

[MS-USRPCH]:

User Profile Change Log Web Service Protocol

Intellectual Property Rights Notice for Open Specifications Documentation

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

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

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

Preliminary Documentation. This Open Specification provides documentation for past and current releases and/or for the pre-release version of this technology. This Open Specification is final documentation for past or current releases as specifically noted in the document, as applicable; it is preliminary documentation for the pre-release versions. Microsoft will release final documentation in connection with the commercial release of the updated or new version of this technology. As the documentation may change between this preliminary version and the final version of this technology, there are risks in relying on preliminary documentation. To the extent that you incur additional

development obligations or any other costs as a result of relying on this preliminary documentation, you do so at your own risk.

Preliminary

Revision Summary

Date	Revision History	Revision Class	Comments
4/4/2008	0.1		Initial Availability
6/27/2008	1.0	Major	Revised and edited the technical content
12/12/2008	1.01	Editorial	Revised and edited the technical content
7/13/2009	1.02	Major	Revised and edited the technical content
8/28/2009	1.03	Editorial	Revised and edited the technical content
11/6/2009	1.04	Editorial	Revised and edited the technical content
2/19/2010	2.0	Major	Updated and revised the technical content
3/31/2010	2.01	Editorial	Revised and edited the technical content
4/30/2010	2.02	Editorial	Revised and edited the technical content
6/7/2010	2.03	Editorial	Revised and edited the technical content
6/29/2010	2.04	Editorial	Changed language and formatting in the technical content.
7/23/2010	2.04	No Change	No changes to the meaning, language, or formatting of the technical content.
9/27/2010	2.04	No Change	No changes to the meaning, language, or formatting of the technical content.
11/15/2010	2.04	No Change	No changes to the meaning, language, or formatting of the technical content.
12/17/2010	2.04	No Change	No changes to the meaning, language, or formatting of the technical content.
3/18/2011	2.04	No Change	No changes to the meaning, language, or formatting of the technical content.
6/10/2011	2.04	No Change	No changes to the meaning, language, or formatting of the technical content.
1/20/2012	2.5	Minor	Clarified the meaning of the technical content.
4/11/2012	2.5	No Change	No changes to the meaning, language, or formatting of the technical content.
7/16/2012	2.5	No Change	No changes to the meaning, language, or formatting of the technical content.
9/12/2012	2.5	No Change	No changes to the meaning, language, or formatting of the technical content.
10/8/2012	2.6	Minor	Clarified the meaning of the technical content.
2/11/2013	2.6	No Change	No changes to the meaning, language, or formatting of the technical content.
7/30/2013	2.7	Minor	Clarified the meaning of the technical content.
11/18/2013	2.7	No Change	No changes to the meaning, language, or formatting of the technical content.

Date	Revision History	Revision Class	Comments
2/10/2014	2.8	Minor	Clarified the meaning of the technical content.
4/30/2014	2.9	Minor	Clarified the meaning of the technical content.
7/31/2014	2.9	No Change	No changes to the meaning, language, or formatting of the technical content.
8/24/2015	3.0	Major	Significantly changed the technical content.

Preliminary

Table of Contents

1	Introduction	7
1.1	Glossary	7
1.2	References	8
1.2.1	Normative References	8
1.2.2	Informative References	9
1.3	Protocol Overview (Synopsis)	9
1.4	Relationship to Other Protocols	9
1.5	Prerequisites/Preconditions	10
1.6	Applicability Statement	10
1.7	Versioning and Capability Negotiation	10
1.8	Vendor-Extensible Fields	10
1.9	Standards Assignments.....	10
2	Messages.....	11
2.1	Transport	11
2.2	Common Message Syntax	11
2.2.1	Namespaces	11
2.2.2	Messages.....	12
2.2.3	Elements	12
2.2.4	Complex Types.....	12
2.2.4.1	ArrayOfUserProfileChangeData	12
2.2.4.2	ProfileBaseChangeQuery	13
2.2.4.3	UserProfileChangeData	13
2.2.4.4	UserProfileChangeDataContainer.....	14
2.2.4.5	UserProfileChangeQuery	15
2.2.4.6	UserProfileChangeToken	16
2.2.5	Simple Types	16
2.2.5.1	ChangeTypes.....	16
2.2.5.2	ObjectTypes	17
2.2.5.3	GUID.....	18
2.2.6	Attributes	18
2.2.7	Groups	18
2.2.8	Attribute Groups.....	18
3	Protocol Details.....	19
3.1	Server Details.....	19
3.1.1	Abstract Data Model.....	19
3.1.2	Timers	20
3.1.3	Initialization.....	20
3.1.4	Message Processing Events and Sequencing Rules	20
3.1.4.1	GetAllChanges	21
3.1.4.1.1	Messages	21
3.1.4.1.1.1	GetAllChangesSoapIn	21
3.1.4.1.1.2	GetAllChangesSoapOut.....	22
3.1.4.1.2	Elements	22
3.1.4.1.2.1	GetAllChanges	22
3.1.4.1.2.2	GetAllChangesResponse.....	22
3.1.4.2	GetChanges	22
3.1.4.2.1	Messages	23
3.1.4.2.1.1	GetChangesSoapIn	23
3.1.4.2.1.2	GetChangesSoapOut	23
3.1.4.2.2	Elements.....	23
3.1.4.2.2.1	GetChanges	23
3.1.4.2.2.2	GetChangesResponse	23
3.1.4.3	GetCurrentChangeToken	24

3.1.4.3.1	Messages	24
3.1.4.3.1.1	GetCurrentChangeTokenSoapIn	24
3.1.4.3.1.2	GetCurrentChangeTokenSoapOut	24
3.1.4.3.2	Elements	25
3.1.4.3.2.1	GetCurrentChangeToken	25
3.1.4.3.2.2	GetCurrentChangeTokenResponse	25
3.1.4.4	GetUserAllChanges	25
3.1.4.4.1	Messages	25
3.1.4.4.1.1	GetUserAllChangesSoapIn	26
3.1.4.4.1.2	GetUserAllChangesSoapOut	26
3.1.4.4.2	Elements	26
3.1.4.4.2.1	GetUserAllChanges	26
3.1.4.4.2.2	GetUserAllChangesResponse	26
3.1.4.5	GetUserChanges	26
3.1.4.5.1	Messages	27
3.1.4.5.1.1	GetUserChangesSoapIn	27
3.1.4.5.1.2	GetUserChangesSoapOut	27
3.1.4.5.2	Elements	27
3.1.4.5.2.1	GetUserChanges	27
3.1.4.5.2.2	GetUserChangesResponse	28
3.1.4.6	GetUserCurrentChangeToken	28
3.1.4.6.1	Messages	29
3.1.4.6.1.1	GetUserCurrentChangeTokenSoapIn	29
3.1.4.6.1.2	GetUserCurrentChangeTokenSoapOut	29
3.1.4.6.2	Elements	29
3.1.4.6.2.1	GetUserCurrentChangeToken	29
3.1.4.6.2.2	GetUserCurrentChangeTokenResponse	29
3.1.5	Timer Events	30
3.1.6	Other Local Events	30
4	Protocol Examples	31
4.1	Sample Data	31
4.2	Profile Replication	32
4.3	Profile Caching	34
5	Security	37
5.1	Security Considerations for Implementers	37
5.2	Index of Security Parameters	37
6	Appendix A: Full WSDL	38
7	Appendix B: Product Behavior	45
8	Change Tracking	46
9	Index	48

1 Introduction

The User Profile Change Log Web Service Protocol enables a protocol client to query and synchronize changes from user profiles.

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:

change token: A serialized token that can be used to determine whether changes occurred in the system. It can also be used to deserialize packages in the correct sequence during import or restore operations.

colleague: A user who has a social networking relationship with another user.

crawl: The process of traversing a URL space to acquire items to record in a search catalog.

distribution list: A collection of users, computers, contacts, or other groups that is used only for email distribution, and addressed as a single recipient.

Hypertext Transfer Protocol (HTTP): An application-level protocol for distributed, collaborative, hypermedia information systems (text, graphic images, sound, video, and other multimedia files) on the World Wide Web.

Hypertext Transfer Protocol Secure (HTTPS): An extension of HTTP that securely encrypts and decrypts web page requests. In some older protocols, "Hypertext Transfer Protocol over Secure Sockets Layer" is still used (Secure Sockets Layer has been deprecated). For more information, see [\[SSL3\]](#) and [\[RFC5246\]](#).

item: A unit of content that can be indexed and searched by a search application.

multivalue property: A property that can contain multiple values of the same type.

organization: A security group that contains additional fields (1) for describing hierarchical relationships between organizations.

personal site: A type of SharePoint site that is used by an individual user for personal productivity. The site appears to the user as My Site.

single-value property: A property that can have only one value and can be added, modified, or deleted by using a Change Type operation.

site: A group of related pages and data within a SharePoint site collection. The structure and content of a site is based on a site definition. Also referred to as SharePoint site and web site.

site membership: The status of being a member of a site and having a defined set of user rights for accessing or managing content on that site.

SOAP: A lightweight protocol for exchanging structured information in a decentralized, distributed environment. **SOAP** uses XML technologies to define an extensible messaging framework, which provides a message construct that can be exchanged over a variety of underlying protocols. The framework has been designed to be independent of any particular programming model and other implementation-specific semantics. SOAP 1.2 supersedes SOAP 1.1. See [\[SOAP1.2-1/2003\]](#).

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 fault: A container for error and status information within a SOAP message. See [\[SOAP1.2-1/2007\]](#) section 5.4 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 [\[RFC1738\]](#).

user profile: A collection of properties that pertain to a specific person or entity within a portal site.

user profile change entry log: A repository that logs all of the changes that occur in a user profile.

user profile privacy policy: A set of rules that governs all interactions with user profiles.

user profile store: A database that stores information about each user profile.

web log: See [blog \(1\)](#).

Web Services Description Language (WSDL): An XML format for describing network services as a set of endpoints that operate on messages that contain either document-oriented or procedure-oriented information. The operations and messages are described abstractly and are bound to a concrete network protocol and message format in order to define an endpoint. Related concrete endpoints are combined into abstract endpoints, which describe a network service. WSDL is extensible, which allows the description of endpoints and their messages regardless of the message formats or network protocols that are used.

WSDL operation: A single action or function of a web service. The execution of a WSDL operation typically requires the exchange of messages between the service requestor and the service provider.

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.

[MS-USPSWS] Microsoft Corporation, "[User Profile Service Web Service Protocol](#)".

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

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

[SOAP1.1] Box, D., Ehnebuske, D., Kaktivaya, 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., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>

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

1.2.2 Informative References

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

1.3 Protocol Overview (Synopsis)

This protocol is used by a protocol client to query and synchronize changes from a **user profile store**. This protocol enables a protocol client to query for changes to specific user profiles or for changes to all profiles on the protocol server. This protocol is also designed to support incremental search engine crawling, back-up, and data transfer from the user profile store.

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:

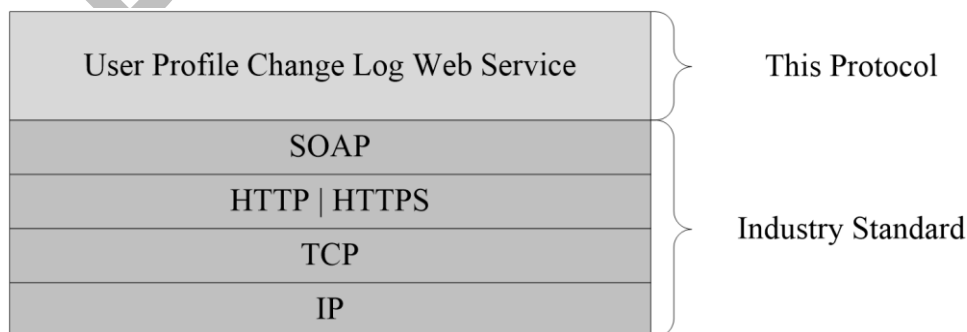


Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

This protocol operates against a **site** that is identified by a **URL** that is known by protocol clients. The protocol server endpoint is formed by appending "/_vti_bin/UserProfileChangeService.asmx" to the URL of the site; for example "http://www.example.com/Repository/_vti_bin/UserProfileChangeService.asmx".

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

1.6 Applicability Statement

This protocol is applicable in scenarios where one protocol server replicates the **user profile** information from another protocol server for the search engine **crawl** process against the user profile data, and for situations where the profile data is cached on the protocol client and kept synchronized with the protocol server.

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 specified 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**, **not null**, and **present**.

2.1 Transport

Protocol servers need to support SOAP over HTTP. Additionally, protocol servers SHOULD support SOAP over HTTPS for securing communication with protocol clients.

This protocol uses SOAP for formatting requests and responses, as specified in [\[SOAP1.1\]](#) section 4 or as specified in [\[SOAP1.2/1\]](#) section 5. Protocol server faults are returned either by using an HTTP Status Code as specified in [\[RFC2616\]](#) section 10, or by using a **SOAP fault**, 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 used by this protocol. The syntax of the definitions uses XML schema as defined in [\[XMLSCHEMA1\]](#) and [\[XMLSCHEMA2\]](#), and WSDL as defined in [\[WSDL\]](#).

2.2.1 Namespaces

This specification defines and references various XML namespaces 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
soap	http://schemas.xmlsoap.org/wsdl/soap	[SOAP1.1]
tm	http://microsoft.com/wsdl/mime/textMatching	
soapenc	http://schemas.xmlsoap.org/soap/encoding	
mime	http://schemas.xmlsoap.org/wsdl/mime	
tns	http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService	
s1	http://microsoft.com/wsdl/types/	
s	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1] [XMLSCHEMA2]
soap12	http://schemas.xmlsoap.org/wsdl/soap12/	[SOAP1.2/1] [SOAP1.2/2]
(none)	http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService	
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
ArrayOfUserProfileChangeData	An array of UserProfileChangeData .
ProfileBaseChangeQuery	A base type that is used to specify the ChangeTypes (section 2.2.5.1) and ObjectTypes (section 2.2.5.2) simple types, which are used to query the user profile change entries log.
UserProfileChangeData	A data type that contains one user profile change entry.
UserProfileChangeDataContainer	A container for user profile change entries returned by Web methods.
UserProfileChangeQuery	A data type that describes filter criteria for retrieving user profile change entries.
UserProfileChangeToken	A base type that is used to specify the unique sequential location of a change within the user profile change entries log.

2.2.4.1 ArrayOfUserProfileChangeData

The **ArrayOfUserProfileChangeData** complex type contains an array of user profile change entries as part of the response to any of the following request operations.

[GetAllChanges](#) (section [3.1.4.1](#))

[GetChanges](#) (section [3.1.4.2](#))

[GetUserAllChanges](#) (section [3.1.4.4](#))

[GetUserChanges](#) (section [3.1.4.5](#))

```
<s:complexType name="ArrayOfUserProfileChangeData">
  <s:sequence>
    <s:element name="UserProfileChangeData" type="tns:UserProfileChangeData"
      nillable="true" minOccurs="0" maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

UserProfileChangeData: A **UserProfileChangeData** (section [2.2.4.3](#)) type is a property that MUST contain the data that identifies one change in the current request response.

2.2.4.2 ProfileBaseChangeQuery

ProfileBaseChangeQuery is a complex base type that is used to specify the **ChangeTypes** (section [2.2.5.1](#)) and **ObjectTypes** (section [2.2.5.2](#)) simple types, which are used to query the user profile change entries log.

```
<s:complexType name="ProfileBaseChangeQuery">
  <s:sequence>
    <s:element minOccurs="1" maxOccurs="1"
      name="SingleValueProperty" type="s:boolean" />
    <s:element minOccurs="1" maxOccurs="1"
      name="MultiValueProperty" type="s:boolean" />
    <s:element minOccurs="1" maxOccurs="1" name="Custom" type="s:boolean" />
    <s:element minOccurs="1" maxOccurs="1" name="Add" type="s:boolean" />
    <s:element minOccurs="1" maxOccurs="1" name="Update" type="s:boolean" />
    <s:element minOccurs="1" maxOccurs="1"
      name="UpdateMetadata" type="s:boolean" />
    <s:element minOccurs="1" maxOccurs="1" name="Delete" type="s:boolean" />
    <s:element minOccurs="0" maxOccurs="1"
      name="ChangeTokenStart" type="tns:UserProfileChangeToken" />
  </s:sequence>
</s:complexType>
```

SingleValueProperty: A Boolean that specifies whether or not to query for single value property changes. A query run based on this value specifies the modified **ChangeTypes** records. True indicates to query for single value property changes; false indicates not to query for single value property changes.

MultiValueProperty: A Boolean that specifies whether or not to query for multiple property value changes. A query run based on this value specifies all **ChangeTypes** records that match the individual values of the multiple property values. True indicates to query for multiple property value changes; false indicates not to query for multiple property value changes.

Custom: A Boolean that specifies whether or not to include Custom ObjectTypes in the query. True indicates to include Custom ObjectTypes in the query; false indicates not to include Custom ObjectTypes in the query.

Add: A Boolean that specifies whether or not to query for **Add** (section 2.2.5.1) changes. True indicates to query for **Add** changes; false indicates not to query for **Add** changes.

Update: A Boolean that specifies whether or not to query for **Modify** changes. True indicates to query for **Modify** changes; false indicates not to query for **Modify** changes.

UpdateMetadata: A Boolean that specifies whether or not to query for **Metadata** update changes. True indicates to query for **Metadata** update changes; false indicates not to query for **Metadata** update changes.

Delete: A Boolean that specifies whether or not to query for **Delete** (section 2.2.5.1) changes. True indicates to query for **Delete** changes; false indicates not to query for **Delete** changes.

ChangeTokenStart: Specifies the starting location in the user profile change logs for the query. The **UserProfileChangeToken** type MUST support construction from a string representation of a change token (section [2.2.4.4](#)).

2.2.4.3 UserProfileChangeData

The **UserProfileChangeData** complex type contains the data that identifies a change in the request response.

```
<s:complexType name="UserProfileChangeData">
```

```

<s:sequence>
  <s:element minOccurs="1" maxOccurs="1" name="Id" type="s:long" />
  <s:element minOccurs="0" maxOccurs="1"
    name="UserAccountName" type="s:string" />
  <s:element minOccurs="0" maxOccurs="1"
    name="UserRemotePersonalSiteHostUrl" type="s:string" />
  <s:element minOccurs="1" maxOccurs="1"
    name="ChangeType" type="tns:ChangeTypes" />
  <s:element minOccurs="1" maxOccurs="1"
    name="ObjectType" type="tns:ObjectTypes" />
  <s:element minOccurs="1" maxOccurs="1" name="EventTime" type="s:dateTime" />
  <s:element minOccurs="0" maxOccurs="1" name="Value" />
  <s:element minOccurs="1" maxOccurs="1" name="PolicyId" type="s1:guid" />
  <s:element minOccurs="0" maxOccurs="1" name="PropertyName" type="s:string" />
</s:sequence>
</s:complexType>

```

Id: A **long** type that is a property that **MUST** contain a unique identifier for the user profile change entry.

UserAccountName: A string that is a property that **MUST** contain the user name.

UserRemotePersonalSiteHostUrl: A string that is a property that **MUST** contain a value representing the URL of the **personal site** of the user.

ChangeType: This property **MUST** contain the **ChangeTypes** (section [2.2.5.1](#)) instance for the user profile change entry.

ObjectType: This property **MUST** contain the **ObjectTypes** (section [2.2.5.2](#)) instance for the user profile change entry.

EventTime: A **dateTime** type that is a property that **MUST** contain the date and time of the user profile change entry.

Value: This property is the value of the user profile change entry. This property does not have a specific type.

PolicyId: A **GUID** type that is a property that **MUST** contain a unique identifier for a **user profile privacy policy** item.

PropertyName: A string that is a property that **MUST** be the name of a property in the user profile change entry if the **ObjectTypes** (section [2.2.5.2](#)) has the value "SingleValueProperty" or "MultiValueProperty". Otherwise, this property **MUST** be NULL.

2.2.4.4 UserProfileChangeDataContainer

The **UserProfileChangeDataContainer** type contains data about user profile change entries.

```

<s:complexType name="UserProfileChangeDataContainer">
  <s:sequence>
    <s:element minOccurs="0" maxOccurs="1"
      name="Changes" type="tns:ArrayOfUserProfileChangeData" />
    <s:element minOccurs="0" maxOccurs="1" name="ChangeToken" type="s:string" />
    <s:element minOccurs="1" maxOccurs="1"
      name="HasExceededCountLimit" type="s:boolean" />
  </s:sequence>
</s:complexType>

```

Changes: An **ArrayOfUserProfileChangeData** (section [2.2.4.1](#)) type that represents a set of user profile change entries that **MUST** be older than or include the value referred to by **ChangeToken**.

ChangeToken: A string that specifies the user profile **change token** value that can be used to retrieve any user profile change entries that occur after the returned changes.

HasExceededCountLimit: A Boolean that MUST be true if the number of results exceeds 1000. Otherwise, **HasExceededCountLimit** MUST be false. If **HasExceededCountLimit** is true, only the 1000 most recent changes will be retrieved.

2.2.4.5 UserProfileChangeQuery

UserProfileChangeQuery is a complex type that is used to specify the filter criteria for retrieving user profile change entries.

```
<s:complexType name="UserProfileChangeQuery">
  <s:complexContent mixed="false">
    <s:extension base="tns:ProfileBaseChangeQuery">
      <s:sequence>
        <s:element minOccurs="1" maxOccurs="1"
          name="Anniversary" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1"
          name="DistributionListMembership" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1"
          name="SiteMembership" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1" name="QuickLink" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1" name="Colleague" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1" name="WebLog" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1"
          name="PersonalizationSite" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1"
          name="UserProfile" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1"
          name="OrganizationMembership" type="s:boolean" />
      </s:sequence>
    </s:extension>
  </s:complexContent>
</s:complexType>
```

Anniversary: A Boolean that specifies a query for Anniversary (section [2.2.5.2](#)) changes to be executed. True indicates to query for **Anniversary** changes; false indicates not to query for **Anniversary** change.

DistributionListMembership: A Boolean that specifies a query for **DLMembership** (section 2.2.5.2) changes to be executed. True indicates to query for **DLMembership** changes; false indicates not to query for **DLMembership** changes.

SiteMembership: A Boolean that specifies a query for **SiteMembership** (section 2.2.5.2) changes to be executed. True indicates to query for **SiteMembership** changes; false indicates not to query for **SiteMembership** changes.

QuickLink: A Boolean that specifies whether or not to query for **QuickLink** (section 2.2.5.2) changes. True indicates to query for **QuickLink** changes; false indicates not to query for **QuickLink** changes.

Colleague: A Boolean that specifies whether or not to query for **Colleague** (section 2.2.5.2) changes. True indicates to query for **Colleague** changes; false indicates not to query for **Colleague** changes.

WebLog: A Boolean that specifies whether or not to query for **WebLog** (section 2.2.5.2) changes. True indicates to query for **WebLog** changes; false indicates not to query for **WebLog** changes.

PersonalizationSite: A Boolean that specifies whether or not to query for **PersonalizationSite** (section 2.2.5.2) changes. True indicates to query for **PersonalizationSite** changes; false indicates not to query for **PersonalizationSite** changes.

UserProfile: A Boolean that specifies whether or not to query for **UserProfile** (section 2.2.5.2) changes. True indicates to query for **UserProfile** changes; false indicates not to query for **UserProfile** changes.

OrganizationMembership: A Boolean that specifies whether or not to query for **OrganizationMembership** (section 2.2.5.2) changes. True indicates to query for **OrganizationMembership** changes; false indicates not to query for **OrganizationMembership** changes.

2.2.4.6 UserProfileChangeToken

UserProfileChangeToken is a complex base type that is used to specify the unique sequential location of a change within the user profile change entries log. The **UserProfileChangeToken** type MUST support construction from a string representation of a change token.

```
<s:complexType name="UserProfileChangeToken" />
```

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
ChangeTypes	Type of user profile change entry made on the object.
ObjectTypes	Type of object represented

2.2.5.1 ChangeTypes

ChangeTypes is a simple type that enumerates the valid operation types applied to user profile data.

```
<s:simpleType name="ChangeTypes">
  <s:list>
    <s:simpleType>
      <s:restriction base="s:string">
        <s:enumeration value="None"/>
        <s:enumeration value="Add"/>
        <s:enumeration value="Modify"/>
        <s:enumeration value="Delete"/>
        <s:enumeration value="Metadata"/>
        <s:enumeration value="All"/>
      </s:restriction>
    </s:simpleType>
  </s:list>
</s:simpleType>
```

The following table defines the allowable values for **ChangeTypes**:

Value	Meaning
None	None.
Add	An object has been added to user profile.

Value	Meaning
Modify	An existing object has been modified.
Delete	An existing object has been deleted.
Metadata	The metadata of an object has been modified.
All	Multiple operations were performed on an object.

2.2.5.2 ObjectTypes

ObjectTypes is a simple type that enumerates the supported types.

```

<s:simpleType name="ObjectTypes">
  <s:list>
    <s:simpleType>
      <s:restriction base="s:string">
        <s:enumeration value="None"/>
        <s:enumeration value="SingleValueProperty"/>
        <s:enumeration value="MultiValueProperty"/>
        <s:enumeration value="Anniversary"/>
        <s:enumeration value="DLMembership"/>
        <s:enumeration value="SiteMembership"/>
        <s:enumeration value="QuickLink"/>
        <s:enumeration value="Colleague"/>
        <s:enumeration value="PersonalizationSite"/>
        <s:enumeration value="UserProfile"/>
        <s:enumeration value="WebLog"/>
        <s:enumeration value="Custom" />
        <s:enumeration value="OrganizationProfile" />
        <s:enumeration value="OrganizationMembership" />
        <s:enumeration value="All"/>
      </s:restriction>
    </s:simpleType>
  </s:list>
</s:simpleType>

```

The following table defines the allowable values for **ObjectTypes**:

Value	Meaning
None	None.
SingleValueProperty	A user profile single-value property change.
MultiValueProperty	A user profile multivalue property change.
Anniversary	A user profile anniversary change, which is an event that occurs when a date in the user's profile matches the current date.
DLMembership	A user profile distribution list membership change.
SiteMembership	A user profile site membership change.
QuickLink	A link item change.

Value	Meaning
Colleague	A colleague relationship addition, deletion, or update.
PersonalizationSite	A personal site item change.
UserProfile	A user profile change.
WebLog	A user profile Web log change.
Custom<1>	A custom change to a user profile.
OrganizationProfile<2>	An Organization object change.
OrganizationMembership<3>	A user profile organization membership change.
All	A set of all object types.

2.2.5.3 GUID

GUID is a simple type that is used to represent a **GUID**.

```
<s:simpleType name="guid">
  <s:restriction base="s:string">
    <s:pattern value="[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}"/>
  </s:restriction>
</s:simpleType>
```

2.2.6 Attributes

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

2.2.7 Groups

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

2.2.8 Attribute Groups

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

3 Protocol Details

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**, **not null**, and **present**.

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

3.1 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 the information that is described in this document.

This protocol is contingent on the abstract data model as specified by [\[MS-USPSWS\]](#) section 3.1.1.

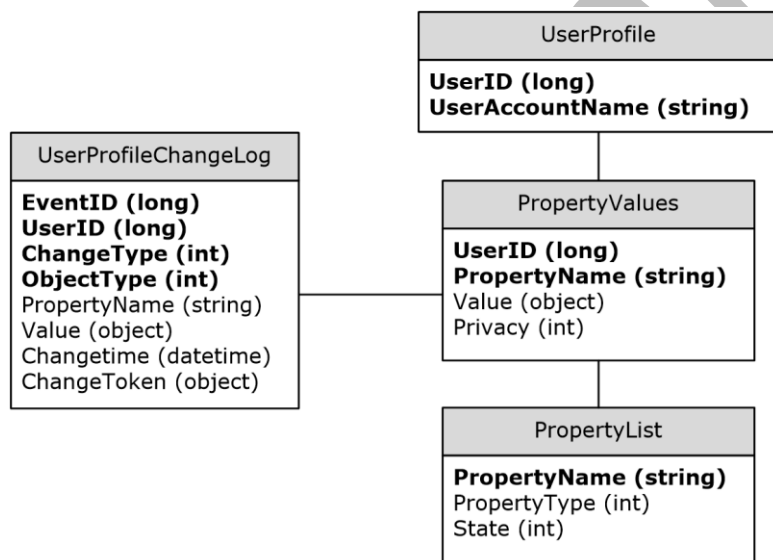


Figure 2: Abstract data model

In the preceding diagram, each table specifies a type of entity in the model, and each line specifies that one type of entity contains a reference to another.

UserProfile Table: A collection of entries corresponding to the user profile available on the protocol server.

- **UserID:** A unique number that identifies the user.
- **userAccountName:** A unique string name that identifies the user.

PropertyList Table: A collection of entries, each one corresponding to a property.

- **PropertyName:** A unique name for the property.
- **PropertyType:** An integer identifying the type of the property.
- **State:** An integer identifying what is the property state.

PropertyValues Table: A collection of entries with the values of the user properties.

- **UserID:** The unique identifier of the user.
- **PropertyName:** The unique name of the property.
- **Value:** The value of the property identified by **PropertyName** for the user identified by **UserID**.
- **Privacy:** An integer indicating what the privacy policy is for this property value.

UserProfileChangeLog: A collection of entries containing the user profile change entries.

- **EventID:** A unique identifier for the user profile change log entry.
- **UserID:** The unique identifier for the user for whom the user profile change log entry was created.
- **ChangeType:** An integer identifying the change type of the user profile change log entry.
- **ObjectType:** An integer identifying the object type of the user profile change log entry.
- **PropertyName:** The name of the single value property or **multivalue property** which the user profile change log entry refers to.
- **Value:** The value of the property for the user profile change log entry.
- **ChangeTime:** The date and time at which the user profile change log entry was created.
- **ChangeToken:** The Change Token of the user profile change log entry. It uniquely identifies the specified change.

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:

Operation	Description
GetAllChanges	Retrieves all user profile change entries available on the protocol server.
GetChanges	Retrieves a subset of user profile change entries available on the protocol server.

Operation	Description
GetCurrentChangeToken	Retrieves the change token for the most recent user profile change entry available on the protocol server.
GetUserAllChanges	Retrieves all user profile change entries available on the protocol server for the specified user.
GetUserChanges	Retrieves of the user profile change entries available on the protocol server for the specified user.
GetUserCurrentChangeToken	Retrieves the change token for the most recent user profile change entry available on the protocol server for the specified user.

3.1.4.1 GetAllChanges

The **GetAllChanges** operation is used to get all user profile change entries available on the protocol server.

```
<wsdl:operation name="GetAllChanges">
  <wsdl:input message="tns:GetAllChangesSoapIn" />
  <wsdl:output message="tns:GetAllChangesSoapOut" />
</wsdl:operation>
```

This method has no input parameters. It is used to retrieve up to 1000 user profile change entries on the protocol server. Only a user with administrator privileges can call this method.

The protocol client sends a **GetAllChangesSoapIn** request message (section [3.1.4.1.1.1](#)) and the protocol server responds with a **GetAllChangesSoapOut** response message (section [3.1.4.1.1.2](#)), as shown in the following figure.

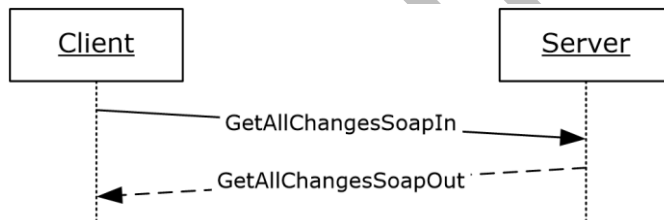


Figure 3: GetAllChanges operation

3.1.4.1.1 Messages

3.1.4.1.1.1 GetAllChangesSoapIn

The request WSDL message for a **GetAllChanges** **WSDL operation**.

The **SOAP action** value is:

```
http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/GetAllChanges
```

The **SOAP body** contains a **GetAllChanges** element.

3.1.4.1.1.2 GetAllChangesSoapOut

The response WSDL message for a **GetAllChanges** WSDL operation.

The SOAP body contains a **GetAllChangesResponse** element.

3.1.4.1.2 Elements

3.1.4.1.2.1 GetAllChanges

The input for a **GetAllChanges** WSDL operation.

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

3.1.4.1.2.2 GetAllChangesResponse

The response WSDL message for a **GetAllChanges** WSDL operation.

```
<s:element name="GetAllChangesResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="GetAllChangesResult"
        type="tns:UserProfileChangeDataContainer" />
    </s:sequence>
  </s:complexType>
</s:element>
```

GetAllChangesResult: The **UserProfileChangeDataContainer**, which MUST contain the returned user profile change entries.

3.1.4.2 GetChanges

The **GetChanges** operation is used to retrieve a subset of all user profile change entries available on the protocol server.

```
<wsdl:operation name="GetChanges">
  <wsdl:input message="tns:GetChangesSoapIn" />
  <wsdl:output message="tns:GetChangesSoapOut" />
</wsdl:operation>
```

This method takes a **ChangeToken**, as described in (section [2.2.4.4](#)), and a query parameter used to filter the user profile change entries available on the protocol server. Only a user with administrator privileges can call this method.

The protocol client sends a **GetChangesSoapIn** request message (section [3.1.4.2.1.1](#)) and the protocol server responds with a **GetChangesSoapOut** response message (section [3.1.4.2.1.2](#)), as shown in the following figure.

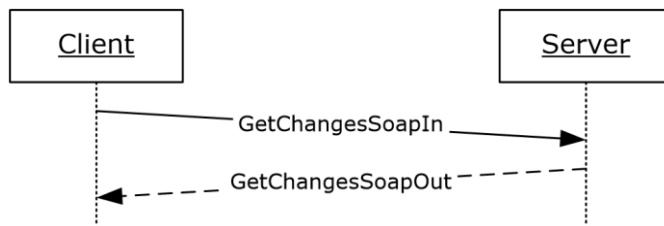


Figure 4: GetChanges operation

3.1.4.2.1 Messages

3.1.4.2.1.1 GetChangesSoapIn

The request WSDL message for a **GetChanges** WSDL operation.

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

```
http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/GetChanges
```

The SOAP body contains a **GetChanges** element.

3.1.4.2.1.2 GetChangesSoapOut

The response WSDL message for a **GetChanges** WSDL operation.

The SOAP body contains a **GetChangesResponse** element.

3.1.4.2.2 Elements

3.1.4.2.2.1 GetChanges

The input data for a **GetChanges** WSDL operation.

```

<s:element name="GetChanges">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="changeToken" type="s:string" />
      <s:element minOccurs="0" maxOccurs="1" name="changeQuery"
        type="tns:UserProfileChangeQuery" />
    </s:sequence>
  </s:complexType>
</s:element>
  
```

changeToken: A value specifying a change token. This value is acquired from the value of "GetCurrentChangeTokenResult" (section [3.1.4.3.2.2](#)). All returned user profile change entries MUST follow the user profile change entry identified by this change token.

changeQuery: A value that defines the **ObjectTypes** and **ChangeTypes** that the returned data SHOULD contain. [<4>](#)

3.1.4.2.2.2 GetChangesResponse

The result data for a **GetChanges** WSDL operation.

```

<s:element name="GetChangesResponse">
  <s:complexType>
  
```

```

<s:sequence>
  <s:element minOccurs="0" maxOccurs="1" name="GetChangesResult"
    type="tns:UserProfileChangeDataContainer" />
</s:sequence>
</s:complexType>
</s:element>

```

GetChangesResult: A **UserProfileChangeDataContainer** that MUST contain all user profile change entries between 0 and 1000.

The response MUST contain a SOAP fault in the following cases:

- The change token provided precedes the earliest change available on the protocol server.
- The change token is invalid.

3.1.4.3 GetCurrentChangeToken

The **GetCurrentChangeToken** operation is used to get a change token that identifies the most recent user profile change entry available on the protocol server.

```

<wsdl:operation name="GetCurrentChangeToken">
  <wsdl:input message="tns:GetCurrentChangeTokenSoapIn" />
  <wsdl:output message="tns:GetCurrentChangeTokenSoapOut" />
</wsdl:operation>

```

The protocol client sends a **GetCurrentChangeTokenSoapIn** request message (section [3.1.4.3.1.1](#)) and the protocol server responds with a **GetCurrentChangeTokenSoapOut** response message (section [3.1.4.3.1.2](#)), as shown in the following figure.

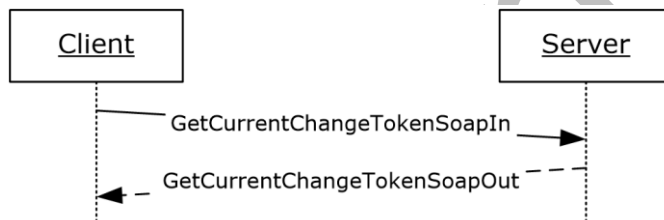


Figure 5: GetCurrentChangeToken operation

3.1.4.3.1 Messages

3.1.4.3.1.1 GetCurrentChangeTokenSoapIn

The request WSDL message for a **GetCurrentChangeToken** WSDL operation.

The SOAP action value is:

```

http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/GetCurrentChangeToken

```

The SOAP body contains a **GetCurrentChangeToken** element.

3.1.4.3.1.2 GetCurrentChangeTokenSoapOut

The response WSDL message for a **GetCurrentChangeToken** WSDL operation.

The SOAP body contains a **GetCurrentChangeTokenResponse** element.

3.1.4.3.2 Elements

3.1.4.3.2.1 GetCurrentChangeToken

The request WSDL message for a **GetCurrentChangeToken** WSDL operation.

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

3.1.4.3.2.2 GetCurrentChangeTokenResponse

The response WSDL message for a **GetCurrentChangeToken** WSDL operation.

```
<s:element name="GetCurrentChangeTokenResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="GetCurrentChangeTokenResult"
        type="s:string" />
    </s:sequence>
  </s:complexType>
</s:element>
```

GetCurrentChangeTokenResult: A value that MUST identify the most recent user profile change entry available on the protocol server.

3.1.4.4 GetUserAllChanges

The **GetUserAllChanges** operation is used to get all user profile change entries available on the protocol server for the specified user.

```
<wsdl:operation name="GetUserAllChanges">
  <wsdl:input message="tns:GetUserAllChangesSoapIn" />
  <wsdl:output message="tns:GetUserAllChangesSoapOut" />
</wsdl:operation>
```

This method takes a user name as a parameter, and retrieves up to 1000 user profile change entries on the protocol server.

The protocol client sends a **GetUserAllChangesSoapIn** request message (section [3.1.4.4.1.1](#)) and the protocol server responds with a **GetUserAllChangesSoapOut** response message (section [3.1.4.4.1.2](#)), as shown in the following figure.

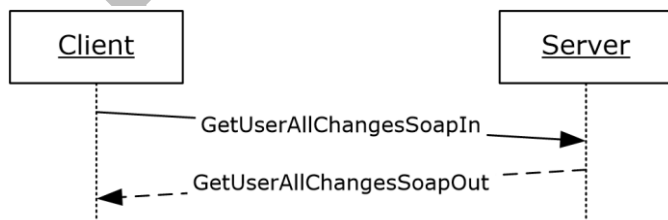


Figure 6: GetUserAllChanges operation

3.1.4.4.1 Messages

3.1.4.4.1.1 GetUserAllChangesSoapIn

The request WSDL message for a **GetUserAllChangesSoapIn** WSDL operation.

The SOAP action value is:

```
http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/GetUserAllChanges
```

The SOAP body contains a **GetUserAllChanges** element.

3.1.4.4.1.2 GetUserAllChangesSoapOut

The response WSDL message for a **GetUserAllChangesSoapOut** WSDL operation.

The SOAP body contains a **GetUserAllChangesResponse** element.

3.1.4.4.2 Elements

3.1.4.4.2.1 GetUserAllChanges

The request WSDL message for a **GetUserAllChanges** WSDL operation.

```
<s:element name="GetUserAllChanges">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="userAccountName"
        type="s:string" />
    </s:sequence>
  </s:complexType>
</s:element>
```

userAccountName: A value that identifies the user whose profile change entries MUST be retrieved.

3.1.4.4.2.2 GetUserAllChangesResponse

The response WSDL message for a **GetUserAllChanges** WSDL operation.

```
<s:element name="GetUserAllChangesResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="GetUserAllChangesResult"
        type="tns:UserProfileChangeDataContainer" />
    </s:sequence>
  </s:complexType>
</s:element>
```

GetUserAllChangesResult: A **UserProfileChangeDataContainer** that MUST contain the user profile change entries of the specified user.

The response MUST contain a SOAP fault when the **userAccountName** does not have a corresponding profile on the protocol server.

3.1.4.5 GetUserChanges

The **GetUserChanges** operation is used to retrieve a subset of all of the user profile change entries that are available on the protocol server for the specified user.

```

<wsdl:operation name="GetUserChanges">
  <wsdl:input message="tns:GetUserChangesSoapIn" />
  <wsdl:output message="tns:GetUserChangesSoapOut" />
</wsdl:operation>

```

This method takes a change token and a query parameter used to filter the user profile change entries that are available on the protocol server for the specified user.

The protocol client sends a **GetUserChangesSoapIn** request message (section [3.1.4.5.1.1](#)) and the protocol server responds with a **GetUserChangesSoapOut** response message (section [3.1.4.5.1.2](#)), as shown in the following figure.

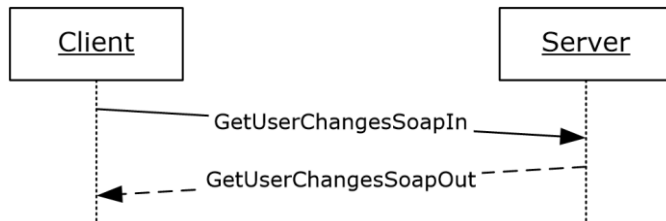


Figure 7: GetUserChanges operation

3.1.4.5.1 Messages

3.1.4.5.1.1 GetUserChangesSoapIn

The request WSDL message for a **GetUserChanges** WSDL operation.

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

```

http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/GetUserChanges

```

The SOAP body contains a **GetUserChanges** element.

3.1.4.5.1.2 GetUserChangesSoapOut

The response WSDL message for a **GetUserChanges** WSDL operation.

The SOAP body contains a **GetUserChangesResponse** element.

3.1.4.5.2 Elements

3.1.4.5.2.1 GetUserChanges

The **GetUserChanges** complex type is used to represent the input data of a **GetUserChanges** WSDL operation.

```

<s:element name="GetUserChanges">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="userAccountName"
        type="s:string" />
      <s:element minOccurs="0" maxOccurs="1" name="changeToken" type="s:string" />
      <s:element minOccurs="0" maxOccurs="1" name="changeQuery"
        type="tns:UserProfileChangeQuery" />
    </s:sequence>
  </s:complexType>

```

```
</s:element>
```

userAccountName: A value that identifies the user whose profile change entries MUST be retrieved.

changeToken: A value specifying a change token. This value is acquired from the value of "GetUserCurrentChangeTokenResult" (section [3.1.4.6.2.2](#)). All returned user profile change entries MUST follow the user profile change entry identified by this change token.

changeQuery: A value that defines the **ObjectTypes** and **ChangeTypes** that the returned data SHOULD contain. [<5>](#)

3.1.4.5.2.2 GetUserChangesResponse

The response WSDL message for a **GetUserChanges** WSDL operation.

```
<s:element name="GetUserChangesResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1" name="GetUserChangesResult"
        type="tns:UserProfileChangeDataContainer" />
    </s:sequence>
  </s:complexType>
</s:element>
```

GetUserChangesResult: A **UserProfileChangeDataContainer** that MUST contain the user profile change entries of the specified user. It occurs after the value is identified by the change token.

The response MUST contain a SOAP fault in the following cases:

- The **userAccountName** does not have a corresponding profile on the protocol server.
- The change token provided precedes the earliest change available on the protocol server.
- The change token is invalid.

3.1.4.6 GetUserCurrentChangeToken

The **GetUserCurrentChangeToken** operation is used to return a change token that identifies the most recent user profile change entry available on the protocol server for the specified user.

```
<wsdl:operation name="GetUserCurrentChangeToken">
  <wsdl:input message="tns:GetUserCurrentChangeTokenSoapIn" />
  <wsdl:output message="tns:GetUserCurrentChangeTokenSoapOut" />
</wsdl:operation>
```

The protocol client sends a **GetUserCurrentChangeTokenSoapIn** request message (section [3.1.4.6.1.1](#)) and the protocol server responds with a **GetUserCurrentChangeTokenSoapOut** response message (section [3.1.4.6.1.2](#)), as shown in the following figure.

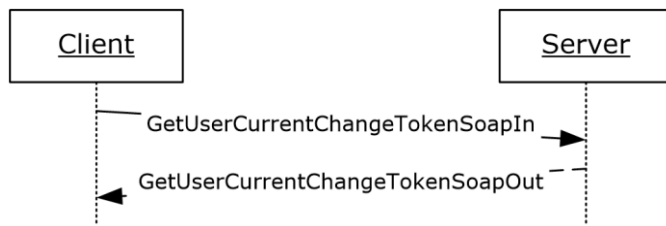


Figure 8: GetUserCurrentChangeToken operation

3.1.4.6.1 Messages

3.1.4.6.1.1 GetUserCurrentChangeTokenSoapIn

The request WSDL message for a **GetUserCurrentChangeToken** WSDL operation.

The SOAP action value is:

```
http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/GetUserCurrentChangeToken
```

The SOAP body contains a **GetUserCurrentChangeToken** element.

3.1.4.6.1.2 GetUserCurrentChangeTokenSoapOut

The response WSDL message for a **GetUserCurrentChangeToken** WSDL operation.

The SOAP body contains a **GetUserCurrentChangeTokenResponse** element.

3.1.4.6.2 Elements

3.1.4.6.2.1 GetUserCurrentChangeToken

The **GetUserCurrentChangeToken** complex type is used to represent the input data of a **GetUserCurrentChangeToken** WSDL operation.

```

<s:element name="GetUserCurrentChangeToken">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1"
        name="userAccountName" type="s:string" />
    </s:sequence>
  </s:complexType>
</s:element>
  
```

userAccountName: The specified user to whom the user profile change entry change token applies. This value **MUST** be retrieved and **MUST NOT** be NULL.

3.1.4.6.2.2 GetUserCurrentChangeTokenResponse

The response WSDL message for a **GetUserCurrentChangeToken** WSDL operation.

```

<s:element name="GetUserCurrentChangeTokenResponse">
  <s:complexType>
    <s:sequence>
      <s:element minOccurs="0" maxOccurs="1"
        name="GetUserCurrentChangeTokenResult" type="s:string" />
    </s:sequence>
  </s:complexType>
</s:element>
  
```

```
</s:complexType>  
</s:element>
```

GetUserCurrentChangeTokenResult: A value that identifies the most recent user profile change entry that is available on the protocol server for a specified user.

The response MUST contain a SOAP fault when the **userAccountName** does not have a corresponding profile on the protocol server.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

Preliminary

4 Protocol Examples

4.1 Sample Data

The user profile store contains five user profiles representing five different users. This sample data is used in the following two examples.

User	Colleague list
1	2, 3
2	1, 4, 5
3	1
4	2, 5
5	2, 4

The property store contains four properties and their privacy policy.

Property name	Type	State
Name	String	Enabled
Address	String	Enabled
Birthday	Date	Enabled
Marriage Date	Date	Enabled

The user profile property store contains ten user profile property values.

User	Property	Value	Privacy
1	Name	User1	Public
1	Address	123 New Road, New City, ST	Manager
1	Marriage Data	02/29/2008	Public
2	Name	One More User2	Public
3	Name	Different User3	Public
3	Birthday	01/02/1973	Contacts
4	Name	Another User4	Public
4	Marriage Data	02/03/1974	Private
5	Name	Last User5	Public
5	Address	456 Some Road, Some City, ST	Organization

The **user profile change entry log** contains six user profile change entries.

EventId	User	Change type	Object Type	Property name	Value	Change time
1	1	Modify	SingleValue Property	Address	123 New Road, New City, ST	02/13/2008 1:23:45 PM
2	2	Add	Colleague		Another User4	02/13/2008 2:34:56 PM
3	4	Add	Colleague		One More User2	02/13/2008 2:34:56 PM
4	5	Add	WebLog		<pre><?xml version="1.0" encoding="utf-16"?> <WebLog> <Title> My New Post </Title> <Permalink> http://site/p5/newpost </Permalink> </WebLog></pre>	02/13/2008 3:45:07 PM
5	3	Delete	WebLog		<pre><?xml version="1.0" encoding="utf-16"?> <WebLog> <Title> My Old Post </Title> <Permalink> http://site/p3/oldpost </Permalink> </WebLog></pre>	02/13/2008 4:56:18 PM
6	1	Add	SingleValue Property	Marriage Data	02/29/2008	03/01/2008 3:21:17 PM

4.2 Profile Replication

This scenario describes the protocol that is used to replicate the user profile information from one protocol server to another, for search engine crawling of user profiles, back-up, transfer, and so forth.

Initially, the protocol client retrieves the current change token to use as a starting point, and sends the following request:


```

<?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>
    <GetCurrentChangeToken
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService"/>
  </soap:Body>
</soap:Envelope>

```

The protocol server returns the current change token in the form of the following SOAP response:

```

<?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>
    <GetCurrentChangeTokenResponse
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <GetCurrentChangeTokenResult>
        1;42703492;02/13/2008 14:34:56
      </GetCurrentChangeTokenResult>
    </GetCurrentChangeTokenResponse>
  </soap:Body>
</soap:Envelope>

```

The protocol client uses the change token to retrieve all user profile change entries that occurred after the date and time of the specified change token, by sending the following request:

```

<?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>
    <GetChanges
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <changeToken>
        1;42703492;02/13/2008 14:34:56
      </changeToken>
      <changeQuery>
        <SingleValueProperty>true</SingleValueProperty>
        <MultiValueProperty>true</MultiValueProperty>
        <Custom>true</Custom>
        <Anniversary>true</Anniversary>
        <DistributionListMembership>true</DistributionListMembership>
        <SiteMembership>true</SiteMembership>
        <QuickLink>true</QuickLink>
        <Colleague>true</Colleague>
        <PersonalizationSite>true</PersonalizationSite>
        <UserProfile>true</UserProfile>
        <OrganizationMembership>true</OrganizationMembership>
        <WebLog>true</WebLog>
        <Add>true</Add>
        <Update>true</Update>
        <UpdateMetadata>true</UpdateMetadata>
        <Delete>true</Delete>
      </changeQuery>
    </GetChanges>
  </soap:Body>
</soap:Envelope>

```

The protocol server retrieves all user profile change entries that occurred after the specified change token and replies with the following response:

```

<?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>
    <GetChangesResponse
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <GetChangesResult>
        <Changes>
          <UserProfileChangeData>
            <Id>42703511</Id>
            <UserAccountName>Another User4</UserAccountName>
            <ChangeType>Add</ChangeType>
            <ObjectType>Colleague</ObjectType>
            <EventTime>2008-02-13T14:34:56.183</EventTime>
            <Value xsi:type="xsd:string">One More User2</Value>
            <PolicyId>a88b9dcb-5b82-41e4-8a19-17672f307b95</PolicyId>
          </UserProfileChangeData>
          <UserProfileChangeData>
            <Id>42703578</Id>
            <UserAccountName>Another User4</UserAccountName>
            <ChangeType>Add</ChangeType>
            <ObjectType>WebLog</ObjectType>
            <EventTime>2008-02-13T15:45:07.183</EventTime>
            <PolicyId>a88b9dcb-5b82-41e4-8a19-17672f307b95</PolicyId>
          </UserProfileChangeData>
          <UserProfileChangeData>
            <Id>42703599</Id>
            <UserAccountName>Another User4</UserAccountName>
            <ChangeType>Delete</ChangeType>
            <ObjectType> WebLog </ObjectType>
            <EventTime>2008-02-13T16:56:18.183</EventTime>
            <PolicyId>a88b9dcb-5b82-41e4-8a19-17672f307b95</PolicyId>
          </UserProfileChangeData>
          <UserProfileChangeData>
            <Id>42703604</Id>
            <UserAccountName>User1</UserAccountName>
            <ChangeType>Add</ChangeType>
            <ObjectType>SingleValueProperty</ObjectType>
            <EventTime>2008-03-01T15:21:17.183</EventTime>
            <Value xsi:type="xsd:string">02/29/2008 </Value>
            <PolicyId>a88b9dcb-5b82-41e4-8a19-17672f307b95</PolicyId>
            <PropertyName>Marriage Data</PropertyName>
          </UserProfileChangeData>
        </Changes>
        <ChangeToken>1; 42703604;03/01/2008 15:21:17</ChangeToken>
        <HasExceededCountLimit>>false</HasExceededCountLimit>
      </GetChangesResult>
    </GetChangesResponse>
  </soap:Body>
</soap:Envelope>

```

The protocol client parses each **UserProfileChangeData** record and saves data according to its own storage mechanism, then uses the value of the **ChangeToken** node to initiate a new **GetChanges** request. If **HasExceededCountLimit** is true, not all user profile change entries have been retrieved and only the most recent ones have been sent. The protocol client will then reduce the time period between two consecutive **GetChanges** requests until **HasExceededCountLimit** is false, thus ensuring that no further data is lost.

4.3 Profile Caching

This scenario describes the protocol that is used to maintain user profile information about a cached user. This example assumes that the protocol client includes data that is already cached.

The protocol client retrieves the desired user's current change token, which it uses as a starting point to send the following request:

```
<?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>
    <GetUserCurrentChangeToken
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <userAccountName>User1</userAccountName>
    </GetUserCurrentChangeToken>
  </soap:Body>
</soap:Envelope>
```

The protocol server returns the current change token in the form of the following SOAP response:

```
<?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>
    <GetUserCurrentChangeTokenResponse
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <GetUserCurrentChangeTokenResult>
        1;1;02/13/2008 13:23:45
      </GetUserCurrentChangeTokenResult>
    </GetUserCurrentChangeTokenResponse>
  </soap:Body>
</soap:Envelope>
```

The protocol client then uses the change token to retrieve all user profile change entries that occurred after the date and time of the specified change token, by sending the following request:

```
<?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>
    <GetUserChanges
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <userAccountName>User1</userAccountName>
      <changeToken>1;1;02/13/2008 13:23:45</changeToken>
      <changeQuery>
        <SingleValueProperty>true</SingleValueProperty>
        <MultiValueProperty>true</MultiValueProperty>
        <Custom>true</Custom>
        <Anniversary>true</Anniversary>
        <DistributionListMembership>true</DistributionListMembership>
        <SiteMembership>true</SiteMembership>
        <QuickLink>true</QuickLink>
        <Colleague>true</Colleague>
        <PersonalizationSite>true</PersonalizationSite>
        <UserProfile>true</UserProfile>
        <OrganizationMembership>true</OrganizationMembership>
        <WebLog>true</WebLog>
        <Add>true</Add>
        <Update>true</Update>
        <UpdateMetadata>true</UpdateMetadata>
        <Delete>true</Delete>
      </changeQuery>
    </GetUserChanges>
  </soap:Body>
```

```
</soap:Envelope>
```

The protocol server retrieves all user profile change entries that occurred after the specified change token and replies with the following response:

```
<?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>
    <GetUserChangesResponse
xmlns="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <GetUserChangesResult>
        <Changes>
          <UserProfileChangeData>
            <Id>6</Id>
            <UserAccountName>User1</UserAccountName>
            <ChangeType>Add</ChangeType>
            <ObjectType> SingleValueProperty</ObjectType>
            <EventTime>2008-03-01T15:45:07.128</EventTime>
            <Value xsi:type="xsd:date">2008-02-29 </Value>
            <PolicyId>a88b9dcb-5b82-41e4-8a19-17672f307b95</PolicyId>
            <PropertyName> Marriage Data </PropertyName>
          </UserProfileChangeData>
        </Changes>
        <ChangeToken>1;6;03/01/2008 15:45:07</ChangeToken>
        <HasExceededCountLimit>>false</HasExceededCountLimit>
      </GetUserChangesResult>
    </GetUserChangesResponse>
  </soap:Body>
</soap:Envelope>
```

The protocol client parses each **UserProfileChangeData** record and updates the data in the cache accordingly. The protocol client then waits a predetermined amount of time, and uses the value of the **ChangeToken** node to initiate a new operation. The **userAccountName** does not have a corresponding profile on the protocol server.

If **HasExceededCountLimit** is true (signaling that not all user profile change entries could be retrieved and only the most recent ones have been sent), then the protocol client will reduce the time period between two consecutive calls. The **userAccountName** does not have a corresponding profile on the protocol server. **GetUserChanges** requests entries until **HasExceededCountLimit** is false, which ensures that no further data is lost.

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 is provided in the following:

```
<?xml version="1.0" encoding="utf-8"?>
<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://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService"
xmlns:s1="http://microsoft.com/wsdl/types/" 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://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <s:schema elementFormDefault="qualified"
targetNamespace="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService">
      <s:import namespace="http://microsoft.com/wsdl/types/" />
      <s:element name="GetAllChanges">
        <s:complexType />
      </s:element>
      <s:element name="GetAllChangesResponse">
        <s:complexType>
          <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="GetAllChangesResult"
type="tns:UserProfileChangeDataContainer" />
          </s:sequence>
        </s:complexType>
      </s:element>
      <s:complexType name="UserProfileChangeDataContainer">
        <s:sequence>
          <s:element minOccurs="0" maxOccurs="1" name="Changes"
type="tns:ArrayOfUserProfileChangeData" />
          <s:element minOccurs="0" maxOccurs="1" name="ChangeToken" type="s:string" />
          <s:element minOccurs="1" maxOccurs="1" name="HasExceededCountLimit"
type="s:boolean" />
        </s:sequence>
      </s:complexType>
      <s:complexType name="ArrayOfUserProfileChangeData">
        <s:sequence>
          <s:element minOccurs="0" maxOccurs="unbounded" name="UserProfileChangeData"
nillable="true" type="tns:UserProfileChangeData" />
        </s:sequence>
      </s:complexType>
      <s:complexType name="UserProfileChangeData">
        <s:sequence>
          <s:element minOccurs="1" maxOccurs="1" name="Id" type="s:long" />
          <s:element minOccurs="0" maxOccurs="1" name="UserAccountName" type="s:string" />
          <s:element minOccurs="0" maxOccurs="1" name="UserRemotePersonalSiteHostUrl"
type="s:string" />
          <s:element minOccurs="1" maxOccurs="1" name="ChangeType" type="tns:ChangeTypes" />
          <s:element minOccurs="1" maxOccurs="1" name="ObjectType" type="tns:ObjectTypes" />
          <s:element minOccurs="1" maxOccurs="1" name="EventTime" type="s:dateTime" />
          <s:element minOccurs="0" maxOccurs="1" name="Value" />
          <s:element minOccurs="1" maxOccurs="1" name="PolicyId" type="s1:guid" />
          <s:element minOccurs="0" maxOccurs="1" name="PropertyName" type="s:string" />
        </s:sequence>
      </s:complexType>
      <s:simpleType name="ChangeTypes">
        <s:list>
          <s:simpleType>
            <s:restriction base="s:string">
              <s:enumeration value="None" />
              <s:enumeration value="Add" />
              <s:enumeration value="Modify" />
            </s:restriction>
          </s:simpleType>
        </s:list>
      </s:simpleType>
    </s:schema>
  </wsdl:types>

```

```

        <s:enumeration value="Delete" />
        <s:enumeration value="Metadata" />
        <s:enumeration value="All" />
    </s:restriction>
</s:simpleType>
</s:list>
</s:simpleType>
<s:simpleType name="ObjectTypes">
    <s:list>
        <s:simpleType>
            <s:restriction base="s:string">
                <s:enumeration value="None" />
                <s:enumeration value="SingleValueProperty" />
                <s:enumeration value="MultiValueProperty" />
                <s:enumeration value="Anniversary" />
                <s:enumeration value="DLMembership" />
                <s:enumeration value="SiteMembership" />
                <s:enumeration value="QuickLink" />
                <s:enumeration value="Colleague" />
                <s:enumeration value="PersonalizationSite" />
                <s:enumeration value="UserProfile" />
                <s:enumeration value="WebLog" />
                <s:enumeration value="Custom" />
                <s:enumeration value="OrganizationProfile" />
                <s:enumeration value="OrganizationMembership" />
                <s:enumeration value="All" />
            </s:restriction>
        </s:simpleType>
    </s:list>
</s:simpleType>
<s:element name="GetChanges">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="changeToken" type="s:string" />
            <s:element minOccurs="0" maxOccurs="1" name="changeQuery"
type="tns:UserProfileChangeQuery" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:complexType name="UserProfileChangeQuery">
    <s:complexContent mixed="false">
        <s:extension base="tns:ProfileBaseChangeQuery">
            <s:sequence>
                <s:element minOccurs="1" maxOccurs="1" name="Anniversary" type="s:boolean" />
                <s:element minOccurs="1" maxOccurs="1" name="DistributionListMembership"
type="s:boolean" />
                <s:element minOccurs="1" maxOccurs="1" name="SiteMembership" type="s:boolean" />
                <s:element minOccurs="1" maxOccurs="1" name="QuickLink" type="s:boolean" />
                <s:element minOccurs="1" maxOccurs="1" name="Colleague" type="s:boolean" />
                <s:element minOccurs="1" maxOccurs="1" name="WebLog" type="s:boolean" />
                <s:element minOccurs="1" maxOccurs="1" name="PersonalizationSite" type="s:boolean"
/>
                <s:element minOccurs="1" maxOccurs="1" name="UserProfile" type="s:boolean" />
                <s:element minOccurs="1" maxOccurs="1" name="OrganizationMembership"
type="s:boolean" />
            </s:sequence>
        </s:extension>
    </s:complexContent>
</s:complexType>
<s:complexType name="ProfileBaseChangeQuery">
    <s:sequence>
        <s:element minOccurs="1" maxOccurs="1" name="SingleValueProperty" type="s:boolean"
/>
        <s:element minOccurs="1" maxOccurs="1" name="MultiValueProperty" type="s:boolean"
/>
        <s:element minOccurs="1" maxOccurs="1" name="Custom" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1" name="Add" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1" name="Update" type="s:boolean" />
        <s:element minOccurs="1" maxOccurs="1" name="UpdateMetadata" type="s:boolean" />
    </s:sequence>
</s:complexType>

```

```

        <s:element minOccurs="1" maxOccurs="1" name="Delete" type="s:boolean" />
        <s:element minOccurs="0" maxOccurs="1" name="ChangeTokenStart"
type="tns:UserProfileChangeToken" />
    </s:sequence>
</s:complexType>
<s:complexType name="UserProfileChangeToken" />
<s:element name="GetChangesResponse">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="GetChangesResult"
type="tns:UserProfileChangeDataContainer" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetCurrentChangeToken">
    <s:complexType />
</s:element>
<s:element name="GetCurrentChangeTokenResponse">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="GetCurrentChangeTokenResult"
type="s:string" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetUserAllChanges">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="userAccountName" type="s:string" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetUserAllChangesResponse">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="GetUserAllChangesResult"
type="tns:UserProfileChangeDataContainer" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetUserChanges">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="userAccountName" type="s:string" />
            <s:element minOccurs="0" maxOccurs="1" name="changeToken" type="s:string" />
            <s:element minOccurs="0" maxOccurs="1" name="changeQuery"
type="tns:UserProfileChangeQuery" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetUserChangesResponse">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="GetUserChangesResult"
type="tns:UserProfileChangeDataContainer" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetUserCurrentChangeToken">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1" name="userAccountName" type="s:string" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetUserCurrentChangeTokenResponse">
    <s:complexType>
        <s:sequence>

```



```

        <s:element minOccurs="0" maxOccurs="1" name="GetUserCurrentChangeTokenResult"
type="s:string" />
    </s:sequence>
</s:complexType>
</s:element>
</s:schema>
<s:schema elementFormDefault="qualified"
targetNamespace="http://microsoft.com/wsdl/types/">
    <s:simpleType name="guid">
        <s:restriction base="s:string">
            <s:pattern value="[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}" />
        </s:restriction>
    </s:simpleType>
</s:schema>
</wsdl:types>
<wsdl:message name="GetAllChangesSoapIn">
    <wsdl:part name="parameters" element="tns:GetAllChanges" />
</wsdl:message>
<wsdl:message name="GetAllChangesSoapOut">
    <wsdl:part name="parameters" element="tns:GetAllChangesResponse" />
</wsdl:message>
<wsdl:message name="GetChangesSoapIn">
    <wsdl:part name="parameters" element="tns:GetChanges" />
</wsdl:message>
<wsdl:message name="GetChangesSoapOut">
    <wsdl:part name="parameters" element="tns:GetChangesResponse" />
</wsdl:message>
<wsdl:message name="GetCurrentChangeTokenSoapIn">
    <wsdl:part name="parameters" element="tns:GetCurrentChangeToken" />
</wsdl:message>
<wsdl:message name="GetCurrentChangeTokenSoapOut">
    <wsdl:part name="parameters" element="tns:GetCurrentChangeTokenResponse" />
</wsdl:message>
<wsdl:message name="GetUserAllChangesSoapIn">
    <wsdl:part name="parameters" element="tns:GetUserAllChanges" />
</wsdl:message>
<wsdl:message name="GetUserAllChangesSoapOut">
    <wsdl:part name="parameters" element="tns:GetUserAllChangesResponse" />
</wsdl:message>
<wsdl:message name="GetUserChangesSoapIn">
    <wsdl:part name="parameters" element="tns:GetUserChanges" />
</wsdl:message>
<wsdl:message name="GetUserChangesSoapOut">
    <wsdl:part name="parameters" element="tns:GetUserChangesResponse" />
</wsdl:message>
<wsdl:message name="GetUserCurrentChangeTokenSoapIn">
    <wsdl:part name="parameters" element="tns:GetUserCurrentChangeToken" />
</wsdl:message>
<wsdl:message name="GetUserCurrentChangeTokenSoapOut">
    <wsdl:part name="parameters" element="tns:GetUserCurrentChangeTokenResponse" />
</wsdl:message>
<wsdl:portType name="UserProfileChangeServiceSoap">
    <wsdl:operation name="GetAllChanges">
        <wsdl:input message="tns:GetAllChangesSoapIn" />
        <wsdl:output message="tns:GetAllChangesSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="GetChanges">
        <wsdl:input message="tns:GetChangesSoapIn" />
        <wsdl:output message="tns:GetChangesSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="GetCurrentChangeToken">
        <wsdl:input message="tns:GetCurrentChangeTokenSoapIn" />
        <wsdl:output message="tns:GetCurrentChangeTokenSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="GetUserAllChanges">
        <wsdl:input message="tns:GetUserAllChangesSoapIn" />
        <wsdl:output message="tns:GetUserAllChangesSoapOut" />
    </wsdl:operation>

```

```

    <wsdl:operation name="GetUserChanges">
      <wsdl:input message="tns:GetUserChangesSoapIn" />
      <wsdl:output message="tns:GetUserChangesSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="GetUserCurrentChangeToken">
      <wsdl:input message="tns:GetUserCurrentChangeTokenSoapIn" />
      <wsdl:output message="tns:GetUserCurrentChangeTokenSoapOut" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="UserProfileChangeServiceSoap" type="tns:UserProfileChangeServiceSoap">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="GetAllChanges">
      <soap:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetAllChanges" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetChanges">
      <soap:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetChanges" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetCurrentChangeToken">
      <soap:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetCurrentChangeToken" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetUserAllChanges">
      <soap:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetUserAllChanges" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetUserChanges">
      <soap:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetUserChanges" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetUserCurrentChangeToken">

```

```

    <soap:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetUserCurrentChangeToken" 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="UserProfileChangeServiceSoap12"
type="tns:UserProfileChangeServiceSoap">
    <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="GetAllChanges">
        <soap12:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetAllChanges" style="document" />
        <wsdl:input>
            <soap12:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal" />
        </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetChanges">
        <soap12:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetChanges" style="document" />
        <wsdl:input>
            <soap12:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal" />
        </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetCurrentChangeToken">
        <soap12:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetCurrentChangeToken" style="document" />
        <wsdl:input>
            <soap12:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal" />
        </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetUserAllChanges">
        <soap12:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetUserAllChanges" style="document" />
        <wsdl:input>
            <soap12:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal" />
        </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetUserChanges">
        <soap12:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetUserChanges" style="document" />
        <wsdl:input>
            <soap12:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal" />
        </wsdl:output>
    </wsdl:operation>

```

```
<wsdl:operation name="GetUserCurrentChangeToken">
  <soap12:operation
soapAction="http://microsoft.com/webservices/SharePointPortalServer/UserProfileChangeService/
GetUserCurrentChangeToken" style="document" />
  <wsdl:input>
    <soap12:body use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap12:body use="literal" />
  </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 Office SharePoint Server 2007
- 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 2.2.5.2](#): Custom is not supported in Office SharePoint Server 2007.

[<2> Section 2.2.5.2](#): OrganizationProfile is not supported in Office SharePoint Server 2007.

[<3> Section 2.2.5.2](#): OrganizationMembership is not supported in Office SharePoint Server 2007.

[<4> Section 3.1.4.2.2.1](#): When the user profile change entries log in the server does not have the specified ObjectTypes or ChangeTypes, the returned data will not contain the corresponding ObjectTypes or ChangeTypes.

[<5> Section 3.1.4.5.2.1](#): When the user profile change entries log in the server does not have the specified ObjectTypes or ChangeTypes, the returned data will not contain the corresponding ObjectTypes or ChangeTypes.

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

9 Index

A

Abstract data model
[server](#) 19
[Applicability](#) 10
[ArrayOfUserProfileChangeData complex type](#) 12
[Attribute groups](#) 18
[Attributes](#) 18

C

[Capability negotiation](#) 10
[Change tracking](#) 46
[ChangeTypes simple type](#) 16
[Complex types](#) 12
[ArrayOfUserProfileChangeData](#) 12
[ProfileBaseChangeQuery](#) 13
[UserProfileChangeData](#) 13
[UserProfileChangeDataContainer](#) 14
[UserProfileChangeQuery](#) 15
[UserProfileChangeToken](#) 16

D

Data model - abstract
[server](#) 19

E

Events
[local - server](#) 30
[timer - server](#) 30

Examples

[profile caching](#) 34
[profile replication](#) 32
[sample data](#) 31

F

[Fields - vendor-extensible](#) 10
[Full WSDL](#) 38

G

[Glossary](#) 7
[Groups](#) 18
[GUID simple type](#) 18

I

[Implementer - security considerations](#) 37
[Index of security parameters](#) 37
[Informative references](#) 9
Initialization
[server](#) 20
[Introduction](#) 7

L

Local events
[server](#) 30

M

Message processing
[server](#) 20
Messages
[ArrayOfUserProfileChangeData complex type](#) 12
[attribute groups](#) 18
[attributes](#) 18
[ChangeTypes simple type](#) 16
[complex types](#) 12
[elements](#) 12
[enumerated](#) 12
[groups](#) 18
[GUID simple type](#) 18
[namespaces](#) 11
[ObjectTypes simple type](#) 17
[ProfileBaseChangeQuery complex type](#) 13
[simple types](#) 16
[syntax](#) 11
[transport](#) 11
[UserProfileChangeData complex type](#) 13
[UserProfileChangeDataContainer complex type](#) 14
[UserProfileChangeQuery complex type](#) 15
[UserProfileChangeToken complex type](#) 16

N

[Namespaces](#) 11
[Normative references](#) 8

O

[ObjectTypes simple type](#) 17
Operations
[GetAllChanges](#) 21
[GetChanges](#) 22
[GetCurrentChangeToken](#) 24
[GetUserAllChanges](#) 25
[GetUserChanges](#) 26
[GetUserCurrentChangeToken](#) 28
[Overview \(synopsis\)](#) 9

P

[Parameters - security index](#) 37
[Preconditions](#) 10
[Prerequisites](#) 10
[Product behavior](#) 45
[Profile caching example](#) 34
[Profile replication example](#) 32
[ProfileBaseChangeQuery complex type](#) 13
Protocol Details
[overview](#) 19

R

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

S

- [Sample data example](#) 31
- Security
 - [implementer considerations](#) 37
 - [parameter index](#) 37
- Sequencing rules
 - [server](#) 20
- Server
 - [abstract data model](#) 19
 - [GetAllChanges operation](#) 21
 - [GetChanges operation](#) 22
 - [GetCurrentChangeToken operation](#) 24
 - [GetUserAllChanges operation](#) 25
 - [GetUserChanges operation](#) 26
 - [GetUserCurrentChangeToken operation](#) 28
 - [initialization](#) 20
 - [local events](#) 30
 - [message processing](#) 20
 - [sequencing rules](#) 20
 - [timer events](#) 30
 - [timers](#) 20
- [Simple types](#) 16
 - [ChangeTypes](#) 16
 - [GUID](#) 18
 - [ObjectTypes](#) 17
- [Standards assignments](#) 10
- Syntax
 - [messages - overview](#) 11

T

- Timer events
 - [server](#) 30
- Timers
 - [server](#) 20
- [Tracking changes](#) 46
- [Transport](#) 11
- Types
 - [complex](#) 12
 - [simple](#) 16

U

- [UserProfileChangeData complex type](#) 13
- [UserProfileChangeDataContainer complex type](#) 14
- [UserProfileChangeQuery complex type](#) 15
- [UserProfileChangeToken complex type](#) 16

V

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

W

- [WSDL](#) 38