

[MS-UPSCP]: User Profile Synchronization (UPS): Configuration Protocol Extensions

Intellectual Property Rights Notice for Open Specifications Documentation

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

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

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

This document provides an overview of the User Profile Synchronization (UPS): Configuration Protocol Extensions Protocol Family. It is intended for use in conjunction with the Microsoft Protocol Technical Documents, publicly available standard specifications, network programming art, and Microsoft Windows distributed systems concepts. It assumes that the reader is either familiar with the aforementioned material or has immediate access to it.

A Protocol Family System Document does not require the use of Microsoft programming tools or programming environments in order to implement the Protocols in the System. Developers who have access to Microsoft programming tools and environments are free to take advantage of them.

Abstract

Specifies the User Profile Synchronization (UPS): Configuration Protocol, which describes the WS-Enumeration dialect implemented by the UPS Configuration database, WS-Transfer extension for dialect for fragment transfer, and WS-Addressing extensions for Transfer.

Revision Summary

Date	Revision History	Revision Class	Comments
08/14/2009	0.1	Major	First Release.
09/25/2009	0.2	Minor	Updated the technical content.
11/06/2009	0.2.1	Editorial	Revised and edited the technical content.
12/18/2009	1.0	Major	Updated and revised the technical content.
01/29/2010	1.1	Minor	Updated the technical content.
03/12/2010	1.1.1	Editorial	Revised and edited the technical content.
04/23/2010	2.0	Major	Updated and revised the technical content.
06/04/2010	2.1	Minor	Updated the technical content.
07/16/2010	2.1	No change	No changes to the meaning, language, or formatting of the technical content.
08/27/2010	2.2	Minor	Clarified the meaning of the technical content.
10/08/2010	2.2	No change	No changes to the meaning, language, or formatting of the technical content.
11/19/2010	2.2	No change	No changes to the meaning, language, or formatting of the technical content.
01/07/2011	2.2	No change	No changes to the meaning, language, or formatting of the technical content.
02/11/2011	2.2	No change	No changes to the meaning, language, or formatting of the technical content.

Contents

1 Introduction	7
1.1 Glossary	7
1.2 References.....	7
1.2.1 Normative References.....	7
1.2.2 Informative References	8
1.3 Overview	9
1.4 Relationship to Other Protocols.....	9
1.5 Prerequisites/Preconditions	10
1.6 Applicability Statement.....	10
1.7 Versioning and Capability Negotiation.....	10
1.8 Vendor-Extensible Fields.....	10
1.9 Standards Assignments	10
2 Messages	11
2.1 Transport.....	11
2.2 Common Message Syntax	11
2.2.1 Namespaces	11
2.2.2 Messages	12
2.2.2.1 AddRequestMessage	13
2.2.2.2 AddResponseMessage	14
2.2.2.3 BaseObjectSearchRequestMessage	14
2.2.2.4 BaseObjectSearchResponseMessage	15
2.2.2.5 DeleteRequestMessage.....	15
2.2.2.6 DeleteResponseMessage.....	16
2.2.2.7 EnumerateMessage.....	16
2.2.2.8 EnumerateResponseMessage	16
2.2.2.9 GetStatusMessage	17
2.2.2.10 GetStatusResponseMessage	17
2.2.2.11 PermissionDeniedFault.....	18
2.2.2.12 ModifyRequestMessage.....	18
2.2.2.13 ModifyResponseMessage	19
2.2.2.14 PullMessage	19
2.2.2.15 PullResponseMessage	19
2.2.2.16 ReleaseMessage	20
2.2.2.17 ReleaseResponseMessage	20
2.2.2.18 RenewMessage	21
2.2.2.19 RenewResponseMessage.....	21
2.2.2.20 UnwillingToPerform	22
2.2.2.21 InvalidRepresentation.....	22
2.2.2.22 EndpointUnavailable.....	22
2.2.3 Elements.....	22
2.2.3.1 AddRequest	24
2.2.3.2 AttributeType	24
2.2.3.3 AttributeTypeAndValue.....	25
2.2.3.4 AttributeValue	25
2.2.3.5 BaseObjectSearchRequest	26
2.2.3.6 Change	26
2.2.3.7 Enumerate.....	27
2.2.3.8 EnumerateResponse	28
2.2.3.9 EnumerationContext	29

2.2.3.10	EnumerationDetail	30
2.2.3.11	Expires	30
2.2.3.12	Filter	31
2.2.3.13	Items	31
2.2.3.14	LocalePreferences	31
2.2.3.15	ModifyRequest	31
2.2.3.16	PartialAttribute	32
2.2.3.17	PermissionDeniedFaultDetail	32
2.2.3.18	Pull	33
2.2.3.19	PullAdjustment	34
2.2.3.20	PullResponse	34
2.2.3.21	ResourceCreated	35
2.2.3.22	ResourceReferenceProperty	36
2.2.3.23	Selection	36
2.2.3.24	Sorting	36
2.2.3.25	SortingAttribute	37
2.2.4	Complex Types	37
2.2.4.1	ItemsType	38
2.2.4.2	EnumerationContextType	38
2.2.4.3	EnumerationDetailType	39
2.2.4.4	FilterType	39
2.2.4.5	LocalePreferencesType	39
2.2.4.6	PullAdjustmentType	40
2.2.4.7	SelectionType	41
2.2.5	Simple Types	41
2.2.5.1	AscendingType	42
2.2.5.2	AttributeTypeXmlType	42
2.2.5.3	DialectType	44
2.2.5.4	EnumerationDirectionType	45
2.2.5.5	FilterDialectType	45
2.2.5.6	FilterQueryType	45
2.2.5.7	ReferenceType	46
2.2.5.8	StartingIndexType	46
2.2.6	Attributes	46
2.2.7	Groups	46
2.2.8	Attribute Groups	46
3	Protocol Details	47
3.1	Server Details	47
3.1.1	Abstract Data Model	47
3.1.2	Timers	47
3.1.3	Initialization	48
3.1.4	Message Processing Events and Sequencing Rules	48
3.1.4.1	Get	48
3.1.4.1.1	Messages	50
3.1.4.1.2	Elements	50
3.1.4.2	Put	50
3.1.4.2.1	Messages	52
3.1.4.2.2	Elements	52
3.1.4.2.3	Attributes	52
3.1.4.3	Delete	52
3.1.4.3.1	Messages	53
3.1.4.3.2	Elements	53

3.1.4.4	Create.....	53
3.1.4.4.1	Messages	54
3.1.4.5	Enumerate.....	55
3.1.4.5.1	Messages	55
3.1.4.5.2	Elements.....	56
3.1.4.5.2.1	MaxElements	56
3.1.4.6	Pull.....	56
3.1.4.6.1	Messages	57
3.1.4.7	Release	57
3.1.4.7.1	Messages	57
3.1.4.8	Renew.....	57
3.1.4.8.1	Messages	58
3.1.4.9	GetStatus	58
3.1.4.9.1	Messages	58
3.1.5	Timer Events	59
3.1.6	Other Local Events	59
3.2	Client Details.....	59
3.2.1	Abstract Data Model	59
3.2.2	Timers	59
3.2.3	Initialization	59
3.2.4	Message Processing Events and Sequencing Rules.....	59
3.2.5	Timer Events	59
3.2.6	Other Local Events	60
4	Protocol Examples.....	61
4.1	Example of Creating a Synchronization Object.....	61
4.1.1	SOAP AddRequestMessage	61
4.1.2	SOAP AddResponseMessage	61
4.2	Example of Retrieving a Synchronization Object	62
4.2.1	SOAP BaseObjectSearchRequestMessage	62
4.2.2	SOAP BaseObjectSearchResponseMessage	63
4.3	Example of Modifying a Synchronization Object	63
4.3.1	SOAP ModifyRequestMessage.....	63
4.3.2	SOAP ModifyResponseMessage.....	64
4.4	Example of Deleting a Synchronization Object	65
4.4.1	SOAP DeleteRequestMessage.....	65
4.4.2	SOAP DeleteResponseMessage.....	65
4.4.3	SOAP Encrypted DeleteRequestMessage.....	66
4.4.4	SOAP Encrypted DeleteResponseMessage.....	68
4.5	Example of Enumerating Synchronization Objects.....	69
4.5.1	SOAP EnumerateMessage.....	69
4.5.2	SOAP EnumerateResponseMessage	70
4.6	Example of Pulling Synchronization Objects	71
4.6.1	SOAP PullMessage	71
4.6.2	SOAP PullResponseMessage.....	72
4.7	Example of Releasing an Enumeration Context	73
4.7.1	SOAP ReleaseMessage	73
4.7.2	SOAP ReleaseResponseMessage	74
4.8	Example of Renewing an Enumeration Context	74
4.8.1	SOAP RenewMessage.....	75
4.8.2	SOAP RenewResponseMessage	75
4.9	Example of Retrieving the Expiration Time of an Enumeration Context	76
4.9.1	SOAP GetStatusMessage	76

4.9.2 SOAP GetStatusResponseMessage	77
4.10 Example of Permission Denied Fault	77
4.10.1 SOAP Permission Denied Fault.....	77
5 Security.....	79
5.1 Security Considerations for Implementers.....	79
5.2 Index of Security Parameters	79
6 Appendix A: Full WSDL	80
7 Appendix B: Product Behavior	105
8 Change Tracking.....	106
9 Index	107

1 Introduction

This document specifies the User Profile Synchronization (UPS): Configuration Protocol Extensions. This protocol is used to create, read, update, delete, and enumerate objects that configure synchronization between connected data sources.

1.1 Glossary

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

globally unique identifier (GUID)
SOAP action
SOAP body
SOAP fault
SOAP header
Uniform Resource Locator (URL)

The following terms are specific to this document:

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

1.2 References

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[IANAPORT] Internet Assigned Numbers Authority, "Port Numbers", November 2006, <http://www.iana.org/assignments/port-numbers>

[MC-NETCEX] Microsoft Corporation, ".NET Context Exchange Protocol Specification", February 2009.

[MS-NETTR] Microsoft Corporation, ".NET Tracing Protocol Specification", April 2008.

[MS-SPNG] Microsoft Corporation, "[Simple and Protected GSS-API Negotiation Mechanism \(SPNEGO\) Extension](#)", January 2007.

[MS-UPSCDS] Microsoft Corporation, "[User Profile Synchronization \(UPS\): Configuration Data Structure](#)", August 2009.

[MS-WSTIM] Microsoft Corporation, "[WS-Transfer: Identity Management Operations for Directory Access Extensions](#)", December 2008.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.ietf.org/rfc/rfc2119.txt>

[SOAP1.2/1] Gudgin, M., Hadley, M., Mendelsohn, N., Moreau, J., and Nielsen, H.F., "SOAP Version 1.2 Part 1: Messaging Framework", W3C Recommendation, June 2003, <http://www.w3.org/TR/2003/REC-soap12-part1-20030624>.

[WS-Policy] Siddharth, B., Box, D., Chappell, D., et al., "Web Services Policy 1.2 - Framework (WS-Policy)", April 2006, <http://www.w3.org/Submission/2006/SUBM-WS-Policy-20060425/>

[WSA1.0 SOAP Binding] Gudgin, M., Ed., Hadley, M., Ed., and Rogers, T., Ed., "Web Services Addressing 1.0 - SOAP Binding", W3C Recommendation 9 May 2006, <http://www.w3.org/TR/2006/REC-ws-addr-soap-20060509/ws-addr-soap.pdf>.

[WSAddressing] Box, D., Christensen, E., Ferguson, D., et al., "Web Services Addressing (WS-Addressing)", August 2004, <http://www.w3.org/Submission/ws-addressing/>

If you have any trouble finding [WSAddressing], please check [here](#).

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

[WSENUM] Alexander, J., Box, D., Cabrera, L.F., et al., "Web Services Enumeration (WS-Enumeration)", March 2006, <http://www.w3.org/Submission/2006/SUBM-WS-Enumeration-20060315/>

If you have any trouble finding [WSENUM], please check [here](#).

[WSSC1.3] Lawrence, K., Kaler, C., Nadalin, A., et al., "WS-SecureConversation 1.3", March 2007, <http://docs.oasis-open.org/ws-sx/ws-secureconversation/200512/ws-secureconversation-1.3-os.html>

[WSSE 1.0] Nadalin, A., Kaler, C., Hallam-Baker, P., and Monzillo, R., Eds., "Web Services Security: SOAP Message Security 1.0 (WS-Security 2004)", OASIS Standard 200401, March 2004, <http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0.pdf>.

[WSSP1.2/10.1] OASIS Standard, "WS-SecurityPolicy 1.2 - 10.1 Trust13 Assertion", July 2007, http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702/ws-securitypolicy-1.2-spec-os.html#_Toc161826576

[WSTrust] IBM, Microsoft, Nortel, VeriSign, "WS-Trust V1.0", February 2005, <http://specs.xmlsoap.org/ws/2005/02/trust/WS-Trust.pdf>

[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/>

[XMLNS] World Wide Web Consortium, "Namespaces in XML 1.0 (Second Edition)", August 2006, <http://www.w3.org/TR/REC-xml-names/>

[XMLSCHEMA1/2] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/xmlschema-1/>

[XMLSCHEMA2/2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/xmlschema-2>

1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "[Windows Protocols Master Glossary](#)", March 2007.

[WSA1.0 Metadata] Gudgin, M., Ed., Hadley, M., Ed., Rogers, T., Ed., Yalcinalp, U., Ed., "Web Services Addressing 1.0 - Metadata", W3C Recommendation 4 September 2007, <http://www.w3.org/TR/ws-addr-metadata/>.

[WSA1.0] World Wide Web Consortium, "Web Services Addressing 1.0 - WSDL Binding", 29 May 2006, <http://www.w3.org/TR/ws-addr-wsdl/>.

1.3 Overview

The 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. The structure of the configuration objects carried in this protocol is defined in [\[MS-UPSCDS\]](#).

1.4 Relationship to Other Protocols

The UPS: Configuration Protocol Extensions use [\[WSSE 1.0\]](#) over [\[SOAP1.2/1\]](#) as shown in the following figure.

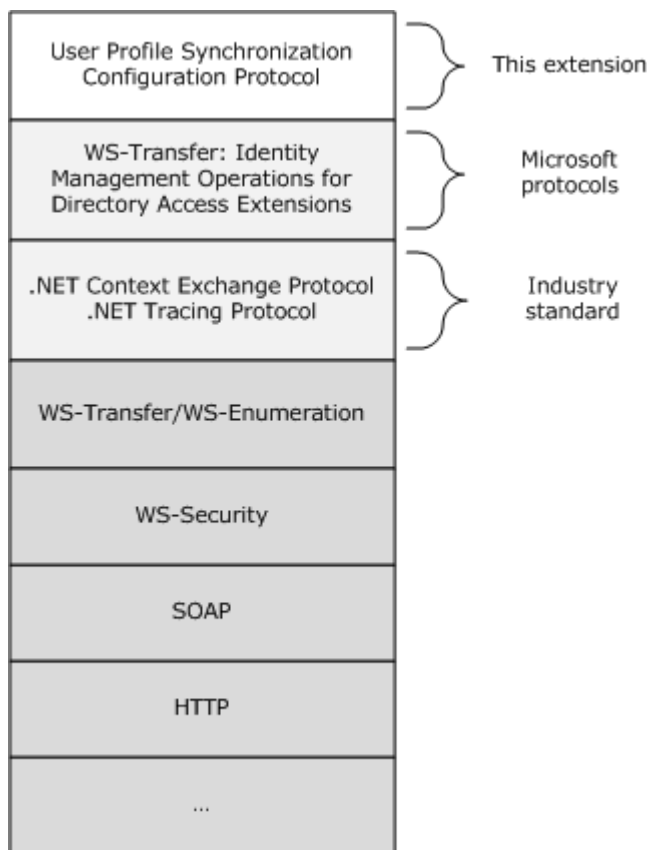


Figure 1: Protocol layering diagram for User Profile Synchronization (UPS): Configuration Protocol Extensions

1.5 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** 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.

1.6 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 defined in [\[MS-UPSCDS\]](#). No higher level protocols are layered atop this protocol.

1.7 Versioning and Capability Negotiation

This protocol does not define any versioning and capabilities negotiation.

1.8 Vendor-Extensible Fields

None.

1.9 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]

2 Messages

2.1 Transport

Messages MUST be transported using [\[WSSP1.2/10.1\]](#) over [\[SOAP1.2/1\]](#). 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 [Appendix A: Full WSDL \(section 6\)](#). [\[WSSP1.2/10.1\]](#) 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 Appendix A: Full WSDL.

As defined by the WSDL in Appendix A: Full WSDL, 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](#) and da:IdentityManagementOperation MUST NOT be encrypted. Messages MUST be encrypted with Basic256 encryption algorithm suite. Basic256 is defined in [\[WSSP1.2/10.1\]](#) section 6.1. Messages MUST use [\[WSTrust\]](#) 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:

```
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 [\[MS-SPNG\]](#). The SPNEGO requirement is:

```
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](#) for security considerations.

2.2 Common Message Syntax

This section contains common definitions used by this protocol. The syntax of the definitions uses XML Schema as defined in [\[XMLSCHEMA1/2\]](#) and [\[XMLSCHEMA2/2\]](#), and Web Services Description Language as defined in [\[WSDL\]](#).

2.2.1 Namespaces

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

Prefix	Namespace URI	Reference
s	http://www.w3.org/2003/05/soap-envelope	[SOAP1.2/1]

Prefix	Namespace URI	Reference
wsa	http://schemas.xmlsoap.org/ws/2004/08/addressing	[WSAddressing]
xsd	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1/2]
wxf	http://schemas.xmlsoap.org/ws/2004/09/transfer	[WXFR]
wsen	http://schemas.xmlsoap.org/ws/2004/09/enumeration	[WSENUM]
da	http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess	[MS-WSTIM]
rm	http://schemas.microsoft.com/2006/11/ResourceManagement	[MS-UPSCDS]
diag	http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics	[MS-NETTR]
wsc	http://schemas.microsoft.com/ws/2006/05/context	[MC-NETCEX]
t	http://schemas.xmlsoap.org/ws/2005/02/trust	[WSTrust]
wsp	http://www.w3.org/ns/ws-policy	[WS-Policy]
sp	http://schemas.xmlsoap.org/ws/2005/07/securitypolicy	[WSSP1.2/10.1]
wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd	[WSSE 1.0]
wsam	http://www.w3.org/2007/05/addressing/metadata	[WSA1.0 Metadata]
soap12	http://schemas.xmlsoap.org/wsdl/soap12/	[SOAP1.2/1]
wsa10	http://www.w3.org/2005/08/addressing	[WSA1.0]
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]

2.2.2 Messages

Message	Description
AddRequestMessage (section 2.2.2.1)	A request to create a configuration object.
AddResponseMessage (section 2.2.2.2)	A message sent in response to an AddRequestMessage that indicates a successful Create operation.
BaseObjectSearchRequestMessage (section 2.2.2.3)	A request to retrieve a configuration object.
BaseObjectSearchResponseMessage (section 2.2.2.4)	A message sent in response to a BaseObjectSearchRequestMessage that includes a configuration object.
DeleteRequestMessage (section 2.2.2.5)	A request to delete a configuration object.
DeleteResponseMessage (section 2.2.2.6)	A message sent in response to a DeleteRequestMessage that indicates a successful Delete operation.
EndpointUnavailable (section 2.2.2.22)	A fault that results when a critical error on the server prevents

Message	Description
	a response to the request. This type of fault does not indicate that the request is syntactically malformed.
EnumerateMessage (section 2.2.2.7)	A request to initiate an enumeration.
EnumerateResponseMessage (section 2.2.2.8)	A message sent in response to an EnumerateMessage (section 2.2.2.7) that includes configuration objects.
GetStatusMessage (section 2.2.2.9)	A request to retrieve the enumeration context expiration.
GetStatusResponseMessage (section 2.2.2.10)	A message sent in response to a GetStatusMessage (section 2.2.2.9) that includes the enumeration context expiration.
InvalidRepresentation (section 2.2.2.21)	A fault that results from the request containing an invalid representation of an object.
ModifyRequestMessage (section 2.2.2.12)	A request to modify a configuration object.
ModifyResponseMessage (section 2.2.2.13)	A message sent in response to a ModifyRequestMessage that indicates a successful Put operation.
PermissionDeniedFault (section 2.2.2.11)	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)	A request to pull subsequent objects in an enumeration.
PullResponseMessage (section 2.2.2.15)	A message sent in response to a PullMessage that includes subsequent objects in an enumeration.
ReleaseMessage (section 2.2.2.16)	A request to release an enumeration context.
ReleaseResponseMessage (section 2.2.2.17)	A message sent in response to a ReleaseMessage that indicates a successful Release operation.
RenewMessage (section 2.2.2.18)	A request to renew an enumeration context.
RenewResponseMessage (section 2.2.2.19)	A message sent in response to a RenewMessage that indicates a successful Renew operation.
UnwillingToPerform (section 2.2.2.20)	A fault that results from the server not being willing to perform a given request.

2.2.2.1 AddRequestMessage

The client sends the message AddRequestMessage to request the [Create \(section 3.1.4.4\)](#) operation. The message AddRequestMessage is defined in [\[MS-WSTIM\]](#) section 3.3.4.1.1.1.

The **SOAP action** value of the message MUST be:

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

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

The **SOAP body** MUST include the element `da:AddRequest`. The extension to [MS-WSTIM] of element `da:AddRequest` is defined in this specification in section [2.2.3.1](#).

```
<wsdl:message name="AddRequestMessage">
  <wsdl:part name="Body" element="da:AddRequest"/>
</wsdl:message>
```

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

2.2.2.2 AddResponseMessage

The server sends the message `AddResponseMessage` in response to a client's request [AddRequestMessage \(section 2.2.2.1\)](#). The message `AddResponseMessage` is defined in [MS-WSTIM] section 3.3.4.1.1.2.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse
```

The SOAP body MUST include the element `wxf:ResourceCreated`. The extension to [WSAddressing] of element `wxf:ResourceCreated` is defined in this specification in section [2.2.3.21](#).

```
<wsdl:message name="AddResponseMessage">
  <wsdl:part name="Body" element="wxf:ResourceCreated"/>
</wsdl:message>
```

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

2.2.2.3 BaseObjectSearchRequestMessage

The client sends the message `BaseObjectSearchRequestMessage` to request the [Get \(section 3.1.4.1\)](#) operation. The message `BaseObjectSearchRequestMessage` is defined in [MS-WSTIM] section 3.2.4.1.1.1.

The SOAP action value of the message MUST be:

```
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`. The element `rm:ResourceReferenceProperty` is defined in this specification in section [2.2.3.22](#).

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

```
<wsdl:message name="BaseObjectSearchRequestMessage">
  <wsdl:part name="Body" element="da:BaseObjectSearchRequest"/>
</wsdl:message>
```

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

2.2.2.4 BaseObjectSearchResponseMessage

The server sends the message BaseObjectSearchResponseMessage in response to a client's request [BaseObjectSearchRequestMessage \(section 2.2.2.3\)](#). The message BaseObjectSearchResponseMessage is defined in [\[MS-WSTIM\]](#) section 3.2.4.1.1.2.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse
```

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.

```
<wsdl:message name="BaseObjectSearchResponseMessage">
  <wsdl:part name="Body" element="da:BaseObjectSearchResponse"/>
</wsdl:message>
```

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

2.2.2.5 DeleteRequestMessage

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

The SOAP action value of the message MUST be:

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

The SOAP header MUST include the element rm:[ResourceReferenceProperty](#). The element rm:ResourceReferenceProperty is defined in this specification in section [2.2.3.22](#).

The SOAP body MUST be empty.

```
<wsdl:message name="DeleteRequestMessage" />
```

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

2.2.2.6 DeleteResponseMessage

The server sends the message DeleteResponseMessage in response to a client's [DeleteRequestMessage \(section 2.2.2.5\)](#) request. The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse
```

The SOAP body MUST be empty.

```
<wsdl:message name="DeleteResponseMessage" />
```

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

2.2.2.7 EnumerateMessage

The client sends the message EnumerateMessage to request the [Enumerate \(section 3.1.4.5\)](#) operation. The message EnumerateMessage is defined in [\[WSENUM\]](#) section 3.1 as Enumerate request message.

The SOAP action value of the message MUST be:

```
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 this specification in section [2.2.3.7](#).

```
<wsdl:message name="EnumerateMessage">
  <wsdl:part name="Body" element="wsen:Enumerate" />
</wsdl:message>
```

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

2.2.2.8 EnumerateResponseMessage

The server sends message EnumerateResponseMessage in response to a client's [EnumerateMessage \(section 2.2.2.7\)](#) request. The message EnumeraterResponseMessage is defined in [\[WSENUM\]](#) section 3.1.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse
```

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

```
<wsdl:message name="EnumerateResponseMessage">
```



```
<wsdl:part name="Body" element="wsen:EnumerateResponse" />
</wsdl:message>
```

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

2.2.2.9 GetStatusMessage

The client sends the message GetStatusMessage to request the [GetStatus \(section 3.1.4.9\)](#) operation. The message GetStatusMessage is defined in [\[WSENUM\]](#) section 3.4.

The SOAP action value of the message MUST be:

```
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.

```
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 this specification in section [2.2.3.9](#).

```
<wsdl:message name="GetStatusMessage" >
  <wsdl:part name="Body" element="wsen:GetStatus" />
</wsdl:message>
```

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

2.2.2.10 GetStatusResponseMessage

The server sends message GetStatusResponseMessage in response to a client's [GetStatusMessage \(section 2.2.2.9\)](#) request. The message GetStatusResponseMessage is defined in [\[WSENUM\]](#) section 3.4.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse
```

The SOAP body MUST include the element wsen:GetStatusResponse. The element wsen:GetStatusResponse is defined in [\[WSENUM\]](#) section 3.4.

```
wsen:GetStatusResponse/wsen:Expires
```

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

```
<wsdl:message name="GetStatusResponseMessage" >
  <wsdl:part name="Body" element="wsen:ResponseStatus" />
</wsdl:message>
```

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

2.2.2.11 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 [\[SOAP1.2/1\]](#) 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 \(section 2.2.3.17\)](#).

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

2.2.2.12 ModifyRequestMessage

The client sends the message ModifyRequestMessage to request the [Put \(section 3.1.4.2\)](#) operation. The message ModifyRequestMessage is defined in [\[MS-WSTIM\]](#) section 3.2.4.2.1.1.

The SOAP action value of the message MUST be:

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

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

The SOAP header MUST include the element rm:[ResourceReferenceProperty](#). The element rm:ResourceReferenceProperty is defined in this specification in section [2.2.3.22](#).

```
<wsdl:message name="ModifyRequestMessage">
  <wsdl:part name="Body" element="da:ModifyRequest"/>
</wsdl:message>
```

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

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

2.2.2.13 ModifyResponseMessage

The server sends the message `ModifyResponseMessage` in response to a client's [ModifyRequestMessage \(section 2.2.2.12\)](#) request. The message `ModifyResponseMessage` is defined in [\[MS-WSTIM\]](#) section 3.2.4.2.1.2.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/transfer/PutResponse
```

The SOAP body MUST be empty.

```
<wsdl:message name="ModifyResponseMessage" />
```

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

2.2.2.14 PullMessage

The client sends the message `PullMessage` to request the [Pull \(section 3.1.4.6\)](#) operation. The message `PullMessage` is defined in [\[WSENUM\]](#) section 3.2.

The SOAP action value of the message MUST be:

```
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 this specification in section [2.2.3.18](#).

```
<wsdl:message name="PullMessage">  
  <wsdl:part name="Body" element="wsen:Pull" />  
</wsdl:message>
```

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

2.2.2.15 PullResponseMessage

The server sends the message `PullResponseMessage` in response to a client's [PullMessage \(section 2.2.2.14\)](#) request. The message `PullResponseMessage` is defined in [\[WSENUM\]](#) section 3.2.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse
```

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

```
<wsdl:message name="PullResponseMessage">
  <wsdl:part name="Body" element="wsen:PullResponse" />
</wsdl:message>
```

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

2.2.2.16 ReleaseMessage

The client sends ReleaseMessage to request the [Release \(section 3.1.4.7\)](#) operation. The message ReleaseMessage is defined in [\[WSENUM\]](#) section 3.5.

The SOAP action value of the message MUST be:

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

The SOAP body MUST include the element wsen:Release. The element wsen:Release is defined in [\[WSENUM\]](#) section 3.5.

```
wsen:Release/wsen:EnumerationContext
```

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

```
<wsdl:message name="ReleaseMessage">
  <wsdl:part name="Body" element="wsen:Release" />
</wsdl:message>
```

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

2.2.2.17 ReleaseResponseMessage

The server sends ReleaseResponseMessage in response to a client's [ReleaseMessage \(section 2.2.2.16\)](#) request. The message ReleaseResponseMessage is defined in [\[WSENUM\]](#) section 3.5.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse
```

The SOAP body MUST be empty.

```
<wsdl:message name="ReleaseResponseMessage" />
```

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

2.2.2.18 RenewMessage

The client sends the message RenewMessage to request the [Renew \(section 3.1.4.8\)](#) operation. The message RenewMessage is defined in [\[WSENUM\]](#) section 3.3.

The SOAP action value of the message MUST be:

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

The SOAP body MUST include the element wsen:Renew. The element wsen:Renew is defined in [\[WSENUM\]](#) section 3.3.

```
wsen:Renew/wsen:EnumerationContext
```

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

```
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 this specification in section [2.2.3.11](#)

```
<wsdl:message name="RenewMessage" >  
  <wsdl:part name="Body" element="wsen:Renew" />  
</wsdl:message>
```

See section [4.8.1](#) for an example of message ReleaseMessage.

2.2.2.19 RenewResponseMessage

The server sends the message RenewResponseMessage in response to a client's [RenewMessage \(section 2.2.2.18\)](#) request. The message RenewResponseMessage is defined in [\[WSENUM\]](#) section 3.3.

The SOAP action value of the message MUST be:

```
http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse
```

The SOAP body MUST include the element wsen:RenewResponse. The element wsen:RenewResponse is defined in [\[WSENUM\]](#) section 3.3.

```
wsen:RenewResponse/wsen:EnumerationContext
```

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

```
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 this specification in section [2.2.3.11](#).

```
<wsdl:message name="RenewResponseMessage" >
  <wsdl:part name="Body" element="wsen:RenewResponse" />
</wsdl:message>
```

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

2.2.2.20 UnwillingToPerform

If, in response to a [Put \(section 3.1.4.2\)](#) operation 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 defined in [\[MS-WSTIM\]](#) section 3.1.4.2.10.

2.2.2.21 InvalidRepresentation

If the client sends a request for a [Create \(section 3.1.4.4\)](#) or [Put \(section 3.1.4.2\)](#) operation that would result in an invalid representation of a configuration object, the server MUST respond with an InvalidRepresentation fault as defined in [\[WXFR\]](#) section 5.1.

2.2.2.22 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 [\[SOAP1.2/1\]](#). The SOAP fault MUST contain information defined in [\[WSA1.0 SOAP Binding\]](#) section 6.4.5 for the EndpointUnavailable fault.

2.2.3 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)	An element that includes identity attributes to include on a newly created object.
AttributeType (section 2.2.3.2)	An element that identifies one identity attribute of a configuration object.
AttributeTypeAndValue (section 2.2.3.3)	An element that contains elements AttributeType (section 2.2.3.2) and AttributeValue (section 2.2.3.4) .
AttributeValue (section 2.2.3.4)	An element that contains the XML representation of a configuration

Element	Description
	object's identity attribute value.
BaseObjectSearchRequest (section 2.2.3.5)	An element that contains a list of identity attributes to include in message BaseObjectSearchResponseMessage (section 2.2.2.4) .
Change (section 2.2.3.6)	An element that contains elements AttributeType (section 2.2.3.2) and AttributeValue (section 2.2.3.4).
Enumerate (section 2.2.3.7)	An element that contains details of an enumerate request.
EnumerateResponse (section 2.2.3.8)	An element that contains the results of an enumeration.
EnumerationContext (section 2.2.3.9)	An element that contains the results of an enumeration between Enumerate and Pull requests.
EnumerationDetail (section 2.2.3.10)	An element that contains details about an enumeration result.
Expires (section 2.2.3.11)	An element that contains a literal string value.
Filter (section 2.2.3.12)	An element that supplies the filter in an EnumerateMessage (section 2.2.2.7) .
Items (section 2.2.3.13)	An element that contains the configuration resources returned in EnumerateResponse (section 2.2.3.8) and PullResponse (section 2.2.3.20) .
LocalePreferences (section 2.2.3.14)	An element that supplies preferences for the locale of the object to return in an EnumerateResponse.
ModifyRequest (section 2.2.3.15)	An element that contains a list of identity attributes and values for the server to modify.
PartialAttribute (section 2.2.3.16)	An element that contains an XML representation of one identity attribute.
PermissionDeniedFaultDetail (section 2.2.3.17)	An element that supplies details regarding a PermissionDeniedFault defined fault, as specified in section 2.2.2.
Pull (section 2.2.3.18)	An element that contains the details of a pull request.
PullAdjustment (section 2.2.3.19)	An element that specifies the quantity, direction, and starting index in a PullMessage (section 2.2.2.14) .
PullResponse (section 2.2.3.20)	An element that contains the results of a pull.
ResourceCreated (section 2.2.3.21)	An element that contains an endpoint reference of a newly created resource.
ResourceReferenceProperty (section 2.2.3.22)	The reference property value identifies a configuration object.
Selection (section 2.2.3.23)	An element that specifies which identity attributes of a configuration object to return in an EnumerateResponse.
Sorting (section 2.2.3.24)	An element that specifies which identity attributes to use when sorting configuration objects returned in an EnumerateResponse.

Element	Description
SortingAttribute (section 2.2.3.25)	An element that specifies the identity attribute to use when sorting configuration objects returned in an EnumerateResponse (section 2.2.3.8).

2.2.3.1 AddRequest

The element da:AddRequest is defined in [\[MS-WSTIM\]](#) section 3.3.4.1.2.1.

```
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](#). The simple type rm:DialectType is defined in this specification in section [2.2.5.3](#).

```
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 this specification in section [2.2.3.3](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="AddRequest">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:AttributeTypeAndValue" minOccurs="1" maxOccurs="unbounded" />
      </xs:sequence>
      <xs:attribute name="Dialect" type="rm:DialectType"/>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

2.2.3.2 AttributeType

The element da:AttributeType is defined in [\[MS-WSTIM\]](#) section 2.2.3.1. As a profile of [\[MS-WSTIM\]](#), the element value of da:AttributeType MUST be of simple type rm:[AttributeTypeXmlType](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="AttributeType" type="rm:AttributeTypeXmlType"/>
</xs:schema>
```


The simple type `rm:AttributeTypeXmlType` is defined in this specification in section [2.2.5.2](#).

2.2.3.3 AttributeTypeAndValue

The element `da:AttributeTypeAndValue` is defined in [\[MS-WSTIM\]](#) section 2.2.3.2.

```
da:AttributeTypeAndValue/da:AttributeType
```

The element `da:AttributeTypeAndValue` MUST include exactly one element `da:AttributeType`. The element `da:AttributeType` is defined in this specification in section [2.2.3.2](#).

```
da:AttributeTypeAndValue/da:AttributeValue
```

As a profile of [\[MS-WSTIM\]](#), the element `da:AttributeTypeAndValue` MUST include exactly one element `da:AttributeValue`. The element `da:AttributeValue` is defined in this specification in section [2.2.3.4](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="AttributeTypeAndValue">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

2.2.3.4 AttributeValue

The element `da:AttributeValue` is defined in [\[MS-WSTIM\]](#) 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 [\[MS-UPSCDS\]](#) section 2.

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="AttributeValue" type="rm:ItemsType"/>
</xs:schema>
```

The complex type `rm:ItemsType` is defined in this specification in section [2.2.4.1](#)

2.2.3.5 BaseObjectSearchRequest

The element `da:BaseObjectSearchRequest` is defined in [\[MS-WSTIM\]](#) section 3.2.4.1.2.1.

```
da:BaseObjectSearchRequest/@da:Dialect
```

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

```
da:BaseObjectSearchRequest/da:AttributeType
```

The element `da:BaseObjectSearchRequest` MUST include one or more elements `da:AttributeType`. The element `da:AttributeType` is defined in this specification in section [2.2.3.2](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="BaseObjectSearchRequest">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="unbounded" />
      </xs:sequence>
      <xs:attribute name="Dialect" type="rm:DialectType"/>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

2.2.3.6 Change

The element `da:Change` is defined in [\[MS-WSTIM\]](#) section 3.2.4.2.2.2.

```
a:Change/@da:Operation
```

As a profile of [MS-WSTIM], the element `da:Change` MUST include 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.

```
da:Change/da:AttributeType
```

The element `da:Change` MUST include exactly one element `da:AttributeType`. The element `da:AttributeType` is defined in this specification in section [2.2.3.2](#).

da:Change/da:AttributeValue

As a profile of [MS-WSTIM], the element da:Change MUST include exactly one element da:[AttributeValue](#). The element da:AttributeValue is defined in this specification in section [2.2.3.4](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="Change">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="1" />
        <xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1" />
      </xs:sequence>
      <xs:attribute name="Operation" type="da:OperationXmlType"/>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

2.2.3.7 Enumerate

The element wsen:Enumerate is defined in [\[WSENUM\]](#) 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.

wsen:Enumerate/wsen:Filter

As a profile of [\[WSENUM\]](#), the element wsen:[Filter](#) MUST be present as a child of wsen:Enumerate. The element wsen:Filter is defined in this specification in section [2.2.3.12](#).

wsen:Enumerate/rm:LocalePreferences

As an extension to [\[WSENUM\]](#), the element rm:[LocalePreferences](#) MUST be present as a child of wsen:Enumerate. The element rm:LocalePreferences is defined in this specification in section [2.2.3.14](#).

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.

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.

wsen:Enumerate/rm:Sorting

As an extension to [\[WSENUM\]](#), the element rm:Sorting MUST be present as a child of wsen:Enumerate. The element rm:Sorting is defined in this specification in section [2.2.3.24](#).

wsen:Enumerate/rm:Selection

As an extension to [\[WSENUM\]](#), the element rm:Selection MUST be present one or more times as a child of wsen:Enumerate. The element rm:Selection is defined in this specification in section [2.2.3.23](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="Enumerate">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="wsen:Filter" minOccurs="1" maxOccurs="1" />
        <xs:element ref="rm:LocalePreferences" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="rm:Sorting" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="rm:Selection" minOccurs="1" maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

2.2.3.8 EnumerateResponse

The element wsen:EnumerateResponse is defined in [\[WSENUM\]](#) section 3.1.

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 this specification in section [2.2.3.11](#).

wsen:EnumerateResponse/wsen:EndOfSequence

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

wsen:EnumerateResponse/wsen:EnumerationContext

As a profile of [\[WSENUM\]](#), the element wsen:EnumerationContext MUST be present as a child of wsen:EnumerateResponse if the element wsen:EndOfSequence is not present as a child of wsen:PullResponse. The element wsen:EnumerationContext is defined in this specification in section [2.2.3.9](#).

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 this specification in section [2.2.3.10](#).

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 this specification in section [2.2.3.13](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="EnumerateResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="wsen:Expires" minOccurs="1" maxOccurs="1" />
        <xs:element ref="wsen:EnumerationContext" minOccurs="0" maxOccurs="1"/>
        <xs:element ref="rm:EnumerationDetail" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:Items" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:EndOfSequence" minOccurs="0" maxOccurs="1"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

2.2.3.9 EnumerationContext

The element wsen:EnumerationContext is defined in [\[WSENUM\]](#) section 3.1. As a profile of [\[WSENUM\]](#), the element wsen:EnumerationContext MUST be the complex type [EnumerationContextType \(section 2.2.4.2\)](#).

```

<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="EnumerationContext" type="rm:EnumerationContextType">
    </xs:element>
</xs:schema>

```

2.2.3.10 EnumerationDetail

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

```
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 \(section 2.2.3.12\)](#) in the [EnumerateMessage \(section 2.2.2.7\)](#).

```

<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="EnumerationDetail" type="rm:EnumerationDetailType"/>
</xs:schema>

```

The complex type `rm:EnumerationDetailType` is defined in this specification in section [2.2.4.3](#).

2.2.3.11 Expires

The element `wsen:Expires` is defined in [\[WSENUM\]](#) section 3.1. As a profile of [\[WSENUM\]](#), the value of the element `wsen:Expires` MUST be the literal string "12/31/9999 11:59:59 PM".

```

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration">
  <xs:element name="Expires">
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="12/31/9999 11:59:59 PM"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:element>
</xs:schema>

```

2.2.3.12 Filter

The element wsen:Filter is defined in [\[WSENUM\]](#) section 3.1.

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="Filter" type="rm:FilterType"/>
</xs:schema>
```

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

2.2.3.13 Items

The element wsen:Items is defined in [\[WSENUM\]](#) 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](#). The element contains a sequence of XML representations of configuration objects that are defined in [\[MS-UPSCDS\]](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="Items" type="rm:ItemsType"/>
</xs:schema>
```

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

2.2.3.14 LocalePreferences

The element rm:LocalePreferences includes a sequence of LocalePreference elements.

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="LocalePreferences" type="rm:LocalePreferencesType"/>
</xs:schema>
```

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

2.2.3.15 ModifyRequest

The element da:ModifyRequest is defined in [\[MS-WSTIM\]](#) section 3.2.4.2.2.1.

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. The simple type rm:DialectType is defined in this specification in section [2.2.5.3](#).

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 this specification in section [2.2.3.6](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="ModifyRequest">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:Change" minOccurs="1" maxOccurs="unbounded" />
      </xs:sequence>
      <xs:attribute name="Dialect" type="rm:DialectType"/>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

2.2.3.16 PartialAttribute

The element da:PartialAttribute is defined in [\[MS-WSTIM\]](#) 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 [\[MS-UPSCDS\]](#) section 2.

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="PartialAttribute" type="rm:ItemsType"/>
</xs:schema>
```

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

2.2.3.17 PermissionDeniedFaultDetail

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

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
```



```
<xs:element name="PermissionDeniedFaultDetail" type="xs:string"/>
</xs:schema>
```

2.2.3.18 Pull

The element wsen:Pull is defined in [\[WSENUM\]](#) section 3.2.

```
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.

```
wsen:Pull/wsen:MaxElements
```

A profile of [\[WSENUM\]](#), the element wsen:MaxElements MUST be present as a child of wsen:Enumerate. The element wsen:MaxElements is defined in [\[WSENUM\]](#) section 3.2.

```
wsen:Pull/rm:MaxCharacters
```

As a profile of [\[WSENUM\]](#), the element wsen:MaxCharacters MUST be present as a child of wsen:Enumerate. The element wsen:MaxCharacters is defined in [\[WSENUM\]](#) section 3.2.

```
wsen:Pull/wsen:EnumerationContext
```

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

```
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 this specification in section [2.2.3.19](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="Pull">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="wsen:MaxTime" minOccurs="1" maxOccurs="1" />
        <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:EnumerationContext" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="rm:PullAdjustment" minOccurs="1" maxOccurs="1"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

```
    </xs:sequence>
  </xs:complexType>
</xs:element>
</xs:schema>
```

2.2.3.19 PullAdjustment

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

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="PullAdjustment" type="rm:PullAdjustmentType"/>
</xs:schema>
```

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

2.2.3.20 PullResponse

The element `wsen:PullResponse` is defined in [\[WSENUM\]](#) section 3.2.

```
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 this specification in section [2.2.3.13](#).

```
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.

```
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 this specification in section [2.2.3.9](#).

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="PullResponse">
    <xs:complexType>
      <xs:sequence>
```

```

    <xs:element ref="wsen:EnumerationContext" minOccurs="0" maxOccurs="1"/>
    <xs:element ref="wsen:EndOfSequence" minOccurs="0" maxOccurs="1"/>
    <xs:element ref="wsen:Items" minOccurs="1" maxOccurs="1"/>
  </xs:sequence>
</xs:complexType>
</xs:element>
</xs:schema>

```

2.2.3.21 ResourceCreated

The element wxf:ResourceCreated is defined in [\[WXFR\]](#) section 4.1.

```
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 [\[WSAddressing\]](#) section 2.

```
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.

```
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 this specification in section [2.2.3.22](#).

```

<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="ReferenceProperties">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="rm:ResourceReferenceProperty" minOccurs="1" maxOccurs="1"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>

```

2.2.3.22 ResourceReferenceProperty

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

```
<?xml version='1.0' encoding='utf-8' ?>
<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'
elementFormDefault='qualified'>
  <xs:element name="ResourceReferenceProperty" type="rm:ReferenceType"/></xs:schema>
```

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

2.2.3.23 Selection

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

```
<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">
  <xs:element name="Selection" type="rm:AttributeTypeXmlType"/>
</xs:schema>
```

2.2.3.24 Sorting

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

```
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 simple type `rm:DialectType` is defined in this specification in section [2.2.5.3](#).

```
rm:Sorting/rm:SortingAttribute
```

The element `rm:Sorting` MUST have one or more elements `rm:SortingAttribute` as children. The element `rm:SortingAttribute` is defined in this specification in section [2.2.3.25](#).

```
<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">
  <xs:element name="Sorting">
    <xs:complexType>
      <xs:sequence>
```

```

        <xs:element ref="rm:SortingAttribute" minOccurs="1" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="Dialect" type="rm:DialectType"/>
</xs:complexType>
</xs:element>
</xs:schema>

```

2.2.3.25 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](#), as follows:

```

<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:element name="SortingAttribute">
    <xs:complexType>
      <xs:simpleContent>
        <xs:extension base="rm:AttributeTypeXmlType">
          <xs:attribute name="Ascending" type="rm:AscendingType"/>
        </xs:extension>
      </xs:simpleContent>
    </xs:complexType>
  </xs:element>
</xs:schema>

```

2.2.4 Complex Types

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

Complex Type	Description
EnumerationDetailType (section 2.2.4.3)	A complex type that contains details about an enumeration result such as the count of resources.
EnumerationContextType (section 2.2.4.2)	A complex type that includes information necessary for the server to coordinate requests with an original enumeration operation.
FilterType (section 2.2.4.4)	A complex type that extends FilterQueryType (section 2.2.5.6) and includes an XML attribute of simple type FilterDialectType (section 2.2.5.5) .
ItemsType (section 2.2.4.1)	A complex type that includes XML representations of [MS-UPSCDS] configuration objects.
LocalePreferencesType (section 2.2.4.5)	A type used to specify client preferences for locales.
PullAdjustmentType (section 2.2.4.6)	A complex type that includes the quantity, direction, and initial index

Complex Type	Description
2.2.4.6	position for a Pull (section 3.1.4.6) operation.
SelectionType (section 2.2.4.7)	A complex type that contains a sequence of identity attribute type names.

2.2.4.1 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 [\[MS-UPSCDS\] section 2](#).

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

2.2.4.2 EnumerationContextType

The complex type `rm:EnumerationContextType` includes elements that store the state of an enumeration session. The complex type defines the element `wsen:EnumerationContext`.

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:complexType name="EnumerationContextType">
    <xs:sequence>
      <xs:element name="CurrentIndex" type="xs:integer"/>
      <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
      <xs:element ref="wsen:Expires"/>
      <xs:element name="Filter" type="xs:string"/>
      <xs:element ref="rm:LocalePreferences"/>
      <xs:element ref="rm:Selection"/>
      <xs:element ref="rm:Sorting"/>
      <xs:element name="Count" type="xs:integer"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

The simple type `rm:EnumerationDirectionType` is defined in this specification in section [2.2.5.4](#).

The element `wsen:Expires` is defined in this specification in section [2.2.3.11](#).

The element `rm:LocalePreferences` is defined in this specification in section [2.2.3.14](#).

The element `rm:Selection` is defined in this specification in section [2.2.3.23](#).

The element `rm:Sorting` is defined in this specification in section [2.2.3.24](#).

2.2.4.3 EnumerationDetailType

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

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:complexType name="EnumerationDetailType">
    <xs:sequence>
      <xs:element name="Count" type="xs:integer"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

2.2.4.4 FilterType

The complex type `rm:FilterType` extends simple type `rm:FilterQueryType` and includes an XML attribute `wsen:Dialect`.

The XML attribute `wsen:Dialect` is defined in this [\[WSENUM\]](#) section 3.1. As a profile of [\[WSENUM\]](#), the XML attribute `wsen:Dialect` MUST be simple type `rm:FilterDialectType`. The simple type `rm:FilterDialectType` is defined in this specification in section [2.2.5.5](#).

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

2.2.4.5 LocalePreferencesType

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

```
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".

```
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".

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <xs:complexType name="LocalePreferencesType">
    <xs:sequence>
      <xs:element name="LocalePreference" minOccurs="1" maxOccurs="1">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Locale">
              <xs:simpleType>
                <xs:restriction base="xs:string">
                  <xs:enumeration value="en-US"/>
                </xs:restriction>
              </xs:simpleType>
            </xs:element>
            <xs:element name="PreferenceValue">
              <xs:simpleType>
                <xs:restriction base="xs:string">
                  <xs:enumeration value="0"/>
                </xs:restriction>
              </xs:simpleType>
            </xs:element>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

2.2.4.6 PullAdjustmentType

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

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:complexType name="PullAdjustmentType">
    <xs:sequence>
      <xs:element name="StartingIndex" type="rm:StartingIndexType"/>
      <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```


The simple type `rm:StartingIndexType` is defined in this specification in section [2.2.5.8](#).

The simple type `rm:EnumerationDetailType` is defined in this specification in section [2.2.5.4](#).

2.2.4.7 SelectionType

The complex type `rm:SelectionType` defines element `rm:Selection`. The complex type includes a sequence of identity attribute names to use in selection.

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:complexType name="SelectionType">
    <xs:sequence>
      <xs:element name="string" type="rm:AttributeTypeXmlType" minOccurs="1"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

The simple type `rm:AttributeTypeXmlType` is defined in this specification in section [2.2.5.2](#).

2.2.5 Simple Types

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

Simple Type	Description
AscendingType (section 2.2.5.1)	A simple type that derives from <code>xs:string</code> and is set to a specific value.
AttributeTypeXmlType (section 2.2.5.2)	A simple type that derives from <code>xs:string</code> and is restricted to specific identity attributes defined in [MS-UPSCDS] .
DialectType (section 2.2.5.3)	A simple type that derives from <code>xs:anyURI</code> and is set to a specific URI.
EnumerationDirectionType (section 2.2.5.4)	A simple type that derives from <code>xs:string</code> and restricts the value to be "Forwards".
FilterDialectType (section 2.2.5.5)	A simple type that derives from <code>xs:anyURI</code> and is set to a specific URI.
FilterQueryType (section 2.2.5.6)	A simple type that derives from <code>xs:string</code> and restricts the value to a set of strings representing queries.
StartingIndexType (section 2.2.5.8)	A simple type that derives from <code>xs:integer</code> that has the number of configuration objects retrieved from Enumerate (section 3.1.4.5) .
ReferenceType (section 2.2.5.7)	The reference property value identifies a configuration object.

2.2.5.1 AscendingType

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

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

2.2.5.2 AttributeTypeXmlType

The simple type `rm:AttributeTypeXmlType` derives from `xs:string` and is restricted to valid identity attributes defined in [\[MS-UPSCDS\]](#) section 2.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <xs:simpleType name="AttributeTypeXmlType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="AccountName"/>
      <xs:enumeration value="ActionParameter"/>
      <xs:enumeration value="ActionType"/>
      <xs:enumeration value="ActionWorkflowDefinition"/>
      <xs:enumeration value="AD_UserCannotChangePassword"/>
      <xs:enumeration value="Address"/>
      <xs:enumeration value="Assistant"/>
      <xs:enumeration value="AuthenticationWorkflowDefinition"/>
      <xs:enumeration value="AuthNLockoutRegistrationID"/>
      <xs:enumeration value="AuthNWFLockedOut"/>
      <xs:enumeration value="AuthNWFRegistered"/>
      <xs:enumeration value="AuthorizationWorkflowDefinition"/>
      <xs:enumeration value="City"/>
      <xs:enumeration value="Company"/>
      <xs:enumeration value="ComputedMember"/>
      <xs:enumeration value="ConnectedObjectType"/>
      <xs:enumeration value="ConnectedSystem"/>
      <xs:enumeration value="ConnectedSystemScope"/>
      <xs:enumeration value="CostCenter"/>
      <xs:enumeration value="CostCenterName"/>
      <xs:enumeration value="Country"/>
      <xs:enumeration value="CreateConnectedSystemObject"/>
      <xs:enumeration value="CreatedTime"/>
      <xs:enumeration value="CreateILMObject"/>
      <xs:enumeration value="Creator"/>
      <xs:enumeration value="DeletedTime"/>
      <xs:enumeration value="Department"/>
      <xs:enumeration value="Dependency"/>
      <xs:enumeration value="Description"/>
      <xs:enumeration value="DetectedRulesList"/>
      <xs:enumeration value="DisconnectConnectedSystemObject"/>
      <xs:enumeration value="DisplayName"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

```
<xs:enumeration value="Domain"/>
<xs:enumeration value="DomainConfiguration"/>
<xs:enumeration value="Email"/>
<xs:enumeration value="EmployeeEndDate"/>
<xs:enumeration value="EmployeeID"/>
<xs:enumeration value="EmployeeStartDate"/>
<xs:enumeration value="EmployeeType"/>
<xs:enumeration value="ExistenceTest"/>
<xs:enumeration value="ExpectedRulesList"/>
<xs:enumeration value="ExpirationTime"/>
<xs:enumeration value="ExplicitMember"/>
<xs:enumeration value="Filter"/>
<xs:enumeration value="FirstName"/>
<xs:enumeration value="FlowType"/>
<xs:enumeration value="FreezeCount"/>
<xs:enumeration value="FreezeLevel"/>
<xs:enumeration value="GrantRight"/>
<xs:enumeration value="ILMObjectType"/>
<xs:enumeration value="ILMScoping"/>
<xs:enumeration value="InitialFlow"/>
<xs:enumeration value="IsRASEnabled"/>
<xs:enumeration value="JobTitle"/>
<xs:enumeration value="LastName"/>
<xs:enumeration value="LastResetAttemptTime"/>
<xs:enumeration value="Locale"/>
<xs:enumeration value="LoginName"/>
<xs:enumeration value="MailNickname"/>
<xs:enumeration value="Manager"/>
<xs:enumeration value="MembershipCondition"/>
<xs:enumeration value="MiddleName"/>
<xs:enumeration value="MobilePhone"/>
<xs:enumeration value="MVOBJECTID"/>
<xs:enumeration value="ObjectID"/>
<xs:enumeration value="ObjectSID"/>
<xs:enumeration value="ObjectType"/>
<xs:enumeration value="OfficeFax"/>
<xs:enumeration value="OfficeLocation"/>
<xs:enumeration value="OfficePhone"/>
<xs:enumeration value="PersistentFlow"/>
<xs:enumeration value="Photo"/>
<xs:enumeration value="PostalCode"/>
<xs:enumeration value="Precedence"/>
<xs:enumeration value="PrincipalRelativeToResource"/>
<xs:enumeration value="PrincipalSet"/>
<xs:enumeration value="ProxyAddressCollection"/>
<xs:enumeration value="Register"/>
<xs:enumeration value="RegistrationRequired"/>
<xs:enumeration value="RelationshipCriteria"/>
<xs:enumeration value="ResetPassword"/>
<xs:enumeration value="ResourceCurrentRelativeToPrincipal"/>
<xs:enumeration value="ResourceCurrentSet"/>
<xs:enumeration value="ResourceFinalRelativeToPrincipal"/>
<xs:enumeration value="ResourceFinalSet"/>
<xs:enumeration value="ResourceTime"/>
<xs:enumeration value="SIDHistory"/>
<xs:enumeration value="SyncConfig-attribute-inclusion"/>
<xs:enumeration value="SyncConfig-capabilities-mask"/>
<xs:enumeration value="SyncConfig-category"/>
<xs:enumeration value="SyncConfig-component_mappings"/>
```

```

    <xs:enumeration value="SyncConfig-controller-configuration"/>
    <xs:enumeration value="SyncConfig-creation-time"/>
    <xs:enumeration value="SyncConfig-dn-construction"/>
    <xs:enumeration value="SyncConfig-encrypted-attributes"/>
    <xs:enumeration value="SyncConfig-export-attribute-flow"/>
    <xs:enumeration value="SyncConfig-export-type"/>
    <xs:enumeration value="SyncConfig-extension"/>
    <xs:enumeration value="SyncConfig-format-version"/>
    <xs:enumeration value="SyncConfig-id"/>
    <xs:enumeration value="SyncConfig-import-attribute-flow"/>
    <xs:enumeration value="SyncConfig-internal-version"/>
    <xs:enumeration value="SyncConfig-join"/>
    <xs:enumeration value="SyncConfig-last-modification-time"/>
    <xs:enumeration value="SyncConfig-ma-companyname"/>
    <xs:enumeration value="SyncConfig-ma-listname"/>
    <xs:enumeration value="SyncConfig-ma-partition-data"/>
    <xs:enumeration value="SyncConfig-ma-run-data"/>
    <xs:enumeration value="SyncConfig-ma-ui-settings"/>
    <xs:enumeration value="SyncConfig-mv-deletion"/>
    <xs:enumeration value="SyncConfig-password-change-history-size"/>
    <xs:enumeration value="SyncConfig-password-sync"/>
    <xs:enumeration value="SyncConfig-password-sync-allowed"/>
    <xs:enumeration value="SyncConfig-private-configuration"/>
    <xs:enumeration value="SyncConfig-projection"/>
    <xs:enumeration value="SyncConfig-provisioning"/>
    <xs:enumeration value="SyncConfig-provisioning-cleanup"/>
    <xs:enumeration value="SyncConfig-provisioning-cleanup-type"/>
    <xs:enumeration value="SyncConfig-provisioning-type"/>
    <xs:enumeration value="SyncConfig-schema"/>
    <xs:enumeration value="SyncConfig-stay-disconnector"/>
    <xs:enumeration value="SyncConfig-sub-type"/>
    <xs:enumeration value="SyncConfig-version"/>
    <xs:enumeration value="SynchronizationRuleParameters"/>
    <xs:enumeration value="Temporal"/>
  </xs:restriction>
</xs:simpleType>
</xs:schema>

```

2.2.5.3 DialectType

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

```
http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602
```

```

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

```

2.2.5.4 EnumerationDirectionType

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

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

2.2.5.5 FilterDialectType

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

`http://schemas.microsoft.com/2006/11/XPathFilterDialect`

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

2.2.5.6 FilterQueryType

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

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <xs:simpleType name="FilterQueryType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="/ma-data"/>
      <xs:enumeration value="/mv-data"/>
      <xs:enumeration value="/Person"/>
      <xs:enumeration value="/ManagementPolicyRule"/>
      <xs:enumeration value="/Set"/>
      <xs:enumeration value="/SynchronizationRule"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

2.2.5.7 ReferenceType

The simple type `rm:ReferenceType` uniquely identifies a configuration object and contains a **globally unique identifier (GUID)**. The `ReferenceType` extends `xs:string` with the following restrictions:

- Preceded by the literal "urn:uuid:"
- A reference type is of format **GUID** ([MS-DTYP] section 2.3.2.3).
- No open bracket, i.e. {, at the beginning and no close bracket, i.e. }, at the end of the reference type.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <xs:simpleType name="ReferenceType">
    <xs:restriction base="xs:string">
      <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}" />
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

2.2.5.8 StartingIndexType

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

```
<?xml version="1.0" encoding="utf-8"?>
<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">
  <xs:simpleType name="StartingIndexType"/>
</xs:schema>
```

2.2.6 Attributes

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

2.2.7 Groups

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

2.2.8 Attribute Groups

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

3 Protocol Details

The 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](#): Resource, ResourceFactory, and Enumeration.

This protocol extends [\[MS-WSTIM\]](#) and [\[WSENUM\]](#) 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 [\[WSSE 1.0\]](#) 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](#) 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.

3.1 Server Details

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

The Resource endpoint is defined by the Resource port type in [\[WXFR\]](#) and is used to process the following operations:

- [Get \(section 3.1.4.1\)](#)
- [Put \(section 3.1.4.2\)](#)
- [Delete \(section 3.1.4.3\)](#)

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

- [Create \(section 3.1.4.4\)](#)

The Enumeration endpoint is defined by the DataSource port type in [\[WSENUM\]](#) and is used to process the following operations:

- [Enumerate \(section 3.1.4.5\)](#)
- [Pull \(section 3.1.4.6\)](#)
- [Release \(section 3.1.4.7\)](#)
- [GetStatus \(section 3.1.4.9\)](#)
- [Renew \(section 3.1.4.8\)](#)

3.1.1 Abstract Data Model

No new abstract data model is needed other than that specified in [\[MS-WSTIM\]](#) and [\[MS-UPSCDS\]](#).

3.1.2 Timers

This specification does not define any timers needed other than those specified in [\[WSENUM\]](#).

3.1.3 Initialization

The server MUST configure the symmetric key for use in [\[WSSC1.3\]](#).

3.1.4 Message Processing Events and Sequencing Rules

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

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

Beyond the resource data model requirements of [\[WXFR\]](#), [\[MS-WSTIM\]](#), and [\[MS-UPSCDS\]](#), 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.

The server MUST include the `diag:ActivityID` and `wsc:ContextID` headers in all messages as defined in [\[MS-NETTR\]](#) and [\[MC-NETCEX\]](#).

3.1.4.1 Get

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

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

```
s:Header/rm:ResourceReferenceProperty
```

The server MUST use the value in the request message SOAP header element `rm:ResourceReferenceProperty` to identify which configuration object to retrieve. The element `rm:ResourceReferenceProperty` is defined in this specification in section [2.2.3.22](#). If the element `rm:ResourceReferenceProperty` is not present, then the server MUST respond with a [PermissionDeniedFault \(section 2.2.2.11\)](#) SOAP fault. The `PermissionDeniedFault` is defined in section [2.2.2.11](#).

```
da:BaseObjectSearchResponse/da:PartialAttribute
```

The element `da:BaseObjectSearchResponse` in message `BaseObjectSearchResponseMessage` MUST include one element `da:PartialAttribute` for each element `da:AttributeType` 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, or if any of the requested identity attributes does not exist on the configuration object, then the server MUST respond with the `PermissionDeniedFault (section 2.2.2.11)` SOAP fault.

If the client provides a malformed `BaseObjectSearchRequestMessage (section 2.2.2.3)` message that does not satisfy the definition in section [2.2.2.3](#), then the server MUST respond with an [InvalidRepresentation \(section 2.2.2.1\)](#) SOAP fault.

```
<wsdl:operation name="Get">
  <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get"
style="document" />
  <wsdl:input message="da:BaseObjectSearchRequestMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get">
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output message="da:BaseObjectSearchResponseMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse">
    <soap12:body use="literal" />
  </wsdl:output>
  <wsdl:fault name="InvalidRepresentation ">
    <soap12:fault use="literal" name="InvalidRepresentation"
namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
  </wsdl:fault>
  <wsdl:fault name="PermissionDeniedFault">
    <soap12:fault use="literal" name="PermissionDeniedFault"
namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
  </wsdl:fault>
</wsdl:operation>
```

3.1.4.1.1 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) .
BaseObjectSearchResponseMessage	See BaseObjectSearchResponseMessage (section 2.2.2.4) .

3.1.4.1.2 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) .
da:PartialAttribute	See PartialAttribute (section 2.2.3.16) .
da:AttributeType	See AttributeType (section 2.2.3.2) .
da:BaseObjectSearchRequest	See BaseObjectSearchRequest (section 2.2.3.5) .

3.1.4.2 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 \(section 2.2.2.12\)](#) 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 \(section 2.2.2.13\)](#) in response.

```
s:Header/rm:ResourceReferenceProperty
```

The server MUST use the value in the request message SOAP header element rm: [ResourceReferenceProperty \(section 2.2.3.22\)](#) to identify which configuration object to modify. The element rm:ResourceReferenceProperty is defined in this specification in section [2.2.3.22](#). If the element rm:ResourceReferenceProperty is not present then the server MUST respond with the [PermissionDeniedFault \(section 2.2.2.11\)](#) SOAP fault. The PermissionDeniedFault is defined in section [2.2.2.11](#).

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 SOAP fault.

If the client provides a new value that does not match the representation defined in [MS-UPSCDS] , the server MUST respond with an InvalidRepresentation SOAP fault.

As a profile of [MS-WSTIM], 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. 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) 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 MUST 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 a PermissionDeniedFault 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 MUST 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 a PermissionDeniedFault SOAP fault.

If the client requests to change any of the following identity attributes, then the server MUST respond with a PermissionDeniedFault SOAP fault:

- ObjectID
- ObjectType
- Creator
- CreatedTime
- ResourceTime
- DeletedTime

```
<wsdl:operation name="Put">
  <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put"
style="document" />
  <wsdl:input message="da:ModifyRequestMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put">
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output message="da:ModifyResponseMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/PutResponse">
    <soap12:body use="literal" />
  </wsdl:output>
  <wsdl:fault name="InvalidRepresentation ">
    <soap12:fault use="literal" name="I"
namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
  </wsdl:fault>
  <wsdl:fault name="PermissionDeniedFault">
```

```

        <soap12:fault use="literal" name="PermissionDeniedFault"
namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
    </wsdl:fault>
    <wsdl:fault name="UnwillingToPerform ">
        <soap12:fault use="literal" name="UnwillingToPerform"
namespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" />
    </wsdl:fault>
</wsdl:operation>

```

3.1.4.2.1 Messages

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

Message	Description
ModifyRequestMessage	See ModifyRequestMessage (section 2.2.2.12) .
ModifyResponseMessage	See ModifyResponseMessage (section 2.2.2.13) .

3.1.4.2.2 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)
Da:ModifyRequest	See ModifyRequest (section 2.2.3.15) .
Da:Change	See Change (section 2.2.3.6) .

3.1.4.2.3 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) .

3.1.4.3 Delete

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

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

```
s:Header/rm:ResourceReferenceProperty
```

The server MUST use the value in the request message SOAP header element `rm:ResourceReferenceProperty` (section 2.2.3.22) to identify which configuration object to delete. The element `rm:ResourceReferenceProperty` is defined in this specification in section 2.2.3.22.

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

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

```
<wsdl:operation name="Delete">
  <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete"
  style="document" />
  <wsdl:input message="da:DeleteRequestMessage"
  wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete">
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output message="da:DeleteResponseMessage"
  wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse">
    <soap12:body use="literal" />
  </wsdl:output>
  <wsdl:fault name="PermissionDeniedFault">
    <soap12:fault use="literal" name="PermissionDeniedFault"
    namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
  </wsdl:fault>
</wsdl:operation>
```

3.1.4.3.1 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).
DeleteResponseMessage	See DeleteResponseMessage (section 2.2.2.6).

3.1.4.3.2 Elements

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

Element	Description
<code>rm:ResourceReferenceProperty</code>	See ResourceReferenceProperty (section 2.2.3.22).

3.1.4.4 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) 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) 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 \(section 2.2.2.11\)](#) 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 \(section 2.2.2.21\)](#) SOAP fault.

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

- ObjectId
- Creator
- CreatedTime
- ResourceTime
- DeletedTime

```
<wsdl:operation name="Create">
  <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create"
  style="document" />
  <wsdl:input message="da:AddRequestMessage"
  wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create">
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output message="da:AddResponseMessage"
  wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse">
    <soap12:body use="literal" />
  </wsdl:output>
  <wsdl:fault name="InvalidRepresentation ">
    <soap12:fault use="literal" name="InvalidRepresentation"
  namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
  </wsdl:fault>
  <wsdl:fault name="PermissionDeniedFault">
    <soap12:fault use="literal" name="PermissionDeniedFault"
  namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
  </wsdl:fault>
</wsdl:operation>
```

3.1.4.4.1 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) .
AddResponseMessage	See AddResponseMessage (section 2.2.2.2) .

3.1.4.5 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 \(section 2.2.2.7\)](#) 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 \(section 2.2.2.8\)](#) in response.

As a profile of [\[WSENUM\]](#), the server MUST NOT send wsen:FilterDialectRequestedUnavailable SOAP fault. The server MUST NOT send wsen:CannotProcessFilter SOAP fault. The server MUST NOT send wsen:InvalidExpiryTime 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 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 "/Person", then the server MUST return in this response and subsequent responses zero or more configuration objects with identity attribute ObjectType set to "User".

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](#) 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](#) value to the server for all further [\[WSENUM\]](#) messages except Enumerate.

```
<wsdl:operation name="Enumerate">
  <wsdl:input
    message="wsen:EnumerateMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate"
  />
  <wsdl:output
    message="wsen:EnumerateResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse"
  />
</wsdl:operation>
```

3.1.4.5.1 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) .
EnumerateResponseMessage	See EnumerateResponseMessage (section 2.2.2.8) .

3.1.4.5.2 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) .
wsen:MaxElements	The maximum number of elements to return in an EnumerateResponse (section 2.2.3.8) .
wsen:EnumerationContext	See EnumerationContext (section 2.2.3.9) .

3.1.4.5.2.1 MaxElements

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

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.

3.1.4.6 Pull

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

The protocol client sends the message [PullMessage \(section 2.2.2.14\)](#) 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 \(section 2.2.2.15\)](#) in response.

As a profile of [\[WSENUM\]](#), 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.

```
<wsdl:operation name="Pull">
  <wsdl:input
    message="wsen:PullMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull"
  />
  <wsdl:output
    message="wsen:PullResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse"
  />
</wsdl:operation>
```


3.1.4.6.1 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) .
PullResponseMessage	See PullResponseMessage (section 2.2.2.15) .

3.1.4.7 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 \(section 2.2.2.16\)](#) to request that the element wsen: [EnumerationContext](#) be released. If the server accepts the request, then the server MUST send the message [ReleaseResponseMessage \(section 2.2.2.17\)](#) in response.

```
<wsdl:operation name="Release">
  <wsdl:input
    message="wsen:ReleaseMessage"
    wsaction="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release"
  />
  <wsdl:output
    message="wsen:ReleaseResponseMessage"
    wsaction="http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse"
  />
</wsdl:operation>
```

3.1.4.7.1 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) .
ReleaseResponseMessage	See ReleaseResponseMessage (section 2.2.2.17) .

3.1.4.8 Renew

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

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

As a profile of [\[WSENUM\]](#), the server MUST NOT send wsen:InvalidEnumerationContext SOAP fault. The server MUST NOT send wsen:UnableToRenew SOAP fault.

```

<wsdl:operation name="Renew" >
  <wsdl:input
    message="wsen:RenewMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew"
  />
  <wsdl:output
    message="wsen:RenewResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse"
  />
</wsdl:operation>

```

3.1.4.8.1 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) .
RenewResponseMessage	See RenewResponseMessage (section 2.2.2.19) .

3.1.4.9 GetStatus

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

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

As a profile of [\[WSENUM\]](#), the server MUST NOT send wsen:InvalidEnumerationContext SOAP fault.

```

<wsdl:operation name="GetStatus" >
  <wsdl:input
    message="wsen:GetStatusMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus"
  />
  <wsdl:output
    message="wsen:GetStatusResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse"
  />
</wsdl:operation>

```

3.1.4.9.1 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) .

Message	Description
GetStatusResponseMessage	See GetStatusResponseMessage (section 2.2.2.10) .

3.1.5 Timer Events

There are no timer events defined in this protocol.

3.1.6 Other Local Events

There are no local events defined in this protocol.

3.2 Client Details

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

3.2.1 Abstract Data Model

No new abstract data model is needed other than that specified in [\[MS-WSTIM\]](#) and [\[WSENUM\]](#).

3.2.2 Timers

There are no timers defined in this protocol.

3.2.3 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 [\[WSSC1.3\]](#). No additional initialization is required beyond that specified in [\[SOAP1.2/1\]](#) and [\[WSSC1.3\]](#).

3.2.4 Message Processing Events and Sequencing Rules

There is no sequence required for the operations [Create \(section 3.1.4.4\)](#), [Get \(section 3.1.4.1\)](#), [Put \(section 3.1.4.2\)](#), and [Delete \(section 3.1.4.3\)](#). The operations [Pull \(section 3.1.4.6\)](#), [Release \(section 3.1.4.7\)](#), [Renew \(section 3.1.4.8\)](#), and [GetStatus \(section 3.1.4.9\)](#) MUST follow the operation [Enumerate \(section 3.1.4.5\)](#). The element wsen: [EnumerationContext](#) 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 MUST include the diag:ActivityID and wsc:ContextID headers in all messages as defined in [\[MS-NETTR\]](#) and [\[MC-NETCEX\]](#).

3.2.5 Timer Events

There are no timer events defined in this protocol.

3.2.6 Other Local Events

There are no other local events defined in this protocol.

4 Protocol Examples

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

4.1 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 \(section 3.1.4.4\)](#) operation. The client sends the message [AddRequestMessage \(section 4.1.1\)](#), and the server responds with message [AddResponseMessage \(section 4.1.2\)](#).

4.1.1 SOAP AddRequestMessage

```
<?xml version="1.0" encoding="utf-8"?>
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
xmlns:wsa="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <wsa:Action
s:mustUnderstand="1">http://schemas.xmlsoap.org/ws/2004/09/transfer/Create</wsa:Action>
    <da:IdentityManagementOperation s:mustUnderstand="1" />
    <wsa:ReplyTo>
<wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsa:To
s:mustUnderstand="1">http://localhost:5725/ResourceManagementService/ResourceFactory</wsa:To>
  </s:Header>
  <s:Body>
    <da:AddRequest
Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
      <da:AttributeTypeAndValue>
        <da:AttributeType>ObjectType</da:AttributeType>
        <da:AttributeValue>
          <rm:ObjectType>ma-data</rm:ObjectType>
        </da:AttributeValue>
      </da:AttributeTypeAndValue>
      <da:AttributeTypeAndValue>
        <da:AttributeType>DisplayName</da:AttributeType>
        <da:AttributeValue>
          <rm:DisplayName>
            Active Directory Management Agent
          </rm:DisplayName>
        </da:AttributeValue>
      </da:AttributeTypeAndValue>
    </da:AddRequest>
  </s:Body>
</s:Envelope>
```

4.1.2 SOAP AddResponseMessage

```
<s:Envelope xmlns:a="http://www.w3.org/2005/08/addressing"
xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Header>
```

```

    <a:Action
s:mustUnderstand="1">http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse</a:Action>
    <a:RelatesTo>urn:uuid:0ad4aa5a-80d2-4afb-a7ba-718b93dc1f53</a:RelatesTo>
  </s:Header>
  <s:Body>
    <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">
      <EndpointReference xmlns="http://schemas.xmlsoap.org/ws/2004/08/addressing">
        <Address>http://10.195.162.92:5725/ResourceManagementService/Resource</Address>
        <ReferenceProperties>
          <ResourceReferenceProperty
xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">urn:uuid:fa14aafd-d74b-4833-
bd94-94c96ee1b278</ResourceReferenceProperty>
        </ReferenceProperties>
      </EndpointReference>
    </ResourceCreated>
  </s:Body>
</s:Envelope>

```

4.2 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 \(section 3.1.4.1\)](#) operation. The client sends the message [BaseObjectSearchRequestMessage \(section 4.2.1\)](#), and the server responds with message [BaseObjectSearchResponseMessage \(section 4.2.2\)](#).

4.2.1 SOAP BaseObjectSearchRequestMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://www.w3.org/2005/08/addressing"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/09/transfer/Get</wsa:Action>
    <da:IdentityManagementOperation s:mustUnderstand="1" />
    <rm:ResourceReferenceProperty>
      urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
    </rm:ResourceReferenceProperty>
    <wsa:MessageID>
      urn:uuid:928f9abe-875d-4bc1-bb5f-d1be16c035c3
    </wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsa:To>
      http://www.fabrikam.com:5725/IdentityManagementService/Resource
    </wsa:To>
  </s:Header>
  <s:Body>
    <da:BaseObjectSearchRequest Dialect="
http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-
20080602">

```

```

        <da:AttributeType>ObjectType</da:AttributeType>
        <da:AttributeType>DisplayName</da:AttributeType>
    </da:BaseObjectSearchRequest >
</s:Body>
</s:Envelope>

```

4.2.2 SOAP BaseObjectSearchResponseMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://www.w3.org/2005/08/addressing"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

  xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse
    </wsa:Action>
    <wsa:RelatesTo>urn:uuid:928f9abe-875d-4bc1-bb5f-d1be16c035c3</wsa:RelatesTo>
    <wsa:To>
      http://www.w3.org/2005/08/addressing/anonymous
    </wsa:To>
    <wsc:Context>
      <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
    </wsc:Context>
  </s:Header>
  <s:Body>
    <da:BaseObjectSearchResponse>
      <da:PartialAttribute>
        <rm:ObjectType>ma-data</rm:ObjectType>
      </da:PartialAttribute>
      <da:PartialAttribute>
        <rm:DisplayName>Active Directory Management Agent</rm:DisplayName>
      </da:PartialAttribute>
    </da:BaseObjectSearchResponse>
  </s:Body>
</s:Envelope>

```

4.3 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 \(section 3.1.4.2\)](#) operation. The client sends the message [ModifyRequestMessage \(section 4.3.1\)](#), and the server responds with message [ModifyResponseMessage \(section 4.3.2\)](#).

4.3.1 SOAP ModifyRequestMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://www.w3.org/2005/08/addressing"

```

```

    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
<s:Header>
  <wsa:Action>
    http://schemas.xmlsoap.org/ws/2004/09/transfer/Put
  </wsa:Action>
  <da:IdentityManagementOperation s:mustUnderstand="1" />
  <rm:ResourceReferenceProperty>
    urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
  </rm:ResourceReferenceProperty>
  <wsa:MessageID>
    urn:uuid:5fb63904-b05a-408d-8a4a-4d2f9332568e
  </wsa:MessageID>
  <wsa:ReplyTo>
    <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
  </wsa:ReplyTo>
  <wsa:To>
    http://www.fabrikam.com:5725/IdentityManagementService/Resource
  </wsa:To>
</s:Header>
<s:Body>
  <da:ModifyRequest Dialect="
http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-
20080602">
    <da:Change Operation="replace">
      <da:AttributeType>DisplayName</da:AttributeType>
      <da:AttributeValue>
        <rm:DisplayName>AD Management Agent</rm:DisplayName>
      </da:AttributeValue>
    </da:Change>
  </da:ModifyRequest>
</s:Body>
</s:Envelope>

```

4.3.2 SOAP ModifyResponseMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://www.w3.org/2005/08/addressing"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context">
<s:Header>
  <wsa:Action>
    http://schemas.xmlsoap.org/ws/2004/09/transfer/PutResponse
  </wsa:Action>
  <wsa:RelatesTo>
    urn:uuid:5fb63904-b05a-408d-8a4a-4d2f9332568e
  </wsa:RelatesTo>
  <wsa:To>
    http://www.w3.org/2005/08/addressing/anonymous
  </wsa:To>
  <wsc:Context>
    <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
  </wsc:Context>
</s:Header>
<s:Body />

```



```
</s:Envelope>
```

4.4 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 \(section 3.1.4.3\)](#) operation. The client sends the message [DeleteRequestMessage \(section 4.4.1\)](#), and the server responds with message [DeleteResponseMessage \(section 4.4.2\)](#).

For convenience, this example also includes encrypted versions of the message [DeleteRequestMessage \(section 4.4.3\)](#) and message [DeleteResponseMessage \(section 4.4.4\)](#) to illustrate how the protocol is represented after being passed to [\[WSSP1.2/10.1\]](#).

4.4.1 SOAP DeleteRequestMessage

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://www.w3.org/2005/08/addressing"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd=http://www.w3.org/2001/XMLSchema
  xmlns:da="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsa:Action>http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete</wsa:Action>
    <rm:ResourceReferenceProperty>
      urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
    </rm:ResourceReferenceProperty>
    <wsa:MessageID>
      urn:uuid:c694c005-75a2-4cb1-84f9-8d6890da9958
    </wsa:MessageID>
    <wsa:ReplyTo>
      <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsa:To>
      http://www.fabrikam.com:5725/IdentityManagementService/Resource
    </wsa:To>
  </s:Header>
  <s:Body />
</s:Envelope>
```

4.4.2 SOAP DeleteResponseMessage

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://www.w3.org/2005/08/addressing"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context">
  <s:Header>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse
    </wsa:Action>
    <wsa:RelatesTo>urn:uuid:c694c005-75a2-4cb1-84f9-8d6890da9958</wsa:RelatesTo>
    <wsa:To>
```

```

    http://www.w3.org/2005/08/addressing/anonymous
  </wsa:To>
  <wsc:Context>
    <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
  </wsc:Context>
</s:Header>
<s:Body />
</s:Envelope>

```

4.4.3 SOAP Encrypted DeleteRequestMessage

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="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">
  <s:Header>
    <a:Action s:mustUnderstand="1"
u:Id="_4">http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete</a:Action>
    <ResourceReferenceProperty
xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">urn:uuid:88a0aad6-d9eb-454b-
9bfb-b7007e3f0be7</ResourceReferenceProperty>
    <a:MessageID u:Id="_5">urn:uuid:40b2951b-abaee-4503-ac1c-33ae3f595512</a:MessageID>
    <a:ReplyTo u:Id="_6">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1"
u:Id="_7">http://fimdcl:5725/ResourceManagementService/Resource</a:To>
    <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd">
      <u:Timestamp u:Id="uuid-14fce77a-ala7-4423-9b3a-65e7708e28af-417">
        <u:Created>2009-06-09T17:33:47.091Z</u:Created>
        <u:Expires>2009-06-09T17:38:47.091Z</u:Expires>
      </u:Timestamp>
      <c:SecurityContextToken u:Id="uuid-ad80351b-2771-4303-b9a3-1ecf78188dbb-27"
xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
        <c:Identifier>urn:uuid:cef0945a-c70c-45f6-897d-490a4032769b</c:Identifier>
      </c:SecurityContextToken>
      <c:DerivedKeyToken u:Id="_0" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
        <o:SecurityTokenReference>
          <o:Reference ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct" URI="#uuid-
ad80351b-2771-4303-b9a3-1ecf78188dbb-27"/>
        </o:SecurityTokenReference>
        <c:Offset>0</c:Offset>
        <c:Length>24</c:Length>
        <c:Nonce>s2L5LlckfCOBkobF9uEN4A==</c:Nonce>
      </c:DerivedKeyToken>
      <c:DerivedKeyToken u:Id="_1" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
        <o:SecurityTokenReference>
          <o:Reference ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct" URI="#uuid-
ad80351b-2771-4303-b9a3-1ecf78188dbb-27"/>
        </o:SecurityTokenReference>
        <c:Nonce>37srittB4snFuL+twYnBhw==</c:Nonce>
      </c:DerivedKeyToken>
      <e:ReferenceList xmlns:e="http://www.w3.org/2001/04/xmlenc#">
        <e:DataReference URI="#_3"/>
        <e:DataReference URI="#_8"/>
      </e:ReferenceList>
      <e:EncryptedData Id="_8" Type="http://www.w3.org/2001/04/xmlenc#Element"
xmlns:e="http://www.w3.org/2001/04/xmlenc#">

```

```

<e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
<KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
  <o:SecurityTokenReference>
    <o:Reference URI="#_1"/>
  </o:SecurityTokenReference>
</KeyInfo>
<e:CipherData>

<e:CipherValue>Zn8uZduYkdIwfKOFDFCzrZlvXRWuT3J49g5jEIDjkGEGK52M7/oudMBOa12mzfpOOY7SUZR6fpDeX7
9mkZ1Id/Qz90gposQ9jALV/QSfN/XcawAdevMApuRsDqn3yYegR1+KTSFhz+mGQ+AU/wnXQKJY05NbF5JQ4+fzZuTXCHG
0gy5Y8gtiMnpk33VxOPgzlrOc4OIHPARh43hdjnU4uky2G03JNgEshiY9WqgOEpvgzH06tOnHwM2Sp2FyZndKcO4dnw4F
1HkRYr7Ku00RDrXPjj/25E5wn5MB3g02Pb9aGnlTxYXQi88/gz82+OB7stmhFqhAw739ksGGe9fAdsfEkpZh/1g6J09TZ
MjWOotm3NeisziSQblpKQqd/F1+XjD2adHy1QOYI4XUXP7MaD09bh6jKsprsY9UF32dp3Cbig6wicNDCDaGWA1EaEJ94+
k1LXzrBFmB7xzqlaXUQkP6Z3+mLBjp98J9RSrun2vtGsbneXbRgISfNcVjGnQgJiMPACjB+jJRWRSRGRmlXvkrxt/dfN5
KsuTg4Qa84dWIdsedhiHt9wDMTGO/ZxxTbBlNFmMSY0JXKa0dL+EL1S/cj4W7LmQROJg8HX50vLWNRVii+5mGuzwgvvyKn
HYvN2vYnitoc4WZ8aqJoQEa7sQXnd3soQF7ic/oSNOC0gHrJfImpaP5Vs2+D/f3VGt9yAkWRXsTgR1mBVMGLkdPoNtDRP
N+gs2/yQNQ48QhAAyItEZ+UZ/2tFvXKJ0Q8l0I6aeWmFMedbdkx2bRyYctzBHLGCYxv0BG8V1v62/6SFvU+zc+J9CTZ15
+wZxE/a30gbC9gea7efGqnpnj3JmrwBC9rZb/4rzmEeugj4qRh24+OWEOH8W82H8anSL+//h+Gh6kAtOD1t1KQ0QSL25c
RxlM0c8P11XQujAy4vo/E40PTwfhLTKPSWO8Koi9DzQC1EU3gvEM8v8nY2WZSjwoudpiJMPY5D8ioh6BvSSmBBz+LSCT
vVzUB7Y/Qome0Sb6pkzCqjjJF9caWAP3Hr6F17JITBzv+saMSCqQU1Wi/WTtCHFNxIt49LgnrrUoA6kdMxPpdHAA69+h
e8VhfmlZ60BYVZup6B6dvY/LgjHglj1f3a4dcu7fo6bmbTYerV3bYLDf9V+0DvdKYPhi2ymnkVlXf28xB1e12aW92Mafh
ox0fjQUHwosfEmuMwvSscqz2u6eAjmzw1BYBa8iY6P2y4wFBNiErTwnfHdunZsf1f72vMRuCMf4xaCtKBCF1s14MWjFRN
Z42eQ55ZDpT/3wfJ2WJLCHDFD/+UOMs6fMJ8wtJ+PoaOnCo0PyLVZ02iYhj0/Ez1qi0sB0EjH7xRvNBUL2cymC9HH2+4S
bTPwpl+9u1/deLavsZ/hMBgSV6RnKrZnhyYIVqHnKSnJ1Es365/nX1J2BaKqFid9j4IIUh0qcqHMM+oxRX+vujsRhanV
gdg6ME3qzmrFJAQRHKAC+5HnObsXdbfJ9aIhpt/TvnpNaqlDucfh8hCxu7qt/qkCQzq+o5kCk7U+oCf4Y6x01/svMBD74
Duk7sqVm+wVxUxAS/Vxectza7SnuRSZ1tVd7pyyhV8dyaV7PDgt3lBYiphss8R4EHihFCVWcvnEC1NG0s5yDL5HxrYlJw
MWG0koFWq7JPOhtI2XtD333Qz9UI1sAX0skcsu84iXOKYR2wkELr4JJ/NS2Tn7B3YOqB1+r0TnYg86Qms/UQkLo53nnc
4T+j6UScRcL0KKElZ9eyvwBoktReaMoFc6xv9Kh2V51/bly7tDC5m/gALP53iv9ncDvhPaziurWXHiTFP8U4ntEbiSsYf
mY669tiBaI7n67yQVm/OX0T4Eb5NyaybNggv55m0n65BT2it3WYBT3xuB1Ot30g504/QiUu8kGvOwhdIQ11VLDGv9kBK
YFlaJvnC6vBt0NLBRNvqFwgnFi9FcXJd6K5QMD0jpbYibqtEghjJqYE/hWRAP1tZxbmkglnAkrqZXY8FgCPVh2KgtNsjr
TfuZfgsuMFCDDzbJU8eGT2OEXpr9RlwFW8ym02GXIBP15iE8jOZS6IFA235M2xnjkQyMobri7r1QYi01CXr4bWVvuWwxb1
WNGXx/sL5OKxfCAEN2s67CtPBd8i+ERu8L1Pprr1YcGHASqPdcDzQ97TDngqXrpB64JgMAJIJQ1NSrAhA2u/BM40u+Pq
R8j3LhUBXwPvgVQBf1hzxbpiwP4KQURyWgv1Nd6ev0k9SBpOopGdLv7/CWUD1RLEp4FanfjME+HvVhGGGVhn8y6YqHJ
1HxaIUmo/LnsRGfFzchXS14eQ0JIbJV1/ACw30002dL5+4brLe09AcpLkb0nF+fL3aw6vvXnKRwIb1ZzbGxvFbuv7tVf7W
81QTXrbvjL5LtlWlh+XAdwHcu5btj+srM6ITbq8x381noP3C60Vcw+yYH1PjuGxYk2XTtuw2M6GdL8ne9bgbHjkEgu1CB
MbECVPfQT86EL4JAna6Y0FAZ8FCjQXxwH9G/+Vr0Kt10rucnpz8RcsX6mbJvDHHUGQArbiguhNqmtZx2kyG3wjYorWQF0
NKSrCwlbba2Shkt0JAg8IaiosAjSPZRqp2mn2BirAKIAZ8S5sdWI7KtFVB9y/PQ5nrMijKkC6z4uob0tHLzz+7r0o1w1C
aPvY/o/<e:CipherValue>
  </e:CipherData>
</e:EncryptedData>
</o:Security>
</s:Header>
<s:Body u:Id="_2">
  <e:EncryptedData Id="_3" Type="http://www.w3.org/2001/04/xmlenc#Content"
xmlns:e="http://www.w3.org/2001/04/xmlenc#">
    <e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
    <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
      <o:SecurityTokenReference xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd">
        <o:Reference URI="#_1"/>
      </o:SecurityTokenReference>
    </KeyInfo>
    <e:CipherData>
      <e:CipherValue>30wzQEEv/lnHI+juADL1ltf4lxZMJrM5j6utajIDUr0=<e:CipherValue>
    </e:CipherData>
  </e:EncryptedData>
</s:Body>
</s:Envelope>

```

4.4.4 SOAP Encrypted DeleteResponseMessage

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="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">
  <s:Header>
    <a:Action s:mustUnderstand="1"
u:Id="_4">http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse</a:Action>
    <a:RelatesTo u:Id="_5">urn:uuid:40b2951b-abae-4503-ac1c-33ae3f595512</a:RelatesTo>
    <Context u:Id="_6" xmlns="http://schemas.microsoft.com/ws/2006/05/context">
      <Property name="instanceId">aef2994f-79ee-4184-981e-6e9b08449fbf</Property>
    </Context>
    <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd">
      <u:Timestamp u:Id="uuid-ad80351b-2771-4303-b9a3-1ecf78188dbb-30">
        <u:Created>2009-06-09T17:35:23.749Z</u:Created>
        <u:Expires>2009-06-09T17:40:23.749Z</u:Expires>
      </u:Timestamp>
      <c:DerivedKeyToken u:Id="_0" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
        <o:SecurityTokenReference>
          <o:Reference URI="urn:uuid:cef0945a-c70c-45f6-897d-490a4032769b"
ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct"/>
        </o:SecurityTokenReference>
        <c:Offset>0</c:Offset>
        <c:Length>24</c:Length>
        <c:Nonce>gz3yN2Xr+sN702SVxLttxQ==</c:Nonce>
      </c:DerivedKeyToken>
      <c:DerivedKeyToken u:Id="_1" xmlns:c="http://schemas.xmlsoap.org/ws/2005/02/sc">
        <o:SecurityTokenReference>
          <o:Reference URI="urn:uuid:cef0945a-c70c-45f6-897d-490a4032769b"
ValueType="http://schemas.xmlsoap.org/ws/2005/02/sc/sct"/>
        </o:SecurityTokenReference>
        <c:Nonce>fAop6NmTl8KlKlyDO9EobQ==</c:Nonce>
      </c:DerivedKeyToken>
      <e:ReferenceList xmlns:e="http://www.w3.org/2001/04/xmlenc#">
        <e:DataReference URI="#_3"/>
        <e:DataReference URI="#_7"/>
      </e:ReferenceList>
      <e:EncryptedData Id="_7" Type="http://www.w3.org/2001/04/xmlenc#Element"
xmlns:e="http://www.w3.org/2001/04/xmlenc#">
        <e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
        <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
          <o:SecurityTokenReference>
            <o:Reference URI="#_1"/>
          </o:SecurityTokenReference>
        </KeyInfo>
        <e:CipherData>
          <e:CipherValue>ZVNRpiLghDb+n5+8TJ3liGrJyvCPTRIGib7I4LGXILQ407srnCDw7zp4tOZAwNGYyukW9ACj6lpqRJ
H4HrQTMpdtcQ2VlmsNVziOVxHdzYojd05vm+PSrrLRNqYEqfElASd+nBgxodFioTRPsOhrKhRiP4+ld+LiihgJ1+vliA
114NC4u+lytjqkG11M2SuBXANI29Vkimules+U265qbP4dy0+VKtrMBYci/Ct+6ZwWG08JhoLRkiSwrDRx4xpp7XC+qCa
1xcsI3xJO7UiveOhzNiK49BzoKFH6uv8MtIJ+cEiz3myRhw8uGfVzbUW063tahJB5GxmU4VJQwvMhG0eI62rowcvZ
5J7gnfz6AlYtODRwHT8E7yycvqBWXaDkkPxxkqyqKqFmrAJxJFfC0dEnzYOEZC010f7AGNLqy5TNNr8q480BUXEk3Tjr7lh
jKp17dff+Ga012Zw6jkC+pEggevZNA3IVJWlIYieOMdLb8TkswuT5qcKflAHGZ5YZDh21D31gYLbXjvDJBuYxKJ7VFj18
tKr2w1hLGzupQeSt8YVUkxrNBj2FPQcIhWvoFIHciSy+ItEsF1+f8tnHPzgw9n8HhcbGgjt8D7YLl0JdyJeq28nNoVly
+HYQ17db5aLzFWkvpxnLCdLs/4w9DMBOTU12QaoeSIIzs9Y4cIi2j29IW5n+o57k3g5q2ucR5fb90ZByfmK6PNP3cxiCq
zcBP3HM2mGKYymR/lIrpGWAXm3TB5sYnHdj1t+CNad9Z9+cI1LyYa7vPwAdf4XPsPAUIv61Q5fQ06LcgZLbzSYR2xfU7k
omznE/SHV/ET1Tf9opNcRPRB67OZl1+UqYisrfgp/ZQY1zGPPUvDgCw8f94Q6MJ2QV+RLi++8MuQmGQYUI/S0cAeQAdsF
9E2HXm2n4Ry71ZY3NSDpivK++HmBm9RC3J0ZZC44PvjQp6XIzt0s4Bg19TYMPCusQ+fXKyX9Ae36ZAsppM/HNVBU8XbqT
+WT6NpmaX127Xt4s10wgL2eOMc6cKgBKc8LUAsaPJeH3Mq70xb20cPxKrGKCSE7L1h015SemmuLnc/mELVixZ1kpG1Cmw
18UbOophl6PDqa75q3SbShAY5zIt1t8D4tU/WKjd90fnY6JcOtmIisiEz+huJTInoKIwAy8d6/y5TXWXst85KpGmtUqaVH
```

```

RX1FTvC0ZaB++M7JKlznSK21WIwyTpc76T6am2fPhDPiC14XGu+oE+OA9vp+3czWW700g3H67U4QDRoDJetTw11rvB94
BbZac6Ei29XBQs6Hifz6kB+rit5RbNUcqTwxAWGdgyPkKXRvpqJjb2ItFGpGwHIB0wIHUDIqzgeswOt4jP/Crx1NS0LE1
5MmW0iydtKo8Wt8tgaOAtJnv+94mXAC6pWnW+hABXiUkqpTpAufBrjPqlHfksc//m6ryFojmFN+P/ZSs9hS0ldzxfLG6t
V2PACNOH78/zZR4NYoMdyBeNyJlFSsClTjKsea+NjhI1QIcMaP41D+UvLfiL++Zv4Ou+KMfBnAl1WcKXckVXdrMvN4N3G
uy10FG0rwKJG0fxakshET6Owb7mgs0AAIaH/UC6jfUMoKfaqvLl+HWw4janXMyviNXP5PmitgNIHW4ZZUfdNe18g2zeGP
apIPhH9ASWP9ep3rps21cMRP32BEfCgU38W7a023XL/OjxdwLVIXVGFJLbQmaOxQQ2/GCwIz/+2nF+LVwqX3UyKKch0B
Fh1kAIAJbFmqS3C4yaddh/k3uu28YVGI+TWE4afOdDa+CH6fzFIYMT0737e5+YpfPrNexXBMWEyul1CkcTnuQo3zp37QL
E/Q3rbK+4V7UIvFT3hBgLPogX41xa6zBkAOZnmB1HhhJV6iKp2JVs7QdcLusrmCZE4HYnoXH11ia68haajmRCWQRWK3d/
3WfK1Vt8a3oUNhmlji9fBp2Htm8gYbWlatL+4cvEEV0nTQFzPRvdivG1Jcx+JynGkGb8sVkORGxbu2tzR3S3tLiLjDx/L
QrXOyMBS0HedJeDqKtYMDBco+YWWL8/rDp+FHTq56e0njs4BVdkiB4JQVb3xSmHwhYwFOCj1NvQOaa8jpNTW6/f08PL8u
EcAiOzvbYpAjbbE2kwlJ35H01W2dnfZQMT2rVZ1NVczb6u032uEBcoDpUnvz7DgD8ns+IRwNex8xlrvaNbjb8JtVvCE6g
wkXkvjD67wJKvlt4OMg+g6gyWdr9VZYsXrOwoU+DS8ZILZhrU+CcPd916lXDyyOwEE3cxVLqAjqDLrn3mD/jpdGkIW3GA
mg40nAnKFMwUzyFFPs76Neg4NkDIRaSlRmcvCPzOI0mMSDQc1x61BouAl</e:CipherValue>
  </e:CipherData>
</e:EncryptedData>
</o:Security>
</s:Header>
<s:Body u:Id="_2">
  <e:EncryptedData Id="_3" Type="http://www.w3.org/2001/04/xmlenc#Content"
xmlns:e="http://www.w3.org/2001/04/xmlenc#">
    <e:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
    <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
      <o:SecurityTokenReference xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd">
        <o:Reference URI="#_1"/>
      </o:SecurityTokenReference>
    </KeyInfo>
    <e:CipherData>
      <e:CipherValue>GsukYxK61MI6q300I91LRkUGrY+UD09CAai/V11qjkY=</e:CipherValue>
    </e:CipherData>
  </e:EncryptedData>
</s:Body>
</s:Envelope>

```

4.5 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 \(section 3.1.4.5\)](#) operation. The client sends the message [EnumerateMessage \(section 4.5.1\)](#), and the server responds with message [EnumerateResponseMessage \(section 4.5.2\)](#).

4.5.1 SOAP EnumerateMessage

```

<?xml version="1.0" encoding="utf-8"?>
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsa:ReplyTo>
      <wsa:Address>
        http://www.fabrikam.com/sender
      </wsa:Address>
    </wsa:ReplyTo>
    <wsa:To>
      http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
    </wsa:To>
  </s:Header>

```

```

    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate
    </wsa:Action>
    <wsa:MessageID>
      uuid:00000000-0000-0000-c000-000000000046
    </wsa:MessageID>
  </s:Header>
  <s:Body>
    <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">
      <Filter Dialect="http://schemas.microsoft.com/2006/11/XPathFilterDialect"/>/ma-
      data</Filter>
      <LocalePreferences xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
        <LocalePreference>
          <Locale>en-US</Locale>
          <PreferenceValue>0</PreferenceValue>
        </LocalePreference>
      </LocalePreferences>
      <MaxElements>20</MaxElements>
      <MaxCharacters>3668672</MaxCharacters>
      <Sorting Dialect="http://schemas.xmlsoap.org/ws/2006/08/resourceTransfer/Dialect/QName"
        xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
        <SortingAttribute Ascending="true">DisplayName</SortingAttribute>
      </Sorting>
      <Selection
        xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">DisplayName</Selection>
      <Selection
        xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">CreatedTime</Selection>
      <Selection
        xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">Creator</Selection>
      <Selection
        xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">ObjectType</Selection>
      <Selection
        xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">ObjectID</Selection>
    </Enumerate>
  </s:Body>
</s:Envelope>

```

4.5.2 SOAP EnumerateResponseMessage

```

<s:Envelope xmlns:s=http://www.w3.org/2003/05/soap-envelope
  xmlns:wsa="http://www.w3.org/2005/08/addressing"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsa:Action s:mustUnderstand="1">
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse
    </wsa:Action>
    <wsa:RelatesTo>urn:uuid:e3a74cd4-d623-47d6-b33b-0dd733808b66</wsa:RelatesTo>
    <wsc:Context>
      <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
    </wsc:Context>
  </s:Header>

```

```

</s:Header>
<s:Body u:Id="_2">
  <wsen:EnumerateResponse>
    <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
    <wsen:EnumerationContext>
      <rm:Count>1</rm:Count>
      <rm:CurrentIndex>0</rm:CurrentIndex>
      <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
      <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
      <rm:Filter>/ma-data</rm:Filter>
      <rm:LocalePreferences xsi:nil="true" />
      <rm:Selection>
        <rm:string>DisplayName</string>
        <rm:string>ObjectType</string>
        <rm:string>ObjectId</string>
        <rm:string>CreatedTime</string>
        <rm:string>Creator</string>
      </rm:Selection>
      <rm:Sorting
Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeTyp
e-20080602">
        <rm:SortingAttribute Ascending="true">DisplayName</rm:SortingAttribute>
      </rm:Sorting>
    </wsen:EnumerationContext>
    <rm:EnumerationDetail>
      <rm:Count>1</rm:Count>
    </rm:EnumerationDetail>
  </wsen:EnumerateResponse>
  <wsen:Items>
    <rm:ma-data>
      <rm:ObjectType>ma-data</rm:ObjectType>
      <rm:ObjectID>
        urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
      </rm:ObjectID>
      <rm:DisplayName>AD Management Agent</rm:DisplayName>
      <rm:CreatedTime>2009-01-20T23:28:40.207</rm:CreatedTime>
      <rm:Creator>
        urn:uuid:23dbfb6c-557f-48d1-ac38-6d570ddbe189
      </rm:Creator>
    </rm:ma-data>
  </wsen:Items>
</s:Body>
</s:Envelope>

```

4.6 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 \(section 4.6.1\)](#), and the server responds with message [PullResponseMessage \(section 4.6.2\)](#).

4.6.1 SOAP PullMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"

```

```

xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
<s:Header>
  <wsa:To>
    http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
  </wsa:To>
  <wsa:Action>
    http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull
  </wsa:Action>
</s:Header>
<s:Body>
  <wsen:Pull>
    <wsen:EnumerationContext>
      <rm:Count>1</rm:Count>
      <rm:CurrentIndex>0</rm:CurrentIndex>
      <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
      <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
      <rm:Filter>/ma-data</rm:Filter>
      <LocalePreferences xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
        <LocalePreference>
          <Locale>en-US</Locale>
          <PreferenceValue>0</PreferenceValue>
        </LocalePreference>
      </LocalePreferences>
      <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
        <string>DisplayName</string>
        <string>Creator</string>
        <string>CreatedTime</string>
        <string>ObjectType</string>
        <string>ObjectID</string>
      </Selection>
      <rm:Sorting
Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
        <rm:SortingAttribute Ascending="true">DisplayName</rm:SortingAttribute>
      </rm:Sorting>
    </wsen:EnumerationContext>
    <rm:PullAdjustment>
      <rm:StartingIndex>0</rm:StartingIndex>
      <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
    </rm:PullAdjustment>
    <wsen:MaxTime>10675199.02:48:05.4775807</wsen:MaxTime>
    <wsen:MaxElements>20</wsen:MaxElements>
    <wsen:MaxCharacters>3668672</wsen:MaxCharacters>
  </wsen:Pull>
</s:Body>
</s:Envelope>

```

4.6.2 SOAP PullResponseMessage

```

<s:Envelope
xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
  <s:Header>

```



```

    <wsa:To>
      http://www.fabrikam.com/sender
    </wsa:To>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse
    </wsa:Action>
    <wsc:Context>
      <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
    </wsc:Context>
  </s:Header>
  <s:Body>
    <wsen:Items>
      <rm:ma-data>
        <rm:ObjectType>ma-data</rm:ObjectType>
        <rm:ObjectID>
          urn:uuid:fa14aafd-d74b-4833-bd94-94c96ee1b278
        </rm:ObjectID>
        <rm:DisplayName>AD Management Agent</rm:DisplayName>
        <rm:CreatedTime>2009-01-20T23:28:40.207</rm:CreatedTime>
        <rm:Creator>
          urn:uuid:23dbfb6c-557f-48d1-ac38-6d570ddbe189
        </rm:Creator>
      </rm:ma-data>
    </wsen:Items>
    <wsen:EndOfSequence/>
  </s:Body>
</s:Envelope>

```

4.7 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 \(section 3.1.4.7\)](#) operation. The client sends the message [ReleaseMessage \(section 4.7.1\)](#), and the server responds with message [ReleaseResponseMessage \(section 4.7.2\)](#).

4.7.1 SOAP ReleaseMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsa:ReplyTo>
      <wsa:Address>
        http://www.fabrikam.com/sender
      </wsa:Address>
    </wsa:ReplyTo>
    <wsa:To>
      http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
    </wsa:To>
    <wsc:Context>
      <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
    </wsc:Context>
    <wsa:Action>

```

```

    http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release
  </wsa:Action>
  <wsa:MessageID>
    uuid:00000000-0000-0000-c000-000000000046
  </wsa:MessageID>
</s:Header>
<s:Body>
  <wsen:Release>
    <wsen:EnumerationContext>
      <rm:Count>1</rm:Count>
      <rm:CurrentIndex>0</rm:CurrentIndex>
      <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
      <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
      <rm:Filter>/ma-data</rm:Filter>
      <rm:LocalePreferences xsi:nil="true" />
      <rm:Selection xsi:nil="true" />
      <rm:Sorting xsi:nil="true" />
    </wsen:EnumerationContext>
  </wsen:Release>
</s:Body>
</s:Envelope>

```

4.7.2 SOAP ReleaseResponseMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
  <s:Header>
    <wsa:To>
      http://www.fabrikam.com/sender
    </wsa:To>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse
    </wsa:Action>
    <wsc:Context>
      <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
    </wsc:Context>
  </s:Header>
  <s:Body/>
</s:Envelope>

```

4.8 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 \(section 3.1.4.8\)](#) operation. The client sends the message [RenewMessage \(section 4.8.1\)](#), and the server responds with message [RenewResponseMessage \(section 4.8.2\)](#).

4.8.1 SOAP RenewMessage

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
  <s:Header>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew
    </wsa:Action>
    <wsa:ReplyTo>
      <wsa:Address>
        http://www.fabrikam.com/sender
      </wsa:Address>
    </wsa:ReplyTo>
    <wsa:To>
      http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
    </wsa:To>
  </s:Header>
  <s:Body>
    <wsen:Renew>
      <wsen:EnumerationContext>
        <rm:Count>1</rm:Count>
        <rm:CurrentIndex>0</rm:CurrentIndex>
        <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
        <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
        <rm:Filter>/ma-data</rm:Filter>
        <rm:LocalePreferences xsi:nil="true" />
        <rm:Selection xsi:nil="true" />
        <rm:Sorting xsi:nil="true" />
      </wsen:EnumerationContext>
      <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
    </wsen:Renew>
  </s:Body>
</s:Envelope>
```

4.8.2 SOAP RenewResponseMessage

```
<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
  <s:Header>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse
    </wsa:Action>
    <wsa:To>
      http://www.fabrikam.com/sender
    </wsa:To>
  </s:Header>
  <s:Body>
    <wsen:RenewResponse>
      <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
    </wsen:RenewResponse>
  </s:Body>
</s:Envelope>
```

```

    <wsen:EnumerationContext>
      <rm:Count>1</rm:Count>
      <rm:CurrentIndex>0</rm:CurrentIndex>
      <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
      <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
      <rm:Filter>/ma-data</rm:Filter>
      <rm:LocalePreferences xsi:nil="true" />
      <rm:Selection xsi:nil="true" />
      <rm:Sorting xsi:nil="true" />
    </wsen:EnumerationContext>
  </wsen:RenewResponse>
</s:Body>
</s:Envelope>

```

4.9 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 \(section 3.1.4.9\)](#) operation. The client sends the message [GetStatusMessage \(section 4.9.1\)](#), and the server responds with message [GetStatusResponseMessage \(section 4.9.2\)](#).

4.9.1 SOAP GetStatusMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
  <s:Header>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus
    </wsa:Action>
    <wsa:ReplyTo>
      <wsa:Address>
        http://www.fabrikam.com/sender
      </wsa:Address>
    </wsa:ReplyTo>
    <wsa:To>
      http://www.fabrikam.com:5725/IdentityManagementService/Enumeration
    </wsa:To>
  </s:Header>
  <s:Body>
    <wsen:GetStatus>
      <wsen:EnumerationContext>
        <rm:Count>1</rm:Count>
        <rm:CurrentIndex>0</rm:CurrentIndex>
        <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
        <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
        <rm:Filter>/ma-data</rm:Filter>
        <LocalePreferences xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
          <LocalePreference>
            <Locale>en-US</Locale>
            <PreferenceValue>0</PreferenceValue>
          </LocalePreference>
        </LocalePreferences>
      </wsen:EnumerationContext>
    </wsen:GetStatus>
  </s:Body>
</s:Envelope>

```

```

        <Selection xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
            <string>DisplayName</string>
            <string>Creator</string>
            <string>CreatedTime</string>
            <string>ObjectType</string>
            <string>ObjectID</string>
        </Selection>
        <rm:Sorting
Dialect="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-20080602">
            <rm:SortingAttribute Ascending="true">DisplayName</rm:SortingAttribute>
        </rm:Sorting>
    </wsen:EnumerationContext>
</wsen:GetStatus>
</s:Body>
</s:Envelope>

```

4.9.2 SOAP GetStatusResponseMessage

```

<s:Envelope
  xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing"
  xmlns:wsen="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
  xmlns:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement" >
  <s:Header>
    <wsa:Action>
      http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse
    </wsa:Action>
    <wsa:To>
      http://www.fabrikam.com/sender
    </wsa:To>
  </s:Header>
  <s:Body>
    <wsen:GetStatusResponse>
      <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
    </wsen:GetStatusResponse>
  </s:Body>
</s:Envelope>

```

4.10 Example of Permission Denied Fault

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

4.10.1 SOAP Permission Denied Fault

```

<s:Envelope
  xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:ctx="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <ctx:Context>
      <ctx:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</ctx:InstanceId>

```

```
</ctx:Context>
</s:Header>
<s:Body>
  <s:Fault>
    <s:Code>
      <s:Value>s:Client</s:Value>
      <s:Subcode>
        <s:Value>rm:PermissionDenied</s:Value>
      </s:Subcode>
    </s:Code>
    <s:Reason>
      <s:Text xml:lang="en-US" />
    </s:Reason>
    <s:Detail>
      <rm:PermissionDeniedFault />
    </s:Detail>
  </s:Fault>
</s:Body>
</s:Envelope>
```

5 Security

5.1 Security Considerations for Implementers

This specification uses encryption and signing to protect messages.

The protocol uses [\[WSSP1.2/10.1\]](#) to sign and encrypt the header, the body, and the signature of the message. The keys used to sign and encrypt are defined by [\[WSTrust\]](#). 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.

5.2 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] 5.4.5.
Key and Encryption Requirements: http://schemas.xmlsoap.org/ws/2005/02/trust/SymmetricKey	[WSTrust] 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]

6 Appendix A: Full WSDL

```
<?xml version="1.0" encoding="utf-8"?>
<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"
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">
  <wsdl:import namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer"
location="http://schemas.xmlsoap.org/ws/2004/09/transfer/transfer.wsdl" />
  <wsdl:import namespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
location="http://schemas.xmlsoap.org/ws/2004/09/enumeration/enumeration.wsdl" />
  <wsp:Policy wsu:Id="ServiceMultipleTokenBinding_Resource_policy">
    <wsp:ExactlyOne>
      <wsp>All>
        <IncludeContext ProtectionLevel="Sign"
xmlns="http://schemas.microsoft.com/ws/2006/05/context" />
        <sp:SymmetricBinding xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
          <wsp:Policy>
            <sp:ProtectionToken>
              <wsp:Policy>
                <sp:SpnegoContextToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
cipient">
                  <wsp:Policy>
                    <sp:RequireDerivedKeys />
                  </wsp:Policy>
                </sp:SpnegoContextToken>
              </wsp:Policy>
            </sp:ProtectionToken>
            <sp:AlgorithmSuite>
              <wsp:Policy>
                <sp:Basic256 />
              </wsp:Policy>
            </sp:AlgorithmSuite>
            <sp:Layout>
              <wsp:Policy>
                <sp:Strict />
              </wsp:Policy>
            </sp:Layout>
            <sp:IncludeTimestamp />
            <sp:EncryptSignature />
            <sp:OnlySignEntireHeadersAndBody />
          </wsp:Policy>
        </sp:SymmetricBinding>
        <sp:EndorsingSupportingTokens
xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
          <wsp:Policy>
            <sp:IssuedToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
cipient" wsp:Optional="true">
```



```

        <sp:RequestSecurityTokenTemplate>
            <t:KeyType
xmlns:t="http://schemas.xmlsoap.org/ws/2005/02/trust">http://schemas.xmlsoap.org/ws/2005/02/t
rust/SymmetricKey</t:KeyType>
            </sp:RequestSecurityTokenTemplate>
        <wsp:Policy>
            <sp:RequireDerivedKeys />
            <sp:RequireInternalReference />
        </wsp:Policy>
    </sp:IssuedToken>
</wsp:Policy>
</sp:EndorsingSupportingTokens>
<sp:Wss11 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <wsp:Policy>
        <sp:MustSupportRefKeyIdentifier />
        <sp:MustSupportRefIssuerSerial />
        <sp:MustSupportRefThumbprint />
        <sp:MustSupportRefEncryptedKey />
    </wsp:Policy>
</sp:Wss11>
<sp:Trust10 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <wsp:Policy>
        <sp:MustSupportIssuedTokens />
        <sp:RequireClientEntropy />
        <sp:RequireServerEntropy />
    </wsp:Policy>
</sp:Trust10>
<wsam:Addressing>
    <wsp:Policy>
        <wsam:AnonymousResponses />
    </wsp:Policy>
</wsam:Addressing>
</wsp:All>
</wsp:ExactlyOne>
</wsp:Policy>
<wsp:Policy wsu:Id="ServiceMultipleTokenBinding_Resource_Operation_policy">
    <wsp:ExactlyOne>
        <wsp:All>
            <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
                <sp:Body />
                <sp:Header Name="Context"
Namespace="http://schemas.microsoft.com/ws/2006/05/context" />
                <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing" />
            </sp:SignedParts>
            <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
                <sp:Body />
            </sp:EncryptedParts>
        </wsp:All>
    </wsp:ExactlyOne>
</wsp:Policy>

<wsp:Policy wsu:Id="ServiceMultipleTokenBinding_ResourceFactory_policy">
    <wsp:ExactlyOne>

```

```

    <wsp:All>
      <IncludeContext ProtectionLevel="Sign"
xmlns="http://schemas.microsoft.com/ws/2006/05/context" />
      <sp:SymmetricBinding xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
        <wsp:Policy>
          <sp:ProtectionToken>
            <wsp:Policy>
              <sp:SpnegoContextToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
cipient">
                <wsp:Policy>
                  <sp:RequireDerivedKeys />
                </wsp:Policy>
              </sp:SpnegoContextToken>
            </wsp:Policy>
          </sp:ProtectionToken>
          <sp:AlgorithmSuite>
            <wsp:Policy>
              <sp:Basic256 />
            </wsp:Policy>
          </sp:AlgorithmSuite>
          <sp:Layout>
            <wsp:Policy>
              <sp:Strict />
            </wsp:Policy>
          </sp:Layout>
          <sp:IncludeTimestamp />
          <sp:EncryptSignature />
          <sp:OnlySignEntireHeadersAndBody />
        </wsp:Policy>
      </sp:SymmetricBinding>
      <sp:EndorsingSupportingTokens
xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
        <wsp:Policy>
          <sp:IssuedToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
cipient" wsp:Optional="true">
            <sp:RequestSecurityTokenTemplate>
              <t:KeyType
xmlns:t="http://schemas.xmlsoap.org/ws/2005/02/trust">http://schemas.xmlsoap.org/ws/2005/02/t
rust/SymmetricKey</t:KeyType>
            </sp:RequestSecurityTokenTemplate>
            <wsp:Policy>
              <sp:RequireDerivedKeys />
              <sp:RequireInternalReference />
            </wsp:Policy>
          </sp:IssuedToken>
        </wsp:Policy>
      </sp:EndorsingSupportingTokens>
      <sp:Wss11 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
        <wsp:Policy>
          <sp:MustSupportRefKeyIdentifier />
          <sp:MustSupportRefIssuerSerial />
          <sp:MustSupportRefThumbprint />
          <sp:MustSupportRefEncryptedKey />
        </wsp:Policy>
      </sp:Wss11>
      <sp:Trust10 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
        <wsp:Policy>
          <sp:MustSupportIssuedTokens />
        </wsp:Policy>
      </sp:Trust10>
    </wsp:All>

```

```

        <sp:RequireClientEntropy />
        <sp:RequireServerEntropy />
    </wsp:Policy>
</sp:Trust10>
<wsam:Addressing>
    <wsp:Policy>
        <wsam:AnonymousResponses />
    </wsp:Policy>
</wsam:Addressing>
</wsp:All>
</wsp:ExactlyOne>
</wsp:Policy>
<wsp:Policy wsu:Id="ServiceMultipleTokenBinding_ResourceFactory_Operation_policy">
    <wsp:ExactlyOne>
        <wsp:All>
            <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
                <sp:Body />
                <sp:Header Name="Context"
Namespace="http://schemas.microsoft.com/ws/2006/05/context" />
                <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing" />
            </sp:SignedParts>
            <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
                <sp:Body />
            </sp:EncryptedParts>
        </wsp:All>
    </wsp:ExactlyOne>
</wsp:Policy>

<wsp:Policy wsu:Id="ServiceMultipleTokenBinding_Search_policy">
    <wsp:ExactlyOne>
        <wsp:All>
            <IncludeContext ProtectionLevel="Sign"
xmlns="http://schemas.microsoft.com/ws/2006/05/context" />
            <sp:SymmetricBinding xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
                <wsp:Policy>
                    <sp:ProtectionToken>
                        <wsp:Policy>
                            <sp:SpnegoContextToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRe
cipient">
                                <wsp:Policy>
                                    <sp:RequireDerivedKeys />
                                </wsp:Policy>
                            </sp:SpnegoContextToken>
                        </wsp:Policy>
                    </sp:ProtectionToken>
                    <sp:AlgorithmSuite>
                        <wsp:Policy>
                            <sp:Basic256 />
                        </wsp:Policy>
                    </sp:AlgorithmSuite>
                    <sp:Layout>
                        <wsp:Policy>

```

```

        <sp:Strict />
    </wsp:Policy>
</sp:Layout>
<sp:IncludeTimestamp />
<sp:EncryptSignature />
<sp:OnlySignEntireHeadersAndBody />
</wsp:Policy>
</sp:SymmetricBinding>
<sp:EndorsingSupportingTokens
xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <wsp:Policy>
        <sp:IssuedToken
sp:IncludeToken="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy/IncludeToken/AlwaysToRecipient"
wsp:Optional="true">
            <sp:RequestSecurityTokenTemplate>
                <t:KeyType
xmlns:t="http://schemas.xmlsoap.org/ws/2005/02/trust">http://schemas.xmlsoap.org/ws/2005/02/trust/SymmetricKey</t:KeyType>
                </sp:RequestSecurityTokenTemplate>
            <wsp:Policy>
                <sp:RequireDerivedKeys />
                <sp:RequireInternalReference />
            </wsp:Policy>
        </sp:IssuedToken>
    </wsp:Policy>
</sp:EndorsingSupportingTokens>
<sp:Wss11 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <wsp:Policy>
        <sp:MustSupportRefKeyIdentifier />
        <sp:MustSupportRefIssuerSerial />
        <sp:MustSupportRefThumbprint />
        <sp:MustSupportRefEncryptedKey />
    </wsp:Policy>
</sp:Wss11>
<sp:Trust10 xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <wsp:Policy>
        <sp:MustSupportIssuedTokens />
        <sp:RequireClientEntropy />
        <sp:RequireServerEntropy />
    </wsp:Policy>
</sp:Trust10>
<wsam:Addressing>
    <wsp:Policy>
        <wsam:AnonymousResponses />
    </wsp:Policy>
</wsam:Addressing>
</wsp:All>
</wsp:ExactlyOne>
</wsp:Policy>
<wsp:Policy wsu:Id="ServiceMultipleTokenBinding_Search_Operation_policy">
    <wsp:ExactlyOne>
        <wsp:All>
            <sp:SignedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
                <sp:Body />
                <sp:Header Name="Context"
Namespace="http://schemas.microsoft.com/ws/2006/05/context" />
                <sp:Header Name="To" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="From" Namespace="http://www.w3.org/2005/08/addressing" />
                <sp:Header Name="FaultTo" Namespace="http://www.w3.org/2005/08/addressing" />
            </sp:SignedParts>
        </wsp:All>
    </wsp:ExactlyOne>
</wsp:Policy>

```

```

    <sp:Header Name="ReplyTo" Namespace="http://www.w3.org/2005/08/addressing" />
    <sp:Header Name="MessageID" Namespace="http://www.w3.org/2005/08/addressing" />
    <sp:Header Name="RelatesTo" Namespace="http://www.w3.org/2005/08/addressing" />
    <sp:Header Name="Action" Namespace="http://www.w3.org/2005/08/addressing" />
  </sp:SignedParts>
  <sp:EncryptedParts xmlns:sp="http://schemas.xmlsoap.org/ws/2005/07/securitypolicy">
    <sp:Body />
  </sp:EncryptedParts>
</wsp:All>
</wsp:ExactlyOne>
</wsp:Policy>

<wsdl:types>
  <xsd:schema>
    <!--
    <xsd:import
      namespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration"
      schemaLocation="http://schemas.xmlsoap.org/ws/2004/09/enumeration/enumeration.xsd"/>
    <xsd:import
      namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer"
      schemaLocation="http://schemas.xmlsoap.org/ws/2004/09/transfer/transfer.xsd"/>
    -->
  </xsd:schema>
  <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:w3c="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">
    <xsd:import
      namespace="http://schemas.xmlsoap.org/ws/2004/09/enumeration" />

    <xs:simpleType name="StartingIndexType">
      <xs:restriction base="xs:integer"/>
    </xs:simpleType>
    <xs:simpleType name="ReferenceType">
      <xs:restriction base="xs:string">
        <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}" />
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="AscendingType">
      <xs:restriction base="xs:string">
        <xs:enumeration value="true"/>
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="FilterQueryType">
      <xs:restriction base="xs:string">
        <xs:enumeration value="/ma-data"/>
        <xs:enumeration value="/mv-data"/>
        <xs:enumeration value="/Person"/>
        <xs:enumeration value="/ManagementPolicyRule"/>
        <xs:enumeration value="/Set"/>
        <xs:enumeration value="/SynchronizationRule"/>
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="FilterDialectType">
      <xs:restriction base="xs:anyURI">
        <xs:enumeration value="http://schemas.microsoft.com/2006/11/XPathFilterDialect"/>
      </xs:restriction>

```

```

</xs:simpleType>
<xs:simpleType name="DialectType">
  <xs:restriction base="xs:anyURI">
    <xs:enumeration
value="http://schemas.microsoft.com/2006/11/ResourceManagement/Dialect/IdentityAttributeType-
20080602"/>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="AttributeTypeXmlType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="AccountName"/>
    <xs:enumeration value="ActionParameter"/>
    <xs:enumeration value="ActionType"/>
    <xs:enumeration value="ActionWorkflowDefinition"/>
    <xs:enumeration value="AD_UserCannotChangePassword"/>
    <xs:enumeration value="Address"/>
    <xs:enumeration value="Assistant"/>
    <xs:enumeration value="AuthenticationWorkflowDefinition"/>
    <xs:enumeration value="AuthNLockoutRegistrationID"/>
    <xs:enumeration value="AuthNWFLockedOut"/>
    <xs:enumeration value="AuthNWFRegistered"/>
    <xs:enumeration value="AuthorizationWorkflowDefinition"/>
    <xs:enumeration value="City"/>
    <xs:enumeration value="Company"/>
    <xs:enumeration value="ComputedMember"/>
    <xs:enumeration value="ConnectedObjectType"/>
    <xs:enumeration value="ConnectedSystem"/>
    <xs:enumeration value="ConnectedSystemScope"/>
    <xs:enumeration value="CostCenter"/>
    <xs:enumeration value="CostCenterName"/>
    <xs:enumeration value="Country"/>
    <xs:enumeration value="CreateConnectedSystemObject"/>
    <xs:enumeration value="CreatedTime"/>
    <xs:enumeration value="CreateILMObject"/>
    <xs:enumeration value="Creator"/>
    <xs:enumeration value="DeletedTime"/>
    <xs:enumeration value="Department"/>
    <xs:enumeration value="Dependency"/>
    <xs:enumeration value="Description"/>
    <xs:enumeration value="DetectedRulesList"/>
    <xs:enumeration value="DisconnectConnectedSystemObject"/>
    <xs:enumeration value="DisplayName"/>
    <xs:enumeration value="Domain"/>
    <xs:enumeration value="DomainConfiguration"/>
    <xs:enumeration value="Email"/>
    <xs:enumeration value="EmployeeEndDate"/>
    <xs:enumeration value="EmployeeID"/>
    <xs:enumeration value="EmployeeStartDate"/>
    <xs:enumeration value="EmployeeType"/>
    <xs:enumeration value="ExistenceTest"/>
    <xs:enumeration value="ExpectedRulesList"/>
    <xs:enumeration value="ExpirationTime"/>
    <xs:enumeration value="ExplicitMember"/>
    <xs:enumeration value="Filter"/>
    <xs:enumeration value="FirstName"/>
    <xs:enumeration value="FlowType"/>
    <xs:enumeration value="FreezeCount"/>
    <xs:enumeration value="FreezeLevel"/>
    <xs:enumeration value="GrantRight"/>
  </xs:restriction>
</xs:simpleType>

```

```

<xs:enumeration value="ILMObjectType"/>
<xs:enumeration value="ILMScoping"/>
<xs:enumeration value="InitialFlow"/>
<xs:enumeration value="IsRASEnabled"/>
<xs:enumeration value="JobTitle"/>
<xs:enumeration value="LastName"/>
<xs:enumeration value="LastResetAttemptTime"/>
<xs:enumeration value="Locale"/>
<xs:enumeration value="LoginName"/>
<xs:enumeration value="MailNickname"/>
<xs:enumeration value="Manager"/>
<xs:enumeration value="MembershipCondition"/>
<xs:enumeration value="MiddleName"/>
<xs:enumeration value="MobilePhone"/>
<xs:enumeration value="MVObjectID"/>
<xs:enumeration value="ObjectID"/>
<xs:enumeration value="ObjectSID"/>
<xs:enumeration value="ObjectType"/>
<xs:enumeration value="OfficeFax"/>
<xs:enumeration value="OfficeLocation"/>
<xs:enumeration value="OfficePhone"/>
<xs:enumeration value="PersistentFlow"/>
<xs:enumeration value="Photo"/>
<xs:enumeration value="PostalCode"/>
<xs:enumeration value="Precedence"/>
<xs:enumeration value="PrincipalRelativeToResource"/>
<xs:enumeration value="PrincipalSet"/>
<xs:enumeration value="ProxyAddressCollection"/>
<xs:enumeration value="Register"/>
<xs:enumeration value="RegistrationRequired"/>
<xs:enumeration value="RelationshipCriteria"/>
<xs:enumeration value="ResetPassword"/>
<xs:enumeration value="ResourceCurrentRelativeToPrincipal"/>
<xs:enumeration value="ResourceCurrentSet"/>
<xs:enumeration value="ResourceFinalRelativeToPrincipal"/>
<xs:enumeration value="ResourceFinalSet"/>
<xs:enumeration value="ResourceTime"/>
<xs:enumeration value="SIDHistory"/>
<xs:enumeration value="SyncConfig-attribute-inclusion"/>
<xs:enumeration value="SyncConfig-capabilities-mask"/>
<xs:enumeration value="SyncConfig-category"/>
<xs:enumeration value="SyncConfig-component_mappings"/>
<xs:enumeration value="SyncConfig-controller-configuration"/>
<xs:enumeration value="SyncConfig-creation-time"/>
<xs:enumeration value="SyncConfig-dn-construction"/>
<xs:enumeration value="SyncConfig-encrypted-attributes"/>
<xs:enumeration value="SyncConfig-export-attribute-flow"/>
<xs:enumeration value="SyncConfig-export-type"/>
<xs:enumeration value="SyncConfig-extension"/>
<xs:enumeration value="SyncConfig-format-version"/>
<xs:enumeration value="SyncConfig-id"/>
<xs:enumeration value="SyncConfig-import-attribute-flow"/>
<xs:enumeration value="SyncConfig-internal-version"/>
<xs:enumeration value="SyncConfig-join"/>
<xs:enumeration value="SyncConfig-last-modification-time"/>
<xs:enumeration value="SyncConfig-ma-companyname"/>
<xs:enumeration value="SyncConfig-ma-listname"/>
<xs:enumeration value="SyncConfig-ma-partition-data"/>
<xs:enumeration value="SyncConfig-ma-run-data"/>

```

```

    <xs:enumeration value="SyncConfig-ma-ui-settings"/>
    <xs:enumeration value="SyncConfig-mv-deletion"/>
    <xs:enumeration value="SyncConfig-password-change-history-size"/>
    <xs:enumeration value="SyncConfig-password-sync"/>
    <xs:enumeration value="SyncConfig-password-sync-allowed"/>
    <xs:enumeration value="SyncConfig-private-configuration"/>
    <xs:enumeration value="SyncConfig-projection"/>
    <xs:enumeration value="SyncConfig-provisioning"/>
    <xs:enumeration value="SyncConfig-provisioning-cleanup"/>
    <xs:enumeration value="SyncConfig-provisioning-cleanup-type"/>
    <xs:enumeration value="SyncConfig-provisioning-type"/>
    <xs:enumeration value="SyncConfig-schema"/>
    <xs:enumeration value="SyncConfig-stay-disconnector"/>
    <xs:enumeration value="SyncConfig-sub-type"/>
    <xs:enumeration value="SyncConfig-version"/>
    <xs:enumeration value="SynchronizationRuleParameters"/>
    <xs:enumeration value="Temporal"/>
  </xs:restriction>
</xs:simpleType>

<xs:complexType name="EnumerationDetailType">
  <xs:sequence>
    <xs:element name="Count" type="xs:integer"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="EnumerationContextType">
  <xs:sequence>
    <xs:element name="CurrentIndex" type="xs:integer"/>
    <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
    <xs:element ref="wsen:Expires"/>
    <xs:element name="Filter" type="xs:string"/>
    <xs:element ref="rm:LocalePreferences"/>
    <xs:element ref="rm:Selection"/>
    <xs:element ref="rm:Sorting"/>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="EnumerationDirectionType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Forwards"/>
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="ItemsType">
  <xs:sequence>
    <xs:any namespace="http://schemas.microsoft.com/2006/11/ResourceManagement"
minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>

<xs:complexType name="SelectionType">
  <xs:sequence>
    <xs:element name="string" type="rm:AttributeTypeXmlType" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="PullAdjustmentType">
  <xs:sequence>
    <xs:element name="StartingIndex" type="rm:StartingIndexType"/>
    <xs:element name="EnumerationDirection" type="rm:EnumerationDirectionType"/>
  </xs:sequence>

```



```

</xs:complexType>
<xs:complexType name="LocalePreferencesType">
  <xs:sequence>
    <xs:element name="LocalePreference">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="Locale">
            <xs:simpleType>
              <xs:restriction base="xs:string">
                <xs:enumeration value="en-US"/>
              </xs:restriction>
            </xs:simpleType>
          </xs:element>
          <xs:element name="PreferenceValue">
            <xs:simpleType>
              <xs:restriction base="xs:string">
                <xs:enumeration value="0"/>
              </xs:restriction>
            </xs:simpleType>
          </xs:element>
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="FilterType">
  <xs:simpleContent>
    <xs:extension base="rm:FilterQueryType">
      <xs:attribute name="Dialect" type="rm:FilterDialectType"/>
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>
<xs:element name="Time">
  <xs:simpleType>
    <xs:restriction base="xs:string">
      <xs:maxLength value="0"/>
    </xs:restriction>
  </xs:simpleType>
</xs:element>
<xs:element name="SortingAttribute">
  <xs:complexType>
    <xs:simpleContent>
      <xs:extension base="rm:AttributeTypeXmlType">
        <xs:attribute name="Ascending" type="rm:AscendingType"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
</xs:element>
<xs:element name="Sorting">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="rm:SortingAttribute" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="Dialect" type="rm:DialectType"/>
  </xs:complexType>
</xs:element>
<xs:element name="Selection" type="rm:AttributeTypeXmlType"/>
<xs:element name="PullAdjustment" type="rm:PullAdjustmentType"/>
<xs:element name="LocalePreferences" type="rm:LocalePreferencesType"/>

```

```

        <xs:element name="EnumerationDetail" type="rm:EnumerationDetailType"/>
        <xs:element name="ResourceReferenceProperty" type="rm:ReferenceType"/>
<xs:complexType name="ReferenceCollectionType">
<xs:sequence>
<xs:element minOccurs="1" maxOccurs="unbounded" name="Item" type="rm:ReferenceType" />
</xs:sequence>
</xs:complexType>

<xs:complexType name="StringCollectionType">
<xs:sequence>
<xs:element minOccurs="1" maxOccurs="unbounded" name="Item">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
</xs:sequence>
</xs:complexType>

<xs:complexType name="TextCollectionType">
<xs:sequence>
<xs:element minOccurs="1" maxOccurs="unbounded" name="Item" type="xs:string" />
</xs:sequence>
</xs:complexType>

<xs:element name="ma-data">
<xs:complexType>
<xs:sequence>
<xs:element ref="rm:ObjectID" minOccurs="0" />
<xs:element ref="rm:ObjectType" minOccurs="0" />
<xs:element ref="rm:DisplayName" minOccurs="0" />
<xs:element ref="rm:Description" minOccurs="0" />
<xs:element ref="rm:CreatedTime" minOccurs="0" />
<xs:element ref="rm:Creator" minOccurs="0" />
<xs:element ref="rm:SyncConfig-id" minOccurs="0" />
<xs:element ref="rm:SyncConfig-format-version" minOccurs="0" />
<xs:element ref="rm:SyncConfig-category" minOccurs="0" />
<xs:element ref="rm:SyncConfig-subtype" minOccurs="0" />
<xs:element ref="rm:SyncConfig-version" minOccurs="0" />
<xs:element ref="rm:SyncConfig-ma-listname" minOccurs="0" />
<xs:element ref="rm:SyncConfig-ma-companyname" minOccurs="0" />
<xs:element ref="rm:SyncConfig-creation-time" minOccurs="0" />
<xs:element ref="rm:SyncConfig-last-modification-time" minOccurs="0" />
<xs:element ref="rm:SyncConfig-internal-version" minOccurs="0" />
<xs:element ref="rm:SyncConfig-schema" minOccurs="0" />
<xs:element ref="rm:SyncConfig-refresh-schema" minOccurs="0" />
<xs:element ref="rm:SyncConfig-attribute-inclusion" minOccurs="0" />
<xs:element ref="rm:SyncConfig-stay-disconnector" minOccurs="0" />
<xs:element ref="rm:SyncConfig-join" minOccurs="0" />
<xs:element ref="rm:SyncConfig-projection" minOccurs="0" />
<xs:element ref="rm:SyncConfig-export-attribute-flow" minOccurs="0" />
<xs:element ref="rm:SyncConfig-provisioning-cleanup-type" minOccurs="0" />
<xs:element ref="rm:SyncConfig-provisioning-cleanup" minOccurs="0" />
<xs:element ref="rm:SyncConfig-extension" minOccurs="0" />
<xs:element ref="rm:SyncConfig-controller-configuration" minOccurs="0" />
<xs:element ref="rm:SyncConfig-password-sync-allowed" minOccurs="0" />
<xs:element ref="rm:SyncConfig-password-sync" minOccurs="0" />
<xs:element ref="rm:SyncConfig-ma-ui-settings" minOccurs="0" />

```

```

<xs:element ref="rm:SyncConfig-private-configuration" minOccurs="0" />
<xs:element ref="rm:SyncConfig-capabilities-mask" minOccurs="0" />
<xs:element ref="rm:SyncConfig-export-type" minOccurs="0" />
<xs:element ref="rm:SyncConfig-dn-construction" minOccurs="0" />
<!-- xs:element ref="rm:SyncConfig-component-mappings" minOccurs="0" / -->
<xs:element minOccurs="0" name="SyncConfig-ma-partition-data" type="rm:TextCollectionType"/>
<xs:element minOccurs="0" name="SyncConfig-ma-run-data" type="rm:TextCollectionType"/>
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:element name="mv-data">
<xs:complexType>
<xs:sequence>
<xs:element ref="rm:ObjectID" minOccurs="0" />
<xs:element ref="rm:ObjectType" minOccurs="0" />
<xs:element ref="rm:DisplayName" minOccurs="0" />
<xs:element ref="rm:Description" minOccurs="0" />
<xs:element ref="rm:CreatedTime" minOccurs="0" />
<xs:element ref="rm:Creator" minOccurs="0" />
<xs:element ref="rm:SyncConfig-format-version" minOccurs="0" />
<xs:element ref="rm:SyncConfig-version" minOccurs="0" />
<xs:element ref="rm:SyncConfig-extension" minOccurs="0" />
<xs:element ref="rm:SyncConfig-schema" minOccurs="0" />
<xs:element ref="rm:SyncConfig-import-attribute-flow" minOccurs="0" />
<xs:element ref="rm:SyncConfig-mv-deletion" minOccurs="0" />
<xs:element ref="rm:SyncConfig-provisioning" minOccurs="0" />
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:element name="Person">
<xs:complexType>
<xs:sequence>
<xs:element ref="rm:ObjectID" minOccurs="0" />
<xs:element ref="rm:ObjectType" minOccurs="0" />
<xs:element ref="rm:DisplayName" minOccurs="0" />
<xs:element ref="rm:Description" minOccurs="0" />
<xs:element ref="rm:CreatedTime" minOccurs="0" />
<xs:element ref="rm:Creator" minOccurs="0" />
<xs:element ref="rm:AccountName" minOccurs="0" />
<xs:element ref="rm:Domain" minOccurs="0" />
<xs:element ref="rm:ObjectSID" minOccurs="0" />
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:element name="Set">
<xs:complexType>
<xs:sequence>
<xs:element ref="rm:ObjectID" minOccurs="0" />
<xs:element ref="rm:ObjectType" minOccurs="0" />
<xs:element ref="rm:DisplayName" minOccurs="0" />
<xs:element ref="rm:Description" minOccurs="0" />
<xs:element ref="rm:CreatedTime" minOccurs="0" />
<xs:element ref="rm:Creator" minOccurs="0" />
<xs:element ref="rm:Filter" minOccurs="0" />
<xs:element minOccurs="0" name="ExplicitMember" type="rm:ReferenceCollectionType"/>
</xs:sequence>
</xs:complexType>

```

```

</xs:element>

<xs:element name="ManagementPolicyRule">
<xs:complexType>
<xs:sequence>
<xs:element ref="rm:ObjectID" minOccurs="0" />
<xs:element ref="rm:ObjectType" minOccurs="0" />
<xs:element ref="rm:DisplayName" minOccurs="0" />
<xs:element ref="rm:Description" minOccurs="0" />
<xs:element ref="rm:CreatedTime" minOccurs="0" />
<xs:element ref="rm:Creator" minOccurs="0" />
<xs:element minOccurs="0" name="ActionParameter" type="rm:StringCollectionType"/>
<xs:element minOccurs="0" name="ActionType" type="rm:StringCollectionType"/>
<xs:element ref="rm:PrincipalSet" minOccurs="0" />
<xs:element ref="rm:ResourceCurrentSet" minOccurs="0" />
<xs:element ref="rm:ResourceFinalSet" minOccurs="0" />
<xs:element ref="rm:GrantRight" minOccurs="0" />
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:element name="ExplicitMember" type="xs:string" />
<!-- ReferenceCollectionType-->
<xs:element name="ActionParameter" type="xs:string" />
<!-- StringCollectionType -->
<xs:element name="ActionType" type="xs:string" />
<!-- StringCollectionType -->
<xs:element name="SyncConfig-ma-partition-data" type="xs:string" />
<!--TextCollectionType-->
<xs:element name="SyncConfig-ma-run-data" type="xs:string" />
<!--TextCollectionType-->

<xs:element name="SyncConfig-export-type" type="xs:integer" />
<xs:element name="SyncConfig-internal-version" type="xs:integer" />
<xs:element name="SyncConfig-schema" type="xs:string" />
<xs:element name="SyncConfig-refresh-schema" type="xs:integer" />
<xs:element name="SyncConfig-password-sync-allowed" type="xs:integer" />
<xs:element name="SyncConfig-capabilities-mask" type="xs:integer" />
<xs:element name="ObjectID" type="rm:ReferenceType" />
<xs:element name="ObjectType">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="DisplayName">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="Description" type="xs:string" />
<xs:element name="CreatedTime" type="xs:dateTime" />
<xs:element name="Creator" type="rm:ReferenceType" />
<xs:element name="AccountName">
<xs:simpleType>

```

```

<xs:restriction base="xs:string">
<xs:pattern value="^{1,64}$" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="Domain">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="ObjectSID" type="xs:base64Binary" />
<xs:element name="Filter" type="xs:string" />
<xs:element name="PrincipalSet" type="rm:ReferenceType" />
<xs:element name="ResourceCurrentSet" type="rm:ReferenceType" />
<xs:element name="ResourceFinalSet" type="rm:ReferenceType" />
<xs:element name="GrantRight" type="xs:boolean" />
<xs:element name="SyncConfig-id">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-format-version" type="xs:integer" />
<xs:element name="SyncConfig-category">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-subtype" type="xs:string" />
<xs:element name="SyncConfig-version" type="xs:integer" />
<xs:element name="SyncConfig-ma-listname">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-ma-companyname">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-creation-time">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-last-modification-time">
<xs:simpleType>
<xs:restriction base="xs:string">

```

```

<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-attribute-inclusion" type="xs:string" />
<xs:element name="SyncConfig-stay-disconnector" type="xs:string" />
<xs:element name="SyncConfig-join" type="xs:string" />
<xs:element name="SyncConfig-projection" type="xs:string" />
<xs:element name="SyncConfig-export-attribute-flow" type="xs:string" />
<xs:element name="SyncConfig-provisioning-cleanup-type">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-provisioning-cleanup" type="xs:string" />
<xs:element name="SyncConfig-extension" type="xs:string" />
<xs:element name="SyncConfig-controller-configuration" type="xs:string" />
<xs:element name="SyncConfig-password-sync">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-ma-ui-settings" type="xs:string" />
<xs:element name="SyncConfig-private-configuration" type="xs:string" />
<xs:element name="SyncConfig-dn-construction">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:pattern value=".{448}" />
</xs:restriction>
</xs:simpleType>
</xs:element>
<xs:element name="SyncConfig-encrypted-attributes" type="xs:string" />
<xs:element name="SyncConfig-import-attribute-flow" type="xs:string" />
<xs:element name="SyncConfig-mv-deletion" type="xs:string" />
<xs:element name="SyncConfig-provisioning" type="xs:string" />

</xs:schema>
<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">

<xsd:import namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />

<xs:element name="AttributeType" type="rm:AttributeTypeXmlType"/>
<xs:element name="AttributeValue" type="rm:ItemsType"/>
<xs:element name="PartialAttribute" type="rm:ItemsType"/>
<xs:element name="AttributeTypeAndValue">
<xs:complexType>
<xs:sequence>
<xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="1"/>
<xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="AddRequest">

```

```

    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:AttributeTypeAndValue" minOccurs="1" maxOccurs="unbounded" />
      </xs:sequence>
      <xs:attribute name="Dialect" type="rm:DialectType"/>
    </xs:complexType>
  </xs:element>
  <xs:element name="ModifyRequest">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:Change" minOccurs="1" maxOccurs="unbounded" />
      </xs:sequence>
      <xs:attribute name="Dialect" type="rm:DialectType"/>
    </xs:complexType>
  </xs:element>
  <xs:element name="Change">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="1" />
        <xs:element ref="da:AttributeValue" minOccurs="1" maxOccurs="1" />
      </xs:sequence>
      <xs:attribute name="Operation" type="da:OperationXmlType"/>
    </xs:complexType>
  </xs:element>
  <xs:element name="BaseObjectSearchRequest">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="da:AttributeType" minOccurs="1" maxOccurs="unbounded" />
      </xs:sequence>
      <xs:attribute name="Dialect" type="rm:DialectType"/>
    </xs:complexType>
  </xs:element>
  <xsd:element name="BaseObjectSearchResponse">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element ref="da:PartialAttribute" minOccurs="1" maxOccurs="unbounded" />
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
  <xsd:simpleType name="OperationXmlType">
    <xsd:restriction base="xs:string">
      <xsd:enumeration value="add" />
      <xsd:enumeration value="delete" />
      <xsd:enumeration value="replace" />
    </xsd:restriction>
  </xsd:simpleType>
</xs:schema>
<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">
  <xs:import namespace='http://www.w3.org/XML/1998/namespace'
    schemaLocation="http://www.w3.org/2001/xml.xsd"/>

  <xs:import namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />

  <xs:element name="PullResponse">
    <xs:complexType>
      <xs:sequence>

```

```

<xs:element name="EnumerationContext" type="rm:EnumerationContextType" minOccurs="0" />
<xs:element name="Items" type="wsen:ItemListType" minOccurs="0" />
<xs:element name="EndOfSequence" minOccurs="0" />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
</xs:element>

<xs:complexType name="ItemListType">
<xs:sequence maxOccurs="unbounded">
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
</xs:complexType>

<xs:element name="Renew">
<xs:complexType>
<xs:sequence>
<xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
<xs:element name="Expires" type="wsen:ExpirationType" minOccurs="0" />
<xs:any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
</xs:element>

<xs:simpleType name="NonNegativeDurationType">
<xs:restriction base="xs:duration">
<xs:minInclusive value="P0Y0M0DT0H0M0S" />
</xs:restriction>
</xs:simpleType>

<xs:simpleType name="ExpirationType">
<xs:union memberTypes="xs:dateTime wsen:NonNegativeDurationType" />
</xs:simpleType>

<xs:element name="RenewResponse">
<xs:complexType>
<xs:sequence>
<xs:element name="Expires" type="wsen:ExpirationType" minOccurs="0" />
<xs:element name="EnumerationContext" type="rm:EnumerationContextType" minOccurs="0" />
<xs:any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
</xs:element>

<xs:element name="GetStatus">
<xs:complexType>
<xs:sequence>
<xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
<xs:any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
</xs:element>

```



```

<xs:element name="GetStatusResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Expires" type="wsen:ExpirationType" minOccurs="0" />
      <xs:any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded" />
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax" />
  </xs:complexType>
</xs:element>

<xs:element name="Release">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax" />
  </xs:complexType>
</xs:element>

<xs:element name="EnumerationEnd">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="EnumerationContext" type="rm:EnumerationContextType" />
      <xs:element name="Code" type="wsen:OpenEnumerationEndCodeType" />
      <xs:element name="Reason" type="wsen:LanguageSpecificStringType" minOccurs="0"
maxOccurs="unbounded" />
      <xs:any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded" />
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax" />
  </xs:complexType>
</xs:element>

<xs:simpleType name="EnumerationEndCodeType">
  <xs:restriction base="xs:anyURI">
    <xs:enumeration value="http://schemas.xmlsoap.org/ws/2004/09/enumeration/SourceShuttingDown"
/>
    <xs:enumeration value="http://schemas.xmlsoap.org/ws/2004/09/enumeration/SourceCancelling" />
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="OpenEnumerationEndCodeType">
  <xs:union memberTypes="wsen:EnumerationEndCodeType xs:anyURI" />
</xs:simpleType>

<xs:complexType name="LanguageSpecificStringType">
  <xs:simpleContent>
    <xs:extension base="xs:string">
      <xs:attribute ref="xml:lang" />
      <xs:anyAttribute namespace="##other" processContents="lax" />
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>

<xs:element name="Enumerate">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="wsen:Filter" minOccurs="1" maxOccurs="1" />
    </xs:sequence>
  </xs:complexType>

```

```

        <xs:element ref="rm:LocalePreferences" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="rm:Sorting" minOccurs="1" maxOccurs="1"/>
        <xs:element ref="rm:Selection" minOccurs="1" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="Pull">
    <xs:complexType>
        <xs:sequence>
            <xs:element ref="wsen:MaxTime" minOccurs="1" maxOccurs="1" />
            <xs:element ref="wsen:MaxElements" minOccurs="1" maxOccurs="1"/>
            <xs:element ref="wsen:MaxCharacters" minOccurs="1" maxOccurs="1"/>
            <xs:element ref="wsen:EnumerationContext" minOccurs="1" maxOccurs="1"/>
            <xs:element ref="rm:PullAdjustment" minOccurs="1" maxOccurs="1"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="Items" type="rm:ItemsType"/>
<xs:element name="Filter" type="rm:FilterType"/>
<xs:element name="Expires">
    <xs:simpleType>
        <xs:restriction base="xs:string">
            <xs:enumeration value="12/31/9999 11:59:59 PM"/>
        </xs:restriction>
    </xs:simpleType>
</xs:element>
<xs:element name="EnumerationContext" type="rm:EnumerationContextType"/>
<xs:element name="EnumerateResponse">
    <xs:complexType>
        <xs:sequence>
            <xs:element ref="wsen:Expires" minOccurs="1" maxOccurs="1" />
            <xs:element ref="wsen:EnumerationContext" minOccurs="1" maxOccurs="1"/>
            <xs:element ref="rm:EnumerationDetail" minOccurs="1" maxOccurs="1"/>
            <xs:element ref="wsen:Items" minOccurs="1" maxOccurs="1"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="MaxElements" type="xs:integer"/>
<xs:element name="MaxCharacters" type="xs:integer"/>
<xs:element name="MaxTime">
    <xs:simpleType>
        <xs:restriction base="xs:string">
            <xs:enumeration value="12/31/9999 11:59:59 PM"/>
        </xs:restriction>
    </xs:simpleType>
</xs:element>
</xs:schema>
<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">

<xsd:import namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />

    <xs:element name="ReferenceProperties">
        <xs:complexType>
            <xs:sequence>
                <xs:element ref="rm:ResourceReferenceProperty" minOccurs="1" maxOccurs="1"/>
            </xs:sequence>
        </xs:complexType>
    </xs:element>

```

```

        </xs:sequence>
    </xs:complexType>
</xs:element>
</xs:schema>
</wsdl:types>

<wsdl:message name="AddRequestMessage">
    <wsdl:part name="Body" element="da:AddRequest"/>
</wsdl:message>
<wsdl:message name="AddResponseMessage">
    <wsdl:part name="Body" element="wxf:ResourceCreated"/>
</wsdl:message>
<wsdl:message name="BaseObjectSearchRequestMessage">
    <wsdl:part name="Body" element="da:BaseObjectSearchRequest"/>
</wsdl:message>
<wsdl:message name="BaseObjectSearchResponseMessage">
    <wsdl:part name="Body" element="da:BaseObjectSearchResponse"/>
</wsdl:message>
<wsdl:message name="DeleteRequestMessage" />
<wsdl:message name="DeleteResponseMessage" />
<wsdl:message name="ModifyRequestMessage">
    <wsdl:part name="Body" element="da:ModifyRequest"/>
</wsdl:message>
<wsdl:message name="ModifyResponseMessage" />

<wsdl:message name="EnumerateMessage">
    <wsdl:part name="Body" element="wsen:Enumerate" />
</wsdl:message>
<wsdl:message name="EnumerateResponseMessage">
    <wsdl:part name="Body" element="wsen:EnumerateResponse" />
</wsdl:message>
<wsdl:message name="PullMessage">
    <wsdl:part name="Body" element="wsen:Pull" />
</wsdl:message>
<wsdl:message name="PullResponseMessage">
    <wsdl:part name="Body" element="wsen:PullResponse" />
</wsdl:message>
<wsdl:message name="RenewMessage" >
    <wsdl:part name="Body" element="wsen:Renew" />
</wsdl:message>
<wsdl:message name="RenewResponseMessage" >
    <wsdl:part name="Body" element="wsen:RenewResponse" />
</wsdl:message>
<wsdl:message name="GetStatusMessage" >
    <wsdl:part name="Body" element="wsen:GetStatus" />
</wsdl:message>
<wsdl:message name="GetStatusResponseMessage" >
    <wsdl:part name="Body" element="wsen:GetStatusResponse" />
</wsdl:message>
<wsdl:message name="ReleaseMessage">
    <wsdl:part name="Body" element="wsen:Release" />
</wsdl:message>
<wsdl:message name="ReleaseResponseMessage" />
<wsdl:message name="EnumerationEndMessage" >
    <wsdl:part name="Body" element="wsen:EnumerationEnd" />
</wsdl:message>

<wsdl:binding name="ServiceMultipleTokenBinding_Resource" type="wxf:Resource">

```

```

<soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
<wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_policy" />
<wsdl:operation name="Get">
  <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get"
style="document" />
  <wsdl:input message="da:BaseObjectSearchRequestMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Get">
    <soap12:body use="literal" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
  </wsdl:input>
  <wsdl:output message="da:BaseObjectSearchResponseMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/GetResponse">
    <soap12:body use="literal" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
  </wsdl:output>
  <wsdl:fault name="InvalidRepresentation ">
    <soap12:fault use="literal" name="UnwillingToPerform"
namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
  </wsdl:fault>
  <wsdl:fault name="PermissionDeniedFault">
    <soap12:fault use="literal" name="PermissionDeniedFault"
namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
  </wsdl:fault>
</wsdl:operation>

  <wsdl:operation name="Put">
    <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put"
style="document" />
    <wsdl:input message="da:ModifyRequestMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Put">
      <soap12:body use="literal" />
      <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
    </wsdl:input>
    <wsdl:output message="da:ModifyResponseMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/PutResponse">
      <soap12:body use="literal" />
      <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
    </wsdl:output>
    <wsdl:fault name="InvalidRepresentation ">
      <soap12:fault use="literal" name="InvalidRepresentation"
namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
      <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
    </wsdl:fault>
    <wsdl:fault name="PermissionDeniedFault">
      <soap12:fault use="literal" name="PermissionDeniedFault"
namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
      <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
    </wsdl:fault>
    <wsdl:fault name="UnwillingToPerform ">
      <soap12:fault use="literal" name="UnwillingToPerform"
namespace="http://schemas.microsoft.com/2006/11/IdentityManagement/DirectoryAccess" />
      <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
    </wsdl:fault>
  </wsdl:operation>

  <wsdl:operation name="Delete">
    <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete"
style="document" />

```

```

    <wsdl:input message="da:DeleteRequestMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete">
    <soap12:body use="literal" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
</wsdl:input>
    <wsdl:output message="da:DeleteResponseMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse">
    <soap12:body use="literal" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
</wsdl:output>
    <wsdl:fault name="PermissionDeniedFault">
    <soap12:fault use="literal" name="PermissionDeniedFault"
namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Resource_Operation_policy" />
</wsdl:fault>
</wsdl:operation>
</wsdl:binding>

    <wsdl:binding name="ServiceMultipleTokenBinding_ResourceFactory"
type="wxf:ResourceFactory">
    <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_ResourceFactory_policy" />
    <wsdl:operation name="Create">
    <soap12:operation soapAction="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create"
style="document" />
    <wsdl:input message="da:AddRequestMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/Create">
    <soap12:body use="literal" />
    <wsp:PolicyReference
URI="#ServiceMultipleTokenBinding_ResourceFactory_Operation_policy" />
</wsdl:input>
    <wsdl:output message="da:AddResponseMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse">
    <soap12:body use="literal" />
    <wsp:PolicyReference
URI="#ServiceMultipleTokenBinding_ResourceFactory_Operation_policy" />
</wsdl:output>
    <wsdl:fault name="InvalidRepresentation">
    <soap12:fault use="literal" name="InvalidRepresentation"
namespace="http://schemas.xmlsoap.org/ws/2004/09/transfer" />
    <wsp:PolicyReference
URI="#ServiceMultipleTokenBinding_ResourceFactory_Operation_policy" />
</wsdl:fault>
    <wsdl:fault name="PermissionDeniedFault">
    <soap12:fault use="literal" name="PermissionDeniedFault"
namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
    <wsp:PolicyReference
URI="#ServiceMultipleTokenBinding_ResourceFactory_Operation_policy" />
</wsdl:fault>
</wsdl:operation>
</wsdl:binding>

    <wsdl:portType name="DataSource">
    <wsdl:operation name="Enumerate">
    <wsdl:input
message="rm:EnumerateMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate"

```

```

    />
  <wsdl:output
    message="rm:EnumerateResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse"
  />
</wsdl:operation>
<wsdl:operation name="Pull">
  <wsdl:input
    message="rm:PullMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull"
  />
  <wsdl:output
    message="rm:PullResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse"
  />
</wsdl:operation>
<wsdl:operation name="Renew" >
  <wsdl:input
    message="rm:RenewMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew"
  />
  <wsdl:output
    message="rm:RenewResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse"
  />
</wsdl:operation>
<wsdl:operation name="GetStatus" >
  <wsdl:input
    message="rm:GetStatusMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus"
  />
  <wsdl:output
    message="rm:GetStatusResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse"
  />
</wsdl:operation>
<wsdl:operation name="Release">
  <wsdl:input
    message="rm:ReleaseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release"
  />
  <wsdl:output
    message="rm:ReleaseResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse"
  />
</wsdl:operation>
<wsdl:operation name="EnumerationEnd" >
  <wsdl:output
    message="rm:EnumerationEndMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerationEnd"
  />
</wsdl:operation>
</wsdl:portType>

<wsdl:binding name="ServiceMultipleTokenBinding_Search" type="rm:DataSource">
  <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
  <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_policy" />
  <wsdl:operation name="Enumerate">

```

```

    <wsdl:input message="wsen:EnumerateMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Enumerate">
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:input>
    <wsdl:output message="wsen:EnumerateResponseMessage"
wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/EnumerateResponse">
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:output>
</wsdl:operation>
<wsdl:operation name="Pull">
    <wsdl:input
        message="wsen:PullMessage"
        wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Pull"
    >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:input>
    <wsdl:output
        message="wsen:PullResponseMessage"
        wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/PullResponse"
    >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:output>
</wsdl:operation>
<wsdl:operation name="Renew" >
    <wsdl:input
        message="wsen:RenewMessage"
        wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Renew"
    >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:input>
    <wsdl:output
        message="wsen:RenewResponseMessage"
        wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/RenewResponse"
    >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:output>
</wsdl:operation>
<wsdl:operation name="GetStatus" >
    <wsdl:input
        message="wsen:GetStatusMessage"
        wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatus"
    >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:input>
    <wsdl:output
        message="wsen:GetStatusResponseMessage"
        wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/GetStatusResponse"
    >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:output>
</wsdl:operation>
<wsdl:operation name="Release">
    <wsdl:input
        message="wsen:ReleaseMessage"
        wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release"
    >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
    </wsdl:input>
    <wsdl:output

```

```
    message="wsen:ReleaseResponseMessage"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/ReleaseResponse"
  >
    <wsp:PolicyReference URI="#ServiceMultipleTokenBinding_Search_Operation_policy" />
  </wsp:output>
</wsdl:operation>

</wsdl:binding>
</wsdl:definitions>
```


7 Appendix B: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Microsoft® SharePoint® Server 2010

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

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

8 Change Tracking

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

9 Index

A

Abstract data model
[client](#) 59
[server](#) 47
[Applicability](#) 10
[Attribute groups](#) 46
[Attributes](#) 46

C

[Capability negotiation](#) 10
[Change tracking](#) 106
Client
[abstract data model](#) 59
[initialization](#) 59
[local events](#) 60
[message processing](#) 59
[overview](#) 59
[sequencing rules](#) 59
[timer events](#) 59
[timers](#) 59
[Complex types](#) 37

D

Data model – abstract
[client](#) 59
[server](#) 47
[Details - overview](#) 47

E

[Elements](#) 22
Examples
[creating a synchronization object](#) 61
[deleting a synchronization object](#) 65
[enumerating synchronization objects](#) 69
[modifying a synchronization object](#) 63
[overview](#) 61
[permission denied fault](#) 77
[pulling synchronization objects](#) 71
[releasing an enumeration context](#) 73
[renewing an enumeration context](#) 74
[retrieving a synchronization object](#) 62
[retrieving the expiration time of an enumeration context](#) 76

F

[Fields – vendor-extensible](#) 10
[Full WSDL](#) 80

G

[Glossary](#) 7
[Groups](#) 46

I

[Implementer – security considerations](#) 79
[Index of security parameters](#) 79
[Informative references](#) 8
Initialization
[client](#) 59
[server](#) 48
[Introduction](#) 7

L

Local events
[client](#) 60
[server](#) 59

M

Message processing
[client](#) 59
[server](#) 48
Messages
[syntax](#) 11
[transport](#) 11

N

[Namespaces](#) 11
[Normative references](#) 7

O

[Overview](#) 9

P

[Parameters – security index](#) 79
[Preconditions](#) 10
[Prerequisites](#) 10
[Product behavior](#) 105

R

References
[informative](#) 8
[normative](#) 7
[Relationship to other protocols](#) 9

S

Security
[implementer considerations](#) 79
[parameter index](#) 79
Sequencing rules
[client](#) 59
[server](#) 48
Server
[abstract data model](#) 47
[initialization](#) 48
[local events](#) 59
[message processing](#) 48

- [overview](#) 47
- [sequencing rules](#) 48
- [timer events](#) 59
- [timers](#) 47
- [Simple types](#) 41
- [Standards Assignments](#) 10
- Syntax
 - [attribute groups](#) 46
 - [attributes](#) 46
 - [complex types](#) 37
 - [elements](#) 22
 - [groups](#) 46
 - [messages](#) 12
 - [namespaces](#) 11
 - [overview](#) 11
 - [simple types](#) 41

T

- Timer events
 - [client](#) 59
 - [server](#) 59
- Timers
 - [client](#) 59
 - [server](#) 47
- [Tracking changes](#) 106
- [Transport](#) 11

V

- [Vendor-extensible fields](#) 10
- [Versioning](#) 10

W

- [WSDL](#) 80