**[MS-UPSCP]:**

**User Profile Synchronization (UPS): Configuration Protocol Extensions**

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**Revision Summary**

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| 9/25/2009 | 0.2 | Minor | Updated the technical content. |
| 11/6/2009 | 0.2.1 | Editorial | Revised and edited the technical content. |
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Table of Contents

[1 Introduction 7](#_Toc87418239)

[1.1 Glossary 7](#_Toc87418240)

[1.2 References 7](#_Toc87418241)

[1.2.1 Normative References 7](#_Toc87418242)

[1.2.2 Informative References 9](#_Toc87418243)

[1.3 Overview 9](#_Toc87418244)

[1.4 Relationship to Other Protocols 9](#_Toc87418245)

[1.5 Prerequisites/Preconditions 10](#_Toc87418246)

[1.6 Applicability Statement 10](#_Toc87418247)

[1.7 Versioning and Capability Negotiation 10](#_Toc87418248)

[1.8 Vendor-Extensible Fields 10](#_Toc87418249)

[1.9 Standards Assignments 11](#_Toc87418250)

[2 Messages 12](#_Toc87418251)

[2.1 Transport 12](#_Toc87418252)

[2.2 Common Message Syntax 12](#_Toc87418253)

[2.2.1 Namespaces 12](#_Toc87418254)

[2.2.2 Messages 13](#_Toc87418255)

[2.2.2.1 AddRequestMessage 14](#_Toc87418256)

[2.2.2.2 AddResponseMessage 15](#_Toc87418257)

[2.2.2.3 BaseObjectSearchRequestMessage 15](#_Toc87418258)

[2.2.2.4 BaseObjectSearchResponseMessage 16](#_Toc87418259)

[2.2.2.5 DeleteRequestMessage 16](#_Toc87418260)

[2.2.2.6 DeleteResponseMessage 16](#_Toc87418261)

[2.2.2.7 EnumerateMessage 17](#_Toc87418262)

[2.2.2.8 EnumerateResponseMessage 17](#_Toc87418263)

[2.2.2.9 GetStatusMessage 17](#_Toc87418264)

[2.2.2.10 GetStatusResponseMessage 18](#_Toc87418265)

[2.2.2.11 PermissionDeniedFault 18](#_Toc87418266)

[2.2.2.12 ModifyRequestMessage 18](#_Toc87418267)

[2.2.2.13 ModifyResponseMessage 19](#_Toc87418268)

[2.2.2.14 PullMessage 19](#_Toc87418269)

[2.2.2.15 PullResponseMessage 20](#_Toc87418270)

[2.2.2.16 ReleaseMessage 20](#_Toc87418271)

[2.2.2.17 ReleaseResponseMessage 20](#_Toc87418272)

[2.2.2.18 RenewMessage 21](#_Toc87418273)

[2.2.2.19 RenewResponseMessage 21](#_Toc87418274)

[2.2.2.20 UnwillingToPerform 22](#_Toc87418275)

[2.2.2.21 InvalidRepresentation 22](#_Toc87418276)

[2.2.2.22 EndpointUnavailable 22](#_Toc87418277)

[2.2.3 Elements 22](#_Toc87418278)

[2.2.3.1 AddRequest 24](#_Toc87418279)

[2.2.3.2 AttributeType 24](#_Toc87418280)

[2.2.3.3 AttributeTypeAndValue 25](#_Toc87418281)

[2.2.3.4 AttributeValue 25](#_Toc87418282)

[2.2.3.5 BaseObjectSearchRequest 25](#_Toc87418283)

[2.2.3.6 Change 26](#_Toc87418284)

[2.2.3.7 Enumerate 27](#_Toc87418285)

[2.2.3.8 EnumerateResponse 28](#_Toc87418286)

[2.2.3.9 EnumerationContext 29](#_Toc87418287)

[2.2.3.10 EnumerationDetail 29](#_Toc87418288)

[2.2.3.11 Expires 30](#_Toc87418289)

[2.2.3.12 Filter 30](#_Toc87418290)

[2.2.3.13 Items 30](#_Toc87418291)

[2.2.3.14 LocalePreferences 31](#_Toc87418292)

[2.2.3.15 ModifyRequest 31](#_Toc87418293)

[2.2.3.16 PartialAttribute 32](#_Toc87418294)

[2.2.3.17 PermissionDeniedFaultDetail 32](#_Toc87418295)

[2.2.3.18 Pull 32](#_Toc87418296)

[2.2.3.19 PullAdjustment 33](#_Toc87418297)

[2.2.3.20 PullResponse 33](#_Toc87418298)

[2.2.3.21 ResourceCreated 34](#_Toc87418299)

[2.2.3.22 ResourceReferenceProperty 35](#_Toc87418300)

[2.2.3.23 Selection 35](#_Toc87418301)

[2.2.3.24 Sorting 35](#_Toc87418302)

[2.2.3.25 SortingAttribute 36](#_Toc87418303)

[2.2.4 Complex Types 36](#_Toc87418304)

[2.2.4.1 ItemsType 37](#_Toc87418305)

[2.2.4.2 EnumerationContextType 37](#_Toc87418306)

[2.2.4.3 EnumerationDetailType 38](#_Toc87418307)

[2.2.4.4 FilterType 38](#_Toc87418308)

[2.2.4.5 LocalePreferencesType 38](#_Toc87418309)

[2.2.4.6 PullAdjustmentType 39](#_Toc87418310)

[2.2.4.7 SelectionType 40](#_Toc87418311)

[2.2.5 Simple Types 40](#_Toc87418312)

[2.2.5.1 AscendingType 40](#_Toc87418313)

[2.2.5.2 AttributeTypeXmlType 41](#_Toc87418314)

[2.2.5.3 DialectType 43](#_Toc87418315)

[2.2.5.4 EnumerationDirectionType 43](#_Toc87418316)

[2.2.5.5 FilterDialectType 43](#_Toc87418317)

[2.2.5.6 FilterQueryType 44](#_Toc87418318)

[2.2.5.7 ReferenceType 44](#_Toc87418319)

[2.2.5.8 StartingIndexType 44](#_Toc87418320)

[2.2.6 Attributes 45](#_Toc87418321)

[2.2.7 Groups 45](#_Toc87418322)

[2.2.8 Attribute Groups 45](#_Toc87418323)

[3 Protocol Details 46](#_Toc87418324)

[3.1 Server Details 46](#_Toc87418325)

[3.1.1 Abstract Data Model 46](#_Toc87418326)

[3.1.2 Timers 46](#_Toc87418327)

[3.1.3 Initialization 47](#_Toc87418328)

[3.1.4 Message Processing Events and Sequencing Rules 47](#_Toc87418329)

[3.1.4.1 Get 47](#_Toc87418330)

[3.1.4.1.1 Messages 48](#_Toc87418331)

[3.1.4.1.2 Elements 49](#_Toc87418332)

[3.1.4.2 Put 49](#_Toc87418333)

[3.1.4.2.1 Messages 50](#_Toc87418334)

[3.1.4.2.2 Elements 51](#_Toc87418335)

[3.1.4.2.3 Attributes 51](#_Toc87418336)

[3.1.4.3 Delete 51](#_Toc87418337)

[3.1.4.3.1 Messages 52](#_Toc87418338)

[3.1.4.3.2 Elements 52](#_Toc87418339)

[3.1.4.4 Create 52](#_Toc87418340)

[3.1.4.4.1 Messages 53](#_Toc87418341)

[3.1.4.5 Enumerate 53](#_Toc87418342)

[3.1.4.5.1 Messages 54](#_Toc87418343)

[3.1.4.5.2 Elements 55](#_Toc87418344)

[3.1.4.5.2.1 MaxElements 55](#_Toc87418345)

[3.1.4.6 Pull 55](#_Toc87418346)

[3.1.4.6.1 Messages 55](#_Toc87418347)

[3.1.4.7 Release 56](#_Toc87418348)

[3.1.4.7.1 Messages 56](#_Toc87418349)

[3.1.4.8 Renew 56](#_Toc87418350)

[3.1.4.8.1 Messages 57](#_Toc87418351)

[3.1.4.9 GetStatus 57](#_Toc87418352)

[3.1.4.9.1 Messages 57](#_Toc87418353)

[3.1.5 Timer Events 57](#_Toc87418354)

[3.1.6 Other Local Events 58](#_Toc87418355)

[3.2 Client Details 58](#_Toc87418356)

[3.2.1 Abstract Data Model 58](#_Toc87418357)

[3.2.2 Timers 58](#_Toc87418358)

[3.2.3 Initialization 58](#_Toc87418359)

[3.2.4 Message Processing Events and Sequencing Rules 58](#_Toc87418360)

[3.2.5 Timer Events 58](#_Toc87418361)

[3.2.6 Other Local Events 58](#_Toc87418362)

[4 Protocol Examples 59](#_Toc87418363)

[4.1 Example of Creating a Synchronization Object 59](#_Toc87418364)

[4.1.1 SOAP AddRequestMessage 59](#_Toc87418365)

[4.1.2 SOAP AddResponseMessage 59](#_Toc87418366)

[4.2 Example of Retrieving a Synchronization Object 60](#_Toc87418367)

[4.2.1 SOAP BaseObjectSearchRequestMessage 60](#_Toc87418368)

[4.2.2 SOAP BaseObjectSearchResponseMessage 60](#_Toc87418369)

[4.3 Example of Modifying a Synchronization Object 61](#_Toc87418370)

[4.3.1 SOAP ModifyRequestMessage 61](#_Toc87418371)

[4.3.2 SOAP ModifyResponseMessage 62](#_Toc87418372)

[4.4 Example of Deleting a Synchronization Object 62](#_Toc87418373)

[4.4.1 SOAP DeleteRequestMessage 62](#_Toc87418374)

[4.4.2 SOAP DeleteResponseMessage 63](#_Toc87418375)

[4.4.3 SOAP Encrypted DeleteRequestMessage 63](#_Toc87418376)

[4.4.4 SOAP Encrypted DeleteResponseMessage 65](#_Toc87418377)

[4.5 Example of Enumerating Synchronization Objects 66](#_Toc87418378)

[4.5.1 SOAP EnumerateMessage 66](#_Toc87418379)

[4.5.2 SOAP EnumerateResponseMessage 67](#_Toc87418380)

[4.6 Example of Pulling Synchronization Objects 68](#_Toc87418381)

[4.6.1 SOAP PullMessage 68](#_Toc87418382)

[4.6.2 SOAP PullResponseMessage 69](#_Toc87418383)

[4.7 Example of Releasing an Enumeration Context 70](#_Toc87418384)

[4.7.1 SOAP ReleaseMessage 70](#_Toc87418385)

[4.7.2 SOAP ReleaseResponseMessage 71](#_Toc87418386)

[4.8 Example of Renewing an Enumeration Context 71](#_Toc87418387)

[4.8.1 SOAP RenewMessage 71](#_Toc87418388)

[4.8.2 SOAP RenewResponseMessage 72](#_Toc87418389)

[4.9 Example of Retrieving the Expiration Time of an Enumeration Context 72](#_Toc87418390)

[4.9.1 SOAP GetStatusMessage 73](#_Toc87418391)

[4.9.2 SOAP GetStatusResponseMessage 73](#_Toc87418392)

[4.10 Example of Permission Denied Fault 74](#_Toc87418393)

[4.10.1 SOAP Permission Denied Fault 74](#_Toc87418394)

[5 Security 75](#_Toc87418395)

[5.1 Security Considerations for Implementers 75](#_Toc87418396)

[5.2 Index of Security Parameters 75](#_Toc87418397)

[6 Appendix A: Full WSDL 76](#_Toc87418398)

[7 Appendix B: Product Behavior 97](#_Toc87418399)

[8 Change Tracking 98](#_Toc87418400)

[9 Index 99](#_Toc87418401)

# Introduction

The User Profile Synchronization (UPS): Configuration Protocol Extensions are used to create, read, update, delete, and enumerate objects that configure synchronization between connected data sources.

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

## Glossary

This document uses the following terms:

**globally unique identifier (GUID)**: A term used interchangeably with universally unique identifier (UUID) in Microsoft protocol technical documents (TDs). Interchanging the usage of these terms does not imply or require a specific algorithm or mechanism to generate the value. Specifically, the use of this term does not imply or require that the algorithms described in [[RFC4122]](https://go.microsoft.com/fwlink/?LinkId=90460) or [[C706]](https://go.microsoft.com/fwlink/?LinkId=89824) must be used for generating the [**GUID**](#gt_f49694cc-c350-462d-ab8e-816f0103c6c1). See also universally unique identifier (UUID).

**SOAP action**: The HTTP request header field used to indicate the intent of the SOAP request, using a URI value. See [[SOAP1.1]](https://go.microsoft.com/fwlink/?LinkId=90520) section 6.1.1 for more information.

**SOAP body**: A container for the payload data being delivered by a [**SOAP message**](#gt_96185df3-4677-478c-b239-f72fcf514c59) to its recipient. See [[SOAP1.2-1/2007]](https://go.microsoft.com/fwlink/?LinkId=94664) section 5.3 for more information.

**SOAP header**: A mechanism for implementing extensions to a [**SOAP message**](#gt_96185df3-4677-478c-b239-f72fcf514c59) in a decentralized manner without prior agreement between the communicating parties. See [SOAP1.2-1/2007] section 5.2 for more information.

**SOAP message**: An XML document consisting of a mandatory SOAP envelope, an optional [**SOAP header**](#gt_093a0af2-e71c-40fc-a484-d2f802da0277), and a mandatory [**SOAP body**](#gt_57cdf8ab-8d79-462d-a446-5d85632a7a04). See [SOAP1.2-1/2007] section 5 for more information.

**Uniform Resource Locator (URL)**: A string of characters in a standardized format that identifies a document or resource on the World Wide Web. The format is as specified in [[RFC1738]](https://go.microsoft.com/fwlink/?LinkId=90287).

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as defined in [[RFC2119]](https://go.microsoft.com/fwlink/?LinkId=90317). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](https://go.microsoft.com/fwlink/?linkid=850906).

### 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.

[IANAPORT] IANA, "Service Name and Transport Protocol Port Number Registry", [http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml](https://go.microsoft.com/fwlink/?LinkId=89888)

[MC-NETCEX] Microsoft Corporation, "[.NET Context Exchange Protocol](%5bMC-NETCEX%5d.pdf#Section_a7f26280491f465b9914c5eb5322dbb4)".

[MS-DTYP] Microsoft Corporation, "[Windows Data Types](%5bMS-DTYP%5d.pdf#Section_cca2742956894a16b2b49325d93e4ba2)".

[MS-NETTR] Microsoft Corporation, "[.NET Tracing Protocol](%5bMS-NETTR%5d.pdf#Section_9c5f8cb55a4f425a9c384f1a2b46e6d0)".

[MS-SPNG] Microsoft Corporation, "[Simple and Protected GSS-API Negotiation Mechanism (SPNEGO) Extension](%5bMS-SPNG%5d.pdf#Section_f377a379c24f4a0fa3eb0d835389e28a)".

[MS-UPSCDS] Microsoft Corporation, "[User Profile Synchronization (UPS): Configuration Data Structure](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77)".

[MS-WSTIM] Microsoft Corporation, "[WS-Transfer: Identity Management Operations for Directory Access Extensions](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536)".

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[WXFR] Alexander, J., Box, D., Cabrera, L.F., et al., "Web Services Transfer (WS-Transfer)", September 2006, [http://www.w3.org/Submission/2006/SUBM-WS-Transfer-20060927/](https://go.microsoft.com/fwlink/?LinkId=90587)

[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/](https://go.microsoft.com/fwlink/?LinkId=191840)

[XMLSCHEMA1/2] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures Second Edition", W3C Recommendation, October 2004, [http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/](https://go.microsoft.com/fwlink/?LinkId=90607)

[XMLSCHEMA2/2] Biron, P., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, [http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/](https://go.microsoft.com/fwlink/?LinkId=90609)

### Informative References

None.

## Overview

The User Profile Synchronization (UPS): Configuration Protocol Extensions can be used to create, read, update, delete, and enumerate objects that configure synchronization between connected data sources. This specification defines a protocol with which to transmit configuration objects using [**SOAP messages**](#gt_96185df3-4677-478c-b239-f72fcf514c59). The structure of the configuration objects carried in this protocol is described in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77).

## Relationship to Other Protocols

The User Profile Synchronization (UPS): Configuration Protocol Extensions use [[WSSE 1.0]](https://go.microsoft.com/fwlink/?LinkId=113701) over [[SOAP1.2-1/2007]](https://go.microsoft.com/fwlink/?LinkId=94664) as shown in the following figure.

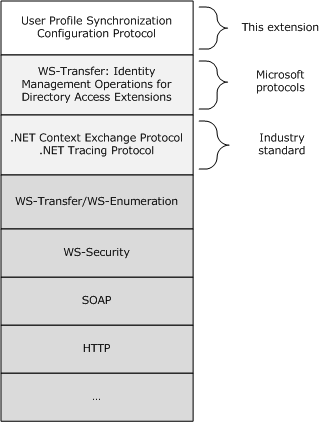


Figure 1: Protocol layering diagram for User Profile Synchronization (UPS): Configuration Protocol Extensions

## Prerequisites/Preconditions

The operations described by this protocol operate between a protocol client and a protocol server. The protocol requires the protocol client to have the [**URLs**](#gt_433a4fb7-ef84-46b0-ab65-905f5e3a80b1) of the protocol server.

This protocol requires that the protocol client has appropriate permissions to call operations on configuration objects on the protocol server as determined by the protocol server's rights model.

## Applicability Statement

This protocol was designed to configure synchronization with connected data sources and configure the rights model that controls access to synchronization configuration. This protocol is applicable for creating, reading, updating, and deleting User Profile Synchronization Configuration Data Structures as described in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77). No higher level protocols are layered atop this protocol.

## Versioning and Capability Negotiation

This protocol does not define any versioning and capabilities negotiation.

## Vendor-Extensible Fields

None.

## Standards Assignments

All messages defined in this protocol are transmitted over TCP to a server listening on port 5725.

| Parameter | Value | Reference |
| --- | --- | --- |
| TCP Port | 5725 | [[IANAPORT]](https://go.microsoft.com/fwlink/?LinkId=89888) |

# Messages

## Transport

Messages MUST be transported using [[WSSP1.2/10.1]](https://go.microsoft.com/fwlink/?LinkId=130730) over [[SOAP1.2/1]](https://go.microsoft.com/fwlink/?LinkId=90521). All messages are transported over HTTP to a server listening on TCP port 5725.

Implementations MUST follow the requirements of the wsp:policy sections of the WSDL in section [6](#Section_067058c70d634b8ba6890a56b6555c5d). [WSSP1.2/10.1] defines the effects of security wsp:policy assertions with endpoint policy subject for a Web service protocol. The relevant policy assertions for this protocol are listed in section 6.

As defined by the WSDL in section 6, all requests, responses, and faults are encrypted and signed using [WSSP1.2/10.1]. The message SOAP body MUST be encrypted, but the SOAP headers **rm:ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)) and **da:IdentityManagementOperation** MUST NOT be encrypted. **da:IdentityManagementOperation** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 2.2.3.6.

Messages MUST be encrypted with Basic256 encryption algorithm suite. Basic256 is defined in [WSSP1.2/10.1] section 6.1. Messages MUST use [[WSTrust]](https://go.microsoft.com/fwlink/?LinkId=90584) client and server entropy. Client and server entropy are defined in [WSSP1.2/10.1] section 10.1. Clients and servers MUST support issued tokens. Issued tokens are defined in [WSSP1.2/10.1] section 10.1. Messages MUST be encrypted with symmetric keys specified by the following requirement:

1. http://schemas.xmlsoap.org/ws/2005/02/trust/SymmetricKey

This requirement for symmetric keys is defined in [WSTrust] section 9.2.

Messages MUST use SPNEGO for security context token assertions. SPNEGO is defined in [[MS-SPNG]](%5bMS-SPNG%5d.pdf#Section_f377a379c24f4a0fa3eb0d835389e28a). The SPNEGO requirement is:

1. http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRecipient

This requirement for SPNEGO token assertion is defined in [WSSP1.2/10.1] section 5.4.5.

See section [5.1](#Section_580f57fc7ed149e99fcfa67a995237ed) for security considerations.

## Common Message Syntax

This section contains common definitions used by this protocol. The syntax of the definitions uses XML Schema as defined in [[XMLSCHEMA1/2]](https://go.microsoft.com/fwlink/?LinkId=90607) and [[XMLSCHEMA2/2]](https://go.microsoft.com/fwlink/?LinkId=90609), and Web Services Description Language as defined in [[WSDL]](https://go.microsoft.com/fwlink/?LinkId=90577).

### Namespaces

This specification defines and references various XML namespaces using the mechanisms specified in [[XMLNS]](https://go.microsoft.com/fwlink/?LinkId=191840). 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 |
| --- | --- | --- | --- |
| s | http://www.w3.org/2003/05/soap-envelope | | [[SOAP1.2-1/2007]](https://go.microsoft.com/fwlink/?LinkId=94664) |
| wsa | http://schemas.xmlsoap.org/ws/2004/08/addressing | | [[WSAddressing]](https://go.microsoft.com/fwlink/?LinkId=90575) |
| xsd | http://www.w3.org/2001/XMLSchema | | [[XMLSCHEMA1/2]](https://go.microsoft.com/fwlink/?LinkId=90607) |
| wxf | http://schemas.xmlsoap.org/ws/2004/09/transfer | | [[WXFR]](https://go.microsoft.com/fwlink/?LinkId=90587) |
| wsen | http://schemas.xmlsoap.org/ws/2004/09/enumeration | | [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) |
| da | http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess | | [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) |
| rm | http://schemas.microsoft.com/2006/11/ResourceManagement | | [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77) |
| diag | http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics | | [[MS-NETTR]](%5bMS-NETTR%5d.pdf#Section_9c5f8cb55a4f425a9c384f1a2b46e6d0) |
| wsc | http://schemas.microsoft.com/ws/2006/05/context | | [[MC-NETCEX]](%5bMC-NETCEX%5d.pdf#Section_a7f26280491f465b9914c5eb5322dbb4) |
| t | http://schemas.xmlsoap.org/ws/2005/02/trust | | [[WSTrust]](https://go.microsoft.com/fwlink/?LinkId=90584) |
| wsp | http://www.w3.org/ns/ws-policy | | [[WS-Policy1.2]](https://go.microsoft.com/fwlink/?LinkId=92757) |
| sp | http://schemas.xmlsoap.org/ws/2005/07/securitypolicy | | [[WSSP1.2/10.1]](https://go.microsoft.com/fwlink/?LinkId=130730) |
| wsu | http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd | | [[WSSE 1.0]](https://go.microsoft.com/fwlink/?LinkId=113701) |
| wsam | http://www.w3.org/2007/05/addressing/metadata | | [[WSA1.0 Metadata]](https://go.microsoft.com/fwlink/?LinkId=153657) |
| soap12 | http://schemas.xmlsoap.org/wsdl/soap12/ | | [SOAP1.2-1/2007] |
| wsa10 | http://www.w3.org/2005/08/addressing | | [[WSA1.0]](https://go.microsoft.com/fwlink/?LinkId=145131) |
| wsdl | http://schemas.xmlsoap.org/wsdl/ | | [[WSDL]](https://go.microsoft.com/fwlink/?LinkId=90577) |

### Messages

| Message | Description |
| --- | --- |
| **AddRequestMessage** (section [2.2.2.1](#Section_f11a5e46e3964dd5b68fa94e414327ee)) | A request to create a configuration object. |
| **AddResponseMessage** (section [2.2.2.2](#Section_10af2a1e1afa45d186e05057ff5d91a3)) | A message sent in response to an **AddRequestMessage** that indicates a successful **Create** operation. |
| **BaseObjectSearchRequestMessage** (section [2.2.2.3](#Section_b99626608193402ca8416f45adcb62fe)) | A request to retrieve a configuration object. |
| **BaseObjectSearchResponseMessage** (section [2.2.2.4](#Section_61bf04209ab647be924d5b0e7790feae)) | A message sent in response to a **BaseObjectSearchRequestMessage** that includes a configuration object. |
| **DeleteRequestMessage** (section [2.2.2.5](#Section_bba048cda3234d9dba4b4579edc31a0f)) | A request to delete a configuration object. |
| **DeleteResponseMessage** (section [2.2.2.6](#Section_176978e8266f4d71aaaff679ae10d8d3)) | A message sent in response to a **DeleteRequestMessage** that indicates a successful **Delete** operation. |
| **EndpointUnavailable** (section [2.2.2.22](#Section_af39a8aea5f74f3ea812bc813a9151ed)) | A fault that results when a critical error on the server prevents a response to the request. This type of fault does not indicate that the request is syntactically malformed. |
| **EnumerateMessage** (section [2.2.2.7](#Section_c1c54249019f4850b3aa57503cabff99)) | A request to initiate an enumeration. |
| **EnumerateResponseMessage** (section [2.2.2.8](#Section_c5df18b357974c0c8a3f1e0c4e362a19)) | A message sent in response to an **EnumerateMessage** that includes configuration objects. |
| **GetStatusMessage** (section [2.2.2.9](#Section_57e8e752a7b84a37832213cd119b596e)) | A request to retrieve the enumeration context expiration. |
| **GetStatusResponseMessage** (section [2.2.2.10](#Section_8d4f59ad5460457580b768504104a441)) | A message sent in response to a **GetStatusMessage** that includes the enumeration context expiration. |
| **InvalidRepresentation** (section [2.2.2.21](#Section_765140fbe5464e5cb3559b069df37307)) | A fault that results from the request containing an invalid representation of an object. |
| **ModifyRequestMessage** (section[2.2.2.12)](#Section_e0083c16ffb140878c8877cb871836c4) | A request to modify a configuration object. |
| **ModifyResponseMessage** (section [2.2.2.13](#Section_71102e15da6e4fddbcaed3392d16a022)) | A message sent in response to a **ModifyRequestMessage** that indicates a successful **Put** operation. |
| **PermissionDeniedFault** (section [2.2.2.11](#Section_ce89f9c2574249719919a0ce83f7f61b)) | A fault that results for any operation if the user making the request does not have appropriate access to the object. |
| **PullMessage** (section [2.2.2.14](#Section_2647f4c2465f4cce9bf38647c5ecdd04)) | A request to pull subsequent objects in an enumeration. |
| **PullResponseMessage** (section [2.2.2.15](#Section_90a97f91c3a547c88e40de3344d175c1)) | A message sent in response to a **PullMessage** that includes subsequent objects in an enumeration. |
| **ReleaseMessage** (section [2.2.2.16](#Section_34f8ce38340549d290c830dc296d09f1)) | A request to release an enumeration context. |
| **ReleaseResponseMessage** (section [2.2.2.17](#Section_0b99adf177d74382beef46f33a7e771b)) | A message sent in response to a **ReleaseMessage** that indicates a successful **Release** operation. |
| **RenewMessage** (section [2.2.2.18](#Section_f90764319d1a46208912cc28be48a49e)) | A request to renew an enumeration context. |
| **RenewResponseMessage** (section [2.2.2.19](#Section_1a80000b829c4955a6b6baa8f6c590c2)) | A message sent in response to a **RenewMessage** that indicates a successful **Renew** operation. |
| **UnwillingToPerform** (section [2.2.2.20](#Section_78504395a689401693e34e81ca066cac)) | A fault that results from the server not being willing to perform a given request. |

#### AddRequestMessage

The client sends the message **AddRequestMessage** to request the **Create** (section [3.1.4.4](#Section_1c82904d4d554570a852d48269b9df05)) operation. **AddRequestMessage** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.3.4.1.1.1.

The [**SOAP action**](#gt_c1358651-96c1-4ce0-8e1f-b0b7a94145e3) value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/transfer/Create

The [**SOAP header**](#gt_093a0af2-e71c-40fc-a484-d2f802da0277) MUST include the element **da:IdentityManagementOperation**, defined in [MS-WSTIM] section 2.2.3.6.

The [**SOAP body**](#gt_57cdf8ab-8d79-462d-a446-5d85632a7a04) MUST include the element **da:AddRequest**. The extension to [MS-WSTIM] of element **da:AddRequest** is defined in section [2.2.3.1](#Section_014d6185c9914c7487d17f2d9a1ef123).

1. <wsdl:message name="AddRequestMessage">
2. <wsdl:part name="Body" element="da:AddRequest"/>
3. <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
4. </wsdl:message>

See section [4.1.1](#Section_ce923a866cff4b0cb539f928ba8c27f4) for an example of message **AddRequestMessage**.

#### AddResponseMessage

The server sends the message **AddResponseMessage** in response to a client's request **AddRequestMessage** (section [2.2.2.1](#Section_f11a5e46e3964dd5b68fa94e414327ee)). The message **AddResponseMessage** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.3.4.1.1.2.

The SOAP body MUST include the element **wxf:ResourceCreated**. The extension to [[WSAddressing]](https://go.microsoft.com/fwlink/?LinkId=90575) of element **wxf:ResourceCreated** is defined in section [2.2.3.21](#Section_0598f9a183f1440ca409655d86f84c2c).

1. <wsdl:message name="AddResponseMessage">
2. <wsdl:part name="Body" element="wxf:ResourceCreated"/>
3. </wsdl:message>

See section [4.1.2](#Section_f83c091abedb4f24accf401e8860477a) for an example of message **AddResponseMessage**.

#### BaseObjectSearchRequestMessage

The client sends the message **BaseObjectSearchRequestMessage** to request the **Get** operation (section [3.1.4.1](#Section_402385a9ca734114b5b097ba9b00435b)). The message **BaseObjectSearchRequestMessage** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.1.1.1.

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/transfer/Get

The SOAP header MUST include the element **da:IdentityManagementOperation**. The element **da:IdentityManagementOperation** is defined in [MS-WSTIM] section 2.2.3.6.

As an extension to [MS-WSTIM], the SOAP header MUST include the element **rm:ResourceReferenceProperty**, defined in section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369).

The SOAP body MUST include the element **da:BaseObjectSearchRequest**. The extension to [MS-WSTIM] of element **da:BaseObjectSearchRequest** is defined in section [2.2.3.5](#Section_a3fe32a3b85a4d5e90d8d533902f5b77).

1. <wsdl:message name="BaseObjectSearchRequestMessage">
2. <wsdl:part name="Body" element="da:BaseObjectSearchRequest"/>
3. <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
4. </wsdl:message>

See section [4.2.1](#Section_d0166081c58341d891c058c249e436c5) for an example of message **BaseObjectSearchRequestMessage**.

#### BaseObjectSearchResponseMessage

The server sends the message **BaseObjectSearchResponseMessage** in response to a client's request **BaseObjectSearchRequestMessage** (section [2.2.2.3](#Section_b99626608193402ca8416f45adcb62fe)). The message **BaseObjectSearchResponseMessage** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.1.1.2.

The SOAP body MUST include the element **da:BaseObjectSearchResponse**. The element **da:BaseObjectSearchResponse** is defined in [MS-WSTIM] section 3.2.4.1.2.2.

1. <wsdl:message name="BaseObjectSearchResponseMessage">
2. <wsdl:part name="Body" element="da:BaseObjectSearchResponse"/>
3. </wsdl:message>

See section [4.2.2](#Section_7d68b369f5fb47fd985eb3f4e983df3f) for an example of message **BaseObjectSearchResponseMessage**.

#### DeleteRequestMessage

The client sends the message **DeleteRequestMessage** to request the **Delete** operation (section [3.1.4.3](#Section_afd5575282214d88b1dd598a80829b66)).

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete

The SOAP header MUST include the element **rm:ResourceReferenceProperty**, defined in section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369).

The SOAP body MUST be empty.

1. <wsdl:message name="DeleteRequestMessage">
2. <wsdl:part name="objectidentityheader" element="rm:ResourceReferenceProperty"/>
3. </wsdl:message>

See section [4.4.1](#Section_1a9fdcc5bcdd468eb0b6fe3742b233a2) for an example of message **DeleteRequestMessage**.

#### DeleteResponseMessage

The server sends the message **DeleteResponseMessage** in response to a client's **DeleteRequestMessage** request (section [2.2.2.5](#Section_bba048cda3234d9dba4b4579edc31a0f)).

The SOAP body MUST be empty.

1. <wsdl:message name="DeleteResponseMessage" />

See section [4.4.2](#Section_430816fc3dc845d993fdcaf15bb066c9) for an example of message **DeleteResponseMessage**.

#### EnumerateMessage

The client sends the message **EnumerateMessage** to request the **Enumerate** operation (section [3.1.4.5](#Section_bce96c63da3c4fcbbdcc1fb2cc2f8268)). The message **EnumerateMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1 as **Enumerate** request message.

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate

The SOAP body MUST include the element **wsen:Enumerate**. The extension to [WSENUM] of element **wsen:Enumerate** is defined in section [2.2.3.7](#Section_2c311fbaa3064a66b18b6078c025d1be).

1. <wsdl:message name="EnumerateMessage">
2. <wsdl:part name="Body" element="wsen:Enumerate" />
3. </wsdl:message>

See section [4.5.1](#Section_0bfa97ec4f49410aaa6cbfe27c7e0612) for an example of message **EnumerateMessage**.

#### EnumerateResponseMessage

The server sends message **EnumerateResponseMessage** in response to a client's **EnumerateMessage** request (section [2.2.2.7](#Section_c1c54249019f4850b3aa57503cabff99)). The message **EnumerateResponseMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1.

The SOAP body MUST include the element **wsen:EnumerateResponse**. The extension to [WSENUM] of element **wsen:EnumerateResponse** is defined in section [2.2.3.8](#Section_85b368208b624becbcd284e88432cd05).

1. <wsdl:message name="EnumerateResponseMessage">
2. <wsdl:part name="Body" element="wsen:EnumerateResponse" />
3. </wsdl:message>

See section [4.5.2](#Section_ad72bbe139d2403d89f0e13847a8147e) for an example of message **EnumerateResponseMessage**.

#### GetStatusMessage

The client sends the message **GetStatusMessage** to request the **GetStatus** operation (section [3.1.4.9](#Section_e48ca955e20b4abbb39ca26ce418b731)). The message **GetStatusMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.4.

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus

The SOAP body MUST include the element **wsen:GetStatus**. The element **wsen:GetStatus** is defined in [WSENUM] section 3.4.

1. wsen:GetStatus/wsen:EnumerationContext

As a profile of [WSENUM], the element **wsen:EnumerationContext** MUST be present as a child of **wsen:GetStatus**. The element **wsen:EnumerationContext** is defined in section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543).

1. <wsdl:message name="GetStatusMessage" >
2. <wsdl:part name="Body" element="wsen:GetStatus" />
3. </wsdl:message>

See section [4.9.1](#Section_a4bbe08b08fb47b0a1eec361a81bdb2a) for an example of message **GetStatusMessage**.

#### GetStatusResponseMessage

The server sends message **GetStatusResponseMessage** in response to a client's **GetStatusMessage** request (section [2.2.2.9](#Section_57e8e752a7b84a37832213cd119b596e)). The message **GetStatusResponseMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.4.

The SOAP body MUST include the element **wsen:GetStatusResponse**, defined in [WSENUM] section 3.4.

1. wsen:GetStatusResponse/wsen:Expires

As a profile of [WSENUM], the element **wsen:Expires** MUST be present as a child of **wsen:GetStatusResponse**. The element **wsen:Expires** is defined in section [2.2.3.11](#Section_babd69053d1842bd99872fcff4b87a16).

1. <wsdl:message name="GetStatusResponseMessage" >
2. <wsdl:part name="Body" element="wsen:GetStatusResponse" />
3. </wsdl:message>

See section [4.9.2](#Section_a756bdd16b974755b690d4ee7b891123) for an example of message **GetStatusResponseMessage**.

#### PermissionDeniedFault

If, in response to any operation specified in this protocol, the user making the request has not been granted access to the configuration objects, the server MUST respond with a fault, as defined in [[SOAP1.2-1/2007]](https://go.microsoft.com/fwlink/?LinkId=94664) section 5.4, containing the following information:

Code.Value: s:Client

Code.SubCode: rm:PermissionDenied

Reason: No reason is specified.

Detail: An element of type **PermissionDeniedFaultDetail** (section [2.2.3.17](#Section_d9fe9aad68cd4437afa8ca94630b3ca6)).

See section [4.10](#Section_26d1462ed83f42e58f3893163e103413) for an example of a **PermissionDeniedFault** response.

#### ModifyRequestMessage

The client sends the message **ModifyRequestMessage** to request the **Put** operation (section [3.1.4.2](#Section_db3e81d73544458481b70cd48ef8410d)). The message **ModifyRequestMessage** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.2.1.1.

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/transfer/Put

The SOAP header MUST include the element **da:IdentityManagementOperation**, defined in [MS-WSTIM] section 2.2.3.6.

The SOAP header MUST include the element **rm:ResourceReferenceProperty**, defined in section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369).

1. <wsdl:message name="ModifyRequestMessage">
2. <wsdl:part name="Body" element="da:ModifyRequest"/>
3. <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
4. <wsdl:part name="operationheader" element="rm:ResourceReferenceProperty"/>
5. </wsdl:message>

The SOAP body MUST include the element **da:ModifyRequest**. The extension to [MS-WSTIM] of element **da:ModifyRequest** is defined in section [2.2.3.15](#Section_1186d376fde744bab741868d92a16314).

See section [4.3.1](#Section_209012fe48384ff3ad50eaefe3092fff) for an example of message **ModifyRequestMessage**.

#### ModifyResponseMessage

The server sends the message **ModifyResponseMessage** in response to a client's **ModifyRequestMessage** request (section [2.2.2.12](#Section_e0083c16ffb140878c8877cb871836c4)). The message **ModifyResponseMessage** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.2.1.2.

The SOAP body MUST be empty.

1. <wsdl:message name="ModifyResponseMessage" />

See section [4.3.2](#Section_076b2273bb814985b19c0047c31947f9) for an example of message **ModifyResponseMessage**.

#### PullMessage

The client sends the message **PullMessage** to request the **Pull** operation (section [3.1.4.6](#Section_c8c150b28fac4b8980ddbc9ea4fe3c69)). The message **PullMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.2.

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull

The SOAP body MUST include the element **wsen:Pull**. The extension to [WSENUM] of element **wsen:Pull** is defined in section [2.2.3.18](#Section_6ff84ef2514d4ad6a56f156a993cec5b).

1. <wsdl:message name="PullMessage">
2. <wsdl:part name="Body" element="wsen:Pull" />
3. </wsdl:message>

See section [4.6.1](#Section_b7958a259b3a415384c5fb4ca3dcde2c) for an example of message **PullMessage**.

#### PullResponseMessage

The server sends the message **PullResponseMessage** in response to a client's **PullMessage** request (section [2.2.2.14](#Section_2647f4c2465f4cce9bf38647c5ecdd04)). The message **PullResponseMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.2.

The SOAP body MUST include the element **wsen:PullResponse**. The extension to [WSENUM] of element **wsen:PullResponse** is defined in section [2.2.3.20](#Section_66d508025e704761b8d9b0e08f4d1865).

1. <wsdl:message name="PullResponseMessage">
2. <wsdl:part name="Body" element="wsen:PullResponse" />
3. </wsdl:message>

See section [4.6.2](#Section_b82b2dca7dae4b2bb59e9f567498944b) for an example of message **PullResponseMessage**.

#### ReleaseMessage

The client sends **ReleaseMessage** to request the **Release** operation (section [3.1.4.7](#Section_2503ef84c4234805951c589b22591f09)). The message **ReleaseMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.5.

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release

The SOAP body MUST include the element **wsen:Release**, defined in [WSENUM] section 3.5.

1. wsen:Release/wsen:EnumerationContext

The element **wsen:EnumerationContext** MUST be present as a child of **wsen:Release**. The element **wsen:EnumerationContext** is defined in section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543).

1. <wsdl:message name="ReleaseMessage">
2. <wsdl:part name="Body" element="wsen:Release" />
3. </wsdl:message>

See section [4.7.1](#Section_abe63614764647d59a42a87d66ba3713) for an example of message **ReleaseMessage**.

#### ReleaseResponseMessage

The server sends **ReleaseResponseMessage** in response to a client's **ReleaseMessage** request (section [2.2.2.16](#Section_34f8ce38340549d290c830dc296d09f1)). The message **ReleaseResponseMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.5.

The SOAP body MUST be empty.

1. <wsdl:message name="ReleaseResponseMessage" />

See section [4.7.2](#Section_465fc87b778e4e48b4809029b4111136) for an example of message **ReleaseResponseMessage**.

#### RenewMessage

The client sends the message **RenewMessage** to request the **Renew** operation (section [3.1.4.8](#Section_61a73eb59bed4bf8978cfd692f975b78)). The message **RenewMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.3.

The SOAP action value of the message MUST be:

1. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew

The SOAP body MUST include the element **wsen:Renew**, defined in [WSENUM] section 3.3.

1. wsen:Renew/wsen:EnumerationContext

The element **wsen:EnumerationContext** MUST be present as a child of **wsen:Renew**. The element **wsen:EnumerationContext** is defined in section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543).

1. wsen:Renew/wsen:Expires

As a profile of [WSENUM], the element **wsen:Expires** MUST be present as a child of **wsen:Renew**. The element **wsen:Expires** is defined in section [2.2.3.11](#Section_babd69053d1842bd99872fcff4b87a16)

1. <wsdl:message name="RenewMessage" >
2. <wsdl:part name="Body" element="wsen:Renew" />
3. </wsdl:message>

See section [4.8.1](#Section_569e60b858754a6eb6e1860c56af41f1) for an example of message **RenewMessage**.

#### RenewResponseMessage

The server sends the message **RenewResponseMessage** in response to a client's **RenewMessage** request (section [2.2.2.18](#Section_f90764319d1a46208912cc28be48a49e)). The message **RenewResponseMessage** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.3.

The SOAP body MUST include the element **wsen:RenewResponse**, defined in [WSENUM] section 3.3.

1. wsen:RenewResponse/wsen:EnumerationContext

The element **wsen:EnumerationContext** MUST be present as a child of **wsen:RenewResponse**. The element **wsen:EnumerationContext** is defined in section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543).

1. wsen:RenewResponse/wsen:Expires

As a profile of [WSENUM], the element **wsen:Expires** MUST be present as a child of **wsen:RenewResponse**. The element **wsen:Expires** is defined in section [2.2.3.11](#Section_babd69053d1842bd99872fcff4b87a16).

1. <wsdl:message name="RenewResponseMessage" >
2. <wsdl:part name="Body" element="wsen:RenewResponse" />
3. </wsdl:message>

See section [4.8.2](#Section_21aaba65f85b4041b7088c52a019725e) for an example of message **RenewResponseMessage**.

#### UnwillingToPerform

If, in response to a **Put** operation (section [3.1.4.2)](#Section_db3e81d73544458481b70cd48ef8410d) specified in this protocol, the server is unwilling to perform and when there is no other more-specific fault specified in this document, the server MUST respond with an **UnwillingToPerform** fault as specified in [[SOAP1.2-1/2007]](https://go.microsoft.com/fwlink/?LinkId=94664) section 5.4.

| Element | Description |
| --- | --- |
| [Code] | s:Sender |
| [Subcode] | da:UnwillingToPerform |
| [Reason] | A string that describes the reason why the server is unwilling to perform the operation. |

#### InvalidRepresentation

If the client sends a request for a **Create** operation (section [3.1.4.4](#Section_1c82904d4d554570a852d48269b9df05)) or **Put** operation (section [3.1.4.2](#Section_db3e81d73544458481b70cd48ef8410d)) that would result in an invalid representation of a configuration object, the server MUST respond with an **InvalidRepresentation** fault as defined in [[WXFR]](https://go.microsoft.com/fwlink/?LinkId=90587) section 5.1.

#### EndpointUnavailable

If, in response to any operation specified in this protocol, a server failure prevents processing the request, the server MUST respond with a SOAP fault, as defined in [[SOAP1.2-1/2007]](https://go.microsoft.com/fwlink/?LinkId=94664). The SOAP fault MUST contain information defined in [[WSA1.0 SOAP Binding]](https://go.microsoft.com/fwlink/?LinkId=146148) section 6.4.5 for the **EndpointUnavailable** fault.

### Elements

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

| Element | Description |
| --- | --- |
| **AddRequest** (section [2.2.3.1](#Section_014d6185c9914c7487d17f2d9a1ef123)) | An element that includes identity attributes to include on a newly created object. |
| **AttributeType** (section [2.2.3.2](#Section_1f947c3696454ddaa9ae493e9e272838)) | An element that identifies one identity attribute of a configuration object. |
| **AttributeTypeAndValue** (section [2.2.3.3](#Section_a2001cf31f8544af8ab8794b9124881f)) | An element that contains elements **AttributeType** (section 2.2.3.2) and **AttributeValue** (section [2.2.3.4](#Section_83a4d1893d9840669900b6378f50d706)). |
| **AttributeValue** (section 2.2.3.4) | An element that contains the XML representation of a configuration object's identity attribute value. |
| **BaseObjectSearchRequest** (section [2.2.3.5](#Section_a3fe32a3b85a4d5e90d8d533902f5b77)) | An element that contains a list of identity attributes to include in message **BaseObjectSearchResponseMessage** (section [2.2.2.4](#Section_61bf04209ab647be924d5b0e7790feae)). |
| **Change** (section [2.2.3.6](#Section_222602b2dd5e4da695effad59b587c5b)) | An element that contains elements **AttributeType** (section 2.2.3.2) and **AttributeValue** (section 2.2.3.4). |
| **Enumerate** (section [2.2.3.7](#Section_2c311fbaa3064a66b18b6078c025d1be)) | An element that contains details of an enumerate request. |
| **EnumerateResponse** (section [2.2.3.8](#Section_85b368208b624becbcd284e88432cd05)) | An element that contains the results of an enumeration. |
| **EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)) | An element that contains the results of an enumeration between Enumerate and Pull requests. |
| **EnumerationDetail** (section [2.2.3.10](#Section_6c039ac4e1d848dcb59f6daa70aa26bc)) | An element that contains details about an enumeration result. |
| **Expires** (section [2.2.3.11](#Section_babd69053d1842bd99872fcff4b87a16)) | An element that contains a literal string value. |
| **Filter** (section [2.2.3.12](#Section_1dfac4919ae8435da2e9b33d3f6fb113)) | An element that supplies the filter in an **EnumerateMessage** (section [2.2.2.7](#Section_c1c54249019f4850b3aa57503cabff99)). |
| **Items** (section [2.2.3.13](#Section_878a2b5ec2f04a2e811e7eed74379a6b)) | An element that contains the configuration resources returned in **EnumerateResponse** (section 2.2.3.8) and **PullResponse** (section [2.2.3.20](#Section_66d508025e704761b8d9b0e08f4d1865)). |
| **LocalePreferences** (section [2.2.3.14](#Section_d36e138916f64e88aae1802f79001487)) | An element that supplies preferences for the locale of the object to return in an **EnumerateResponse**. |
| **ModifyRequest** (section [2.2.3.15](#Section_1186d376fde744bab741868d92a16314)) | An element that contains a list of identity attributes and values for the server to modify. |
| **PartialAttribute** (section [2.2.3.16](#Section_c04ea7273f7f4aebbeb1b001f7ddf445)) | An element that contains an XML representation of one identity attribute. |
| **PermissionDeniedFaultDetail** (section [2.2.3.17](#Section_d9fe9aad68cd4437afa8ca94630b3ca6)) | An element that supplies details regarding a **PermissionDeniedFault** defined fault, as specified in section [2.2.2.11](#Section_ce89f9c2574249719919a0ce83f7f61b). |
| **Pull** (section [2.2.3.18](#Section_6ff84ef2514d4ad6a56f156a993cec5b)) | An element that contains the details of a pull request. |
| **PullAdjustment** (section [2.2.3.19](#Section_b555e224dbc146da8953e3148ae72983)) | An element that specifies the quantity, direction, and starting index in a **PullMessage** (section [2.2.2.14](#Section_2647f4c2465f4cce9bf38647c5ecdd04)). |
| **PullResponse** (section 2.2.3.20) | An element that contains the results of a pull. |
| **ResourceCreated** (section [2.2.3.21](#Section_0598f9a183f1440ca409655d86f84c2c)) | An element that contains an endpoint reference of a newly created resource. |
| **ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)) | The reference property value identifies a configuration object. |
| **Selection** (section [2.2.3.23](#Section_909f83a08be24114a59af5b852531691)) | An element that specifies which identity attributes of a configuration object to return in an **EnumerateResponse** (section 2.2.3.8). |
| **Sorting** (section [2.2.3.24](#Section_04f236731fbc41a381900f3fe3fef453)) | An element that specifies which identity attributes to use when sorting configuration objects returned in an **EnumerateResponse** (section 2.2.3.8). |
| **SortingAttribute** (section [2.2.3.25](#Section_e91597fdddfc464099cab9d7f55b9a3c)) | An element that specifies the identity attribute to use when sorting configuration objects returned in an **EnumerateResponse** (section 2.2.3.8). |

#### AddRequest

The element **da:AddRequest** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.3.4.1.2.1.

1. da:AddRequest/@da:Dialect

The element **da:AddRequest** MUST include XML attribute **da:Dialect**. As a profile of [MS-WSTIM], the XML attribute **da:Dialect** MUST be of simple type **rm:DialectType** (section [2.2.5.3](#Section_c4024432b17d485f896841369ef41091)).

1. da:AddRequest/da:AttributeTypeAndValue

As a profile of [MS-WSTIM], the element **da:AddRequest** MUST include one or more elements **da:AttributeTypeAndValue**. The element **da:AttributeTypeAndValue** is defined in section [2.2.3.3](#Section_a2001cf31f8544af8ab8794b9124881f).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
3. <xs:element name="AddRequest">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="da:AttributeTypeAndValue" minOccurs="1" maxOccurs="unbounded" />
7. </xs:sequence>
8. <xs:attribute name="Dialect" type="rm:DialectType"/>
9. </xs:complexType>
10. </xs:element>
11. </xs:schema>

#### AttributeType

The element **da:AttributeType** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 2.2.3.1. As a profile of [MS-WSTIM], the element value of **da:AttributeType** MUST be of simple type **rm:AttributeTypeXmlType** (section [2.2.5.2](#Section_18895745202549948c16684c8efbd8f4)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
3. <xs:element name="AttributeType" type="rm:AttributeTypeXmlType"/>
4. </xs:schema>

#### AttributeTypeAndValue

The element **da:AttributeTypeAndValue** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 2.2.3.2.

1. da:AttributeTypeAndValue/da:AttributeType

The element **da:AttributeTypeAndValue** MUST include exactly one element **da:AttributeType** (section [2.2.3.2](#Section_1f947c3696454ddaa9ae493e9e272838)).

1. da:AttributeTypeAndValue/da:AttributeValue

As a profile of [MS-WSTIM], the element **da:AttributeTypeAndValue** MUST include exactly one element **da:AttributeValue** (section [2.2.3.4](#Section_83a4d1893d9840669900b6378f50d706)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
3. <xs:element name="AttributeTypeAndValue">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="1"/>
7. <xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1"/>
8. </xs:sequence>
9. </xs:complexType>
10. </xs:element>
11. </xs:schema>

#### AttributeValue

The element **da:AttributeValue** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 2.2.4.1. As a profile of [MS-WSTIM], the elements **da:AttributeValue** MUST include the XML representation of the identity attribute specified in **da:AttributeType**. The XML representation of identity attributes is defined in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77) section [2](#Section_c454f68374384297bfaac0bf62c7fe5f).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
3. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
4. <xs:element name="AttributeValue" type="rm:ItemsType"/>
5. </xs:schema>

The complex type **rm:ItemsType** is defined in section [2.2.4.1](#Section_f54ca45178dc448880a931e220023a5c).

#### BaseObjectSearchRequest

The element **da:BaseObjectSearchRequest** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.1.2.1.

1. da:BaseObjectSearchRequest/@da:Dialect

The element **da:BaseObjectSearchRequest** MUST include the XML attribute **da:Dialect**. As a profile of [MS-WSTIM], the XML attribute **da:Dialect** MUST be of simple type **rm:DialectType** (section [2.2.5.3](#Section_c4024432b17d485f896841369ef41091)).

1. da:BaseObjectSearchRequest/da:AttributeType

The element **da:BaseObjectSearchRequest** MUST include one or more elements **da:AttributeType** (section [2.2.3.2](#Section_1f947c3696454ddaa9ae493e9e272838)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
3. <xs:element name="BaseObjectSearchRequest">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="unbounded" />
7. </xs:sequence>
8. <xs:attribute name="Dialect" type="rm:DialectType"/>
9. </xs:complexType>
10. </xs:element>
11. </xs:schema>

#### Change

The element **da:Change** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.2.2.2.

1. a:Change/@da:Operation

As a profile of [MS-WSTIM], the element **da:Change** MUST include the XML attribute **da:Operation**. The XML attribute **da:Operation** MUST be simple type **da:OperationXmlType**. The simple type **da:OperationXmlType** is defined in [MS-WSTIM] section 3.2.4.2.3.1.

1. da:Change/da:AttributeType

The element **da:Change** MUST include exactly one element **da:AttributeType** (section [2.2.3.2](#Section_1f947c3696454ddaa9ae493e9e272838)).

1. da:Change/da:AttributeValue

As a profile of [MS-WSTIM], the element **da:Change** MUST include exactly one element **da:AttributeValue** (section [2.2.3.4](#Section_83a4d1893d9840669900b6378f50d706)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
3. <xs:element name="Change">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="1" />
7. <xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1" />
8. </xs:sequence>
9. <xs:attribute name="Operation" type="da:OperationXmlType"/>
10. </xs:complexType>
11. </xs:element>
12. </xs:schema>

#### Enumerate

The element **wsen:Enumerate** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1.

As a profile of [WSENUM], the element **wsen:EndTo** MUST NOT be present as a child of **wsen:Enumerate**.

As a profile of [WSENUM], the element **wsen:Expires** MUST NOT be present as a child of **wsen:Enumerate**.

1. wsen:Enumerate/wsen:Filter

As a profile of [WSENUM], the element **wsen:Filter** (section [2.2.3.12](#Section_1dfac4919ae8435da2e9b33d3f6fb113)) MUST be present as a child of **wsen:Enumerate**.

1. wsen:Enumerate/rm:LocalePreferences

As an extension to [WSENUM], the element **rm:LocalePreferences** (section [2.2.3.14](#Section_d36e138916f64e88aae1802f79001487)) MUST be present as a child of **wsen:Enumerate**.

1. Wsen:Enumerate/wsen:MaxElements

As an extension to [WSENUM], the element **wsen:MaxElements** MUST be present as a child of **wsen:Enumerate**. The element **wsen:MaxElements** is defined in [WSENUM] section 3.2.

1. wsen:Enumerate/wsen:MaxCharacters

As an extension to [WSENUM], the element **wsen:MaxCharacters** MUST be present as a child of **wsen:Enumerate**. The element **wsen:MaxCharacters** is defined in [WSENUM] section 3.2.

1. wsen:Enumerate/rm:Sorting

As an extension to [WSENUM], the element **rm:Sorting** (section [2.2.3.24](#Section_04f236731fbc41a381900f3fe3fef453)) MUST be present as a child of **wsen:Enumerate**.

1. wsen:Enumerate/rm:Selection

As an extension to [WSENUM], the element **rm:Selection** (section [2.2.3.23](#Section_909f83a08be24114a59af5b852531691)) MUST be present one or more times as a child of **wsen:Enumerate**.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
3. <xs:element name="Enumerate">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="wsen:Filter" minOccurs="1" maxOccurs="1" />
7. <xs:element ref="rm:LocalePreferences" minOccurs="1" maxOccurs="1"/>
8. <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
9. <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
10. <xs:element ref="rm:Sorting" minOccurs="1" maxOccurs="1"/>
11. <xs:element ref="rm:Selection" minOccurs="1" maxOccurs="unbounded"/>
12. </xs:sequence>
13. </xs:complexType>
14. </xs:element>
15. </xs:schema>

#### EnumerateResponse

The element **wsen:EnumerateResponse** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1.

1. wsen:EnumerateResponse/wsen:Expires

As a profile of [WSENUM], the element **wsen:Expires** MUST be present as a child of **wsen:EnumerateResponse**. The element **wsen:Expires** is defined in section [2.2.3.11](#Section_babd69053d1842bd99872fcff4b87a16).

1. wsen:EnumerateResponse/wsen:EnumerationContext

As a profile of [WSENUM], the element **wsen:EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)) MUST be present as a child of **wsen:EnumerateResponse** if the element **wsen:EndOfSequence** is not present as a child of **wsen:EnumerateResponse**.

1. wsen:EnumerateResponse/rm:EnumerationDetail

As an extension of [WSENUM], the element **rm:EnumerationDetail** MUST be present as a child of **wsen:EnumerateResponse**. The element **rm:EnumerationDetail** is defined in section [2.2.3.10](#Section_6c039ac4e1d848dcb59f6daa70aa26bc).

1. wsen:EnumerateResponse/wsen:Items

As an extension of [WSENUM], the element **wsen:Items** MUST be present as a child of **wsen:EnumerateResponse**. The element **wsen:Items** is defined in section [2.2.3.13](#Section_878a2b5ec2f04a2e811e7eed74379a6b).

1. wsen:EnumerateResponse/wsen:EndOfSequence

The element **wsen:EndOfSequence** ([WSENUM] section 3.2) MUST be present as a child of **wsen:EnumerateResponse** zero or one times.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
3. <xs:element name="EnumerateResponse">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="wsen:Expires" minOccurs="1" maxOccurs="1" />
7. <xs:element ref="wsen:EnumerationContext" minOccurs="0" maxOccurs="1"/>
8. <xs:element ref="rm:EnumerationDetail" minOccurs="1" maxOccurs="1"/>
9. <xs:element ref="wsen:Items" minOccurs="1" maxOccurs="1"/>
10. <xs:element ref="wsen:EndOfSequence" minOccurs="0" maxOccurs="1"/>
11. </xs:sequence>
12. </xs:complexType>
13. </xs:element>
14. </xs:schema>

#### EnumerationContext

The element **wsen:EnumerationContext** extends the definition in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1. As a profile of [WSENUM], the element **wsen:EnumerationContext** MUST be the complex type **EnumerationContextType** (section [2.2.4.2](#Section_20e9798e89d74afc844700edc671af51)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
3. <xs:element name="EnumerationContext" type="rm:EnumerationContextType">
4. </xs:element>
5. </xs:schema>

#### EnumerationDetail

The element **rm:EnumerationDetail** contains additional information about the enumeration response including the count of configuration objects included in the enumeration.

1. rm:EnumerationDetail/rm:Count

The element **rm:Count** MUST be a child of **rm:EnumerationDetail**. The element **rm:Count** MUST be the total number of configuration objects identified by the **Filter** (section [2.2.3.12](#Section_1dfac4919ae8435da2e9b33d3f6fb113)) in the **EnumerateMessage** (section [2.2.2.7](#Section_c1c54249019f4850b3aa57503cabff99)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:element name="EnumerationDetail" type="rm:EnumerationDetailType"/>
4. </xs:schema>

The complex type **rm:**[**EnumerationDetailType**](#Section_35eacef79e5645f89c2167962f5151ae) is defined in section 2.2.4.3.

#### Expires

The element **wsen:Expires** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1. As a profile of [WSENUM], the value of the element **wsen:Expires** MUST be the literal string "9999-12-31T23:59:59: 9999999".

1. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
2. <xs:element name="Expires">
3. <xs:simpleType>
4. <xs:restriction base="xs:string">
5. <xs:enumeration value="9999-12-31T23:59:59: 9999999"/>
6. </xs:restriction>
7. </xs:simpleType>
8. </xs:element>
9. </xs:schema>

#### Filter

The element **wsen:Filter** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
3. <xs:element name="Filter" type="rm:FilterType"/>
4. </xs:schema>

The complex type **rm:FilterType** is defined in section [2.2.4.4](#Section_1c9389f3dcfe45d48b46bc890882e9e8).

#### Items

The element **wsen:Items** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.2. As a profile of [WSENUM], the element **wsen:Items** MUST be the complex type **ItemsType** defined in this specification in section [2.2.4.1](#Section_f54ca45178dc448880a931e220023a5c). The element contains a sequence of XML representations of configuration objects that are defined in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
3. <xs:element name="Items" type="rm:ItemsType"/>
4. </xs:schema>

The complex type **rm:ItemsType** is defined in section 2.2.4.1.

#### LocalePreferences

The element **rm:LocalePreferences** includes a **LocalePreference** element.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:element name="LocalePreferences" type="rm:LocalePreferencesType"/>
4. </xs:schema>

The complex type **rm:LocalePreferencesType** is defined in section [2.2.4.5](#Section_cae0d71cef4e4a7ab46d4faa255787df).

#### ModifyRequest

The element **da:ModifyRequest** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.2.2.1.

1. da:ModifyRequest/@da:Dialect

The element **da:ModifyRequest** MUST include XML attribute **da:Dialect**. As a profile of [MS-WSTIM], the XML attribute **da:Dialect** MUST be of simple type **rm:DialectType** (section [2.2.5.3](#Section_c4024432b17d485f896841369ef41091)).

1. da:ModifyRequest/da:Change

As a profile of [MS-WSTIM], the element **da:ModifyRequest** MUST include one or more elements **da:Change**. The element **da:Change** is defined in section [2.2.3.6](#Section_222602b2dd5e4da695effad59b587c5b).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
3. <xs:element name="ModifyRequest">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="da:Change" minOccurs="1" maxOccurs="unbounded" />
7. </xs:sequence>
8. <xs:attribute name="Dialect" type="rm:DialectType"/>
9. </xs:complexType>
10. </xs:element>
11. </xs:schema>

#### PartialAttribute

The element **da:PartialAttribute** is defined in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) section 3.2.4.1.2.2. As a profile of [MS-WSTIM], the element **da:PartialAttribute** MUST include the XML representation of identity attributes as defined in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77) section [2](#Section_c454f68374384297bfaac0bf62c7fe5f).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
3. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
4. <xs:element name="PartialAttribute" type="rm:ItemsType"/>
5. </xs:schema>

The complex type **rm:ItemsType** is defined in section [2.2.4.1](#Section_f54ca45178dc448880a931e220023a5c).

#### PermissionDeniedFaultDetail

The element **rm:PermissionDeniedFaultDetail** includes a string message that details the specific failure.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:element name="PermissionDeniedFaultDetail" type="xs:string"/>
4. </xs:schema>

#### Pull

The element **wsen:Pull** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.2.

1. wsen:Pull/wsen:MaxTime

As a profile of [WSENUM], the element **wsen:MaxTime** MUST be present as a child of **wsen:Pull**. The element **wsen:MaxTime** is defined in [WSENUM] section 3.2.

1. wsen:Pull/wsen:MaxElements

As a profile of [WSENUM], the element **wsen:MaxElements** MUST be present as a child of **wsen:Pull**. The element **wsen:MaxElements** is defined in [WSENUM] section 3.2.

1. wsen:Pull/rm:MaxCharacters

As a profile of [WSENUM], the element **wsen:MaxCharacters** MUST be present as a child of **wsen:Pull**. The element **wsen:MaxCharacters** is defined in [WSENUM] section 3.2.

1. wsen:Pull/wsen:EnumerationContext

The element **wsen:EnumerationContext** MUST be present as a child of **wsen:Pull**. The element **wsen:EnumerationContext** is defined in section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543).

1. wsen:Pull/rm:PullAdjustment

As an extension to [WSENUM], the element **rm:PullAdjustment** MUST be present as a child of **wsen:Pull**. The element **rm:PullAdjustment** is defined in section [2.2.3.19](#Section_b555e224dbc146da8953e3148ae72983).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
3. <xs:element name="Pull">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="wsen:MaxTime" minOccurs="1" maxOccurs="1" />
7. <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
8. <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
9. <xs:element ref="wsen:EnumerationContext" minOccurs="1" maxOccurs="1"/>
10. <xs:element ref="rm:PullAdjustment" minOccurs="1" maxOccurs="1"/>
11. </xs:sequence>
12. </xs:complexType>
13. </xs:element>
14. </xs:schema>

#### PullAdjustment

The element **rm:PullAdjustment** includes adjustments to ordering, initial offset, and quantity of configuration objects returned in **wsen:Items** in a **PullResponse**.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:element name="PullAdjustment" type="rm:PullAdjustmentType"/>
4. </xs:schema>

The complex type **rm:PullAdjustmentType** is defined in section [2.2.4.6](#Section_b6773bd32a3644eabfc0d11a1b85828b).

#### PullResponse

The element **wsen:PullResponse** is defined in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.2.

1. wsen:PullResponse/wsen:Items

As a profile of [WSENUM], the element **wsen:Items** MUST be present as a child of **wsen:PullResponse**. The element **wsen:Items** is defined in section [2.2.3.13](#Section_878a2b5ec2f04a2e811e7eed74379a6b).

1. wsen:PullResponse/wsen:EndOfSequence

The element **wsen:EndOfSequence** MUST be present as a child of **wsen:PullResponse** zero or one times. The element **wsen:EndOfSequence** is defined in [WSENUM] section 3.2.

1. wsen:PullResponse/wsen:EnumerationContext

The element **wsen:EnumerationContext** MUST be present as a child of **wsen:PullResponse** if the element **wsen:EndOfSequence** is not present as a child of **wsen:PullResponse**. The element **wsen:EnumerationContext** is defined in section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
3. <xs:element name="PullResponse">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="wsen:EnumerationContext" minOccurs="0" maxOccurs="1"/>
7. <xs:element ref="wsen:EndOfSequence" minOccurs="0" maxOccurs="1"/>
8. <xs:element ref="wsen:Items" minOccurs="1" maxOccurs="1"/>
9. </xs:sequence>
10. </xs:complexType>
11. </xs:element>
12. </xs:schema>

#### ResourceCreated

The element **wxf:ResourceCreated** is defined in [[WXFR]](https://go.microsoft.com/fwlink/?LinkId=90587) section 4.1.

1. wxf:ResourceCreated/wsa:EndpointReference

As a profile of [WXFR], the element **wxf:ResourceCreated** MUST include element **wsa:EndpointReference**. The element **wsa:EndpointReference** is defined in [[WSAddressing]](https://go.microsoft.com/fwlink/?LinkId=90575) section 2.

1. wxf:ResourceCreated/wsa:EndpointReference/wsa:ReferenceProperties

As a profile of [WSAddressing], the element **wsa:EndpointReference** MUST include element **wsa:ReferenceProperties**. The element **wsa:ReferenceProperties** is defined in [WSAddressing] section 2.1.

1. wxf:ResourceCreated/wsa:EndpointReference/wsa:ReferenceProperties/rm:ResourceReferenceProperty

As a profile of [WSAddressing], the element **wsa:ReferenceProperties** MUST include element **rm:ResourceReferenceProperty**. The element **rm:** **ResourceReferenceProperty** is defined in section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/08/addressing">
3. <xs:element name="ReferenceProperties">
4. <xs:complexType>
5. <xs:sequence>
6. <xs:element ref="rm:ResourceReferenceProperty" minOccurs="1" maxOccurs="1"/>
7. </xs:sequence>
8. </xs:complexType>
9. </xs:element>
10. </xs:schema>

#### ResourceReferenceProperty

The element **rm:ResourceReferenceProperty** contains a unique identifier that specifies one configuration object.

1. <?xml version='1.0' encoding='utf-8' ?>
2. <xs:schema xmlns:xs='http://www.w3.org/2001/XMLSchema' xmlns:rm='http://schemas.microsoft.com/2006/11/ResourceManagement' targetNamespace='http://schemas.microsoft.com/2006/11/ResourceManagement'
3. elementFormDefault='qualified'>
4. <xs:element name="ResourceReferenceProperty" type="rm:ReferenceType"/></xs:schema>

The simple type **rm:ReferenceType** is defined in section [2.2.5.7](#Section_5882bbf46aef47a29a49d7533ae25268).

#### Selection

A client MUST include at least one element **rm:Selection** as a child of **wsen:Enumerate** in an **Enumerate** request (section [2.2.3.7](#Section_2c311fbaa3064a66b18b6078c025d1be)). This element MUST be simple type **rm:AttributeTypeXmlType**. The simple type **rm:AttributeTypeXmlType** is defined in section [2.2.5.2](#Section_18895745202549948c16684c8efbd8f4).

1. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
2. <xs:element name="Selection" type="rm:SelectionType"/>
3. </xs:schema>

#### Sorting

A client MUST include one element **rm:Sorting** element as a child of **wsen:Enumerate** in an **Enumerate** request (section [2.2.3.7](#Section_2c311fbaa3064a66b18b6078c025d1be)).

1. rm:Sorting/@rm:Dialect

The element **rm:Sorting** MUST include XML attribute **rm:Dialect**. The XML attribute **rm:Dialect** MUST be of simple type **rm:DialectType**. The simpleType **rm:DialectType** is defined in section [2.2.5.3](#Section_c4024432b17d485f896841369ef41091).

1. rm:Sorting/rm:SortingAttribute

The element **rm:Sorting** MUST have one or more elements **rm:SortingAttribute** as child elements. The element **rm:SortingAttribute** is defined in section [2.2.3.25](#Section_e91597fdddfc464099cab9d7f55b9a3c).

1. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
2. <xs:element name="Sorting">
3. <xs:complexType>
4. <xs:sequence>
5. <xs:element ref="rm:SortingAttribute" minOccurs="1" maxOccurs="unbounded"/>
6. </xs:sequence>
7. <xs:attribute name="Dialect" type="rm:DialectType"/>
8. </xs:complexType>
9. </xs:element>
10. </xs:schema>

#### SortingAttribute

The element **rm:SortingAttribute** extends the simple type **rm:AttributeTypeXmlType**, adding the XML attribute **rm:Ascending**. The XML attribute **rm:Ascending** MUST be the simple type **rm:AscendingType**, which is defined in section [2.2.5.1](#Section_38a6256f59c943e5b053fd0a908545b9), as follows:

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:element name="SortingAttribute">
4. <xs:complexType>
5. <xs:simpleContent>
6. <xs:extension base="rm:AttributeTypeXmlType">
7. <xs:attribute name="Ascending" type="rm:AscendingType"/>
8. </xs:extension>
9. </xs:simpleContent>
10. </xs:complexType>
11. </xs:element>
12. </xs:schema>

### 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 that operation.

| Complex Type | Description |
| --- | --- |
| **EnumerationDetailType** (section [2.2.4.3](#Section_35eacef79e5645f89c2167962f5151ae)) | A complex type that contains details about an enumeration result such as the count of resources. |
| **EnumerationContextType** (section [2.2.4.2](#Section_20e9798e89d74afc844700edc671af51)) | A complex type that includes information necessary for the server to coordinate requests with an original enumeration operation. |
| **FilterType** (section [2.2.4.4](#Section_1c9389f3dcfe45d48b46bc890882e9e8)) | A complex type that extends **FilterQueryType** (section [2.2.5.6](#Section_e3530726cf0749db84ee299d58ca478b)) and includes an XML attribute of simple type **FilterDialectType** (section [2.2.5.5](#Section_038024b7a8aa40d0aeeb64cc31d6e9b7)). |
| **ItemsType** (section [2.2.4.1](#Section_f54ca45178dc448880a931e220023a5c)) | A complex type that includes XML representations of [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77) configuration objects. |
| **LocalePreferencesType** (section [2.2.4.5](#Section_cae0d71cef4e4a7ab46d4faa255787df)) | A type used to specify client preferences for locales. |
| **PullAdjustmentType** (section [2.2.4.6](#Section_b6773bd32a3644eabfc0d11a1b85828b)) | A complex type that includes the quantity, direction, and initial index position for a **Pull** operation (section [3.1.4.6](#Section_c8c150b28fac4b8980ddbc9ea4fe3c69)). |
| **SelectionType** (section [2.2.4.7](#Section_a26c7872ca104e6c930f7c854c27ab96)) | A complex type that contains a sequence of identity attribute type names. |

#### ItemsType

The complex type **rm:ItemsType** contains a sequence of elements from the "http://schemas.microsoft.com/2006/11/ResourceManagement" namespace. These elements are defined in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77) section 2.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:complexType name="ItemsType">
4. <xs:sequence>
5. <xs:any namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" minOccurs="1" maxOccurs="unbounded"/>
6. </xs:sequence>
7. </xs:complexType>
8. </xs:schema>

#### EnumerationContextType

The complex type **rm:EnumerationContextType** includes elements that store the state of an enumeration session. The complex type defines the element **wsen:EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:complexType name="EnumerationContextType">
4. <xs:sequence>
5. <xs:element name="CurrentIndex" type="xs:integer"/>
6. <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
7. <xs:element ref="wsen:Expires"/>
8. <xs:element name="Filter" type="xs:string"/>
9. <xs:element ref="rm:LocalePreferences"/>
10. <xs:element ref="rm:Selection"/>
11. <xs:element ref="rm:Sorting"/>
12. </xs:sequence>
13. </xs:complexType>
14. </xs:schema>

The **CurrentIndex** element contains the index of the first **wsen:Items** element returned in the **EnumerateResponseMessage** (section [2.2.2.8](#Section_c5df18b357974c0c8a3f1e0c4e362a19)).

The simple type **rm:EnumerationDirectionType** is defined in section [2.2.5.4](#Section_35d6b4d0d92442ea98185a2034df2f67).

The element **wsen:Expires** is defined in section [2.2.3.11](#Section_babd69053d1842bd99872fcff4b87a16).

The **Filter** element (section [2.2.3.12](#Section_1dfac4919ae8435da2e9b33d3f6fb113)) contains the value of the **wsen:Filter** element passed to the **Enumerate** message (section [2.2.3.7](#Section_2c311fbaa3064a66b18b6078c025d1be)).

The element **rm:LocalePreferences** is defined in section [2.2.3.14](#Section_d36e138916f64e88aae1802f79001487).

The element **rm:Selection** is defined in section [2.2.3.23](#Section_909f83a08be24114a59af5b852531691).

The element **rm:Sorting** is defined in section [2.2.3.24](#Section_04f236731fbc41a381900f3fe3fef453).

#### EnumerationDetailType

The complex type **rm:EnumerationDetailType** contains the count of the configuration objects included in the enumeration.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:complexType name="EnumerationDetailType">
4. <xs:sequence>
5. <xs:element name="Count" type="xs:integer"/>
6. </xs:sequence>
7. </xs:complexType>
8. </xs:schema>

#### FilterType

The complex type **rm:FilterType** extends simple type **rm:FilterQueryType** (section [2.2.5.6](#Section_e3530726cf0749db84ee299d58ca478b)) and includes an XML attribute **wsen:Dialect**.

The XML attribute **wsen:Dialect** is defined in this [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) section 3.1. As a profile of [WSENUM], the XML attribute **wsen:Dialect** MUST be of simple type **rm:FilterDialectType** (section [2.2.5.5](#Section_038024b7a8aa40d0aeeb64cc31d6e9b7)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:complexType name="FilterType">
4. <xs:simpleContent>
5. <xs:extension base="rm:FilterQueryType">
6. <xs:attribute name="Dialect" type="rm:FilterDialectType"/>
7. </xs:extension>
8. </xs:simpleContent>
9. </xs:complexType>
10. </xs:schema>

#### LocalePreferencesType

The complex type **rm:LocalePreferencesType** MUST include one element **rm:LocalePreference**, defined in this section. The element **rm:LocalePreference** MUST include two elements, **rm:Locale** and **rm:PreferenceValue**.

1. rm:LocalePreference/rm:Locale

The element **rm:LocalePreference** MUST include element **rm:Locale** as a child. The element **rm:Locale** MUST be set to the string literal "en-US".

1. rm:LocalePreference/rm:PreferenceValue

The element **rm:LocalePreference** MUST include element **rm:PreferenceValue** as a child. The element **rm:PreferenceValue** MUST be set to the string literal "0".

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:complexType name="LocalePreferencesType">
4. <xs:sequence>
5. <xs:element name="LocalePreference" minOccurs="1" maxOccurs="1">
6. <xs:complexType>
7. <xs:sequence>
8. <xs:element name="Locale">
9. <xs:simpleType>
10. <xs:restriction base="xs:string">
11. <xs:enumeration value="en-US"/>
12. </xs:restriction>
13. </xs:simpleType>
14. </xs:element>
15. <xs:element name="PreferenceValue">
16. <xs:simpleType>
17. <xs:restriction base="xs:string">
18. <xs:enumeration value="0"/>
19. </xs:restriction>
20. </xs:simpleType>
21. </xs:element>
22. </xs:sequence>
23. </xs:complexType>
24. </xs:element>
25. </xs:sequence>
26. </xs:complexType>
27. </xs:schema>

#### PullAdjustmentType

The complex type **rm:PullAdjustmentType** MUST be included in element **Pull** (section [2.2.3.18](#Section_6ff84ef2514d4ad6a56f156a993cec5b)) during a **PullMessage** (section [2.2.2.14](#Section_2647f4c2465f4cce9bf38647c5ecdd04)).

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:complexType name="PullAdjustmentType">
4. <xs:sequence>
5. <xs:element name="StartingIndex" type="rm:StartingIndexType"/>
6. <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
7. </xs:sequence>
8. </xs:complexType>
9. </xs:schema>

The simple type **rm:StartingIndexType** is defined in section [2.2.5.8](#Section_e5d0ba203c944e2ab31185f482512cae).

The simple type **rm:EnumerationDetailType** is defined in section [2.2.5.4](#Section_35d6b4d0d92442ea98185a2034df2f67).

#### SelectionType

The complex type **rm:SelectionType** defines element **rm:Selection** (section [2.2.3.23](#Section_909f83a08be24114a59af5b852531691)). The complex type includes a sequence of identity attribute names to use in selection.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:complexType name="SelectionType">
4. <xs:sequence>
5. <xs:element name="string" type="rm:AttributeTypeXmlType" minOccurs="1" maxOccurs="unbounded"/>
6. </xs:sequence>
7. </xs:complexType>
8. </xs:schema>

The simple type **rm:AttributeTypeXmlType** is defined in section [2.2.5.2](#Section_18895745202549948c16684c8efbd8f4).

### 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 that operation.

| Simple Type | Description |
| --- | --- |
| **AscendingType** (section [2.2.5.1](#Section_38a6256f59c943e5b053fd0a908545b9)) | A simple type that derives from **xs:string** and is set to a specific value. |
| **AttributeTypeXmlType** (section [2.2.5.2](#Section_18895745202549948c16684c8efbd8f4)) | A simple type that derives from **xs:string** and is restricted to specific identity attributes defined in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77). |
| **DialectType** (section [2.2.5.3](#Section_c4024432b17d485f896841369ef41091)) | A simple type that derives from **xs:anyURI** and is set to a specific URI. |
| **EnumerationDirectionType** (section [2.2.5.4](#Section_35d6b4d0d92442ea98185a2034df2f67)) | A simple type that derives from **xs:string** and restricts the value to be "Forwards". |
| **FilterDialectType** (section [2.2.5.5](#Section_038024b7a8aa40d0aeeb64cc31d6e9b7)) | A simple type that derives from **xs:anyURI** and is set to a specific URI. |
| **FilterQueryType** (section [2.2.5.6](#Section_e3530726cf0749db84ee299d58ca478b)) | A simple type that derives from **xs:string** and restricts the value to a set of strings representing queries. |
| **ReferenceType** (section [2.2.5.7](#Section_5882bbf46aef47a29a49d7533ae25268)) | The reference property value identifies a configuration object. |
| **StartingIndexType** (section [2.2.5.8](#Section_e5d0ba203c944e2ab31185f482512cae)) | A simple type that derives from **xs:integer** that has the number of configuration objects retrieved from **Enumerate** (section [3.1.4.5](#Section_bce96c63da3c4fcbbdcc1fb2cc2f8268)). |

#### AscendingType

The simple type **rm:AscendingType** derives from **xs:string** and MUST be the string literal "true".

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:simpleType name="AscendingType">
4. <xs:restriction base="xs:string">
5. <xs:enumeration value="true"/>
6. </xs:restriction>
7. </xs:simpleType>
8. </xs:schema>

#### AttributeTypeXmlType

The simple type **rm:AttributeTypeXmlType** derives from **xs:string** and is restricted to valid identity attributes defined in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77) section 2.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:simpleType name="AttributeTypeXmlType">
4. <xs:restriction base="xs:string">
5. <xs:enumeration value="AccountName"/>
6. <xs:enumeration value="ActionParameter"/>
7. <xs:enumeration value="ActionType"/>
8. <xs:enumeration value="ActionWorkflowDefinition"/>
9. <xs:enumeration value="AD\_UserCannotChangePassword"/>
10. <xs:enumeration value="Address"/>
11. <xs:enumeration value="Assistant"/>
12. <xs:enumeration value="AuthenticationWorkflowDefinition"/>
13. <xs:enumeration value="AuthNLockoutRegistrationID"/>
14. <xs:enumeration value="AuthNWFLockedOut"/>
15. <xs:enumeration value="AuthNWFRegistered"/>
16. <xs:enumeration value="AuthorizationWorkflowDefinition"/>
17. <xs:enumeration value="City"/>
18. <xs:enumeration value="Company"/>
19. <xs:enumeration value="ComputedMember"/>
20. <xs:enumeration value="ConnectedObjectType"/>
21. <xs:enumeration value="ConnectedSystem"/>
22. <xs:enumeration value="ConnectedSystemScope"/>
23. <xs:enumeration value="CostCenter"/>
24. <xs:enumeration value="CostCenterName"/>
25. <xs:enumeration value="Country"/>
26. <xs:enumeration value="CreateConnectedSystemObject"/>
27. <xs:enumeration value="CreatedTime"/>
28. <xs:enumeration value="CreateILMObject"/>
29. <xs:enumeration value="Creator"/>
30. <xs:enumeration value="DeletedTime"/>
31. <xs:enumeration value="Department"/>
32. <xs:enumeration value="Dependency"/>
33. <xs:enumeration value="Description"/>
34. <xs:enumeration value="DetectedRulesList"/>
35. <xs:enumeration value="DisconnectConnectedSystemObject"/>
36. <xs:enumeration value="DisplayName"/>
37. <xs:enumeration value="Domain"/>
38. <xs:enumeration value="DomainConfiguration"/>
39. <xs:enumeration value="Email"/>
40. <xs:enumeration value="EmployeeEndDate"/>
41. <xs:enumeration value="EmployeeID"/>
42. <xs:enumeration value="EmployeeStartDate"/>
43. <xs:enumeration value="EmployeeType"/>
44. <xs:enumeration value="ExistenceTest"/>
45. <xs:enumeration value="ExpectedRulesList"/>
46. <xs:enumeration value="ExpirationTime"/>
47. <xs:enumeration value="ExplicitMember"/>
48. <xs:enumeration value="Filter"/>
49. <xs:enumeration value="FirstName"/>
50. <xs:enumeration value="FlowType"/>
51. <xs:enumeration value="FreezeCount"/>
52. <xs:enumeration value="FreezeLevel"/>
53. <xs:enumeration value="GrantRight"/>
54. <xs:enumeration value="ILMObjectType"/>
55. <xs:enumeration value="ILMScoping"/>
56. <xs:enumeration value="InitialFlow"/>
57. <xs:enumeration value="IsRASEnabled"/>
58. <xs:enumeration value="JobTitle"/>
59. <xs:enumeration value="LastName"/>
60. <xs:enumeration value="LastResetAttemptTime"/>
61. <xs:enumeration value="Locale"/>
62. <xs:enumeration value="LoginName"/>
63. <xs:enumeration value="MailNickname"/>
64. <xs:enumeration value="Manager"/>
65. <xs:enumeration value="MembershipCondition"/>
66. <xs:enumeration value="MiddleName"/>
67. <xs:enumeration value="MobilePhone"/>
68. <xs:enumeration value="MVObjectID"/>
69. <xs:enumeration value="ObjectID"/>
70. <xs:enumeration value="ObjectSID"/>
71. <xs:enumeration value="ObjectType"/>
72. <xs:enumeration value="OfficeFax"/>
73. <xs:enumeration value="OfficeLocation"/>
74. <xs:enumeration value="OfficePhone"/>
75. <xs:enumeration value="PersistentFlow"/>
76. <xs:enumeration value="Photo"/>
77. <xs:enumeration value="PostalCode"/>
78. <xs:enumeration value="Precedence"/>
79. <xs:enumeration value="PrincipalRelativeToResource"/>
80. <xs:enumeration value="PrincipalSet"/>
81. <xs:enumeration value="ProxyAddressCollection"/>
82. <xs:enumeration value="Register"/>
83. <xs:enumeration value="RegistrationRequired"/>
84. <xs:enumeration value="RelationshipCriteria"/>
85. <xs:enumeration value="ResetPassword"/>
86. <xs:enumeration value="ResourceCurrentRelativeToPrincipal"/>
87. <xs:enumeration value="ResourceCurrentSet"/>
88. <xs:enumeration value="ResourceFinalRelativeToPrincipal"/>
89. <xs:enumeration value="ResourceFinalSet"/>
90. <xs:enumeration value="ResourceTime"/>
91. <xs:enumeration value="SIDHistory"/>
92. <xs:enumeration value="SyncConfig-attribute-inclusion"/>
93. <xs:enumeration value="SyncConfig-capabilities-mask"/>
94. <xs:enumeration value="SyncConfig-category"/>
95. <xs:enumeration value="SyncConfig-component\_mappings"/>
96. <xs:enumeration value="SyncConfig-controller-configuration"/>
97. <xs:enumeration value="SyncConfig-creation-time"/>
98. <xs:enumeration value="SyncConfig-dn-construction"/>
99. <xs:enumeration value="SyncConfig-encrypted-attributes"/>
100. <xs:enumeration value="SyncConfig-export-attribute-flow"/>
101. <xs:enumeration value="SyncConfig-export-type"/>
102. <xs:enumeration value="SyncConfig-extension"/>
103. <xs:enumeration value="SyncConfig-format-version"/>
104. <xs:enumeration value="SyncConfig-id"/>
105. <xs:enumeration value="SyncConfig-import-attribute-flow"/>
106. <xs:enumeration value="SyncConfig-internal-version"/>
107. <xs:enumeration value="SyncConfig-join"/>
108. <xs:enumeration value="SyncConfig-last-modification-time"/>
109. <xs:enumeration value="SyncConfig-ma-companyname"/>
110. <xs:enumeration value="SyncConfig-ma-listname"/>
111. <xs:enumeration value="SyncConfig-ma-partition-data"/>
112. <xs:enumeration value="SyncConfig-ma-run-data"/>
113. <xs:enumeration value="SyncConfig-ma-ui-settings"/>
114. <xs:enumeration value="SyncConfig-mv-deletion"/>
115. <xs:enumeration value="SyncConfig-password-change-history-size"/>
116. <xs:enumeration value="SyncConfig-password-sync"/>
117. <xs:enumeration value="SyncConfig-password-sync-allowed"/>
118. <xs:enumeration value="SyncConfig-private-configuration"/>
119. <xs:enumeration value="SyncConfig-projection"/>
120. <xs:enumeration value="SyncConfig-provisioning"/>
121. <xs:enumeration value="SyncConfig-provisioning-cleanup"/>
122. <xs:enumeration value="SyncConfig-provisioning-cleanup-type"/>
123. <xs:enumeration value="SyncConfig-provisioning-type"/>
124. <xs:enumeration value="SyncConfig-schema"/>
125. <xs:enumeration value="SyncConfig-stay-disconnector"/>
126. <xs:enumeration value="SyncConfig-sub-type"/>
127. <xs:enumeration value="SyncConfig-version"/>
128. <xs:enumeration value="SynchronizationRuleParameters"/>
129. <xs:enumeration value="Temporal"/>
130. </xs:restriction>
131. </xs:simpleType>
132. </xs:schema>

#### DialectType

The simple type **rm:DialectType** derives from **xs:anyURI** and requires that the URI be set to:

1. http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602
2. <?xml version="1.0" encoding="utf-8"?>
3. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
4. <xs:simpleType name="DialectType">
5. <xs:restriction base="xs:anyURI">
6. <xs:enumeration value="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602"/>
7. </xs:restriction>
8. </xs:simpleType>
9. </xs:schema>

#### EnumerationDirectionType

The simple type **rm:EnumerationDirectionType** derives from **xs:string** and MUST be the value "Forwards".

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:simpleType name="EnumerationDirectionType">
4. <xs:restriction base="xs:string">
5. <xs:enumeration value="Forwards"/>
6. </xs:restriction>
7. </xs:simpleType>
8. </xs:schema>

#### FilterDialectType

The simple type **rm:FilterDialectType** derives from **xs:anyURI** and requires that the URI be:

1. http://schemas.microsoft.com/2006/11/XPathFilterDialect
2. <?xml version="1.0" encoding="utf-8"?>
3. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
4. <xs:simpleType name="FilterDialectType">
5. <xs:restriction base="xs:anyURI">
6. <xs:enumeration value="http://schemas.microsoft.com/2006/11/XPathFilterDialect"/>
7. </xs:restriction>
8. </xs:simpleType>
9. </xs:schema>

#### FilterQueryType

The simple type **rm:FilterQueryType** derives from **xs:string** and restricts the value to one of a set of specified string values.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:simpleType name="FilterQueryType">
4. <xs:restriction base="xs:string">
5. <xs:enumeration value="/ma-data"/>
6. <xs:enumeration value="/mv-data"/>
7. <xs:enumeration value="/Person"/>
8. <xs:enumeration value="/ManagementPolicyRule"/>
9. <xs:enumeration value="/Set"/>
10. </xs:restriction>
11. </xs:simpleType>
12. </xs:schema>

#### ReferenceType

The simple type **rm:ReferenceType** uniquely identifies a configuration object and contains a [**GUID**](#gt_f49694cc-c350-462d-ab8e-816f0103c6c1). **rm:ReferenceType** extends **xs:string** with the following restrictions:

* Preceded by the literal "urn:uuid:"
* A reference type is of format GUID ([[MS-DTYP]](%5bMS-DTYP%5d.pdf#Section_cca2742956894a16b2b49325d93e4ba2) section 2.3.2.3).
* No open bracket ({) at the beginning and no close bracket (}) at the end of the reference type.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:simpleType name="ReferenceType">
4. <xs:restriction base="xs:string">
5. <xs:pattern value="urn:uuid:([0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12})" />
6. </xs:restriction>
7. </xs:simpleType>
8. </xs:schema>

#### StartingIndexType

The simple type **rm:StartingIndexType** derives from **xs:integer**.

1. <?xml version="1.0" encoding="utf-8"?>
2. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <xs:simpleType name="StartingIndexType">
4. <xs:restriction base="xs:integer"/>
5. </xs:simpleType>
6. </xs:schema>

### Attributes

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

### Groups

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

### Attribute Groups

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

# Protocol Details

The following sections describe the behavior of the UPS: Configuration Protocol Extensions. The server exposes three endpoints that are described in depth in section [3.1](#Section_55247f2a4b954989bedd818e86e7e05c): Resource, ResourceFactory, and Enumeration.

This protocol extends [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) and [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) and follows the client-server model, in which a client sends a SOAP message containing an encrypted request to the server and the server responds with a SOAP message containing either an encrypted response or an encrypted SOAP fault if an error occurs during server processing. SOAP messages are transported using [[WSSE 1.0]](https://go.microsoft.com/fwlink/?LinkId=113701) for signing and encryption. Each SOAP message that is received by either the client or the server is processed by [WSSE 1.0] for verification and decryption steps prior to being provided to this protocol. See section [5.1](#Section_580f57fc7ed149e99fcfa67a995237ed) for security considerations.

This protocol allows protocol servers to notify protocol clients of application-level faults using SOAP faults. Except where specified, these SOAP faults are not significant for interoperability, and protocol clients can interpret them in an implementation-specific manner.

## Server Details

The Server role defines three endpoints: Resource, ResourceFactory, and Enumeration.

The Resource endpoint is defined by the **Resource** port type in [[WXFR]](https://go.microsoft.com/fwlink/?LinkId=90587) and is used to process the following operations:

* **Get** (section [3.1.4.1](#Section_402385a9ca734114b5b097ba9b00435b))
* **Put** (section [3.1.4.2](#Section_db3e81d73544458481b70cd48ef8410d))
* **Delete** (section [3.1.4.3](#Section_afd5575282214d88b1dd598a80829b66))

The ResourceFactory endpoint is defined by the **ResourceFactory** port type in [WXFR] and is used to process the following operation:

* **Create** (section [3.1.4.4](#Section_1c82904d4d554570a852d48269b9df05))

The Enumeration endpoint is defined by the **DataSource** port type in [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580) and is used to process the following operations:

* **Enumerate** (section [3.1.4.5](#Section_bce96c63da3c4fcbbdcc1fb2cc2f8268))
* **Pull** (section [3.1.4.6](#Section_c8c150b28fac4b8980ddbc9ea4fe3c69))
* **Release** (section [3.1.4.7](#Section_2503ef84c4234805951c589b22591f09))
* **GetStatus** (section [3.1.4.9](#Section_e48ca955e20b4abbb39ca26ce418b731))
* **Renew** (section [3.1.4.8](#Section_61a73eb59bed4bf8978cfd692f975b78))

### Abstract Data Model

No new abstract data model is needed other than that specified in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) and [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77).

### Timers

None.

### Initialization

The server MUST configure the symmetric key for use in [[WSSC1.3]](https://go.microsoft.com/fwlink/?LinkId=131545).

### Message Processing Events and Sequencing Rules

This section defines the operations supported by the Resource, ResourceFactory, and Enumeration endpoints.

| WSDL Operation | Endpoint | Description |
| --- | --- | --- |
| **Get** (section [3.1.4.1](#Section_402385a9ca734114b5b097ba9b00435b)) | Resource | Retrieves one or more identity attributes from a configuration object. |
| **Put** (section [3.1.4.2](#Section_db3e81d73544458481b70cd48ef8410d)) | Resource | Modifies the contents of one or more identity attributes on a configuration object. |
| **Delete** (section [3.1.4.3](#Section_afd5575282214d88b1dd598a80829b66)) | Resource | Removes an existing configuration object. |
| **Create** (section [3.1.4.4](#Section_1c82904d4d554570a852d48269b9df05)) | ResourceFactory | Creates a new configuration object. |
| **Enumerate** (section [3.1.4.5](#Section_bce96c63da3c4fcbbdcc1fb2cc2f8268)) | Enumeration | Requests to start an enumeration and receive an enumeration context. |
| **Pull** (section [3.1.4.6](#Section_c8c150b28fac4b8980ddbc9ea4fe3c69)) | Enumeration | Requests to retrieve the configuration objects identified by an **Enumerate** request. |
| **Release** (section [3.1.4.7](#Section_2503ef84c4234805951c589b22591f09)) | Enumeration | Releases an enumeration context retrieved from an **Enumerate** operation. |
| **Renew** (section [3.1.4.8](#Section_61a73eb59bed4bf8978cfd692f975b78)) | Enumeration | Renews an enumeration context. |
| **GetStatus** (section [3.1.4.9](#Section_e48ca955e20b4abbb39ca26ce418b731)) | Enumeration | Gets the expiration of an enumeration context. |

Beyond the resource data model requirements of [[WXFR]](https://go.microsoft.com/fwlink/?LinkId=90587), [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536), and [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77), there are no sequencing requirements for the server role in the **Create**, **Get**, **Put**, and **Delete** operations. The definitions of identity attributes in [MS-UPSCDS] include specification of requirements on the server role when processing a **Create** or a **Put** operation that includes one or more identity attributes.

The **Pull**, **Release**, **Renew**, and **GetStatus** operations MUST include the enumeration context obtained from the response of the **Enumerate** operation. Therefore, the **Pull**, **Release**, **Renew**, and **GetStatus** operations MUST be invoked subsequent to the **Enumerate** operation.

When the server receives a request that contains a **diag:ActivityID**, the server MUST process this header based on the processing rules specified in [[MS-NETTR]](%5bMS-NETTR%5d.pdf#Section_9c5f8cb55a4f425a9c384f1a2b46e6d0).

When the server receives a request that contains a **wsc:ContextID**, the server MUST process this header based on the processing rules specified in [[MC-NETCEX]](%5bMC-NETCEX%5d.pdf#Section_a7f26280491f465b9914c5eb5322dbb4).

#### Get

The protocol client uses the **Get** operation to retrieve specific identity attributes of one configuration object.

A client sends the message **BaseObjectSearchRequestMessage** (section [2.2.2.3](#Section_b99626608193402ca8416f45adcb62fe)) to request the server to retrieve an existing configuration object. If the server accepts the request, the server MUST send message **BaseObjectSearchResponseMessage** (section [2.2.2.4](#Section_61bf04209ab647be924d5b0e7790feae)) in response.

1. s:Header/rm:ResourceReferenceProperty

The server MUST use the value in the request message SOAP header element **rm:** **ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)) to identify which configuration object to retrieve. If the element **rm:ResourceReferenceProperty** is not present, then the server behavior is undefined.

1. da:BaseObjectSearchResponse/da:PartialAttribute

The element **da:BaseObjectSearchResponse** in message **BaseObjectSearchResponseMessage** MUST include one element **da:PartialAttribute** (section [2.2.3.16](#Section_c04ea7273f7f4aebbeb1b001f7ddf445)) for each element **da:AttributeType** (section [2.2.3.2](#Section_1f947c3696454ddaa9ae493e9e272838)) in the element **da:BaseObjectSearchRequest** in message **BaseObjectSearchRequestMessage**. The server MUST respond with the current value of each requested identity attribute.

If the client does not have permission to retrieve any of the requested identity attributes of the configuration object, then the server MUST respond with the **PermissionDeniedFault** (section [2.2.2.11](#Section_ce89f9c2574249719919a0ce83f7f61b)) SOAP fault.

If the client provides a malformed **BaseObjectSearchRequestMessage** message that does not satisfy the definition in section 2.2.2.3, then the server behavior is undefined.

1. <wsdl:operation name="Get">
2. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get" style="document" />
3. <wsdl:input message="da:BaseObjectSearchRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get">
4. <soap12:body use="literal" />
5. <soap12:header message="da:BaseObjectSearchRequestMessage" part="operationheader" use="literal"/>
6. </wsdl:input>
7. <wsdl:output message="da:BaseObjectSearchResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse">
8. <soap12:body use="literal" />
9. </wsdl:output>
10. <wsdl:fault name="InvalidRepresentation ">
11. <soap12:fault use="literal" name="InvalidRepresentation" namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
12. </wsdl:fault>
13. <wsdl:fault name="PermissionDeniedFault">
14. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
15. </wsdl:fault>
16. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| BaseObjectSearchRequestMessage | See **BaseObjectSearchRequestMessage** (section [2.2.2.3](#Section_b99626608193402ca8416f45adcb62fe)). |
| BaseObjectSearchResponseMessage | See **BaseObjectSearchResponseMessage** (section [2.2.2.4](#Section_61bf04209ab647be924d5b0e7790feae)). |

##### Elements

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

| Element | Description |
| --- | --- |
| rm:ResourceReferenceProperty | See **ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)). |
| da:PartialAttribute | See **PartialAttribute** (section [2.2.3.16](#Section_c04ea7273f7f4aebbeb1b001f7ddf445)). |
| da:AttributeType | See **AttributeType** (section [2.2.3.2](#Section_1f947c3696454ddaa9ae493e9e272838)). |
| da:BaseObjectSearchRequest | See **BaseObjectSearchRequest** (section [2.2.3.5](#Section_a3fe32a3b85a4d5e90d8d533902f5b77)). |

#### Put

The protocol client uses the **Put** operation to modify specific identity attributes of one existing configuration object.

The protocol client sends the message **ModifyRequestMessage** (section [2.2.2.12](#Section_e0083c16ffb140878c8877cb871836c4)) to request the server to change the values of identity attributes on an existing configuration object. If the server accepts the request, then the server MUST send message **ModifyResponseMessage** (section [2.2.2.13](#Section_71102e15da6e4fddbcaed3392d16a022)) in response.

1. s:Header/rm:ResourceReferenceProperty

The server MUST use the value in the request message SOAP header element **rm:** **ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)) to identify which configuration object to modify. If the **rm:ResourceReferenceProperty** element is not present, then the server MUST respond with the **InvalidRepresentation** (section [2.2.2.21](#Section_765140fbe5464e5cb3559b069df37307)) SOAP fault.

If the server accepts the request, then the server MUST apply all changes to the configuration object.

If the client provides a malformed message **ModifyRequestMessage** that does not satisfy the definition in section 2.2.2.12, then the server MUST respond with an **InvalidRepresentation** (section 2.2.2.21) SOAP fault.

If the client does not have permission to change one or more of the identity attributes then the server MUST respond with a **PermissionDeniedFault** (section [2.2.2.11](#Section_ce89f9c2574249719919a0ce83f7f61b)) SOAP fault.

If the client provides a new value that does not match the representation defined in [[MS-UPSCDS]](%5bMS-UPSCDS%5d.pdf#Section_f817255989dd4bb69a70fcf9a3dc1e77), the server MUST respond with an InvalidRepresentation SOAP fault.

As a profile of [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536), this specification requires the WSDL operation **Put** (section 3.1.4.2) to distinguish modifying single-valued and multi-valued identity attributes. Single-valued and multi-valued are defined in [MS-UPSCDS] section [2](#Section_c454f68374384297bfaac0bf62c7fe5f). If the client requests to change a single-valued identity attribute with XML attribute **da:operation** of either values "add" or "delete", then the server MUST respond with an **UnwillingToPerform** (section [2.2.2.20](#Section_78504395a689401693e34e81ca066cac)) SOAP fault. If the client requests to change a single-valued identity attribute with XML attribute da:operation set to value "replace", and the server otherwise accepts the message, then the server MUST replace the existing value with the new value.

If the client requests to change a multi-valued identity attribute with XML attribute **da:operation** set to value "replace", then the server MUST respond with an **UnwillingToPerform** SOAP fault.

If the client requests to change a multi-valued identity attribute with XML attribute **da:operation** set to value "add", and the server otherwise accepts the message, then the server SHOULD[<1>](#Appendix_A_1" \o "Product behavior note 1) add the new value to the multi-valued identity attribute. There is no requirement that the order of added values be preserved. If the new value already exists as a value of the multi-valued identity attribute, then the server MUST respond with an **UnwillingToPerform** SOAP fault.

If the client requests to change a multi-valued identity attribute with XML attribute **da:operation** set to value "delete", and the server otherwise accepts the message, then the server SHOULD[<2>](#Appendix_A_2" \o "Product behavior note 2) remove the new value from the multi-valued identity attribute. If the new value does not exist in the multi-valued identity attribute, then the server MUST respond with an UnwillingToPerform SOAP fault.

If the client requests to change any of the following identity attributes:

* ObjectID
* ObjectType
* Creator
* CreatedTime
* ResourceTime
* DeletedTime

then the server MUST respond with an **InvalidRepresentation** SOAP fault.

1. <wsdl:operation name="Put">
2. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put" style="document" />
3. <wsdl:input message="da:ModifyRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put">
4. <soap12:body use="literal" />
5. <soap12:header message="da:ModifyRequestMessage" part="operationheader" use="literal"/>
6. </wsdl:input>
7. <wsdl:output message="da:ModifyResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/PutResponse">
8. <soap12:body use="literal" />
9. </wsdl:output>
10. <wsdl:fault name="InvalidRepresentation ">
11. <soap12:fault use="literal" name="I" namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
12. </wsdl:fault>
13. <wsdl:fault name="PermissionDeniedFault">
14. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
15. </wsdl:fault>
16. <wsdl:fault name="UnwillingToPerform ">
17. <soap12:fault use="literal" name="UnwillingToPerform" namespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" />
18. </wsdl:fault>
19. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| ModifyRequestMessage | See **ModifyRequestMessage** (section [2.2.2.12](#Section_e0083c16ffb140878c8877cb871836c4)). |
| ModifyResponseMessage | See **ModifyResponseMessage** (section [2.2.2.13](#Section_71102e15da6e4fddbcaed3392d16a022)). |

##### Elements

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

| Element | Description |
| --- | --- |
| rm:ResourceReferenceProperty | See **ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)). |
| da:ModifyRequest | See **ModifyRequest** (section [2.2.3.15](#Section_1186d376fde744bab741868d92a16314)). |
| da:Change | See **Change** (section [2.2.3.6](#Section_222602b2dd5e4da695effad59b587c5b)). |

##### Attributes

The following table summarizes the XML Schema attribute definitions that are specific to this operation.

| Attribute | Description |
| --- | --- |
| da:Operation | See **Change** section [2.2.3.6](#Section_222602b2dd5e4da695effad59b587c5b). |

#### Delete

The protocol client uses the **Delete** operation to delete an existing configuration object.

The protocol client sends the message **DeleteRequestMessage** section [2.2.2.5](#Section_bba048cda3234d9dba4b4579edc31a0f) to request the server to delete one existing configuration object. If the server accepts the request, then the server MUST send message **DeleteResponseMessage** section [2.2.2.6](#Section_176978e8266f4d71aaaff679ae10d8d3)in response.

1. s:Header/rm:ResourceReferenceProperty

The server MUST use the value in the request message SOAP header element **rm:ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)) to identify which configuration object to delete.

If the server accepts the request then the server MUST delete the configuration object.

If the configuration object does not exist, then the server MUST respond with an **EndpointUnavailable** (section [2.2.2.22](#Section_af39a8aea5f74f3ea812bc813a9151ed)) SOAP fault.

If the client does not have permission to delete the configuration object, then the server MUST respond with a **PermissionDeniedFault** (section [2.2.2.11)](#Section_ce89f9c2574249719919a0ce83f7f61b) SOAP fault.

1. <wsdl:operation name="Delete">
2. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete" style="document" />
3. <wsdl:input message="da:DeleteRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete">
4. <soap12:header message="da:DeleteRequestMessage" part="objectidentityheader" use="literal"/>
5. </wsdl:input>
6. <wsdl:output message="da:DeleteResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse">
7. <soap12:body use="literal" />
8. </wsdl:output>
9. <wsdl:fault name="EndpointUnavailable"> <soap12:fault use="literal" name="EndpointUnavailable" namespace="http://schemas.xmlsoap.org/ws/2004/08/addressing"/>
10. </wsdl:fault>
11. <wsdl:fault name="PermissionDeniedFault">
12. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
13. </wsdl:fault>
14. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| DeleteRequestMessage | See **DeleteRequestMessage** (section [2.2.2.5](#Section_bba048cda3234d9dba4b4579edc31a0f)). |
| DeleteResponseMessage | See **DeleteResponseMessage** (section [2.2.2.6](#Section_176978e8266f4d71aaaff679ae10d8d3)). |

##### Elements

The following table summarizes the WSDL Schema element definitions that are specific to this operation.

| Element | Description |
| --- | --- |
| rm:ResourceReferenceProperty | See **ResourceReferenceProperty** (section [2.2.3.22](#Section_ae8367632f4c4278a00c3f4a03469369)). |

#### Create

The protocol client uses the **Create** operation to create a new configuration object.

The protocol client sends the message **AddRequestMessage** (section [2.2.2.1](#Section_f11a5e46e3964dd5b68fa94e414327ee)) to request the server to create one new configuration object. If the server accepts the request, then the server MUST send message **AddResponseMessage** (section [2.2.2.2](#Section_10af2a1e1afa45d186e05057ff5d91a3)) in response.

If the server accepts the request then the server MUST create the configuration object.

If the client does not have permission to create the configuration object, then the server MUST respond with a **PermissionDeniedFault** (section [2.2.2.11](#Section_ce89f9c2574249719919a0ce83f7f61b)) SOAP fault.

If the client provides a malformed message **AddRequestMessage** that does not satisfy the definition in section 2.2.2.1, then the server MUST respond with an **InvalidRepresentation** (section [2.2.2.21](#Section_765140fbe5464e5cb3559b069df37307)) SOAP fault.

If the client requests to provide values for any of the following identity attributes, then the server MUST respond with an **InvalidRepresentation** SOAP fault:

* ObjectId
* Creator
* CreatedTime
* ResourceTime
* DeletedTime

1. <wsdl:operation name="Create">
2. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create" style="document" />
3. <wsdl:input message="da:AddRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create">
4. <soap12:body use="literal" />
5. <soap12:header message="da:AddRequestMessage" part="operationheader" use="literal"/>
6. </wsdl:input>
7. <wsdl:output message="da:AddResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse">
8. <soap12:body use="literal" />
9. </wsdl:output>
10. <wsdl:fault name="InvalidRepresentation ">
11. <soap12:fault use="literal" name="InvalidRepresentation" namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
12. </wsdl:fault>
13. <wsdl:fault name="PermissionDeniedFault">
14. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
15. </wsdl:fault>
16. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| AddRequestMessage | See **AddRequestMessage** (section [2.2.2.1](#Section_f11a5e46e3964dd5b68fa94e414327ee)). |
| AddResponseMessage | See **AddResponseMessage** (section [2.2.2.2](#Section_10af2a1e1afa45d186e05057ff5d91a3)). |

#### Enumerate

The protocol client uses the **Enumerate** operation to select existing configuration objects that match a given filter.

The protocol client sends the message **EnumerateMessage** (section [2.2.2.7](#Section_c1c54249019f4850b3aa57503cabff99)) to request the server to initiate a new enumeration context and return zero or more configuration objects that match the filter. If the server accepts the request, then the server MUST send message **EnumerateResponseMessage** (section [2.2.2.8](#Section_c5df18b357974c0c8a3f1e0c4e362a19)) in response.

As a profile of [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580), the server MUST NOT send **wsen:FilterDialectRequestedUnavailable** SOAP fault. The server MUST NOT send **wsen:CannotProcessFilter** SOAP fault. The server MUST NOT send **wsen:InvalidExpirationTime** SOAP fault.

If a configuration object matches the filter and the client does not have permission to read the configuration object, then the server MUST omit the configuration object from the results.

If **wsen:Filter** (section [2.2.3.12](#Section_1dfac4919ae8435da2e9b33d3f6fb113)) is the value "/ma-data", then the server MUST return in this response and subsequent responses zero or more configuration objects with identity attribute **ObjectType** set to "ma-data".

If **wsen:Filter** is the value "/mv-data", then the server MUST return in this response and subsequent responses zero or more configuration objects with identity attribute **ObjectType** set to "mv-data".

If **wsen:Filter** is the value "/Person", then the server MUST return in this response and subsequent responses zero or more configuration objects with identity attribute **ObjectType** set to "Person".

If **wsen:Filter** is the value "/ManagementPolicyRule", then the server MUST return in this response and subsequent responses zero or more configuration identity objects with attribute **ObjectType** set to "ManagementPolicyRule".

If **wsen:Filter** is the value "/Set", then the server MUST return in this response and subsequent responses zero or more configuration objects with identity attribute **ObjectType** set to "Set".

The server returns the first **wsen:MaxElements** number of objects in the response. The remaining configuration objects are left for subsequent **Pull** (section [3.1.4.6](#Section_c8c150b28fac4b8980ddbc9ea4fe3c69)) operations. If the number of objects returned is fewer than or equal to **wsen:MaxElements**, then the server MUST include **wsen:EndOfSequence** and MUST NOT include **wsen:EnumerationContext**.

To operate on the results produced in EnumerateResponseMessage, the client MUST set the **wsen:EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)) value to the server for all further [WSENUM] messages except **Enumerate**.

1. <wsdl:operation name="Enumerate">
2. <wsdl:input
3. message="wsen:EnumerateMessage"
4. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate"
5. />
6. <wsdl:output
7. message="wsen:EnumerateResponseMessage"
8. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse"
9. />
10. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| EnumerateMessage | See **EnumerateMessage** (section [2.2.2.7](#Section_c1c54249019f4850b3aa57503cabff99)). |
| EnumerateResponseMessage | See **EnumerateResponseMessage** (section [2.2.2.8](#Section_c5df18b357974c0c8a3f1e0c4e362a19)). |

##### Elements

The following table summarizes the WSDL Schema element definitions that are specific to this operation.

| Element | Description |
| --- | --- |
| wsen:Filter | See **Filter** (section [2.2.3.12](#Section_1dfac4919ae8435da2e9b33d3f6fb113)). |
| wsen:MaxElements | The maximum number of elements to return in an **EnumerateResponse** (section [2.2.3.8](#Section_85b368208b624becbcd284e88432cd05)). |
| wsen:EnumerationContext | See **EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)). |

###### MaxElements

The maximum number of elements to return in an **EnumerateResponse** (section [2.2.3.8](#Section_85b368208b624becbcd284e88432cd05)).

As an extension to [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580), the element **wsen:MaxElements** MUST be present as a child of **wsen:Enumerate**. The element **wsen:MaxElements** is defined in [WSENUM] section 3.2.

#### Pull

The protocol client uses the **Pull** operation to retrieve additional configuration objects that match the filter provided in a preceding **Enumerate** operation (section [3.1.4.5](#Section_bce96c63da3c4fcbbdcc1fb2cc2f8268)).

The protocol client sends the message **PullMessage** (section [2.2.2.14](#Section_2647f4c2465f4cce9bf38647c5ecdd04)) to request the server to retrieve additional configuration objects that match the filter. If the server accepts the request, then the server MUST send message **PullResponseMessage** (section [2.2.2.15](#Section_90a97f91c3a547c88e40de3344d175c1)) in response.

As a profile of [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580), the server MUST NOT send **wsen:InvalidEnumerationContext** SOAP fault. The server MUST NOT send **wsen:TimedOut** SOAP fault.

If the number of objects returned is fewer than **wsen:MaxElements**, then the server MUST include **wsen:EndOfSequence** and MUST NOT include **wsen:EnumerationContext**.

1. <wsdl:operation name="Pull">
2. <wsdl:input
3. message="wsen:PullMessage"
4. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull"
5. />
6. <wsdl:output
7. message="wsen:PullResponseMessage"
8. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse"
9. />
10. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| PullMessage | See **PullMessage** (section [2.2.2.14](#Section_2647f4c2465f4cce9bf38647c5ecdd04)). |
| PullResponseMessage | See **PullResponseMessage** (section [2.2.2.15](#Section_90a97f91c3a547c88e40de3344d175c1)). |

#### Release

The protocol client uses the **Release** operation to notify the protocol server that the protocol client no longer uses its enumeration context.

The protocol client sends the message **ReleaseMessage** (section [2.2.2.16](#Section_34f8ce38340549d290c830dc296d09f1)) to request that the element **wsen:** **EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)) be released. If the server accepts the request, then the server MUST send the message **ReleaseResponseMessage** (section [2.2.2.17](#Section_0b99adf177d74382beef46f33a7e771b)) in response.

1. <wsdl:operation name="Release">
2. <wsdl:input
3. message="wsen:ReleaseMessage"
4. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release"
5. />
6. <wsdl:output
7. message="wsen:ReleaseResponseMessage"
8. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse"
9. />
10. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| ReleaseMessage | See **ReleaseMessage** (section [2.2.2.16](#Section_34f8ce38340549d290c830dc296d09f1)). |
| ReleaseResponseMessage | See **ReleaseResponseMessage** (section [2.2.2.17](#Section_0b99adf177d74382beef46f33a7e771b)). |

#### Renew

The protocol client uses the **Renew** operation to renew its enumeration context.

The protocol client sends the message **RenewMessage** (section [2.2.2.18](#Section_f90764319d1a46208912cc28be48a49e)) to request that the element **wsen:EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)) be renewed. If the server accepts the request, then the server MUST send message **RenewResponseMessage** (section [2.2.2.19](#Section_1a80000b829c4955a6b6baa8f6c590c2)) in response.

As a profile of [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580), the server MUST NOT send a **wsen:UnableToRenew** SOAP fault.

1. <wsdl:operation name="Renew" >
2. <wsdl:input
3. message="wsen:RenewMessage"
4. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew"
5. />
6. <wsdl:output
7. message="wsen:RenewResponseMessage"
8. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse"
9. />
10. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| RenewMessage | See **RenewMessage** (section [2.2.2.18](#Section_f90764319d1a46208912cc28be48a49e)). |
| RenewResponseMessage | See **RenewResponseMessage** (section [2.2.2.19](#Section_1a80000b829c4955a6b6baa8f6c590c2)). |

#### GetStatus

The protocol client uses the **GetStatus** operation to retrieve the current expiration of its enumeration context.

The protocol client sends the message **GetStatusMessage** (section [2.2.2.9](#Section_57e8e752a7b84a37832213cd119b596e)) to request the expiration time of the element **wsen:EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)). If the server accepts the request, then the server MUST send the message **GetStatusResponseMessage** (section [2.2.2.10](#Section_8d4f59ad5460457580b768504104a441)) in response.

1. <wsdl:operation name="GetStatus" >
2. <wsdl:input
3. message="wsen:GetStatusMessage"
4. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus"
5. />
6. <wsdl:output
7. message="wsen:GetStatusResponseMessage"
8. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse"
9. />
10. </wsdl:operation>

##### Messages

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

| Message | Description |
| --- | --- |
| GetStatusMessage | See **GetStatusMessage** (section [2.2.2.9](#Section_57e8e752a7b84a37832213cd119b596e)). |
| GetStatusResponseMessage | See **GetStatusResponseMessage** (section [2.2.2.10](#Section_8d4f59ad5460457580b768504104a441)). |

### Timer Events

None.

### Other Local Events

None.

## Client Details

The UPS: Configuration Protocol Extensions client exchanges messages with three server endpoints defined in section [3.1](#Section_55247f2a4b954989bedd818e86e7e05c).

### Abstract Data Model

No new abstract data model is needed other than that specified in [[MS-WSTIM]](%5bMS-WSTIM%5d.pdf#Section_08164681df9149bda0eace949d1cc536) and [[WSENUM]](https://go.microsoft.com/fwlink/?LinkId=90580).

### Timers

None.

### Initialization

The initial conditions of this protocol include acquisition by the client of the server URL to which to connect and of the necessary server-side permissions, as determined by the protocol server's rights model. These initial conditions are implementation-dependent and do not affect interoperability.

The client MUST configure the symmetrical key for use in [[WSSC1.3]](https://go.microsoft.com/fwlink/?LinkId=131545). No additional initialization is required beyond that specified in [[SOAP1.2-1/2007]](https://go.microsoft.com/fwlink/?LinkId=94664) and [WSSC1.3].

### Message Processing Events and Sequencing Rules

There is no sequence required for the operations **Create** (section [3.1.4.4](#Section_1c82904d4d554570a852d48269b9df05)), **Get** (section [3.1.4.1](#Section_402385a9ca734114b5b097ba9b00435b)), **Put** (section [3.1.4.2](#Section_db3e81d73544458481b70cd48ef8410d)), and **Delete** (section [3.1.4.3](#Section_afd5575282214d88b1dd598a80829b66)). The operations **Pull** (section [3.1.4.6](#Section_c8c150b28fac4b8980ddbc9ea4fe3c69)), **Release** (section [3.1.4.7](#Section_2503ef84c4234805951c589b22591f09)), **Renew** (section [3.1.4.8)](#Section_61a73eb59bed4bf8978cfd692f975b78), and **GetStatus** (section [3.1.4.9](#Section_e48ca955e20b4abbb39ca26ce418b731)) MUST follow the operation **Enumerate** (section [3.1.4.5](#Section_bce96c63da3c4fcbbdcc1fb2cc2f8268)). The element **wsen:EnumerationContext** (section [2.2.3.9](#Section_f5c9971ad29a4af29dac4ca7ca662543)) included in the response message operation **Enumerate** MUST be included in the requests of operations **Pull**, **Release**, **Renew**, and **GetStatus**.

The client MUST omit **rm:StartingIndex** for the operation **Enumerate** and MUST send as the value of **rm:StartingIndex** in each subsequent **Pull** operation for the enumeration context returned by **Enumerate** the value of **rm:CurrentIndex** returned to the client from the previous **Pull** or **Enumerate** response for that enumeration context.

The client MAY send a request that contains a **diag:ActivityID** that conforms to the schema and processing rules specified in [[MS-NETTR]](%5bMS-NETTR%5d.pdf#Section_9c5f8cb55a4f425a9c384f1a2b46e6d0).

The client MAY send a request that contains a **wsc:ContextID** that conforms to the schema and processing rules specified in [[MC-NETCEX]](%5bMC-NETCEX%5d.pdf#Section_a7f26280491f465b9914c5eb5322dbb4).

### Timer Events

None.

### Other Local Events

None.

# Protocol Examples

This section provides examples of the messages described in section [3](#Section_00856f5268ce4ea29a8864603159540e), prior to any encryption being applied to the contents of the messages by the WS-Security encryption step for transport.

## Example of Creating a Synchronization Object

In this example, the protocol client requests the protocol server to create a new synchronization object using the **Create** operation (section [3.1.4.4](#Section_1c82904d4d554570a852d48269b9df05)). The client sends the message **AddRequestMessage** (section [4.1.1](#Section_ce923a866cff4b0cb539f928ba8c27f4)), and the server responds with message **AddResponseMessage** (section [4.1.2](#Section_f83c091abedb4f24accf401e8860477a)).

### SOAP AddRequestMessage

1. <?xml version="1.0" encoding="utf-8"?>
2. <s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
3. xmlns:wsa="http://www.w3.org/2005/08/addressing">
4. <s:Header>
5. <wsa:Action s:mustUnderstand="1">http://schemas.xmlsoap.org/ws/2004/09/transfer/Create</wsa:Action>
6. <da:IdentityManagementOperation s:mustUnderstand="1" />
7. <wsa:ReplyTo>
8. <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
9. </wsa:ReplyTo>
10. <wsa:To s:mustUnderstand="1">http://localhost:5725/ResourceManagementService/ResourceFactory</wsa:To> </s:Header>
11. <s:Body>
12. <da:AddRequest Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
13. <da:AttributeTypeAndValue>
14. <da:AttributeType>ObjectType</da:AttributeType>
15. <da:AttributeValue>
16. <rm:ObjectType>ma-data</rm:ObjectType>
17. </da:AttributeValue>
18. </da:AttributeTypeAndValue>
19. <da:AttributeTypeAndValue>
20. <da:AttributeType>DisplayName</da:AttributeType>
21. <da:AttributeValue>
22. <rm:DisplayName>
23. Active Directory Management Agent
24. </rm:DisplayName>
25. </da:AttributeValue>
26. </da:AttributeTypeAndValue>
27. </da:AddRequest>
28. </s:Body>
29. </s:Envelope>

### SOAP AddResponseMessage

1. <s:Envelope xmlns:wsa="http://www.w3.org/2005/08/addressing" xmlns:s="http://www.w3.org/2003/05/soap-envelope"
2. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
3. <s:Header>
4. <wsa:Action s:mustUnderstand="1">http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse</wsa:Action>
5. <wsa:RelatesTo>urn:uuid:0ad4aa5a-80d2-4afb-a7ba-718b93dc1f53</wsa:RelatesTo>
6. </s:Header>
7. <s:Body>
8. <ResourceCreated xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://schemas.xmlsoap.org/ws/2004/09/transfer">
9. <wsa:EndpointReference>
10. <Address>http://127.0.0.1:5725/ResourceManagementService/Resource</Address>
11. <wsa:ReferenceProperties>
12. <rm:ResourceReferenceProperty>urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278</rm:ResourceReferenceProperty>
13. </wsa:ReferenceProperties>
14. </wsa:EndpointReference>
15. </ResourceCreated>
16. </s:Body>
17. </s:Envelope>

## Example of Retrieving a Synchronization Object

In this example, the protocol client requests the protocol server to retrieve the previously created configuration object using the **Get** operation (section [3.1.4.1](#Section_402385a9ca734114b5b097ba9b00435b)). The client sends the message **BaseObjectSearchRequestMessage** (section [4.2.1](#Section_d0166081c58341d891c058c249e436c5)), and the server responds with message **BaseObjectSearchResponseMessage** (section [4.2.2](#Section_7d68b369f5fb47fd985eb3f4e983df3f)).

### SOAP BaseObjectSearchRequestMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://www.w3.org/2005/08/addressing"
4. xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5. xmlns:xsd="http://www.w3.org/2001/XMLSchema"
6. xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
7. <s:Header>
8. <wsa:Action>http://schemas.xmlsoap.org/ws/2004/09/transfer/Get</wsa:Action>
9. <da:IdentityManagementOperation s:mustUnderstand="1" />
10. <rm:ResourceReferenceProperty>
11. urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
12. </rm:ResourceReferenceProperty>
13. <wsa:MessageID>
14. urn:uuid:928f9abe-875d-4bc1-bb5f-d1be16c035c3
15. </wsa:MessageID>
16. <wsa:ReplyTo>
17. <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
18. </wsa:ReplyTo>
19. <wsa:To>
20. http://www.fabrikam.com:5725/IdentityManagementService/Resource
21. </wsa:To>
22. </s:Header>
23. <s:Body>
24. <da:BaseObjectSearchRequest Dialect=" http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
25. <da:AttributeType>ObjectType</da:AttributeType>
26. <da:AttributeType>DisplayName</da:AttributeType>
27. </da:BaseObjectSearchRequest >
28. </s:Body>
29. </s:Envelope>

### SOAP BaseObjectSearchResponseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://www.w3.org/2005/08/addressing"
4. xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5. xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
6. xmlns:xsd="http://www.w3.org/2001/XMLSchema"
7. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
8. xmlns="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
9. <s:Header>
10. <wsa:Action>
11. http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse
12. </wsa:Action>
13. <wsa:RelatesTo>urn:uuid:928f9abe-875d-4bc1-bb5f-d1be16c035c3</wsa:RelatesTo>
14. <wsa:To>
15. http://www.w3.org/2005/08/addressing/anonymous
16. </wsa:To>
17. <wsc:Context>
18. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
19. </wsc:Context>
20. </s:Header>
21. <s:Body>
22. <da:BaseObjectSearchResponse>
23. <da:PartialAttribute>
24. <rm:ObjectType>ma-data</rm:ObjectType>
25. </da:PartialAttribute>
26. <da:PartialAttribute>
27. <rm:DisplayName>Active Directory Management Agent</rm:DisplayName>
28. </da:PartialAttribute>
29. </da:BaseObjectSearchResponse>
30. </s:Body>
31. </s:Envelope>

## Example of Modifying a Synchronization Object

In this example, the protocol client requests the protocol server to modify the previously created configuration object using the **Put** operation (section [3.1.4.2](#Section_db3e81d73544458481b70cd48ef8410d)). The client sends the message **ModifyRequestMessage** (section [4.3.1](#Section_209012fe48384ff3ad50eaefe3092fff)), and the server responds with message **ModifyResponseMessage** (section [4.3.2](#Section_076b2273bb814985b19c0047c31947f9)).

### SOAP ModifyRequestMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://www.w3.org/2005/08/addressing"
4. xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5. xmlns:xsd="http://www.w3.org/2001/XMLSchema"
6. xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
7. <s:Header>
8. <wsa:Action>
9. http://schemas.xmlsoap.org/ws/2004/09/transfer/Put
10. </wsa:Action>
11. <da:IdentityManagementOperation s:mustUnderstand="1" />
12. <rm:ResourceReferenceProperty>
13. urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
14. </rm:ResourceReferenceProperty>
15. <wsa:MessageID>
16. urn:uuid:5fb63904-b05a-408d-8a4a-4d2f9332568e
17. </wsa:MessageID>
18. <wsa:ReplyTo>
19. <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
20. </wsa:ReplyTo>
21. <wsa:To>
22. http://www.fabrikam.com:5725/IdentityManagementService/Resource
23. </wsa:To>
24. </s:Header>
25. <s:Body>
26. <da:ModifyRequest Dialect=" http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
27. <da:Change Operation="replace">
28. <da:AttributeType>DisplayName</da:AttributeType>
29. <da:AttributeValue>
30. <rm:DisplayName>AD Management Agent</rm:DisplayName>
31. </da:AttributeValue>
32. </da:Change>
33. </da:ModifyRequest>
34. </s:Body>
35. </s:Envelope>

### SOAP ModifyResponseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://www.w3.org/2005/08/addressing"
4. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context">
5. <s:Header>
6. <wsa:Action>
7. http://schemas.xmlsoap.org/ws/2004/09/transfer/PutResponse
8. </wsa:Action>
9. <wsa:RelatesTo>
10. urn:uuid:5fb63904-b05a-408d-8a4a-4d2f9332568e
11. </wsa:RelatesTo>
12. <wsa:To>
13. http://www.w3.org/2005/08/addressing/anonymous
14. </wsa:To>
15. <wsc:Context>
16. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
17. </wsc:Context>
18. </s:Header>
19. <s:Body />
20. </s:Envelope>

## Example of Deleting a Synchronization Object

In this example, the protocol client requests the protocol server to delete the previously created configuration object using the **Delete** operation (section [3.1.4.3](#Section_afd5575282214d88b1dd598a80829b66)). The client sends the message **DeleteRequestMessage** (section [4.4.1](#Section_1a9fdcc5bcdd468eb0b6fe3742b233a2)), and the server responds with message **DeleteResponseMessage** (section [4.4.2](#Section_430816fc3dc845d993fdcaf15bb066c9)).

For convenience, this example also includes encrypted versions of the message **DeleteRequestMessage** (section 4.4.2) and message **DeleteResponseMessage** (section [4.4.4](#Section_bcd8ff54937f419aa79c7e53a76968b2)) to illustrate how the protocol is represented after being passed to [[WSSP1.2/10.1]](https://go.microsoft.com/fwlink/?LinkId=130730).

### SOAP DeleteRequestMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://www.w3.org/2005/08/addressing"
4. xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5. xmlns:xsd="http://www.w3.org/2001/XMLSchema"
6. xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
7. <s:Header>
8. <wsa:Action>http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete</wsa:Action>
9. <rm:ResourceReferenceProperty>
10. urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
11. </rm:ResourceReferenceProperty>
12. <wsa:MessageID>
13. urn:uuid:c694c005-75a2-4cb1-84f9-8d6890da9958
14. </wsa:MessageID>
15. <wsa:ReplyTo>
16. <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
17. </wsa:ReplyTo>
18. <wsa:To>
19. http://www.fabrikam.com:5725/IdentityManagementService/Resource
20. </wsa:To>
21. </s:Header>
22. <s:Body />
23. </s:Envelope>

### SOAP DeleteResponseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://www.w3.org/2005/08/addressing"
4. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context">
5. <s:Header>
6. <wsa:Action>
7. http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse
8. </wsa:Action>
9. <wsa:RelatesTo>urn:uuid:c694c005-75a2-4cb1-84f9-8d6890da9958</wsa:RelatesTo>
10. <wsa:To>
11. http://www.w3.org/2005/08/addressing/anonymous
12. </wsa:To>
13. <wsc:Context>
14. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
15. </wsc:Context>
16. </s:Header>
17. <s:Body />
18. </s:Envelope>

### SOAP Encrypted DeleteRequestMessage

1. <s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
2. <s:Header>
3. <wsa:Action s:mustUnderstand="1" u:Id="\_4">http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete</wsa:Action>
4. <ResourceReferenceProperty xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">urn:uuid:88a0aad6-d9eb-454b-9bfb-b7007e3f0be7</ResourceReferenceProperty>
5. <wsa:MessageID u:Id="\_5">urn:uuid:40b2951b-abae-4503-ac1c-33ae3f595512</wsa:MessageID>
6. <wsa:ReplyTo u:Id="\_6">
7. <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
8. </wsa:ReplyTo>
9. <wsa:To s:mustUnderstand="1" u:Id="\_7">http://fimdc1:5725/ResourceManagementService/Resource</wsa:To>
10. <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
11. <u:Timestamp u:Id="uuid-14fce77a-a1a7-4423-9b3a-65e7708e28af-417">
12. <u:Created>2009-06-09T17:33:47.091Z</u:Created>
13. <u:Expires>2009-06-09T17:38:47.091Z</u:Expires>
14. </u:Timestamp>
15. <c:SecurityContextToken u:Id="uuid-ad80351b-2771-4303-b9a3-1ecf78188dbb-27" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
16. <c:Identifier>urn:uuid:cef0945a-c70c-45f6-897d-490a4032769b</c:Identifier>
17. </c:SecurityContextToken>
18. <c:DerivedKeyToken u:Id="\_0" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
19. <o:SecurityTokenReference>
20. <o:Reference ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct" URI="#uuid-ad80351b-2771-4303-b9a3-1ecf78188dbb-27"/>
21. </o:SecurityTokenReference>
22. <c:Offset>0</c:Offset>
23. <c:Length>24</c:Length>
24. <c:Nonce>s2L5LlcKfCOBkobF9uEN4A==</c:Nonce>
25. </c:DerivedKeyToken>
26. <c:DerivedKeyToken u:Id="\_1" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
27. <o:SecurityTokenReference>
28. <o:Reference ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct" URI="#uuid-ad80351b-2771-4303-b9a3-1ecf78188dbb-27"/>
29. </o:SecurityTokenReference>
30. <c:Nonce>37srittB4snFuL+twYnBhw==</c:Nonce>
31. </c:DerivedKeyToken>
32. <e:ReferenceList xmlns:e="http://www.w3.org/2001/04/xmlenc#">
33. <e:DataReference URI="#\_3"/>
34. <e:DataReference URI="#\_8"/>
35. </e:ReferenceList>
36. <e:EncryptedData Id="\_8" Type="http://www.w3.org/2001/04/xmlenc#Element" xmlns:e="http://www.w3.org/2001/04/xmlenc#">
37. <e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
38. <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
39. <o:SecurityTokenReference>
40. <o:Reference URI="#\_1"/>
41. </o:SecurityTokenReference>
42. </KeyInfo>
43. <e:CipherData>
44. <e:CipherValue></e:CipherValue>
45. </e:CipherData>
46. </e:EncryptedData>
47. </o:Security>
48. </s:Header>
49. <s:Body u:Id="\_2">
50. <e:EncryptedData Id="\_3" Type="http://www.w3.org/2001/04/xmlenc#Content" xmlns:e="http://www.w3.org/2001/04/xmlenc#">
51. <e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
52. <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
53. <o:SecurityTokenReference xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
54. <o:Reference URI="#\_1"/>
55. </o:SecurityTokenReference>
56. </KeyInfo>
57. <e:CipherData>
58. <e:CipherValue>30wzQUEv/1nHI+juADLlltf4lxZMJrMsj6utajIDUr0=</e:CipherValue>
59. </e:CipherData>
60. </e:EncryptedData>
61. </s:Body>
62. </s:Envelope>

### SOAP Encrypted DeleteResponseMessage

1. <s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope" xmlns:wsa="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
2. <s:Header>
3. <wsa:Action s:mustUnderstand="1" u:Id="\_4">http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse</wsa:Action>
4. <wsa:RelatesTo u:Id="\_5">urn:uuid:40b2951b-abae-4503-ac1c-33ae3f595512</wsa:RelatesTo>
5. <Context u:Id="\_6" xmlns="http://schemas.microsoft.com/ws/2006/05/context">
6. <Property name="instanceId">aef2994f-79ee-4184-981e-6e9b08449fbf</Property>
7. </Context>
8. <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
9. <u:Timestamp u:Id="uuid-ad80351b-2771-4303-b9a3-1ecf78188dbb-30">
10. <u:Created>2009-06-09T17:35:23.749Z</u:Created>
11. <u:Expires>2009-06-09T17:40:23.749Z</u:Expires>
12. </u:Timestamp>
13. <c:DerivedKeyToken u:Id="\_0" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
14. <o:SecurityTokenReference>
15. <o:Reference URI="urn:uuid:cef0945a-c70c-45f6-897d-490a4032769b" ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct"/>
16. </o:SecurityTokenReference>
17. <c:Offset>0</c:Offset>
18. <c:Length>24</c:Length>
19. <c:Nonce>gz3yN2Xr+sN702SVxLttxQ==</c:Nonce>
20. </c:DerivedKeyToken>
21. <c:DerivedKeyToken u:Id="\_1" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
22. <o:SecurityTokenReference>
23. <o:Reference URI="urn:uuid:cef0945a-c70c-45f6-897d-490a4032769b" ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct"/>
24. </o:SecurityTokenReference>
25. <c:Nonce>fAop6NmTl8KLK1yDO9EobQ==</c:Nonce>
26. </c:DerivedKeyToken>
27. <e:ReferenceList xmlns:e="http://www.w3.org/2001/04/xmlenc#">
28. <e:DataReference URI="#\_3"/>
29. <e:DataReference URI="#\_7"/>
30. </e:ReferenceList>
31. <e:EncryptedData Id="\_7" Type="http://www.w3.org/2001/04/xmlenc#Element" xmlns:e="http://www.w3.org/2001/04/xmlenc#">
32. <e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
33. <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
34. <o:SecurityTokenReference>
35. <o:Reference URI="#\_1"/>
36. </o:SecurityTokenReference>
37. </KeyInfo>
38. <e:CipherData>
39. <e:CipherValue></e:CipherValue>
40. </e:CipherData>
41. </e:EncryptedData>
42. </o:Security>
43. </s:Header>
44. <s:Body u:Id="\_2">
45. <e:EncryptedData Id="\_3" Type="http://www.w3.org/2001/04/xmlenc#Content" xmlns:e="http://www.w3.org/2001/04/xmlenc#">
46. <e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
47. <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
48. <o:SecurityTokenReference xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
49. <o:Reference URI="#\_1"/>
50. </o:SecurityTokenReference>
51. </KeyInfo>
52. <e:CipherData>
53. <e:CipherValue>GsukYxK6lMI6q3OOI91LRkUGrY+UD09CAai/V11qjkY=</e:CipherValue>
54. </e:CipherData>
55. </e:EncryptedData>
56. </s:Body>
57. </s:Envelope>

## Example of Enumerating Synchronization Objects

In this example, the protocol client requests the protocol server to search for previously created configuration objects using the **Enumerate** operation (section [3.1.4.5](#Section_bce96c63da3c4fcbbdcc1fb2cc2f8268)). The client sends the message **EnumerateMessage** (section [4.5.1](#Section_0bfa97ec4f49410aaa6cbfe27c7e0612)), and the server responds with message **EnumerateResponseMessage** (section [4.5.2](#Section_ad72bbe139d2403d89f0e13847a8147e)).

### SOAP EnumerateMessage

1. <?xml version="1.0" encoding="utf-8"?>
2. <s:Envelope
3. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
4. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
5. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
6. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
7. <s:Header>
8. <wsa:ReplyTo>
9. <wsa:Address>
10. http://www.fabrikam.com/sender
11. </wsa:Address>
12. </wsa:ReplyTo>
13. <wsa:To>
14. http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
15. </wsa:To>
16. <wsa:Action>
17. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate
18. </wsa:Action>
19. <wsa:MessageID>
20. uuid:00000000-0000-0000-C000-000000000046
21. </wsa:MessageID>
22. </s:Header>
23. <s:Body>
24. <Enumerate xmlns="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
25. <Filter Dialect="http://schemas.microsoft.com/2006/11/XPathFilterDialect">/ma-data</Filter>
26. <LocalePreferences xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
27. <LocalePreference>
28. <Locale>en-US</Locale>
29. <PreferenceValue>0</PreferenceValue>
30. </LocalePreference>
31. </LocalePreferences>
32. <MaxElements>20</MaxElements>
33. <MaxCharacters>3668672</MaxCharacters>
34. <Sorting Dialect="http://schemas.xmlsoap.org/ws/2006/08/resourceTransfer/Dialect/QName" xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
35. <SortingAttribute Ascending="true">DisplayName</SortingAttribute>
36. </Sorting>
37. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">DisplayName</Selection>
38. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">CreatedTime</Selection>
39. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">Creator</Selection>
40. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">ObjectType</Selection>
41. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">ObjectID</Selection>
42. </Enumerate>
43. </s:Body>
44. </s:Envelope>

### SOAP EnumerateResponseMessage

1. <s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
2. xmlns:wsa="http://www.w3.org/2005/08/addressing"
3. xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:xsd="http://www.w3.org/2001/XMLSchema"
6. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
7. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement"
8. xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
9. <s:Header>
10. <wsa:Action s:mustUnderstand="1">
11. http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse
12. </wsa:Action>
13. <wsa:RelatesTo>urn:uuid:e3a74cd4-d623-47d6-b33b-0dd733808b66</wsa:RelatesTo>
14. <wsc:Context>
15. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
16. </wsc:Context>
17. </s:Header>
18. <s:Body wsu:Id="\_2">
19. <wsen:EnumerateResponse>
20. <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
21. <wsen:EnumerationContext>
22. <rm:CurrentIndex>0</rm:CurrentIndex>
23. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
24. <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
25. <rm:Filter>/ma-data</rm:Filter>
26. <rm:LocalePreferences xsi:nil="true" />
27. <rm:Selection>
28. <rm:string>DisplayName</rm:string>
29. <rm:string>ObjectType</rm:string>
30. <rm:string>ObjectId</rm:string>
31. <rm:string>CreatedTime</rm:string>
32. <rm:string>Creator</rm:string>
33. </rm:Selection>
34. <rm:Sorting Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
35. <rm:SortingAttribute Ascending="true">DisplayName</rm:SortingAttribute>
36. </rm:Sorting>
37. </wsen:EnumerationContext>
38. <rm:EnumerationDetail>
39. <rm:Count>1</rm:Count>
40. </rm:EnumerationDetail>
41. </wsen:EnumerateResponse>
42. <wsen:Items>
43. <rm:ma-data>
44. <rm:ObjectType>ma-data</rm:ObjectType>
45. <rm:ObjectID>
46. urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
47. </rm:ObjectID>
48. <rm:DisplayName>AD Management Agent</rm:DisplayName>
49. <rm:CreatedTime>2009-01-20T23:28:40.207</rm:CreatedTime>
50. <rm:Creator>
51. urn:uuid:23dbfb6c-557f-48d1-ac38-6d570ddbe189
52. </rm:Creator>
53. </rm:ma-data>
54. </wsen:Items>
55. </s:Body>
56. </s:Envelope>

## Example of Pulling Synchronization Objects

In this example, the protocol client requests the protocol server to retrieve additional configuration objects from the previous enumeration using the Pull operation. The client sends the message **PullMessage** (section [4.6.1](#Section_b7958a259b3a415384c5fb4ca3dcde2c)), and the server responds with message **PullResponseMessage** (section [4.6.2](#Section_b82b2dca7dae4b2bb59e9f567498944b)).

### SOAP PullMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
6. <s:Header>
7. <wsa:To>
8. http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
9. </wsa:To>
10. <wsa:Action>
11. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull
12. </wsa:Action>
13. </s:Header>
14. <s:Body>
15. <wsen:Pull>
16. <wsen:EnumerationContext>
17. <rm:CurrentIndex>0</rm:CurrentIndex>
18. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
19. <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
20. <rm:Filter>/ma-data</rm:Filter>
21. <LocalePreferences xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
22. <LocalePreference>
23. <Locale>en-US</Locale>
24. <PreferenceValue>0</PreferenceValue>
25. </LocalePreference>
26. </LocalePreferences>
27. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
28. <string>DisplayName</string>
29. <string>Creator</string>
30. <string>CreatedTime</string>
31. <string>ObjectType</string>
32. <string>ObjectID</string>
33. </Selection>
34. <rm:Sorting Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
35. <rm:SortingAttribute Ascending="true">DisplayName</rm:SortingAttribute>
36. </rm:Sorting>
37. </wsen:EnumerationContext>
38. <rm:PullAdjustment>
39. <rm:StartingIndex>0</rm:StartingIndex>
40. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
41. </rm:PullAdjustment>
42. <wsen:MaxTime>10675199.02:48:05.4775807</wsen:MaxTime>
43. <wsen:MaxElements>20</wsen:MaxElements>
44. <wsen:MaxCharacters>3668672</wsen:MaxCharacters>
45. </wsen:Pull>
46. </s:Body>
47. </s:Envelope>

### SOAP PullResponseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
6. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
7. <s:Header>
8. <wsa:To>
9. http://www.fabrikam.com/sender
10. </wsa:To>
11. <wsa:Action>
12. http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse
13. </wsa:Action>
14. <wsc:Context>
15. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
16. </wsc:Context>
17. </s:Header>
18. <s:Body>
19. <wsen:PullResponse>
20. <wsen:EnumerationContext>
21. <rm:CurrentIndex>0</rm:CurrentIndex>
22. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
23. <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
24. <rm:Filter>/ma-data</rm:Filter>
25. <LocalePreferences xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
26. <LocalePreference>
27. <Locale>en-US</Locale>
28. <PreferenceValue>0</PreferenceValue>
29. </LocalePreference>
30. </LocalePreferences>
31. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
32. <string>DisplayName</string>
33. <string>Creator</string>
34. <string>CreatedTime</string>
35. <string>ObjectType</string>
36. <string>ObjectID</string>
37. </Selection>
38. <rm:Sorting Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
39. <rm:SortingAttribute Ascending="true">DisplayName</rm:SortingAttribute>
40. </rm:Sorting>
41. </wsen:EnumerationContext>
42. <rm:PullAdjustment>
43. <rm:StartingIndex>0</rm:StartingIndex>
44. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
45. </rm:PullAdjustment>
46. <wsen:MaxTime>10675199.02:48:05.4775807</wsen:MaxTime>
47. <wsen:MaxElements>20</wsen:MaxElements>
48. <wsen:MaxCharacters>3668672</wsen:MaxCharacters>
49. <wsen:Items>
50. <rm:ma-data>
51. <rm:ObjectType>ma-data</rm:ObjectType>
52. <rm:ObjectID>
53. urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
54. </rm:ObjectID>
55. <rm:DisplayName>AD Management Agent</rm:DisplayName>
56. <rm:CreatedTime>2009-01-20T23:28:40.207</rm:CreatedTime>
57. <rm:Creator>
58. urn:uuid:23dbfb6c-557f-48d1-ac38-6d570ddbe189
59. </rm:Creator>
60. </rm:ma-data>
61. </wsen:Items>
62. <wsen:EndOfSequence/>
63. </wsen:PullResponse>
64. </s:Body>
65. </s:Envelope>

## Example of Releasing an Enumeration Context

In this example, the protocol client requests the protocol server to release enumeration context from the previous example using the **Release** operation (section [3.1.4.7](#Section_2503ef84c4234805951c589b22591f09)). The client sends the message **ReleaseMessage** (section [4.7.1](#Section_abe63614764647d59a42a87d66ba3713)), and the server responds with message **ReleaseResponseMessage** (section [4.7.2](#Section_465fc87b778e4e48b4809029b4111136)).

### SOAP ReleaseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
6. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
7. <s:Header>
8. <wsa:ReplyTo>
9. <wsa:Address>
10. http://www.fabrikam.com/sender
11. </wsa:Address>
12. </wsa:ReplyTo>
13. <wsa:To>
14. http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
15. </wsa:To>
16. <wsc:Context>
17. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
18. </wsc:Context>
19. <wsa:Action>
20. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release
21. </wsa:Action>
22. <wsa:MessageID>
23. uuid:00000000-0000-0000-C000-000000000046
24. </wsa:MessageID>
25. </s:Header>
26. <s:Body>
27. <wsen:Release>
28. <wsen:EnumerationContext>
29. <rm:CurrentIndex>0</rm:CurrentIndex>
30. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
31. <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
32. <rm:Filter>/ma-data</rm:Filter>
33. <rm:LocalePreferences xsi:nil="true" />
34. <rm:Selection xsi:nil="true" />
35. <rm:Sorting xsi:nil="true" />
36. </wsen:EnumerationContext>
37. </wsen:Release>
38. </s:Body>
39. </s:Envelope>

### SOAP ReleaseResponseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
6. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
7. <s:Header>
8. <wsa:To>
9. http://www.fabrikam.com/sender
10. </wsa:To>
11. <wsa:Action>
12. http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse
13. </wsa:Action>
14. <wsc:Context>
15. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
16. </wsc:Context>
17. </s:Header>
18. <s:Body/>
19. </s:Envelope>

## Example of Renewing an Enumeration Context

In this example, the protocol client requests the protocol server to renew the enumeration context from the previous example using the **Renew** operation (section [3.1.4.8](#Section_61a73eb59bed4bf8978cfd692f975b78)). The client sends the message **RenewMessage** (section [4.8.1](#Section_569e60b858754a6eb6e1860c56af41f1)), and the server responds with message **RenewResponseMessage** (section [4.8.2](#Section_21aaba65f85b4041b7088c52a019725e)).

### SOAP RenewMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
6. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
7. <s:Header>
8. <wsa:Action>
9. http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew
10. </wsa:Action>
11. <wsa:ReplyTo>
12. <wsa:Address>
13. http://www.fabrikam.com/sender
14. </wsa:Address>
15. </wsa:ReplyTo>
16. <wsa:To>
17. http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
18. </wsa:To>
19. </s:Header>
20. <s:Body>
21. <wsen:Renew>
22. <wsen:EnumerationContext>
23. <rm:CurrentIndex>0</rm:CurrentIndex>
24. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
25. <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
26. <rm:Filter>/ma-data</rm:Filter>
27. <rm:LocalePreferences xsi:nil="true" />
28. <rm:Selection xsi:nil="true" />
29. <rm:Sorting xsi:nil="true" />
30. </wsen:EnumerationContext>
31. <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
32. </wsen:Renew>
33. </s:Body>
34. </s:Envelope>

### SOAP RenewResponseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
6. <s:Header>
7. <wsa:Action>
8. http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse
9. </wsa:Action>
10. <wsa:To>
11. http://www.fabrikam.com/sender
12. </wsa:To>
13. </s:Header>
14. <s:Body>
15. <wsen:RenewResponse>
16. <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
17. <wsen:EnumerationContext>
18. <rm:CurrentIndex>0</rm:CurrentIndex>
19. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
20. <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
21. <rm:Filter>/ma-data</rm:Filter>
22. <rm:LocalePreferences xsi:nil="true" />
23. <rm:Selection xsi:nil="true" />
24. <rm:Sorting xsi:nil="true" />
25. </wsen:EnumerationContext>
26. </wsen:RenewResponse>
27. </s:Body>
28. </s:Envelope>

## Example of Retrieving the Expiration Time of an Enumeration Context

In this example, the protocol client requests the protocol server to retrieve the expiration time of the enumeration context from the previous example using the **GetStatus** operation (section [3.1.4.9](#Section_e48ca955e20b4abbb39ca26ce418b731)). The client sends the message **GetStatusMessage** (section [4.9.1](#Section_a4bbe08b08fb47b0a1eec361a81bdb2a)), and the server responds with message **GetStatusResponseMessage** (section [4.9.2](#Section_a756bdd16b974755b690d4ee7b891123)).

### SOAP GetStatusMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
6. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
7. <s:Header>
8. <wsa:Action>
9. http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus
10. </wsa:Action>
11. <wsa:ReplyTo>
12. <wsa:Address>
13. http://www.fabrikam.com/sender
14. </wsa:Address>
15. </wsa:ReplyTo>
16. <wsa:To>
17. http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
18. </wsa:To>
19. </s:Header>
20. <s:Body>
21. <wsen:GetStatus>
22. <wsen:EnumerationContext>
23. <rm:CurrentIndex>0</rm:CurrentIndex>
24. <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
25. <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
26. <rm:Filter>/ma-data</rm:Filter>
27. <LocalePreferences xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
28. <LocalePreference>
29. <Locale>en-US</Locale>
30. <PreferenceValue>0</PreferenceValue>
31. </LocalePreference>
32. </LocalePreferences>
33. <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
34. <string>DisplayName</string>
35. <string>Creator</string>
36. <string>CreatedTime</string>
37. <string>ObjectType</string>
38. <string>ObjectID</string>
39. </Selection>
40. <rm:Sorting Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
41. <rm:SortingAttribute Ascending="true">DisplayName</rm:SortingAttribute>
42. </rm:Sorting>
43. </wsen:EnumerationContext>
44. </wsen:GetStatus>
45. </s:Body>
46. </s:Envelope>

### SOAP GetStatusResponseMessage

1. <s:Envelope
2. xmlns:s="http://www.w3.org/2003/05/soap-envelope"
3. xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
4. xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
5. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
6. xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
7. <s:Header>
8. <wsa:Action>
9. http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse
10. </wsa:Action>
11. <wsa:To>
12. http://www.fabrikam.com/sender
13. </wsa:To>
14. </s:Header>
15. <s:Body>
16. <wsen:GetStatusResponse>
17. <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
18. </wsen:GetStatusResponse>
19. </s:Body>
20. </s:Envelope>

## Example of Permission Denied Fault

In this example, the server responds to a request with a **PermissionDeniedFault** (section [4.10.1](#Section_1de352eae8eb4a1b8f71df212defcccf)).

### SOAP Permission Denied Fault

1. <s:Envelope
2. xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"
3. xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
4. xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
5. <s:Header>
6. <wsc:Context>
7. <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
8. </wsc:Context>
9. </s:Header>
10. <s:Body>
11. <s:Fault>
12. <s:Code>
13. <s:Value>s:Client</s:Value>
14. <s:Subcode>
15. <s:Value>rm:PermissionDenied</s:Value>
16. </s:Subcode>
17. </s:Code>
18. <s:Reason>
19. <s:Text xml:lang="en-US" />
20. </s:Reason>
21. <s:Detail>
22. <rm:PermissionDeniedFault />
23. </s:Detail>
24. </s:Fault>
25. </s:Body>
26. </s:Envelope>

# Security

## Security Considerations for Implementers

This specification uses encryption and signing to protect messages.

The protocol uses [[WSSP1.2/10.1]](https://go.microsoft.com/fwlink/?LinkId=130730) to sign and encrypt the header, the body, and the signature of the message. The keys used to sign and encrypt are defined by [[WSTrust]](https://go.microsoft.com/fwlink/?LinkId=90584). The protocol uses [WSSP1.2/10.1] SPNEGO security context tokens. This protocol does not introduce any additional security considerations beyond those that apply to its underlying protocols.

## Index of Security Parameters

| Security Parameter | Section |
| --- | --- |
| SPNEGO security context token assertion:  http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRecipient | [[WSSP1.2/10.1]](https://go.microsoft.com/fwlink/?LinkId=130730) section 5.4.5 |
| Key and Encryption Requirements:  http://schemas.xmlsoap.org/ws/2005/02/trust/SymmetricKey | [[WSTrust]](https://go.microsoft.com/fwlink/?LinkId=90584) section 9.2 |
| Key and Encryption Algorithm Suite:  Basic256 | [WSSP1.2/10.1] section 6.1 |
| Server Entropy Required | [WSSP1.2/10.1] section 10.1 |
| Client Entropy Required | [WSSP1.2/10.1] section 10.1 |
| Must support issued tokens | [WSSP1.2/10.1] section 10.1 |
| IncludeContext with ProtectionLevel = "Sign" | [[MC-NETCEX]](%5bMC-NETCEX%5d.pdf#Section_a7f26280491f465b9914c5eb5322dbb4) |

# Appendix A: Full WSDL

1. <?xml version="1.0" encoding="utf-8"?>
2. <wsdl:definitions xmlns:s="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing" xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" xmlns:wsp="http://www.w3.org/ns/ws-policy" xmlns:wxf="http://schemas.xmlsoap.org/ws/2004/09/transfer" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/" xmlns:wsa10="http://www.w3.org/2005/08/addressing" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
3. targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
4. <wsdl:import namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" location="http://schemas.xmlsoap.org/ws/2004/09/transfer/transfer.wsdl" />
5. <wsdl:import namespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration" location="http://schemas.xmlsoap.org/ws/2004/09/enumeration/enumeration.wsdl" />
6. <wsp:Policy wsu:Id="ServiceMultipleTokenBinding\_Resource\_policy">
7. <wsp:ExactlyOne>
8. <wsp:All>
9. <IncludeContext ProtectionLevel="Sign" xmlns="http://schemas.microsoft.com/ws/2006/05/context" />
10. <sp:SymmetricBinding xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
11. <wsp:Policy>
12. <sp:ProtectionToken>
13. <wsp:Policy>
14. <sp:SpnegoContextToken sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRecipient">
15. <wsp:Policy>
16. <sp:RequireDerivedKeys />
17. </wsp:Policy>
18. </sp:SpnegoContextToken>
19. </wsp:Policy>
20. </sp:ProtectionToken>
21. <sp:AlgorithmSuite>
22. <wsp:Policy>
23. <sp:Basic256 />
24. </wsp:Policy>
25. </sp:AlgorithmSuite>
26. <sp:Layout>
27. <wsp:Policy>
28. <sp:Strict />
29. </wsp:Policy>
30. </sp:Layout>
31. <sp:IncludeTimestamp />
32. <sp:EncryptSignature />
33. <sp:OnlySignEntireHeadersAndBody />
34. </wsp:Policy>
35. </sp:SymmetricBinding>
36. <sp:EndorsingSupportingTokens xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
37. <wsp:Policy>
38. <sp:IssuedToken sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRecipient" wsp:Optional="true">
39. <sp:RequestSecurityTokenTemplate>
40. <t:KeyType xmlns:t="http://schemas.xmlsoap.org/ws/2005/02/trust">http://schemas.xmlsoap.org/ws/2005/02/trust/SymmetricKey</t:KeyType>
41. </sp:RequestSecurityTokenTemplate>
42. <wsp:Policy>
43. <sp:RequireDerivedKeys />
44. <sp:RequireInternalReference />
45. </wsp:Policy>
46. </sp:IssuedToken>
47. </wsp:Policy>
48. </sp:EndorsingSupportingTokens>
49. <sp:Wss11 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
50. <wsp:Policy>
51. <sp:MustSupportRefKeyIdentifier />
52. <sp:MustSupportRefIssuerSerial />
53. <sp:MustSupportRefThumbprint />
54. <sp:MustSupportRefEncryptedKey />
55. </wsp:Policy>
56. </sp:Wss11>
57. <sp:Trust10 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
58. <wsp:Policy>
59. <sp:MustSupportIssuedTokens />
60. <sp:RequireClientEntropy />
61. <sp:RequireServerEntropy />
62. </wsp:Policy>
63. </sp:Trust10>
64. <wsam:Addressing>
65. <wsp:Policy>
66. <wsam:AnonymousResponses />
67. </wsp:Policy>
68. </wsam:Addressing>
69. </wsp:All>
70. </wsp:ExactlyOne>
71. </wsp:Policy>
72. <wsp:Policy wsu:Id="ServiceMultipleTokenBinding\_Resource\_Operation\_policy">
73. <wsp:ExactlyOne>
74. <wsp:All>
75. <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
76. <sp:Body />
77. <sp:Header Name="Context" Namespace="http://schemas.microsoft.com/ws/2006/05/context" />
78. <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing" />
79. <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing" />
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81. <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing" />
82. <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing" />
83. <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing" />
84. <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing" />
85. </sp:SignedParts>
86. <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
87. <sp:Body />
88. </sp:EncryptedParts>
89. </wsp:All>
90. </wsp:ExactlyOne>
91. </wsp:Policy>
92. <wsp:Policy wsu:Id="ServiceMultipleTokenBinding\_ResourceFactory\_policy">
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99. <wsp:Policy>
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102. <sp:RequireDerivedKeys />
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104. </sp:SpnegoContextToken>
105. </wsp:Policy>
106. </sp:ProtectionToken>
107. <sp:AlgorithmSuite>
108. <wsp:Policy>
109. <sp:Basic256 />
110. </wsp:Policy>
111. </sp:AlgorithmSuite>
112. <sp:Layout>
113. <wsp:Policy>
114. <sp:Strict />
115. </wsp:Policy>
116. </sp:Layout>
117. <sp:IncludeTimestamp />
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119. <sp:OnlySignEntireHeadersAndBody />
120. </wsp:Policy>
121. </sp:SymmetricBinding>
122. <sp:EndorsingSupportingTokens xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
123. <wsp:Policy>
124. <sp:IssuedToken sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRecipient" wsp:Optional="true">
125. <sp:RequestSecurityTokenTemplate>
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139. <sp:MustSupportRefThumbprint />
140. <sp:MustSupportRefEncryptedKey />
141. </wsp:Policy>
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144. <wsp:Policy>
145. <sp:MustSupportIssuedTokens />
146. <sp:RequireClientEntropy />
147. <sp:RequireServerEntropy />
148. </wsp:Policy>
149. </sp:Trust10>
150. <wsam:Addressing>
151. <wsp:Policy>
152. <wsam:AnonymousResponses />
153. </wsp:Policy>
154. </wsam:Addressing>
155. </wsp:All>
156. </wsp:ExactlyOne>
157. </wsp:Policy>
158. <wsp:Policy wsu:Id="ServiceMultipleTokenBinding\_ResourceFactory\_Operation\_policy">
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160. <wsp:All>
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167. <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing" />
168. <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing" />
169. <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing" />
170. <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing" />
171. </sp:SignedParts>
172. <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
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176. </wsp:ExactlyOne>
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198. <sp:Layout>
199. <wsp:Policy>
200. <sp:Strict />
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202. </sp:Layout>
203. <sp:IncludeTimestamp />
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205. <sp:OnlySignEntireHeadersAndBody />
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207. </sp:SymmetricBinding>
208. <sp:EndorsingSupportingTokens xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
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210. <sp:IssuedToken sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRecipient" wsp:Optional="true">
211. <sp:RequestSecurityTokenTemplate>
212. <t:KeyType xmlns:t="http://schemas.xmlsoap.org/ws/2005/02/trust">http://schemas.xmlsoap.org/ws/2005/02/trust/SymmetricKey</t:KeyType>
213. </sp:RequestSecurityTokenTemplate>
214. <wsp:Policy>
215. <sp:RequireDerivedKeys />
216. <sp:RequireInternalReference />
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221. <sp:Wss11 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
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233. <sp:RequireServerEntropy />
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236. <wsam:Addressing>
237. <wsp:Policy>
238. <wsam:AnonymousResponses />
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247. <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
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252. <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing" />
253. <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing" />
254. <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing" />
255. <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing" />
256. <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing" />
257. </sp:SignedParts>
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259. <sp:Body />
260. </sp:EncryptedParts>
261. </wsp:All>
262. </wsp:ExactlyOne>
263. </wsp:Policy>
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269. schemaLocation="http://schemas.xmlsoap.org/ws/2004/09/enumeration/enumeration.xsd"/>
270. <xsd:import
271. namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer"
272. schemaLocation="http://schemas.xmlsoap.org/ws/2004/09/transfer/transfer.xsd"/>
273. -->
274. </xsd:schema>
275. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
276. <xsd:import
277. namespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration" />
278. <xs:simpleType name="StartingIndexType">
279. <xs:restriction base="xs:integer"/>
280. </xs:simpleType>
281. <xs:simpleType name="ReferenceType">
282. <xs:restriction base="xs:string">
283. <xs:pattern value="urn:uuid:([0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12})" />
284. </xs:restriction>
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309. </xs:simpleType>
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311. <xs:restriction base="xs:string">
312. <xs:enumeration value="AccountName"/>
313. <xs:enumeration value="ActionParameter"/>
314. <xs:enumeration value="ActionType"/>
315. <xs:enumeration value="ActionWorkflowDefinition"/>
316. <xs:enumeration value="AD\_UserCannotChangePassword"/>
317. <xs:enumeration value="Address"/>
318. <xs:enumeration value="Assistant"/>
319. <xs:enumeration value="AuthenticationWorkflowDefinition"/>
320. <xs:enumeration value="AuthNLockoutRegistrationID"/>
321. <xs:enumeration value="AuthNWFLockedOut"/>
322. <xs:enumeration value="AuthNWFRegistered"/>
323. <xs:enumeration value="AuthorizationWorkflowDefinition"/>
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326. <xs:enumeration value="ComputedMember"/>
327. <xs:enumeration value="ConnectedObjectType"/>
328. <xs:enumeration value="ConnectedSystem"/>
329. <xs:enumeration value="ConnectedSystemScope"/>
330. <xs:enumeration value="CostCenter"/>
331. <xs:enumeration value="CostCenterName"/>
332. <xs:enumeration value="Country"/>
333. <xs:enumeration value="CreateConnectedSystemObject"/>
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335. <xs:enumeration value="CreateILMObject"/>
336. <xs:enumeration value="Creator"/>
337. <xs:enumeration value="DeletedTime"/>
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339. <xs:enumeration value="Dependency"/>
340. <xs:enumeration value="Description"/>
341. <xs:enumeration value="DetectedRulesList"/>
342. <xs:enumeration value="DisconnectConnectedSystemObject"/>
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345. <xs:enumeration value="DomainConfiguration"/>
346. <xs:enumeration value="Email"/>
347. <xs:enumeration value="EmployeeEndDate"/>
348. <xs:enumeration value="EmployeeID"/>
349. <xs:enumeration value="EmployeeStartDate"/>
350. <xs:enumeration value="EmployeeType"/>
351. <xs:enumeration value="ExistenceTest"/>
352. <xs:enumeration value="ExpectedRulesList"/>
353. <xs:enumeration value="ExpirationTime"/>
354. <xs:enumeration value="ExplicitMember"/>
355. <xs:enumeration value="Filter"/>
356. <xs:enumeration value="FirstName"/>
357. <xs:enumeration value="FlowType"/>
358. <xs:enumeration value="FreezeCount"/>
359. <xs:enumeration value="FreezeLevel"/>
360. <xs:enumeration value="GrantRight"/>
361. <xs:enumeration value="ILMObjectType"/>
362. <xs:enumeration value="ILMScoping"/>
363. <xs:enumeration value="InitialFlow"/>
364. <xs:enumeration value="IsRASEnabled"/>
365. <xs:enumeration value="JobTitle"/>
366. <xs:enumeration value="LastName"/>
367. <xs:enumeration value="LastResetAttemptTime"/>
368. <xs:enumeration value="Locale"/>
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372. <xs:enumeration value="MembershipCondition"/>
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374. <xs:enumeration value="MobilePhone"/>
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376. <xs:enumeration value="ObjectID"/>
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381. <xs:enumeration value="OfficePhone"/>
382. <xs:enumeration value="PersistentFlow"/>
383. <xs:enumeration value="Photo"/>
384. <xs:enumeration value="PostalCode"/>
385. <xs:enumeration value="Precedence"/>
386. <xs:enumeration value="PrincipalRelativeToResource"/>
387. <xs:enumeration value="PrincipalSet"/>
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389. <xs:enumeration value="Register"/>
390. <xs:enumeration value="RegistrationRequired"/>
391. <xs:enumeration value="RelationshipCriteria"/>
392. <xs:enumeration value="ResetPassword"/>
393. <xs:enumeration value="ResourceCurrentRelativeToPrincipal"/>
394. <xs:enumeration value="ResourceCurrentSet"/>
395. <xs:enumeration value="ResourceFinalRelativeToPrincipal"/>
396. <xs:enumeration value="ResourceFinalSet"/>
397. <xs:enumeration value="ResourceTime"/>
398. <xs:enumeration value="SIDHistory"/>
399. <xs:enumeration value="SyncConfig-attribute-inclusion"/>
400. <xs:enumeration value="SyncConfig-capabilities-mask"/>
401. <xs:enumeration value="SyncConfig-category"/>
402. <xs:enumeration value="SyncConfig-component\_mappings"/>
403. <xs:enumeration value="SyncConfig-controller-configuration"/>
404. <xs:enumeration value="SyncConfig-creation-time"/>
405. <xs:enumeration value="SyncConfig-dn-construction"/>
406. <xs:enumeration value="SyncConfig-encrypted-attributes"/>
407. <xs:enumeration value="SyncConfig-export-attribute-flow"/>
408. <xs:enumeration value="SyncConfig-export-type"/>
409. <xs:enumeration value="SyncConfig-extension"/>
410. <xs:enumeration value="SyncConfig-format-version"/>
411. <xs:enumeration value="SyncConfig-id"/>
412. <xs:enumeration value="SyncConfig-import-attribute-flow"/>
413. <xs:enumeration value="SyncConfig-internal-version"/>
414. <xs:enumeration value="SyncConfig-join"/>
415. <xs:enumeration value="SyncConfig-last-modification-time"/>
416. <xs:enumeration value="SyncConfig-ma-companyname"/>
417. <xs:enumeration value="SyncConfig-ma-listname"/>
418. <xs:enumeration value="SyncConfig-ma-partition-data"/>
419. <xs:enumeration value="SyncConfig-ma-run-data"/>
420. <xs:enumeration value="SyncConfig-ma-ui-settings"/>
421. <xs:enumeration value="SyncConfig-mv-deletion"/>
422. <xs:enumeration value="SyncConfig-password-change-history-size"/>
423. <xs:enumeration value="SyncConfig-password-sync"/>
424. <xs:enumeration value="SyncConfig-password-sync-allowed"/>
425. <xs:enumeration value="SyncConfig-private-configuration"/>
426. <xs:enumeration value="SyncConfig-projection"/>
427. <xs:enumeration value="SyncConfig-provisioning"/>
428. <xs:enumeration value="SyncConfig-provisioning-cleanup"/>
429. <xs:enumeration value="SyncConfig-provisioning-cleanup-type"/>
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431. <xs:enumeration value="SyncConfig-schema"/>
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433. <xs:enumeration value="SyncConfig-sub-type"/>
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442. </xs:sequence>
443. </xs:complexType>
444. <xs:complexType name="EnumerationContextType">
445. <xs:sequence>
446. <xs:element name="CurrentIndex" type="xs:integer"/>
447. <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
448. <xs:element ref="wsen:Expires"/>
449. <xs:element name="Filter" type="xs:string"/>
450. <xs:element ref="rm:LocalePreferences"/>
451. <xs:element ref="rm:Selection"/>
452. <xs:element ref="rm:Sorting"/>
453. </xs:sequence>
454. </xs:complexType>
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457. <xs:enumeration value="Forwards"/>
458. </xs:restriction>
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463. </xs:sequence>
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465. <xs:complexType name="SelectionType">
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472. <xs:element name="StartingIndex" type="rm:StartingIndexType"/>
473. <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
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476. <xs:complexType name="LocalePreferencesType">
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486. </xs:simpleType>
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491. <xs:enumeration value="0"/>
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503. <xs:attribute name="Dialect" type="rm:FilterDialectType"/>
504. </xs:extension>
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507. <xs:element name="SortingAttribute">
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510. <xs:extension base="rm:AttributeTypeXmlType">
511. <xs:attribute name="Ascending" type="rm:AscendingType"/>
512. </xs:extension>
513. </xs:simpleContent>
514. </xs:complexType>
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521. <xs:attribute name="Dialect" type="rm:DialectType"/>
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524. <xs:element name="Selection" type="rm:SelectionType"/>
525. <xs:element name="PullAdjustment" type="rm:PullAdjustmentType"/>
526. <xs:element name="LocalePreferences" type="rm:LocalePreferencesType"/>
527. <xs:element name="EnumerationDetail" type="rm:EnumerationDetailType"/>
528. <xs:element name="ResourceReferenceProperty" type="rm:ReferenceType"/>
529. <xs:complexType name="ReferenceCollectionType">
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556. <xs:element ref="rm:Description" minOccurs="0" />
557. <xs:element ref="rm:CreatedTime" minOccurs="0" />
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559. <xs:element ref="rm:SyncConfig-id" minOccurs="0" />
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561. <xs:element ref="rm:SyncConfig-category" minOccurs="0" />
562. <xs:element ref="rm:SyncConfig-subtype" minOccurs="0" />
563. <xs:element ref="rm:SyncConfig-version" minOccurs="0" />
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575. <xs:element ref="rm:SyncConfig-export-attribute-flow" minOccurs="0" />
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583. <xs:element ref="rm:SyncConfig-private-configuration" minOccurs="0" />
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585. <xs:element ref="rm:SyncConfig-export-type" minOccurs="0" />
586. <xs:element ref="rm:SyncConfig-dn-construction" minOccurs="0" />
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588. <xs:element minOccurs="0" name="SyncConfig-ma-partition-data" type="rm:TextCollectionType"/>
589. <xs:element minOccurs="0" name="SyncConfig-ma-run-data" type="rm:TextCollectionType"/>
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601. <xs:element ref="rm:Creator" minOccurs="0" />
602. <xs:element ref="rm:SyncConfig-format-version" minOccurs="0" />
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604. <xs:element ref="rm:SyncConfig-extension" minOccurs="0" />
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606. <xs:element ref="rm:SyncConfig-import-attribute-flow" minOccurs="0" />
607. <xs:element ref="rm:SyncConfig-mv-deletion" minOccurs="0" />
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636. <xs:element ref="rm:Filter" minOccurs="0" />
637. <xs:element minOccurs="0" name="ExplicitMember" type="rm:ReferenceCollectionType"/>
638. </xs:sequence>
639. </xs:complexType>
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641. <xs:element name="ManagementPolicyRule">
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649. <xs:element ref="rm:Creator" minOccurs="0" />
650. <xs:element minOccurs="0" name="ActionParameter" type="rm:StringCollectionType"/>
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652. <xs:element ref="rm:PrincipalSet" minOccurs="0" />
653. <xs:element ref="rm:ResourceCurrentSet" minOccurs="0" />
654. <xs:element ref="rm:ResourceFinalSet" minOccurs="0" />
655. <xs:element ref="rm:GrantRight" minOccurs="0" />
656. </xs:sequence>
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662. <!-- StringCollectionType -->
663. <xs:element name="ActionType" type="xs:string" />
664. <!-- StringCollectionType -->
665. <xs:element name="SyncConfig-ma-partition-data" type="xs:string" />
666. <!--TextCollectionType-->
667. <xs:element name="SyncConfig-ma-run-data" type="xs:string" />
668. <!--TextCollectionType-->
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670. <xs:element name="SyncConfig-internal-version" type="xs:integer" />
671. <xs:element name="SyncConfig-schema" type="xs:string" />
672. <xs:element name="SyncConfig-refresh-schema" type="xs:integer" />
673. <xs:element name="SyncConfig-password-sync-allowed" type="xs:integer" />
674. <xs:element name="SyncConfig-capabilities-mask" type="xs:integer" />
675. <xs:element name="ObjectID" type="rm:ReferenceType" />
676. <xs:element name="ObjectType">
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679. <xs:pattern value=".{448}" />
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689. </xs:element>
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692. <xs:element name="Creator" type="rm:ReferenceType" />
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695. <xs:restriction base="xs:string">
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697. </xs:restriction>
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700. <xs:element name="Domain">
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704. </xs:restriction>
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709. <xs:element name="PrincipalSet" type="rm:ReferenceType" />
710. <xs:element name="ResourceCurrentSet" type="rm:ReferenceType" />
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712. <xs:element name="GrantRight" type="xs:boolean" />
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716. <xs:pattern value=".{448}" />
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725. </xs:restriction>
726. </xs:simpleType>
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730. <xs:element name="SyncConfig-ma-listname">
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741. </xs:restriction>
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757. </xs:element>
758. <xs:element name="SyncConfig-attribute-inclusion" type="xs:string" />
759. <xs:element name="SyncConfig-stay-disconnector" type="xs:string" />
760. <xs:element name="SyncConfig-join" type="xs:string" />
761. <xs:element name="SyncConfig-projection" type="xs:string" />
762. <xs:element name="SyncConfig-export-attribute-flow" type="xs:string" />
763. <xs:element name="SyncConfig-provisioning-cleanup-type">
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765. <xs:restriction base="xs:string">
766. <xs:pattern value=".{448}" />
767. </xs:restriction>
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772. <xs:element name="SyncConfig-controller-configuration" type="xs:string" />
773. <xs:element name="SyncConfig-password-sync">
774. <xs:simpleType>
775. <xs:restriction base="xs:string">
776. <xs:pattern value=".{448}" />
777. </xs:restriction>
778. </xs:simpleType>
779. </xs:element>
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781. <xs:element name="SyncConfig-private-configuration" type="xs:string" />
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786. </xs:restriction>
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788. </xs:element>
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790. <xs:element name="SyncConfig-import-attribute-flow" type="xs:string" />
791. <xs:element name="SyncConfig-mv-deletion" type="xs:string" />
792. <xs:element name="SyncConfig-provisioning" type="xs:string" />
794. </xs:schema>
795. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess">
796. <xsd:import namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
797. <xs:element name="AttributeType" type="rm:AttributeTypeXmlType"/>
798. <xs:element name="AttributeValue" type="rm:ItemsType"/>
799. <xs:element name="PartialAttribute" type="rm:ItemsType"/>
800. <xs:element name="AttributeTypeAndValue">
801. <xs:complexType>
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803. <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="1"/>
804. <xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1"/>
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806. </xs:complexType>
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808. <xs:element name="AddRequest">
809. <xs:complexType>
810. <xs:sequence>
811. <xs:element ref="da:AttributeTypeAndValue" minOccurs="1" maxOccurs="unbounded" />
812. </xs:sequence>
813. <xs:attribute name="Dialect" type="rm:DialectType"/>
814. </xs:complexType>
815. </xs:element>
816. <xs:element name="ModifyRequest">
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823. </xs:element>
824. <xs:element name="Change">
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828. <xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1" />
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830. <xs:attribute name="Operation" type="da:OperationXmlType"/>
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833. <xs:element name="BaseObjectSearchRequest">
834. <xs:complexType>
835. <xs:sequence>
836. <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="unbounded" />
837. </xs:sequence>
838. <xs:attribute name="Dialect" type="rm:DialectType"/>
839. </xs:complexType>
840. </xs:element>
841. <xsd:element name="BaseObjectSearchResponse">
842. <xsd:complexType>
843. <xsd:sequence>
844. <xsd:element ref="da:PartialAttribute" minOccurs="1" maxOccurs="unbounded" />
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846. </xsd:complexType>
847. </xsd:element>
848. <xsd:simpleType name="OperationXmlType">
849. <xsd:restriction base="xs:string">
850. <xsd:enumeration value="add" />
851. <xsd:enumeration value="delete" />
852. <xsd:enumeration value="replace" />
853. </xsd:restriction>
854. </xsd:simpleType>
855. </xs:schema>
856. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
857. <xs:import namespace='http://www.w3.org/XML/1998/namespace'
858. schemaLocation="http://www.w3.org/2001/xml.xsd"/>
859. <xs:import namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
860. <xs:element name="PullResponse">
861. <xs:complexType>
862. <xs:sequence>
863. <xs:element name="EnumerationContext" type="rm:EnumerationContextType" minOccurs="0" />
864. <xs:element name="Items" type="wsen:ItemListType" minOccurs="0" />
865. <xs:element name="EndOfSequence" minOccurs="0" />
866. </xs:sequence>
867. </xs:complexType>
868. </xs:element>
869. <xs:complexType name="ItemListType">
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871. <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
872. </xs:sequence>
873. </xs:complexType>
874. <xs:element name="Renew">
875. <xs:complexType>
876. <xs:sequence>
877. <xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
878. <xs:element name="Expires" type="wsen:ExpirationType" minOccurs="0" />
879. <xs:any namespace="##other" processContents="lax"
880. minOccurs="0" maxOccurs="unbounded" />
881. </xs:sequence>
882. <xs:anyAttribute namespace="##other" processContents="lax" />
883. </xs:complexType>
884. </xs:element>
885. <xs:simpleType name="NonNegativeDurationType">
886. <xs:restriction base="xs:duration">
887. <xs:minInclusive value="P0Y0M0DT0H0M0S" />
888. </xs:restriction>
889. </xs:simpleType>
890. <xs:simpleType name="ExpirationType">
891. <xs:union memberTypes="xs:dateTime wsen:NonNegativeDurationType" />
892. </xs:simpleType>
893. <xs:element name="RenewResponse">
894. <xs:complexType>
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896. <xs:element name="Expires" type="wsen:ExpirationType" minOccurs="0" />
897. <xs:element name="EnumerationContext" type="rm:EnumerationContextType" minOccurs="0" />
898. <xs:any namespace="##other" processContents="lax"
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903. </xs:element>
904. <xs:element name="GetStatus">
905. <xs:complexType>
906. <xs:sequence>
907. <xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
908. <xs:any namespace="##other" processContents="lax"
909. minOccurs="0" maxOccurs="unbounded" />
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911. <xs:anyAttribute namespace="##other" processContents="lax" />
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913. </xs:element>
914. <xs:element name="GetStatusResponse">
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917. <xs:element name="Expires" type="wsen:ExpirationType" minOccurs="0" />
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919. minOccurs="0" maxOccurs="unbounded" />
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923. </xs:element>
924. <xs:element name="Release">
925. <xs:complexType>
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927. <xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
928. </xs:sequence>
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931. </xs:element>
932. <xs:element name="EnumerationEnd">
933. <xs:complexType>
934. <xs:sequence>
935. <xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
936. <xs:element name="Code" type="wsen:OpenEnumerationEndCodeType" />
937. <xs:element name="Reason" type="wsen:LanguageSpecificStringType" minOccurs="0" maxOccurs="unbounded" />
938. <xs:any namespace="##other" processContents="lax"
939. minOccurs="0" maxOccurs="unbounded" />
940. </xs:sequence>
941. <xs:anyAttribute namespace="##other" processContents="lax" />
942. </xs:complexType>
943. </xs:element>
944. <xs:simpleType name="EnumerationEndCodeType">
945. <xs:restriction base="xs:anyURI">
946. <xs:enumeration value="http://schemas.xmlsoap.org/ws/2004/09/enumeration/SourceShuttingDown" />
947. <xs:enumeration value="http://schemas.xmlsoap.org/ws/2004/09/enumeration/SourceCancelling" />
948. </xs:restriction>
949. </xs:simpleType>
950. <xs:simpleType name="OpenEnumerationEndCodeType">
951. <xs:union memberTypes="wsen:EnumerationEndCodeType xs:anyURI" />
952. </xs:simpleType>
953. <xs:complexType name="LanguageSpecificStringType">
954. <xs:simpleContent>
955. <xs:extension base="xs:string">
956. <xs:attribute ref="xml:lang" />
957. <xs:anyAttribute namespace="##other" processContents="lax" />
958. </xs:extension>
959. </xs:simpleContent>
960. </xs:complexType>
961. <xs:element name="Enumerate">
962. <xs:complexType>
963. <xs:sequence>
964. <xs:element ref="wsen:Filter" minOccurs="1" maxOccurs="1" />
965. <xs:element ref="rm:LocalePreferences" minOccurs="1" maxOccurs="1"/>
966. <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
967. <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
968. <xs:element ref="rm:Sorting" minOccurs="1" maxOccurs="1"/>
969. <xs:element ref="rm:Selection" minOccurs="1" maxOccurs="unbounded"/>
970. </xs:sequence>
971. </xs:complexType>
972. </xs:element>
973. <xs:element name="Pull">
974. <xs:complexType>
975. <xs:sequence>
976. <xs:element ref="wsen:MaxTime" minOccurs="1" maxOccurs="1" />
977. <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
978. <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
979. <xs:element ref="wsen:EnumerationContext" minOccurs="1" maxOccurs="1"/>
980. <xs:element ref="rm:PullAdjustment" minOccurs="1" maxOccurs="1"/>
981. </xs:sequence>
982. </xs:complexType>
983. </xs:element>
984. <xs:element name="Items" type="rm:ItemsType"/>
985. <xs:element name="Filter" type="rm:FilterType"/>
986. <xs:element name="Expires">
987. <xs:simpleType>
988. <xs:restriction base="xs:string">
989. <xs:enumeration value="9999-12-31T23:59:59: 9999999"/>
990. </xs:restriction>
991. </xs:simpleType>
992. </xs:element>
993. <xs:element name="EnumerationContext" type="rm:EnumerationContextType"/>
994. <xs:element name="EnumerateResponse">
995. <xs:complexType>
996. <xs:sequence>
997. <xs:element ref="wsen:Expires" minOccurs="1" maxOccurs="1" />
998. <xs:element ref="wsen:EnumerationContext" minOccurs="0" maxOccurs="1"/>
999. <xs:element ref="rm:EnumerationDetail" minOccurs="1" maxOccurs="1"/>
1000. <xs:element ref="wsen:Items" minOccurs="1" maxOccurs="1"/>
1001. <xs:element ref="wsen:EndOfSequence" minOccurs="0" maxOccurs="1"/>
1002. </xs:sequence>
1003. </xs:complexType>
1004. </xs:element>
1005. <xs:element name="MaxElements" type="xs:integer"/>
1006. <xs:element name="MaxCharacters" type="xs:integer"/>
1007. <xs:element name="MaxTime">
1008. <xs:simpleType>
1009. <xs:restriction base="xs:string">
1010. <xs:enumeration value="12/31/9999 11:59:59 PM"/>
1011. </xs:restriction>
1012. </xs:simpleType>
1013. </xs:element>
1014. </xs:schema>
1015. <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" targetNamespace="http://schemas.xmlsoap.org/ws/2004/08/addressing">
1016. <xsd:import namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
1017. <xs:element name="ReferenceProperties">
1018. <xs:complexType>
1019. <xs:sequence>
1020. <xs:element ref="rm:ResourceReferenceProperty" minOccurs="1" maxOccurs="1"/>
1021. </xs:sequence>
1022. </xs:complexType>
1023. </xs:element>
1024. <xs:element name="PermissionDeniedFaultDetail" type="xs:string"/>
1025. </xs:schema>
1026. </wsdl:types>
1027. <wsdl:message name="AddRequestMessage">
1028. <wsdl:part name="Body" element="da:AddRequest"/>
1029. <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
1030. </wsdl:message>
1031. <wsdl:message name="AddResponseMessage">
1032. <wsdl:part name="Body" element="wxf:ResourceCreated"/>
1033. </wsdl:message>
1034. <wsdl:message name="BaseObjectSearchRequestMessage">
1035. <wsdl:part name="Body" element="da:BaseObjectSearchRequest"/>
1036. <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
1037. </wsdl:message>
1038. <wsdl:message name="BaseObjectSearchResponseMessage">
1039. <wsdl:part name="Body" element="da:BaseObjectSearchResponse"/>
1040. </wsdl:message>
1041. <wsdl:message name="DeleteRequestMessage">
1042. <wsdl:part name="objectidentityheader" element="rm:ResourceReferenceProperty"/>
1043. </wsdl:message>
1044. <wsdl:message name="DeleteResponseMessage" />
1045. <wsdl:message name="ModifyRequestMessage">
1046. <wsdl:part name="Body" element="da:ModifyRequest"/>
1047. <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
1048. <wsdl:part name="operationheader" element="rm:ResourceReferenceProperty"/>
1049. </wsdl:message>
1050. <wsdl:message name="ModifyResponseMessage" />
1051. <wsdl:message name="EnumerateMessage">
1052. <wsdl:part name="Body" element="wsen:Enumerate" />
1053. </wsdl:message>
1054. <wsdl:message name="EnumerateResponseMessage">
1055. <wsdl:part name="Body" element="wsen:EnumerateResponse" />
1056. </wsdl:message>
1057. <wsdl:message name="PullMessage">
1058. <wsdl:part name="Body" element="wsen:Pull" />
1059. </wsdl:message>
1060. <wsdl:message name="PullResponseMessage">
1061. <wsdl:part name="Body" element="wsen:PullResponse" />
1062. </wsdl:message>
1063. <wsdl:message name="RenewMessage" >
1064. <wsdl:part name="Body" element="wsen:Renew" />
1065. </wsdl:message>
1066. <wsdl:message name="RenewResponseMessage" >
1067. <wsdl:part name="Body" element="wsen:RenewResponse" />
1068. </wsdl:message>
1069. <wsdl:message name="GetStatusMessage" >
1070. <wsdl:part name="Body" element="wsen:GetStatus" />
1071. </wsdl:message>
1072. <wsdl:message name="GetStatusResponseMessage" >
1073. <wsdl:part name="Body" element="wsen:GetStatusResponse" />
1074. </wsdl:message>
1075. <wsdl:message name="ReleaseMessage">
1076. <wsdl:part name="Body" element="wsen:Release" />
1077. </wsdl:message>
1078. <wsdl:message name="ReleaseResponseMessage" />
1079. <wsdl:message name="EnumerationEndMessage" >
1080. <wsdl:part name="Body" element="wsen:EnumerationEnd" />
1081. </wsdl:message>
1082. <wsdl:binding name="ServiceMultipleTokenBinding\_Resource" type="wxf:Resource">
1083. <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
1084. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_policy" />
1085. <wsdl:operation name="Get">
1086. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get" style="document" />
1087. <wsdl:input message="da:BaseObjectSearchRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get">
1088. <soap12:body use="literal" />
1089. <soap12:header message="da:BaseObjectSearchRequestMessage" part="operationheader" use="literal"/>
1090. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1091. </wsdl:input>
1092. <wsdl:output message="da:BaseObjectSearchResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse">
1093. <soap12:body use="literal" />
1094. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1095. </wsdl:output>
1096. <wsdl:fault name="InvalidRepresentation ">
1097. <soap12:fault use="literal" name="UnwillingToPerform" namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
1098. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1099. </wsdl:fault>
1100. <wsdl:fault name="PermissionDeniedFault">
1101. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
1102. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1103. </wsdl:fault>
1104. </wsdl:operation>
1105. <wsdl:operation name="Put">
1106. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put" style="document" />
1107. <wsdl:input message="da:ModifyRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put">
1108. <soap12:body use="literal" />
1109. <soap12:header message="da:ModifyRequestMessage" part="operationheader" use="literal"/>
1110. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1111. </wsdl:input>
1112. <wsdl:output message="da:ModifyResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/PutResponse">
1113. <soap12:body use="literal" />
1114. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1115. </wsdl:output>
1116. <wsdl:fault name="InvalidRepresentation ">
1117. <soap12:fault use="literal" name="InvalidRepresentation" namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
1118. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1119. </wsdl:fault>
1120. <wsdl:fault name="PermissionDeniedFault">
1121. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
1122. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1123. </wsdl:fault>
1124. <wsdl:fault name="UnwillingToPerform ">
1125. <soap12:fault use="literal" name="UnwillingToPerform" namespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" />
1126. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1127. </wsdl:fault>
1128. </wsdl:operation>
1129. <wsdl:operation name="Delete">
1130. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete" style="document" />
1131. <wsdl:input message="da:DeleteRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete">
1132. <soap12:header message="da:DeleteRequestMessage" part="objectidentityheader" use="literal"/>
1133. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1134. </wsdl:input>
1135. <wsdl:output message="da:DeleteResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse">
1136. <soap12:body use="literal" />
1137. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1138. </wsdl:output>
1139. <wsdl:fault name="EndpointUnavailable"> <soap12:fault use="literal" name="EndpointUnavailable" namespace="http://schemas.xmlsoap.org/ws/2004/08/addressing"/>
1140. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1141. </wsdl:fault>
1142. <wsdl:fault name="PermissionDeniedFault">
1143. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
1144. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Resource\_Operation\_policy" />
1145. </wsdl:fault>
1146. </wsdl:operation>
1147. </wsdl:binding>
1148. <wsdl:binding name="ServiceMultipleTokenBinding\_ResourceFactory" type="wxf:ResourceFactory">
1149. <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
1150. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_ResourceFactory\_policy" />
1151. <wsdl:operation name="Create">
1152. <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create" style="document" />
1153. <wsdl:input message="da:AddRequestMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create">
1154. <soap12:body use="literal" />
1155. <soap12:header message="da:AddRequestMessage" part="operationheader" use="literal"/>
1156. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_ResourceFactory\_Operation\_policy" />
1157. </wsdl:input>
1158. <wsdl:output message="da:AddResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse">
1159. <soap12:body use="literal" />
1160. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_ResourceFactory\_Operation\_policy" />
1161. </wsdl:output>
1162. <wsdl:fault name="InvalidRepresentation ">
1163. <soap12:fault use="literal" name="InvalidRepresentation" namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
1164. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_ResourceFactory\_Operation\_policy" />
1165. </wsdl:fault>
1166. <wsdl:fault name="PermissionDeniedFault">
1167. <soap12:fault use="literal" name="PermissionDeniedFault" namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
1168. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_ResourceFactory\_Operation\_policy" />
1169. </wsdl:fault>
1170. </wsdl:operation>
1171. </wsdl:binding>
1172. <wsdl:portType name="DataSource">
1173. <wsdl:operation name="Enumerate">
1174. <wsdl:input
1175. message="rm:EnumerateMessage"
1176. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate"
1177. />
1178. <wsdl:output
1179. message="rm:EnumerateResponseMessage"
1180. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse"
1181. />
1182. </wsdl:operation>
1183. <wsdl:operation name="Pull">
1184. <wsdl:input
1185. message="rm:PullMessage"
1186. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull"
1187. />
1188. <wsdl:output
1189. message="rm:PullResponseMessage"
1190. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse"
1191. />
1192. </wsdl:operation>
1193. <wsdl:operation name="Renew" >
1194. <wsdl:input
1195. message="rm:RenewMessage"
1196. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew"
1197. />
1198. <wsdl:output
1199. message="rm:RenewResponseMessage"
1200. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse"
1201. />
1202. </wsdl:operation>
1203. <wsdl:operation name="GetStatus" >
1204. <wsdl:input
1205. message="rm:GetStatusMessage"
1206. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus"
1207. />
1208. <wsdl:output
1209. message="rm:GetStatusResponseMessage"
1210. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse"
1211. />
1212. </wsdl:operation>
1213. <wsdl:operation name="Release">
1214. <wsdl:input
1215. message="rm:ReleaseMessage"
1216. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release"
1217. />
1218. <wsdl:output
1219. message="rm:ReleaseResponseMessage"
1220. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse"
1221. />
1222. </wsdl:operation>
1223. <wsdl:operation name="EnumerationEnd" >
1224. <wsdl:output
1225. message="rm:EnumerationEndMessage"
1226. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerationEnd"
1227. />
1228. </wsdl:operation>
1229. </wsdl:portType>
1230. <wsdl:binding name="ServiceMultipleTokenBinding\_Search" type="rm:DataSource">
1231. <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
1232. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_policy" />
1233. <wsdl:operation name="Enumerate">
1234. <wsdl:input message="wsen:EnumerateMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate">
1235. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1236. </wsdl:input>
1237. <wsdl:output message="wsen:EnumerateResponseMessage" wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse">
1238. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1239. </wsdl:output>
1240. </wsdl:operation>
1241. <wsdl:operation name="Pull">
1242. <wsdl:input
1243. message="wsen:PullMessage"
1244. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull"
1245. >
1246. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1247. </wsdl:input>
1248. <wsdl:output
1249. message="wsen:PullResponseMessage"
1250. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse"
1251. >
1252. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1253. </wsdl:output>
1254. </wsdl:operation>
1255. <wsdl:operation name="Renew" >
1256. <wsdl:input
1257. message="wsen:RenewMessage"
1258. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew"
1259. >
1260. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1261. </wsdl:input>
1262. <wsdl:output
1263. message="wsen:RenewResponseMessage"
1264. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse"
1265. >
1266. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1267. </wsdl:output>
1268. </wsdl:operation>
1269. <wsdl:operation name="GetStatus" >
1270. <wsdl:input
1271. message="wsen:GetStatusMessage"
1272. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus"
1273. >
1274. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1275. </wsdl:input>
1276. <wsdl:output
1277. message="wsen:GetStatusResponseMessage"
1278. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse"
1279. >
1280. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1281. </wsdl:output>
1282. </wsdl:operation>
1283. <wsdl:operation name="Release">
1284. <wsdl:input
1285. message="wsen:ReleaseMessage"
1286. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release"
1287. >
1288. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1289. </wsdl:input>
1290. <wsdl:output
1291. message="wsen:ReleaseResponseMessage"
1292. wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse"
1293. >
1294. <wsp:PolicyReference URI="#ServiceMultipleTokenBinding\_Search\_Operation\_policy" />
1295. </wsdl:output>
1296. </wsdl:operation>
1297. </wsdl:binding>
1298. </wsdl:definitions>

# Appendix B: Product Behavior

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

* Microsoft SharePoint Server 2010
* Microsoft SharePoint Server 2013
* Microsoft SharePoint Server 2016
* Microsoft SharePoint Server 2019
* Microsoft SharePoint Server Subscription Edition

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates 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 3.1.4.2](#Appendix_A_Target_1): SharePoint Server 2010 returns an **UnwillingToPerform** (section [2.2.2.20](#Section_78504395a689401693e34e81ca066cac)) SOAP fault and does not perform the operation.

[<2> Section 3.1.4.2](#Appendix_A_Target_2): SharePoint Server 2010 returns an **UnwillingToPerform** (section 2.2.2.20) SOAP fault and does not perform the operation.

# Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

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.
* A document revision that captures changes to protocol functionality.

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 **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

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 | Description | Revision class |
| --- | --- | --- |
| [2.2.2.5](#Section_bba048cda3234d9dba4b4579edc31a0f) DeleteRequestMessage | Updated DeleteRequestMessage wsdl message. | Minor |
| [3.1.4.1](#Section_402385a9ca734114b5b097ba9b00435b) Get | Changed 'soap:header' to 'soap12:header'. | Minor |
| [3.1.4.2](#Section_db3e81d73544458481b70cd48ef8410d) Put | Changed 'soap:header' to 'soap12:header'. | Minor |
| [3.1.4.3](#Section_afd5575282214d88b1dd598a80829b66) Delete | Changed 'soap:header' to 'soap12:header'. | Minor |
| [3.1.4.4](#Section_1c82904d4d554570a852d48269b9df05) Create | Changed 'soap:header' to 'soap12:header'. | Minor |
| [4.1.2](#Section_f83c091abedb4f24accf401e8860477a) SOAP AddResponseMessage | Changed </a:Action> to </wsa:Action> and </a:RelatesTo> to </wsa:RelatesTo>. | Minor |
| [4.4.1](#Section_1a9fdcc5bcdd468eb0b6fe3742b233a2) SOAP DeleteRequestMessage | Updated DeleteRequestMessage example. | Minor |
| [4.4.2](#Section_430816fc3dc845d993fdcaf15bb066c9) SOAP DeleteResponseMessage | Updated DeleteResponseMessage example. | Minor |
| [4.5.2](#Section_ad72bbe139d2403d89f0e13847a8147e) SOAP EnumerateResponseMessage | Updated EnumerateResponseMessage example. | Minor |
| 4.5.2 SOAP EnumerateResponseMessage | Changed schema, added 'wsu' prefix and changed 'u' to 'wsu', changed </string> to </rm:string>. | Minor |
| [6](#Section_067058c70d634b8ba6890a56b6555c5d) Appendix A: Full WSDL | Deleted </xs:sequence> from EnumerateResponse element and updated DeleteRequestMessage wsdl message. | Minor |
| 6 Appendix A: Full WSDL | Changed 'soap:header' to 'soap12:header'. | Minor |

# Index

A

Abstract data model

[client](#section_5c857b8385be4576a72d116504499614) 58

[server](#section_4e2555f1a96341e28308fb0eddc7f15a) 46

[AddRequest element](#section_014d6185c9914c7487d17f2d9a1ef123) 24

[Applicability](#section_c07359e016784e94a653a7c1fee07bd7) 10

[AscendingType simple type](#section_38a6256f59c943e5b053fd0a908545b9) 40

[Attribute groups](#section_e45dfe13958c4bc0908cfdcc9d7c3e73) 45

[Attributes](#section_bba286936b9a4356a6923318763f278a) 45

[AttributeType element](#section_1f947c3696454ddaa9ae493e9e272838) 24

[AttributeTypeAndValue element](#section_a2001cf31f8544af8ab8794b9124881f) 25

[AttributeTypeXmlType simple type](#section_18895745202549948c16684c8efbd8f4) 41

[AttributeValue element](#section_83a4d1893d9840669900b6378f50d706) 25

B

[BaseObjectSearchRequest element](#section_a3fe32a3b85a4d5e90d8d533902f5b77) 25

C

[Capability negotiation](#section_c9980bb0774d4560833c500d0a4923e4) 10

[Change element](#section_222602b2dd5e4da695effad59b587c5b) 26

[Change tracking](#section_813fbac23c8e4b9285238a58a9b546ba) 98

Client

[abstract data model](#section_5c857b8385be4576a72d116504499614) 58

[initialization](#section_2b9077015a894426a1bb349e5ce18aad) 58

[local events](#section_48accc717c5745f2910eaab6bb68bd04) 58

[message processing](#section_e0cae41d955f44739f4d3fee8a57d221) 58

[sequencing rules](#section_e0cae41d955f44739f4d3fee8a57d221) 58

[timer events](#section_3dcfd85b77014ce884e13e0bce3e5337) 58

[timers](#section_c537d26f4fbf4fa88f80a88928111f4d) 58

[Complex types](#section_7a12d2ea84c74e848a68dda1d3c6402b) 36

[EnumerationContextType](#section_20e9798e89d74afc844700edc671af51) 37

[EnumerationDetailType](#section_35eacef79e5645f89c2167962f5151ae) 38

[FilterType](#section_1c9389f3dcfe45d48b46bc890882e9e8) 38

[ItemsType](#section_f54ca45178dc448880a931e220023a5c) 37

[LocalePreferencesType](#section_cae0d71cef4e4a7ab46d4faa255787df) 38

[PullAdjustmentType](#section_b6773bd32a3644eabfc0d11a1b85828b) 39

[SelectionType](#section_a26c7872ca104e6c930f7c854c27ab96) 40

[Creating a synchronization object example](#section_0e30af1d0f564dfab4f5b34b973f7162) 59

D

Data model - abstract

[client](#section_5c857b8385be4576a72d116504499614) 58

[server](#section_4e2555f1a96341e28308fb0eddc7f15a) 46

[Deleting a synchronization object example](#section_e18bc1aa4ab84ed5b384b92461dcd42b) 62

[DialectType simple type](#section_c4024432b17d485f896841369ef41091) 43

E

Elements

[AddRequest](#section_014d6185c9914c7487d17f2d9a1ef123) 24

[AttributeType](#section_1f947c3696454ddaa9ae493e9e272838) 24

[AttributeTypeAndValue](#section_a2001cf31f8544af8ab8794b9124881f) 25

[AttributeValue](#section_83a4d1893d9840669900b6378f50d706) 25

[BaseObjectSearchRequest](#section_a3fe32a3b85a4d5e90d8d533902f5b77) 25

[Change](#section_222602b2dd5e4da695effad59b587c5b) 26

[Enumerate](#section_2c311fbaa3064a66b18b6078c025d1be) 27

[EnumerateResponse](#section_85b368208b624becbcd284e88432cd05) 28

[EnumerationContext](#section_f5c9971ad29a4af29dac4ca7ca662543) 29

[EnumerationDetail](#section_6c039ac4e1d848dcb59f6daa70aa26bc) 29

[Expires](#section_babd69053d1842bd99872fcff4b87a16) 30

[Filter](#section_1dfac4919ae8435da2e9b33d3f6fb113) 30

[Items](#section_878a2b5ec2f04a2e811e7eed74379a6b) 30

[LocalePreferences](#section_d36e138916f64e88aae1802f79001487) 31

[ModifyRequest](#section_1186d376fde744bab741868d92a16314) 31

[PartialAttribute](#section_c04ea7273f7f4aebbeb1b001f7ddf445) 32

[PermissionDeniedFaultDetail](#section_d9fe9aad68cd4437afa8ca94630b3ca6) 32

[Pull](#section_6ff84ef2514d4ad6a56f156a993cec5b) 32

[PullAdjustment](#section_b555e224dbc146da8953e3148ae72983) 33

[PullResponse](#section_66d508025e704761b8d9b0e08f4d1865) 33

[ResourceCreated](#section_0598f9a183f1440ca409655d86f84c2c) 34

[ResourceReferenceProperty](#section_ae8367632f4c4278a00c3f4a03469369) 35

[Selection](#section_909f83a08be24114a59af5b852531691) 35

[Sorting](#section_04f236731fbc41a381900f3fe3fef453) 35

[SortingAttribute](#section_e91597fdddfc464099cab9d7f55b9a3c) 36

[Enumerate element](#section_2c311fbaa3064a66b18b6078c025d1be) 27

[EnumerateResponse element](#section_85b368208b624becbcd284e88432cd05) 28

[Enumerating synchronization objects example](#section_d3eabcbacba04ef19f46ecd920f93103) 66

[EnumerationContext element](#section_f5c9971ad29a4af29dac4ca7ca662543) 29

[EnumerationContextType complex type](#section_20e9798e89d74afc844700edc671af51) 37

[EnumerationDetail element](#section_6c039ac4e1d848dcb59f6daa70aa26bc) 29

[EnumerationDetailType complex type](#section_35eacef79e5645f89c2167962f5151ae) 38

[EnumerationDirectionType simple type](#section_35d6b4d0d92442ea98185a2034df2f67) 43

Events

[local - client](#section_48accc717c5745f2910eaab6bb68bd04) 58

[local - server](#section_b17794b750a2407f86d917e27646e39e) 58

[timer - client](#section_3dcfd85b77014ce884e13e0bce3e5337) 58

[timer - server](#section_add00bedd34948dbaec5736b4acda120) 57

Examples

[creating a synchronization object](#section_0e30af1d0f564dfab4f5b34b973f7162) 59

[deleting a synchronization object](#section_e18bc1aa4ab84ed5b384b92461dcd42b) 62

[enumerating synchronization objects](#section_d3eabcbacba04ef19f46ecd920f93103) 66

[modifying a synchronization object](#section_5a2e9085dbc744dda50f2f7e2afd4038) 61

[permission denied fault](#section_26d1462ed83f42e58f3893163e103413) 74

[pulling synchronization objects](#section_23a74d3118ae4bc5912a90e35b214446) 68

[releasing an enumeration context](#section_e4dd4dc856a1463696fff511b5ac61a9) 70

[renewing an enumeration context](#section_ca78885d093944d3aac13c89ce9efbdb) 71

[retrieving a synchronization object](#section_d0f56f1e5e0d4c01bbb547a8ecd9b729) 60

[retrieving the expiration time of an enumeration context](#section_ea7e9a96132c4aecb576f2610c3c54d1) 72

[Expires element](#section_babd69053d1842bd99872fcff4b87a16) 30

F

[Fields - vendor-extensible](#section_20c4a20f61c0411286861a72d07e83a1) 10

[Filter element](#section_1dfac4919ae8435da2e9b33d3f6fb113) 30

[FilterDialectType simple type](#section_038024b7a8aa40d0aeeb64cc31d6e9b7) 43

[FilterQueryType simple type](#section_e3530726cf0749db84ee299d58ca478b) 44

[FilterType complex type](#section_1c9389f3dcfe45d48b46bc890882e9e8) 38

[Full WSDL](#section_067058c70d634b8ba6890a56b6555c5d) 76

G

[Glossary](#section_7b1734b66c004ff8951e4d5e095d1843) 7

[Groups](#section_1665c90e960642cd9c5479b9407c7df9) 45

I

[Implementer - security considerations](#section_580f57fc7ed149e99fcfa67a995237ed) 75

[Index of security parameters](#section_ea98c078460d4c398cd3ee023aaa4dc5) 75

[Informative references](#section_2354942afbe449ad8d5bd859802673ad) 9

Initialization

[client](#section_2b9077015a894426a1bb349e5ce18aad) 58

[server](#section_701645af8f3f4a8f8d89da5639c11f94) 47

[Introduction](#section_16fe94e778224be4b9b9475484e8e5c3) 7

[Items element](#section_878a2b5ec2f04a2e811e7eed74379a6b) 30

[ItemsType complex type](#section_f54ca45178dc448880a931e220023a5c) 37

L

Local events

[client](#section_48accc717c5745f2910eaab6bb68bd04) 58

[server](#section_b17794b750a2407f86d917e27646e39e) 58

[LocalePreferences element](#section_d36e138916f64e88aae1802f79001487) 31

[LocalePreferencesType complex type](#section_cae0d71cef4e4a7ab46d4faa255787df) 38

M

Message processing

[client](#section_e0cae41d955f44739f4d3fee8a57d221) 58

[server](#section_1c54512733e8454fa76fc66c03796e83) 47

Messages

[AddRequest element](#section_014d6185c9914c7487d17f2d9a1ef123) 24

[AddRequestMessage](#section_f11a5e46e3964dd5b68fa94e414327ee) 14

[AddRequestMessage message](#section_f11a5e46e3964dd5b68fa94e414327ee) 14

[AddResponseMessage](#section_10af2a1e1afa45d186e05057ff5d91a3) 15

[AddResponseMessage message](#section_10af2a1e1afa45d186e05057ff5d91a3) 15

[AscendingType simple type](#section_38a6256f59c943e5b053fd0a908545b9) 40

[attribute groups](#section_e45dfe13958c4bc0908cfdcc9d7c3e73) 45

[attributes](#section_bba286936b9a4356a6923318763f278a) 45

[AttributeType element](#section_1f947c3696454ddaa9ae493e9e272838) 24

[AttributeTypeAndValue element](#section_a2001cf31f8544af8ab8794b9124881f) 25

[AttributeTypeXmlType simple type](#section_18895745202549948c16684c8efbd8f4) 41

[AttributeValue element](#section_83a4d1893d9840669900b6378f50d706) 25

[BaseObjectSearchRequest element](#section_a3fe32a3b85a4d5e90d8d533902f5b77) 25

[BaseObjectSearchRequestMessage](#section_b99626608193402ca8416f45adcb62fe) 15

[BaseObjectSearchRequestMessage message](#section_b99626608193402ca8416f45adcb62fe) 15

[BaseObjectSearchResponseMessage](#section_61bf04209ab647be924d5b0e7790feae) 16

[BaseObjectSearchResponseMessage message](#section_61bf04209ab647be924d5b0e7790feae) 16

[Change element](#section_222602b2dd5e4da695effad59b587c5b) 26

[complex types](#section_7a12d2ea84c74e848a68dda1d3c6402b) 36

[DeleteRequestMessage](#section_bba048cda3234d9dba4b4579edc31a0f) 16

[DeleteRequestMessage message](#section_bba048cda3234d9dba4b4579edc31a0f) 16

[DeleteResponseMessage](#section_176978e8266f4d71aaaff679ae10d8d3) 16

[DeleteResponseMessage message](#section_176978e8266f4d71aaaff679ae10d8d3) 16

[DialectType simple type](#section_c4024432b17d485f896841369ef41091) 43

[elements](#section_d57c7f4996ce42a3af6406b88cb28c76) 22

[EndpointUnavailable](#section_af39a8aea5f74f3ea812bc813a9151ed) 22

[EndpointUnavailable message](#section_af39a8aea5f74f3ea812bc813a9151ed) 22

[Enumerate element](#section_2c311fbaa3064a66b18b6078c025d1be) 27

[enumerated](#section_f31d9f25bdbc49e5bb7e60dae7fb6406) 13

[EnumerateMessage](#section_c1c54249019f4850b3aa57503cabff99) 17

[EnumerateMessage message](#section_c1c54249019f4850b3aa57503cabff99) 17

[EnumerateResponse element](#section_85b368208b624becbcd284e88432cd05) 28

[EnumerateResponseMessage](#section_c5df18b357974c0c8a3f1e0c4e362a19) 17

[EnumerateResponseMessage message](#section_c5df18b357974c0c8a3f1e0c4e362a19) 17

[EnumerationContext element](#section_f5c9971ad29a4af29dac4ca7ca662543) 29

[EnumerationContextType complex type](#section_20e9798e89d74afc844700edc671af51) 37

[EnumerationDetail element](#section_6c039ac4e1d848dcb59f6daa70aa26bc) 29

[EnumerationDetailType complex type](#section_35eacef79e5645f89c2167962f5151ae) 38

[EnumerationDirectionType simple type](#section_35d6b4d0d92442ea98185a2034df2f67) 43

[Expires element](#section_babd69053d1842bd99872fcff4b87a16) 30

[Filter element](#section_1dfac4919ae8435da2e9b33d3f6fb113) 30

[FilterDialectType simple type](#section_038024b7a8aa40d0aeeb64cc31d6e9b7) 43

[FilterQueryType simple type](#section_e3530726cf0749db84ee299d58ca478b) 44

[FilterType complex type](#section_1c9389f3dcfe45d48b46bc890882e9e8) 38

[GetStatusMessage](#section_57e8e752a7b84a37832213cd119b596e) 17

[GetStatusMessage message](#section_57e8e752a7b84a37832213cd119b596e) 17

[GetStatusResponseMessage](#section_8d4f59ad5460457580b768504104a441) 18

[GetStatusResponseMessage message](#section_8d4f59ad5460457580b768504104a441) 18

[groups](#section_1665c90e960642cd9c5479b9407c7df9) 45

[InvalidRepresentation](#section_765140fbe5464e5cb3559b069df37307) 22

[InvalidRepresentation message](#section_765140fbe5464e5cb3559b069df37307) 22

[Items element](#section_878a2b5ec2f04a2e811e7eed74379a6b) 30

[ItemsType complex type](#section_f54ca45178dc448880a931e220023a5c) 37

[LocalePreferences element](#section_d36e138916f64e88aae1802f79001487) 31

[LocalePreferencesType complex type](#section_cae0d71cef4e4a7ab46d4faa255787df) 38

[ModifyRequest element](#section_1186d376fde744bab741868d92a16314) 31

[ModifyRequestMessage](#section_e0083c16ffb140878c8877cb871836c4) 18

[ModifyRequestMessage message](#section_e0083c16ffb140878c8877cb871836c4) 18

[ModifyResponseMessage](#section_71102e15da6e4fddbcaed3392d16a022) 19

[ModifyResponseMessage message](#section_71102e15da6e4fddbcaed3392d16a022) 19

[namespaces](#section_a2f362a3b76947e184b897e8c3b55d34) 12

[PartialAttribute element](#section_c04ea7273f7f4aebbeb1b001f7ddf445) 32

[PermissionDeniedFault](#section_ce89f9c2574249719919a0ce83f7f61b) 18

[PermissionDeniedFault message](#section_ce89f9c2574249719919a0ce83f7f61b) 18

[PermissionDeniedFaultDetail element](#section_d9fe9aad68cd4437afa8ca94630b3ca6) 32

[Pull element](#section_6ff84ef2514d4ad6a56f156a993cec5b) 32

[PullAdjustment element](#section_b555e224dbc146da8953e3148ae72983) 33

[PullAdjustmentType complex type](#section_b6773bd32a3644eabfc0d11a1b85828b) 39

[PullMessage](#section_2647f4c2465f4cce9bf38647c5ecdd04) 19

[PullMessage message](#section_2647f4c2465f4cce9bf38647c5ecdd04) 19

[PullResponse element](#section_66d508025e704761b8d9b0e08f4d1865) 33

[PullResponseMessage](#section_90a97f91c3a547c88e40de3344d175c1) 20

[PullResponseMessage message](#section_90a97f91c3a547c88e40de3344d175c1) 20

[ReferenceType simple type](#section_5882bbf46aef47a29a49d7533ae25268) 44

[ReleaseMessage](#section_34f8ce38340549d290c830dc296d09f1) 20

[ReleaseMessage message](#section_34f8ce38340549d290c830dc296d09f1) 20

[ReleaseResponseMessage](#section_0b99adf177d74382beef46f33a7e771b) 20

[ReleaseResponseMessage message](#section_0b99adf177d74382beef46f33a7e771b) 20

[RenewMessage](#section_f90764319d1a46208912cc28be48a49e) 21

[RenewMessage message](#section_f90764319d1a46208912cc28be48a49e) 21

[RenewResponseMessage](#section_1a80000b829c4955a6b6baa8f6c590c2) 21

[RenewResponseMessage message](#section_1a80000b829c4955a6b6baa8f6c590c2) 21

[ResourceCreated element](#section_0598f9a183f1440ca409655d86f84c2c) 34

[ResourceReferenceProperty element](#section_ae8367632f4c4278a00c3f4a03469369) 35

[Selection element](#section_909f83a08be24114a59af5b852531691) 35

[SelectionType complex type](#section_a26c7872ca104e6c930f7c854c27ab96) 40

[simple types](#section_44fd3bc0de654de2b76d20ad9b753652) 40

[Sorting element](#section_04f236731fbc41a381900f3fe3fef453) 35

[SortingAttribute element](#section_e91597fdddfc464099cab9d7f55b9a3c) 36

[StartingIndexType simple type](#section_e5d0ba203c944e2ab31185f482512cae) 44

[syntax](#section_19812d064b7a4266b9468fe12b3a2948) 12

[transport](#section_2e83f47d13074dcbbf8a9974834fc7e1) 12

[UnwillingToPerform](#section_78504395a689401693e34e81ca066cac) 22

[UnwillingToPerform message](#section_78504395a689401693e34e81ca066cac) 22

[Modifying a synchronization object example](#section_5a2e9085dbc744dda50f2f7e2afd4038) 61

[ModifyRequest element](#section_1186d376fde744bab741868d92a16314) 31

N

[Namespaces](#section_a2f362a3b76947e184b897e8c3b55d34) 12

[Normative references](#section_8aed0d93dc6a4f92b1da32083fbf6b60) 7

O

Operations

[Create](#section_1c82904d4d554570a852d48269b9df05) 52

[Delete](#section_afd5575282214d88b1dd598a80829b66) 51

[Enumerate](#section_bce96c63da3c4fcbbdcc1fb2cc2f8268) 53

[Get](#section_402385a9ca734114b5b097ba9b00435b) 47

[GetStatus](#section_e48ca955e20b4abbb39ca26ce418b731) 57

[Pull](#section_c8c150b28fac4b8980ddbc9ea4fe3c69) 55

[Put](#section_db3e81d73544458481b70cd48ef8410d) 49

[Release](#section_2503ef84c4234805951c589b22591f09) 56

[Renew](#section_61a73eb59bed4bf8978cfd692f975b78) 56

[Overview (synopsis)](#section_8392fc6bdc1a4d36a6645776ca700757) 9

P

[Parameters - security index](#section_ea98c078460d4c398cd3ee023aaa4dc5) 75

[PartialAttribute element](#section_c04ea7273f7f4aebbeb1b001f7ddf445) 32

[Permission denied fault example](#section_26d1462ed83f42e58f3893163e103413) 74

[PermissionDeniedFaultDetail element](#section_d9fe9aad68cd4437afa8ca94630b3ca6) 32

[Preconditions](#section_9bb9e5554df846f49d529b0994028245) 10

[Prerequisites](#section_9bb9e5554df846f49d529b0994028245) 10

[Product behavior](#section_9c51086dc33e44049ac9c62e1a734f3c) 97

Protocol Details

[overview](#section_00856f5268ce4ea29a8864603159540e) 46

[Pull element](#section_6ff84ef2514d4ad6a56f156a993cec5b) 32

[PullAdjustment element](#section_b555e224dbc146da8953e3148ae72983) 33

[PullAdjustmentType complex type](#section_b6773bd32a3644eabfc0d11a1b85828b) 39

[Pulling synchronization objects example](#section_23a74d3118ae4bc5912a90e35b214446) 68

[PullResponse element](#section_66d508025e704761b8d9b0e08f4d1865) 33

R

[References](#section_0c8bf32a10d341769156c97f48495b43) 7

[informative](#section_2354942afbe449ad8d5bd859802673ad) 9

[normative](#section_8aed0d93dc6a4f92b1da32083fbf6b60) 7

[ReferenceType simple type](#section_5882bbf46aef47a29a49d7533ae25268) 44

[Relationship to other protocols](#section_2f752d07147a458c884b3b3cda52c104) 9

[Releasing an enumeration context example](#section_e4dd4dc856a1463696fff511b5ac61a9) 70

[Renewing an enumeration context example](#section_ca78885d093944d3aac13c89ce9efbdb) 71

[ResourceCreated element](#section_0598f9a183f1440ca409655d86f84c2c) 34

[ResourceReferenceProperty element](#section_ae8367632f4c4278a00c3f4a03469369) 35

[Retrieving a synchronization object example](#section_d0f56f1e5e0d4c01bbb547a8ecd9b729) 60

[Retrieving the expiration time of an enumeration context example](#section_ea7e9a96132c4aecb576f2610c3c54d1) 72

S

Security

[implementer considerations](#section_580f57fc7ed149e99fcfa67a995237ed) 75

[parameter index](#section_ea98c078460d4c398cd3ee023aaa4dc5) 75

[Selection element](#section_909f83a08be24114a59af5b852531691) 35

[SelectionType complex type](#section_a26c7872ca104e6c930f7c854c27ab96) 40

Sequencing rules

[client](#section_e0cae41d955f44739f4d3fee8a57d221) 58

[server](#section_1c54512733e8454fa76fc66c03796e83) 47

Server

[abstract data model](#section_4e2555f1a96341e28308fb0eddc7f15a) 46

[Create operation](#section_1c82904d4d554570a852d48269b9df05) 52

[Delete operation](#section_afd5575282214d88b1dd598a80829b66) 51

[Enumerate operation](#section_bce96c63da3c4fcbbdcc1fb2cc2f8268) 53

[Get operation](#section_402385a9ca734114b5b097ba9b00435b) 47

[GetStatus operation](#section_e48ca955e20b4abbb39ca26ce418b731) 57

[initialization](#section_701645af8f3f4a8f8d89da5639c11f94) 47

[local events](#section_b17794b750a2407f86d917e27646e39e) 58

[message processing](#section_1c54512733e8454fa76fc66c03796e83) 47

[Pull operation](#section_c8c150b28fac4b8980ddbc9ea4fe3c69) 55

[Put operation](#section_db3e81d73544458481b70cd48ef8410d) 49

[Release operation](#section_2503ef84c4234805951c589b22591f09) 56

[Renew operation](#section_61a73eb59bed4bf8978cfd692f975b78) 56

[sequencing rules](#section_1c54512733e8454fa76fc66c03796e83) 47

[timer events](#section_add00bedd34948dbaec5736b4acda120) 57

[timers](#section_d0df218947ef4642872a8e2f6b0a4c70) 46

[Simple types](#section_44fd3bc0de654de2b76d20ad9b753652) 40

[AscendingType](#section_38a6256f59c943e5b053fd0a908545b9) 40

[AttributeTypeXmlType](#section_18895745202549948c16684c8efbd8f4) 41

[DialectType](#section_c4024432b17d485f896841369ef41091) 43

[EnumerationDirectionType](#section_35d6b4d0d92442ea98185a2034df2f67) 43

[FilterDialectType](#section_038024b7a8aa40d0aeeb64cc31d6e9b7) 43

[FilterQueryType](#section_e3530726cf0749db84ee299d58ca478b) 44

[ReferenceType](#section_5882bbf46aef47a29a49d7533ae25268) 44

[StartingIndexType](#section_e5d0ba203c944e2ab31185f482512cae) 44

[Sorting element](#section_04f236731fbc41a381900f3fe3fef453) 35

[SortingAttribute element](#section_e91597fdddfc464099cab9d7f55b9a3c) 36

[Standards assignments](#section_96cfcc81724b4fafa173db25f10dac70) 11

[StartingIndexType simple type](#section_e5d0ba203c944e2ab31185f482512cae) 44

Syntax

[messages - overview](#section_19812d064b7a4266b9468fe12b3a2948) 12

T

Timer events

[client](#section_3dcfd85b77014ce884e13e0bce3e5337) 58

[server](#section_add00bedd34948dbaec5736b4acda120) 57

Timers

[client](#section_c537d26f4fbf4fa88f80a88928111f4d) 58

[server](#section_d0df218947ef4642872a8e2f6b0a4c70) 46

[Tracking changes](#section_813fbac23c8e4b9285238a58a9b546ba) 98

[Transport](#section_2e83f47d13074dcbbf8a9974834fc7e1) 12

Types

[complex](#section_7a12d2ea84c74e848a68dda1d3c6402b) 36

[simple](#section_44fd3bc0de654de2b76d20ad9b753652) 40

V

[Vendor-extensible fields](#section_20c4a20f61c0411286861a72d07e83a1) 10

[Versioning](#section_c9980bb0774d4560833c500d0a4923e4) 10

W

[WSDL](#section_067058c70d634b8ba6890a56b6555c5d) 76