.</td>
</tr>
<tr>
<td></td>
<td>If the EmbeddedEntryID field contains a the EntryID of a Contact object, this unsigned integer MUST have one of the following values:</td>
</tr>
<tr>
<td></td>
<td>• 0 (denoting a Business Fax electronic address)</td>
</tr>
<tr>
<td></td>
<td>• 1 (denoting a Home Fax electronic address)</td>
</tr>
<tr>
<td></td>
<td>• 2 (denoting a Primary Fax electronic address)</td>
</tr>
<tr>
<td></td>
<td>• 4 (denoting an Email1 address)</td>
</tr>
<tr>
<td></td>
<td>• 5 (denoting an Email2 address)</td>
</tr>
<tr>
<td></td>
<td>• 6 (denoting an Email3 address)</td>
</tr>
<tr>
<td></td>
<td>Note that this value MUST NOT be set to 7.</td>
</tr>
<tr>
<td>0x80</td>
<td>If the EmbeddedEntryID field contains a one-off EntryID, this bit MUST NOT be set. Otherwise, this bit MUST be set.</td>
</tr>
</tbody>
</table>

EmbeddedEntryID (variable): An array of bytes that specifies an EntryID that MUST be interpreted according to the value of the Type field, more specifically according to the value contained in the lower 4 bits of the Type field, as specified in the previous table.

2.2.2.3 Other Personal Distribution List Properties

2.2.2.3.1 PidLidAddressBookProviderArrayType Property
Type: PtypInteger32 ([MS-OXCDATA] section 2.11.1)

The PidLidAddressBookProviderArrayType property ([MS-OXPROPS] section 2.1) specifies the state of the contact’s electronic addresses. The client SHOULD set this property to 0x00000000. The server does not set this property.

2.2.2.4 Additional Property Constraints

This protocol puts additional constraints on the PidTagNormalizedSubject (section 2.2.2.4.1) and PidTagMessageClass (section 2.2.2.4.2) properties beyond what is specified in [MS-OXCMSG].

2.2.2.4.1 PidTagNormalizedSubject Property

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

The PidTagNormalizedSubject property ([MS-OXCMSG] section 2.2.1.10) specifies the user-visible name of the personal distribution list. The value of this property MUST be the same as the value of the PidTagDisplayName property (section 2.2.2.1.1).

2.2.2.4.2 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. A Personal Distribution List object MUST have this property set to either "IPM.DistList" or a string prefixed with "IPM.DistList".

2.2.3 Contacts-Related Folders

A contacts-related folder is a Folder object that has the PidTagContainerClass property ([MS-OXOCAL] section 2.2.11.1) set to a string that begins with "IPF.Contact". In all other respects, a contacts-related folder conforms to the folder syntax and functionality specified by [MS-OXCFOLD]. The following contacts-related folders are defined.<18>

<table>
<thead>
<tr>
<th>Folder name</th>
<th>Container class</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts</td>
<td>&quot;IPF.Contact&quot;</td>
<td>Contact objects and Personal Distribution List objects; subfolders that contain imported contacts.</td>
</tr>
<tr>
<td>Quick Contacts</td>
<td>&quot;IPF.Contact.Moc.QuickContacts&quot;</td>
<td>Contains Contact objects for the user's favorite contacts and instant messaging contacts.</td>
</tr>
<tr>
<td>IM Contact List</td>
<td>&quot;IPF.Contact.Moc.ImContactList&quot;</td>
<td>Contains Personal Distribution List objects for the user's favorite contacts.</td>
</tr>
<tr>
<td>&lt;depends on the source from which the contact was obtained&gt;</td>
<td>&quot;IPF.Contact&quot;</td>
<td>Contains Contact objects representing external contacts that have been imported from a source such as a social networking site. The name of the folder reflects the source of the contact. Each folder that contains external contacts is a subfolder of the Contacts folder.</td>
</tr>
</tbody>
</table>

A Contact object SHOULD be created in the Contacts folder, a subfolder of the Contacts folder, or the Quick Contacts folder. A Personal Distribution List object SHOULD be created in the Contacts folder or the IM Contact List folder.
3 Protocol Details

3.1 Client Details
The client creates and manipulates a Contact object and a Personal Distribution List object 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 Contact object and the Personal Distribution List object are extensions of the Message object.
- A Contact object and a Personal Distribution List object are created in the contacts-related folders, as specified in section 2.2.3.

3.1.2 Timers
None.

3.1.3 Initialization
None.

3.1.4 Higher-Layer Triggered Events

3.1.4.1 Contact Object Events

3.1.4.1.1 Creating a Contact
To create a Contact object, 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 2.2.1 of this specification and [MS-OXCPRPT]; and saves the resulting Message object as described in [MS-OXCMSG] section 3.1.4.3.

3.1.4.1.2 Deleting a Contact
Contact objects have no special semantics in relation to deletion beyond what is specified in [MS-OXCOLD].

3.1.4.1.3 Modifying a Contact
When modifying a Contact object, 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 [MS-OXCPRPT] and in section 2 and section 3.1.5.1 through section 3.1.5.7 of this specification, and saves the Message object as described in [MS-OXCMSG] section 3.1.4.3.
3.1.4.2 Personal Distribution List Events

Personal distribution list events pertain to Personal Distribution List objects, as specified in section 3.1.4.2.1 to section 3.1.5.11.

3.1.4.2.1 Creating a Personal Distribution List

To create a Personal Distribution List object, the client creates a Message object as specified in [MS-OXCMSG] section 3.1.4.2, sets properties in accordance with the requirements in [MS-OXCPRPT] and in section 2.2.2 of this specification, and saves the resulting Message object as described in [MS-OXCMSG] section 3.1.4.3.

3.1.4.2.2 Deleting a Personal Distribution List

Personal Distribution List objects have no special semantics in relation to deletion beyond what is specified in [MS-OXCOLD].

3.1.4.2.3 Modifying a Personal Distribution List

When modifying a Personal Distribution List object, 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 [MS-OXCPRPT] and in section 2 and section 3.1.5.8 through section 3.1.5.11 of this specification, and saves the Message object as described in [MS-OXCMSG] section 3.1.4.3.

It is possible that personal distribution lists contain circular references to one another. Such circular references SHOULD be avoided but are permitted under this protocol, and the client MUST be able to handle circular references.

3.1.5 Message Processing Events and Sequencing Rules

3.1.5.1 Modifying a Contact Name Property

Contact Name properties MUST be modified at the same time to preserve their relationship. The following table specifies the properties that SHOULD be updated when another property is changed (according to the definition of each property in section 2.2.1 of this specification). More than one condition can be met at the same time. Not all properties will need to be updated every time. Clients use the grouping of specifications in section 2.2.1 and section 2.2.1.2.8 to determine whether an update is required.

<table>
<thead>
<tr>
<th>Changed property</th>
<th>Conditions</th>
<th>Properties that SHOULD be updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidTagGeneration (section 2.2.1.1.2)</td>
<td>None.</td>
<td>PidTagDisplayName (section 2.2.1.1.8), PidTagNormalizedSubject (section 2.2.1.1.1)</td>
</tr>
<tr>
<td>PidTagGeneration or PidTagSurname (section 2.2.1.1.4) or PidTagMiddleName (section 2.2.1.1.5) or PidTagGivenName (section 2.2.1.1.6) or PidTagDisplayName or PidTagCompanyName (section 2.2.1.6.2)</td>
<td>Value of the PidLidFileUnderId property (section 2.2.1.1.12) is not 0x00000000 or 0xFFFFFFFF.</td>
<td>PidLidFileUnder (section 2.2.1.1.11)</td>
</tr>
<tr>
<td>PidTagDisplayNamePrefix (section 2.2.1.1.3)</td>
<td>None.</td>
<td>PidTagDisplayName</td>
</tr>
<tr>
<td>PidTagSurname (section 2.2.1.1.4) or PidTagMiddleName</td>
<td>None.</td>
<td>PidTagDisplayName, PidTagNormalizedSubject,</td>
</tr>
</tbody>
</table>
The client SHOULD also update the **PidLidFax1EmailAddress** (section 2.2.1.2.8), **PidLidFax2EmailAddress** (section 2.2.1.2.8), or **PidLidFax3EmailAddress** (section 2.2.1.2.8) properties as needed to reflect any updates to the Contact Name properties if the contact has a Primary Fax, Business Fax, or Home Fax address, respectively.

### 3.1.5.2 Modifying a Physical Address Property

Physical Address properties MUST be modified at the same time to preserve their relationship.

The following table specifies the properties that SHOULD be updated if another property is changed (according to the definition of each property in section 2.2.1 of this specification). Not all properties will need to be updated every time. Clients use the specifications in section 2.2.1.3 to determine whether an update is required. More than one condition can be met at the same time.

<table>
<thead>
<tr>
<th>Changed property</th>
<th>Conditions</th>
<th>Properties that SHOULD be updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidTagGivenName</td>
<td>None.</td>
<td>PidTagInitials (section 2.2.1.1.7)</td>
</tr>
<tr>
<td>PidTagDisplayName</td>
<td>None.</td>
<td>PidTagDisplayNamePrefix, PidTagGivenName, PidTagMiddleName, PidTagSurname, PidTagNormalizedSubject, PidTagGeneration</td>
</tr>
<tr>
<td>PidTagLidPostalAddressId</td>
<td>None.</td>
<td>PidTagPostalAddress (section 2.2.1.3.8), PidTagStreetAddress (section 2.2.1.3.1), PidTagLocality (section 2.2.1.3.2), PidTagStateOrProvince (section 2.2.1.3.3), PidTagPostalCode (section 2.2.1.3.4), PidTagCountry (section 2.2.1.3.5), PidLidAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td>PidLidWorkAddress</td>
<td>None.</td>
<td>PidLidWorkAddressStreet (section 2.2.1.3.1), PidLidWorkAddressCity (section 2.2.1.3.2), PidLidWorkAddressState (section 2.2.1.3.3), PidLidWorkAddressPostalCode (section 2.2.1.3.4), PidLidWorkAddressCountry (section 2.2.1.3.5), PidLidWorkAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td>PidLidHomeAddress</td>
<td>None.</td>
<td>PidTagHomeAddressStreet (section 2.2.1.3.1), PidTagHomeAddressCity (section 2.2.1.3.2), PidTagHomeAddressStateOrProvince (section 2.2.1.3.3), PidTagHomeAddressPostalCode (section 2.2.1.3.4), PidTagHomeAddressCountry (section 2.2.1.3.5), PidLidHomeAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td>PidLidOtherAddress</td>
<td>None.</td>
<td>PidTagOtherAddressStreet (section 2.2.1.3.1), PidTagOtherAddressCity (section 2.2.1.3.2), PidTagOtherAddressStateOrProvince (section 2.2.1.3.3), PidTagOtherAddressPostalCode (section 2.2.1.3.4), PidTagOtherAddressCountry (section 2.2.1.3.5), PidLidOtherAddressCountryCode (section 2.2.1.3.6)</td>
</tr>
<tr>
<td>PidTagHomeAddressStreet</td>
<td>None.</td>
<td>PidLidHomeAddress</td>
</tr>
<tr>
<td>PidLidWorkAddressStreet</td>
<td>None.</td>
<td>PidLidWorkAddress</td>
</tr>
</tbody>
</table>
The **PidTagPostalAddress**, **PidTagStreetAddress**, **PidTagLocality**, **PidTagStateOrProvince**, **PidTagPostalCode**, **PidTagCountry**, and **PidLidAddressCountryCode** properties SHOULD NOT be set without also setting one of the other addresses (either Home Address, Work Address, or Other Address) and **PidLidPostalAddressId**.

If the Home Address, Work Address, or Other Address is updated, and the **PidLidPostalAddressId** property is set and the physical address that it maps to is changed, then the Mailing Address MUST be updated. For more details, see section 2.2.1.3.9.

### 3.1.5.3 Modifying an E-Mail Address Property

Electronic Address properties MUST be modified at the same time to preserve their relationship. The following table specifies the properties that SHOULD be updated when another property is changed (according to the definition of each property in section 2.2.1 of this specification). More than one **condition** can be met at the same time. The table includes property names only for the properties in the Email1 group (see section 2.2.1.2), but the same logic also applies to the properties in the Email2 and Email3 groups. Not all properties need to be updated every time. Clients use the specifications defined in section 2.2.1.2 to determine whether an update is required.

<table>
<thead>
<tr>
<th>Changed property</th>
<th>Conditions</th>
<th>Properties that SHOULD be updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidLidEmail1OriginalEntryId (section 2.2.1.2.5)</td>
<td>PidLidEmail1OriginalEntryId is now either an empty PtypBinary or not set.</td>
<td>PidLidEmail1DisplayName (section 2.2.1.2.1), PidLidEmail1EmailAddress (section 2.2.1.2.3), PidLidEmail1AddressType (section 2.2.1.2.2)</td>
</tr>
</tbody>
</table>
### 3.1.5.4 Updating a FAX Number

The electronic fax properties MUST be modified at the same time to preserve their relationship. When one of the fax number properties (\texttt{PidTagPrimaryFaxNumber}, \texttt{PidTagBusinessFaxNumber}, or \texttt{PidTagHomeFaxNumber}, specified in (section 2.2.1.2.6)) is defined, the following properties MUST be set, as specified in section 2.2.1 and the following table.

The fax properties SHOULD be updated only when the corresponding fax number is updated.

<table>
<thead>
<tr>
<th>Fax number</th>
<th>Properties that \textbf{SHOULD} be updated or defined</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{PidTagPrimaryFaxNumber}</td>
<td>\texttt{PidLidFax1AddressType} (section 2.2.1.2.7), \texttt{PidLidFax1EmailAddress} (section 2.2.1.2.8), \texttt{PidLidFax1OriginalDisplayName} (section 2.2.1.2.9), \texttt{PidLidFax1OriginalEntryId} (section 2.2.1.2.10)</td>
</tr>
<tr>
<td>\texttt{PidTagBusinessFaxNumber}</td>
<td>\texttt{PidLidFax2AddressType} (section 2.2.1.2.7), \texttt{PidLidFax2EmailAddress} (section 2.2.1.2.8), \texttt{PidLidFax2OriginalDisplayName} (section 2.2.1.2.9), \texttt{PidLidFax2OriginalEntryId} (section 2.2.1.2.10)</td>
</tr>
<tr>
<td>\texttt{PidTagHomeFaxNumber}</td>
<td>\texttt{PidLidFax3AddressType} (section 2.2.1.2.7), \texttt{PidLidFax3EmailAddress} (section 2.2.1.2.8), \texttt{PidLidFax3OriginalDisplayName} (section 2.2.1.2.9), \texttt{PidLidFax3OriginalEntryId} (section 2.2.1.2.10)</td>
</tr>
</tbody>
</table>

### 3.1.5.5 Modifying an Event Property

Event properties MUST be modified at the same time to preserve their relationship.

The following table specifies the properties to be updated or defined when another property is changed as specified in section 2.2.1.5.

<table>
<thead>
<tr>
<th>Changed property</th>
<th>Conditions</th>
<th>Properties to be updated or defined</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{PidTagBirthday} (section 2.2.1.5.1)</td>
<td>None.</td>
<td>\texttt{PidLidReferenceEntryId} (section 2.2.1.10.1), \texttt{PidLidBirthdayEventEntryId}</td>
</tr>
<tr>
<td>Changed property</td>
<td>Conditions</td>
<td>Properties to be updated or defined</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>(section 2.2.1.5.3),</td>
<td>PidlIdBirthdayLocal (section 2.2.1.5.2) \nFor more details, see the paragraph following the table.</td>
</tr>
<tr>
<td></td>
<td>PidlIdReferenceEntryId,</td>
<td>PidlIdBirthdayEventEntryId, PidlTagBirthday. For more details, see the paragraph following the table.</td>
</tr>
<tr>
<td></td>
<td>PidlIdAnniversaryEventEntryId,</td>
<td>PidlWeddingAnniversaryLocal \nFor more details, see the paragraph following the table.</td>
</tr>
<tr>
<td></td>
<td>PidlTagWeddingAnniversary</td>
<td>None. \nPidlIdReferenceEntryId, PidlIdAnniversaryEventEntryId, PidlTagWeddingAnniversary \nFor more details, see the paragraph following the table.</td>
</tr>
<tr>
<td></td>
<td>PidlWeddingAnniversaryLocal</td>
<td>None. \nPidlIdReferenceEntryId, PidlIdAnniversaryEventEntryId, PidlTagWeddingAnniversary \nFor more details, see the paragraph following the table.</td>
</tr>
<tr>
<td></td>
<td>PidlBirthdayEventEntryId</td>
<td>None. \nPidlTagBirthday, PidlIdBirthdayLocal \nPidlIdAnniversaryEventEntryId, PidlWeddingAnniversaryLocal \nFor more details, see the paragraph following the table.</td>
</tr>
<tr>
<td></td>
<td>PidlAnniversaryEventEntryId</td>
<td>None. \nPidlTagWeddingAnniversary, PidlWeddingAnniversaryLocal \nPidlIdPrivate ([MS-OXCMGR] section 2.2.1.15) \nUpdate the value of the PidlIdPrivate property on the corresponding Appointment object to match the one on the contact.</td>
</tr>
<tr>
<td></td>
<td>PidlNormalizedSubject \n(section 2.2.1.11.1)</td>
<td>PidlBirthdayEventEntryId or PidlIdAnniversaryEventEntryId is set. \nUpdate the value of the PidlTagSubjectPrefix property ([MS-OXCMGR] section 2.2.1.60) on the corresponding Appointment object to match the name of the contact.</td>
</tr>
<tr>
<td></td>
<td>PidlPrivate ([MS-OXCMGR] section 2.2.1.15)</td>
<td>PidlBirthdayEventEntryId or PidlIdAnniversaryEventEntryId is set. \nUpdate the value of the PidlIdPrivate property on the corresponding Appointment object to match the one on the contact.</td>
</tr>
</tbody>
</table>

When the PidlTagBirthday property or the PidlIdBirthdayLocal property is updated, the client SHOULD update the Appointment object associated with this contact's birthday (PidIdBirthdayEventEntryId property) to match the time specified in the PidlTagBirthday property. If no Appointment object has been created, the client SHOULD create an Appointment object, save the Appointment object's EntryID to the PidlIdBirthdayEventEntryId property, and link the Appointment object to the **Contact object** by using the PidlIdContactLinkEntry ([MS-OXCMGR] section 2.2.1.57.1), PidlIdContactLinkSearchKey ([MS-OXCMGR] section 2.2.1.57.4), and PidlIdContactLinkName ([MS-OXCMGR] section 2.2.1.57.3) properties, as specified in [MS-OXCMGR] section 2.2.1.57.

When the PidlTagWeddingAnniversary property or the PidlIdWeddingAnniversaryLocal property is updated, the client SHOULD update the Appointment object associated with this contact's anniversary (PidIdAnniversaryEventEntryId property) to match the time specified in the PidlTagWeddingAnniversary property. If no Appointment object has been created, the client SHOULD create an Appointment object, save the Appointment object's EntryID to the
**PidLidAnniversaryEventEntryId** property, and link the Appointment object to the Contact object using the **PidLidContactLinkEntry**, **PidLidContactLinkSearchKey**, and **PidLidContactLinkName** properties, as specified in [MS-OXCMSG] section 2.2.1.57.

For details about Appointment objects, see [MS-OXOCAL].

### 3.1.5.6 Modifying a Business Card Property

Business Card properties MUST be modified at the same time to preserve their relationship. The following table specifies which properties MUST be updated when another property is updated.

<table>
<thead>
<tr>
<th>Changed property</th>
<th>Conditions</th>
<th>Properties that MUST be updated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PidLidBusinessCardCardPicture</strong> (section 2.2.1.7.2)</td>
<td>On removal or addition.</td>
<td>The <strong>ImageSource</strong> field of the <strong>PidLidBusinessCardDisplayDefinition</strong> property (section 2.2.1.7.1) MUST be updated to reflect the removal or addition of the card picture.</td>
</tr>
<tr>
<td><strong>PidLidBusinessCardDisplayDefinition</strong></td>
<td>When the value of the <strong>ImageSource</strong> field changes.</td>
<td>The <strong>PidLidBusinessCardCardPicture</strong> property MUST be added or removed.</td>
</tr>
</tbody>
</table>

### 3.1.5.7 Modifying a Contact Photo Property

Contact Photo properties MUST be modified at the same time to preserve their relationship. The following table specifies which properties MUST be updated when another property is updated.

<table>
<thead>
<tr>
<th>Changed property or attachment</th>
<th>Conditions</th>
<th>Properties that MUST be updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Photo Attachment as specified in section 2.2.1.8.3</td>
<td>On removal or addition.</td>
<td>The <strong>PidLidHasPicture</strong> property (section 2.2.1.8.1) MUST be updated to reflect the removal or addition of the contact photo.</td>
</tr>
</tbody>
</table>

### 3.1.5.8 Naming a Personal Distribution List

When the client changes the name of a personal **distribution list**, either by user input or by other means, the properties in the following table MUST be updated.

<table>
<thead>
<tr>
<th>Property name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PidTagDisplayName</strong> (section 2.2.1.1)</td>
<td>The name of the <strong>Personal Distribution List object</strong>.</td>
</tr>
<tr>
<td><strong>PidLidDistributionListName</strong> (section 2.2.2.1.2)</td>
<td>The name of the Personal Distribution List object.</td>
</tr>
<tr>
<td><strong>PidLidFileUnder</strong> (section 2.2.2.1.3)</td>
<td>The name of the Personal Distribution List object.</td>
</tr>
<tr>
<td><strong>PidLidFileUnderId</strong> (section 2.2.1.1.12)</td>
<td>This property MUST be set to 0xFFFFFFFF.</td>
</tr>
<tr>
<td><strong>PidTagNormalizedSubject</strong> (section 2.2.4.1)</td>
<td>This MUST be set to the same value as the value <strong>PidLidDistributionListName</strong> property.</td>
</tr>
</tbody>
</table>
3.1.5.9 Adding a Member to a Personal Distribution List

**Personal Distribution List objects** SHOULD NOT contain duplicate entries for the same members. Whenever a member is added to a personal **distribution list**, the client SHOULD check that the new member isn't already in the list. Then the client MUST update the **PidLidDistributionListMembers** (section 2.2.2.2.1) and **PidLidDistributionListOneOffMembers** (section 2.2.2.2.2) properties.

The **EntryID** corresponding to the member MUST be added to the **PidLidDistributionListMembers** property, and the **one-off EntryID** corresponding to the member MUST be added to the **PidLidDistributionListOneOffMembers** property. The new values MUST be added such that the entry is in the same position of both **multivalue properties**.

After updating these properties, the client SHOULD update the **PidLidDistributionListChecksum** property (section 2.2.2.3), as specified in section 3.1.5.11.

3.1.5.10 Removing a Member from a Personal Distribution List

Whenever a member is removed from a personal **distribution list**, the client MUST update the **PidLidDistributionListMembers** (section 2.2.2.2.1) and **PidLidDistributionListOneOffMembers** (section 2.2.2.2.2) properties.

The **EntryID** corresponding to the member MUST be removed from the **PidLidDistributionListMembers** property, and the **one-off EntryID** corresponding to the member MUST be removed from the **PidLidDistributionListOneOffMembers** property.

After updating these properties, the client SHOULD update the **PidLidDistributionListChecksum** property (section 2.2.2.3), as specified in section 3.1.5.11.

3.1.5.11 Updating the Checksum of a Personal Distribution List

Whenever a member is added to or removed from a personal **distribution list**, the client SHOULD update the value of the **PidLidDistributionListChecksum** property (section 2.2.2.2.3). The checksum is calculated by iterating through each byte of each **PtypBinary** value in the multivalue **PidLidDistributionListMembers** property (section 2.2.2.2.1), as specified by the following algorithm.

```
SET CheckSum = 0
FOR EACH PtypBinaryValue in PidLidDistributionListMembers
    FOR EACH byteValue in PtypBinaryValue
        Checksum = CRC(Checksum, byteValue)
    ENDFOR
ENDFOR
```

This algorithm uses the IEEE 802.3 **CRC** polynomial 0xEDB88320 (x^{32} + x^{26} + x^{23} + x^{22} + x^{16} + x^{12} + x^{11} + x^{10} + x^{8} + x^{7} + x^{5} + x^{4} + x^{2} + x + 1) with a seed value of 0x00000000. For more details about the polynomial, see [ISO/IEC8802-3] section 3.2.8.

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 Contact object and a Personal Distribution List object, and in all other ways operates within the server role as specified in [MS-OXCMSG].

3.2.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This 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 Contact object and the Personal Distribution List object are extensions of the Message object.
- A Contact object and a Personal Distribution List object are created in the contacts-related folders, as specified in section 2.2.3.

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].

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.
4 Protocol Examples

4.1 Creating a Contact

A user creates a contact with a name (Jay Hamlin), email address (someone@example.com), and phone number ((206) 555-0123), and then saves it. The following is an example of what a client might do to accomplish the user’s intentions, and the responses a server might return.

Before manipulating Contact objects, the client needs to ask the server to map property names or long IDs (LIDs) to property IDs by using the RopGetPropertyIdsFromNames ROP ([MS-OXCROPS] section 2.2.8.1).

<table>
<thead>
<tr>
<th>Property</th>
<th>Property set GUID</th>
<th>LID</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidLidFileUnderList (section 2.2.1.1.13)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008026</td>
</tr>
<tr>
<td>PidLidAutoLog (section 2.2.1.10.19)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008025</td>
</tr>
<tr>
<td>PidLidAddressBookProviderEmailList (section 2.2.1.2.11)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008028</td>
</tr>
<tr>
<td>PidLidAddressBookProviderArrayType (section 2.2.1.2.12)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008029</td>
</tr>
<tr>
<td>PidLidFileUnder (section 2.2.1.11)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008005</td>
</tr>
<tr>
<td>PidLidFileUnderId (section 2.2.1.1.12)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008006</td>
</tr>
<tr>
<td>PidLidContactCharacterSet (section 2.2.1.10.18)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008023</td>
</tr>
<tr>
<td>PidLidEmail1DisplayName (section 2.2.1.2.1)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008080</td>
</tr>
<tr>
<td>PidLidEmail1AddressType (section 2.2.1.2.2)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008082</td>
</tr>
<tr>
<td>PidLidEmail1EmailAddress (section 2.2.1.2.3)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008083</td>
</tr>
<tr>
<td>PidLidEmail1OriginalDisplayName (section 2.2.1.2.4)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008084</td>
</tr>
<tr>
<td>PidLidEmail1OriginalEntryId (section 2.2.1.2.5)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008085</td>
</tr>
</tbody>
</table>

For this example, the server returns the following property IDs in response to the RopGetPropertyIdsFromNames ROP request. The actual property IDs are at the discretion of the server.

<table>
<thead>
<tr>
<th>Property</th>
<th>Property ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidLidFileUnderList</td>
<td>0x827B</td>
</tr>
<tr>
<td>PidLidAutoLog</td>
<td>0x8280</td>
</tr>
<tr>
<td>PidLidAddressBookProviderEmailList</td>
<td>0x81D4</td>
</tr>
</tbody>
</table>
To create a Contact object, 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 properties of the Contact object are set according to data that is specified by the user. After the user has input the data for the Contact object, the client uses the **RopSetProperties** ROP ([MS-OXCROPS] section 2.2.8.6) to transmit the property settings to the server. The properties and their settings for this example are listed in the following table. The property types shown in the table are described in [MS-OXCDATA] section 2.11.1.

<table>
<thead>
<tr>
<th>Property</th>
<th>Property ID</th>
<th>Data</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PidTagDisplayNamePrefix</strong> (section 2.2.1.1.3)</td>
<td>PtypString</td>
<td>00 00</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td><strong>PidTagSurname</strong> (section 2.2.1.1.4)</td>
<td>PtypString</td>
<td>48 00 61 00 6D 00 6C 00 69 00 6E 00 00 00</td>
<td>&quot;Hamlin&quot;</td>
</tr>
<tr>
<td><strong>PidTagMiddleName</strong> (section 2.2.1.1.5)</td>
<td>PtypString</td>
<td>00 00</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td><strong>PidTagGivenName</strong> (section 2.2.1.1.6)</td>
<td>PtypString</td>
<td>4A 00 61 00 00 00</td>
<td>&quot;Jay&quot;</td>
</tr>
<tr>
<td><strong>PidLidFileUnderList</strong></td>
<td>PtypMultipleInteger32</td>
<td>05 00 00 17 80 00 00 37 80 00 00 16 3A 00 00 19 80</td>
<td>cValues: 0x00000005 1p1: (0x00008017; 0x00008037; 0x00003A16; 0x00008019; 0x00008018)</td>
</tr>
<tr>
<td>Property</td>
<td>Property type</td>
<td>Data</td>
<td>Meaning</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>--------------------------------</td>
<td>-----------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PidLidAddressBookProvider EmailList</td>
<td>PtypMultipleInteger32</td>
<td>01 00 00 00</td>
<td>cValues: 0x0000000001 1pl: {0x00000000}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00 00</td>
<td></td>
</tr>
<tr>
<td>PidLidAddressBookProvider ArrayType</td>
<td>PtypInteger32</td>
<td>0x0000 0001</td>
<td>Email1 is defined</td>
</tr>
<tr>
<td></td>
<td></td>
<td>00 00</td>
<td></td>
</tr>
<tr>
<td>PidLidFileUnder</td>
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<td>&quot;someone (<a href="mailto:someone@example.com">someone@example.com</a>)&quot;</td>
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**PidLidEmail1OriginalDisplay Name**

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|                                |               | 6E 00                                     |                                  |
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|                                |               | 65 00                                     |                                  |
|                                |               | 78 00                                     |                                  |
|                                |               | 76 00                                     |                                  |
|                                |               | 70 00                                     |                                  |
|                                |               | 6C 00                                     |                                  |
|                                |               | 65 00                                     |                                  |
|                                |               | 2E 00                                     |                                  |
|                                |               | 63 00                                     |                                  |
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**PidLidEmail1OriginalEntryId**

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|                                |               | C0 42                                     | ...../..-Fir                  |
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|                                |               | B4 B9                                     | ization/                   |
|                                |               | 08 00                                     | ou-Exchange                    |
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|                                |               | 01 00                                     | ve Group                       |
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|                                |               | 00 00                                     | HF23SPDL                       |
|                                |               | 00 00                                     | T)/cn-Re                        |
|                                |               | 2F 6F                                     | cipients                       |
|                                |               | 3D 46                                     | /cn-someone                    |
|                                |               | 69 72                                     |                               |
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<td></td>
</tr>
<tr>
<td></td>
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<td>06 01</td>
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</tr>
<tr>
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<td></td>
<td>01 0B</td>
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</tr>
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</tr>
<tr>
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<td>67 31</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>66 35</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>00 64</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>00 72</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>63 70</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0D D0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0E 00</td>
<td></td>
</tr>
</tbody>
</table>

Size: 5350 bytes

---

[MS-OXOCNTC] - v20210817
Contact Object Protocol
Copyright © 2021 Microsoft Corporation
Release: August 17, 2021
When the user is ready to save his or her changes, the client uses the **RopSaveChangesMessage** ROP ([MS-OXCROPS] section 2.2.6.3) to commit the properties on the server.

The values of some properties will change during the execution of the **RopSaveChangesMessage** ROP; however, none of the properties that change are Contact object properties.
4.2 Creating a Personal Distribution List

A user creates a personal distribution list that contains the previous sample contact and another email address (user1@example.com). The following is a description of what a client might do to accomplish the user's intentions and what responses a server might return.

Before manipulating Contact objects, the client needs to ask the server to map property names or long IDs (LIDs) to property IDs by using the RopGetPropertyIdsFromNames ROP ([MS-OXCROPS] section 2.2.8.1).

<table>
<thead>
<tr>
<th>Property</th>
<th>Property set GUID</th>
<th>LID</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidLidAutoLog (section 2.2.1.10.19)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008025</td>
</tr>
<tr>
<td>PidLidAddressBookProviderArrayType (section 2.2.2.3.1)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008029</td>
</tr>
<tr>
<td>PidLidFileUnder (section 2.2.2.1.3)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008005</td>
</tr>
<tr>
<td>PidLidFileUnderId (section 2.2.2.1.4)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008006</td>
</tr>
<tr>
<td>PidLidDistributionListName (section 2.2.2.1.2)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008053</td>
</tr>
<tr>
<td>PidLidDistributionListChecksum (section 2.2.2.2.3)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x0000804C</td>
</tr>
<tr>
<td>PidLidDistributionListMembers (section 2.2.2.2.1)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008055</td>
</tr>
<tr>
<td>PidLidDistributionListOneOffMembers (section 2.2.2.2)</td>
<td>{00062004-0000-0000-C000-000000000046}</td>
<td>0x00008054</td>
</tr>
</tbody>
</table>

For this example, the server returns the following property IDs in response to the RopGetPropertyIdsFromNames ROP request ([MS-OXCROPS] section 2.2.8.1). The actual property IDs are at the discretion of the server.

<table>
<thead>
<tr>
<th>Property</th>
<th>Property ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidLidAutoLog</td>
<td>0x8280</td>
</tr>
<tr>
<td>PidLidAddressBookProviderArrayType</td>
<td>0x81D5</td>
</tr>
<tr>
<td>PidLidFileUnder</td>
<td>0x8016</td>
</tr>
<tr>
<td>PidLidFileUnderId</td>
<td>0x81DA</td>
</tr>
<tr>
<td>PidLidDistributionListName</td>
<td>0x81C9</td>
</tr>
<tr>
<td>PidLidDistributionListChecksum</td>
<td>0x81C7</td>
</tr>
<tr>
<td>PidLidDistributionListMembers</td>
<td>0x81C8</td>
</tr>
<tr>
<td>PidLidDistributionListOneOffMembers</td>
<td>0x81CA</td>
</tr>
</tbody>
</table>

To create a Personal Distribution List object, 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 properties of the Contact object are set according to data that is specified by the user. After the user has input content the data for the Personal Distribution List object, the client uses the **RopSetProperties** ROP ([MS-OXCROPS] section 2.2.8.6) to transmit the property settings to the server. The properties and their settings for this example are listed in the following table. The property types shown in the table are described in [MS-OXCDATA] section 2.11.1.

<table>
<thead>
<tr>
<th>Property</th>
<th>Property type</th>
<th>Data</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PidTagDisplayNamePrefix (section 2.2.1.1.3)</td>
<td>PtypString</td>
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<td>&quot;&quot;</td>
</tr>
<tr>
<td>PidLidAddressBookProviderArrayType (section 2.2.2.3.1)</td>
<td>PtypInteger32</td>
<td>0x00000000</td>
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</tr>
<tr>
<td>PidLidFileUnder</td>
<td>PtypString</td>
<td>46 00 72 00 69 00 65 00 6E 00 64 00 73 00 00 00</td>
<td>&quot;Friends&quot;</td>
</tr>
<tr>
<td>PidLidFileUnderId</td>
<td>PtypInteger32</td>
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<tr>
<td>PidLidAutoLog</td>
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<tr>
<td>PidTagDisplayName (section 2.2.2.1.1)</td>
<td>PtypString</td>
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<td>&quot;Friends&quot;</td>
</tr>
<tr>
<td>PidLidDistributionListName</td>
<td>PtypString</td>
<td>46 00 72 00 69 00 65 00 6E 00 64 00 73 00 00 00</td>
<td>&quot;Friends&quot;</td>
</tr>
<tr>
<td>PidLidDistributionListChecksum</td>
<td>PtypInteger32</td>
<td>0xD4B0223A</td>
<td>-726654406</td>
</tr>
<tr>
<td>PidLidDistributionListMembers</td>
<td>PtypMultipleBinary</td>
<td>02 00 00 00 64 00 00 00 00 81 2B 1F A4 BE A3 10 19 9D 6E 00 DD 01 0F 54 02 00 00 01 80 54 00 68 00 6F 00 6D 00 61 00 73 00 20 00 48 00 61 00 6D 00 62 00 6F 00 72 00</td>
<td>2 binary large objects (BLOBs) to follow</td>
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<td></td>
<td></td>
<td>BLOB1 Size: 100 bytes .....+.... .....n. .....T. .....T.h.o.m. a.s. .H. a.m.b.o. r.g...S. M.T.P... u.s.e.r. i.g.e.x. a.m.p.l. e...C.o.</td>
<td></td>
</tr>
<tr>
<td>Property</td>
<td>Property type</td>
<td>Data</td>
<td>Meaning</td>
</tr>
<tr>
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<td></td>
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<td>BE A3 10 19</td>
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<td></td>
<td>9D 6E 00 DD</td>
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<td></td>
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</tr>
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<td>.......n..</td>
</tr>
<tr>
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<td>63 00 6F 00</td>
<td>...T.....</td>
</tr>
<tr>
<td>65 00 78 00</td>
<td>61 00 6D 00</td>
<td>...u.s.e.r.</td>
</tr>
<tr>
<td>70 00 6C 00</td>
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<td>1.0..{.</td>
</tr>
<tr>
<td>AC 00</td>
<td></td>
<td>0.0...s.</td>
</tr>
<tr>
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<td>81 2B 1F A4</td>
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</tr>
<tr>
<td>BE A3 10 19</td>
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</tr>
<tr>
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</tr>
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</tr>
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<td>z.f.k.u.</td>
</tr>
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<td>75 00 73 00</td>
<td>k.-d.o.</td>
</tr>
<tr>
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<td>31 00 30 00</td>
<td>m...e.x.</td>
</tr>
<tr>
<td>40 00 73 00</td>
<td>75 00 73 00</td>
<td>a.m.p.l.</td>
</tr>
<tr>
<td>7A 00 66 00</td>
<td></td>
<td>e...c.o.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td></td>
<td>m...</td>
</tr>
<tr>
<td>6B 00 2D 00</td>
<td>64 00 6F 00</td>
<td>..T....</td>
</tr>
<tr>
<td>6D 00 2E 00</td>
<td>65 00 78 00</td>
<td>u.s.e.r.</td>
</tr>
<tr>
<td>6A 00 6D 00</td>
<td>70 00 6C 00</td>
<td>1.0...s.</td>
</tr>
<tr>
<td>65 00 2E 00</td>
<td>63 00 6F 00</td>
<td>z.f.k.u.</td>
</tr>
<tr>
<td>50 00 00 00</td>
<td>40 00 73 00</td>
<td>k.-d.o.</td>
</tr>
<tr>
<td>7A 00 66 00</td>
<td>75 00 73 00</td>
<td>m...e.x.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>31 00 30 00</td>
<td>a.m.p.l.</td>
</tr>
<tr>
<td>6B 00 2D 00</td>
<td>7A 00 66 00</td>
<td>e...c.o.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>64 00 6F 00</td>
<td>m...</td>
</tr>
<tr>
<td>6D 00 2E 00</td>
<td>65 00 78 00</td>
<td>..T....</td>
</tr>
<tr>
<td>6A 00 6D 00</td>
<td>70 00 6C 00</td>
<td>u.s.e.r.</td>
</tr>
<tr>
<td>65 00 2E 00</td>
<td>63 00 6F 00</td>
<td>1.0...s.</td>
</tr>
<tr>
<td>50 00 00 00</td>
<td>40 00 73 00</td>
<td>z.f.k.u.</td>
</tr>
<tr>
<td>7A 00 66 00</td>
<td>75 00 73 00</td>
<td>k.-d.o.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>31 00 30 00</td>
<td>m...e.x.</td>
</tr>
<tr>
<td>6B 00 2D 00</td>
<td>7A 00 66 00</td>
<td>a.m.p.l.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>64 00 6F 00</td>
<td>e...c.o.</td>
</tr>
<tr>
<td>6D 00 2E 00</td>
<td>65 00 78 00</td>
<td>m...</td>
</tr>
<tr>
<td>6A 00 6D 00</td>
<td>70 00 6C 00</td>
<td>..T....</td>
</tr>
<tr>
<td>65 00 2E 00</td>
<td>63 00 6F 00</td>
<td>u.s.e.r.</td>
</tr>
<tr>
<td>50 00 00 00</td>
<td>40 00 73 00</td>
<td>1.0...s.</td>
</tr>
<tr>
<td>7A 00 66 00</td>
<td>75 00 73 00</td>
<td>z.f.k.u.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>31 00 30 00</td>
<td>k.-d.o.</td>
</tr>
<tr>
<td>6B 00 2D 00</td>
<td>7A 00 66 00</td>
<td>m...e.x.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>64 00 6F 00</td>
<td>a.m.p.l.</td>
</tr>
<tr>
<td>6D 00 2E 00</td>
<td>65 00 78 00</td>
<td>e...c.o.</td>
</tr>
<tr>
<td>6A 00 6D 00</td>
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<td>m...</td>
</tr>
<tr>
<td>65 00 2E 00</td>
<td>63 00 6F 00</td>
<td>..T....</td>
</tr>
<tr>
<td>50 00 00 00</td>
<td>40 00 73 00</td>
<td>u.s.e.r.</td>
</tr>
<tr>
<td>7A 00 66 00</td>
<td>75 00 73 00</td>
<td>1.0...s.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>31 00 30 00</td>
<td>z.f.k.u.</td>
</tr>
<tr>
<td>6B 00 2D 00</td>
<td>7A 00 66 00</td>
<td>k.-d.o.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>64 00 6F 00</td>
<td>m...e.x.</td>
</tr>
<tr>
<td>6D 00 2E 00</td>
<td>65 00 78 00</td>
<td>a.m.p.l.</td>
</tr>
<tr>
<td>6A 00 6D 00</td>
<td>70 00 6C 00</td>
<td>e...c.o.</td>
</tr>
<tr>
<td>65 00 2E 00</td>
<td>63 00 6F 00</td>
<td>m...</td>
</tr>
<tr>
<td>50 00 00 00</td>
<td>40 00 73 00</td>
<td>..T....</td>
</tr>
<tr>
<td>7A 00 66 00</td>
<td>75 00 73 00</td>
<td>u.s.e.r.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>31 00 30 00</td>
<td>1.0...s.</td>
</tr>
<tr>
<td>6B 00 2D 00</td>
<td>7A 00 66 00</td>
<td>z.f.k.u.</td>
</tr>
<tr>
<td>6B 00 75 00</td>
<td>64 00 6F 00</td>
<td>k.-d.o.</td>
</tr>
<tr>
<td>6D 00 2E 00</td>
<td>65 00 78 00</td>
<td>m...e.x.</td>
</tr>
<tr>
<td>6A 00 6D 00</td>
<td>70 00 6C 00</td>
<td>a.m.p.l.</td>
</tr>
<tr>
<td>65 00 2E 00</td>
<td>63 00 6F 00</td>
<td>e...c.o.</td>
</tr>
<tr>
<td>50 00 00 00</td>
<td>40 00 73 00</td>
<td>m...</td>
</tr>
</tbody>
</table>

**PidTagMessageClass** (section [2.2.4.2](#))

**PtypString**

<table>
<thead>
<tr>
<th>Data</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>49 00 50 00</td>
<td>&quot;IPM.DistList&quot;</td>
</tr>
<tr>
<td>4D 00 28 00</td>
<td></td>
</tr>
<tr>
<td>44 00 69 00</td>
<td></td>
</tr>
<tr>
<td>73 00 74 00</td>
<td></td>
</tr>
<tr>
<td>4C 00 69 00</td>
<td></td>
</tr>
<tr>
<td>73 00 74 00</td>
<td></td>
</tr>
<tr>
<td>00 00</td>
<td></td>
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</table>

**PidTagIconIndex** ([MS-OXOMSG](#))

section [2.2.1.10](#)

**PtypInteger32**

| Data (0x00000202) | 514 |

---

[MS-OXOCNTC] - v20210817
Contact Object Protocol
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Release: August 17, 2021
<table>
<thead>
<tr>
<th>Property</th>
<th>Property type</th>
<th>Data</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PidTagSubjectPrefix</strong> ([MS-OXOMSG] section 2.2.1.60)</td>
<td>PtypString</td>
<td>00 00</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td><strong>PidTagSubject</strong> ([MS-OXPROPS] section 2.1033)</td>
<td>PtypString</td>
<td>46 00 72 00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>69 00 65 00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6E 00 64 00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>73 00 00 00</td>
<td>&quot;Friends&quot;</td>
</tr>
</tbody>
</table>

When the user is ready to save his or her changes, the client uses the `RopSaveChangesMessage` ROP ([MS-OXCROPS] section 2.2.6.3) to commit the properties on the server.

The values of some properties will change during the execution of the `RopSaveChangesMessage` ROP; however, none of the properties that change are Personal Distribution List object properties.
5 Security

5.1 Security Considerations for Implementers

There are no special security considerations specific to the Contact Object Protocol. General security considerations pertaining to the underlying transport apply, as described in [MS-OXCMG].

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 Communicator 2007 R2
- Microsoft Lync 2010
- Microsoft Lync Client 2013/Skype for Business
- 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 1.6: Lync Client 2013/Skype for Business uses this protocol when connected to Exchange 2010 or Microsoft Lync Server 2010. When Lync Client 2013/Skype for Business is connected to Exchange 2013, Exchange 2016, or Exchange 2019, it uses the Unified Contact Store Web Service Protocol, as described in [MS-OXWSCOS].

<2> Section 2.2.1.2: Exchange 2003 sets the PidlAddressBookProviderArrayType property (section 2.2.1.2.12) to 0x00000000 and never sets the PidlAddressBookProviderEmailList property (section 2.2.1.2.11) unless an email address is defined for the contact.

<3> Section 2.2.1.7: Office Outlook 2003 does not use the Business Card properties.

<4> Section 2.2.1.8: Exchange 2003 does not use Contact Photo properties.

Section 2.2.1.9.1: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the PidLidContactLinkedGlobalAddressListEntryId property (section 2.2.1.9.1).

Section 2.2.1.9.2: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the PidLidContactLinkGlobalAddressListLinkId property (section 2.2.1.9.2).

Section 2.2.1.9.3: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the PidLidContactLinkGlobalAddressListLinkState property (section 2.2.1.9.3).

Section 2.2.1.9.4: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the PidLidContactLinkLinkRejectHistory property (section 2.2.1.9.4).

Section 2.2.1.9.5: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the PidLidContactLinkSMTPAddressCache property (section 2.2.1.9.5).

Section 2.2.1.9.6: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the PidLidIsContactLinked property (section 2.2.1.9.6).

Section 2.2.1.10.18: Exchange 2003 and Exchange 2007 do not set or use the PidLidContactCharacterSet property.

Section 2.2.2.1.4: Exchange 2007, Exchange 2010, Exchange 2013, Exchange 2016, and Exchange 2019 set the PidLidFileUnderId property (section 2.2.2.1.4) to 0 when it creates a distribution list.

Section 2.2.2.2: Exchange 2003 does not set or update the PidLidDistributionListOneOffMembers property.

Section 2.2.2.4: Exchange 2003, Exchange 2007, and Office Outlook 2003 do not use the PidLidDistributionListStream property (section 2.2.2.4).

Section 2.2.2.4: If the PidLidDistributionListStream property (section 2.2.2.4) is set, Office Outlook 2003 does not ignore the PidLidDistributionListMembers (section 2.2.2.4), PidLidDistributionListOneOffMembers (section 2.2.2.2), and PidLidDistributionListChecksum (section 2.2.2.3) properties.

Section 2.2.3: Exchange 2003, Exchange 2007, Exchange 2010, Office Outlook 2003, Office Outlook 2007, and Outlook 2010 do not support the Quick Contacts folder, the IM Contact List folder, and the contacts folders that contain imported contacts.
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.

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Revision class</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Appendix A: Product Behavior</td>
<td>Updated list of supported products.</td>
<td>major</td>
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