

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

---

## Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation for protocols, file formats, languages, standards as well as overviews of the interaction among each of these technologies.
- **Copyrights.** This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you may make copies of it in order to develop implementations of the technologies described in the Open Specifications and may distribute portions of it in your implementations using these technologies or your documentation as necessary to properly document the implementation. You may also distribute in your implementation, with or without modification, any schema, IDL's, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications.
- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.
- **Patents.** Microsoft has patents that may cover your implementations of the technologies described in the Open Specifications. Neither this notice nor Microsoft's delivery of the documentation grants any licenses under those or any other Microsoft patents. However, a given Open Specification may be covered by Microsoft [Open Specification Promise](#) or the [Community Promise](#). If you would prefer a written license, or if the technologies described in the Open Specifications are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting [iplg@microsoft.com](mailto:iplg@microsoft.com).
- **Trademarks.** The names of companies and products contained in this documentation may be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit [www.microsoft.com/trademarks](http://www.microsoft.com/trademarks).
- **Fictitious Names.** The example companies, organizations, products, domain names, email addresses, logos, people, places, and events depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

**Reservation of Rights.** All other rights are reserved, and this notice does not grant any rights other than specifically described above, whether by implication, estoppel, or otherwise.

**Tools.** The Open Specifications do not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments you are free to take advantage of them. Certain Open Specifications are intended for use in conjunction with publicly available standard specifications and network programming art, and assumes that the reader either is familiar with the aforementioned material or has immediate access to it.

## 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.
04/30/2014	5.3	Minor	Clarified the meaning of the technical content.
07/31/2014	5.3	No change	No changes to the meaning, language, or formatting of the technical content.
10/30/2014	5.4	Minor	Clarified the meaning of the technical content.

# Table of Contents

<b>1 Introduction</b>	<b>5</b>
1.1 Glossary	5
1.2 References	5
1.2.1 Normative References	6
1.2.2 Informative References	6
1.3 Overview	6
1.4 Relationship to Other Protocols	7
1.5 Prerequisites/Preconditions	7
1.6 Applicability Statement	7
1.7 Versioning and Capability Negotiation	7
1.8 Vendor-Extensible Fields	8
1.9 Standards Assignments	8
<b>2 Messages</b>	<b>9</b>
2.1 Transport	9
2.2 Common Message Syntax	9
2.2.1 Namespaces	9
2.2.2 Messages	9
2.2.3 Elements	9
2.2.4 Complex Types	10
2.2.5 Simple Types	10
2.2.6 Attributes	10
2.2.7 Groups	10
2.2.8 Attribute Groups	10
<b>3 Protocol Details</b>	<b>11</b>
3.1 ExchangeServicePortType Server Details	11
3.1.1 Server Abstract Data Model	11
3.1.2 Server Timers	11
3.1.3 Server Initialization	11
3.1.4 Message Processing Events and Sequencing Rules	11
3.1.4.1 ResolveNames Operation	11
3.1.4.1.1 Messages	12
3.1.4.1.1.1 tns:ResolveNamesSoapIn	12
3.1.4.1.1.2 tns:ResolveNamesSoapOut	13
3.1.4.1.1.2 Elements	13
3.1.4.1.2.1 ResolveNames Element	13
3.1.4.1.2.2 ResolveNamesResponse Element	14
3.1.4.1.3 Complex Types	14
3.1.4.1.3.1 t:ArrayOfResolutionType Complex Type	14
3.1.4.1.3.2 t:Resolutiontype Complex Type	15
3.1.4.1.3.3 m:ResolveNamesResponseMessageType Complex Type	15
3.1.4.1.3.4 m:ResolveNamesResponseType Complex Type	16
3.1.4.1.3.5 m:ResolveNamesType Complex Type	16
3.1.4.1.4 Simple Types	17
3.1.4.1.4.1 t:ResolveNamesSearchScopeType Simple Type	17
3.1.5 Timer Events	18
3.1.6 Other Local Events	18
<b>4 Protocol Examples</b>	<b>19</b>

<b>5 Security</b> .....	<b>21</b>
5.1 Security Considerations for Implementers.....	21
5.2 Index of Security Parameters .....	21
<b>6 Appendix A: Full WSDL</b> .....	<b>22</b>
<b>7 Appendix B: Full XML Schema</b> .....	<b>24</b>
7.1 Messages Schema.....	24
7.2 Types Schema.....	25
<b>8 Appendix C: Product Behavior</b> .....	<b>27</b>
<b>9 Change Tracking</b> .....	<b>28</b>
<b>10 Index</b> .....	<b>30</b>

# 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 [\[RFC2119\]](#). Sections 1.5 and 1.9 are also normative but do not contain those terms. All other sections and examples in this specification are informative.

## 1.1 Glossary

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

- contact**
- Contacts folder**
- directory service (DS)**
- distribution list**
- email address**
- endpoint**
- Hypertext Transfer Protocol (HTTP)**
- Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**
- mailbox**
- recipient**
- SOAP**
- SOAP action**
- SOAP body**
- SOAP header**
- SOAP message**
- Uniform Resource Locator (URL)**
- web server**
- Web Services Description Language (WSDL)**
- WSDL message**
- WSDL port type**
- XML**
- XML namespace**
- XML namespace prefix**
- XML schema**

The following terms are specific to this document:

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

## 1.2 References

References to Microsoft Open Specification documents 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](mailto: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.rfc-editor.org/rfc/rfc2616.txt>

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

[RFC3066] Alvestrand, H., "Tags for the Identification of Languages", BCP 47, 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., 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., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>

### 1.2.2 Informative References

[MS-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

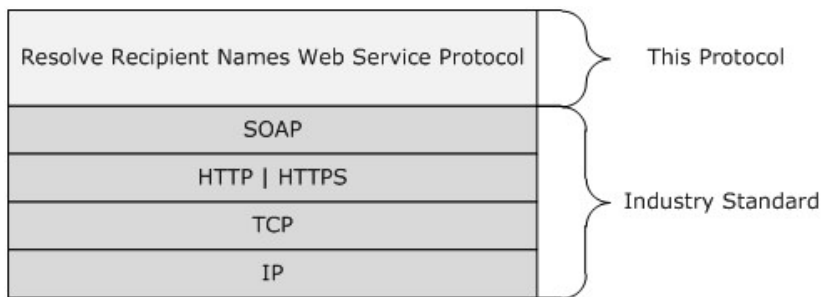
then use those names when addressing items for the server to send. The server can return valid recipients (2) that are known to it; for example, recipient (2) names that are stored in a **directory service** or in a global or user-specific list of contacts (3).

## 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 [\[MS-OXDCLI\]](#), 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 [\[MS-OXDCLI\]](#), 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	<a href="http://schemas.xmlsoap.org/wsdl/soap/">http://schemas.xmlsoap.org/wsdl/soap/</a>	<a href="#">[SOAP1.1]</a>
tns	<a href="http://schemas.microsoft.com/exchange/services/2006/messages">http://schemas.microsoft.com/exchange/services/2006/messages</a>	
m	<a href="http://schemas.microsoft.com/exchange/services/2006/messages">http://schemas.microsoft.com/exchange/services/2006/messages</a>	
wsdl	<a href="http://schemas.xmlsoap.org/wsdl/">http://schemas.xmlsoap.org/wsdl/</a>	<a href="#">[WSDL]</a>
t	<a href="http://schemas.microsoft.com/exchange/services/2006/types">http://schemas.microsoft.com/exchange/services/2006/types</a>	
xs	<a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>	<a href="#">[XMLSCHEMA1]</a> <a href="#">[XMLSCHEMA2]</a>

#### 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
<b>ResolveNames</b>	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/">
    </wsdl:input>
  </soap:operation>
</wsdl:operation>
```

```

    <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
<b>ResolveNamesSoapIn</b>	Specifies the <b>SOAP message</b> that requests name resolution from the server.
<b>ResolveNamesSoapOut</b>	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
<b>request</b>	<b>tns:ResolveNames</b> (section <a href="#">3.1.4.1.2.1</a> )	Specifies the <b>SOAP body</b> of the request.
<b>Impersonation</b>	<b>t:ExchangeImpersonation</b> ( <a href="#">[MS-OXWSCDATA]</a> section 2.2.3.3)	Specifies the identifier of the account to impersonate.
<b>MailboxCulture</b>	<b>t:MailboxCulture</b> ( <a href="#">[MS-OXWSCDATA]</a> section 2.2.3.6)	Specifies a <b>SOAP header</b> that identifies the culture to be used for accessing the server. The cultures are defined by <a href="#">[RFC3066]</a> .

Part name	Element/type	Description
<b>RequestVersion</b>	<b>t:RequestServerVersion</b> ( <a href="#">[MS-OXWSCDATA]</a> 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
<b>ResolveNamesResult</b>	<b>tns:ResolveNamesResponse</b> (section <a href="#">3.1.4.1.2.2</a> )	Specifies the SOAP body of the response.
<b>ServerVersion</b>	<b>t:ServerVersionInfo</b> ( <a href="#">[MS-OXWSCDATA]</a> 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
<b>ResolveNames</b>	Specifies the parameters and the unresolved recipient (2) name to the server.
<b>ResolveNamesResponse</b>	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
<b>ArrayOfResolutionType</b>	Specifies the list of matching recipient (2) candidates that are returned by the server.
<b>ResolutionType</b>	Specifies the type of a matching recipient (2) candidate that is returned by the server.
<b>ResolveNamesResponseMessageType</b>	Specifies the status and result of a <b>ResolveNames</b> operation.
<b>ResolveNamesResponseType</b>	Specifies the contents of the response from the server.
<b>ResolveNamesType</b>	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
<b>Resolution</b>	<b>t:ResolutionType</b> (section <a href="#">3.1.4.1.3.2</a> )	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
<b>Mailbox</b>	<b>t:EmailAddressType</b> ( <a href="#">[MS-OXWSCDATA]</a> section 2.2.4.27)	Specifies an email address.
<b>Contact</b>	<b>t:ContactItemType</b> ( <a href="#">[MS-OXWSCONT]</a> 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:complexContent>
</xs:complexType>
```

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

Element name	Type	Description
<b>ResolutionSet</b>	<b>t:ArrayOfResolutionType</b> (section <a href="#">3.1.4.1.3.1</a> )	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
<b>ParentFolderIds</b>	<b>t:NonEmptyArrayOfBaseFolderIdsType</b> ([MS-OXWSFOLD] section 3.1.4.6.3.3)	Specifies the ID of the parent folder that contains the item.
<b>UnresolvedEntry</b>	<b>t:NonEmptyStringType</b> ([MS-OXWSCDATA] section 2.2.5.20)	Specifies the name of a contact (3) or <b>distribution list</b> to be resolved.

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

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

```

```

<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
<b>ActiveDirectory</b>	Specifies that the server searches for match candidates in the directory service.
<b>ActiveDirectoryContacts</b>	Specifies that the server searches for match candidates in the directory service first, then in the <b>Contacts folder</b> of the <b>mailbox</b> .
<b>Contacts</b>	Specifies that the server searches for match candidates in the Contacts folder of the mailbox.
<b>ContactsActiveDirectory</b>	Specifies that the server searches for match candidates in the Contacts folder of the mailbox first, then in the directory service.

### 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 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 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.	<a href="#">6</a>
MS-OXWSRSLNM-messages.xsd	Contains the XML schema message definitions that are used in this protocol.	<a href="#">7.1</a>
MS-OXWSRSLNM-types.xsd	Contains the XML schema type definitions that are used in this protocol.	<a href="#">7.2</a>

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/">
    </wsi: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:	<a href="#">7.1</a>
Types schema	t:	<a href="#">7.2</a>

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	<a href="#">[MS-OXWSCDATA]</a> section 7.1
MS-OXWSRSLNM-types.xsd	section <a href="#">7.2</a>

```
<?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:ResponseType">
        <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:BaseResponseType"/>
    </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	<a href="#">[MS-OXWSCDATA]</a> 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

This section identifies changes that were made to the [MS-OXWSRSLNM] protocol document between the July 2014 and October 2014 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

The revision class **New** means that a new document is being released.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements or functionality.
- The removal of a document from the documentation set.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **Editorial** means that the formatting in the technical content was changed. Editorial changes apply to grammatical, formatting, and style issues.

The revision class **No change** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the technical content of the document is identical to the last released version.

Major and minor changes can be described further using the following change types:

- New content added.
- Content updated.
- Content removed.
- New product behavior note added.
- Product behavior note updated.
- Product behavior note removed.
- New protocol syntax added.
- Protocol syntax updated.
- Protocol syntax removed.
- New content added due to protocol revision.
- Content updated due to protocol revision.
- Content removed due to protocol revision.
- New protocol syntax added due to protocol revision.
- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.

- Obsolete document removed.

Editorial changes are always classified with the change type **Editorially updated**.

Some important terms used in the change type descriptions are defined as follows:

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.
- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com).

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
<a href="#">3.1.4.1.4.1</a> <a href="#">t:ResolveNamesSearchScopeType</a> <a href="#">Simple Type</a>	Updated the description for enum values ActiveDirectoryContacts and ContactsActiveDirectory.	N	Content updated.

## 10 Index

### A

Abstract data model  
[server](#) 11  
[Applicability](#) 7  
[Attribute groups](#) 10  
[Attributes](#) 10

### C

[Capability negotiation](#) 7  
[Change tracking](#) 28  
[Complex types](#) 10

### D

Data model - abstract  
[server](#) 11

### E

Events  
[local - server](#) 18  
[timer - server](#) 18

### Examples

[ResolveNames operation](#) 19

### F

[Fields - vendor-extensible](#) 8  
[Full WSDL](#) 22  
[Full XML Schema](#) 24  
[Messages Schema](#) 24  
[Types Schema](#) 25

### G

[Glossary](#) 5  
[Groups](#) 10

### I

[Implementer - security considerations](#) 21  
[Index of security parameters](#) 21  
[Informative references](#) 6  
Initialization  
[server](#) 11  
[Introduction](#) 5

### L

Local events  
[server](#) 18

### M

Message processing  
[server](#) 11

### Messages

[attribute groups](#) 10  
[attributes](#) 10  
[complex types](#) 10  
[elements](#) 9  
[enumerated](#) 9  
[groups](#) 10  
[namespaces](#) 9  
[simple types](#) 10  
[syntax](#) 9  
[transport](#) 9

### N

[Namespaces](#) 9  
[Normative references](#) 6

### O

### Operations

[ResolveNames Operation](#) 11  
[Overview \(synopsis\)](#) 6

### P

[Parameters - security index](#) 21  
[Preconditions](#) 7  
[Prerequisites](#) 7  
[Product behavior](#) 27

### Protocol Details

[overview](#) 11

### R

[References](#) 5  
[informative](#) 6  
[normative](#) 6  
[Relationship to other protocols](#) 7  
[ResolveNames operation example](#) 19

### S

### Security

[implementer considerations](#) 21  
[parameter index](#) 21

### Sequencing rules

[server](#) 11

### Server

[abstract data model](#) 11  
[initialization](#) 11  
[local events](#) 18  
[message processing](#) 11  
[ResolveNames Operation operation](#) 11  
[sequencing rules](#) 11  
[timer events](#) 18  
[timers](#) 11  
[Simple types](#) 10  
[Standards assignments](#) 8

Syntax  
[messages - overview](#) 9

## T

Timer events  
[server](#) 18  
Timers  
[server](#) 11  
[Tracking changes](#) 28  
[Transport](#) 9  
Types  
[complex](#) 10  
[simple](#) 10

## V

[Vendor-extensible fields](#) 8  
[Versioning](#) 7

## W

[WSDL](#) 22

## X

[XML Schema](#) 24  
[Messages Schema](#) 24  
[Types Schema](#) 25