[MS-OXWSRSLNM]:
Resolve Recipient Names Web Service Protocol

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Revision Summary

Date	Revision History	Revision Class	Comments
07/15/2009	1.0	Major	Initial Availability.
11/04/2009	1.1.0	Minor	Updated the technical content.
02/10/2010	1.2.0	Minor	Updated the technical content.
05/05/2010	1.2.1	Editorial	Revised and edited the technical content.
08/04/2010	1.3	Minor	Clarified the meaning of the technical content.
11/03/2010	2.0	Major	Significantly changed the technical content.
03/18/2011	2.1	Minor	Clarified the meaning of the technical content.
08/05/2011	3.0	Major	Significantly changed the technical content.
10/07/2011	4.0	Major	Significantly changed the technical content.
01/20/2012	5.0	Major	Significantly changed the technical content.
04/27/2012	5.0	No change	No changes to the meaning, language, or formatting of the technical content.
07/16/2012	5.1	Minor	Clarified the meaning of the technical content.
10/08/2012	5.2	Minor	Clarified the meaning of the technical content.
02/11/2013	5.2	No change	No changes to the meaning, language, or formatting of the technical content.
07/26/2013	5.2	No change	No changes to the meaning, language, or formatting of the technical content.
11/18/2013	5.2	No change	No changes to the meaning, language, or formatting of the technical content.
02/10/2014	5.2	No change	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1   Introduction

The Resolve Recipient Names Web Service Protocol enables a client that has incomplete **recipient (2)** identifying information to retrieve a list of matching and similar recipients (2) that are known to the server.

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**
> **SOAP message**
> **XML**
> **XML namespace**

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

> **contact**
> **Contacts folder**
> **distribution list**
> **email address**
> **endpoint**
> **mailbox**
> **recipient**
> **Uniform Resource Locator (URL)**
> **web server**
> **Web Services Description Language (WSDL)**
> **WSDL message**
> **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.

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

[MS-OXWSCONT] Microsoft Corporation, "Contacts Web Service Protocol".

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

[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

[RFC3066] Alvestrand, H., "Tags for the Identification of Language", RFC 3066, January 2001, http://www.ietf.org/rfc/rfc3066.txt

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

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

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

[XMLSCHEMA1] Thompson, H.S., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "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-OXDSCLI] Microsoft Corporation, "Autodiscover Publishing and Lookup Protocol".

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

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

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

1.3 Overview

The Resolve Recipient Names Web Service Protocol enables a client to retrieve a list of **email addresses** or **contacts (3)** that are known to the server. The client can provide the full or partial name for the intended recipient (2). The server that is implementing the Resolve Recipient Names

Web Service Protocol will return a list of matching or similarly named recipients (2). The client can then use those names when addressing items for the server to send. The server can return valid recipients (2) that are known to it; for example, recipient (2) names that are stored in a directory service or in a global or user-specific list of contacts (3).

1.4 Relationship to Other Protocols

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

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

The Resolve Recipient Names Web Service Protocol uses SOAP over **HTTP**, as specified in [RFC2616], and SOAP over **HTTPS**, as described in [RFC2818], as shown in the layering diagram.
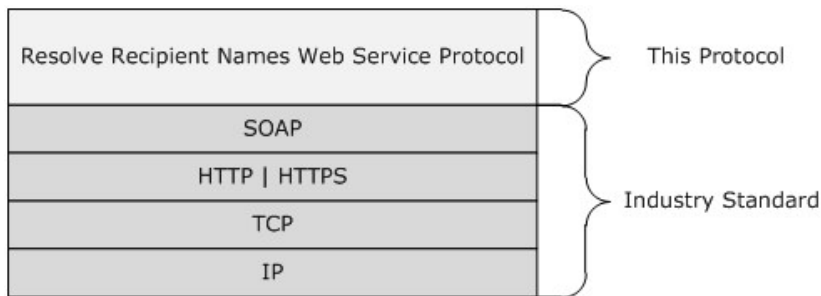

Figure 1: This protocol in relation to other protocols

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

1.5 Prerequisites/Preconditions

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

1.6 Applicability Statement

The Resolve Recipient Names Web Service Protocol is applicable to clients that obtain a list of candidate recipients (2) that are possible matches for ambiguous or partial names that are provided to the client. The server returns the list of candidate matches, and the client application determines whether any of the listed candidates is the intended recipient (2).

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports:** This protocol uses multiple transports with SOAP 1.1, as specified in section 2.1.

- **Protocol Versions:** This protocol specifies only one **WSDL port type** version. The **WSDL** version of the request is identified by using the **t:RequestServerVersion** element, as described in [MS-OXWSCDATA] section 2.2.3.9, and the version of the server responding to the request is identified by using the **t:ServerVersionInfo** element, as described in [MS-OXWSCDATA] section 2.2.3.10.

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

- **Localization:** This protocol includes text strings in various messages. Localization considerations for such strings are specified in section 3.1.4.

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

1.8   Vendor-Extensible Fields

None.

1.9   Standards Assignments

None.

2 Messages

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

2.1 Transport

The SOAP version supported is SOAP 1.1. For details, see [SOAP1.1].

This protocol relies on the Web server that hosts the application to perform authentication. The protocol MUST support SOAP over HTTP, as specified in [RFC2616]. The protocol SHOULD use secure communications by means of HTTPS, as defined 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 defined in [XMLSCHEMA1] and [XMLSCHEMA2], and WSDL as defined in [WSDL].

2.2.1 Namespaces

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

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

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

This specification does not define any common XML schema complex type definitions.

2.2.5   Simple Types

This specification does not define any common XML schema simple type definitions.

2.2.6   Attributes

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

2.2.7   Groups

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

2.2.8   Attribute Groups

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

3   Protocol Details

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.

3.1   ExchangeServicePortType Server Details

The Resolve Recipient Names Web Service Protocol defines a single port type with one operation.

3.1.1   Server Abstract Data Model

None.

3.1.2   Server Timers

None.

3.1.3   Server Initialization

None.

3.1.4   Message Processing Events and Sequencing Rules

The following table summarizes the WSDL operations as defined by this specification.

Operation name	Description
ResolveNames	Returns a list of candidate recipient (2) names that are known to the server and that match or are similar to the recipient (2) name provided in the request by the client.

3.1.4.1   ResolveNames Operation

The **ResolveNames** operation returns a list of candidate recipients (2) that match an ambiguous recipient (2) name that is provided by the client.

The following is the WSDL port type specification for the **ResolveNames** operation.

```
<wsdl:operation name="ResolveNames" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
    <wsdl:input message="tns:ResolveNamesSoapIn"/>
    <wsdl:output message="tns:ResolveNamesSoapOut"/>
</wsdl:operation>
```

The following is the WSDL binding specification for the **ResolveNames** operation.

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

```
      <soap:header message="tns:ResolveNamesSoapIn" part="Impersonation" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      <soap:header message="tns:ResolveNamesSoapIn" part="MailboxCulture" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      <soap:header message="tns:ResolveNamesSoapIn" part="RequestVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
   </wsdl:input>
   <wsdl:output>
      <soap:body parts="ResolveNamesResult" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      <soap:header message="tns:ResolveNamesSoapOut" part="ServerVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
   </wsdl:output>
</wsdl:operation>
```

3.1.4.1.1 Messages

The following table lists and describes the WSDL messages that are specific to the **ResolveNames** operation.

Message name	Description
ResolveNamesSoapIn	Specifies the **SOAP message** that requests name resolution from the server.
ResolveNamesSoapOut	Specifies the SOAP message that is returned in response.

3.1.4.1.1.1 tns:ResolveNamesSoapIn

The **ResolveNamesSoapIn** WSDL message specifies the **ResolveNames** operation request to match an ambiguous recipient (2) name.

```
<wsdl:message name="ResolveNamesSoapIn" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
   <wsdl:part name="request" element="tns:ResolveNames"/>
   <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
   <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
   <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
```

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

The parts of the **ResolveNamesSoapIn** WSDL message are listed and described in the following table.

Part name	Element/type	Description
request	**tns:ResolveNames** (section 3.1.4.1.2.1)	Specifies the **SOAP body** of the request.
Impersonation	**t:ExchangeImpersonation** ([MS-OXWSCDATA] section 2.2.3.3)	Specifies the identifier of the account to impersonate.
MailboxCulture	**t:MailboxCulture** ([MS-OXWSCDATA] section 2.2.3.6)	Specifies a **SOAP header** that identifies the culture to be used for accessing the server. The cultures are defined by [RFC3066].

Part name	Element/type	Description
RequestVersion	**t:RequestServerVersion** ([MS-OXWSCDATA] section 2.2.3.9)	Specifies a SOAP header that identifies the schema version for the request.

3.1.4.1.1.2 tns:ResolveNamesSoapOut

The **ResolveNamesSoapOut** WSDL message specifies the server response to the **ResolveNames** operation request to match an ambiguous recipient (2) name.

```
<wsdl:message name="ResolveNamesSoapOut"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:part name="ResolveNamesResult" element="tns:ResolveNamesResponse"/>
  <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
```

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

The parts of the **ResolveNamesSoapOut** WSDL message are listed and described in the following table.

Part name	Element/type	Description
ResolveNamesResult	**tns:ResolveNamesResponse** (section 3.1.4.1.2.2)	Specifies the SOAP body of the response.
ServerVersion	**t:ServerVersionInfo** ([MS-OXWSCDATA] section 2.2.3.10)	Specifies a SOAP header that identifies the server version for the response.

3.1.4.1.2 Elements

The following table lists and describes the XML schema elements that are specific to the **ResolveNames** operation.

Element name	Description
ResolveNames	Specifies the parameters and the unresolved recipient (2) name to the server.
ResolveNamesResponse	Specifies the candidate matches that are returned in the server response.

3.1.4.1.2.1 ResolveNames Element

The **ResolveNames** element is a container that specifies the parameters and the unresolved recipient (2) name to the server.

```
<xs:element name="ResolveNames"
  type="m:ResolveNamesType"
 />
```

3.1.4.1.2.2   ResolveNamesResponse Element

The **ResolveNamesResponse** element is a container that specifies the candidate matches that are returned in the server response.

```
<xs:element name="ResolveNamesResponse"
  type="m:ResolveNamesResponseType"
 />
```

3.1.4.1.3   Complex Types

The following table lists the XML schema complex type definitions that are specific to the **ResolveNames** operation.

Complex type name	Description
ArrayOfResolutionType	Specifies the list of matching recipient (2) candidates that are returned by the server.
ResolutionType	Specifies the type of a matching recipient (2) candidate that is returned by the server.
ResolveNamesResponseMessageType	Specifies the status and result of a **ResolveNames** operation.
ResolveNamesResponseType	Specifies the contents of the response from the server.
ResolveNamesType	Specifies the contents of a request from the client to locate matching recipient (2) candidates.

3.1.4.1.3.1   t:ArrayOfResolutionType Complex Type

The **ArrayOfResolutionType** complex type specifies the list of matching recipient (2) candidates that are returned by the server. Note that the server returns a maximum of 100 candidate matches.

```
<xs:complexType name="ArrayOfResolutionType">
  <xs:sequence>
    <xs:element name="Resolution"
      type="t:ResolutionType"
      maxOccurs="100"
      minOccurs="0"
     />
  </xs:sequence>
  <xs:attributeGroup
    ref="t:FindResponsePagingAttributes"
   />
</xs:complexType>
```

The following table lists and describes the child element of the **ArrayOfResolutionType** complex type.

Element name	Type	Description
Resolution	**t:ResolutionType** (section 3.1.4.1.3.2)	Specifies a single resolved entity.

The attribute group of the **ArrayOfResolutionType** complex type is the **FindResponsePagingAttributes** attribute group, as specified in [MS-OXWSCDATA] section 2.2.8.1.

3.1.4.1.3.2   t:Resolutiontype Complex Type

The **ResolutionType** complex type specifies the type of matching recipient (2) candidate that is returned by the server.

```
<xs:complexType name="ResolutionType">
  <xs:sequence>
    <xs:element name="Mailbox"
      type="t:EmailAddressType"
     />
    <xs:element name="Contact"
      type="t:ContactItemType"
      minOccurs="0"
     />
  </xs:sequence>
</xs:complexType>
```

The following table lists and describes the child elements of the **ResolutionType** complex type.

Element name	Type	Description
Mailbox	**t:EmailAddressType** ([MS-OXWSCDATA] section 2.2.4.27)	Specifies an email address.
Contact	**t:ContactItemType** ([MS-OXWSCONT] section 2.2.4.2)	Specifies a contact (3) item.

3.1.4.1.3.3   m:ResolveNamesResponseMessageType Complex Type

The **ResolveNamesResponseMessageType** complex type specifies the status and result of a **ResolveNames** operation. The **ResolveNamesResponseMessageType** complex type extends the **ResponseMessageType** complex type, as specified in [MS-OXWSCDATA] section 2.2.4.57.

```
<xs:complexType name="ResolveNamesResponseMessageType">
  <xs:complexContent>
    <xs:extension
      base="m:ResponseMessageType"
    >
      <xs:sequence>
        <xs:element name="ResolutionSet"
          type="t:ArrayOfResolutionType"
          minOccurs="0"
         />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists and describes the child elements of the
ResolveNamesResponseMessageType complex type.

Element name	Type	Description
ResolutionSet	**t:ArrayOfResolutionType** (section 3.1.4.1.3.1)	Specifies the list of matching recipient (2) candidates that are returned by the server.

3.1.4.1.3.4   m:ResolveNamesResponseType Complex Type

The **ResolveNamesResponseType** complex type specifies the contents of the response from the
server. The **ResolveNamesResponseType** complex type extends the
BaseResponseMessageType complex type, as specified in [MS-OXWSCDATA] section 2.2.4.16.

```
<xs:complexType name="ResolveNamesResponseType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseResponseMessageType"
     />
  </xs:complexContent>
</xs:complexType>
```

3.1.4.1.3.5   m:ResolveNamesType Complex Type

The **ResolveNamesType** complex type specifies the contents of a request from the client to locate
matching recipient (2) candidates. The **ResolveNamesType** complex type extends the
BaseRequestType complex type, as specified in [MS-OXWSCDATA] section 2.2.4.15.

```
<xs:complexType name="ResolveNamesType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseRequestType"
    >
      <xs:sequence>
        <xs:element name="ParentFolderIds"
          type="t:NonEmptyArrayOfBaseFolderIdsType"
          minOccurs="0"
         />
        <xs:element name="UnresolvedEntry"
          type="t:NonEmptyStringType"
         />
      </xs:sequence>
      <xs:attribute name="ReturnFullContactData"
        type="xs:boolean"
        use="required"
       />
      <xs:attribute name="SearchScope"
        type="t:ResolveNamesSearchScopeType"
        default="ActiveDirectoryContacts"
       />
      <xs:attribute name="ContactDataShape"
        type="t:DefaultShapeNamesType"
       />
    </xs:extension>
```

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

The following table lists and describes the child elements of the **ResolveNamesType** complex type.

Element name	Type	Description
ParentFolderIds	**t:NonEmptyArrayOfBaseFolderIdsType** ([MS-OXWSFOLD] section 3.1.4.6.3.3)	Specifies the ID of the parent folder that contains the item.
UnresolvedEntry	**t:NonEmptyStringType** ([MS-OXWSCDATA] section 2.2.5.20)	Specifies the name of a contact (3) or **distribution list** to be resolved.

The following table lists and describes the attributes of the **ResolveNamesType** complex type.

Attribute name	Type	Description
ReturnFullContactData	**xs:boolean** [XMLSCHEMA2]	Specifies whether all the data is to be returned for a resolved contact (3).
SearchScope	**t:ResolveNamesSearchScopeType** (section 3.1.4.1.4.1)	Specifies a location where the server searches for candidate matches.
ContactDataShape	**t:DefaultShapeNamesType** ([MS-OXWSCDATA] section 2.2.5.7)	Specifies the standard set of properties to be returned for the resolved names. This attribute SHOULD<1> be included.

3.1.4.1.4   Simple Types

The following table lists and describes the XML schema simple type that is specific to the **ResolveNames** operation.

Simple type name	Description
ResolveNamesSearchScopeType	Specifies a location where the server searches for match candidates.

3.1.4.1.4.1   t:ResolveNamesSearchScopeType Simple Type

The **ResolveNamesSearchScopeType** simple type specifies a location where the server searches for match candidates.

```
<xs:simpleType name="ResolveNamesSearchScopeType">
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
      value="ActiveDirectory"
     />
```

```
      <xs:enumeration
       value="ActiveDirectoryContacts"
      />
      <xs:enumeration
       value="Contacts"
      />
      <xs:enumeration
       value="ContactsActiveDirectory"
      />
   </xs:restriction>
 </xs:simpleType>
```

The following table lists and describes the values that are defined by the
ResolveNamesSearchScopeType simple type.

Value name	Description
ActiveDirectory	Specifies that the server searches for match candidates in the directory service for the organization.
ActiveDirectoryContacts	Specifies that the server searches for match candidates in the global contacts (3) list that is stored in the directory service for the organization.
Contacts	Specifies that the server searches for match candidates in the **mailbox Contacts folder**.
ContactsActiveDirectory	Specifies that the server searches for match candidates in the mailbox contacts (3) list that is stored in the directory service for the organization.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

4 Protocol Examples

The following example of a **ResolveNames** operation shows how to resolve the entry **User2**.

```xml
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types">
  <soap:Body>
    <ResolveNames xmlns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
      ReturnFullContactData="true">
      <UnresolvedEntry>User2</UnresolvedEntry>
    </ResolveNames>
  </soap:Body>
</soap:Envelope>
```

The following example shows a successful response to a **ResolveNames** operation.

```xml
<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Header>
    <t:ServerVersionInfo MajorVersion="8" MinorVersion="0" MajorBuildNumber="685"
MinorBuildNumber="8"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types" />
  </soap:Header>
  <soap:Body>
    <ResolveNamesResponse
xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
      <m:ResponseMessages>
        <m:ResolveNamesResponseMessage ResponseClass="Success">
          <m:ResponseCode>NoError</m:ResponseCode>
          <m:ResolutionSet TotalItemsInView="1" IncludesLastItemInRange="true">
            <t:Resolution>
              <t:Mailbox>
                <t:Name>User2</t:Name>
                <t:EmailAddress>User2@example.com</t:EmailAddress>
                <t:RoutingType>SMTP</t:RoutingType>
                <t:MailboxType>Mailbox</t:MailboxType>
              </t:Mailbox>
              <t:Contact>
                <t:DisplayName>User2</t:DisplayName>
                <t:EmailAddresses>
                  <t:Entry Key="EmailAddress1">SMTP:User2@example.com</t:Entry>
                </t:EmailAddresses>
                <t:ContactSource>ActiveDirectory</t:ContactSource>
              </t:Contact>
            </t:Resolution>
          </m:ResolutionSet>
        </m:ResolveNamesResponseMessage>
      </m:ResponseMessages>
    </ResolveNamesResponse>
  </soap:Body>
```

```
</soap:Envelope>
```

5 Security

5.1 Security Considerations for Implementers

The Resolve Recipient Names Web Service Protocol does not use any additional security mechanisms.

5.2 Index of Security Parameters

None.

6   Appendix A: Full WSDL

The XML files that are listed in the following table are required in order to implement the functionality described in this document.

File name	Description	Section
MS-OXWSRSLNM.wsdl	Contains the WSDL for the implementation of this protocol.	6
MS-OXWSRSLNM-messages.xsd	Contains the XML schema message definitions that are used in this protocol.	7.1
MS-OXWSRSLNM-types.xsd	Contains the XML schema type definitions that are used in this protocol.	7.2

These files have to be placed in a common folder in order for the WSDL to validate and operate. Also, any schema files that are included in or imported into the MS-OXWSRSLNM-types.xsd or MS-OXWSRSLNM-messages.xsd schemas have to be placed in the common folder along with the files listed in the table.

This section contains the contents of the MS-OXWSRSLNM.wsdl file.

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:s="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types">
  <wsdl:types>
    <xs:schema id="messages" elementFormDefault="qualified" version="Exchange2013"
xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages">
      <xs:include schemaLocation="MS-OXWSRSLNM-messages.xsd"/>
    </xs:schema>
    <xs:schema id="types" elementFormDefault="qualified" version="Exchange2013"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:include schemaLocation="MS-OXWSRSLNM-types.xsd"/>
    </xs:schema>
  </wsdl:types>
  <wsdl:portType name="ExchangeServicePortType">
    <wsdl:operation name="ResolveNames" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
      <wsdl:input message="tns:ResolveNamesSoapIn"/>
      <wsdl:output message="tns:ResolveNamesSoapOut"/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:message name="ResolveNamesSoapIn" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
    <wsdl:part name="request" element="tns:ResolveNames"/>
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
  </wsdl:message>
  <wsdl:message name="ResolveNamesSoapOut" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
```

```
      <wsdl:part name="ResolveNamesResult" element="tns:ResolveNamesResponse"/>
      <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:binding name="ExchangeServiceBinding" type="tns:ExchangeServicePortType">
    <wsdl:documentation xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
      <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" style="document"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
    <wsdl:operation name="ResolveNames" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
      <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/ResolveNames"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      <wsdl:input>
        <soap:body parts="request" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
        <soap:header message="tns:ResolveNamesSoapIn" part="Impersonation" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
        <soap:header message="tns:ResolveNamesSoapIn" part="MailboxCulture" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
        <soap:header message="tns:ResolveNamesSoapIn" part="RequestVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="ResolveNamesResult" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
        <soap:header message="tns:ResolveNamesSoapOut" part="ServerVersion" use="literal"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"/>
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
</wsdl:definitions>
```

7   Appendix B: Full XML Schema

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

Schema name	Prefix	Section
Messages schema	m:	7.1
Types schema	t:	7.2

These files have to be placed in a common folder in order for the WSDL to validate and operate. Also, any schema files that are included in or imported into the MS-OXWSRSLNM-types.xsd or MS-OXWSRSLNM-messages.xsd schemas have to be placed in the common folder along with the files listed in the table.

7.1   Messages Schema

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

MS-OXWSRSLNM-messages.xsd includes or imports the files listed in the following table. For the schema file to operate correctly, these files have to be in the folder that contains the WSDL, types schema, and messages schema files for this protocol.

File name	Defining specification
MS-OXWSCDATA-messages.xsd	[MS-OXWSCDATA] section 7.1

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
elementFormDefault="qualified" version="Exchange2013" id="messages">
  <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
schemaLocation="MS-OXWSRSLNM-types.xsd"/>
  <xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
  <xs:complexType name="ResolveNamesResponseMessageType">
    <xs:complexContent>
      <xs:extension base="m:ResponseMessageType">
        <xs:sequence>
          <xs:element name="ResolutionSet" type="t:ArrayOfResolutionType" minOccurs="0"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ResolveNamesResponseType">
    <xs:complexContent>
      <xs:extension base="m:BaseResponseMessageType"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ResolveNamesType">
    <xs:complexContent>
      <xs:extension base="m:BaseRequestType">
        <xs:sequence>
```

```
        <xs:element name="ParentFolderIds" type="t:NonEmptyArrayOfBaseFolderIdsType"
minOccurs="0"/>
        <xs:element name="UnresolvedEntry" type="t:NonEmptyStringType"/>
      </xs:sequence>
      <xs:attribute name="ReturnFullContactData" type="xs:boolean" use="required"/>
      <xs:attribute name="SearchScope" type="t:ResolveNamesSearchScopeType"
default="ActiveDirectoryContacts"/>
        <xs:attribute name="ContactDataShape" type="t:DefaultShapeNamesType"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="ResolveNames" type="m:ResolveNamesType"/>
  <xs:element name="ResolveNamesResponse" type="m:ResolveNamesResponseType"/>
</xs:schema>
```

7.2   Types Schema

This section contains the contents of the MS-OXWSRSLNM-types.xsd file and information about additional files that this schema file requires to operate correctly.

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

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

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
elementFormDefault="qualified" version="Exchange2013" id="types">
  <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
  <xs:include schemaLocation="MS-OXWSCDATA-types.xsd"/>
  <xs:complexType name="ArrayOfResolutionType">
    <xs:sequence>
      <xs:element name="Resolution" type="t:ResolutionType" minOccurs="0" maxOccurs="100"/>
    </xs:sequence>
    <xs:attributeGroup ref="t:FindResponsePagingAttributes"/>
  </xs:complexType>
  <xs:complexType name="ResolutionType">
    <xs:sequence>
      <xs:element name="Mailbox" type="t:EmailAddressType"/>
      <xs:element name="Contact" type="t:ContactItemType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
  <xs:simpleType name="ResolveNamesSearchScopeType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="ActiveDirectory"/>
      <xs:enumeration value="ActiveDirectoryContacts"/>
      <xs:enumeration value="Contacts"/>
      <xs:enumeration value="ContactsActiveDirectory"/>
    </xs:restriction>
  </xs:simpleType>
</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 2007

- Microsoft Exchange Server 2010

- Microsoft Exchange Server 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.

<1> Section 3.1.4.1.3.5: Exchange 2007, Exchange 2010 and Exchange 2010 SP1 do not support the **ContactDataShape** attribute. The **ContactDataShape** attribute was introduced in Exchange 2010 SP2.

9 Change Tracking

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

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