

[MS-OXWSPERS]: Persona Web Service Protocol

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Revision Summary

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Preliminary

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)
SOAP
SOAP action
SOAP body
SOAP header
XML namespace

The following terms are defined in [\[MS-OXGLOS\]](#):

contact
Contacts folder
distribution list
email address
endpoint
Global Address List (GAL)
instant messaging
mailbox
message body
Uniform Resource Identifier (URI)
web server
web service
Web Services Description Language (WSDL)
WSDL message
WSDL operation
WSDL port type
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 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-OXDCLI] Microsoft Corporation, "[Autodiscover Publishing and Lookup Protocol](#)".

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

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

[MS-OXWSCORE] Microsoft Corporation, "[Core Items Web Service Protocol](#)".

[MS-OXWSFOLD] Microsoft Corporation, "[Folders and Folder Permissions Web Service Protocol](#)".

[MS-OXWSSRCH] Microsoft Corporation, "[Mailbox Search Web Service Protocol](#)".

[MS-OXWSXPROP] Microsoft Corporation, "[Extended Properties Structure](#)".

[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>

[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>

[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>

[WSIBASIC] Ballinger, K., Ehnebuske, D., Gudgin, M., et al., Eds., "Basic Profile Version 1.0", Final Material, April 2004, <http://www.ws-i.org/Profiles/BasicProfile-1.0-2004-04-16.html>

[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., Beech, D., Maloney, M., Eds., 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., and Malhotra, A., Eds., "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-OXGLOS] Microsoft Corporation, "[Exchange Server Protocols Master Glossary](#)".

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

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

[MS-OXWSMTGS] Microsoft Corporation, "[Calendaring Web Service Protocol](#)".

1.3 Overview

The Persona Web Service Protocol enables clients to link, search, browse, and retrieve information about a person from multiple sources and organize that information into a single logical entity called a persona.

Personas differ from contacts (3) in that a contact (3) 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 **SOAP**, as described in [\[SOAP1.1\]](#), to specify the structure information that is exchanged between the client and the server. This protocol uses the **XML schema**, 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.

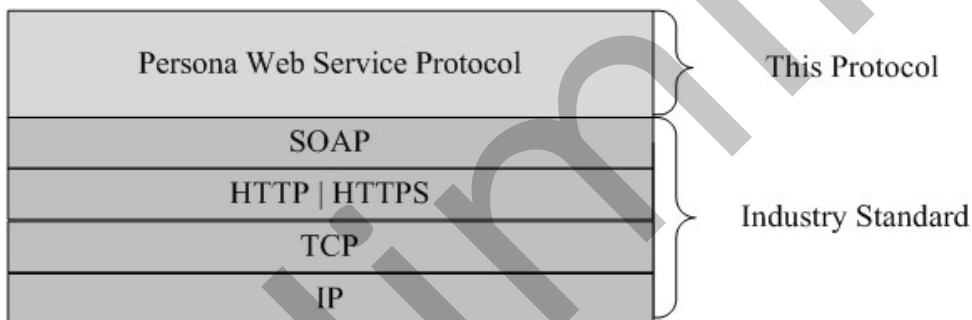


Figure 1: This protocol in relation to other protocols

The following protocols use the persona information provided by the common types defined in section [2.2.4.1](#) through section [2.2.5.1](#):

- Calendaring Web Service Protocol, as described in [\[MS-OXWSMTGS\]](#)
- Unified Contact Store Web Service Protocol, as described in [\[MS-OXWSCOS\]](#)

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

1.5 Prerequisites/Preconditions

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. This endpoint(4) URL is returned by either the Autodiscover Publishing Lookup SOAP-Based Web Service Protocol, as specified in [\[MS-OXWSADISC\]](#), or the Autodiscover Publishing and Lookup Protocol, as specified in [\[MS-OXDSCLI\]](#).

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 **RequestServerVersion** element, as described in [\[MS-OXWSCDATA\]](#) section 2.2.3.9, identifies the WSDL port type version. The **ServerVersionInfo** element, as described in [\[MS-OXWSCDATA\]](#) section 2.2.3.10, identifies the version of the server responding to the request.
- **Security and Authentication Methods:** This protocol relies on the **web server** that is hosting it to perform authentication.
- **Localization:** This protocol includes date/time formats in the **PersonaType** complex type, as described in section [2.2.4.19](#).
- **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 **Web Services Description Language (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

This protocol uses SOAP 1.1, as specified in [\[SOAP1.1\]](#).

This protocol **MUST** support SOAP over HTTP, as specified in [\[RFC2616\]](#). 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 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/	[WSIBASIC]
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
ArrayOfBodyContentAttributedValuesType	The ArrayOfBodyContentAttributedValuesType complex type specifies an array of BodyContentAttributedValue elements.
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 identifier values of the attributions of a persona.
BodyContentAttributedValueType	The BodyContentAttributedValueType complex type specifies the attributions of the body content of an item.
BodyContentType	The BodyContentType complex type specifies the body content and format of an item.

Complex type	Description
EmailAddressAttributedValueType	The EmailAddressAttributedValueType complex type specifies an EmailAddressType element, as specified in [MS-OXWSCDATA] section 2.2.4.27, and an ArrayOfValueAttributionsType complex type, as specified in section 2.2.4.11 , pair. This complex type represents an email address paired with a list of the attributions for the email address.
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 (3) or directory service recipients aggregated into the persona.
PersonaPhoneNumberType	The PersonaPhoneNumberType complex type specifies a phone number of for a PersonaType complex type, as specified in section 2.2.4.19 .
PersonaPostalAddressType	The PersonaPostalAddressType complex type specifies a postal address for a PersonaType complex type, as specified in section 2.2.4.19 .
PersonaType	The PersonaType complex type specifies the type of a persona.
PhoneNumberAttributedValueType	The PhoneNumberAttributedValueType complex type specifies a PersonaPhoneNumberType , as defined in section 2.2.4.17 , and ArrayOfValueAttributionsType , as defined in section 2.2.4.11 , complex type pair. This complex type represents a phone number for a persona, paired with a list of the attributions for the phone number.
PostalAddressAttributedValueType	The PostalAddressAttributedValueType complex type specifies a pair of PersonaPostalAddressType , as defined in section 2.2.4.18 , and ArrayOfValueAttributionsType , as defined in section 2.2.4.11 , complex types. This complex type specifies a postal address for a persona, paired with a list of the attributions for that address.
StringArrayAttributedValueType	The StringArrayAttributedValueType complex type specifies an ArrayOfStringValueType , as defined in section 2.2.4.10 , and an ArrayOfValueAttributionsType , as defined in section 2.2.4.11 , complex type pair.
StringAttributedValueType	The StringAttributedValueType complex type encapsulates a string value and multiple attributions for the value.

2.2.4.1 ArrayOfBodyContentAttributedValuesType

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

The **ArrayOfBodyContentAttributedValuesType** complex type specifies an array of **BodyContentAttributedValue** elements.

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

BodyContentAttributedValue: An element of type **BodyContentAttributedValueType**, as defined in section [2.2.4.12](#), that represents the source of the **message body (2)**.

2.2.4.2 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: An element of type **EmailAddressAttributedValueType**, as defined in section [2.2.4.14](#), that represents the email address of a persona.

2.2.4.3 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: An element of type **ExtendedPropertyAttributedValueType**, as defined in section [2.2.4.15](#), that represents extended properties for a persona.

2.2.4.4 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: An element of type **FolderIdType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.4.31, that represents the identifier of a folder.

2.2.4.5 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: An element of type **PersonaAttributionType**, as defined in section [2.2.4.16](#), that represents a set of attributes for a **PersonaType** complex type.

2.2.4.6 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>
</xs:complexType>
```

PhoneNumberAttributedValue: An element of type **PhoneNumberAttributedValueType**, as defined in section [2.2.4.20](#), that represents an array of phone numbers and their associated attributions.

2.2.4.7 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: An element of type **PostalAddressAttributedValueType**, as defined in section [2.2.4.21](#), that represents an array of postal addresses and their associated attributions.

2.2.4.8 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: An element of type **StringArrayAttributedValueType**, as defined in section [2.2.4.22](#), that represents an array of string data for a persona.

2.2.4.9 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: An element of type **StringAttributedValueType**, as defined in section [2.2.4.23](#), that represents an array of attributes associated with a persona.

2.2.4.10 ArrayOfStringValueType

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

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

```
<xs:complexType name="ArrayOfStringValue" 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: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that represents attributions data.

2.2.4.11 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 identifier 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: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that identifies an attribution for a persona.

2.2.4.12 BodyContentAttributedValueType

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

The **BodyContentAttributedValueType** complex type specifies the attributions of the body content of an item.

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

Value: An element of type **BodyContentType**, as defined in section [2.2.4.13](#), that specifies the body content.

Attributions: An element of type **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), that represents an array of attribution identifiers that are associated with the body content.

2.2.4.13 BodyContentType

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

The **BodyContentType** complex type specifies the body content and format of an item.


```

<xs:complexType name="BodyContentType" 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="BodyType" type="t:BodyTypeType"/>
  </xs:sequence>
</xs:complexType>

```

Value: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that specifies the value of the message body (2).

BodyType: An element of type **BodyTypeType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.5.2, that specifies the type of the text of the message body (2).

2.2.4.14 EmailAddressAttributedValueType

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

The **EmailAddressAttributedValueType** complex type specifies an **EmailAddressType** element, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.4.27, and an **ArrayOfValueAttributionsType** complex type, as specified in section [2.2.4.11](#), pair. This complex type represents an email address paired with a list of the attributions for the email address.

```

<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: An element of type **EmailAddressType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.4.27, that represents an email address.

Attributions: An element of type **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), that represents an array of attribution identifiers that are associated with an email address.

2.2.4.15 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: An element of type **ExtendedPropertyType**, as defined in [\[MS-OXWSXPROP\]](#) section 2.1.5, that contains an array of extended properties for a persona.

Attributions: An element of type **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), that represents an array that contains a set of attributions for its associated **Value** element.

2.2.4.16 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 (3) or directory service 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: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that identifies this attribution within the persona.

SourceId: An element of type **ItemIdType**, as defined in [\[MS-OXWSCORE\]](#) section 2.2.4.17, that represents the identifier of the contact (3) or directory service recipient.

DisplayName: An element of type **string** that contains the name for this attribution that is suitable for display.

IsWritable: An element of type **boolean**, as defined in [\[XMLSCHEMA2\]](#), that indicates whether the underlying contact or directory service recipient can be written to.

IsQuickContact: An element of type **boolean** that indicates whether the underlying contact or directory service recipient is a quick contact.

IsHidden: An element of type **boolean** that indicates whether the underlying contact or directory service recipient is displayed as part of the persona.

FolderId: An element of type **FolderIdType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.4.31, that represents the identifier of the folder for the underlying contact (3).

2.2.4.17 PersonaPhoneNumberType

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

The **PersonaPhoneNumberType** complex type specifies a phone number of for a **PersonaType** complex type, as specified in section [2.2.4.19](#).

```
<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: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that contains a phone number.

Type: An element of type **string** that specifies the type of phone number (for example, Mobile, Business, or Home) of an associated **Number** element value.

2.2.4.18 PersonaPostalAddressType

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

The **PersonaPostalAddressType** complex type specifies a postal address for a **PersonaType** complex type, as specified in section [2.2.4.19](#).

```

<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: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that represents the street portion of a postal address.

City: An element of type **string** that represents the city portion of a postal address.

State: An element of type **string** that represents the state portion of a postal address.

Country: An element of type **string** that represents the country/region portion of a postal address.

PostalCode: An element of type **string** that represents the postal code portion of a postal address.

PostOfficeBox: An element of type **string** that represents the post office box portion of a postal address.

Type: An element of type **string** that specifies the type of postal address; for example, Home or Business.

Latitude: An element of type **double**, as defined in [\[XMLSCHEMA2\]](#), that represents the latitude of the location of the associated postal address.

Longitude: An element of type **double** that represents the longitude of the location of the associated postal address.

Accuracy: An element of type **double** that represents the accuracy of the latitude and longitude of the associated postal address.

Altitude: An element of type **double** that represents the altitude of the associated postal address.

AltitudeAccuracy: An element of type **double** that represents the accuracy of the altitude of the associated postal address.

FormattedAddress: An element of type **string** that specifies the formatted display value of the associated postal address.

LocationUri: An element of type **string** that specifies a **URI**, for example for an Internet address, of the associated postal address.

LocationSource: An element of type **LocationSourceType**, as defined in section [2.2.5.1](#), that contains information about the origin of the associated postal address; for example, a contact (3) or a telephone book.

2.2.4.19 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="Bodies" type="t:ArrayOfBodyContentAttributedValuesType"/>
    <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="DisplayNameFirstLastHeader"
type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DisplayNameLastFirstHeader"
type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="FileAsHeader" 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"/>
<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="YomiCompanyName"
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="OtherAddresses"
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: An element of type **ItemIdType**, as defined in [\[MS-OXWSCORE\]](#) section 2.2.4.17, that represents an item identifier that is associated with a persona.

PersonaType: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that represents the type of the associated persona; for example, a person or a **distribution list**.

PersonaObjectStatus: An element of type **string** that specifies whether the information in the associated persona is complete or partial.

CreationTime: An element of type **datetime**, as defined in [\[XMLSCHEMA2\]](#), that specifies when the associated persona was created.

Bodies: An element of type **ArrayOfBodyContentAttributedValuesType**, as defined in section [2.2.4.1](#), that represents an array of attributions for the content of the body.

DisplayNameFirstLastSortKey: An element of type **string** that represents the sort key for a display name in first name, last name order.

DisplayNameLastFirstSortKey: An element of type **string** that represents the sort key for a display name in last name, first name order.

CompanyNameSortKey: An element of type **string** that represents the sort key for a company name.

HomeCitySortKey: An element of type **string** that represents the sort key for the home city.

WorkCitySortKey: An element of type **string** that represents the sort key for the work city.

DisplayNameFirstLastHeader: An element of type **string** that represents the header for a display name in first name, last name order.

DisplayNameLastFirstHeader: An element of type **string** that represents the header for a display name in last name, first name order.

FileAsHeader: An element of type **string** that contains the computed header, based on locale, of the value in the **FileAs** element.

DisplayName: An element of type **string** that specifies the display name of the associated persona.

DisplayNameFirstLast: An element of type **string** that specifies the display name of the associated persona in first name, last name order.

DisplayNameLastFirst: An element of type **string** that specifies the display name of the associated persona in last name, first name order.

FileAs: An element of type **string** that specifies how the persona is to be filed.

FileAsId: An element of type **string** that specifies the **FileAs** element identifier.

DisplayNamePrefix: An element of type **string** that specifies the prefix of the display name of the associated persona; for example, Mr., Ms., or Dr.

GivenName: An element of type **string** that specifies the given name of the associated persona.

MiddleName: An element of type **string** that specifies the middle name of the associated persona.

Surname: An element of type **string** that specifies the surname of the associated persona.

Generation: An element of type **string** that specifies the generation (Sr., Jr., III, and so on) of the associated persona.

Nickname: An element of type **string** that specifies the nickname of the associated persona.

YomiCompanyName: An element of type **string** that specifies the phonetic Japanese company name of the associated persona.

YomiFirstName: An element of type **string** that contains the phonetic Japanese first name of the associated persona.

YomiLastName: An element of type **xs:string** that contains the phonetic Japanese last name of the associated persona.

Title: An element of type **string** that specifies the job title of the associated persona.

Department: An element of type **string** that specifies the department name of the associated persona.

CompanyName: An element of type **string** that specifies the company name of the associated persona.

Location: An element of type **string** that specifies the location of the associated persona.

EmailAddress: An element of type **EmailAddressType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.4.27, that contains the default email address of the associated persona.

EmailAddresses: An element of type **ArrayOfEmailAddressesType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.4.5, that contains an array of all email addresses of the associated persona.

PhoneNumber: An element of type **PersonaPhoneNumberType**, as defined in section [2.2.4.17](#), that contains the default phone number of the associated persona.

ImAddress: An element of type **string** that specifies the **instant messaging** address of the associated persona.

HomeCity: An element of type **string** that specifies the city of the home address of the associated persona.

WorkCity: An element of type **string** that specifies the city of the work address of the associated persona.

RelevanceScore: An element of type **int**, as defined in [\[XMLSCHEMA2\]](#), that specifies how relevant the associated persona is to the client.

FolderIds: An element of type **ArrayOfFolderIdType**, as defined in section [2.2.4.4](#), that represents the parent folders of all the contacts (3) aggregated into the associated persona.

Attributions: An element of type **ArrayOfPersonaAttributionsType**, as defined in section [2.2.4.5](#), that contains attribution information for the associated persona.

DisplayNames: An element of type **ArrayOfStringAttributedValuesType**, as defined in section [2.2.4.8](#), that contains an array of display names and the identifiers of their source attributions for the associated persona.

FileAses: An element of type **ArrayOfStringAttributedValuesType** that contains an array of **FileAs** element values and the identifiers of their source attributions for the associated persona.

FileAsIds: An element of type **ArrayOfStringAttributedValuesType** that contains an array of **FileAsId** element values and the identifiers of their source attributions for the associated persona.

DisplayNamePrefixes: An element of type **ArrayOfStringAttributedValuesType** that contains an array of display name prefixes and the identifiers of their source attributions for the associated persona.

GivenNames: An element of type **ArrayOfStringAttributedValuesType** that contains an array of given name values and the identifiers of their source attributions for the associated persona.

MiddleNames: An element of type **ArrayOfStringAttributedValuesType** that contains an array of middle name values and the identifiers of their source attributions for the associated persona.

Surnames: An element of type **ArrayOfStringAttributedValuesType** that contains an array of surname values and the identifiers of their source attributions for the associated persona.

Generations: An element of type **ArrayOfStringAttributedValuesType** that contains an array of generation values and the identifiers of their source attributions for the associated persona.

Nicknames: An element of type **ArrayOfStringAttributedValuesType** that contains an array of nickname values and the identifiers of their source attributions for the associated persona.

Initials: An element of type **ArrayOfStringAttributedValuesType** that contains an array of initials values and the identifiers of their source attributions for the associated persona.

YomiCompanyNames: An element of type **ArrayOfStringAttributedValuesType** that contains an array of phonetic Japanese company names and the identifiers of their source attributions for the associated persona.

YomiFirstNames: An element of type **ArrayOfStringAttributedValuesType** that contains an array of phonetic Japanese company names and the identifiers of their source attributions for the associated persona.

YomiLastNames: An element of type **ArrayOfStringAttributedValuesType** that contains an array of phonetic Japanese last names and the identifiers of their source attributions for the associated persona.

BusinessPhoneNumbers: An element of type **ArrayOfPhoneNumberAttributedValuesType**, as defined in section [2.2.4.6](#), that contains an array of business phone numbers and the identifiers of their source attributions for the associated persona.

BusinessPhoneNumbers2: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of business phone numbers and the identifiers of their source attributions for the associated persona.

HomePhones: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of home phone numbers and the identifiers of their source attributions for the associated persona.

HomePhones2: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of phone numbers and the identifiers of their source attributions for the associated persona.

MobilePhones: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of mobile phone numbers and the identifiers of their source attributions for the associated persona.

MobilePhones2: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of mobile phone numbers and the identifiers of their source attributions for the associated persona.

AssistantPhoneNumbers: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of assistant phone numbers and the identifiers of their source attributions for the associated persona.

CallbackPhones: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of call-back phone numbers and the identifiers of their source attributions for the associated persona.

CarPhones: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of car phone numbers and the identifiers of their source attributions for the associated persona.

HomeFaxes: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of home fax numbers and the identifiers of their source attributions for the associated persona.

OrganizationMainPhones: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of the main phone numbers of an organization and the identifiers of their source attributions for the associated persona.

OtherFaxes: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of fax numbers and the identifiers of their source attributions for the associated persona.

OtherTelephones: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of telephone numbers and the identifiers of their source attributions for the associated persona.

OtherPhones2: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of telephone numbers and the identifiers of their source attributions for the associated persona.

Pagers: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of pager phone numbers and the identifiers of their source attributions for the associated persona.

RadioPhones: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of radio phone numbers and the identifiers of their source attributions for the associated persona.

TelexNumbers: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of Telex numbers and the identifiers of their source attributions for the associated persona.

TTYTDDPhoneNumbers: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of Text Telephone/Telecommunications Device for the Deaf (TTY/TDD) text telephone numbers and the identifiers of their source attributions for the associated persona.

WorkFaxes: An element of type **ArrayOfPhoneNumberAttributedValuesType** that contains an array of work fax numbers and the identifiers of their source attributions for the associated persona.

Emails1: An element of type **ArrayOfEmailAddressAttributedValuesType**, as defined in section [2.2.4.2](#) that contains an array of email addresses and the identifiers of their source attributions for the associated persona.

Emails2: An element of type **ArrayOfEmailAddressAttributedValuesType** that contains an array of email addresses and the identifiers of their source attributions for the associated persona.

Emails3: An element of type **ArrayOfEmailAddressAttributedValuesType** that contains an array of email addresses and the identifiers of their source attributions for the associated persona.

BusinessHomePages: An element of type **ArrayOfStringAttributedValuesType**, as defined in section [2.2.4.9](#), that contains an array of business home page values and the identifiers of their source attributions for the associated persona.

PersonalHomePages: An element of type **ArrayOfStringAttributedValuesType** that contains an array of personal home page values and the identifiers of their source attributions for the associated persona.

OfficeLocations: An element of type **ArrayOfStringAttributedValuesType** that contains an array of office locations and the identifiers of their source attributions for the associated persona.

ImAddresses: An element of type **ArrayOfStringAttributedValuesType** that contains an array of instant messaging addresses and the identifiers of their source attributions for the associated persona.

ImAddresses2: An element of type **ArrayOfStringAttributedValuesType** that contains an array of instant messaging addresses and the identifiers of their source attributions for the associated persona.

ImAddresses3: An element of type **ArrayOfStringAttributedValuesType** that contains an array of instant messaging addresses and the identifiers of their source attributions for the associated persona.

BusinessAddresses: An element of type **ArrayOfPostalAddressAttributedValuesType**, as defined in section [2.2.4.7](#), that contains an array of business addresses and the identifiers of their source attributions for the associated persona.

HomeAddresses: An element of type **ArrayOfPostalAttributedValuesType** that contains an array of home addresses and the identifiers of their source attributions for the associated persona.

OtherAddresses: An element of type **ArrayOfPostalAttributedValuesType** that contains an array of addresses and the identifiers of their source attributions for the associated persona.

Titles: An element of type **ArrayOfStringArrayAttributedValuesType**, as defined in section [2.2.4.8](#), that contains an array of job titles and the identifiers of their source attributions for the associated persona.

Departments: An element of type **ArrayOfStringArrayAttributedValuesType** that contains an array of department names and the identifiers of their source attributions for the associated persona.

CompanyNames: An element of type **ArrayOfStringArrayAttributedValuesType** that contains an array of company names and the identifiers of their source attributions for the associated persona.

Managers: An element of type **ArrayOfStringArrayAttributedValuesType** that contains an array of manager names and the identifiers of their source attributions for the associated persona.

AssistantNames: An element of type **ArrayOfStringArrayAttributedValuesType** that contains an array of assistant names and the identifiers of their source attributions for the associated persona.

Professions: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of profession values and the identifiers of their source attributions for the associated persona.

SpouseNames: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of spouse/partner names and the identifiers of their source attributions for the associated persona.

Children: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of child names and identifiers of their source attributions for the associated persona.

Schools: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of school names and the identifiers of their source attributions for the associated persona.

Hobbies: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of hobbies and the identifiers of their source attributions for the associated persona.

WeddingAnniversaries: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of wedding anniversary dates, stored as strings, and the identifiers of their source attributions for the associated persona.

Birthdays: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of birthdays, stored as strings, and the identifiers of their source attributions for the associated persona.

Locations: An element of type **ArrayOfStringArrayAttributedValueType** that contains an array of location values and the identifiers of their source attributions for the associated persona.

ExtendedProperties: An element of type **ArrayOfExtendedPropertyAttributedValueType**, as defined in section [2.2.4.3](#), that 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.

2.2.4.20 PhoneNumberAttributedValueType

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

The **PhoneNumberAttributedValueType** complex type specifies a **PersonaPhoneNumberType**, as defined in section [2.2.4.17](#), and **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), complex type pair. This complex type represents a phone number for a persona, paired with a list of the attributions for the phone number.

```
<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: An element of type **PersonalPhoneNumberType**, as defined in section [2.2.4.17](#), that contains a phone number and type information and is associated with a set of attributions.

Attributions: An element of type **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), that contains an array of attribution identifiers associated with a phone number.

2.2.4.21 PostalAddressAttributedValueType

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

The **PostalAddressAttributedValueType** complex type specifies a pair of **PersonaPostalAddressType**, as defined in section [2.2.4.18](#), and **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), complex types. This complex type specifies a postal address for a persona, paired with a list of the attributions for that address.

```
<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: An element of type **PersonalPostalAddressType**, as defined in section [2.2.4.18](#), that contains information associated with a postal address.

Attributions: An element of type **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), that contains an array of attribution IDs that are associated with a postal address.

2.2.4.22 StringArrayAttributedValueType

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

The **StringArrayAttributedValueType** complex type specifies an **ArrayOfStringValue**, as defined in section [2.2.4.10](#), and an **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), complex type pair.

```
<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: An element of type **ArrayOfStringValue**, as defined in section [2.2.4.10](#), that represents the values in an array of text values associated with the persona.

Attributions: An element of type **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), that contains a list of attributions for the **Values** element that is associated with it.

2.2.4.23 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: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that represents an instance of a paired string and attributions array.

Attributions: An element of type **ArrayOfValueAttributionsType**, as defined in section [2.2.4.11](#), that contains a set of attributions for the **Value** element that is associated with it.

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 from which the resolution of the location was derived.

2.2.5.1 LocationSourceType

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

The **LocationSourceType** simple type specifies the source from which the resolution of the location was derived.

```

<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:enumeration value="Resource"/>
  </xs:restriction>
</xs:simpleType>

```

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

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

Value	Meaning
Resource	Resolved by a resource mailbox, such as a conference room.

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.

Preliminary

3 Protocol Details

The client side of this protocol is simply a pass-through. That is, no additional timers or other state is required on the client side of this protocol. Calls made by the higher-layer protocol or application are passed directly to the transport, and the results returned by the transport are passed directly back to the higher-layer protocol or application.

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

This protocol describes a single WSDL port type with two operations that find and retrieve information about a persona.

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 WSDL operation returns all persona objects from a specified Contacts folder or retrieves contacts (3) that match a specified query string.
GetPersona	The GetPersona WSDL operation retrieves a persona.

3.1.4.1 FindPeople

The **FindPeople WSDL operation** returns all persona objects from a specified Contacts folder or retrieves contacts (3) that match a specified query string.

The following is the WSDL port type specification of the **FindPeople WSDL operation**.

```
<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** WSDL 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** WSDL operation builds on the existing functionality of the **RestrictionType** complex type, as defined in [\[MS-OXWSSRCH\]](#) section 2.2.4.24, and the **DefaultBaseNamesType** simple type, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.5.7 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 instant messaging 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 WSDL message.

3.1.4.1.1.1 FindPeopleSoapIn

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

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

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

Part name	Element/type	Description
request	FindPeople	Specifies the SOAP body of the request to find people.
Impersonation	ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.3.3)	Specifies a SOAP header that identifies the user whom the client is impersonating.
RequestVersion	RequestServerVersion ([MS-OXWSCDATA] section 2.2.3.9)	Specifies a SOAP header that identifies the schema version for the FindPeople WSDL operation request.

3.1.4.1.1.2 FindPeopleSoapOut

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

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

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

Part name	Element/type	Description
FindPeopleResult	FindPeopleResponse	Specifies the SOAP body of the response that contains the requested information.
ServerVersion	ServerVersionInfo ([MS-OXWSCDATA] section 2.2.3.10)	Specifies a SOAP header that identifies the server version for the response.

A successful **FindPeople** WSDL operation request returns a **FindPeopleResponse** element with the **ResponseClass** attribute set to "Success". The **ResponseCode** element of the **FindPeopleResponse** element is set to "NoError".

If the **FindPeople** WSDL operation is not successful, it returns a **FindPeopleResponse** element with the **ResponseClass** attribute set to "Error". The **ResponseCode** element of the **FindPeopleResponse** element is set to one of the common errors defined in [\[MS-OXWSCDATA\]](#) section 2.2.5.23.

3.1.4.1.1.2 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 **FindPeople** element specifies 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 **FindPeopleResponse** element specifies 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
ArrayOfPeopleType	Specifies an array of PersonaType complex types.
FindPeopleResponseMessageType	Specifies the response message for a FindPeople WSDL operation.
FindPeopleType	Specifies a request to find contacts (3).
PersonaResponseShapeType	Specifies the shape of the persona results from the FindPeople WSDL operation.

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 (3). The **FindPeopleType** complex type extends the **BaseRequestType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.4.15.

```
<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" name="PersonaShape" type="t:PersonaResponseShapeType"/>
        <xs:element name="IndexedPageItemView" type="t:IndexedPageViewType"/>
        <xs:element minOccurs="0" name="Restriction" type="t:RestrictionType"/>
        <xs:element minOccurs="0" name="AggregationRestriction" type="t:RestrictionType"/>
        <xs:element minOccurs="0" name="SortOrder" type="t:NonEmptyArrayOfFieldOrdersType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```

    <xs:element minOccurs="0" name="ParentFolderId" type="t:TargetFolderIdType"/>
    <xs:element minOccurs="0" name="QueryString" type="xs:string"/>
  </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>

```

PersonaShape: An element of type **PersonaResponseShapeType** that represents the persona properties.

IndexedPageItemView: An element of type **IndexedPageViewType**, as defined in [\[MS-OXWSSRCH\]](#) section 2.2.4.14, that represents how paged item information is returned in the response.

Restriction: An element of type **RestrictionType**, as defined in [\[MS-OXWSSRCH\]](#) section 2.2.4.24, that represents a restriction definition that filters the results based on raw contact (3) properties.

AggregationRestriction: An element of type **RestrictionType** that represents a restriction definition that filters the results based on aggregated persona properties.

SortOrder: An element of type **NonEmptyArrayOfFieldOrdersType**, as defined in [\[MS-OXWSSRCH\]](#) section 3.1.4.2.3.8, that represents the sort order.

ParentFolderId: An element of type **TargetFolderIdType**, as defined in [\[MS-OXWSFOLD\]](#) section 2.2.4.14, that represents the identifier of the parent folder.

QueryString: An element of type **string**, as defined in [\[XMLSCHEMA2\]](#), that 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** WSDL operation. It defines the set of persona properties to be returned for each **PersonaType** complex type 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: An element of type **DefaultShapeNamesType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.5.7, that represents the base shape for the **PersonaResponseShapeType** complex type, as defined in section [3.1.4.1.3.2](#).

AdditionalProperties: An element of type **NonEmptyArrayOfPathsToElementType**, as defined in [\[MS-OXWSCDATA\]](#) section 2.2.4.44, that represents additional requested properties.

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** WSDL operation. The **FindPeopleResponseMessageType** complex type extends the **ResponseMessageType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.4.57.

```
<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: An element of type **ArrayOfPeopleType** that represents an array of **PersonaType** complex types.

TotalNumberOfPeopleInView: An element of type **int**, as defined in [\[XMLSCHEMA2\]](#), that represents the number of contacts (3) that appear.

3.1.4.1.3.4 ArrayOfPeopleType

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

The **ArrayOfPeopleType** complex type specifies an array of **PersonaType** complex types.

```
<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: An element of type **PersonaType**, as defined in section [2.2.4.19](#), that encapsulates a set of contact (3) data from one or more sources linked by a common persona 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** WSDL operation retrieves a persona.

The following is the WSDL port type specification of the **GetPersona** WSDL operation.

```
<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** WSDL 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>
```

The protocol client sends a **GetPersonaSoapIn** request WSDL message and the protocol server responds with a **GetPersonaSoapOut** response.

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 WSDL message.

3.1.4.2.1.1 GetPersonaSoapIn

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

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

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

```

    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>

```

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

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

Part name	Element/type	Description
request	GetPersona	Specifies the SOAP body of the request for a persona.
Impersonation	ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.3.3)	Specifies a SOAP header that identifies the user whom the client is impersonating.
RequestVersion	RequestServerVersion ([MS-OXWSCDATA] section 2.2.3.9)	Specifies a SOAP header that identifies the schema version for the GetPersona WSDL operation request.

3.1.4.2.1.2 GetPersonaSoapOut

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

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

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

Part name	Element/type	Description
GetPersonaResult	GetPersonaResponseMessage	Specifies the SOAP body of the response that contains the requested information.
ServerVersion	ServerVersionInfo ([MS-OXWSCDATA] section 2.2.3.10)	Specifies a SOAP header that identifies the server version for the response.

A successful **GetPersona** WSDL operation request returns a **GetPersonaResponseMessage** element with the **ResponseClass** attribute set to "Success". The **ResponseCode** element of the **GetPersonaResponseMessage** element is set to "NoError".

If the **GetPersona** operation is not successful, it returns a **GetPersonaResponseMessage** element with the **ResponseClass** attribute set to "Error". The **ResponseCode** element of the

GetPersonaResponseMessage is set to one of the common error codes defined in [\[MS-OXWSCDATA\]](#) section 2.2.5.23.

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 **GetPersona** element specifies 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 **GetPersonaResponseMessage** element specifies 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
GetPersonaResponseMessageType	Specifies the response message for a GetPersona WSDL operation.
GetPersonaType	Specifies a request to retrieve a persona.

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. The **GetPersonaType** complex type extends the **BaseRequestType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.4.15.

```
<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 name="PersonaId" type="t:ItemIdType"/>
</xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
```

PersonaId: An element of type **ItemIdType**, as defined in [\[MS-OXWSCORE\]](#) section 2.2.4.17, that 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** WSDL operation. The **GetPersonaResponseMessageType** complex type extends the **ResponseMessageType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.4.57.

```
<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: An element of type **PersonaType**, as defined in section [2.2.4.19](#), that 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** WSDL operation request shows how to return all contacts (3) from the Contacts folder.

```
<?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="Exchange2013" />
  </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** WSDL operation request.

```
<?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="Exchange2013"
      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="AAQkAGQ1MjJjMTBkLTc4Y2UtNDA5Ny04ZjU5LWI3MTYzNGNkZmRkYQAQOjFqObcLmtOlz1RnHdXQjo=" />
          <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>
          </EmailAddress>
        </Persona>
      </People>
    </FindPeopleResponse>
  </s:Body>
</s:Envelope>
```

```
<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

None.

5.2 Index of Security Parameters

None.

Preliminary

6 Appendix A: Full WSDL

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

```
<?xml version="1.0"?>
<wsdl:definitions xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
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>
    <xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
version="Exchange2013" id="messages" xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:include schemaLocation="MS-OXWSPERS-messages.xsd"/>
    </xs:schema>
  </wsdl:types>
  <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:binding>
<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:definitions>
```

7 Appendix B: Full XML Schema

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

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

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

This section contains the MS-OXWSPERS-messages.xsd and information about additional files that this schema file requires to operate correctly.

MS-OXWSPERS-messages.xsd includes the files listed in the following table. To operate correctly, these files have to be present in the folder that contains the WSDL, types schema, and messages schema for this protocol.

File name	Defining specification/section
MS-OXWSCDATA-messages.xsd	[MS-OXWSCDATA] section 7.1
MS-OXWSPERS-types.xsd	7.2

```
<?xml version="1.0"?>
<xs:schema xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
  xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
  elementFormDefault="qualified"
  targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
  version="Exchange2013" id="messages" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import schemaLocation="MS-OXWSPERS-types.xsd"
    namespace="http://schemas.microsoft.com/exchange/services/2006/types"/>
  <xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
  <xs:complexType name="FindPeopleType">
    <xs:complexContent mixed="false">
      <xs:extension base="m:BaseRequestType">
        <xs:sequence>
          <xs:element minOccurs="0" name="PersonaShape" type="t:PersonaResponseShapeType"/>
          <xs:element name="IndexedPageItemView" type="t:IndexedPageViewType"/>
          <xs:element minOccurs="0" name="Restriction" type="t:RestrictionType"/>
          <xs:element minOccurs="0" name="AggregationRestriction" type="t:RestrictionType"/>
          <xs:element minOccurs="0" name="SortOrder"
            type="t:NonEmptyArrayOfFieldOrdersType"/>
          <xs:element minOccurs="0" name="ParentFolderId" type="t:TargetFolderIdType"/>
          <xs:element minOccurs="0" 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">
    <xs:extension base="m:BaseRequestType">
      <xs:sequence>
        <xs:element 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 MS-OXWSPERS-types.xsd and information about additional files that this schema file requires to operate correctly.

MS-OXWSPERS-types.xsd includes the file listed in the following table. To operate correctly, this file has to be present in the folder that contains the WSDL, types schema, and messages schema for this protocol.

File name	Defining specification/section
MS-OXWSCORE-types.xsd	[MS-OXWSCORE] section 7.2

```

<?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="Exchange2013" 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="ArrayOfBodyContentAttributedValuesType">
    <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="BodyContentAttributedValue"
type="t:BodyContentAttributedValueType"/>
    </xs:sequence>

```

```

</xs:complexType>
<xs:complexType name="BodyContentType">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="BodyType" type="t:BodyType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="BodyContentAttributedValueType">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" type="t:BodyContentType"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Attributions"
type="t:ArrayOfValueAttributionsType"/>
  </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:enumeration value="Resource"/>
  </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:sequence>
</xs:complexType>

```

```

<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="Bodies"
type="t:ArrayOfBodyContentAttributedValuesType"/>
<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="DisplayNameFirstLastHeader"
type="xs:string"/>
<xs:element minOccurs="0" maxOccurs="1" name="DisplayNameLastFirstHeader"
type="xs:string"/>
<xs:element minOccurs="0" maxOccurs="1" name="FileAsHeader" 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"/>
<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:ArrayOfEmailAddressType"/>
<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"/>
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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="Paggers"
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="OtherAddresses"
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"/>
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</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
- Microsoft Lync 2013

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.

9 Change Tracking

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

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