

[MS-PEOPS]: People Web Service Protocol Specification

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Revision Summary

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1 Introduction

This document specifies the People Web Service Protocol, which enables protocol clients to find and resolve authenticated entities on a protocol server.

Sections 1.8, 2, and 3 of this specification are normative and contain RFC 2119 language. Sections 1.5 and 1.9 are also normative but cannot contain RFC 2119 language. All other sections and examples in this specification are informative.

1.1 Glossary

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

Hypertext Transfer Protocol (HTTP)
Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)
principal

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

distribution list
forms authentication
group
security group
Simple Object Access Protocol (SOAP)
site
site collection
SOAP action
SOAP body
SOAP fault
Uniform Resource Locator (URL)
Web Services Description Language (WSDL)
XML namespace
XML schema

The following terms are specific to this document:

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

1.2 References

References to Microsoft Open Specification documents do not include a publishing year because links are to the latest version of the documents, which are updated frequently. References to other documents include a publishing year when one is available.

1.2.1 Normative References

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

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

[RFC2616] Fielding, R., Gettys, J., Mogul, J., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999, <http://www.ietf.org/rfc/rfc2616.txt>

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

[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>

[SOAP1.2/2] Gudgin, M., Hadley, M., Mendelsohn, N., Moreau, J., and Nielsen, H.F., "SOAP Version 1.2 Part 2: Adjuncts", W3C Recommendation, June 2003, <http://www.w3.org/TR/2003/REC-soap12-part2-20030624>

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

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

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>

1.2.2 Informative References

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

[MS-OFCGLOS] Microsoft Corporation, "[Microsoft Office Master Glossary](#)".

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

1.3 Protocol Overview (Synopsis)

This protocol enables a protocol client to resolve and find **principals (1)**. The protocol allows the protocol client to pass criteria, which consist of a list of keys and the principal (1) type, to the protocol server and to receive back a list of resolved principals (1).

A typical scenario for using this protocol is a people-finder application that enables users to choose the principal (1) type and to enter the user name, e-mail address, or display name as search criteria. The application could use this protocol to resolve and find the principals (1) and show details about them.

1.4 Relationship to Other Protocols

This protocol uses the **SOAP** message protocol for formatting request and response messages, as described in [\[SOAP1.1\]](#), [\[SOAP1.2/1\]](#) and [\[SOAP1.2/2\]](#). It transmits those messages by using **HTTP**, as described in [\[RFC2616\]](#), or **Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**, as described in [\[RFC2818\]](#).

The following diagram shows the underlying messaging and transport stack used by the protocol:

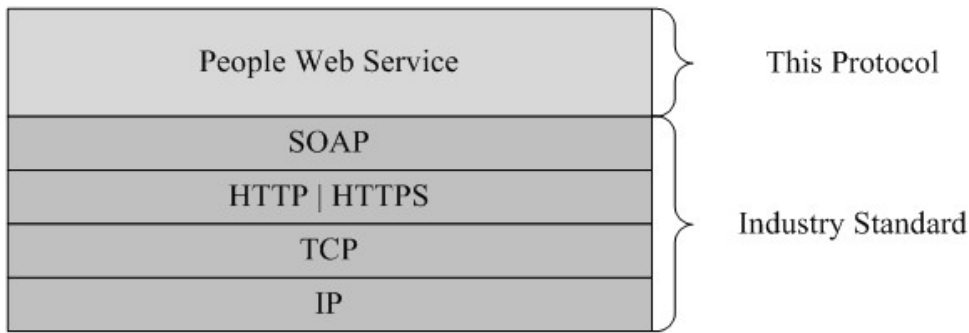


Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

This protocol operates against a **site (1)** that is identified by a **URL** that is known by protocol clients. The protocol server endpoint is formed by appending `"/_vti_bin/People.asmx"` to the URL of the site (1), for example: `http://www.contoso.com/Repository/_vti_bin/People.asmx`.

This protocol assumes that authentication has been performed by the underlying protocols.

1.6 Applicability Statement

None.

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported transports:** This protocol uses multiple transports with SOAP, as described in section [2.1](#).

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

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

2.1 Transport

Protocol servers **MUST** support SOAP over HTTP. Protocol servers **SHOULD** additionally support SOAP over HTTPS for securing communication with protocol clients.

Protocol messages **MUST** be formatted as specified either in [\[SOAP1.1\]](#), section 4 or in [\[SOAP1.2/1\]](#), section 5. Protocol server faults **MUST** be returned either using HTTP Status Codes as specified in [\[RFC2616\]](#), section 10, or using **SOAP faults** as specified either in [\[SOAP1.1\]](#), section 4.4, or in [\[SOAP1.2/1\]](#), section 5.4.

2.2 Common Message Syntax

This section contains common definitions that are used by this protocol. The syntax of the definitions uses **XML schema**, as specified in [\[XMLSCHEMA1\]](#) and [\[XMLSCHEMA2\]](#), and WSDL, as specified in [\[WSDL\]](#).

2.2.1 Namespaces

This protocol specifies and references **XML namespaces** using the mechanisms specified in [\[XMLNS\]](#). Although this document associates an XML namespace prefix for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific. The following table describes these namespaces.

| Prefix | Namespace URI | Reference |
|--------|---|--|
| soap | http://schemas.xmlsoap.org/wsdl/soap/ | [SOAP1.1] |
| tns | http://schemas.microsoft.com/sharepoint/soap/ | |
| s | http://www.w3.org/2001/XMLSchema | [XMLSCHEMA1] [XMLSCHEMA2] |
| soap12 | http://schemas.xmlsoap.org/wsdl/soap12/ | [SOAP1.2/1] [SOAP1.2/2] |
| (none) | http://schemas.microsoft.com/sharepoint/soap/ | |
| wsdl | http://schemas.xmlsoap.org/wsdl/ | [WSDL] |

2.2.2 Messages

This specification does not define any common WSDL message definitions.

2.2.3 Elements

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

2.2.4 Complex Types

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 the operation.

| Complex type | Description |
|-----------------------------|--|
| ArrayOfPrincipalInfo | Array of elements of type PrincipalInfo (section 2.2.4.2). |
| PrincipalInfo | Contains information about a principal (1). |

2.2.4.1 ArrayOfPrincipalInfo

The **ArrayOfPrincipalInfo** complex type contains an array of **PrincipalInfo** elements (section [2.2.4.2](#)). This array contains zero or more **PrincipalInfo** elements (section [2.2.4.2](#)).

```
<s:complexType name="ArrayOfPrincipalInfo">
  <s:sequence>
    <s:element name="PrincipalInfo" type="tns:PrincipalInfo" minOccurs="0"
maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

PrincipalInfo: The information about the principal (1) returned by the protocol server.

2.2.4.2 PrincipalInfo

The **PrincipalInfo** complex type provides information about a principal (1).

```
<s:complexType name="PrincipalInfo">
  <s:sequence>
    <s:element name="AccountName" type="s:string" minOccurs="0" maxOccurs="1" />
    <s:element name="UserInfoID" type="s:int" minOccurs="1" maxOccurs="1"/>
    <s:element name="DisplayName" type="s:string" minOccurs="0" maxOccurs="1" />
    <s:element name="Email" type="s:string" minOccurs="0" maxOccurs="1" />
    <s:element name="Department" type="s:string" minOccurs="0" maxOccurs="1" />
    <s:element name="Title" type="s:string" minOccurs="0" maxOccurs="1" />
    <s:element name="IsResolved" type="s:boolean" minOccurs="1" maxOccurs="1" />
    <s:element name="MoreMatches" type="tns:ArrayOfPrincipalInfo" minOccurs="0" maxOccurs="1"
/>
  </s:sequence>
  <s:element name="PrincipalType" type="tns:SPPPrincipalType" minOccurs="1" maxOccurs="1" />
</s:complexType>
```

AccountName: The logon name of the principal (1). [<1>](#)

UserInfoID: The identifier of the user in the **site collection**.

Display Name: The display name of the principal (1).

Email: The e-mail address of the principal (1).

Department: The department name of the principal (1).

Title: The job title of the principal (1).

IsResolved: A Boolean that specifies whether the principal (1) is uniquely identified in the site collection list of users.

MoreMatches: The list of principals (1) that have name, display name, e-mail address, or sip address starts with the input criteria. The list can be empty if there are no partially matching principals (1).

PrincipalType: The type of the principal (1). This value MUST be a **SPPrincipalType** (section [2.2.5.1](#)).

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 the operation.

| Simple type | Description |
|------------------------|-----------------------------------|
| SPPrincipalType | Specifies the principal (1) type. |

2.2.5.1 SPPrincipalType

The **SPPrincipalType** simple type is an enumeration that specifies the type of a principal (1).

```
<s:simpleType name="SPPrincipalType">
  <s:list>
    <s:simpleType>
      <s:restriction base="s:string">
        <s:enumeration value="None"/>
        <s:enumeration value="User"/>
        <s:enumeration value="DistributionList"/>
        <s:enumeration value="SecurityGroup"/>
        <s:enumeration value="SharePointGroup"/>
        <s:enumeration value="All"/>
      </s:restriction>
    </s:simpleType>
  </s:list></s:simpleType>
```

The following table specifies the possible values for this simple type.

| Value | Meaning |
|------------------|---|
| None | The principal (1) type is not set. |
| User | The principal (1) is a user. |
| DistributionList | The principal (1) is a distribution list . |
| SecurityGroup | The principal (1) is a security group . |
| SharePointGroup | The principal (1) is a site group . |
| All | All of the preceding principal (1) types. |

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.

2.2.9 Common Data Structures

This specification does not define any common XML schema data structures.

Preliminary

3 Protocol Details

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

The client side of this protocol is simply a pass-through. That is, no additional timers or other state is required on the client side of this protocol. Calls made by the higher-layer protocol or application are passed directly to the transport, and the results returned by the transport are passed directly back to the higher-layer protocol or application.

Except where specified, protocol clients SHOULD interpret HTTP status codes returned by the protocol server as specified in [RFC2616](#).

This protocol enables protocol servers to perform implementation-specific authorization checks and to notify protocol clients of authorization faults, either using HTTP status codes or using SOAP faults as specified previously in this section.

3.1 Protocol Server Details

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

The protocol server maintains the following:

- A list of all possible principals (1) that are candidates for resolution. This is used to resolve the user input against a list of possible candidate principals (1). This list MUST NOT be altered by a user of the protocol.
- A list of site collections. This list MUST NOT be altered by a user of the protocol.
- For each site collection, a list of principals (1) that are allowed to use the site collection.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing Rules

The following table summarizes the list of WSDL operations as defined by this specification:

| Operations | Description |
|--------------------------|--|
| ResolvePrincipals | Resolves a list of principals (1) based on a list of criteria. |
| SearchPrincipals | Finds a list of principals (1) that match the search criteria uniquely or partially. |
| IsClaimsMode | Determines whether the web application is in claims mode |

3.1.4.1 ResolvePrincipals

The **ResolvePrincipals** operation is used to resolve principals (1) based on a list of keys, where each key corresponds to one and only one principal (1) to be resolved, and the principal (1) type as specified in **SPPrincipalType** (section [2.2.5.1](#)). This operation also provides an option to add the principals (1), if not already present, to the list of principals (1) associated with the site collection.

```
<wsdl:operation name="ResolvePrincipals">
  <wsdl:input message="ResolvePrincipalsSoapIn" />
  <wsdl:output message="ResolvePrincipalsSoapOut" />
</wsdl:operation>
```

The protocol client sends a **ResolvePrincipalsSoapIn** request message, and the protocol server responds with a **ResolvePrincipalsSoapOut** response message, as follows:

1. The caller of this operation MUST specify the following criteria: the list of keys (which can be any string), the principal (1) type, and a Boolean indicating whether the user MUST be added to the site collection list of principals (1).
2. This operation MUST return the principals (1) that match the criteria specified in the request uniquely or partially. Unique match means there is a unique principal whose name, display name, e-mail address, or sip address exactly matches the input (case-insensitive). Partial match means one of those fields starts with the input. The number of uniquely matched principals (1) returned MUST be less than or equal to the number of keys provided as input.

This operation MUST return a SOAP Fault element in the following cases:

- The *principalKeys* parameter is NULL.
- A *string* element in the *principalKeys* parameter is NULL.

If the user does not have permission to browse for principals (1) this operation MUST return an HTTP status code of 401 if using Windows authentication or 403 if using **forms authentication**.

3.1.4.1.1 Messages

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

| Message | Description |
|---------------------------------|--|
| ResolvePrincipalsSoapIn | A request to initiate a ResolvePrincipals operation on the protocol server. |
| ResolvePrincipalsSoapOut | A response from the protocol server at completion of the ResolvePrincipals operation. |

3.1.4.1.1.1 ResolvePrincipalsSoapIn

The **ResolvePrincipalsSoapIn** message is the request message for a **ResolvePrincipals** operation.

The **SOAP action** value of the message is defined as follows:

```
http://schemas.microsoft.com/sharepoint/soap/ResolvePrincipals
```

The **SOAP body** contains a **ResolvePrincipals** element. This message MUST contain the following criteria: the *principalKeys*, the principal (1) type, and *addToUserInfoList*, a Boolean value indicating whether the principal (1) MUST be added to the list of principals (1) associated with the site collection. Only a principal's (1) information found in the *AccountName*, *Email*, and *DisplayName* of its **PrincipalInfo** fields (section [2.2.4.2](#)) is included when it is added to the list of principals (1) on the site collection.

3.1.4.1.1.2 ResolvePrincipalsSoapOut

The **ResolvePrincipalsSoapOut** message is the response message for a **ResolvePrincipals** operation (section [3.1.4.1](#)).

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/sharepoint/soap/ResolvePrincipals
```

The SOAP body contains a **ResolvePrincipalsResponse** element. The value of this element MUST be the list of principals (1) that match the criteria specified in the request uniquely or partially.

3.1.4.1.2 Elements

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

| Element | Description |
|----------------------------------|--|
| ResolvePrincipals | Body of the ResolvePrincipalsSoapIn message. |
| ResolvePrincipalsResponse | Body of the ResolvePrincipalsSoapOut message. |

3.1.4.1.2.1 ResolvePrincipals

The **ResolvePrincipals** element provides the input data for a **ResolvePrincipals** operation.

```
<s:element name="ResolvePrincipals">
  <s:complexType>
    <s:sequence>
      <s:element name="principalKeys" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
      <s:element name="principalType" type="tns:SPPrincipalType" minOccurs="1"
maxOccurs="1"/>
      <s:element name="addToUserInfoList" type="s:boolean" minOccurs="1" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

principalKeys: The list of keys used to match the principals (1). The key SHOULD be the user name or e-mail, or the display name of the principal (1).

principalType: The principal (1) type. This value MUST be one of the **SPPincipalType** values (section [2.2.5.1](#)).

addToUserInfoList: A Boolean that specifies whether the principal (1) MUST be added to the user's site collection if it is uniquely identified and it does not already exist in the user's site collection. If this element is set to **true**, the principal (1) MUST be added to the user's site collection if it is uniquely identified and it does not already exist in the user's site collection. [<2>](#) If this element is set to **false**, the user MUST NOT be added to the site collection list of users.

3.1.4.1.2.2 ResolvePrincipalsResponse

The ResolvePrincipalsResponse element provides the result data for a **ResolvePrincipals** operation.

```
<s:element name="ResolvePrincipalsResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="ResolvePrincipalsResult" type="tns:ArrayOfPrincipalInfo" minOccurs="0"
maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

ResolvePrincipalsResult: The result data for a **ResolvePrincipals** operation. This element's value MUST be the list of **PrincipalInfo** complex types (section [2.2.4.2](#)) that match the criteria specified in the request uniquely or partially. The number of **PrincipalInfo** complex types (section [2.2.4.2](#)) returned MUST be equal to the number of keys provided as input. This element MUST be present.

Each **PrincipalInfo** complex type (section [2.2.4.2](#)) returned MUST have the following fields:

- **AccountName:** If **IsResolved** is set to **true**, the value of this element MUST be the resolved account name. If **IsResolved** is set to **false**, the value MUST be the key provided as input for **ResolvePrincipals** (section [3.1.4.1](#)) operation.
- **UserInfoID:** This value MUST be greater than or equal to zero if the user is already a member of the site collection. If the user cannot be resolved, the value MUST be -1. The value of this parameter MUST NOT be less than -1.
- **IsResolved:** This value MUST be set to **true** if the principal (1) is uniquely identified in the site collection list of principals (1). Otherwise, it MUST be set to **false**. If **IsResolved** is set to **FALSE**, the value of **UserInfoID** MUST be -1.
- **MoreMatches:** If **IsResolved** is set to **true**, this element MUST be NULL. If **IsResolved** is set to **FALSE**, this element contains the list of principals (1) that partially match the input criteria. The list can be empty if there are no partially matching principals (1). This list MUST contain no more than 10 principals (1), even if there are more than 10 principals (1) that partially satisfy the criteria.
- **PrincipalType:** If **IsResolved** is set to **true**, this value MUST NOT be set to All. If **IsResolved** is set to **false**, this value is the **PrincipalType** provided as input for **ResolvePrincipals** operation (section [3.1.4.1](#)).

- **DisplayName:** If **IsResolved** is set to **false**, this element MUST be NULL. If **IsResolved** is set to **true**, this element can be NULL, empty, or contain the resolved principal's (1) **DisplayName** field.
- **Title:** If **IsResolved** is set to **false**, this element MUST be NULL. If **IsResolved** is set to **true**, this element can be NULL, empty, or contain the resolved principal's (1) **Title** field.
- **Department:** If **IsResolved** is set to **false**, this element MUST be NULL. If **IsResolved** is set to **true**, this element can be NULL, empty, or contain the resolved principal's (1) **Department** field.
- **Email:** If **IsResolved** is set to **false**, this element MUST be NULL. If **IsResolved** is set to **true**, this element can be NULL, empty, or contain the resolved principal's (1) **Email** field.

3.1.4.1.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

| Complex type | Description |
|----------------------|--|
| ArrayOfString | Array of string elements used to specify the list of principals. |

3.1.4.1.3.1 ArrayOfString

This complex type contains an array of string elements. It is used to specify the list of principals (1) in the **ResolvePrincipals** operation.

```
<s:complexType name="ArrayOfString">
  <s:sequence>
    <s:element name="string" type="s:string" nillable="true" minOccurs="0"
maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

string: A key used to match a principal (1).

3.1.4.1.4 Simple Types

None.

3.1.4.1.5 Attributes

None.

3.1.4.1.6 Groups

None.

3.1.4.1.7 Attribute Groups

None.

3.1.4.2 SearchPrincipals

The **SearchPrincipals** operation finds the principals (1) matching the specified search criteria and the principal (1) type. The protocol client MUST specify the upper limit for the number of uniquely or partially matched principals (1) returned by this operation.

```
<wsdl:operation name="SearchPrincipals">
  <wsdl:input message="SearchPrincipalsSoapIn" />
  <wsdl:output message="SearchPrincipalsSoapOut" />
</wsdl:operation>
```

The protocol client sends a **SearchPrincipalsSoapIn** request message, and the protocol server responds with a **SearchPrincipalsSoapOut** response message, as follows:

1. The caller of this operation MUST specify search criteria, a search text (which can be any string), a principal (1) type, and the upper limit for the number of uniquely or partially matched principals (1).
2. This operation MUST return the principals (1) that match the criteria specified in the request uniquely or partially up to the specified limit. Unique match means there is a unique principal whose name, display name, e-mail address, or sip address exactly matches the input (case-insensitive). Partial match means one of those fields starts with the input.

This operation MUST return a SOAP Fault element if the search text is NULL.

If the user does not have permission to browse for principals (1) this operation MUST return an HTTP status code of 401 if using Windows authentication or 403 if using forms authentication.

3.1.4.2.1 Messages

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

| Message | Description |
|--------------------------------|---|
| SearchPrincipalsSoapIn | A request to initiate a SearchPrincipals operation on the protocol server. |
| SearchPrincipalsSoapOut | A response from the protocol server at completion of the SearchPrincipals operation. |

3.1.4.2.1.1 SearchPrincipalsSoapIn

The **SearchPrincipalsSoapIn** message is the request message for a **SearchPrincipals** (section [3.1.4.2](#)) operation.

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/sharepoint/soap/SearchPrincipals
```

The SOAP body contains a **SearchPrincipals** element. This message MUST contain the search criteria, a principal (1) type, and the upper limit for the number of uniquely or partially matched principals (1).

3.1.4.2.1.2 SearchPrincipalsSoapOut

The **SearchPrincipalsSoapOut** message is the response message for a **SearchPrincipals** (section [3.1.4.2](#)) operation.

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/sharepoint/soap/SearchPrincipals
```

The SOAP body contains a **SearchPrincipalsResponse** (section [3.1.4.2.2.2](#)) element. The value of this element MUST be the list of principals (1) that match the criteria specified in the request uniquely or partially. Unique match means there is a unique principal whose name, display name, e-mail address, or sip address exactly matches the input (case-insensitive). Partial match means one of those fields starts with the input.

3.1.4.2.2 Elements

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

| Element | Description |
|---------------------------------|---|
| SearchPrincipals | Body of the SearchPrincipalsSoapIn message. |
| SearchPrincipalsResponse | Body of the SearchPrincipalsSoapOut message. |

3.1.4.2.2.1 SearchPrincipals

The **SearchPrincipals** element provides the input data for a **SearchPrincipals** (section [3.1.4.2](#)) operation.

```
<s:element name="SearchPrincipals">  
  <s:complexType>  
    <s:sequence>  
      <s:element name="searchText" type="s:string" minOccurs="0"/>  
      <s:element name="maxResults" type="s:int"/>  
      <s:element name="principalType" type="tns:SPPrincipalType"/>  
    </s:sequence>  
  </s:complexType>  
</s:element>
```

searchText: The search string used to find the principals (1). The *searchText* and the *principalType* together comprise the search criteria.

maxResults: The maximum number of principals (1) that can be returned by this operation. If the value of this element is less than zero, an empty list of principals (1) MUST be returned.

PrincipalType: The type of principals (1) that need to be found. This element's value MUST be one of the **SPPrincipalType** (section [2.2.5.1](#)) values.

3.1.4.2.2.2 SearchPrincipalsResponse

The **SearchPrincipalsResponse** element provides the result data for a **SearchPrincipals** operation.

```
<s:element name="SearchPrincipalsResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="SearchPrincipalsResult" type="tns:ArrayOfPrincipalInfo"
minOccurs="0"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

SearchPrincipalsResult: The list of principals (1), in the format of [PrincipalInfo](#) (section [2.2.4.2](#)) complex types, that match the specified criteria in the request uniquely or partially. This element **MUST** be present.

Each **PrincipalInfo** (section [2.2.4.2](#)) returned **MUST** have the following fields:

UserInfoID: This value **MUST NOT** be less than -1.

IsResolved: This value **MUST** be set to **true**.

MoreMatches: This value **MUST** be NULL.

AccountName: This value **MUST NOT** be NULL.

PrincipalType: This value **MUST NOT** be set to All.

DisplayName: This element can be NULL, empty, or contain the resolved principal's (1) display name field.

Title: This element can be NULL, empty, or contain the resolved principal's (1) title field.

Department: This element can be NULL, empty, or contain the resolved principal's (1) department field.

Email: This element can be NULL, empty, or contain the resolved principal's (1) **email** field.

3.1.4.2.3 Complex Types

None.

3.1.4.2.4 Simple Types

None.

3.1.4.2.5 Attributes

None.

3.1.4.2.6 Groups

None.

3.1.4.2.7 Attribute Groups

None.

3.1.4.3 IsClaimsMode

The **IsClaimsMode** operation is used to determine whether the claims service is used to search and resolve the principals (1).

```
<wsdl:operation name="IsClaimsMode">
  <wsdl:input message="tns:IsClaimsModeSoapIn" />
  <wsdl:output message="tns:IsClaimsModeSoapOut" />
</wsdl:operation>
```

The protocol client sends a **IsClaimsModeSoapIn** request message, and the protocol server responds with a **IsClaimsModeSoapOut** response message, as follows

- The operation MUST return a Boolean value representing whether the web application is in claims mode.

3.1.4.3.1 Messages

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

| Message | Description |
|----------------------------|---|
| IsClaimsModeSoapIn | A request to initiate a IsClaimsMode operation on the protocol server. |
| IsClaimsModeSoapOut | A response from the protocol server at completion of the IsClaimsMode operation. |

3.1.4.3.1.1 IsClaimsModeSoapIn

The **IsClaimsModeSoapIn** message is the request message for an **IsClaimsMode** operation.

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/sharepoint/soap/IsClaimsMode
```

The SOAP body contains an **IsClaimsMode** element.

3.1.4.3.1.2 IsClaimsModeSoapOut

The **IsClaimsModeSoapOut** message is the response message for an **IsClaimsMode** operation.

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/sharepoint/soap/IsClaimsMode
```

The SOAP body contains an **IsClaimsModeResponse** element. The value of this element MUST contain the claims mode result.

3.1.4.3.2 Elements

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

| Element | Description |
|-----------------------------|---|
| IsClaimsMode | Body of the IsClaimsModeSoapIn message. |
| IsClaimsModeResponse | Body of the IsClaimsModeSoapOut message. |

3.1.4.3.2.1 IsClaimsMode

The **IsClaimsMode** element provides the input data for an **IsClaimsMode** (section [3.1.4.2](#)) operation.

```
<s:element name="IsClaimsMode">
  <s:complexType />
</s:element>
```

3.1.4.3.2.2 IsClaimsModeResponse

The **IsClaimsModeResponse** element provides the result data for an **IsClaimsMode** operation.

```
<s:element name="IsClaimsModeResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="1" maxOccurs="1" name="IsClaimsModeResult" type="s:boolean" />
    </s:sequence>
  </s:complexType>
</s:element>
```

IsClaimsModeResult: This value MUST NOT be NULL

3.1.4.3.3 Complex Types

None.

3.1.4.3.4 Simple Types

None.

3.1.4.3.5 Attributes

None.

3.1.4.3.6 Groups

None.

3.1.4.3.7 Attribute Groups

None.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

Preliminary

4 Protocol Examples

The following subsections contain examples of usage of this protocol.

4.1 Resolve Principals Knowing Their E-mail Addresses

In this scenario, the protocol client resolves a list of principals (1) knowing their e-mail addresses. The protocol client is interested in all types of principals (1) and it does not attempt to add them to the site collection list of users.

The protocol client issues a **ResolvePrincipals** request with the known e-mail addresses as principal keys, the principal (1) type set to ALL and the *addToUserInfoList* parameter set to **false**. The protocol client sends the following WSDL message:

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ResolvePrincipals xmlns="http://schemas.microsoft.com/sharepoint/soap/">
      <principalKeys>
        <string>ben@contoso.com</string>
        <string>doesnotexist@contoso.com</string>
      </principalKeys>
      <principalType>All</principalType>
      <addToUserInfoList>>false</addToUserInfoList>
    </ResolvePrincipals>
  </soap:Body>
</soap:Envelope>
```

The protocol server then responds with the following:

```
<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <ResolvePrincipalsResponse xmlns="http://schemas.microsoft.com/sharepoint/soap/">
      <ResolvePrincipalsResult>
        <PrincipalInfo>
          <AccountName>MYDOMAIN\account1</AccountName>
          <UserInfoID>1</UserInfoID>
          <DisplayName>Ben Smith</DisplayName>
          <Email>ben@contoso.com</Email>
          <Department>Marketing</Department>
          <Title/>
          <IsResolved>>true</IsResolved>
          <PrincipalType>User</PrincipalType>
        </PrincipalInfo>
        <PrincipalInfo>
          <AccountName>doesnotexist@contoso.com</AccountName>
          <UserInfoID>-1</UserInfoID>
          <IsResolved>>false</IsResolved>
          <MoreMatches />
          <PrincipalType>All</PrincipalType>
        </PrincipalInfo>
      </ResolvePrincipalsResult>
    </ResolvePrincipalsResponse>
  </soap:Body>
</soap:Envelope>
```

```

    </ResolvePrincipalsResult>
  </ResolvePrincipalsResponse>
</soap:Body>
</soap:Envelope>

```

The protocol client searches the returned array with information about the principals (1) and checks whether they were resolved.

4.2 Search for Principals Knowing the E-mail Address

In this scenario, the protocol client searches for a maximum of 15 principals (1) that have an e-mail address containing "marketing." The protocol client is interested in all types of principals (1).

The protocol client issues a **SearchPrincipals** request with the e-mail prefix of "marketing" as the searchText, the principal (1) type set to ALL, and 15 as the maximum value of principals (1) to return. The protocol client sends the following WSDL message:

```

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <SearchPrincipals xmlns="http://schemas.microsoft.com/sharepoint/soap/">
      <searchText>marketing</searchText>
      <maxResults>15</maxResults>
      <principalType>All</principalType>
    </SearchPrincipals>
  </soap:Body>
</soap:Envelope>

```

The protocol server then responds with the following:

```

<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <SearchPrincipalsResponse xmlns="http://schemas.microsoft.com/sharepoint/soap/">
      <SearchPrincipalsResult>
        <PrincipalInfo>
          <AccountName>MYDOMAIN\account2</AccountName>
          <UserInfoID>-1</UserInfoID>
          <DisplayName>Marketing - West</DisplayName>
          <Email>marketing-west@contoso.com</Email>
          <Department>Marketing</Department>
          <Title />
          <IsResolved>>true</IsResolved>
          <PrincipalType>User</PrincipalType>
        </PrincipalInfo>
        <PrincipalInfo>
          <AccountName>MYDOMAIN\account3</AccountName>
          <UserInfoID>-1</UserInfoID>
          <DisplayName>Marketing Communication List</DisplayName>
          <Email>mcl@contoso.com</Email>
          <Department />
          <IsResolved>>true</IsResolved>

```



```

        <PrincipalType>DistributionList</PrincipalType>
    </PrincipalInfo>
</SearchPrincipalsResult>
</SearchPrincipalsResponse>
</soap:Body>
</soap:Envelope>

```

The returned array contains no more than 15 principals (1) that match "marketing." Because the client in this scenario is searching exclusively for principals (1) that have an e-mail address containing "marketing," the client will perform additional processing on the array to further limit the results.

4.3 Check Whether in Claims Mode

In this scenario, the protocol client determines whether the claims service is used for the **ResolvePrincipals** and **SearchPrincipals** operations. The protocol client sends the following WSDL message:

```

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <IsClaimsMode xmlns="http://schemas.microsoft.com/sharepoint/soap/">
      </IsClaimsMode>
    </soap:Body>
  </soap:Envelope>

```

The protocol server then responds with the following:

```

<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <IsClaimsModeResponse xmlns="http://schemas.microsoft.com/sharepoint/soap/">
      <IsClaimsModeResult>>false</IsClaimsModeResult>
    </IsClaimsModeResponse>
  </soap:Body>
</soap:Envelope>

```

5 Security

5.1 Security Considerations for Implementers

None.

5.2 Index of Security Parameters

None.

Preliminary

6 Appendix A: Full WSDL

For ease of implementation, the full WSDL and schema are provided in this appendix.

```
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"
xmlns:tns="http://schemas.microsoft.com/sharepoint/soap/"
xmlns:s="http://www.w3.org/2001/XMLSchema"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
targetNamespace="http://schemas.microsoft.com/sharepoint/soap/"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <s:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/sharepoint/soap/">
      <s:element name="IsClaimsMode">
        <s:complexType />
      </s:element>
      <s:element name="IsClaimsModeResponse">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="1" maxOccurs="1" name="IsClaimsModeResult" type="s:boolean"
/>
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:element name="ResolvePrincipals">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="principalKeys"
type="tns:ArrayOfString" />
            <s:element minOccurs="1" maxOccurs="1" name="principalType"
type="tns:SPPrincipalType" />
            <s:element minOccurs="1" maxOccurs="1" name="addToUserInfoList" type="s:boolean"
/>
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:complexType name="ArrayOfString">
        <s:sequence>
          <s:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="s:string" />
        </s:sequence>
      </s:complexType>
      <s:simpleType name="SPPrincipalType">
        <s:list>
          <s:simpleType>
            <s:restriction base="s:string">
              <s:enumeration value="None" />
              <s:enumeration value="User" />
              <s:enumeration value="DistributionList" />
              <s:enumeration value="SecurityGroup" />
              <s:enumeration value="SharePointGroup" />
              <s:enumeration value="All" />
            </s:restriction>
          </s:simpleType>
        </s:list>
      </s:simpleType>
    </s:schema>
  </wsdl:types>

```

```

</s:simpleType>
<s:element name="ResolvePrincipalsResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="ResolvePrincipalsResult"
type="tns:ArrayOfPrincipalInfo" />
    </s:sequence>
  </s:complexType>
</s:element>
<s:complexType name="ArrayOfPrincipalInfo">
  <s:sequence>
    <s:element minOccurs="0" maxOccurs="unbounded" name="PrincipalInfo"
type="tns:PrincipalInfo" />
  </s:sequence>
</s:complexType>
<s:complexType name="PrincipalInfo">
  <s:sequence>
    <s:element minOccurs="0" maxOccurs="1" name="AccountName" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="UserInfoID" type="s:int" />
    <s:element minOccurs="0" maxOccurs="1" name="DisplayName" type="s:string" />
    <s:element minOccurs="0" maxOccurs="1" name="Email" type="s:string" />
    <s:element minOccurs="0" maxOccurs="1" name="Department" type="s:string" />
    <s:element minOccurs="0" maxOccurs="1" name="Title" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1" name="IsResolved" type="s:boolean" />
    <s:element minOccurs="0" maxOccurs="1" name="MoreMatches"
type="tns:ArrayOfPrincipalInfo" />
    <s:element minOccurs="1" maxOccurs="1" name="PrincipalType"
type="tns:SPPrincipalType" />
  </s:sequence>
</s:complexType>
<s:element name="SearchPrincipals">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="searchText" type="s:string" />
      <s:element minOccurs="1" maxOccurs="1" name="maxResults" type="s:int" />
      <s:element minOccurs="1" maxOccurs="1" name="principalType"
type="tns:SPPrincipalType" />
    </s:sequence>
  </s:complexType>
</s:element>
<s:element name="SearchPrincipalsResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="SearchPrincipalsResult"
type="tns:ArrayOfPrincipalInfo" />
    </s:sequence>
  </s:complexType>
</s:element>
</s:schema>
</wsdl:types>
<wsdl:message name="IsClaimsModeSoapIn">
  <wsdl:part name="parameters" element="tns:IsClaimsMode" />
</wsdl:message>
<wsdl:message name="IsClaimsModeSoapOut">
  <wsdl:part name="parameters" element="tns:IsClaimsModeResponse" />
</wsdl:message>
<wsdl:message name="ResolvePrincipalsSoapIn">
  <wsdl:part name="parameters" element="tns:ResolvePrincipals" />
</wsdl:message>

```

```

<wsdl:message name="ResolvePrincipalsSoapOut">
  <wsdl:part name="parameters" element="tns:ResolvePrincipalsResponse" />
</wsdl:message>
<wsdl:message name="SearchPrincipalsSoapIn">
  <wsdl:part name="parameters" element="tns:SearchPrincipals" />
</wsdl:message>
<wsdl:message name="SearchPrincipalsSoapOut">
  <wsdl:part name="parameters" element="tns:SearchPrincipalsResponse" />
</wsdl:message>
<wsdl:portType name="PeopleSoap">
  <wsdl:operation name="IsClaimsMode">
    <wsdl:input message="tns:IsClaimsModeSoapIn" />
    <wsdl:output message="tns:IsClaimsModeSoapOut" />
  </wsdl:operation>
  <wsdl:operation name="ResolvePrincipals">
    <wsdl:input message="tns:ResolvePrincipalsSoapIn" />
    <wsdl:output message="tns:ResolvePrincipalsSoapOut" />
  </wsdl:operation>
  <wsdl:operation name="SearchPrincipals">
    <wsdl:input message="tns:SearchPrincipalsSoapIn" />
    <wsdl:output message="tns:SearchPrincipalsSoapOut" />
  </wsdl:operation>
</wsdl:portType>
<wsdl:binding name="PeopleSoap" type="tns:PeopleSoap">
  <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
  <wsdl:operation name="IsClaimsMode">
    <soap:operation soapAction="http://schemas.microsoft.com/sharepoint/soap/IsClaimsMode"
style="document" />
    <wsdl:input>
      <soap:body use="literal" />
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal" />
    </wsdl:output>
  </wsdl:operation>
  <wsdl:operation name="ResolvePrincipals">
    <soap:operation
soapAction="http://schemas.microsoft.com/sharepoint/soap/ResolvePrincipals" style="document"
/>
    <wsdl:input>
      <soap:body use="literal" />
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal" />
    </wsdl:output>
  </wsdl:operation>
  <wsdl:operation name="SearchPrincipals">
    <soap:operation
soapAction="http://schemas.microsoft.com/sharepoint/soap/SearchPrincipals" style="document"
/>
    <wsdl:input>
      <soap:body use="literal" />
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal" />
    </wsdl:output>
  </wsdl:operation>
</wsdl:binding>
<wsdl:binding name="PeopleSoap12" type="tns:PeopleSoap">

```

```
<soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
<wsdl:operation name="IsClaimsMode">
  <soap12:operation
soapAction="http://schemas.microsoft.com/sharepoint/soap/IsClaimsMode" style="document" />
  <wsdl:input>
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal" />
  </wsdl:output>
</wsdl:operation>
<wsdl:operation name="ResolvePrincipals">
  <soap12:operation
soapAction="http://schemas.microsoft.com/sharepoint/soap/ResolvePrincipals" style="document"
/>
  <wsdl:input>
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal" />
  </wsdl:output>
</wsdl:operation>
<wsdl:operation name="SearchPrincipals">
  <soap12:operation
soapAction="http://schemas.microsoft.com/sharepoint/soap/SearchPrincipals" style="document"
/>
  <wsdl:input>
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal" />
  </wsdl:output>
</wsdl:operation>
</wsdl:binding>
</wsdl:definitions>
```

7 Appendix B: Product Behavior

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

- Microsoft® Office 2010 suites
- Microsoft® SharePoint® Foundation 2010
- The 2007 Microsoft® Office system
- Windows® SharePoint® Services 3.0
- Microsoft® Office 15 Technical Preview
- Microsoft® SharePoint® Foundation 15 Technical 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 2.2.4.2:](#) The login name is in the format: Domain\UserName for Windows accounts. It is in the format Provider:UserName for a SharePoint membership account, where **Provider** is the name of the membership provider.

[<2> Section 3.1.4.1.2.1:](#) SharePoint Foundation 2010 does not add the principal to the site collection if it is of the type Distribution List.

8 Change Tracking

This section identifies changes that were made to the [MS-PEOPS] protocol document between the June 2011 and January 2012 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

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

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

- A document revision that incorporates changes to interoperability requirements or functionality.
- An extensive rewrite, addition, or deletion of major portions of content.
- The removal of a document from the documentation set.
- Changes made for template compliance.

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 language and 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 or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

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.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- 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 protocol@microsoft.com.

| Section | Tracking number (if applicable) and description | Major change (Y or N) | Change type |
|--|---|-----------------------|--------------------|
| 2.2.9 Common Data Structures | Added this section, which states that the specification does not define any common data structures. | N | New content added. |
| 3.1.4.1.1 Messages | Added the table of messages. | N | New content added. |
| 3.1.4.1.2 Elements | Added the table of elements. | N | New content added. |
| 3.1.4.1.3 Complex Types | Added the table of complex types. | N | New content added. |
| 3.1.4.1.4 Simple Types | Added this section with "None" as content. | N | New content added. |
| 3.1.4.1.5 Attributes | Added this section with "None" as content. | N | New content added. |
| 3.1.4.1.6 Groups | Added this section with "None" as content. | N | New content added. |
| 3.1.4.1.7 Attribute Groups | Added this section with "None" as content. | N | New content added. |
| 3.1.4.2.1 Messages | Added the table of messages. | N | New content added. |
| 3.1.4.2.2 Elements | Added the table of elements. | N | New content added. |

| Section | Tracking number (if applicable) and description | Major change (Y or N) | Change type |
|--|--|------------------------------|--------------------|
| 3.1.4.2.3 Complex Types | Added this section with "None" as content. | N | New content added. |
| 3.1.4.2.4 Simple Types | Added this section with "None" as content. | N | New content added. |
| 3.1.4.2.5 Attributes | Added this section with "None" as content. | N | New content added. |
| 3.1.4.2.6 Groups | Added this section with "None" as content. | N | New content added. |
| 3.1.4.2.7 Attribute Groups | Added this section with "None" as content. | N | New content added. |
| 3.1.4.3.1 Messages | Added the table of messages. | N | New content added. |
| 3.1.4.3.2 Elements | Added the table of elements. | N | New content added. |
| 3.1.4.3.3 Complex Types | Added this section with "None" as content. | N | New content added. |
| 3.1.4.3.4 Simple Types | Added this section with "None" as content. | N | New content added. |
| 3.1.4.3.4 Simple Types | Added this section with "None" as content. | N | New content added. |
| 3.1.4.3.5 Attributes | Added this section with "None" as content. | N | New content added. |
| 3.1.4.3.6 Groups | Added this section with "None" as content. | N | New content added. |
| 3.1.4.3.7 Attribute Groups | Added this section with "None" as content. | N | New content added. |
| Z Appendix B: Product Behavior | Updated the list of applicable product versions. | N | Content updated. |

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