[MS-OXWSPERS]:
Persona Web Service Protocol Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
07/16/2012	0.1	New	Released new document.

Table of Contents

1 Introduction

The Persona Web Service Protocol enables clients to use a **Web service** to find and retrieve linked **contacts (3)**.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

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

Hypertext Transfer Protocol (HTTP)
Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)

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

contact
endpoint
Simple Object Access Protocol (SOAP)
SOAP action
SOAP body
SOAP header
Web service
Web Services Description Language (WSDL)
WSDL message
WSDL operation
WSDL port type
XML namespace
XML namespace prefix
XML schema

The following terms are specific to this document:

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

1.2 References

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the technical documents, which are updated frequently. References to other documents include a publishing year when one is available.

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. Please check the archive site, http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

[MS-OXWSCDATA] Microsoft Corporation, "Common Web Service Data Types".

[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

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000, http://www.ietf.org/rfc/rfc2818.txt

[SOAP1.1] Box, D., Ehnebuske, D., Kakivaya, G., et al., "Simple Object Access Protocol (SOAP) 1.1", May 2000, http://www.w3.org/TR/2000/NOTE-SOAP-20000508/

[WSDL] Christensen, E., Curbera, F., Meredith, G., and Weerawarana, S., "Web Services Description Language (WSDL) 1.1", W3C Note, March 2001, http://www.w3.org/TR/2001/NOTE-wsdl-20010315

[XMLNS] Bray, T., Hollander, D., Layman, A., et al., Eds., "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation, December 2009, http://www.w3.org/TR/2009/REC-xml-names-20091208/

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary".

[MS-OXDSCLI] Microsoft Corporation, "Autodiscover Publishing and Lookup Protocol Specification".

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

[MS-OXWSADISC] Microsoft Corporation, "Autodiscover Publishing and Lookup SOAP-Based Web Service Protocol Specification".

[RFC2616] Fielding, R., Gettys, J., Mogul, J., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999, http://www.ietf.org/rfc/rfc2616.txt

1.3 Overview

A persona is a collection of data that is associated with an individual. The data can come from one or more sources and is associated with the persona by means of a common link identifier. Personas in Exchange Web Services (EWS) enable clients to link, search, browse, and retrieve information about a person from multiple sources and organize that information into a single logical entity.

Personas differ from contacts in that a contact is a collection of data from a single source that is associated with an individual, whereas a persona is a collection of integrated data from various sources.

1.4 Relationship to Other Protocols

A client that implements this protocol can use the Autodiscover Publishing and Lookup SOAP-Based Web Service Protocol, as described in [MS-OXWSADISC], or the Autodiscover Publishing and Lookup Protocol, as described in [MS-OXDSCLI], to identify the target **endpoint (4)** to use for each operation.

This protocol uses the SOAP Protocol, as described in [SOAP1.1], to specify the structure information that is exchanged between the client and the server. This protocol uses the XML Protocol, as described in [XMLSCHEMA1] and [XMLSCHEMA2], to describe the message content that is sent to and from the server.

This protocol uses **SOAP** over **HTTP**, as described in [RFC2616], and SOAP over **HTTPS**, as described in [RFC2818], as shown in the following layering diagram.
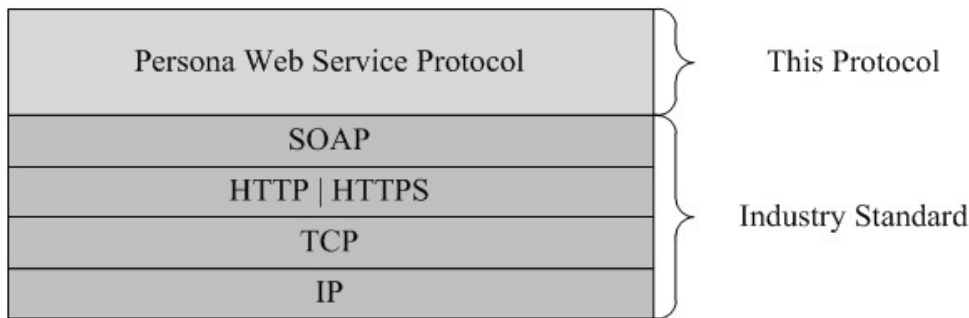
Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

The endpoint (4) URL that is returned by either the Autodiscover Publishing Lookup SOAP-Based Web Service Protocol, as described in [MS-OXWSADISC], or the Autodiscover Publishing and Lookup Protocol, as described in [MS-OXDSCLI], is required to form the HTTP request to the web server that hosts this protocol. The operations that this protocol defines cannot be accessed unless the correct endpoint (4) is identified in the HTTP web requests that target this protocol.

1.6 Applicability Statement

This protocol is applicable to environments that use Web services to implement personas. This protocol is applicable to all SOAP-based clients, as described in [SOAP1.1].

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports**: This protocol uses SOAP 1.1, as described in section 2.1.

- **Protocol Versions**: This protocol describes only one **WSDL port type** version. The **WSDL** version of the request is identified by using the **t:RequestServerVersion** element, as described in [MS-OXWSCDATA] section 2.2.5.9, and the version of the server responding to the request is identified by using the **t:ServerVersionInfo** element, as described in [MS-OXWSCDATA] section 2.2.5.10.

- **Security and Authentication Methods**: This protocol relies on the web server that is hosting it to perform authentication.

- **Capability Negotiation**: This protocol does not support version negotiation.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

In the following sections, the schema definition might differ from the processing rules imposed by the protocol. The WSDL in this specification provides a base description of the protocol. The schema in this specification provides a base description of the message syntax. The text that specifies the WSDL and schema might specify restrictions that reflect actual protocol behavior. For example, the schema definition might allow for an element to be empty, null, or not present but the behavior of the protocol as specified restricts the same elements to being non-empty, not null, or present.

2.1 Transport

The SOAP version used for this protocol is SOAP 1.1, as specified in [SOAP1.1].

This protocol relies on the web server that hosts the application to perform authentication. The protocol SHOULD use secure communications by means of HTTPS, as specified in [RFC2818].

2.2 Common Message Syntax

This section contains common definitions that are used by this protocol. The syntax of the definitions uses **XML schema**, as specified in [XMLSCHEMA1] and [XMLSCHEMA2], and Web Services Description Language (WSDL), as specified in [WSDL].

2.2.1 Namespaces

This specification defines and references various **XML namespaces** using the mechanisms specified in [XMLNS]. Although this specification associates a specific **XML namespace prefix** for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and not significant for interoperability.

Prefix	Namespace URI	Reference
m	http://schemas.microsoft.com/exchange/services/2006/messages	
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
t	http://schemas.microsoft.com/exchange/services/2006/types	
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
wsi	http://ws-i.org/schemas/conformanceClaim/	
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1] [XMLSCHEMA2]

2.2.2 Messages

This specification does not define any common **WSDL message** definitions.

2.2.3 Elements

This specification does not define any common XML schema element definitions.

2.2.4 Complex Types

The following table summarizes the set of common XML schema complex type definitions defined by this specification. XML schema complex type definitions that are specific to a particular operation are described with the operation.

Complex type	Description
ArrayOfEmailAddressAttributedValuesType	The **ArrayOfEmailAddressAttributedValuesType** complex type specifies an array of **EmailAddressAttributedValue** elements.
ArrayOfExtendedPropertyAttributedValueType	The **ArrayOfExtendedPropertyAttributedValueType** complex type specifies an array of **ExtendedPropertyAttributedValue** elements.
ArrayOfFolderIdType	The **ArrayOfFolderIdType** complex type specifies an array of **FolderId** elements.
ArrayOfPersonaAttributionsType	The **ArrayOfPersonaAttributionsType** complex type specifies an array of persona attributions.
ArrayOfPhoneNumberAttributedValuesType	The **ArrayOfPhoneNumberAttributedValuesType** complex type specifies an array of **PhoneNumberAttributedValue** elements.
ArrayOfPostalAddressAttributedValuesType	The **ArrayOfPostalAddressAttributedValuesType** complex type specifies an array of **PostalAddressAttributedValue** elements.
ArrayOfStringArrayAttributedValuesType	The **ArrayOfStringArrayAttributedValuesType** complex type specifies an array of **StringArrayAttributedValue** elements.
ArrayOfStringAttributedValuesType	The **ArrayOfStringAttributedValuesType** complex type specifies an array of **StringAttributedValue** elements.
ArrayOfStringValueType	The **ArrayOfStringValueType** complex type specifies an array of strings.
ArrayOfValueAttributionsType	The **ArrayOfValueAttributionsType** complex type specifies an array of strings, where each string matches one of the **Id** values of the attributions of a persona.
EmailAddressAttributedValueType	The **EmailAddressAttributedValueType** specifies a pair of an **EmailAddress** and an **ArrayOfValueAttributionsType**. The type represents a **Persona** property of type "EmailAddress", paired with a list of the attributions from which that value came.
ExtendedPropertyAttributedValueType	The **ExtendedPropertyAttributedValueType** complex type specifies arrays of extended properties and attributions for a persona.
PersonaAttributionType	The **PersonaAttributionType** complex type specifies the type of one attribution of the persona, which represents information about one of the underlying contacts or Active Directory recipients aggregated into the persona.
PersonaPhoneNumberType	The **PersonaPhoneNumberType** complex type specifies

Complex type	Description
	a persona phone number property.
PersonaPostalAddressType	The **PersonaPostalAddressType** complex type specifies a persona postal address property.
PersonaType	The **PersonaType** complex type specifies the type of a persona.
PhoneNumberAttributedValueType	The **PhoneNumberAttributedValueType** complex type specifies a pair of a **PersonaPhoneNumberType** and an **ArrayOfValueAttributionsType**. The type represents a persona property of type **PersonaPhoneNumberType**, paired with a list of the attributions from which that value came.
PostalAddressAttributedValueType	The **PostalAddressAttributedValueType** complex type specifies a pair of a **PersonaPostalAddressType** and an **ArrayOfValueAttributionsType**. The type specifies a **Persona** property of type **PersonaPostalAddressType**, paired with a list of the attributions from which that value came.
StringArrayAttributedValueType	The **StringArrayAttributedValueType** complex type specifies a pair of an **ArrayOfStringValueType** and an **ArrayOfValueAttributionsType**. The type specifies a **Persona** property of type string, paired with a list of the attributions from which that value came.
StringAttributedValueType	The **StringAttributedValueType** complex type encapsulates a string value and multiple attributions for the value.

2.2.4.1   ArrayOfEmailAddressAttributedValuesType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfEmailAddressAttributedValuesType** complex type specifies an array of **EmailAddressAttributedValue** elements.

```
<xs:complexType name="ArrayOfEmailAddressAttributedValuesType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="EmailAddressAttributedValue"
type="t:EmailAddressAttributedValueType"/>
  </xs:sequence>
</xs:complexType>
```

EmailAddressAttributedValue: Represents the email address of a persona.

2.2.4.2   ArrayOfExtendedPropertyAttributedValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfExtendedPropertyAttributedValueType** complex type specifies an array of **ExtendedPropertyAttributedValue** elements.

```
<xs:complexType name="ArrayOfExtendedPropertyAttributedValueType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ExtendedPropertyAttributedValue"
type="t:ExtendedPropertyAttributedValueType"/>
  </xs:sequence>
</xs:complexType>
```

ExtendedPropertyAttributedValue: Represents extended properties for a persona.

2.2.4.3 ArrayOfFolderIdType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfFolderIdType** complex type specifies an array of **FolderId** elements.

```
<xs:complexType name="ArrayOfFolderIdType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:choice minOccurs="0" maxOccurs="unbounded">
    <xs:element name="FolderId" type="t:FolderIdType"/>
  </xs:choice>
</xs:complexType>
```

FolderId: Represents the identifier of a folder.

2.2.4.4 ArrayOfPersonaAttributionsType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfPersonaAttributionsType** complex type specifies an array of persona attributions.

```
<xs:complexType name="ArrayOfPersonaAttributionsType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="unbounded" name="Attribution"
type="t:PersonaAttributionType"/>
  </xs:sequence>
</xs:complexType>
```

Attribution: Represents an instance in an array that specifies a set of attributes for a
PersonaType element.

2.2.4.5 ArrayOfPhoneNumberAttributedValuesType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfPhoneNumberAttributedValuesType** complex type specifies an array of
PhoneNumberAttributedValue elements.

```
<xs:complexType name="ArrayOfPhoneNumberAttributedValuesType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PhoneNumberAttributedValue"
type="t:PhoneNumberAttributedValueType"/>
  </xs:sequence>
```

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```
        </xs:complexType>
```

PhoneNumberAttributedValue: Represents an instance of an array of phone numbers and their associated attributions.

2.2.4.6   ArrayOfPostalAddressAttributedValuesType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfPostalAddressAttributedValuesType** complex type specifies an array of **PostalAddressAttributedValue** elements.

```
<xs:complexType name="ArrayOfPostalAddressAttributedValuesType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PostalAddressAttributedValue"
type="t:PostalAddressAttributedValueType"/>
  </xs:sequence>
</xs:complexType>
```

PostalAddressAttributedValue: Represents an instance of an array of postal addresses and their associated attributions.

2.2.4.7   ArrayOfStringArrayAttributedValuesType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfStringArrayAttributedValuesType** complex type specifies an array of **StringArrayAttributedValue** elements.

```
<xs:complexType name="ArrayOfStringArrayAttributedValuesType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="StringArrayAttributedValue"
type="t:StringArrayAttributedValueType"/>
  </xs:sequence>
</xs:complexType>
```

StringArrayAttributedValue: Represents an instance of an array of string data for a persona element.

2.2.4.8   ArrayOfStringAttributedValuesType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfStringAttributedValuesType** complex type specifies an array of **StringAttributedValue** elements.

```
<xs:complexType name="ArrayOfStringAttributedValuesType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="StringAttributedValue"
type="t:StringAttributedValueType"/>
  </xs:sequence>
```

```
      </xs:complexType>
```

StringAttributedValue: Represents an instance in an array of attributes associated with a persona.

2.2.4.9   ArrayOfStringValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfStringValueType** complex type specifies an array of strings.

```
<xs:complexType name="ArrayOfStringValueType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="unbounded" name="Value" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

Value: Represents an instance in an array containing a string associated with attributions data.

2.2.4.10   ArrayOfValueAttributionsType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfValueAttributionsType** complex type specifies an array of strings, where each string matches one of the **Id** values of the attributions of a persona.

```
<xs:complexType name="ArrayOfValueAttributionsType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="unbounded" name="Attribution" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

Attribution: Contains a string used to identify a persona attribute.

2.2.4.11   EmailAddressAttributedValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **EmailAddressAttributedValueType** specifies a pair of an **EmailAddress** and an **ArrayOfValueAttributionsType**. The type represents a **Persona** property of type "EmailAddress", paired with a list of the attributions from which that value came.

```
<xs:complexType name="EmailAddressAttributedValueType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:EmailAddressType"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
  </xs:sequence>
</xs:complexType>
```

Value: Represents the value of an **EmailAddress** associated with an **Attributions** array.

Attributions: Represents an array of attribution identifiers associated with an email address.

2.2.4.12 ExtendedPropertyAttributedValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ExtendedPropertyAttributedValueType** complex type specifies arrays of extended properties and attributions for a persona.

```
<xs:complexType name="ExtendedPropertyAttributedValueType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:ExtendedPropertyType"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
  </xs:sequence>
</xs:complexType>
```

Value: Contains an array of extended properties for a persona.

Attributions: Represents an array containing a set of attributions for its associated **Value** element.

2.2.4.13 PersonaAttributionType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **PersonaAttributionType** complex type specifies the type of one attribution of the persona, which represents information about one of the underlying contacts or Active Directory recipients aggregated into the persona.

```
<xs:complexType name="PersonaAttributionType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Id" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="SourceId" type="t:ItemIdType"/>
    <xs:element minOccurs="1" maxOccurs="1" name="DisplayName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="IsWritable" type="xs:boolean"/>
    <xs:element minOccurs="0" maxOccurs="1" name="IsQuickContact" type="xs:boolean"/>
    <xs:element minOccurs="0" maxOccurs="1" name="IsHidden" type="xs:boolean"/>
    <xs:element minOccurs="0" maxOccurs="1" name="FolderId" type="t:FolderIdType"/>
  </xs:sequence>
</xs:complexType>
```

Id: Contains an arbitrary string identifying this attribution within the persona.

SourceId: Represents the Exchange Web Services (EWS) identifier of the contact or Active Directory recipient.

DisplayName: Name for this attribution suitable for display

IsWritable: Contains a Boolean value that indicates whether the underlying contact or Active Directory recipient can be written to.

IsQuickContact: Contains a Boolean value that indicates whether the underlying contact or Active Directory recipient is a quick contact.

IsHidden: Contains a Boolean value that indicates whether the underlying contact or Active Directory recipient should be displayed as part of the persona.

FolderId: Represents the EWS identifier of the folder for the underlying contact.

2.2.4.14 PersonaPhoneNumberType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **PersonaPhoneNumberType** complex type specifies a persona phone number property.

```
<xs:complexType name="PersonaPhoneNumberType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Number" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Type" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

Number: Contains a phone number.

Type: Contains a string specifying the type of phone number, (for example, "Mobile", "Business", or "Home") of an associated **Number** value.

2.2.4.15 PersonaPostalAddressType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **PersonaPostalAddressType** complex type specifies a persona postal address property.

```
<xs:complexType name="PersonaPostalAddressType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="Street" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="City" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="State" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Country" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="PostalCode" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="PostOfficeBox" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Type" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Latitude" type="xs:double"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Longitude" type="xs:double"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Accuracy" type="xs:double"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Altitude" type="xs:double"/>
    <xs:element minOccurs="0" maxOccurs="1" name="AltitudeAccuracy" type="xs:double"/>
    <xs:element minOccurs="0" maxOccurs="1" name="FormattedAddress" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="LocationUri" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="LocationSource"
type="t:LocationSourceType"/>
  </xs:sequence>
</xs:complexType>
```

Street: Contains a string representing the "street" portion of a postal address.

City: Contains a string representing the "city" portion of a postal address.

State: Contains a string representing the "state" portion of a postal address.

Country: Contains a string representing the "country/region" portion of a postal address.

PostalCode: Contains a string representing the "postal code" portion of a postal address.

PostOfficeBox: Contains a string representing the "post office box" portion of a postal address.

Type: Contains a string specifying the type of postal address, for example, "Home" or "Business".

Latitude: Represents the latitude of the location of the associated postal address.

Longitude: Represents the longitude of the location of the associated postal address.

Accuracy: Represents the accuracy of the latitude and longitude of the associated postal address.

Altitude: Represents the altitude of the associated postal address.

AltitudeAccuracy: Represents the accuracy of the altitude of the associated postal address.

FormattedAddress: Contains a string specifying the formatted display value of the associated postal address.

LocationUri: Contains a string specifying a URI, for example, for an Internet address, of the associated postal address.

LocationSource: Contains information about the origin of the associated postal address, for example, a contact or a telephone book.

2.2.4.16 PersonaType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **PersonaType** complex type specifies the type of a persona.

```
<xs:complexType name="PersonaType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="PersonaId" type="t:ItemIdType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="PersonaType" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="PersonaObjectStatus" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="CreationTime" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="Body" type="t:BodyType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameFirstLastSortKey"
type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameLastFirstSortKey"
type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="CompanyNameSortKey" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="HomeCitySortKey" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="WorkCitySortKey" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="FileAsSortKey" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DisplayName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameFirstLast" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameLastFirst" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="FileAs" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="FileAsId" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DisplayNamePrefix" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="GivenName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="MiddleName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Surname" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Generation" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Nickname" type="xs:string"/>
```

```xml
    <xs:element minOccurs="0" maxOccurs="1" name="YomiCompanyName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="YomiFirstName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="YomiLastName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Title" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Department" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="CompanyName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Location" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="EmailAddress" type="t:EmailAddressType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="EmailAddresses"
type="t:ArrayOfEmailAddressesType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="PhoneNumber"
type="t:PersonaPhoneNumberType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="ImAddress" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="HomeCity" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="WorkCity" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="RelevanceScore" type="xs:int"/>
    <xs:element minOccurs="0" maxOccurs="1" name="FolderIds" type="t:ArrayOfFolderIdType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Attributions"
type="t:ArrayOfPersonaAttributionsType"/>
    <xs:element minOccurs="0" name="DisplayNames"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="FileAses" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="FileAsIds" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="DisplayNamePrefixes"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="GivenNames" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="MiddleNames" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Surnames" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Generations" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Nicknames" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Initials" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="YomiCompanyNames"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="YomiFirstNames"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="YomiLastNames"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="BusinessPhoneNumbers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="BusinessPhoneNumbers2"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="HomePhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="HomePhones2"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="MobilePhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="MobilePhones2"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="AssistantPhoneNumbers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="CallbackPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="CarPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="HomeFaxes"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="OrganizationMainPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="OtherFaxes"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
```

```
    <xs:element minOccurs="0" name="OtherTelephones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="OtherPhones2"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="Pagers" type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="RadioPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="TelexNumbers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="TTYTDDPhoneNumbers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" name="WorkFaxes"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Emails1"
type="t:ArrayOfEmailAddressAttributedValuesType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Emails2"
type="t:ArrayOfEmailAddressAttributedValuesType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Emails3"
type="t:ArrayOfEmailAddressAttributedValuesType"/>
    <xs:element minOccurs="0" name="BusinessHomePages"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="PersonalHomePages"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="OfficeLocations"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="ImAddresses" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="ImAddresses2"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="ImAddresses3"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="BusinessAddresses"
type="t:ArrayOfPostalAddressAttributedValuesType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="HomeAddresses"
type="t:ArrayOfPostalAddressAttributedValuesType"/>
    <xs:element minOccurs="0" maxOccurs="1" name="OhterAddresses"
type="t:ArrayOfPostalAddressAttributedValuesType"/>
    <xs:element minOccurs="0" name="Titles" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Departments" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="CompanyNames"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Managers" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="AssistantNames"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Professions" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="SpouseNames" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Children"
type="t:ArrayOfStringArrayAttributedValuesType"/>
    <xs:element minOccurs="0" name="Schools" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Hobbies" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="WeddingAnniversaries"
type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Birthdays" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="Locations" type="t:ArrayOfStringAttributedValuesType"/>
    <xs:element minOccurs="0" name="ExtendedProperties"
type="t:ArrayOfExtendedPropertyAttributedValueType"/>
  </xs:sequence>
</xs:complexType>
```

PersonaId: Represents an item identifier associated with a persona.

PersonaType: Contains a string representing the type of the associated persona, for example, a person or a distribution list.

PersonaObjectStatus: Contains a string that specifies whether the information in the associated persona is complete or partial.

CreationTime: Contains a **DateTime** value representing when the associated persona was created.

Body: Represents the set of notes associated with the person, typically containing free-form details about that person.

DisplayNameFirstLastSortKey: Represents the sort key for a display name in first name, last name order.

DisplayNameLastFirstSortKey: Represents the sort key for a display name in last name, first name order.

CompanyNameSortKey: Represents the sort key for a company name.

HomeCitySortKey: Represents the sort key for the home city.

WorkCitySortKey: Represents the sort key for the work city.

FileAsSortKey: Represents the sort key for the **FileAs** element.

DisplayName: Contains a string specifying the display name of the associated persona.

DisplayNameFirstLast: Contains a string specifying the display name of the associated persona in the format, "First Name", "Last Name".

DisplayNameLastFirst: Contains a string specifying the display name of the associated persona in the format, "Last Name", "First Name".

FileAs: Contains a string specifying how the persona should be filed.

FileAsId: Contains a string specifying the **FileAs** identifier.

DisplayNamePrefix: Contains a string specifying the prefix of the display name, for example, Mr., Ms., or Dr., of the associated persona.

GivenName: Contains a string specifying the given name of the associated persona.

MiddleName: Contains a string specifying the middle name of the associated persona.

Surname: Contains a string specifying the surname of the associated persona.

Generation: Contains a string specifying the generation (Sr., Jr., III, and so on) of the associated persona.

Nickname: Contains a string specifying the nickname of the associated persona.

YomiCompanyName: Contains the phonetic Japanese company name of the associated persona.

YomiFirstName: Contains the phonetic Japanese first name of the associated persona.

YomiLastName: Contains the phonetic Japanese last name of the associated persona.

Title: Contains a string specifying the job title of the associated persona.

Department: Contains a string specifying the department name of the associated persona.

CompanyName: Contains a string specifying the company name of the associated persona.

Location: Contains a string specifying the location of the associated persona.

EmailAddress: Contains the default email address of the associated persona.

EmailAddresses: Contains an array of all email addresses of the associated persona.

PhoneNumber: Contains the default phone number of the associated persona.

ImAddress: Contains a string specifying the instant message address of the associated persona.

HomeCity: Contains a string specifying the city of the home address of the associated persona.

WorkCity: Contains a string specifying the city of the work address of the associated persona.

RelevanceScore: Contains an integer specifying how relevant the associated persona is to the client.

FolderIds: Contains an array representing the parent folders of all the contacts aggregated into the associated persona.

Attributions: Contains an array of attribution information for one or more of the contacts or Active Directory recipients aggregated into the associated persona.

DisplayNames: Contains an array of display names and the identifiers of their source attributions for the associated persona.

FileAses: Contains an array of **FileAs** values and the identifiers of their source attributions for the associated persona.

FileAsIds: Contains an array of **FileAs Id** values and the identifiers of their source attributions for the associated persona.

DisplayNamePrefixes: Contains an array of display name prefixes and the identifiers of their source attributions for the associated persona.

GivenNames: Contains an array of given name values and the identifiers of their source attributions for the associated persona.

MiddleNames: Contains an array of middle name values and the identifiers of their source attributions for the associated persona.

Surnames: Contains an array of **Surname** values and the identifiers of their source attributions for the associated persona.

Generations: Contains an array of generation values and the identifiers of their source attributions for the associated persona.

Nicknames: Contains an array of nickname values and the identifiers of their source attributions for the associated persona.

Initials: Contains an array of initials values and the identifiers of their source attributions for the associated persona.

YomiCompanyNames: Contains an array of phonetic Japanese company names and the identifiers of their source attributions for the associated persona.

YomiFirstNames: Contains an array of phonetic Japanese company names and the identifiers of their source attributions for the associated persona.

YomiLastNames: Contains an array of phonetic Japanese last names and the identifiers of their source attributions for the associated persona.

BusinessPhoneNumbers: Contains an array of business phone numbers and the identifiers of their source attributions for the associated persona.

BusinessPhoneNumbers2: Contains an array of **BusinessPhoneNumber2** values and the identifiers of their source attributions for the associated persona.

HomePhones: Contains an array of home phone numbers and the identifiers of their source attributions for the associated persona.

HomePhones2: Contains an array of **HomePhone2** values and the identifiers of their source attributions for the associated persona.

MobilePhones: Contains an array of mobile phone numbers and the identifiers of their source attributions for the associated persona.

MobilePhones2: Contains an array of **MobilePhone2** values and the identifiers of their source attributions for the associated persona.

AssistantPhoneNumbers: Contains an array of assistant phone numbers and the Ids of their source attributions for the associated persona.

CallbackPhones: Contains an array of call-back phone numbers and the identifiers of their source attributions for the associated persona.

CarPhones: Contains an array of car phone numbers and the identifiers of their source attributions for the associated persona.

HomeFaxes: Contains an array of home fax numbers and the identifiers of their source attributions for the associated persona.

OrganizationMainPhones: Contains an array of organizational main phone numbers and the identifiers of their source attributions for the associated persona.

OtherFaxes: Contains an array of **OtherFax** values and the identifiers of their source attributions for the associated persona.

OtherTelephones: Contains an array of **OtherTelephone** values and the identifiers of their source attributions for the associated persona.

OtherPhones2: Contains an array of **OtherPhone2** values and the identifiers of their source attributions for the associated persona.

Pagers: Contains an array of pager phone numbers and the identifiers of their source attributions for the associated persona.

RadioPhones: Contains an array of radio phone numbers and the identifiers of their source attributions for the associated persona.

TelexNumbers: Contains an array of Telex numbers and the identifiers of their source attributions for the associated persona.

TTYTDDPhoneNumbers: Contains an array of TTY/TDD text telephone numbers and the identifiers of their source attributions for the associated persona.

WorkFaxes: Contains an array of work fax numbers and the identifiers of their source attributions for the associated persona.

Emails1: Contains an array of **Email1** values and the identifiers of their source attributions for the associated persona.

Emails2: Contains an array of **Email2** values and the identifiers of their source attributions for the associated persona.

Emails3: Contains an array of **Email3** values and the identifiers of their source attributions for the associated persona.

BusinessHomePages: Contains an array of **BusinessHomePage** values and the identifiers of their source attributions for the associated persona.

PersonalHomePages: Contains an array of **PersonalHomePage** values and the identifiers of their source attributions for the associated persona.

OfficeLocations: Contains an array of office locations and the identifiers of their source attributions for the associated persona.

ImAddresses: Contains an array of instant message addresses and the identifiers of their source attributions for the associated persona.

ImAddresses2: Contains an array of **ImAddress2** values and the identifiers of their source attributions for the associated persona.

ImAddresses3: Contains an array of **ImAddress3** values and the identifiers of their source attributions for the associated persona.

BusinessAddresses: Contains an array of business addresses and the identifiers of their source attributions for the associated persona.

HomeAddresses: Contains an array of home addresses and the identifiers of their source attributions for the associated persona.

OhterAddresses: Contains an array of **OtherAddress** values and the identifiers of their source attributions for the associated persona.

Titles: Contains an array of job titles and the identifiers of their source attributions for the associated persona.

Departments: Contains an array of department names and the identifiers of their source attributions for the associated persona.

CompanyNames: Contains an array of company names and the identifiers of their source attributions for the associated persona.

Managers: Contains an array of manager names and the identifiers of their source attributions for the associated persona.

AssistantNames: Contains an array of assistant names and the identifiers of their source attributions for the associated persona.

Professions: Contains an array of **Profession** values and the identifiers of their source attributions for the associated persona.

SpouseNames: Contains an array of spouse/partner names and the identifiers of their source attributions for the associated persona.

Children: Contains an array of child names and identifiers of their source attributions for the associated persona.

Schools: Contains an array of school names and the identifiers of their source attributions for the associated persona.

Hobbies: Contains an array of hobbies and the identifiers of their source attributions for the associated persona.

WeddingAnniversaries: Contains an array of wedding anniversary dates, stored as strings, and the identifiers of their source attributions for the associated persona.

Birthdays: Contains an array of birthdays, stored as strings, and the identifiers of their source attributions for the associated persona.

Locations: Contains an array of location values and the identifiers of their source attributions for the associated persona.

ExtendedProperties: Contains an array of additional properties and the identifiers of their source attributions for the associated persona. Extended properties are typically private properties on contacts that are used for application-specific functions.

2.2.4.17 PhoneNumberAttributedValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **PhoneNumberAttributedValueType** complex type specifies a pair of a **PersonaPhoneNumberType** and an **ArrayOfValueAttributionsType**. The type represents a persona property of type **PersonaPhoneNumberType**, paired with a list of the attributions from which that value came.

```
<xs:complexType name="PhoneNumberAttributedValueType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:PersonaPhoneNumberType"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
  </xs:sequence>
</xs:complexType>
```

Value: Contains a phone number and type information and is associated with a set of attributions.

Attributions: Contains an array of attribution identifiers associated with a phone number.

2.2.4.18 PostalAddressAttributedValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **PostalAddressAttributedValueType** complex type specifies a pair of a **PersonaPostalAddressType** and an **ArrayOfValueAttributionsType**. The type specifies a **Persona** property of type **PersonaPostalAddressType**, paired with a list of the attributions from which that value came.

```
<xs:complexType name="PostalAddressAttributedValueType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:PersonaPostalAddressType"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
  </xs:sequence>
</xs:complexType>
```

Value: Contains information associated with a postal address.

Attributions: Contains an array of attribution Ids associated with a postal address.

2.2.4.19   StringArrayAttributedValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **StringArrayAttributedValueType** complex type specifies a pair of an **ArrayOfStringValueType** and an **ArrayOfValueAttributionsType**. The type specifies a **Persona** property of type string, paired with a list of the attributions from which that value came.

```
<xs:complexType name="StringArrayAttributedValueType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Values" type="t:ArrayOfStringValueType"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
  </xs:sequence>
</xs:complexType>
```

Values: Represents the values in an array of persona properties associated with an **Attributions** array.

Attributions: Represents an array that contains a list of attributions for its associated **Values** element.

2.2.4.20   StringAttributedValueType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **StringAttributedValueType** complex type encapsulates a string value and multiple attributions for the value.

```
<xs:complexType name="StringAttributedValueType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
  </xs:sequence>
</xs:complexType>
```

Value: Represents an instance of a paired string and attributions array.

Attributions: Represents an array containing a set of attributions for its associated **Value** element.

2.2.5 Simple Types

The following table summarizes the set of common XML schema simple type definitions defined by this specification. XML schema simple type definitions that are specific to a particular operation are described with the operation.

Simple type	Description
LocationSourceType	The **LocationSourceType** simple type specifies the source of resolution of the location.

2.2.5.1 LocationSourceType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **LocationSourceType** simple type specifies the source of resolution of the location.

```
<xs:simpleType name="LocationSourceType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None"/>
    <xs:enumeration value="LocationServices"/>
    <xs:enumeration value="PhonebookServices"/>
    <xs:enumeration value="Device"/>
    <xs:enumeration value="Contact"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for **LocationSourceType**.

Value	Meaning
None	Not resolved.
LocationServices	Resolved by external location services, such as an Internet search engine.
PhonebookServices	Resolved by external phonebook services.
Device	Resolved by a GPS-enabled device, such as a cellphone.
Contact	Sourced from a contact card.

2.2.6 Attributes

This specification does not define any common XML schema attribute definitions.

2.2.7 Groups

This specification does not define any common XML schema group definitions.

2.2.8 Attribute Groups

This specification does not define any common XML schema attribute group definitions.

3 Protocol Details

In the following sections, the schema definition might be less restrictive than the processing rules imposed by the protocol. The WSDL in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL specifies additional restrictions that reflect actual Microsoft product behavior. For example, the schema definition might allow for an element to be empty, null, or not present but the behavior of the protocol as specified restricts the same elements to being non-empty, not null and present.

3.1 ExchangeServicePortType Server Details

3.1.1 Abstract Data Model

None.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing Rules

The following table summarizes the list of operations as defined by this specification:

Operation	Description
FindPeople	The **FindPeople** operation returns all persona objects from a specified Contacts folder or retrieves contacts that match a specified query string.
GetPersona	The **GetPersona** operation retrieves a persona.

3.1.4.1 FindPeople

The **FindPeople** operation returns all persona objects from a specified Contacts folder or retrieves contacts that match a specified query string.

```
<wsdl:operation name="FindPeople" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input message="m:FindPeopleSoapIn"/>
  <wsdl:output message="m:FindPeopleSoapOut"/>
</wsdl:operation>
```

The following is the WSDL binding specification of the **FindPeople** operation.

```
<wsdl:operation name="FindPeople" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/FindPeople"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
  <wsdl:input>
    <soap:body use="literal" parts="request"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
```

```
      <soap:header message="m:FindPeopleSoapIn" part="RequestVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      <soap:header message="m:FindPeopleSoapIn" part="Impersonation" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
   </wsdl:input>
   <wsdl:output>
      <soap:body use="literal" parts="FindPeopleResult"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      <soap:header message="m:FindPeopleSoapOut" part="ServerVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
   </wsdl:output>
</wsdl:operation>
```

The **FindPeople** operation builds on the existing functionality of the **RestrictionType** and
BaseShape complex types by adding an aggregation restriction and the ability to return additional
properties. By using a restriction, a client can specify filters such as "only return results that have an
IM address". The default search behavior targets both the specified user's personal mailbox and the
global address list (GAL).

3.1.4.1.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this
operation.

Message	Description
FindPeopleSoapIn	Specifies the request to find people.
FindPeopleSoapOut	Specifies the response to the **FindPeopleSoapIn** request.

3.1.4.1.1.1 FindPeopleSoapIn

The **FindPeopleSoapIn** WSDL message specifies the request to find people.

The following is the **FindPeople** WSDL message specification.

```
<wsdl:message name="FindPeopleSoapIn" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
   <wsdl:part name="request" element="m:FindPeople"/>
   <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
   <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
```

The **FindPeople** WSDL message is the input message for the **SOAP action**
http://schemas.microsoft.com/exchange/services/2006/messages/FindPeople.

The parts of the **FindPeople** WSDL message are described in the following table.

Part name	Element/type	Description
request	m:FindPeople (section 3.1.4.1.2.1)	Specifies the **SOAP body** of the request containing the information that is required to query for availability.
Impersonation	t:ExchangeImpersonation ([MS-OXWSCDATA] section	Specifies a **SOAP header** that identifies the user whom the client is impersonating.<1>

Part name	Element/type	Description
	2.2.5.3)	
RequestVersion	t:RequestServerVersion ([MS-OXWSCDATA] section 2.2.5.9)	Specifies a SOAP header that identifies the schema version for the **FindPeople** operation request.<2>

3.1.4.1.1.2 FindPeopleSoapOut

The **FindPeopleSoapOut** WSDL message specifies the response to the **FindPeopleSoapIn** request.

The following is the **FindPeople** WSDL message specification.

```
<wsdl:message name="FindPeopleSoapOut" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:part name="FindPeopleResult" element="m:FindPeopleResponse"/>
  <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
```

The **FindPeople** WSDL message is the output message for the SOAP action http://schemas.microsoft.com/exchange/services/2006/messages/FindPeople.

The parts of the **FindPeople** WSDL message are described in the following table.

Part name	Element/type	Description
FindPeopleResult	m:FindPeopleResponse (section 3.1.4.1.2.2)	Specifies the SOAP body of the response that contains the requested availability information.
ServerVersion	t:ServerVersionInfo ([MS-OXWSCDATA] section 2.2.5.10)	Specifies a SOAP header that identifies the server version for the response.

3.1.4.1.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
FindPeople	The input data for the **FindPeople WSDL operation**.
FindPeopleResponse	The result data for the **FindPeople** WSDL operation.

3.1.4.1.2.1 FindPeople

The input data for the **FindPeople** WSDL operation.

```
<xs:element name="FindPeople" type="m:FindPeopleType"
xmlns:xs="http://www.w3.org/2001/XMLSchema"/>
```

3.1.4.1.2.2 FindPeopleResponse

The result data for the **FindPeople** WSDL operation.

```
<xs:element name="FindPeopleResponse" type="m:FindPeopleResponseMessageType"
xmlns:xs="http://www.w3.org/2001/XMLSchema"/>
```

3.1.4.1.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

Complex type	Description
FindPeopleType	Specifies a request to find contacts.
PersonaResponseShapeType	Specifies the shape of the persona results from the **FindPeople** operation.
FindPeopleResponseMessageType	Specifies the response message for a **FindPeople** operation.
ArrayOfPeopleType	Specifies an array of **Persona** objects.

3.1.4.1.3.1 FindPeopleType

Namespace: http://schemas.microsoft.com/exchange/services/2006/messages

The **FindPeopleType** complex type specifies a request to find contacts.

```
<xs:complexType name="FindPeopleType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="m:BaseRequestType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="1" name="PersonaShape"
type="t:PersonaResponseShapeType"/>
        <xs:element minOccurs="1" maxOccurs="1" name="IndexedPageItemView"
type="t:IndexedPageViewType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Restriction" type="t:RestrictionType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="AggregationRestriction"
type="t:RestrictionType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="SortOrder"
type="t:NonEmptyArrayOfFieldOrdersType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="ParentFolderId"
type="t:TargetFolderIdType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="QueryString" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PersonaShape: Represents the persona properties.

IndexedPageItemView: Represents how paged item information is returned in the response.

Restriction: Represents a restriction definition that can be used to filter the results based on raw contact properties.

AggregationRestriction: Represents a restriction definition that can be used to filter the results based on aggregated persona properties.

SortOrder: Represents the sort order.

ParentFolderId: Represents the identifier of the parent folder.

QueryString: Contains the query string.

3.1.4.1.3.2 PersonaResponseShapeType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **PersonaResponseShapeType** complex type specifies the shape for the persona results from the **FindPeople** operation. It defines the set of persona properties to be returned for each **Persona** object in the result set.

```
<xs:complexType name="PersonaResponseShapeType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element name="BaseShape" type="t:DefaultShapeNamesType"/>
    <xs:element minOccurs="0" name="AdditionalProperties"
type="t:NonEmptyArrayOfPathsToElementType"/>
  </xs:sequence>
</xs:complexType>
```

BaseShape: Represents the base shape for the **PersonaResponseShape** specification.

AdditionalProperties: Represents additional properties requested in addition to the base shape for a **PersonaResponseShape** specification.

3.1.4.1.3.3 FindPeopleResponseMessageType

Namespace: http://schemas.microsoft.com/exchange/services/2006/messages

The **FindPeopleResponseMessageType** complex type specifies the response message for a **FindPeople** operation.

```
<xs:complexType name="FindPeopleResponseMessageType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="m:ResponseMessageType">
      <xs:sequence>
        <xs:element minOccurs="0" name="People" type="t:ArrayOfPeopleType"/>
        <xs:element minOccurs="0" name="TotalNumberOfPeopleInView" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

People: Represents an array of contacts.

TotalNumberOfPeopleInView: Represents the number of contacts that appear.

3.1.4.1.3.4 ArrayOfPeopleType

Namespace: http://schemas.microsoft.com/exchange/services/2006/types

The **ArrayOfPeopleType** specifies an array of **Persona** objects.

```
<xs:complexType name="ArrayOfPeopleType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:choice minOccurs="0" maxOccurs="unbounded">
    <xs:element name="Persona" type="t:PersonaType"/>
  </xs:choice>
</xs:complexType>
```

Persona: Encapsulates a set of contact data from one or more sources linked by a common conversation index identifier.

3.1.4.1.4 Simple Types

None.

3.1.4.1.5 Attributes

None.

3.1.4.1.6 Groups

None.

3.1.4.1.7 Attribute Groups

None.

3.1.4.2 GetPersona

The **GetPersona** operation retrieves a persona.

```
<wsdl:operation name="GetPersona" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input message="m:GetPersonaSoapIn"/>
  <wsdl:output message="m:GetPersonaSoapOut"/>
</wsdl:operation>
```

The following is the WSDL binding specification of the **GetPersona** operation.

```
<wsdl:operation name="GetPersona" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetPersona"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
  <wsdl:input>
    <soap:body use="literal" parts="request"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
    <soap:header message="m:GetPersonaSoapIn" part="RequestVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
    <soap:header message="m:GetPersonaSoapIn" part="Impersonation" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
  </wsdl:input>
  <wsdl:output>
    <soap:body use="literal" parts="GetPersonaResult"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
    <soap:header message="m:GetPersonaSoapOut" part="ServerVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
```

```
  </wsdl:output>
</wsdl:operation>
```

3.1.4.2.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this operation.

Message	Description
GetPersonaSoapIn	Specifies the request to retrieve a persona.
GetPersonaSoapOut	Specifies the response to the **GetPersonaSoapIn** request.

3.1.4.2.1.1 GetPersonaSoapIn

The **GetPersonaSoapIn** WSDL message specifies the request to retrieve a persona.

The following is the **GetPersona** WSDL message specification.

```
<wsdl:message name="GetPersonaSoapIn" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:part name="request" element="m:GetPersona"/>
  <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
  <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
```

The **GetPersona** WSDL message is the input message for the SOAP action http://schemas.microsoft.com/exchange/services/2006/messages/GetPersona.

The parts of the **GetPersona** WSDL message are described in the following table.

Part name	Element/type	Description
request	m:GetPersona (section 3.1.4.2.2.1)	Specifies the SOAP body of the request containing the information that is required to query for availability.
Impersonation	t:ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.5.3)	Specifies a SOAP header that identifies the user whom the client is impersonating.<3>
RequestVersion	t:RequestServerVersion ([MS-OXWSCDATA] section 2.2.5.9)	Specifies a SOAP header that identifies the schema version for the **GetPersona** operation request.<4>

3.1.4.2.1.2 GetPersonaSoapOut

The **GetPersonaSoapOut** WSDL message specifies the response to the **GetPersonaSoapIn** request.

The following is the **GetPersona** WSDL message specification.

```
<wsdl:message name="GetPersonaSoapOut" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:part name="GetPersonaResult" element="m:GetPersonaResponseMessage"/>
```

```
      <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
   </wsdl:message>
```

The **GetPersona** WSDL message is the output message for the SOAP action
http://schemas.microsoft.com/exchange/services/2006/messages/GetPersona.

The parts of the **GetPersona** WSDL message are described in the following table.

Part name	Element/type	Description
GetPersonaResult	m:GetPersonaResponseMessage (section 3.1.4.2.2.2)	Specifies the SOAP body of the response that contains the requested availability information.
ServerVersion	t:ServerVersionInfo ([MS-OXWSCDATA] section 2.2.5.10)	Specifies a SOAP header that identifies the server version for the response.

3.1.4.2.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
GetPersona	The input data for the **GetPersona** WSDL operation.
GetPersonaResponseMessage	The result data for the **GetPersona** WSDL operation.

3.1.4.2.2.1 GetPersona

The input data for the **GetPersona** WSDL operation.

```
<xs:element name="GetPersona" type="m:GetPersonaType"
xmlns:xs="http://www.w3.org/2001/XMLSchema"/>
```

3.1.4.2.2.2 GetPersonaResponseMessage

The result data for the **GetPersona** WSDL operation.

```
<xs:element name="GetPersonaResponseMessage" type="m:GetPersonaResponseMessageType"
xmlns:xs="http://www.w3.org/2001/XMLSchema"/>
```

3.1.4.2.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

Complex type	Description
GetPersonaType	Specifies a request to retrieve a persona.

Complex type	Description
GetPersonaResponseMessageType	Specifies the response message for a **GetPersona** operation.

3.1.4.2.3.1 GetPersonaType

Namespace: http://schemas.microsoft.com/exchange/services/2006/messages

The **GetPersonaType** complex type specifies a request to retrieve a persona.

```
<xs:complexType name="GetPersonaType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="m:BaseRequestType">
      <xs:sequence>
        <xs:element minOccurs="1" name="PersonaId" type="t:ItemIdType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

PersonaId: Represents the identifier of a persona.

3.1.4.2.3.2 GetPersonaResponseMessageType

Namespace: http://schemas.microsoft.com/exchange/services/2006/messages

The **GetPersonaResponseMessageType** complex type specifies the response message for a **GetPersona** operation.

```
<xs:complexType name="GetPersonaResponseMessageType"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="m:ResponseMessageType">
      <xs:sequence>
        <xs:element name="Persona" type="t:PersonaType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Persona: Represents the persona to be retrieved.

3.1.4.2.4 Simple Types

None.

3.1.4.2.5 Attributes

None.

3.1.4.2.6 Groups

None.

3.1.4.2.7 Attribute Groups

None.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

4 Protocol Examples

The following example of a **FindPeople** operation request shows how to return all contacts from the Contacts folder.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
               xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
               xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages">
   <soap:Header>
      <t:RequestServerVersion Version="Exchange2012" />
   </soap:Header>
   <soap:Body >
      <m:FindPeople>
         <m:IndexedPageItemView BasePoint="Beginning" MaxEntriesReturned="100" Offset="0"/>
         <m:ParentFolderId>
            <t:DistinguishedFolderId Id="contacts"/>
         </m:ParentFolderId>
      </m:FindPeople>
   </soap:Body>
</soap:Envelope>
```

The following example shows a successful response to a **FindPeople** operation request.

```xml
<?xml version="1.0" encoding="utf-8"?><s:Envelope
   xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Header>
    <h:ServerVersionInfo MajorVersion="15"
                         MinorVersion="0"
                         MajorBuildNumber="349"
                         MinorBuildNumber="0"
                         Version="Exchange2012"
                         xmlns="http://schemas.microsoft.com/exchange/services/2006/types"
                         xmlns:xsd="http://www.w3.org/2001/XMLSchema"
                         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                         xmlns:h="http://schemas.microsoft.com/exchange/services/2006/types"
/>
  </s:Header>
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <FindPeopleResponse ResponseClass="Success"
                        xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
      <ResponseCode>NoError</ResponseCode>
      <People>
        <Persona xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
          <PersonaId
Id="AAQkAGQ1MjJjMTBkLTc4Y2UtNDA5Ny04ZjU5LWI3MTYzNGNkZmRkYQAQAOjFqObcLmtOlzlRnHdXQjo=" />
          <CreationTime>2012-01-11T22:25:37Z</CreationTime>
          <DisplayName>Terry Adams</DisplayName>
          <DisplayNameFirstLast>Terry Adams</DisplayNameFirstLast>
          <DisplayNameLastFirst>Adams Terry</DisplayNameLastFirst>
          <FileAs>Adams, Terry</FileAs>
          <GivenName>Terry</GivenName>
          <Surname>Adams</Surname>
          <EmailAddress>
            <Name>terry@litwareinc.com</Name>
            <EmailAddress>terry@litwareinc.com</EmailAddress>
```

```
                    <RoutingType>SMTP</RoutingType>
                  </EmailAddress>
                  <EmailAddresses>
                    <EmailAddress>
                      <Name>terry@litwareinc.com</Name>
                      <EmailAddress>terry@litwareinc.com</EmailAddress>
                      <RoutingType>SMTP</RoutingType>
                    </EmailAddress>
                    <EmailAddress>
                      <Name>tadams@contoso.com</Name>
                      <EmailAddress>tadams@contoso.com</EmailAddress>
                      <RoutingType>SMTP</RoutingType>
                    </EmailAddress>
                  </EmailAddresses>
                  <RelevanceScore>2147483647</RelevanceScore>
                </Persona>
              </People>
              <TotalNumberOfPeopleInView>1</TotalNumberOfPeopleInView>
            </FindPeopleResponse>
          </s:Body>
        </s:Envelope>
```

5 Security

5.1 Security Considerations for Implementers

This protocol relies on the web server that hosts the application to perform authentication. The protocol SHOULD use secure communications by means of HTTPS, as described in [RFC2818].

5.2 Index of Security Parameters

None.

6   Appendix A: Full WSDL

For ease of implementation, the full WSDL is provided in this appendix.

```xml
<?xml version="1.0"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types/>
  <wsdl:message name="FindPeopleSoapIn">
    <wsdl:part name="request" element="m:FindPeople"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
  </wsdl:message>
  <wsdl:message name="FindPeopleSoapOut">
    <wsdl:part name="FindPeopleResult" element="m:FindPeopleResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:message name="GetPersonaSoapIn">
    <wsdl:part name="request" element="m:GetPersona"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
  </wsdl:message>
  <wsdl:message name="GetPersonaSoapOut">
    <wsdl:part name="GetPersonaResult" element="m:GetPersonaResponseMessage"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:portType name="ExchangeServicePortType">
    <wsdl:operation name="FindPeople">
      <wsdl:input message="m:FindPeopleSoapIn"/>
      <wsdl:output message="m:FindPeopleSoapOut"/>
    </wsdl:operation>
    <wsdl:operation name="GetPersona">
      <wsdl:input message="m:GetPersonaSoapIn"/>
      <wsdl:output message="m:GetPersonaSoapOut"/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="ExchangeServiceBinding" type="m:ExchangeServicePortType">
    <wsdl:documentation>
      <wsi:Claim conformsTo="http://ws-i.org/profiles/basic/1.0" xmlns:wsi="http://ws-
i.org/schemas/conformanceClaim/"/>
    </wsdl:documentation>
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="FindPeople">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/FindPeople"/>
      <wsdl:input>
        <soap:body use="literal" parts="request"/>
        <soap:header message="m:FindPeopleSoapIn" part="RequestVersion" use="literal"/>
        <soap:header message="m:FindPeopleSoapIn" part="Impersonation" use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" parts="FindPeopleResult"/>
        <soap:header message="m:FindPeopleSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetPersona">
```

```
        <soap:operation
  soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetPersona"/>
        <wsdl:input>
          <soap:body use="literal" parts="request"/>
          <soap:header message="m:GetPersonaSoapIn" part="RequestVersion" use="literal"/>
          <soap:header message="m:GetPersonaSoapIn" part="Impersonation" use="literal"/>
        </wsdl:input>
        <wsdl:output>
          <soap:body use="literal" parts="GetPersonaResult"/>
          <soap:header message="m:GetPersonaSoapOut" part="ServerVersion" use="literal"/>
        </wsdl:output>
      </wsdl:operation>
    </wsdl:binding>
  </wsdl:definitions>
```

7 Appendix B: Full XML Schema

For ease of implementation, the following sections provide the full XML schema for this protocol.

Schema name	Prefix	Section
http://schemas.microsoft.com/exchange/services/2006/messages	m	7.1
http://schemas.microsoft.com/exchange/services/2006/types	t	7.2

7.1 http://schemas.microsoft.com/exchange/services/2006/messages Schema

This section contains the full XML schema for messages.

```
<?xml version="1.0"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
version="Exchange2012" id="messages" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types">
  <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"/>
  <xs:include schemaLocation="MS-OXWSPERS-messages.xsd"/>
  <xs:complexType name="FindPeopleType">
    <xs:complexContent mixed="false">
      <xs:extension base="m:BaseRequestType">
        <xs:sequence>
          <xs:element minOccurs="0" maxOccurs="1" name="PersonaShape"
type="t:PersonaResponseShapeType"/>
          <xs:element minOccurs="1" maxOccurs="1" name="IndexedPageItemView"
type="t:IndexedPageViewType"/>
          <xs:element minOccurs="0" maxOccurs="1" name="Restriction"
type="t:RestrictionType"/>
          <xs:element minOccurs="0" maxOccurs="1" name="AggregationRestriction"
type="t:RestrictionType"/>
          <xs:element minOccurs="0" maxOccurs="1" name="SortOrder"
type="t:NonEmptyArrayOfFieldOrdersType"/>
          <xs:element minOccurs="0" maxOccurs="1" name="ParentFolderId"
type="t:TargetFolderIdType"/>
          <xs:element minOccurs="0" maxOccurs="1" name="QueryString" type="xs:string"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="FindPeople" type="m:FindPeopleType"/>
  <xs:complexType name="FindPeopleResponseMessageType">
    <xs:complexContent mixed="false">
      <xs:extension base="m:ResponseMessageType">
      <xs:sequence>
        <xs:element minOccurs="0" name="People" type="t:ArrayOfPeopleType"/>
        <xs:element minOccurs="0" name="TotalNumberOfPeopleInView" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:element name="FindPeopleResponse" type="m:FindPeopleResponseMessageType"/>
<xs:complexType name="GetPersonaType">
  <xs:complexContent mixed="false">
```

```xml
        <xs:extension base="m:BaseRequestType">
          <xs:sequence>
            <xs:element minOccurs="1" name="PersonaId" type="t:ItemIdType"/>
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="GetPersona" type="m:GetPersonaType"/>
    <xs:complexType name="GetPersonaResponseMessageType">
      <xs:complexContent mixed="false">
        <xs:extension base="m:ResponseMessageType">
          <xs:sequence>
            <xs:element name="Persona" type="t:PersonaType"/>
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:element name="GetPersonaResponseMessage" type="m:GetPersonaResponseMessageType"/>
</xs:schema>
```

7.2   http://schemas.microsoft.com/exchange/services/2006/types Schema

This section contains the full XML schema for types.

```xml
<?xml version="1.0"?>
<xs:schema xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
version="Exchange2012" id="types" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
  <xs:include schemaLocation="MS-OXWSCORE-types.xsd"/>
  <xs:complexType name="ArrayOfFolderIdType">
    <xs:choice minOccurs="0" maxOccurs="unbounded">
      <xs:element name="FolderId" type="t:FolderIdType"/>
    </xs:choice>
  </xs:complexType>
  <xs:complexType name="ArrayOfStringAttributedValuesType">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="StringAttributedValue"
type="t:StringAttributedValueType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfStringArrayAttributedValuesType">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="StringArrayAttributedValue"
type="t:StringArrayAttributedValueType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfEmailAddressAttributedValuesType">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="EmailAddressAttributedValue"
type="t:EmailAddressAttributedValueType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfPeopleType">
    <xs:choice minOccurs="0" maxOccurs="unbounded">
      <xs:element name="Persona" type="t:PersonaType"/>
    </xs:choice>
```

```
      </xs:complexType>
      <xs:complexType name="ArrayOfPhoneNumberAttributedValuesType">
        <xs:sequence>
          <xs:element minOccurs="0" maxOccurs="unbounded" name="PhoneNumberAttributedValue"
    type="t:PhoneNumberAttributedValueType"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="ArrayOfPostalAddressAttributedValuesType">
        <xs:sequence>
          <xs:element minOccurs="0" maxOccurs="unbounded" name="PostalAddressAttributedValue"
    type="t:PostalAddressAttributedValueType"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="ArrayOfExtendedPropertyAttributedValueType">
        <xs:sequence>
          <xs:element minOccurs="0" maxOccurs="unbounded" name="ExtendedPropertyAttributedValue"
    type="t:ExtendedPropertyAttributedValueType"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="ArrayOfPersonaAttributionsType">
        <xs:sequence>
          <xs:element minOccurs="1" maxOccurs="unbounded" name="Attribution"
    type="t:PersonaAttributionType"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="ArrayOfValueAttributionsType">
        <xs:sequence>
          <xs:element minOccurs="1" maxOccurs="unbounded" name="Attribution" type="xs:string"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="ArrayOfStringValueType">
        <xs:sequence>
          <xs:element minOccurs="1" maxOccurs="unbounded" name="Value" type="xs:string"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="EmailAddressAttributedValueType">
        <xs:sequence>
          <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:EmailAddressType"/>
          <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
    type="t:ArrayOfValueAttributionsType"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="ExtendedPropertyAttributedValueType">
        <xs:sequence>
          <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:ExtendedPropertyType"/>
          <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
    type="t:ArrayOfValueAttributionsType"/>
        </xs:sequence>
      </xs:complexType>
      <xs:simpleType name="LocationSourceType">
        <xs:restriction base="xs:string">
          <xs:enumeration value="None"/>
          <xs:enumeration value="LocationServices"/>
          <xs:enumeration value="PhonebookServices"/>
          <xs:enumeration value="Device"/>
          <xs:enumeration value="Contact"/>
        </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="PersonaAttributionType">
```

```
      <xs:sequence>
        <xs:element minOccurs="1" maxOccurs="1" name="Id" type="xs:string"/>
        <xs:element minOccurs="1" maxOccurs="1" name="SourceId" type="t:ItemIdType"/>
        <xs:element minOccurs="1" maxOccurs="1" name="DisplayName" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="IsWritable" type="xs:boolean"/>
        <xs:element minOccurs="0" maxOccurs="1" name="IsQuickContact" type="xs:boolean"/>
        <xs:element minOccurs="0" maxOccurs="1" name="IsHidden" type="xs:boolean"/>
        <xs:element minOccurs="0" maxOccurs="1" name="FolderId" type="t:FolderIdType"/>
      </xs:sequence>
    </xs:complexType>
    <xs:complexType name="PersonaPhoneNumberType">
      <xs:sequence>
        <xs:element minOccurs="1" maxOccurs="1" name="Number" type="xs:string"/>
        <xs:element minOccurs="1" maxOccurs="1" name="Type" type="xs:string"/>
      </xs:sequence>
    </xs:complexType>
    <xs:complexType name="PersonaPostalAddressType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="1" name="Street" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="City" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="State" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Country" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="PostalCode" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="PostOfficeBox" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Type" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Latitude" type="xs:double"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Longitude" type="xs:double"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Accuracy" type="xs:double"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Altitude" type="xs:double"/>
        <xs:element minOccurs="0" maxOccurs="1" name="AltitudeAccuracy" type="xs:double"/>
        <xs:element minOccurs="0" maxOccurs="1" name="FormattedAddress" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="LocationUri" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="LocationSource"
type="t:LocationSourceType"/>
      </xs:sequence>
    </xs:complexType>
    <xs:complexType name="PersonaResponseShapeType">
      <xs:sequence>
        <xs:element name="BaseShape" type="t:DefaultShapeNamesType"/>
        <xs:element minOccurs="0" name="AdditionalProperties"
type="t:NonEmptyArrayOfPathsToElementType"/>
      </xs:sequence>
    </xs:complexType>
    <xs:complexType name="PersonaType">
      <xs:sequence>
        <xs:element minOccurs="1" maxOccurs="1" name="PersonaId" type="t:ItemIdType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="PersonaType" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="PersonaObjectStatus" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="CreationTime" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="Body" type="t:BodyType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameFirstLastSortKey"
type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameLastFirstSortKey"
type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="CompanyNameSortKey" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="HomeCitySortKey" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="WorkCitySortKey" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="FileAsSortKey" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="DisplayName" type="xs:string"/>
```

```xml
      <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameFirstLast" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameLastFirst" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="FileAs" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="FileAsId" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="DisplayNamePrefix" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="GivenName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="MiddleName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="Surname" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="Generation" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="Nickname" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="YomiCompanyName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="YomiFirstName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="YomiLastName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="Title" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="Department" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="CompanyName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="Location" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="EmailAddress" type="t:EmailAddressType"/>
      <xs:element minOccurs="0" maxOccurs="1" name="EmailAddresses"
 type="t:ArrayOfEmailAddressesType"/>
      <xs:element minOccurs="0" maxOccurs="1" name="PhoneNumber"
 type="t:PersonaPhoneNumberType"/>
      <xs:element minOccurs="0" maxOccurs="1" name="ImAddress" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="HomeCity" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="WorkCity" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="RelevanceScore" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="FolderIds" type="t:ArrayOfFolderIdType"/>
      <xs:element minOccurs="0" maxOccurs="1" name="Attributions"
 type="t:ArrayOfPersonaAttributionsType"/>
      <xs:element minOccurs="0" name="DisplayNames"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="FileAses" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="FileAsIds" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="DisplayNamePrefixes"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="GivenNames"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="MiddleNames"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Surnames" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Generations"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Nicknames" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Initials" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="YomiCompanyNames"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="YomiFirstNames"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="YomiLastNames"
 type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="BusinessPhoneNumbers"
 type="t:ArrayOfPhoneNumberAttributedValuesType"/>
      <xs:element minOccurs="0" name="BusinessPhoneNumbers2"
 type="t:ArrayOfPhoneNumberAttributedValuesType"/>
      <xs:element minOccurs="0" name="HomePhones"
 type="t:ArrayOfPhoneNumberAttributedValuesType"/>
      <xs:element minOccurs="0" name="HomePhones2"
 type="t:ArrayOfPhoneNumberAttributedValuesType"/>
      <xs:element minOccurs="0" name="MobilePhones"
 type="t:ArrayOfPhoneNumberAttributedValuesType"/>
```

```
        <xs:element minOccurs="0" name="MobilePhones2"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="AssistantPhoneNumbers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="CallbackPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="CarPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="HomeFaxes"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="OrganizationMainPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="OtherFaxes"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="OtherTelephones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="OtherPhones2"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="Pagers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="RadioPhones"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="TelexNumbers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="TTYTDDPhoneNumbers"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" name="WorkFaxes"
type="t:ArrayOfPhoneNumberAttributedValuesType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Emails1"
type="t:ArrayOfEmailAddressAttributedValuesType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Emails2"
type="t:ArrayOfEmailAddressAttributedValuesType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="Emails3"
type="t:ArrayOfEmailAddressAttributedValuesType"/>
        <xs:element minOccurs="0" name="BusinessHomePages"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="PersonalHomePages"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="OfficeLocations"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="ImAddresses"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="ImAddresses2"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="ImAddresses3"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="BusinessAddresses"
type="t:ArrayOfPostalAddressAttributedValuesType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="HomeAddresses"
type="t:ArrayOfPostalAddressAttributedValuesType"/>
        <xs:element minOccurs="0" maxOccurs="1" name="OhterAddresses"
type="t:ArrayOfPostalAddressAttributedValuesType"/>
        <xs:element minOccurs="0" name="Titles" type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="Departments"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="CompanyNames"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="Managers" type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="AssistantNames"
type="t:ArrayOfStringAttributedValuesType"/>
        <xs:element minOccurs="0" name="Professions"
type="t:ArrayOfStringAttributedValuesType"/>
```

```
      <xs:element minOccurs="0" name="SpouseNames"
type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Children"
type="t:ArrayOfStringArrayAttributedValuesType"/>
      <xs:element minOccurs="0" name="Schools" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Hobbies" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="WeddingAnniversaries"
type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Birthdays" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="Locations" type="t:ArrayOfStringAttributedValuesType"/>
      <xs:element minOccurs="0" name="ExtendedProperties"
type="t:ArrayOfExtendedPropertyAttributedValueType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="PhoneNumberAttributedValueType">
    <xs:sequence>
      <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:PersonaPhoneNumberType"/>
      <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="PostalAddressAttributedValueType">
    <xs:sequence>
      <xs:element minOccurs="1" maxOccurs="1" name="Value"
type="t:PersonaPostalAddressType"/>
      <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="StringArrayAttributedValueType">
    <xs:sequence>
      <xs:element minOccurs="1" maxOccurs="1" name="Values" type="t:ArrayOfStringValueType"/>
      <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="StringAttributedValueType">
    <xs:sequence>
      <xs:element minOccurs="1" maxOccurs="1" name="Value" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

8 Appendix C: 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 2013 Preview

- Microsoft® Lync® 2013 Preview

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

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

<1> Section 3.1.4.1.1.1: Exchange 2007, Exchange 2010, and Exchange 2010 SP1 do not use the **Impersonation** header. The **Impersonation** header was introduced in Exchange 2010 SP2.

<2> Section 3.1.4.1.1.1: Exchange 2007, Exchange 2010, and Exchange 2010 SP1 do not use the **RequestVersion** header. The **RequestVersion** header was introduced in Exchange 2010 SP2.

<3> Section 3.1.4.2.1.1: Exchange 2007, Exchange 2010, and Exchange 2010 SP1 do not use the **Impersonation** header. The **Impersonation** header was introduced in Exchange 2010 SP2.

<4> Section 3.1.4.2.1.1: Exchange 2007, Exchange 2010, and Exchange 2010 SP1 do not use the **RequestVersion** header. The **RequestVersion** header was introduced in Exchange 2010 SP2.

9   Change Tracking

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

10 Index

Release: July 16, 2012