

[MS-UPSCP]:

User Profile Synchronization (UPS): Configuration Protocol Extensions

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Revision Summary

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1 Introduction

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

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in [\[RFC2119\]](#). Sections 1.5 and 1.9 are also normative but do not contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are specific to this document:

globally unique identifier (GUID): A term used interchangeably with universally unique identifier (UUID) in Microsoft protocol technical documents (TDs). Interchanging the usage of these terms does not imply or require a specific algorithm or mechanism to generate the value. Specifically, the use of this term does not imply or require that the algorithms described in [\[RFC4122\]](#) or [\[C706\]](#) must be used for generating the **GUID**. See also universally unique identifier (UUID).

SOAP action: The HTTP request header field used to indicate the intent of the SOAP request, using a URI value. See [\[SOAP1.1\]](#) section 6.1.1 for more information.

SOAP body: A container for the payload data being delivered by a **SOAP message** to its recipient. See [\[SOAP1.2-1/2007\]](#) section 5.3 for more information.

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

SOAP message: An XML document consisting of a mandatory SOAP envelope, an optional **SOAP header**, and a mandatory **SOAP body**. See [\[SOAP1.2-1/2007\]](#) section 5 for more information.

Uniform Resource Locator (URL): A string of characters in a standardized format that identifies a document or resource on the World Wide Web. The format is as specified in [\[RFC1738\]](#).

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

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

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.

[IANAPORT] IANA, "Service Name and Transport Protocol Port Number Registry", November 2006, <http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml>

[MC-NETCEX] Microsoft Corporation, "[.NET Context Exchange Protocol](#)".

[MS-DTYP] Microsoft Corporation, "[Windows Data Types](#)".

[MS-NETTR] Microsoft Corporation, "[.NET Tracing Protocol](#)".

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

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

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

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

[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-Policy1.2] Bajaj, S., 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 Metadata] Gudgin, M., Ed., Hadley, M., Ed., Rogers, T., Ed., Yalcinalp, U., Ed., "Web Services Addressing 1.0 - Metadata", W3C Recommendation, September 2007, <http://www.w3.org/TR/2007/REC-ws-addr-metadata-20070904>

[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>

[WSA1.0] World Wide Web Consortium, "Web Services Addressing 1.0 - WSDL Binding", W3C Candidate Recommendation, May 2006, <http://www.w3.org/TR/2006/CR-ws-addr-wsdl-20060529/>

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

[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/>

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

[XMLSCHEMA1/2] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/>

[XMLSCHEMA2/2] Biron, P., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/>

1.2.2 Informative References

None.

1.3 Overview

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

1.4 Relationship to Other Protocols

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

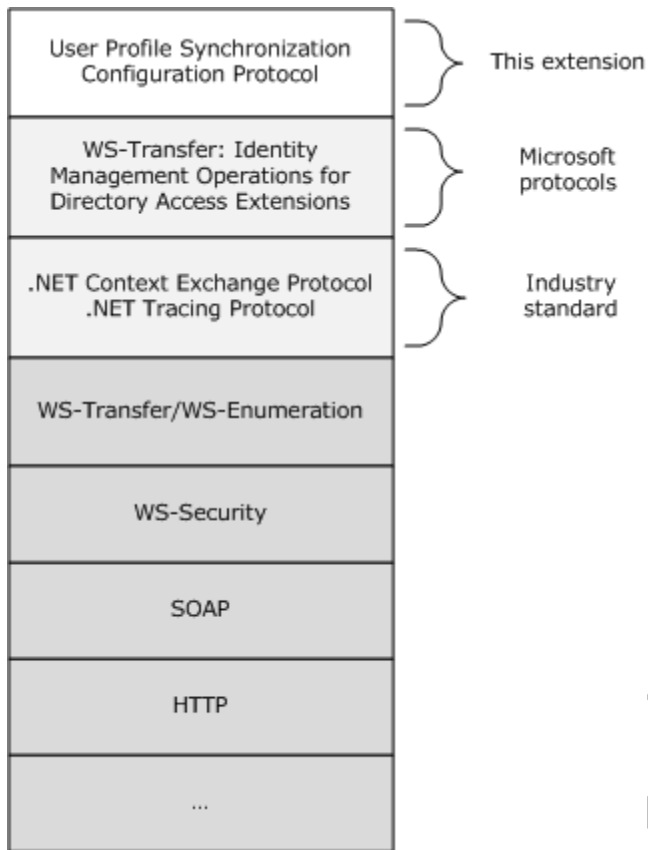


Figure 1: Protocol layering diagram for User Profile Synchronization (UPS): Configuration Protocol Extensions

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 described 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	[IANA:PORT]

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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 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 section 6.

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

Messages MUST be encrypted with Basic256 encryption algorithm suite. Basic256 is defined in [\[WSSP1.2/10.1\]](#) section 6.1. Messages MUST use [\[WSTrust\]](#) 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]
wsa	http://schemas.xmlsoap.org/ws/2004/08/addressing	[WSAddressing]

Prefix	Namespace URI	Reference
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-Policy1.2]
sp	http://schemas.xmlsoap.org/ws/2005/07/securitypolicy	[WSP1.2/10.1]
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 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 that includes configuration objects.

Message	Description
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 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. **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**, 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 section [2.2.3.1](#).

```
<wsdl:message name="AddRequestMessage">
  <wsdl:part name="Body" element="da:AddRequest"/>
  <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
</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 body MUST include the element **wxf:ResourceCreated**. The extension to [\[WSAddressing\]](#) of element **wxf:ResourceCreated** is defined 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** operation (section [3.1.4.1](#)). 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**, defined 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 section [2.2.3.5](#).

```
<wsdl:message name="BaseObjectSearchRequestMessage">
  <wsdl:part name="Body" element="da:BaseObjectSearchRequest"/>
  <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
</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 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** operation (section [3.1.4.3](#)).

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**, defined in section [2.2.3.22](#).

The SOAP body MUST be empty.

```
<wsdl:message name="DeleteRequestMessage"
  <wsdl:part name="objectidentityheader" element="rm:ResourceReferenceProperty"/>
</wsdl:message>
```

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** request (section [2.2.2.5](#)).

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** operation (section [3.1.4.5](#)). 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 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** request (section [2.2.2.7](#)). The message **EnumerateResponseMessage** is defined in [\[WSENUM\]](#) section 3.1.

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

```
<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** operation (section [3.1.4.9](#)). 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 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** request (section [2.2.2.9](#)). The message **GetStatusResponseMessage** is defined in [\[WSENUM\]](#) section 3.4.

The SOAP body MUST include the element **wsen:GetStatusResponse**, 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:GetStatusResponse**. The element **wsen:Expires** is defined in section [2.2.3.11](#).

```
<wsdl:message name="GetStatusResponseMessage" >
  <wsdl:part name="Body" element="wsen:GetStatusResponse" />
</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** operation (section [3.1.4.2](#)). 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**, defined in [MS-WSTIM] section 2.2.3.6.

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

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

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

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** request (section [2.2.2.12](#)). The message **ModifyResponseMessage** is defined in [MS-WSTIM] section 3.2.4.2.1.2.

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** operation (section [3.1.4.6](#)). 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 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** request (section [2.2.2.14](#)). The message **PullResponseMessage** is defined in [\[WSENUM\]](#) section 3.2.

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

```
<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** operation (section [3.1.4.7](#)). 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**, 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 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** request (section [2.2.2.16](#)). The message **ReleaseResponseMessage** is defined in [\[WSENUM\]](#) section 3.5.

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** operation (section [3.1.4.8](#)). 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**, defined in [\[WSENUM\]](#) section 3.3.

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

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

```
wsen:Renew/wsenum:Expires
```

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

```
<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** request (section [2.2.2.18](#)). The message **RenewResponseMessage** is defined in [\[WSENUM\]](#) section 3.3.

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

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

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

```
wsen:RenewResponse/wsenum:Expires
```

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

```
<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** operation (section [3.1.4.2](#)) specified in this protocol, the server is unwilling to perform and when there is no other more-specific fault specified in this document, the server MUST respond with an **UnwillingToPerform** fault as specified in [\[SOAP1.2/1\]](#) section 5.4.

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

2.2.2.21 InvalidRepresentation

If the client sends a request for a **Create** operation (section [3.1.4.4](#)) or **Put** operation (section [3.1.4.2](#)) 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 2.2.2.11 .
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 (section 2.2.3.8).
Sorting (section 2.2.3.24)	An element that specifies which identity attributes to use when sorting configuration objects returned in an EnumerateResponse (section 2.2.3.8).
SortingAttribute (section 2.2.3.25)	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** (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 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** (section [2.2.5.2](#)).

```
<?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="AttributeType" type="rm:AttributeTypeXmlType"/>
</xs:schema>
```

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

da:BaseObjectSearchRequest/da:AttributeType

The element **da:BaseObjectSearchRequest** MUST include one or more elements **da:AttributeType** (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 the XML attribute **da:Operation**. The XML attribute **da:Operation** MUST be simple type **da:OperationXmlType**. The simple type **da:OperationXmlType** is defined in [\[MS-WSTIM\]](#) section 3.2.4.2.3.1.

da:Change/da:AttributeType

The element **da:Change** MUST include exactly one element **da:AttributeType** (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** (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** (section [2.2.3.12](#)) MUST be present as a child of **wsen:Enumerate**.

wsen:Enumerate/rm:LocalePreferences

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

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** (section [2.2.3.24](#)) MUST be present as a child of **wsen:Enumerate**.

wsen:Enumerate/rm:Selection

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

<?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 section [2.2.3.11](#).

```
wsen:EnumerateResponse/wsen:EnumerationContext
```

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

```
wsen:EnumerateResponse/rm:EnumerationDetail
```

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

```
wsen:EnumerateResponse/wsen:Items
```

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

```
wsen:EnumerateResponse/wsen:EndOfSequence
```

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

```

<?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** extends the definition 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 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 "9999-12-31T23:59:59: 99999999".

```
<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="9999-12-31T23:59:59: 99999999"/>
      </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 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 section [2.2.4.1](#).

2.2.3.14 LocalePreferences

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

```
<?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 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** (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 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 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
```

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

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

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

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

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

```
wsen:Pull/rm:PullAdjustment
```

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

```
<?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>

```

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 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 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 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** request (section [2.2.3.7](#)). This element MUST be simple type **rm:AttributeTypeXmlType**. The simple type **rm:AttributeTypeXmlType** is defined 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:SelectionType"/>
</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** request (section [2.2.3.7](#)).

```
rm:Sorting/@rm:Dialect
```

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

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

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

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

```

    <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 position for a Pull operation (section 3.1.4.6).
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** (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"
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:sequence>
  </xs:complexType>
</xs:schema>
```

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

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

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

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

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

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

The element **rm:Sorting** is defined 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:wse="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** (section [2.2.5.6](#)) and includes an XML attribute **wse:Dialect**.

The XML attribute **wse:Dialect** is defined in this [\[WSENUM\]](#) section 3.1. As a profile of [WSENUM], the XML attribute **wse:Dialect** MUST be of simple type **rm:FilterDialectType** (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**, 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 section [2.2.5.8](#).

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

2.2.4.7 SelectionType

The complex type **rm:SelectionType** defines element **rm:Selection** (section [2.2.3.23](#)). 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 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 xs:string and is set to a specific value.
AttributeTypeXmlType (section 2.2.5.2)	A simple type that derives from xs:string and is restricted to specific identity attributes defined in [MS-UPSCDS] .
DialectType (section 2.2.5.3)	A simple type that derives from xs:anyURI and is set to a specific URI.
EnumerationDirectionType (section 2.2.5.4)	A simple type that derives from xs:string and restricts the value to be "Forwards".
FilterDialectType (section 2.2.5.5)	A simple type that derives from xs:anyURI and is set to a specific URI.
FilterQueryType (section 2.2.5.6)	A simple type that derives from xs:string and restricts the value to a set of strings representing queries.
ReferenceType (section 2.2.5.7)	The reference property value identifies a configuration object.
StartingIndexType (section 2.2.5.8)	A simple type that derives from xs:integer that has the number of configuration objects retrieved from Enumerate (section 3.1.4.5).

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: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:restriction>
  </xs:simpleType>

```

```

<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:restriction>
  </xs:simpleType>
</xs:schema>

```

2.2.5.7 ReferenceType

The simple type **rm:ReferenceType** uniquely identifies a configuration object and contains a **GUID**. **rm: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 ({} at the beginning and no close bracket (}) 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:restriction base="xs:integer"/>
  </xs:simpleType>
</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.

Preliminary

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

None.

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 the 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.

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

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

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** (section [2.2.3.22](#)) to identify which configuration object to retrieve. If the element **rm:ResourceReferenceProperty** is not present, then the server behavior is undefined.

da:BaseObjectSearchResponse/da:PartialAttribute

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

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

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

```
<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" />
    <soap:header message="da:BaseObjectSearchRequestMessage" part="operationheader"
  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. If the **rm:ResourceReferenceProperty** element is not present, then the server MUST respond with the **InvalidRepresentation** (section [2.2.2.21](#)) SOAP fault.

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

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

If the client does not have permission to change one or more of the identity attributes then the server MUST respond with a **PermissionDeniedFault** (section [2.2.2.11](#)) 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 SHOULD [<1>](#) add the new value to the multi-valued identity attribute. There is no requirement that the order of added values be preserved. If the new value already exists as a value of the multi-valued identity attribute, then the server MUST respond with an **UnwillingToPerform** SOAP fault.

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

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

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

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

```
<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" />
    <soap:header message="da:ModifyRequestMessage" part="operationheader" 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).

Message	Description
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.

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

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

If the client does not have permission to delete the configuration object, then the server MUST respond with a **PermissionDeniedFault** (section [2.2.2.11](#)) 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">
        <soap:header message="da:DeleteRequestMessage" part="objectidentityheader"
        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="EndpointUnavailable"          <soap12:fault use="literal"
    name="EndpointUnavailable" namespace="http://schemas.xmlsoap.org/ws/2004/08/addressing"/>
    </wsdl:fault>
    <wsdl:fault name="PermissionDeniedFault">
        <soap12:fault use="literal" name="PermissionDeniedFault"
        namespace="http://schemas.microsoft.com/2006/11/ResourceManagement" />
    </wsdl:fault>
</wsdl:operation>

```

3.1.4.3.1 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
rm:ResourceReferenceProperty	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 an **InvalidRepresentation** 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" />
    <soap:header message="da:AddRequestMessage" part="operationheader" 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:InvalidExpirationTime** SOAP fault.

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

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

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

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

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

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

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

To operate on the results produced in `EnumerateResponseMessage`, the client MUST set the **wsen:EnumerationContext** (section 2.2.3.9) 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** (section [2.2.3.8](#)).

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** operation (section [3.1.4.5](#)).

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** (section [2.2.3.9](#)) 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"
    wsa:Action="http://schemas.xmlsoap.org/ws/2004/09/enumeration/Release"
  />
  <wsdl:output
    message="wsen:ReleaseResponseMessage"
    wsa:Action="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** (section [2.2.3.9](#)) 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 a **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** (section [2.2.3.9](#)). If the server accepts the request, then the server MUST send the message **GetStatusResponseMessage** (section [2.2.2.10](#)) in response.

```
<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).
GetStatusResponseMessage	See GetStatusResponseMessage (section 2.2.2.10).

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

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

None.

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** (section [2.2.3.9](#)) included in the response message operation **Enumerate** MUST be included in the requests of operations **Pull**, **Release**, **Renew**, and **GetStatus**.

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

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

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

3.2.5 Timer Events

None.

3.2.6 Other Local Events

None.

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** operation (section 3.1.4.4). 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:xsi="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/IdentityAttributeTyp
e-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:wsa="http://www.w3.org/2005/08/addressing"
xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:rm="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsa:Action
s:mustUnderstand="1">http://schemas.xmlsoap.org/ws/2004/09/transfer/CreateResponse</a:Action>
    <wsa: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">
    <wsa:EndpointReference>
    <Address>http://127.0.0.1:5725/ResourceManagementService/Resource</Address>
    <wsa:ReferenceProperties>
    <rm:ResourceReferenceProperty>urn:uuid:fa14aafd-d74b-4833-bd94-
94c96ee1b278</rm:ResourceReferenceProperty>
    </wsa:ReferenceProperties>
    </rm: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** operation (section 3.1.4.1). 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** operation (section 3.1.4.2). 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:fal4aafd-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** operation (section 3.1.4.3). 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 4.4.2) 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:wsa="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-
  open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <s:Header>
    <wsa:Action s:mustUnderstand="1"
  u:Id="_4">http://schemas.xmlsoap.org/ws/2004/09/transfer/Delete</wsa:Action>
    <ResourceReferenceProperty
  xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">urn:uuid:88a0aad6-d9eb-454b-
  9bf9-b7007e3f0be7</ResourceReferenceProperty>
    <wsa:MessageID u:Id="_5">urn:uuid:40b2951b-abae-4503-ac1c-33ae3f595512</wsa:MessageID>
    <wsa:ReplyTo u:Id="_6">
      <wsa:Address>http://www.w3.org/2005/08/addressing/anonymous</wsa:Address>
    </wsa:ReplyTo>
    <wsa:To s:mustUnderstand="1"
  u:Id="_7">http://fimdcl:5725/ResourceManagementService/Resource</wsa: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>s2L5LlCkFkCOBkobF9uEN4A==</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>Zn8uDzuYkdIwfKOFDFCrZlvXRWuT3J49g5jEIDjkuGEGK52M7/oudMBOal2mzfpOY7SUZR6fPDeX7
9mkZlId/Qz90gposQ9jALV/QSfN/XcawAdevMAPuRsDqn3yYEGr1+KTSFhz+mGQ+AU/wnXQKJY05NbFsjQ4+fzZuTXCHG
0gy5Y8gtImnpk33VxOPgzlrOc4OIHPARh43hdjnU4uky2G03JNgEshiY9WqgOEpvgzH06tOnHwM2Sp2FyZNdKcO4dnw4F
1HkRyR7Ku00RDrXPjj/25E5wn5MB3g02Pb9aGn1TxYXqI88/gz82+OB7stmhFqhAw739ksGGe9fAdsfEkpZh/1g6J09T4
MjWootm3NeisziSQblpkQqd/Fl+XjD2adHy1QOYI4XUXP7mda09bh6jKsprsY9UF32dp3Cbig6wicNDCDaGwALEaEJ94+
k1LXzrBFmB7xzqlaXUQkP6Z3+mLBjpp98J9RSrun2vtGsbnt+eXbRgISfNcVjGnQgJiMPACjB+jJRWsRGRmlXvkrxt/dfn5
KsuTg4Qa54dWIedsdhiHt9wDMTGO/ZxXTbBlNFmMSY0JXKa0dL+EL1S/cj4W7LmQROJg8HX5OvLWNRVii+5mGuzwgvyKn
HYvN2vYnitoc4WZ8aqJoQea7sQXnd3soQF7ic/oSNOC0gHrJfImpaP5Vs2+D/f3Vgt9yAkWRXsTgRlMBVMGLkdPoNtDRP
N+gs2/yQNQ48QhAAyItEZ+UZ/2tFxKJ0Q8101I6aeWmFMedbdkx2bRyYctzBH1GCyXv0BG8V1v62/6SFvU+z+c+J9CTZ15
+wZxE/a30gbC9gea7efGqnpnj3JmrwBC9rZb/4rzmeEugj4qRh24+OWEOH8W82H8anSL+//h+Gh6kAToD1t1LQK0QSL25c
RxlM0c8P11XQujAy4vo/E40PTwfhLtkPSW08KOi9DzQC1EU3gvEM8v8nY2WZSjwoulpdiJMPY5D8ioh6BvSmbBz+LSCT
vZvUB7Y/Qome0Sb6pkzCqjjJF9caWAP3Hr6F17JITBzv+saMSCqQU1Wi/WTtchFNnxIt49LgnrrUoA6kdMxPpdHAA69+h
e8VhfmlZ60BYVZup6B6dvY/LgjHg1j1f3a4dcu7f06bmbTYerV3bY1DF9V+0DvdKyPhi2ymnkVlXf28xBl1e2aW92Mafh
ox0fjQUHwosfEmuMwvSscqz2u6eAjmzw1BYBa8iY6P2y4wFBNIerTwnFhdunZs1f1f72vMRuCMF4xaCtKBCf1s14MwjfRN
Z42eQ55ZDpT/3wfJ2WJLCHDFD/+UOMs6fMj8wtJ+PoaOnCo0PyLZV02iYhj0/Ez1qi0sB0Ejh7xRvNBUL2cymC9HH2+4S
bTPwpl+9u1/deLavsZ/hMBgSV6RnKrZnhyYIVgHnKSnNj1Es365/nX1J2BaKqfId9j4IiU0qccHMM+xoRX+vujsrhANv
gdg6ME3qzmrFJarQHKAC+5HnObsXdbfJ9aIhpT/TvnpNaqlUdcfh8Cxu7qt/qkCQzq+o5kCk7U+ocf4Y6x01/svMBD74
Duk7sqVm+wVxAS/VxECTzA7SnuRSZ1tVd7pyyhV8dyaV7Pdgt31BYiphss8R4EHIhFCVWvcwEC1NG0s5yDL5HxrYlJw
MWG0koFwq7JPOhtI2XtD333Qz9UI1sAX0skcsu84ixOKYR2wKELr4JJ/NS2Tn7B3YOqB1+r0TnYG86Qms/UQkLo53nnc
4T+j6UScRcL0KKElZ9eyvwBoktReaMoFc6xv9Kh2V51/bly7tDC5m/gALP53iv9ncDvhPaziurWXHiTfP8U4ntEbiSsYf
mY669tiBaI7n67yQVm/OX0T4Eb5NyaybNggv55m0n65BT2it3WYBT3xuBlOt30g504/QiUu8KgvOwhdIQ11VLDgGV9kBK
YFlaJvnC6vBtONLBRNvqFwgnFi9FcXJd6K5QMD0jpbYibqtEghjJqYE/hWRAP1tZxbmkglNAkrqZXY8FgCPVh2KgtNsjR
TfuZfgsuMFCdzJbU8eGT2OEXpr9RLwFW8ym02GXIBP15IE8jOZS6IFA235M2xnjkQyMobri7r1QYi01CXr4bWVvuWwbx1
WNGXx/sL50KxfCAEN2nS67CtPBd8i+ERu8L1Pprr1YcGHASqPdcDzQ97TDngqxRpB64JgMAJIJQ1NSrAhA2u/BM40u+Pq
R8j3LhUBXwPvgVJQBF1hznxbpiwP4KQURyWgv1Nd6ev0k9SBp0opGdLv7/CWUD1RLEp4FanfjME+HvVhGGGVhn8y6YqHJ
lHxaIUmo/LnsRgfFzchXS14eQ0JIBJv1/ACw30002dL5+4brLe09AcpLkb0nF+fL3aw6vvXnKRWIb1ZzbGxFbuv7tVf7W
81QTXrbvjL5LtlWh+XAdwHcu5btj+srM6ITbq8x381noP3C6OVcw+y0YH1PjuGxYk2XTtuw2M6GdL8ne9bgbhjkEgu1CB
MbECVPfQT86EL4JAna6Y0FAZ8FCjqXxwH9G/+Vr0Kt10rucnpz8RcsX6mbJvDHHUQArbiguhNQmtZx2kyG3wjYorWQF0
NKSrCwLba2Shkt0JAg8IaiosAjSPZRqp2mm2BirAKIAZ8S5sdWI7KtFVB9y/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>30wzQUEv/lnHI+juADLl1tf41xZMJrMsj6utajIDUr0=</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:wsa="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <s:Header>
    <wsa:Action s:mustUnderstand="1"
u:Id="_4">http://schemas.xmlsoap.org/ws/2004/09/transfer/DeleteResponse</wsa:Action>
    <wsa:RelatesTo u:Id="_5">urn:uuid:40b2951b-abae-4503-ac1c-33ae3f595512</wsa: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>qz3yN2Xr+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>fAop6NmTl8KLKlyD09EobQ==</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+8TJ3liGrJyvCPTRIGib7I4LGXILQ407srnCDw7zp4tOZAwNGYyukW9ACj61pqRJ
H4HrQTMpdqtcQ2VlMsnVZiOVxHdzYojd05vm+PSrrLRNqdYEeqfElASd+nBgxodFioTRPsOhrKhRiP4+ld+LiihgJ1+vliA
114NC4u+lytjqkG1lM2SuBXANI29Vkimules+U265qbP4dy0+VKtrMBYci/Ct+6ZwWG08JhoLRkiSwrDRx4xpp7XC+qCa
1xcsI3xJO7UIve0hzNik49BzoKFH6uv8MtIJ+cEiz3mywRhv8uGfVzbUWO63tahJB5GxmU4VJQwvvpMhGc0eI62rowcvZ
5J7gnfz6AlYtODRwHT8E7yyvcqBWXadkPkxqyqKqFmrAJXFFc0dEnzYOEZC010f7AGNLqy5TNNr8q480BUXEk3Tjr7lh

```

```

jKp17dff+Ga012Zw6jKc+pEGgeVZNA3IVJWlIyieOMdLb8TksWuT5qcKflAHGZ5YZDh21D31gYlBxjvDjBUyxKJ7VFj18
tKr2w1hLgzupQeSt8VUkxrNBj2FPQcIhWvoFIHciSy+ItEsFl+f8tnHPzgw9n8HhcbGgjt8D7YLlOJdyJeq28nNo0vly
+HYQ17db5aLzFWkvpnxLCdLs/4w9DMBOTU12QaoeSIIzS9Y4cIi2j29IW5n+o57k3g5q2ucR5fb90ZByfmK6PNP3cxiCq
zCBP3HM2mGKYymR/1rPgwAXm3TB5sYnHdj1t+CNad9Z9+cI1LyYa7vPwAdf4XPsPAUIv61Q5fQ06LcgZLbZSYR2xfU7k
omznE/SHV/ET1Tf9opNCRPRB67OZl1+UqYisrfgp/ZQY1zGPPUvDgCw8f94Q6MJ2QV+RLi++8MuQmGQYUI/S0cAeQAdSF
9E2HXm2n4Ry71ZY3NSDpivK++HmBm9RC3J0ZzCx4PVjqp6XIzt0s4Bg19TYMPCusQ+fXKyX9Ae36ZAsppM/HNVBU8XbqT
+WT6NpmaX127Xt4s10wgL2eOMc6cKgBKc8LUAsaPJeH3Mq7Oxb2OcPXRKGCSE7Llh015SemmuLnc/mELVixZ1kpG1Cmw
18UbOoph16PDqa75q3SbShAY5zIt1t8D4tU/WKjd90FnY6JcOtmIseZ+huJTInoKIwAy8d6/y5TXWXst85KpGmtUqaVH
RX1FTvC0ZaB++M7JKlznSK21WIwyTpc76T6am2fPhDPilC14XGu+oE+OA9vp+3czWW7O0g3H67U4QDRoDJctTw1lrvB94
BbZaC6Ei29XBQs6HifZ6kB+rit5RbNUcqtWxAWGdgyPKKXRVpqJjb2ItFGpGwHIB0wIHUdIqzgeswOt4jpp/Crx1NS0LE1
5MmW0iydtKo8Wt8tgaOatJnv+94mXAC6pWnW+hABXiUkqpTpAufBrjppq1HfKsc//m6ryFoJmFN+P/ZSs9hS0ldzxfLG6t
V2PACNOH78/zZR4NYoMDyBeNyJlFSsCl1tjKsea+NjhI1QIcMaP41D+UvLFil++Zv4Ou+KMfBnA1lWcKXckVXdRmVN4N3G
uy10FG0rwKJG0fxakshET6Owb7mgs0AAIaH/UC6jfUMoKfaqvL1+HWw4janXMyviNXP5PmitgNIHW4ZZUfdNel8g2zeGP
apIPhH9ASWP9ep3rps21cMRP32BEfCgU38W7a023XL/Ojxdw1VIXVFGFJLbQmaOxQQ2/GCwIz/+2nF+LVwqX3UyKkch0B
FhlkAIAJbFmqS3C4yaddh/k3uu28YVGI+TWE4afOdDa+CH6fzFIYmt0737e5+YpfPrNexXBmWEyul1CkcTnuQo3zp37QL
E/Q3rbK+4V7U1vft3hBgLPogX41xa6zBkAOZnmB1HhhJV6iKp2JV57QdcLusrmCE4HYnoXH11ia68haajmRCWQRWK3d/
3WfK1Vt8a3oUNhm1j9fBp2Htm8gyBw1atL+4cveEV0nTQfzPRvdivG1Jcx+JynGkGb8sVkORGxbu2tzR3S3tLiLjDx/L
QRXOyMBs0HedJedYmDBco+YWWL8/rDp+FHTq56e0njs4BVdkiB4JQVb3xSmHwhYwFOCj1NvQOaa8jpnTW6/f08PL8u
EcAiOzvbYpAjbbE2kw1J35H01W2dNfZQMT2rVZ1NVczb6u032ueBcoDpUnvz7DgD8ns+IRwNex8xlrvanBjb8JtVkcCE6g
wkXkvjD67wJKv1t4OMg+g6gyWdR9VZYSXrOwoU+DS8ZILZHRU+CcPd916LXDyyOwEE3cxVLqAjqDLrn3mD/jpdGkIW3GA
mg40nANKFmWUyzyFPps76Neg4NkDIras1RmVcPzOI0mMSDQc1x61BouAl</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** operation (section 3.1.4.5). 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>
    <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:Body u:Id=" 2">
    <wsen:EnumerateResponse>
      <wsen:Expires>12/31/9999 11:59:59 PM</wsen:Expires>
      <wsen:EnumerationContext>
        <rm:CurrentIndex>0</rm:CurrentIndex>
        <rm:EnumerationDirection>Forwards</rm:EnumerationDirection>
        <rm:Expires>12/31/9999 11:59:59 PM</rm:Expires>
      </wsen:EnumerationContext>
    </wsen:EnumerateResponse>
  </s:Body>
</s:Envelope>

```

```

    <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/IdentityAttributeType-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: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>
      </wsen:EnumerationContext>
    </wsen:Pull>
  </s:Body>
</s:Envelope>

```

```

    <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:PullResponse>
      <wsen:EnumerationContext>
        <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>
        </Selection>
      </wsen:EnumerationContext>
    </wsen:PullResponse>
  </s:Body>
</s:Envelope>

```

```

        <string>ObjectType</string>
        <string>ObjectID</string>
    </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: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: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-ac38-6d570ddb189
        </rm:Creator>
    </rm:ma-data>
</wsen:Items>
    <wsen:EndOfSequence/>
</wsen:PullResponse>
</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** operation (section [3.1.4.7](#)). 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>
  </s:Header>
  <s:Body>
    <rm:ReleaseMessage/>
  </s:Body>
</s:Envelope>

```

```

    <wsa:MessageID>
      uuid:00000000-0000-0000-C000-000000000046
    </wsa:MessageID>
  </s:Header>
  <s:Body>
    <wsen:Release>
      <wsen:EnumerationContext>
        <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** operation (section [3.1.4.8](#)). 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: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:EnumerationContext>
        <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** operation (section 3.1.4.9). 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: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>
    </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>
  </s:Body>
</s:Envelope>
```

```
</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:wsc="http://schemas.microsoft.com/ws/2006/05/context"
  xmlns="http://schemas.microsoft.com/2006/11/ResourceManagement">
  <s:Header>
    <wsc:Context>
      <wsc:InstanceId>19bc8ea5-27f8-4136-97a2-3699697fd271</wsc:InstanceId>
    </wsc: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] section 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:EndorsingSupportingTokens>
      </wsp:All>
    </wsp:ExactlyOne>
  </wsp:Policy>

```

```

        </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/AlwaysToRecipient">
                                    <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_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>
        </wsp:All>
    </wsp:ExactlyOne>
</wsp:Policy>

```

```

        <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/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>
    </wsp:ExactlyOne>
</wsp:Policy>

```



```

        <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: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: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">

    <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: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:restriction>

```

```

<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: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="1" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>

<xs:complexType name="SelectionType">
  <xs:sequence>
    <xs:element name="string" type="rm:AttributeTypeXmlType" minOccurs="1"
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: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="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="1" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="Dialect" type="rm:DialectType"/>
  </xs:complexType>
</xs:element>
<xs:element name="Selection" type="rm:SelectionType"/>
<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" />
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</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">
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<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: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: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="9999-12-31T23:59:59: 9999999"/>
</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="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: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:element name="PermissionDeniedFaultDetail" type="xs:string"/>
</xs:schema>
</wsdl:types>

<wsdl:message name="AddRequestMessage">
    <wsdl:part name="Body" element="da:AddRequest"/>
    <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
</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:part name="operationheader" element="da:IdentityManagementOperation"/>
</wsdl:message>
<wsdl:message name="BaseObjectSearchResponseMessage">
    <wsdl:part name="Body" element="da:BaseObjectSearchResponse"/>
</wsdl:message>
<wsdl:message name="DeleteRequestMessage">
    <wsdl:part name="objectidentityheader" element="rm:ResourceReferenceProperty"/>
</wsdl:message>
<wsdl:message name="DeleteResponseMessage" />
<wsdl:message name="ModifyRequestMessage">
    <wsdl:part name="Body" element="da:ModifyRequest"/>
    <wsdl:part name="operationheader" element="da:IdentityManagementOperation"/>
    <wsdl:part name="operationheader" element="rm:ResourceReferenceProperty"/>
</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" />

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```

</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" />
      <soap:header message="da:BaseObjectSearchRequestMessage" part="operationheader"
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" />
      <soap:header message="da:ModifyRequestMessage" part="operationheader"
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">
            <soap:header message="da:DeleteRequestMessage" part="objectidentityheader"
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="EndpointUnavailable">
            <soap12:fault use="literal"
name="EndpointUnavailable" namespace="http://schemas.xmlsoap.org/ws/2004/08/addressing"/>
            <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: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" />
                <soap:header message="da:AddRequestMessage" part="operationheader"
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" />
    </wsdl:output>
</wsdl:operation>
</wsdl:binding>
</wsdl:definitions>

```

Preliminary

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
- Microsoft SharePoint Server 2013
- Microsoft SharePoint Server 2016 Preview

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

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

<1> [Section 3.1.4.2](#): SharePoint Server 2010 returns an **UnwillingToPerform** (section [2.2.2.20](#)) SOAP fault and does not perform the operation.

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

8 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as New, Major, Minor, Editorial, or No change.

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

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

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

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

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

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

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

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

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

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

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

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
Z Appendix B: Product Behavior	Updated list of supported products.	Y	Content updated due to protocol revision.

Preliminary

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