[MS-OXVCARD]:

vCard to Contact Object Conversion Algorithm

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Revision Summary

Date	Revision History	Revision Class	Comments
4/10/2009	.1	Major	Initial Availability.
7/15/2009	1.0	Major	Revised and edited for technical content.
11/4/2009	1.0.1	Editorial	Revised and edited the technical content.
2/10/2010	1.0.1	None	Version 1.0.1 release
5/5/2010	1.1.0	Minor	Updated the technical content.
8/4/2010	1.2	Minor	Clarified the meaning of the technical content.
11/3/2010	1.3	Minor	Clarified the meaning of the technical content.
3/18/2011	2.0	Major	Significantly changed the technical content.
8/5/2011	3.0	Major	Significantly changed the technical content.
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Table of Contents

1   Introduction

The vCard to Contact Object Conversion Algorithm converts data between a vCard and an object that represents a person.

Sections 1.6 and 2 of this specification are normative. All other sections and examples in this specification are informative.

1.1   Glossary

This document uses the following terms:

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

common name (CN): A string attribute of a certificate (1) that is one component of a distinguished name (DN) (1). In Microsoft Enterprise uses, a CN must be unique within the forest where it is defined and any forests that share trust with the defining forest. The website or email address of the certificate owner is often used as a common name. Client applications often refer to a certification authority (CA) by the CN of its signing certificate.

Contact object: A **Message object** that contains properties pertaining to a contact (3).

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).

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.

Multipurpose Internet Mail Extensions (MIME): A set of extensions that redefines and expands support for various types of content in email messages, as described in [RFC2045], [RFC2046], and [RFC2047].

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].

Uniform Resource Identifier (URI): A string that identifies a resource. The URI is an addressing mechanism defined in Internet Engineering Task Force (IETF) Uniform Resource Identifier (URI): Generic Syntax [RFC3986].

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

1.2   References

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

1.2.1 Normative References

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

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

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

[MS-OXOABK] Microsoft Corporation, "Address Book Object Protocol".

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

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

[RFC2045] Freed, N., and Borenstein, N., "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", RFC 2045, November 1996, http://www.rfc-editor.org/rfc/rfc2045.txt

[RFC2047] Moore, K., "MIME (Multipurpose Internet Mail Extensions) Part Three: Message Header Extensions for Non-ASCII Text", RFC 2047, November 1996, http://ietf.org/rfc/rfc2047.txt

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

[RFC2426] Dawson, F., and Howes, T., "vCard MIME Directory Profile", RFC 2426, September 1998, http://www.rfc-editor.org/rfc/rfc2426.txt

[X520] ITU-T, "X.520: Information technology - Open Systems Interconnection - The Directory: Selected attribute types", ITU-T Recommendation X.520, August 2005, http://www.itu.int/rec/T-REC-X.520/en

1.2.2 Informative References

[MS-OXCMAIL] Microsoft Corporation, "RFC 2822 and MIME to Email Object Conversion Algorithm".

[RFC2425] Howes, T., Smith, M., and Dawson, F., "A MIME Content-Type for Directory Information", RFC 2425, September 1998, http://www.rfc-editor.org/rfc/rfc2425.txt

1.3   Overview

A **Contact object** application, as described in [MS-OXOCNTC], can use this algorithm to import vCard data, as described in [RFC2426], into Contact objects, and also to export Contact objects as vCard data to communicate with other contact applications over non-**Message object** transport methods.

1.4   Relationship to Protocols and Other Algorithms

This document specifies an algorithm that maps vCard data, as described in [RFC2426], and a Contact object, as described in [MS-OXOCNTC]. This algorithm can be updated and sent by using the protocols described in [MS-OXCMSG] and [MS-OXOMSG].

When used as a contact, vCard data can be embedded as a **Multipurpose Internet Mail Extensions (MIME)** part in an email message, as described in [RFC2425] and [MS-OXCMAIL].

This document covers versioning issues in the following areas:

- **Structure version:** The vCard data format defines a **VERSION** type, as specified in section 2.1.3.7.9.

- **Localization:** The vCard data format defines a **SORT-STRING** type to define language-specific sorting rules, as specified in section 2.1.3.7.5.

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

1.5 Applicability Statement

This algorithm is applicable to scenarios in which Contact object data needs to be transported between a Contact object source and a non-Contact object or indeterminate destination.

This algorithm is best avoided if 100 percent fidelity is required when transporting contact data between a Contact object source and a Contact object destination.

Note that [RFC2426] section 3.8 permits the insertion of nonstandard private values by using the extension mechanism defined in [RFC2045]. The primary requirement of these private values is that the name begins with "x-", and as such they are often termed x-components, x-props, and x-parameters. This document specifies several x-props that provide additional contact information.

1.6 Standards Assignments

None.

2 Algorithm Details

2.1 Common Algorithm Details

2.1.1 Abstract Data Model

None.

2.1.2 Initialization

None.

2.1.3 Processing Rules

This section specifies the transformations required for converting data from the vCard format to Contact objects.

2.1.3.1 General Types

The type defined in this section signifies that the information is vCard data.

2.1.3.1.1 Profile: vCard

RFC reference: [RFC2426] section 3.

The vCard MIME Directory Profile Type contains directory information, such as a single directory entry. The information is captured in an attribute schema that is designed for personal contact information.

2.1.3.2 Identification Types

The identification types are used in the vCard profile to capture identification and name information about the person or resource identified by a particular vCard.

2.1.3.2.1 Type: FN

RFC reference: [RFC2426] section 3.1.1.

vCard data format: FN: <name>

Brief description: The name of the object that the vCard represents. The name is in **common name (CN)** semantics, as specified in [X520].

Importing to Contact Objects

The **FN** type is imported to the **PidTagDisplayName** ([MS-OXOCNTC] section 2.2.1.1.8), the **PidTagNormalizedSubject** ([MS-OXOCNTC] section 2.2.1.11.1), and the **PidTagConversationTopic** ([MS-OXOMSG] section 2.2.1.5) properties.

Exporting from Contact Objects

The **FN** type is generated from either the **PidTagDisplayName** or **PidTagNormalizedSubject** property. If both of these properties are set, the **PidTagDisplayName** property is used.

2.1.3.2.2 Type: N

RFC reference: [RFC2426] section 3.1.2.

vCard data format: N:<Family Name>; <Given Name>; <Middle Name>; <Honorific Prefixes>; <Honorific Postfixes>

Brief description: Structured name of the object that the vCard represents.

Importing to Contact Objects

Individual text components are separated by the semicolon (;) character. Text components can contain multiple values that are separated by the comma (,) character. The entire text component should be assigned to the corresponding property, as shown in the following table.

vCard text component	Contact object property	Reference
Family Name	PidTagSurname	[MS-OXOCNTC] section 2.2.1.1.4
Given Name	PidTagGivenName	[MS-OXOCNTC] section 2.2.1.1.6
Middle Name	PidTagMiddleName	[MS-OXOCNTC] section 2.2.1.1.5
Honorific Prefixes	PidTagDisplayNamePrefix	[MS-OXOCNTC] section 2.2.1.1.3
Honorific Postfixes	PidTagGeneration	[MS-OXOCNTC] section 2.2.1.1.2

Exporting from Contact Objects

The **PidTagSurname**, **PidTagGivenName**, **PidTagMiddleName**, **PidTagDisplayNamePrefix**, and **PidTagGeneration** properties are exported as semicolon-delimited strings.

2.1.3.2.3 Type: NICKNAME

RFC reference: [RFC2426] section 3.1.3.

vCard data format: NICKNAME: <nickname>

Brief description: The nickname of the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **NICKNAME** type is imported to and exported from the **PidTagNickname** ([MS-OXOCNTC] section 2.2.1.1.1) property.

2.1.3.2.4 Type: PHOTO

RFC reference: [RFC2426] section 3.1.4.

vCard data format: PHOTO; ENCODING=b; TYPE=<type>:<data>

Brief description: An image or photograph that illustrates some aspect of the object that the vCard represents.

Importing to Contact Objects

The binary data for the associated photo is stored as an attachment. For more details about Message object attachments, see [MS-OXCMSG] section 2.2.2. The properties listed in the following table MUST be set on the **Attachment object**, as specified in [MS-OXCMSG].

Attachment object property	Reference	Value
PidTagAttachmentContactPhoto	[MS-OXOCNTC] section 2.2.1.8.3	TRUE.
PidTagAttachDataBinary	[MS-OXCMSG] section 2.2.2.7	Photo stream in binary format.
PidTagAttachExtension	[MS-OXCMSG] section 2.2.2.12	".jpeg", ".bmp", ".gif", or ".png", according to the **TYPE** parameter.
PidTagAttachLongFilename	[MS-OXCMSG] section 2.2.2.10	"ContactPhoto.<ext>". The extension is the value of the **TYPE** parameter.

Only binary data types with the **ENCODING** parameter set to "b" are supported. The **TYPE** parameter MUST be one of the following image type values:

- .bmp

- .gif

- .jpeg

- .png

Exporting from Contact Objects

The **PHOTO** type is exported from the Attachment object with the **ENCODING** parameter set to "b" and the **TYPE** parameter set to the image type (.bmp, .gif, .jpeg, or .png). The image is exported in binary format, as specified in [RFC2047] section 4.

2.1.3.2.5 Type: BDAY

RFC reference: [RFC2426] section 3.1.5.

vCard data format: BDAY:<date or date-time value>

Brief description: The birth date of the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **BDAY** type is imported to and exported from the **PidTagBirthday** ([MS-OXOCNTC] section 2.2.1.5.1) property. The time that is associated with the birthday event SHOULD<1> be 0:00 in the client's local time zone.

2.1.3.3 Deliverable Addressing Types

The deliverable addressing types are used in the vCard profile to capture information that is related to the delivery addressing or label for the person or resource identified by the vCard.

2.1.3.3.1 Type: ADR

RFC reference: [RFC2426] section 3.2.1.

vCard data format: ADR;TYPE=[Type]:[PO Box];[Extended Address];[Street Address];[Locality];[Region];[Postal Code];[Country Name]

Brief description: Physical addresses that are associated with the object that the vCard represents.

Importing to and exporting from Contact Objects

The Contact object provides built-in support for three physical addresses: Home Address, Work Address, and Other Address. The following table shows the valid values for the vCard **TYPE** parameter and how they correspond to the Contact object properties. The default **TYPE** parameter value is "intl, postal, parcel, work".

TYPE parameter value	Contact object address	Contact object properties
work	Work Address	**PidLidWorkAddressPostOfficeBox** ([MS-OXOCNTC] section 2.2.1.3.7) **PidLidWorkAddressStreet** ([MS-OXOCNTC] section 2.2.1.3.1) **PidLidWorkAddressCity** ([MS-OXOCNTC] section 2.2.1.3.2) **PidLidWorkAddressState** ([MS-OXOCNTC] section 2.2.1.3.3) **PidLidWorkAddressPostalCode** ([MS-OXOCNTC] section 2.2.1.3.4) **PidLidWorkAddressCountry** ([MS-OXOCNTC] section 2.2.1.3.5)
home	Home Address	**PidTagHomeAddressPostOfficeBox** ([MS-OXOCNTC] section 2.2.1.3.7) **PidTagHomeAddressStreet** ([MS-OXOABK] section 2.2.4.20) **PidTagHomeAddressCity** ([MS-OXOCNTC] section 2.2.1.3.2) **PidTagHomeAddressStateOrProvince** ([MS-OXOCNTC] section 2.2.1.3.3) **PidTagHomeAddressPostalCode** ([MS-OXOCNTC] section 2.2.1.3.4) **PidTagHomeAddressCountry** ([MS-OXOCNTC] section 2.2.1.3.5)
postal, dom, intl, parcel (importing) postal (exporting)	Other Address	**PidTagOtherAddressPostOfficeBox** ([MS-OXOCNTC] section 2.2.1.3.7) **PidTagOtherAddressStreet** ([MS-OXOCNTC] section 2.2.1.3.1) **PidTagOtherAddressCity** ([MS-OXOCNTC] section 2.2.1.3.2) **PidTagOtherAddressStateOrProvince** ([MS-OXOCNTC] section 2.2.1.3.3) **PidTagOtherAddressPostalCode** ([MS-OXOCNTC] section 2.2.1.3.4) **PidTagOtherAddressCountry** ([MS-OXOCNTC] section 2.2.1.3.5)

When importing: If the **TYPE** parameter contains "pref", the **PidLidPostalAddressId** property ([MS-OXOCNTC] section 2.2.1.3.9) is set to indicate that that address is the contact's mailing address, and the Mailing Address properties of the Contact object are set as specified in [MS-OXOCNTC] section 2.2.1.3.9.

When exporting: The address that is selected as the mailing address by the **PidLidPostalAddressId** property gets the value "pref" included in its **TYPE** parameter.

The following table shows how the Home Address, Work Address, and Other Address properties of the Contact object correspond to each vCard property.

vCard property	Contact object properties
PO Box	**PidLidWorkAddressPostOfficeBox** **PidTagHomeAddressPostOfficeBox** **PidTagOtherAddressPostOfficeBox**
Extended Address, Street Address	**PidLidWorkAddressStreet** **PidTagHomeAddressStreet** **PidTagOtherAddressStreet**
Locality	**PidLidWorkAddressCity** **PidTagHomeAddressCity** **PidTagOtherAddressCity**
Region	**PidLidWorkAddressState** **PidTagHomeAddressStateOrProvince** **PidTagOtherAddressStateOrProvince**
Postal Code	**PidLidWorkAddressPostalCode** **PidTagHomeAddressPostalCode** **PidTagOtherAddressPostalCode**
Country Name	**PidLidWorkAddressCountry** **PidTagHomeAddressCountry** **PidTagOtherAddressCountry**

2.1.3.3.2 Type: LABEL

RFC reference: [RFC2426] section 3.2.2.

vCard data format: LABEL;TYPE=[Type]:[Formatted Address]

Brief description: Structured mailing label for the object that the vCard represents.

Importing to Contact Objects

The **LABEL** type is ignored on import.

Exporting from Contact Objects

The physical address objects are exported as a formatted string that represents a mailing label. Labels are constructed from the Contact object fields that are listed in the following table.

Address label	Contact object properties
Work	**PidLidWorkAddressStreet** ([MS-OXOCNTC] section 2.2.1.3.1) **PidLidWorkAddressCity** ([MS-OXOCNTC] section 2.2.1.3.2) **PidLidWorkAddressState** ([MS-OXOCNTC] section 2.2.1.3.3) **PidLidWorkAddressPostalCode** ([MS-OXOCNTC] section 2.2.1.3.4) **PidLidWorkAddressCountry** ([MS-OXOCNTC] section 2.2.1.3.5)
Home	**PidTagHomeAddressStreet** ([MS-OXOABK] section 2.2.4.20) **PidTagHomeAddressCity** ([MS-OXOCNTC] section 2.2.1.3.2) **PidTagHomeAddressStateOrProvince** ([MS-OXOCNTC] section 2.2.1.3.3)

Address label	Contact object properties
	PidTagHomeAddressPostalCode ([MS-OXOCNTC] section 2.2.1.3.4)
	PidTagHomeAddressCountry ([MS-OXOCNTC] section 2.2.1.3.5)
Postal	**PidTagOtherAddressStreet** ([MS-OXOCNTC] section 2.2.1.3.1)
	PidTagOtherAddressCity ([MS-OXOCNTC] section 2.2.1.3.2)
	PidTagOtherAddressStateOrProvince ([MS-OXOCNTC] section 2.2.1.3.3)
	PidTagOtherAddressPostalCode ([MS-OXOCNTC] section 2.2.1.3.4)
	PidTagOtherAddressCountry ([MS-OXOCNTC] section 2.2.1.3.5)

2.1.3.4 Telecommunications Addressing Types

The telecommunications addressing types are used in the vCard profile to capture telecommunications information, such as telephone numbers and email addresses for the person or resource identified by the vCard.

2.1.3.4.1 Type: TEL

RFC reference: [RFC2426] section 3.3.1.

vCard data format: TEL; TYPE=[Type]:[Phone Number]

Brief description: A telephone number that is associated with the object that the vCard represents.

Importing to Contact Objects

Telephone numbers are imported to the Contact object based on the **TYPE** parameter, as shown in the following table. If the **TYPE** parameter is not specified in the vCard, the default value is "voice".

TYPE parameter value	Contact object properties
home	**PidTagHomeTelephoneNumber** ([MS-OXOABK] section 2.2.4.22)
	A second **TEL** type with the **TYPE** parameter set to "home" is imported to **PidTagHome2TelephoneNumber** ([MS-OXOABK] section 2.2.4.25).
msg, voice, video, bbs, modem	The first **TEL** type with the **TYPE** parameter set to "msg", "voice", "video", "bbs", or "modem" is imported to **PidTagOtherTelephoneNumber** ([MS-OXOCNTC] section 2.2.1.4.10). Additional **TEL** types with the **TYPE** parameter set to "msg", "voice", "video", "bbs", or "modem" are ignored.
work	**PidTagBusinessTelephoneNumber** ([MS-OXOABK] section 2.2.4.21)
	A second **TEL** type with the **TYPE** parameter set to "work" is imported to **PidTagBusiness2TelephoneNumber** ([MS-OXOABK] section 2.2.4.23).
cell	**PidTagMobileTelephoneNumber** ([MS-OXOABK] section 2.2.4.27)
pager	**PidTagPagerTelephoneNumber** ([MS-OXOABK] section 2.2.4.28)
car	**PidTagCarTelephoneNumber** ([MS-OXOCNTC] section 2.2.1.4.9)
isdn	**PidTagIsdnNumber** ([MS-OXOCNTC] section 2.2.1.4.16)
home;fax	**PidTagHomeFaxNumber** ([MS-OXOCNTC] section 2.2.1.2.6)

TYPE parameter value	Contact object properties
work;fax	**PidTagBusinessFaxNumber** ([MS-OXOCNTC] section 2.2.1.2.6)
pcs	Dropped
pref	**PidTagPrimaryTelephoneNumber** ([MS-OXOCNTC] section 2.2.1.4.5)

Exporting from Contact Objects

Each telephone number is exported as a formatted **TEL** type. The value of the **PidTagOtherTelephoneNumber** property is exported with the **TYPE** parameter set to "voice".

2.1.3.4.2 Type: EMAIL

RFC reference: [RFC2426] section 3.3.2.

vCard data format: EMAIL;TYPE=[Type]:[Email]

Brief description: Email address of the object described by this vCard in either SMTP or X.400 format.

Importing to Contact Objects

The contents of one to three **EMAIL** types are imported into Contact object properties depending on the **TYPE** parameter that is specified. The **EMAIL** type is imported as shown in the following table.

TYPE parameter value	Contact object properties
internet (or no **TYPE** parameter value specified)	**PidLidEmail1EmailAddress** [MS-OXOCNTC] section 2.2.1.2.3 **PidLidEmail2EmailAddress** **PidLidEmail3EmailAddress** Any additional **EMAIL** types are ignored.
im	**PidLidInstantMessagingAddress** [MS-OXOCNTC] section 2.2.1.10.6 Exported as **X-MS-IMADDRESS** as specified in section 2.1.3.9.4.
tlx	**PidTagTelexNumber** ([MS-OXOABK] section 2.2.4.30)

If multiple **TYPE** parameter values are set on an **EMAIL** type, the first recognized **TYPE** parameter value is used. If no **TYPE** parameter value is recognized, "internet" is used.

Exporting from Contact Objects

The **PidLidEmail1EmailAddress**, **PidLidEmail2EmailAddress**, and **PidLidEmail3EmailAddress** properties are exported to the vCard.

The **PidLidInstantMessagingAddress** property is exported as an **X-MS-IMADDRESS** type.

2.1.3.4.3 Type: MAILER

RFC reference: [RFC2426] section 3.3.3.

vCard data format: MAILER:[Mailer]

Brief description: The name of the program that generated the vCard.

Importing to Contact Objects

The **MAILER** type is not imported.

Exporting from Contact Objects

The **MAILER** type is set to a value that is determined by the implementer.<2>

2.1.3.5 Geographical Types

The geographical types capture geographical locations that are associated with the object that the vCard represents.

2.1.3.5.1 Type: TZ

RFC reference: [RFC2426] section 3.4.1.

vCard data format: TZ:[UTC-Offset]

Brief description: The time zone where the object that is represented by the vCard is located.

Importing to and Exporting from Contact Objects

The **TZ** type is neither imported to the Contact object nor exported when a vCard is created.

2.1.3.5.2 Type: GEO

RFC reference: [RFC2426] section 3.4.2.

vCard data format: GEO:[Decimal latitude]; [Decimal longitude]

Brief description: The decimal latitude and longitude of the location of the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **GEO** type is neither imported to the Contact object nor exported when a vCard is created.

2.1.3.6 Organizational Types

These types capture information about the organization or organizational units of the object that the vCard represents.

2.1.3.6.1 Type: TITLE

RFC reference: [RFC2426] section 3.5.1.

vCard data format: TITLE:[Formatted title]

Brief description: Job title, functional position, or function of the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **TITLE** type is imported to and exported from the **PidTagTitle** property ([MS-OXOABK] section 2.2.4.4).

2.1.3.6.2 Type: ROLE

RFC reference: [RFC2426] section 3.5.2.

vCard data format: ROLE:[Formatted role]

Brief description: The role, occupation, or business category of the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **ROLE** type is imported to and exported from the **PidTagProfession** property ([MS-OXOCNTC] section 2.2.1.6.9).

2.1.3.6.3 Type: LOGO

RFC reference: [RFC2426] section 3.5.3.

vCard data format:

LOGO;Encoding=b;TYPE=[Type]:[Data]

LOGO;VALUE=uri:[URI]

Brief description: A graphic image of a logo that is associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **LOGO** type is neither imported to the Contact object nor exported when a vCard is created.

2.1.3.6.4 Type: AGENT

RFC reference: [RFC2426] section 3.5.4.

vCard data format:

AGENT;VALUE=uri:[Unique identifier]

AGENT:BEGIN: VCARD\n[vCard data]\nEND:VCARD\n

Brief description: Information about another person who will act on behalf of the object that is represented by the vCard.

Importing to Contact Objects

Only the second (vCard) form of the **AGENT** type is imported. All values in the **AGENT** type vCard are dropped except for the **FN** and **TEL** types. Contact object properties are assigned as shown in the following table.

AGENT vCard type	Contact object property
FN	**PidTagAssistant** ([MS-OXOABK] section 2.2.4.8)
TEL	**PidTagAssistantTelephoneNumber** ([MS-OXOABK] section 2.2.4.31)

The last **TEL** type in the **AGENT** type vCard is used as the assistant's telephone number.

Exporting from Contact Objects

The **PidTagAssistant** and **PidTagAssistantTelephoneNumber** properties are exported as the **X-MS-ASSISTANT** (section 2.1.3.9.9) and **X-MS-TEL** (section 2.1.3.9.5)**;TYPE=ASSISTANT** types.

2.1.3.6.5 Type: ORG

RFC reference: [RFC2426] section 3.5.5.

vCard data format: ORG:[Organization];[SubUnit1];[SubUnit2]; <repeats>

Brief description: The organizational name and units that are associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The fields of the **ORG** type are imported to and exported from Contact object properties as shown in the following table.

ORG type field	Contact object property
Organization	**PidTagCompanyName** ([MS-OXOABK] section 2.2.4.7)
SubUnit1 **SubUnit2**	**PidTagDepartmentName** ([MS-OXOABK] section 2.2.4.6)

2.1.3.7 Explanatory Types

The explanatory types capture additional information about the person or resource that is identified by the vCard.

2.1.3.7.1 Type: CATEGORIES

RFC reference: [RFC2426] section 3.6.1.

vCard data format: CATEGORIES:[value1],[value2],<repeats>

Brief description: Comma-separated category information that is associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The categories type is imported to and exported from the **PidLidCategories** property ([MS-OXCMSG] section 2.2.1.22).

2.1.3.7.2 Type: NOTE

RFC reference: [RFC2426] section 3.6.2.

Contact object reference: N/A.

vCard data format: NOTE:[Note]

Brief description: Supplemental information or comment that is associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **NOTE** type is imported to and exported from the **PidTagBody** property ([MS-OXCMSG] section 2.2.1.56.1).

2.1.3.7.3 Type: PRODID

RFC reference: [RFC2426] section 3.6.3.

vCard data format: PRODID:[Product]

Brief description: Identifier of the product that created the vCard.

Importing to Contact Objects

The **PRODID** type is not imported.

Exporting from Contact Objects

The **PRODID** type is set to a value that is determined by the implementer.<3>

2.1.3.7.4 Type: REV

RFC reference: [RFC2426] section 3.6.4.

vCard data format: REV:[Revision]

Brief description: Distinguishes the current revision of the information in the vCard from other renditions of the information.

Importing to and Exporting from Contact Objects

The **REV** type is imported to and exported from the **PidTagLastModificationTime** property ([MS-OXCMSG] section 2.2.2.2).

2.1.3.7.5 Type: SORT-STRING

RFC reference: [RFC2426] section 3.6.5.

vCard data format: SORT-STRING:[Sort text]

Brief description: Text to be used for national/regional-language-specific sorting of the **FN** and **N** types.

Importing to and Exporting from Contact Objects

The **SORT-STRING** type is neither imported to the Contact object nor exported when a vCard is created.

2.1.3.7.6 Type: SOUND

RFC reference: [RFC2426] section 3.6.6.

vCard data format:

SOUND;TYPE=[Format];VALUE=uri:cid:[Uri]

SOUND:TYPE=[Format];ENCODING=b:[data]

Brief description: Digital sound content associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **SOUND** type is neither imported to the Contact object nor exported when a vCard is created.

2.1.3.7.7 Type: UID

RFC reference: [RFC2426] section 3.6.7.

vCard data format: UID:[Unique identifier]

Brief description: Globally unique identifier that corresponds to the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **UID** type is neither imported to the Contact object nor exported when a vCard is created.

2.1.3.7.8 Type: URL

RFC reference: [RFC2426] section 3.6.8.

vCard data format: URL; TYPE=[Type]:[Uri]

Brief description: **Uniform Resource Identifier (URI)** that is associated with the object that is represented by the vCard.

Importing to Contact Objects

The **URL** type is imported to the Contact object based on the **TYPE** parameter.

TYPE parameter value	Contact object property
home	**PidTagPersonalHomePage** ([MS-OXOCNTC] section 2.2.1.10.13)
work	**PidTagBusinessHomePage** ([MS-OXOCNTC] section 2.2.1.10.14)

If the **TYPE** parameter is not specified, the **URL** type is imported to the **PidTagPersonalHomePage** property; one additional **URL** type is imported to the **PidTagBusinessHomePage** property; any other instances are ignored.

Exporting from Contact Objects

One **URL** type is exported from the **PidTagBusinessHomePage** property with the **TYPE** parameter set to "work", and another **URL** type is exported from the **PidTagPersonalHomePage** property with the **TYPE** parameter set to "home".

2.1.3.7.9 Type: VERSION

RFC reference: [RFC2426] section 3.6.9.

vCard data format: VERSION:[Version]

Brief description: The version of the vCard specification that is used to format the vCard.

Importing to Contact Objects

The **VERSION** type is not imported to the Contact object.

Exporting from Contact Objects

The **VERSION** type is set to 3.0.

2.1.3.8 Security Types

The security types capture security information for the vCard.

2.1.3.8.1 Type: CLASS

RFC reference: [RFC2426] section 3.7.1.

vCard data format: CLASS:[Access classification]

Brief description: Specifies the access classification for a vCard.

Importing to and Exporting from Contact Objects

The **CLASS** type is imported to and exported from the **PidTagSensitivity** property ([MS-OXCMSG] section 2.2.1.13), as shown in the following table.

CLASS type value	PidTagSensitivity value
Public	0
Private	2
Confidential	3

If the **CLASS** type value is not one of the values shown in the preceding table or if the **CLASS** type is not included in the vCard, the **PidTagSensitivity** property is set to 0.

2.1.3.8.2 Type: KEY

RFC reference: [RFC2426] section 3.7.2.

vCard data format: KEY;ENCODING=b:[data]

Brief description: A public key or authentication certificate that is associated with the object that the vCard represents.

Importing to and Exporting from Contact Objects

If the **KEY** type represents an X.509 certificate, the **KEY** type is imported to and exported from the **PidTagUserX509Certificate** property ([MS-OXOABK] section 2.2.4.36). Other certificate types are not imported.

2.1.3.9 Custom Types

The following types are extended types that use the nonstandard mechanism that is defined in [RFC2045].

2.1.3.9.1 EBC Design

vCard header: X-MS-OL-DESIGN:

vCard data format: X-MS-OL-DESIGN:[data]

Brief description: Electronic business card that is associated with the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **X-MS-OL-DESIGN** type is imported to and exported from the **PidLidBusinessCardDisplayDefinition** property ([MS-OXOCNTC] section 2.2.1.7.1).

2.1.3.9.2 Children

vCard header: X-MS-CHILD:, X-CHILD:

vCard data format: X-MS-CHILD:[Children's names]

Brief description: The names of children who are associated with the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **X-MS-CHILD** and **X-CHILD** types are imported to the **PidTagChildrensNames** property ([MS-OXOCNTC] section 2.2.1.10.17). The **PidTagChildrensNames** property is exported to the **X-MS-CHILD** type; the **X-CHILD** type is not used for export.

2.1.3.9.3 User Text

vCard header: X-MS-TEXT:, X-CUSTOM:

vCard data format: X-MS-TEXT:[Text]

Brief description: Custom text that is associated with the object that the vCard represents.

Importing to Contact Objects

The **X-MS-TEXT** type is saved to the **PidLidContactUserField1**, **PidLidContactUserField2**, **PidLidContactUserField3**, and **PidLidContactUserField4** properties ([MS-OXOCNTC] section 2.2.1.7.3) in the order in which they are received. A maximum of four **X-MS-TEXT** types can be saved; additional instances are discarded.

Exporting from Contact Objects

The contents of the **PidLidContactUserField1**, **PidLidContactUserField2**, **PidLidContactUserField3**, and **PidLidContactUserField4** properties are exported as **X-MS-TEXT** types.

2.1.3.9.4 Instant Messaging Address

vCard header: X-MS-IMADDRESS:, X-MS-RM-IMACCOUNT:, EMAIL;IM:

vCard data format: X-MS-IMADDRESS;[IM Address]

Brief description: Instant messaging address that is associated with the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **X-MS-IMADDRESS** type is imported to and exported from the **PidLidInstantMessagingAddress** property ([MS-OXOCNTC] section 2.2.1.10.6). Any additional **X-MS-IMADDRESS** types are ignored.

2.1.3.9.5 Telephone Numbers

vCard header: X-MS-TEL;TYPE=[type]:[Phone Number]

Brief description: The telephone number properties listed in the following table are imported to and exported from properties as **X-MS-TEL** types.

TYPE parameter value	Contact object property
ASSISTANT	**PidTagAssistantTelephoneNumber (**[MS-OXOCNTC] section 2.2.1.4.11)
CALLBACK	**PidTagCallbackTelephoneNumber** ([MS-OXOCNTC] section 2.2.1.4.2)
COMPANY	**PidTagCompanyMainTelephoneNumber** ([MS-OXOCNTC] section 2.2.1.4.14)
RADIO	**PidTagRadioTelephoneNumber** ([MS-OXOCNTC] section 2.2.1.4.8)
TTYTDD	**PidTagTelecommunicationsDeviceForDeafTelephoneNumber** ([MS-OXOCNTC]

TYPE parameter value	Contact object property
	section 2.2.1.4.13)

2.1.3.9.6 Anniversary

vCard header: X-MS-ANNIVERSARY:, X-ANNIVERSARY:

vCard data format: X-MS-ANNIVERSARY:[date or date/time value]

Required: No.

Brief description: The wedding anniversary that is associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **X-MS-ANNIVERSARY** type is imported to and exported from the **PidTagWeddingAnniversary** property ([MS-OXOCNTC] section 2.2.1.5.4). The time that is associated with the anniversary event SHOULD<4> be 0:00 in the client's local time zone.

2.1.3.9.7 Spouse/Partner's Name

vCard header: X-MS-SPOUSE;N:

vCard data format: X-MS-SPOUSE;N:[Formatted name]

Brief description: The name of the spouse/partner who is associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **X-MS-SPOUSE;N** type is imported to and exported from the **PidTagSpouseName** property ([MS-OXOCNTC] section 2.2.1.10.3).

2.1.3.9.8 Manager's Name

vCard header: X-MS-MANAGER;N:

vCard data format: X-MS-MANAGER;N:[Formatted name]

Brief description: The name of the manager who is associated with the object that the vCard represents.

Importing to and Exporting from Contact Objects

The **X-MS-MANAGER;N** type is imported to and exported from the **PidTagManagerName** property ([MS-OXOCNTC] section 2.2.1.6.6).

2.1.3.9.9 Assistant's Name

vCard header: X-MS-ASSISTANT;N:, X-ASSISTANT

vCard data format: X-MS-ASSISTANT;N:[Formatted name]

Brief description: The name of a person who is authorized to act on behalf of the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **X-MS-ASSISTANT;N** type is imported to and exported from the **PidTagAssistant** property ([MS-OXOABK] section 2.2.4.8). The **X-MS-TEL;ASSISTANT** and **X-MS-ASSISTANT;N:** types are used instead of the vCard **AGENT** type.

2.1.3.9.10   Free/Busy URL

vCard header: FBURL

vCard data format: FBURL:[Uri]

Brief description: A URI from which a client can retrieve free/busy information for the object that is represented by the vCard as an iCal file, as specified in [MS-OXCICAL].

Importing to and Exporting from Contact Objects

The **FBURL** type is imported to and exported from the **PidLidFreeBusyLocation** property ([MS-OXOCNTC] section 2.2.1.10.10).

2.1.3.9.11   Interests

vCard header: X-MS-INTERESTS:, X-INTERESTS:

vCard data format: X-MS-INTERESTS:[List of interests]

Brief description: The hobbies or other interests that are associated with the object that is represented by the vCard.

Importing to and Exporting from Contact Objects

The **X-MS-INTERESTS** type is imported to and exported from the **PidTagHobbies** property ([MS-OXOCNTC] section 2.2.1.10.2).

3 Algorithm Examples

The following examples show how a vCard is imported to and exported from a Contact object.

3.1 Importing a vCard

The following is a text representation of a vCard.

```
BEGIN:vCard
VERSION:3.0
FN:Dan Fennell
ORG:Contoso, Ltd.
ADR;TYPE=WORK,POSTAL,PARCEL:;;7890 Elm Street;Boulder;CO;33041;U.S.
TEL;TYPE=VOICE,MSG,WORK:+1-206-555-0102
TEL;TYPE=FAX,WORK:+1-206-555-0162
EMAIL;TYPE=INTERNET,PREF:dan.fennell@contoso.com
EMAIL;TYPE=INTERNET:dfennell@fabrikam.com
URL;TYPE=WORK:http://www.contoso.com/
END:vCard
```

The information in the vCard is imported to a Contact object, as shown in the following table.

vCard type	Contact object property	Value
FN:	**PidTagDisplayName**	Dan Fennell
ORG:	**PidTagCompanyName**	Contoso, Ltd.
ADR; TYPE=WORK, postal,parcel:	**PidTagStreetAddress** **PidTagOtherAddressStreet**	7890 Elm St.
ADR; TYPE=WORK, postal,parcel:	**PidTagLocality** **PidTagOtherAddressCity**	Boulder
ADR; TYPE=WORK, postal,parcel:	**PidTagStateOrProvince** **PidTagOtherAddressStateOrProvince**	CO
ADR; TYPE=WORK, postal,parcel:	**PidTagPostalCode** **PidTagOtherAddressPostalCode**	33041
ADR; TYPE=WORK, postal,parcel:	**PidTagCountry** **PidTagOtherAddressCountry**	U.S.
TEL; TYPE=VOICE,MSG, WORK:	**PidTagBusinessTelephoneNumber** **PidTagOtherTelephoneNumber**	+1-206-555-0102
TEL; TYPE=FAX, WORK:	**PidTagBusinessFaxNumber**	+1-206-555-0162
EMAIL; TYPE=INTERNET, PREF:	**PidLidEmail1EmailAddress**	dan.fennell@contoso.com
EMAIL; TYPE=INTERNET:	**PidLidEmail2EmailAddress**	dfennell@fabrikam.com
URL; TYPE=WORK:	**PidTagBusinessHomePage**	http://www.contoso.com/

3.2 Exporting a Contact object

The following table contains the values stored in a Contact object.

Contact object property	Value
PidLidEmail1EmailAddress	dan.fennell@contoso.com
PidLidEmail2EmailAddress	dfennell@fabrikam.com
PidTagAssistant	Jeff Price
PidTagAssistantTelephoneNumber	+1-206-555-0188
PidTagBusinessTelephoneNumber	+1-206-555-0102
PidTagCompanyMainTelephoneNumber	+1-206-555-0100
PidTagCompanyName	Contoso, Ltd.
PidTagCountry	USA
PidTagGivenName	Dan
PidTagHomeAddressCountry	USA
PidTagHomeAddressCity	Boulder
PidTagHomeAddressPostalCode	33041
PidTagHomeAddressStateOrProvince	CO
PidTagHomeAddressStreet	345 Aspen Street
PidTagLocality	Boulder
PidTagMobileTelephoneNumber	+1-425-555-0199
PidTagPostalCode	33041
PidTagStateOrProvince	CO
PidTagStreetAddress	7890 Elm Street
PidTagSurname	Fennell

The following vCard is generated from the preceding table.

```
BEGIN:vCard
VERSION:3.0
PRODID:Microsoft Exchange
FN:Dan Fennell
N:Fennell;Dan;;;
ORG:Contoso, Ltd
ADR;TYPE=work,pref:;;7890 Elm Street;Boulder;CO;33041;U.S.
ADR;TYPE=home:;;345 Aspen Street;Boulder;CO;33041;U.S.
EMAIL:TYPE=internet,pref:dan.fennell@contoso.com
EMAIL:TYPE=internet:dfennell@fabrikam.com
TEL;TYPE=work,pref:+1-206-555-0102
TEL;TYPE=cell:+1-425-555-0199
X-MS-TEL;TYPE=COMPANY:+1-206-555-0100
X-MS-ASSISTANT;TYPE=N: Jeff Price
X-MS-TEL;TYPE=ASSISTANT:+1-206-555-0188
```

4 Security

4.1 Security Considerations for Implementers

The vCard format can carry cryptographic keys or certificates, as specified in section 2.1.3.8.2.

Section 2.1.3.8.1 specifies a security classification policy for a vCard. Note that the security policy is not enforced in any way.

vCards have no inherent authentication or privacy features, but they can be sent by any security mechanism that transfers MIME objects with security or privacy. Where the threat exists of invalid vCard information, it is recommended that you send the vCard by such a mechanism.

The information contained in a vCard may become out of date. In cases where the data is important to the originator of the vCard, it is recommended that you specify the **URL** type specified in section 2.1.3.7.8. In addition, you can use the **REV** type specified in section 2.1.3.7.4 to indicate the last time that the vCard data was updated.

4.2 Index of Security Parameters

Security parameter	Section
CLASS type	2.1.3.8.1
KEY type	2.1.3.8.2
REV type	2.1.3.7.4
URL type	2.1.3.7.8

5   Appendix A: Product Behavior

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

- Microsoft Exchange Server 2010

- Microsoft Exchange Server 2013

- Microsoft Exchange Server 2016

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

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

<1> Section 2.1.3.2.5: If the vCard is imported via the **Simple Mail Transfer Protocol (SMTP)**, the client's time zone will be unavailable. In this case, Exchange 2010, Exchange 2013, and Exchange 2016 use the time 0:00 **Coordinated Universal Time (UTC)** when setting the **PidTagBirthday** property and the resulting date might be off by one day.

<2> Section 2.1.3.4.3: The **MAILER** type is set to "Microsoft Exchange" for Exchange Server.

<3> Section 2.1.3.7.3: The **PRODID** type is set to "Microsoft Exchange" for Exchange Server.

<4> Section 2.1.3.9.6: If the vCard is imported via the Simple Mail Transfer Protocol (SMTP), the client's time zone will be unavailable. In this case, Exchange 2010, Exchange 2013, and Exchange 2016 use the time 0:00 UTC when setting the **PidTagWeddingAnniversary** property and the resulting date might be off by one day.

6   Change Tracking

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

7 Index