

# [MS-UPSCWS]: User Profile Service Application Caching Web Service Protocol Specification

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## Revision Summary

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# 1 Introduction

This document specifies the User Profile Service Application Caching Web Service Protocol, which enables a protocol client to retrieve user information from a database that stores user profile data for a site.

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 RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

## 1.1 Glossary

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

- authentication**
- GUID**
- Hypertext Transfer Protocol (HTTP)**
- Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**
- security identifier (SID)**
- Transmission Control Protocol (TCP)**
- Unicode**

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

- application server**
- back-end database server**
- base64 encoding**
- colleague**
- email address**
- endpoint**
- login name**
- request identifier**
- Session Initiation Protocol (SIP) address**
- Simple Object Access Protocol (SOAP)**
- SOAP action**
- SOAP body**
- SOAP fault**
- stream**
- Uniform Resource Identifier (URI)**
- user profile**
- user profile record identifier**
- User Profile Service**
- user profile store**
- Web Services Description Language (WSDL)**
- WSDL message**
- WSDL operation**
- XML namespace**
- XML namespace prefix**
- XML schema**

The following terms are specific to this document:

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

## 1.2 References

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

### 1.2.1 Normative References

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

[MS-SPSTWS] Microsoft Corporation, "[SharePoint Security Token Service Web Service Protocol Specification](#)".

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

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

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

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

[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/>

[XMLSCHEMA] World Wide Web Consortium, "XML Schema", September 2005, <http://www.w3.org/2001/XMLSchema>

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

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

### 1.2.2 Informative References

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

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

[MS-SPTWS] Microsoft Corporation, "[Service Platform Topology Web Service Protocol Specification](#)".

[RFC2822] Resnick, P., Ed., "Internet Message Format", STD 11, RFC 2822, April 2001, <http://www.ietf.org/rfc/rfc2822.txt>

[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>

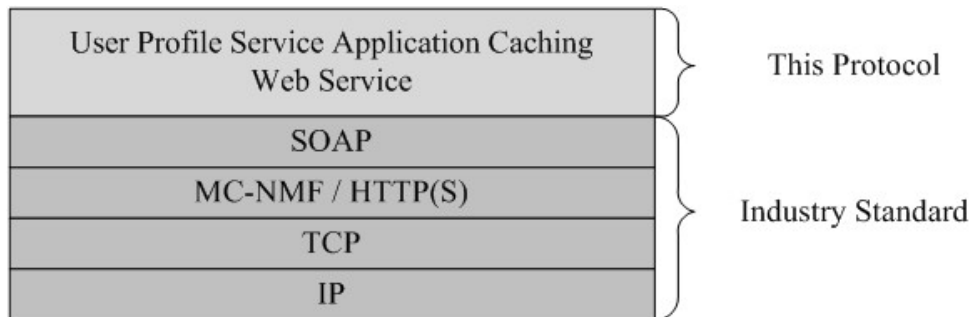
### 1.3 Overview

This protocol allows protocol clients to gain access to **user profile** information through a middle-tier **application server**, instead of a **back-end database server**. A typical scenario is a protocol client fetching user profile properties, such as the name, **e-mail address**, picture URL, or **colleagues** of one or more users, by using user credentials, such as an user name or **security identifier (SID)**, or another field, such as the **user profile record identifier**, that identify those users. The middle-tier application server caches user profile fields that are commonly used and exposes them to protocol clients through this protocol. Consequently, this protocol helps distribute the load from the database tier to the application tier; it helps the protocol server scale to handle higher loads because read requests for commonly used fields are the operations performed most frequently. In addition, this protocol is designed for bulk operations. Protocol clients can use this protocol to gain access to user profile information for many users simultaneously, and the corresponding response can contain data for as many users as requested. This feature optimizes the efficiency of operations for a large user base.

### 1.4 Relationship to Other Protocols

This protocol uses the **Simple Object Access Protocol (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 **Hypertext Transfer Protocol (HTTP)**, as described in [\[RFC2616\]](#).

The User Profile Service Application Caching Web Service Protocol uses SOAP over HTTP(S) as shown in the following layering diagram.



**Figure 1: This protocol in relation to other protocols**

### 1.5 Prerequisites/Preconditions

This protocol operates against a protocol server that exposes one or more **endpoint (4) URIs** that are known by protocol clients. Both the protocol server endpoint (4) URI and transport are either known by the protocol client or are obtained by using the discovery mechanism described in [\[MS-SPTWS\]](#).

The protocol client can obtain the **ApplicationClassId** and **ApplicationVersion** of the protocol server with which it communicates. The endpoint (4) URI of a protocol server is required to provide the discovery mechanism described in [MS-SPTWS] .

This protocol requires the protocol client to have the necessary permission settings to call methods on the protocol server. The protocol also requires that the protocol client implements the token-based security needed for the protocol server and the security protocols described in [\[MS-SPSTWS\]](#).

## 1.6 Applicability Statement

This protocol is designed to retrieve user profile data for multiple users in one call. The number of users for which that data is retrieved is limited only by the configuration of the transport layer.

## 1.7 Versioning and Capability Negotiation

**Supported Transports:** This protocol can be implemented by using transports that support sending SOAP messages, as described in section [2.1](#).

## 1.8 Vendor-Extensible Fields

None.

## 1.9 Standards Assignments

None.



## 2 Messages

In the following sections, the schema definition might be less restrictive than 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 specifies additional restrictions 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 **MUST** support Simple Object Access Protocol (SOAP) over Hypertext Transfer Protocol (HTTP), **Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**, or **TCP**.

All protocol messages **MUST** be transported by using HTTP or TCP bindings at the transport level.

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

If the HTTPS transport is used, a server certificate **MUST** be deployed.

This protocol **MAY** transmit an additional SOAP header, the **ServiceContext** header, as specified in [\[MS-SPSTWS\]](#).

This protocol does not define any means for activating a protocol server or protocol client. The protocol server **MUST** be configured and begin listening in an implementation-specific way. In addition, the protocol client **MUST** know the format and transport that is used by the server, for example, the SOAP format over an HTTP transport.

### 2.2 Common Message Syntax

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

#### 2.2.1 Namespaces

This 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
q1	http://Microsoft/Office/Server/UserProfiles	
q2	http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache	
q3	http://schemas.microsoft.com/2003/10/Serialization/Arrays	
q4	http://schemas.datacontract.org/2004/07/System.IO	

Prefi x	Namespace URI	Reference
q5	http://schemas.datacontract.org/2004/07/System	
soap	http://schemas.xmlsoap.org/wsdl/soap/	<a href="#">[SOAP1.1]</a>
tns	http://tempuri.org/	
tns1	http://schemas.microsoft.com/2003/10/Serialization/	
tns2	http://tempuri.org/Imports	
wsam	http://www.w3.org/2007/05/addressing/metadata	
wsdl	http://schemas.xmlsoap.org/wsdl/	<a href="#">[WSDL]</a>
xs	http://www.w3.org/2001/XMLSchema	<a href="#">[XMLSCHEMA1 1]</a> <a href="#">[XMLSCHEMA2 1]</a>

## 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
<b>ArrayOfUserData</b>	ArrayOfUserData is a sequence of zero or more UserData complex types.
<b>ConfigurationFault</b>	The <b>ConfigurationFault</b> complex type describes errors that occur because of configuration failures either at the service endpoint (4) of this protocol or in transport layers. It is an extension of the <b>UserProfileFault</b> complex type.
<b>InputFault</b>	The <b>InputFault</b> complex type describes errors that occur because of invalid <b>UserSearchCriteria</b> input from a protocol client. The <b>InputFault</b> complex type is an extension of the <b>UserProfileFault</b> complex type.
<b>UnknownFault</b>	The <b>UnknownFault</b> complex type describes errors that occur for unknown reasons in the service endpoint (4) of this protocol. The <b>UnknownFault</b> complex type is an extension of the <b>UserProfileFault</b> complex type.
<b>UserData</b>	<b>UserData</b> is a complex type that contains the commonly used properties of the user profile data for a specific user in the user profile store.
<b>UserProfileFault</b>	The <b>UserProfileFault</b> complex type describes errors that occur because of errors within the service endpoint (4) of this protocol.

### 2.2.4.1 ConfigurationFault

**Namespace:** http://Microsoft/Office/Server/UserProfiles

The **ConfigurationFault** complex type describes errors that occur because of configuration failures either at the service endpoint (4) of this protocol or in transport layers. It is an extension of the **UserProfileFault** complex type.

```
<xs:complexType name="ConfigurationFault" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="q1:UserProfileFault">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

### 2.2.4.2 InputFault

**Namespace:** http://Microsoft/Office/Server/UserProfiles

The **InputFault** complex type describes errors that occur because of invalid **UserSearchCriteria** input from a protocol client. The **InputFault** complex type is an extension of the **UserProfileFault** complex type.

```
<xs:complexType name="InputFault" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="q1:UserProfileFault">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

### 2.2.4.3 UnknownFault

**Namespace:** http://Microsoft/Office/Server/UserProfiles

The **UnknownFault** complex type describes errors that occur for unknown reasons in the service endpoint (4) of this protocol. The **UnknownFault** complex type is an extension of the **UserProfileFault** complex type.

```
<xs:complexType name="UnknownFault" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="q1:UserProfileFault">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

### 2.2.4.4 UserProfileFault

**Namespace:** http://Microsoft/Office/Server/UserProfiles

The **UserProfileFault** complex type describes errors that occur because of errors within the service endpoint (4) of this protocol.

```

<xs:complexType name="UserProfileFault" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="FailureDetail" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="FaultCode" type="q1:FaultCodes"/>
  </xs:sequence>
</xs:complexType>

```

**FailureDetail:** Specifies an error string. The protocol does not impose any restriction on the behavior of the protocol client with respect to this field.

**FaultCode:** Specifies a numerical indicator of the error that occurred. The protocol does not impose any restriction on the behavior of the protocol client with respect to this field.

### 2.2.4.5 ArrayOfUserData

**Namespace:** http://Microsoft/Office/Server/UserProfiles

ArrayOfUserData is a sequence of zero or more UserData complex types.

```

<xs:complexType name="ArrayOfUserData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="UserData" nillable="true"
type="q1:UserData"/>
  </xs:sequence>
</xs:complexType>

```

**UserData:** Specifies a **UserData** complex type.

### 2.2.4.6 UserData

**Namespace:** http://Microsoft/Office/Server/UserProfiles

**UserData** is a complex type that contains the commonly used properties of the user profile data for a specific user in the user profile store.

```

<xs:complexType name="UserData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="Department" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Email" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LastUpdate" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="MasterRecordID" type="xs:long"/>
    <xs:element minOccurs="0" name="NTName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="PartitionID" type="tnsl:guid"/>
    <xs:element minOccurs="0" name="PictureUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="PreferredName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ProfileSubtypeID" type="xs:int"/>
    <xs:element minOccurs="0" name="RecordID" type="xs:long"/>
    <xs:element minOccurs="0" name="SID" nillable="true" type="xs:base64Binary"/>
    <xs:element minOccurs="0" name="SipAddress" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Title" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="UserID" type="tnsl:guid"/>
    <xs:element minOccurs="0" name="PersonalSpace" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="FeedIdentifier" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="FeedPrivacyActivity" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="IsPeopleListPublic" nillable="true" type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>

```

```
<xs:element minOccurs="0" name="EmailOptin" nillable="true" type="xs:int"/>
<xs:element minOccurs="0" name="StatusNote" nillable="true" type="xs:string"/>
</xs:sequence>
</xs:complexType>
```

**Department:** The department at work to which the user belongs.

**Email:** The work-related e-mail address of the user.

**LastUpdate:** The timestamp, in **UTC** format, when the user's user profile data was last modified.

**MasterRecordID:** The identifier of the primary record that stores the user profile data. If the **MasterRecordID** equals the **RecordID**, then this record **MUST** be the primary record of the user profile data of the user. The primary record is the main record for the user if the user has two user profiles.

**NTName:** The user name string that uniquely identifies the user within the authentication **domain** that is used to authenticate the user.

**PartitionID:** A **GUID** used to filter the current request. This value **MUST NOT** be null or empty.

**PictureUrl:** The URL of a picture by which the user prefers to be recognized.

**PreferredName:** The display name of the user by which the user prefers to be addressed.

**ProfileSubtypeID:** An integer that indicates the type of profile. Valid values are "1" (user) and "2" (organization).

**RecordID:** An 8-byte, user profile record identifier.

**SID:** A security identifier (SID) that uniquely identifies the user within the authentication domain that is used to authenticate the user.

**SipAddress:** The **Session Initiation Protocol (SIP) address** of the user.

**Title:** The work title of the user.

**UserID:** A 16-byte GUID that uniquely identifies the user.

**PersonalSpace:** The URL of the personal site for the user.

**FeedIdentifier:** A string that identifies the feed source for the user. The format of the string is feed application defined.

**FeedPrivacyActivity:** An integer that, if nonzero, indicates that changes to the user profile may generate feed activities.

**IsPeopleListPublic:** A Boolean that, if true, indicates that other users are permitted to obtain this user's list of followed people.

**EmailOptin:** An integer field containing bitmask values that indicate the user-specified preferences for receiving emails related to feed activities. Emails are sent to the user under the following conditions:

- If the bit corresponding to value 0x08 is set, emails are sent to this user when a feed entry is posted to this user by any other feed user.

- If the bit corresponding to value 0x10 is set, emails are sent to this user when any other feed user replies to a feed entry posted by this user.
- If the bit corresponding to value 0x20 is set, emails are sent to this user when any other feed user replies to a reply posted by this user.

**StatusNote:** The body of the most recent non-reply feed entry generated by the user.

## 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
<b>char</b>	The <b>char</b> simple type is a <b>Unicode</b> character that is stored in a 4-byte integer.
<b>duration</b>	The <b>duration</b> simple type is the length of time, as specified in <a href="#">[XMLSCHEMA]</a> .
<b>FaultCodes</b>	The <b>FaultCodes</b> simple type is an enumeration of the possible errors that the service endpoint (4) of this protocol communicates with protocol clients. The protocol imposes no restriction on the behavior of the protocol client with respect to this type.

### 2.2.5.1 char

**Namespace:** <http://schemas.microsoft.com/2003/10/Serialization/>

The **char** simple type is a Unicode character that is stored in a 4-byte integer.

```
<xs:simpleType name="char" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:int"/>
</xs:simpleType>
```

### 2.2.5.2 duration

**Namespace:** <http://schemas.microsoft.com/2003/10/Serialization/>

The **duration** simple type is the length of time, as specified in [\[XMLSCHEMA\]](#).

```
<xs:simpleType name="duration" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:duration">
    <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?"/>
    <xs:minInclusive value="-P10675199DT2H48M5.4775808S"/>
    <xs:maxInclusive value="P10675199DT2H48M5.4775807S"/>
  </xs:restriction>
</xs:simpleType>
```

### 2.2.5.3 FaultCodes

**Namespace:** <http://Microsoft/Office/Server/UserProfiles>

The **FaultCodes** simple type is an enumeration of the possible errors that the service endpoint (4) of this protocol communicates with protocol clients. The protocol imposes no restriction on the behavior of the protocol client with respect to this type.

```
<xs:simpleType name="FaultCodes" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UnknownError"/>
    <xs:enumeration value="InvalidInput"/>
    <xs:enumeration value="InvalidConfiguration"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for the **FaultCodes** simple type.

Value	Meaning
UnknownError	The cause of the error is unknown to the service endpoint (4) of this protocol.
InvalidInput	The cause of the error is invalid <b>UserSearchCriteria</b> input from the protocol client.
InvalidConfiguration	The cause of the error is an invalid configuration of the service endpoint (4) of this protocol or the transport layers below it.

### 2.2.6 Attributes

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

### 2.2.7 Groups

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

### 2.2.8 Attribute Groups

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

### 2.2.9 Common Data Structures

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

## 3 Protocol Details

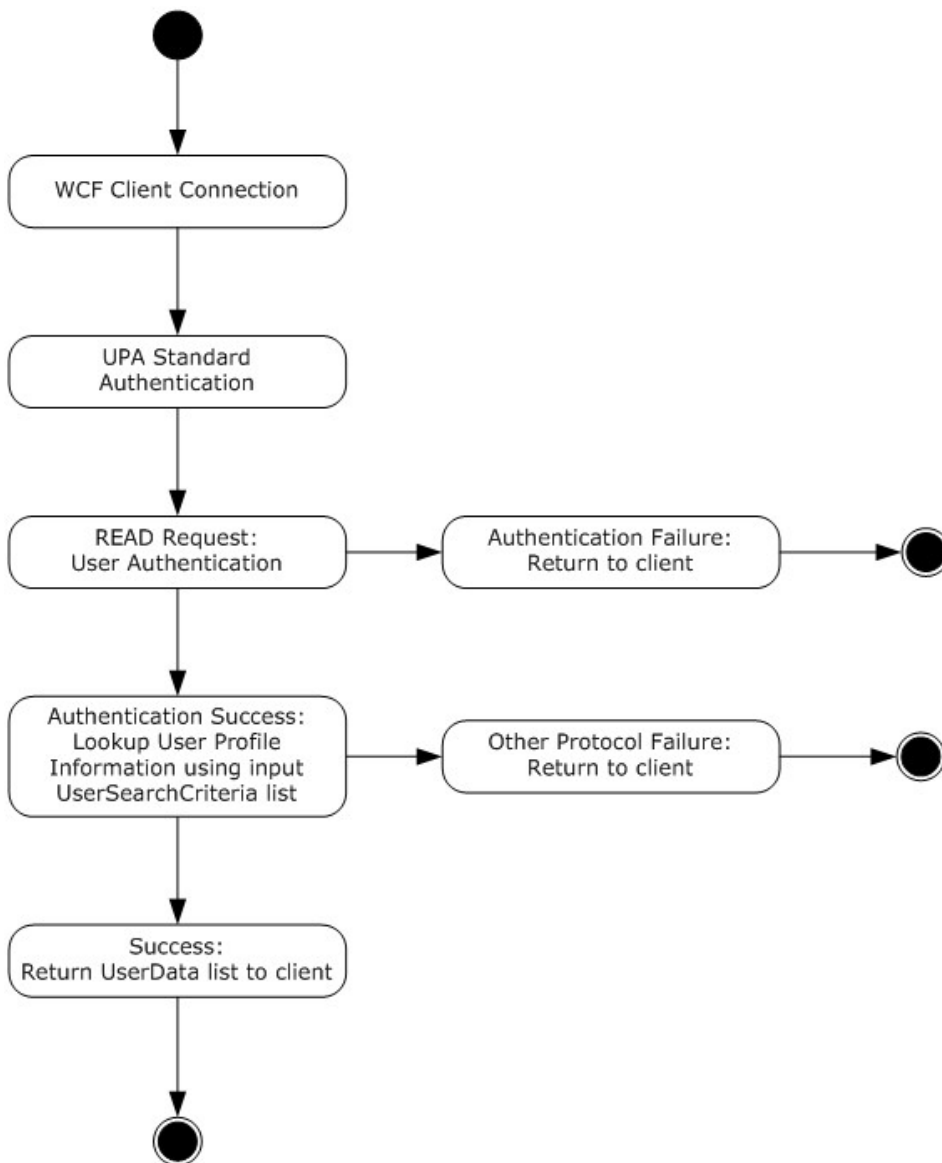
In the following sections, the schema definition might differ from the processing rules imposed by the protocol. The WSDL in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL might specify differences that 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**.

This protocol is a server-side protocol. 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 that are made by the upper protocol or application are passed directly to the transport, and the results returned by the transport are passed directly to the higher-layer protocol or application.

### 3.1 Server Details

This protocol is based on stateless interaction between the protocol client and protocol server. The protocol client **MUST** be authenticated with the credentials of a user who has access to the **User Profile Service** (referred to as 'UPA Standard Authentication' in the following figure). The protocol simply exposes the data that is currently stored in the User Profile Service that is deployed and running. There is no interdependency between the information exchanged between the protocol client and protocol server during one instance of their interaction using this protocol and the next instance. The following diagram illustrates the control flow for retrieving cached information about user profiles and returning it to the protocol client.





**Figure 2: Control flow of the user profile caching service**

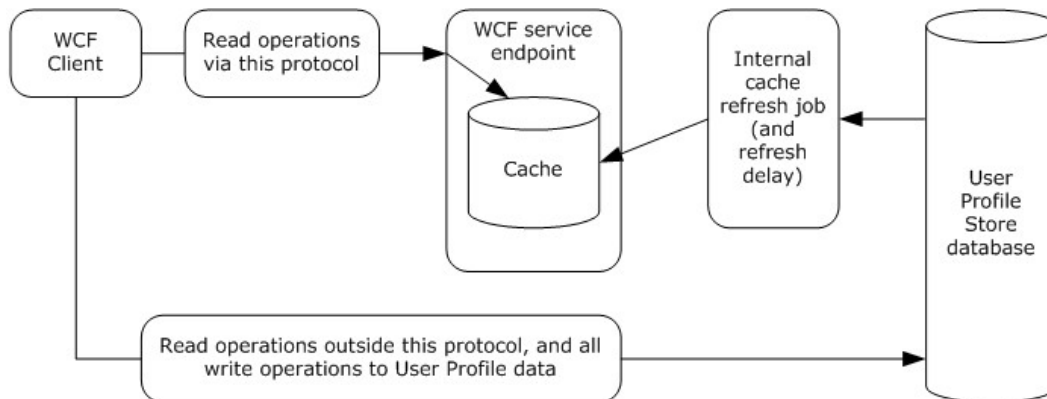
When errors are returned to the protocol client, the service endpoint (4) of this protocol specifies complex types as described in sections [2.2.4.1](#) through [2.2.4.4](#) for each error.

### 3.1.1 Abstract Data Model

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

A key aspect of this protocol is that it allows protocol clients to gain quick and scalable access to a commonly used subset of User Profile Service properties and it does so through a WCF service endpoint (4) that caches these properties from the back-end database server. Protocol clients can use the services that are offered by this protocol for commonly used user profile properties, such as e-mail, picture URL, user name, display name, and user profile record identifier. Protocol clients cannot use this protocol to update user profile information; this protocol does not support write requests.

Because this protocol does not support write requests, the cache of user profile properties behind the service endpoint (4) of this protocol can potentially be out-of-date with the database layer before the cache is refreshed internally within the service. The following diagram captures these dependencies.



**Figure 3: Dependencies on the cache**

The preceding diagram illustrates that protocol clients that use this protocol MUST be able to tolerate a small delay, usually in the order of minutes, before a change that is made to the user profile data in the database is reflected in the cache. The cache refresh timer cannot be manipulated by using this protocol. It can be controlled only on the application server itself.

Initialization is not needed for the cache in the service endpoint (4) because the cache is populated on demand and transparently whenever the protocol client accesses data that is missing in the cache but present in the database. The protocol client interface is a very simple stateless request/response protocol.

### 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 operations as defined by this specification.

Operation	Description
<b>GetUserData</b>	The <b>GetUserData</b> operation retrieves the commonly used properties of a user profile in the <b>user profile store</b> .

### 3.1.4.1 GetUserData

The **GetUserData** operation retrieves the commonly used properties of a user profile in the user profile store.

```
<wsdl:operation name="GetUserData" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input wsam:Action="http://Microsoft.Office.Server.UserProfiles/GetUserData"
    message="tns:IProfileDBCachService_GetUserData_InputMessage"
    xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"/>
  <wsdl:output wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataResponse"
    message="tns:IProfileDBCachService_GetUserData_OutputMessage"
    xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"/>
  <wsdl:fault
    wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataConfigurationFaultFault"
    name="ConfigurationFaultFault"
    message="tns:IProfileDBCachService_GetUserData_ConfigurationFaultFault_FaultMessage"
    xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"/>
  <wsdl:fault
    wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataInputFaultFault"
    name="InputFaultFault"
    message="tns:IProfileDBCachService_GetUserData_InputFaultFault_FaultMessage"
    xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"/>
  <wsdl:fault
    wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataUserProfileFaultFault"
    name="UserProfileFaultFault"
    message="tns:IProfileDBCachService_GetUserData_UserProfileFaultFault_FaultMessage"
    xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"/>
  <wsdl:fault
    wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataUnknownFaultFault"
    name="UnknownFaultFault"
    message="tns:IProfileDBCachService_GetUserData_UnknownFaultFault_FaultMessage"
    xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"/>
</wsdl:operation>
```

The protocol client sends an **IProfileDBCachService\_GetUserData\_InputMessage** request message and the protocol server responds with an **IProfileDBCachService\_GetUserData\_OutputMessage** response message. If the user profile store has user profile data that corresponds to the input **UserSearchCriteria** complex type, then this operation returns and packages that data for the protocol client as an output **UserData** complex type. The protocol client MAY send a request to retrieve multiple user profiles in one call to this operation, as specified in section [3.1.4.1.3.1](#). The operation returns one **UserData** complex type for each input that it receives, if the operation finds the user data. Otherwise, the operation MUST return **NULL** in place of **UserData** corresponding to the **UserSearchCriteria**. In case of any error, the operation MUST return an error, using one of the fault messages described in sections [2.2.4.1](#) through [2.2.4.4](#).

#### 3.1.4.1.1 Messages

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

Message	Description
<b>IProfileDBCacheService_GetUserData_InputMessage</b>	The request WSDL message for the <b>GetUserData</b> WSDL operation.
<b>IProfileDBCacheService_GetUserData_OutputMessage</b>	The response WSDL message for the <b>GetUserData</b> WSDL operation.

### 3.1.4.1.1.1 IProfileDBCacheService\_GetUserData\_InputMessage

The request WSDL message for the **GetUserData** WSDL operation.

The **SOAP action** value is:

```
http://Microsoft.Office.Server.UserProfiles/GetUserData
```

The **SOAP body** contains the **GetUserData** element.

### 3.1.4.1.1.2 IProfileDBCacheService\_GetUserData\_OutputMessage

The response WSDL message for the **GetUserData** WSDL operation.

The SOAP body contains the **GetUserDataResponse** element.

### 3.1.4.1.2 Elements

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

Element	Description
<b>GetUserData</b>	The input data for the <b>GetUserData</b> WSDL operation.
<b>GetUserDataResponse</b>	The result data for the <b>GetUserData</b> WSDL operation.

#### 3.1.4.1.2.1 GetUserData

The **GetUserData** element specifies the input data for the **GetUserData** WSDL operation.

```
<xs:element name="GetUserData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element xmlns:q1="http://Microsoft/Office/Server/UserProfiles" minOccurs="0"
        name="searchCriteria" nillable="true" type="q1:UserSearchCriteria"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**searchCriteria:** Contains search criteria for the service endpoint (4) to use when searching for user profile data.

### 3.1.4.1.2.2 GetUserDataResponse

The **GetUserDataResponse** element specifies the result data for the **GetUserData** WSDL operation.

```
<xs:element name="GetUserDataResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache"
        minOccurs="0" name="GetUserDataResult" nillable="true"
        type="q2:StreamedDataOfArrayOfUserDatajHCugpoN"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**GetUserDataResult:** Contains **StreamedDataOfArrayOfUserDatajHCugpoN** complex type. The collection of **UserData** complex types specified in **StreamedDataOfArrayOfUserDatajHCugpoN** complex type have a one-to-one relationship with input **searchCriteria** complex types. If the user profile data for a specific **UserSearchCriteria** is not found, the corresponding **UserData** structure is nil.

### 3.1.4.1.3 Complex Types

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

Complex type	Description
<b>UserSearchCriteria</b>	
<b>ArrayOfstring</b>	
<b>ArrayOflong</b>	
<b>ArrayOfbase64Binary</b>	
<b>ArrayOfguid</b>	
<b>StreamedDataOfArrayOfUserDatajHCugpoN</b>	
<b>MemoryStream</b>	
<b>Stream</b>	
<b>MarshalByRefObject</b>	

### 3.1.4.1.3.1 UserSearchCriteria

**Namespace:** http://Microsoft/Office/Server/UserProfiles

The **UserSearchCriteria** complex type specifies the list of properties that the service endpoint (4) MUST use when searching for user profile data. In case of any error, the protocol server MUST return either an **InputFault**, **ConfigurationFault**, or **UnknownFault** complex type to the protocol client.

```

<xs:complexType name="UserSearchCriteria" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="AllowAlternateAccountName" type="xs:boolean"/>
    <xs:element minOccurs="0" name="CorrelationID" type="tns1:guid"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="EmailCollection" nillable="true" type="q3:ArrayOfstring"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="NTNameCollection" nillable="true" type="q3:ArrayOfstring"/>
    <xs:element minOccurs="0" name="PartitionID" type="tns1:guid"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="RecordIDCollection" nillable="true" type="q3:ArrayOflong"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="SIDCollection" nillable="true" type="q3:ArrayOfbase64Binary"/>
    <xs:element minOccurs="0" name="SearchColumn" nillable="true" type="xs:string"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="UserIDCollection" nillable="true" type="q3:ArrayOfguid"/>
  </xs:sequence>
</xs:complexType>

```

**AllowAlternateAccountName:** A single user can have multiple accounts in an organization. For example, a user can have an account "DOMAIN1\user1" for primary **authentication (1)** and another account "DOMAIN2\User1First.User1Last" for e-mail. When a user's user profile information is created, a distinct record for each user account is created in the user profile store, but the service ensures that all of the accounts have the same user profile data associated with them in the user profile store. The service also marks one of the accounts, for example "DOMAIN1\user1" as the master account, which is used primarily to identify the user. If this value is "true", it indicates that the **UserSearchCriteria** can be applied to any of the user's accounts. If this value is "false", it indicates that **UserSearchCriteria** MUST be applied only to the master account for the user.

**CorrelationID:** **CorrelationID:** The optional **request identifier** for the current request.

**EmailCollection:** The list of e-mail addresses for users, based on which the search for their user profile data MUST be conducted by the service. A commonly used format is "user@domain.company".

**NTNameCollection:** The list of user names for users, based on which the search for their user profile data MUST be conducted by the service. A commonly used format is "DOMAIN\user".

**PartitionID:** **PartitionID:** A GUID used to filter the current request. This value MUST NOT be null or empty.

**RecordIDCollection:** The list of 8-byte user profile record identifiers, based on which the search for the user profile data MUST be conducted by the service.

**SIDCollection:** The list of security identifiers (SIDs), based on which the search for the user profile data MUST be conducted by the service.

**SearchColumn:** Specifies which of the following search criteria fields to use when searching for user profile data:

- If the **SearchColumn** is the string "Email" it specifies **EmailCollection**.
- If the **SearchColumn** is the string "UserID" it specifies **UserIDCollection**.
- If the **SearchColumn** is the string "NTName" it specifies **NTNameCollection**.
- If the **SearchColumn** is the string "SID" it specifies **SIDCollection**.

- If the **SearchColumn** is the string "RecordID" it specifies **RecordIDCollection**.

The service never matches against more than one of these fields at a time. The service chooses exactly one string specified by **SearchColumn** to conduct a search. This value MUST NOT be null or empty.

**UserIDCollection:** The list of 16-byte GUIDs that uniquely identify a user, based on which the search for the user profile data MUST be conducted by the service.

#### 3.1.4.1.3.2 ArrayOfstring

**Namespace:** http://schemas.microsoft.com/2003/10/Serialization/Arrays

**ArrayOfstring** is a sequence of zero or more strings.

```
<xs:complexType name="ArrayOfstring" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

**string:** A single string value.

#### 3.1.4.1.3.3 ArrayOflong

**Namespace:** http://schemas.microsoft.com/2003/10/Serialization/Arrays

**ArrayOflong** is a sequence of zero or more 8-byte, long integers.

```
<xs:complexType name="ArrayOflong" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="long" type="xs:long"/>
  </xs:sequence>
</xs:complexType>
```

**long:** An 8-byte (64-bit) integer.

#### 3.1.4.1.3.4 ArrayOfbase64Binary

**Namespace:** http://schemas.microsoft.com/2003/10/Serialization/Arrays

**ArrayOfbase64Binary** is a sequence of zero or more **base64Binary** types.

```
<xs:complexType name="ArrayOfbase64Binary" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="base64Binary" nillable="true"
type="xs:base64Binary"/>
  </xs:sequence>
</xs:complexType>
```

**base64Binary:** This is a sequence of bytes represented in **base64 encoding**.

### 3.1.4.1.3.5 ArrayOfguid

**Namespace:** http://schemas.microsoft.com/2003/10/Serialization/Arrays

**ArrayOfguid** is a sequence of zero or more 16-byte GUIDs.

```
<xs:complexType name="ArrayOfguid" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="guid" type="tnsl:guid"/>
  </xs:sequence>
</xs:complexType>
```

**guid:** A 16-byte GUID.

### 3.1.4.1.3.6 StreamedDataOfArrayOfUserDatajHCugpoN

**Namespace:** http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache

**StreamedDataOfArrayOfUserDatajHCugpoN** is a complex type that contains a **stream** with serialized contents of **ArrayOfUserData** complex type.

```
<xs:complexType name="StreamedDataOfArrayOfUserDatajHCugpoN"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element xmlns:q4="http://schemas.datacontract.org/2004/07/System.IO" minOccurs="0"
name="DataStream" nillable="true" type="q4:MemoryStream"/>
  </xs:sequence>
</xs:complexType>
```

**DataStream:** Specifies a **MemoryStream** complex type containing serialized contents of **ArrayOfUserData** complex type.

### 3.1.4.1.3.7 MemoryStream

**Namespace:** http://schemas.datacontract.org/2004/07/System.IO

**MemoryStream** is a complex type that specifies a stream (1) whose backing store is memory.

```
<xs:complexType name="MemoryStream" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension base="q4:Stream">
      <xs:sequence>
        <xs:element name="_buffer" nillable="true" type="xs:base64Binary"/>
        <xs:element name="_capacity" type="xs:int"/>
        <xs:element name="_expandable" type="xs:boolean"/>
        <xs:element name="_exposable" type="xs:boolean"/>
        <xs:element name="_isOpen" type="xs:boolean"/>
        <xs:element name="_length" type="xs:int"/>
        <xs:element name="_origin" type="xs:int"/>
        <xs:element name="_position" type="xs:int"/>
        <xs:element name="_writable" type="xs:boolean"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```



- \_buffer:** The array of unsigned bytes from which the stream (1) is created.
- \_capacity:** Specifies the number of bytes allocated for this stream (1).
- \_expandable:** Specifies if the stream (1) is expandable.
- \_exposable:** Specifies if the underlying byte buffer is exposed.
- \_isOpen:** Specifies if the stream (1) is open.
- \_length:** Specifies the length of the stream (1) in bytes.
- \_origin:** Specifies the index into the underlying buffer at which the stream (1) starts.
- \_position:** Specifies the current position within the stream (1).
- \_writable:** Specifies if the stream (1) supports writing.

### 3.1.4.1.3.8 Stream

**Namespace:** http://schemas.datacontract.org/2004/07/System.IO

```
<xs:complexType name="Stream" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexContent mixed="false">
    <xs:extension xmlns:q5="http://schemas.datacontract.org/2004/07/System"
      base="q5:MarshalByRefObject">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

### 3.1.4.1.3.9 MarshalByRefObject

**Namespace:** http://schemas.datacontract.org/2004/07/System

```
<xs:complexType name="MarshalByRefObject" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element name="__identity" nillable="true" type="xs:anyType"/>
  </xs:sequence>
</xs:complexType>
```

**\_\_identity:**

### 3.1.4.1.4 Simple Types

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

Simple type	Description
guid	

#### 3.1.4.1.4.1 guid

**Namespace:** http://schemas.microsoft.com/2003/10/Serialization/

```
<xs:simpleType name="guid" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:pattern value="\{8\}-\{4\}-\{4\}-\{4\}-\{12\}" />
  </xs:restriction>
</xs:simpleType>
```

#### **3.1.4.1.5 Attributes**

None.

#### **3.1.4.1.6 Groups**

None.

#### **3.1.4.1.7 Attribute Groups**

None.

#### **3.1.5 Timer Events**

None.

#### **3.1.6 Other Local Events**

None.

## 4 Protocol Examples

This section provides specific example scenarios for retrieving a single user profile by **login name** and retrieving multiple user profiles by user profile record identifier.

Consider that the following two user profiles are part of the user profile store:

Record ID	User Name	NT Name	User ID
1	Agarwal, Nupur	contoso\nupuragarwal	4bccfd46-fb01-4c9b-988c-0730eaed529a
2	Cannon, Paul	contoso\paulcannon	b8110f57-8f8e-4c4a-9570-1c75828e18ef

The following identifiers are used in the examples in this section:

- PartitionID - 0C37852B-34D0-418E-91C6-2AC25AF4BE5B
- CorrelationID - a6b889ea-932a-4447-8d73-ce928cc912ad
- Security identifier (SID) - AQUAAAAAAAAUVAAAAoGXPfnhLm1/nfIdw6iooAA==

### 4.1 Retrieving a User Profile by NT Name

To retrieve a user profile by domain user account, consider the following WSDL message constructed by the protocol client to call **GetUserData**.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://Microsoft.Office.Server.UserProfiles/GetUserData</a:Action>
    <a:MessageID>urn:uuid:3548f307-1764-4099-bbab-d421557cca8d</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To
s:mustUnderstand="1">net.tcp://mymachine:32845/827f1817ac334b5da4476147b9ee5a8f/ProfileDBCach
eService.svc</a:To>
    <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd">
      ...
    </o:Security>
  </s:Header>
  <s:Body>
    <GetUserData xmlns="http://tempuri.org/">
      <searchCriteria xmlns:b="http://Microsoft/Office/Server/UserProfiles"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
        <b:AllowAlternateAccountName>false</b:AllowAlternateAccountName>
        <b:CorrelationID>a6b889ea-932a-4447-8d73-ce928cc912ad</b:CorrelationID>
        <b>EmailCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b>EmailCollection>
        <b:NTNameCollection
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
          <c:string>contoso\nupuragarwal</c:string>
        </b:NTNameCollection>
        <b:PartitionID>0c37852b-34d0-418e-91c6-2ac25af4be5b</b:PartitionID>
      </searchCriteria>
    </GetUserData>
  </s:Body>
</s:Envelope>
```

```

        <b:RecordIDCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:RecordIDCollection>
        <b:SIDCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:SIDCollection>
        <b:SearchColumn>NTName</b:SearchColumn>
        <b:UserIDCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:UserIDCollection>
    </searchCriteria>
</GetUserData>
</s:Body>
</s:Envelope>

```

The protocol server returns the following WSDL message response with the requested data:

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
    <s:Header>
        <a:Action
s:mustUnderstand="1">http://tempuri.org/IProfileDBCacheService/GetUserDataResponse</a:Action>
        <a:RelatesTo>urn:uuid:3548f307-1764-4099-bbab-d421557cca8d</a:RelatesTo>
        <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
        <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-
200401-wss-wssecurity-secext-1.0.xsd">
            ...
        </o:Security>
    </s:Header>
    <s:Body>
        <GetUserDataResponse xmlns="http://tempuri.org/">
            <GetUserDataResult xmlns:b="http://Microsoft/Office/Server/UserProfiles"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
                <d4p1:DataStream xmlns:d5p1="http://schemas.datacontract.org/2004/07/System.IO">
                    <__identity i:nil="true"
xmlns="http://schemas.datacontract.org/2004/07/System"></__identity>
                    <d5p1:_buffer></d5p1:_buffer>
                    <d5p1:_capacity>672</d5p1:_capacity>
                    <d5p1:_expandable>true</d5p1:_expandable>
                    <d5p1:_exposable>true</d5p1:_exposable>
                    <d5p1:_isOpen>true</d5p1:_isOpen>
                    <d5p1:_length>672</d5p1:_length>
                    <d5p1:_origin>0</d5p1:_origin>
                    <d5p1:_position>0</d5p1:_position>
                    <d5p1:_writable>true</d5p1:_writable>
                </d4p1:DataStream>
            </GetUserDataResult>
        </GetUserDataResponse>
    </s:Body>
</s:Envelope>

```

## 4.2 Retrieving Multiple User Profiles by Record Identifier

To retrieve multiple user profiles by record identifier, consider the following WSDL message constructed by the protocol client to call **GetUserData**.

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">

```

```

<s:Header>
  <a:Action
s:mustUnderstand="1">http://Microsoft.Office.Server.UserProfiles/GetUserData</a:Action>
  <a:MessageID>urn:uuid:d0d7a499-931c-4e16-8407-6ea7f43b2a4a</a:MessageID>
  <a:ReplyTo>
    <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
  </a:ReplyTo>
  <a:To
s:mustUnderstand="1">net.tcp://mymachine:32845/827f1817ac334b5da4476147b9ee5a8f/ProfileDBCacheService.svc</a:To>
    <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
      ...
    </o:Security>
  </s:Header>
<s:Body>
  <GetUserData xmlns="http://tempuri.org/">
    <searchCriteria xmlns:b="http://Microsoft/Office/Server/UserProfiles"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
      <b:AllowAlternateAccountName>true</b:AllowAlternateAccountName>
      <b:CorrelationID>a6b889ea-932a-4447-8d73-ce928cc912ad</b:CorrelationID>
      <b>EmailCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b>EmailCollection>
      <b:NTNameCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:NTNameCollection>
      <b:PartitionID>0c37852b-34d0-418e-91c6-2ac25af4be5b</b:PartitionID>
      <b:RecordIDCollection xmlns:c="http://www.w3.org/2001/XMLSchema">
        <c:long>1</c:long>
        <c:long>2</c:long>
      </b:RecordIDCollection>
      <b:SIDCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:SIDCollection>
      <b:SearchColumn>RecordID</b:SearchColumn>
      <b:UserIDCollection i:nil="true"
xmlns:c="http://schemas.microsoft.com/2003/10/Serialization/Arrays"></b:UserIDCollection>
    </searchCriteria>
  </GetUserData>
</s:Body>
</s:Envelope>

```

The protocol server responds with the following WSDL message which contains the requested data:

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing" xmlns:u="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <s:Header>
    <a:Action
s:mustUnderstand="1">http://tempuri.org/IProfileDBCacheService/GetUserDataResponse</a:Action>
    <a:RelatesTo>urn:uuid:d0d7a499-931c-4e16-8407-6ea7f43b2a4a</a:RelatesTo>
    <a:To s:mustUnderstand="1">http://www.w3.org/2005/08/addressing/anonymous</a:To>
    <o:Security s:mustUnderstand="1" xmlns:o="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">
      ...
    </o:Security>
  </s:Header>
  <s:Body>
    <GetUserDataResponse xmlns="http://tempuri.org/">
      <GetUserDataResult xmlns:b="http://Microsoft/Office/Server/UserProfiles"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

```

```
<d4p1:DataStream xmlns:d5p1="http://schemas.datacontract.org/2004/07/System.IO">
  <__identity i:nil="true"
xmlns="http://schemas.datacontract.org/2004/07/System"></__identity>
  <d5p1:_buffer></d5p1:_buffer>
  <d5p1:_capacity>2054</d5p1:_capacity>
  <d5p1:_expandable>true</d5p1:_expandable>
  <d5p1:_exposable>true</d5p1:_exposable>
  <d5p1:_isOpen>true</d5p1:_isOpen>
  <d5p1:_length>1205</d5p1:_length>
  <d5p1:_origin>0</d5p1:_origin>
  <d5p1:_position>0</d5p1:_position>
  <d5p1:_writable>true</d5p1:_writable>
</d4p1:DataStream>
</GetUserDataResult>
</GetUserDataResponse>
</s:Body>
</s:Envelope>
```

## 5 Security

### 5.1 Security Considerations for Implementers

There are no security considerations that are specific to this protocol. General security considerations pertaining to [RFC2822](#) apply.

This protocol does not introduce any additional security considerations beyond those that apply to its underlying protocols.

### 5.2 Index of Security Parameters

None.

## 6 Appendix A: Full WSDL

For ease of implementation, the full WSDL is provided in this appendix.

```
<?xml version="1.0"?>
<wsdl:definitions xmlns:tns="http://tempuri.org/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata"
xmlns:xs="http://www.w3.org/2001/XMLSchema" name="ProfileDBCachService"
targetNamespace="http://tempuri.org/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xs:schema xmlns:tns2="http://tempuri.org/Imports"
targetNamespace="http://tempuri.org/Imports">
      <xs:import namespace="http://tempuri.org/" />
      <xs:import namespace="http://Microsoft/Office/Server/UserProfiles/" />
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
      <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache
"/>
      <xs:import namespace="http://schemas.datacontract.org/2004/07/System.IO"/>
      <xs:import namespace="http://schemas.datacontract.org/2004/07/System"/>
    </xs:schema>
  </wsdl:types>
  <wsdl:message name="IProfileDBCachService_GetUserData_InputMessage">
    <wsdl:part name="parameters" element="tns:GetUserData"/>
  </wsdl:message>
  <wsdl:message name="IProfileDBCachService_GetUserData_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetUserDataResponse"/>
  </wsdl:message>
  <wsdl:message
name="IProfileDBCachService_GetUserData_ConfigurationFaultFault_FaultMessage">
    <wsdl:part xmlns:q1="http://Microsoft/Office/Server/UserProfiles" name="detail"
element="q1:ConfigurationFault"/>
  </wsdl:message>
  <wsdl:message name="IProfileDBCachService_GetUserData_InputFaultFault_FaultMessage">
    <wsdl:part xmlns:q1="http://Microsoft/Office/Server/UserProfiles" name="detail"
element="q1:InputFault"/>
  </wsdl:message>
  <wsdl:message name="IProfileDBCachService_GetUserData_UserProfileFaultFault_FaultMessage">
    <wsdl:part xmlns:q1="http://Microsoft/Office/Server/UserProfiles" name="detail"
element="q1:UserProfileFault"/>
  </wsdl:message>
  <wsdl:message name="IProfileDBCachService_GetUserData_UnknownFaultFault_FaultMessage">
    <wsdl:part xmlns:q1="http://Microsoft/Office/Server/UserProfiles" name="detail"
element="q1:UnknownFault"/>
  </wsdl:message>
  <wsdl:portType name="IProfileDBCachService">
    <wsdl:operation name="GetUserData">
      <wsdl:input wsam:Action="http://Microsoft.Office.Server.UserProfiles/GetUserData"
message="tns:IProfileDBCachService_GetUserData_InputMessage"/>
      <wsdl:output
wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataResponse"
message="tns:IProfileDBCachService_GetUserData_OutputMessage"/>
      <wsdl:fault
wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataConfigurationFaultFault"
name="ConfigurationFaultFault"
message="tns:IProfileDBCachService_GetUserData_ConfigurationFaultFault_FaultMessage"/>
      <wsdl:fault
wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataInputFaultFault"
```



```

name="InputFaultFault"
message="tns:IProfileDBCachService_GetUserData_InputFaultFault_FaultMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataUserProfileFaultFault"
name="UserProfileFaultFault"
message="tns:IProfileDBCachService_GetUserData_UserProfileFaultFault_FaultMessage"/>
  <wsdl:fault
wsam:Action="http://tempuri.org/IProfileDBCachService/GetUserDataUnknownFaultFault"
name="UnknownFaultFault"
message="tns:IProfileDBCachService_GetUserData_UnknownFaultFault_FaultMessage"/>
  </wsdl:operation>
</wsdl:portType>
  <wsdl:binding name="CustomBinding_IProfileDBCachService"
type="tns:IProfileDBCachService">
  <soap:binding transport="http://schemas.xmlsoap.org/soap/http"/>
  <wsdl:operation name="GetUserData">
  <soap:operation soapAction="http://Microsoft.Office.Server.UserProfiles/GetUserData"
style="document"/>
  <wsdl:input>
  <soap:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
  <soap:body use="literal"/>
  </wsdl:output>
  <wsdl:fault name="ConfigurationFaultFault">
  <soap:fault use="literal" name="ConfigurationFaultFault" namespace=""/>
  </wsdl:fault>
  <wsdl:fault name="InputFaultFault">
  <soap:fault use="literal" name="InputFaultFault" namespace=""/>
  </wsdl:fault>
  <wsdl:fault name="UserProfileFaultFault">
  <soap:fault use="literal" name="UserProfileFaultFault" namespace=""/>
  </wsdl:fault>
  <wsdl:fault name="UnknownFaultFault">
  <soap:fault use="literal" name="UnknownFaultFault" namespace=""/>
  </wsdl:fault>
  </wsdl:operation>
</wsdl:binding>
</wsdl:definitions>

```

## 7 Appendix B: Full XML Schema

For ease of implementation, the following sections provide the full XML schema for this protocol.

Schema name	Prefix	Section
<a href="http://tempuri.org/">http://tempuri.org/</a>	tns	<a href="#">7.1</a>
<a href="http://schemas.microsoft.com/2003/10/Serialization/">http://schemas.microsoft.com/2003/10/Serialization/</a>	tns1	<a href="#">7.2</a>
<a href="http://Microsoft/Office/Server/UserProfiles">http://Microsoft/Office/Server/UserProfiles</a>	q1	<a href="#">7.3</a>
<a href="http://schemas.microsoft.com/2003/10/Serialization/Arrays">http://schemas.microsoft.com/2003/10/Serialization/Arrays</a>	q3	<a href="#">7.4</a>
<a href="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache">http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache</a>	q2	<a href="#">7.5</a>
<a href="http://schemas.datacontract.org/2004/07/System.IO">http://schemas.datacontract.org/2004/07/System.IO</a>	q4	<a href="#">7.6</a>
<a href="http://schemas.datacontract.org/2004/07/System">http://schemas.datacontract.org/2004/07/System</a>	q5	<a href="#">7.7</a>

### 7.1 <http://tempuri.org/> Schema

```
<?xml version="1.0"?>
<xs:schema elementFormDefault="qualified" targetNamespace="http://tempuri.org/"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://Microsoft/Office/Server/UserProfiles"/>
  <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache"
"/>
  <xs:element name="GetUserData">
    <xs:complexType>
      <xs:sequence>
        <xs:element xmlns:q1="http://Microsoft/Office/Server/UserProfiles" minOccurs="0"
name="searchCriteria" nillable="true" type="q1:UserSearchCriteria"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetUserDataResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache"
minOccurs="0" name="GetUserDataResult" nillable="true"
type="q2:StreamedDataOfArrayOfUserDatajHCugpoN"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

### 7.2 <http://schemas.microsoft.com/2003/10/Serialization/> Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:tns1="http://schemas.microsoft.com/2003/10/Serialization/"
attributeFormDefault="qualified" elementFormDefault="qualified">
```

```

targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
  <xs:element name="anyType" nillable="true" type="xs:anyType"/>
  <xs:element name="anyURI" nillable="true" type="xs:anyURI"/>
  <xs:element name="base64Binary" nillable="true" type="xs:base64Binary"/>
  <xs:element name="boolean" nillable="true" type="xs:boolean"/>
  <xs:element name="byte" nillable="true" type="xs:byte"/>
  <xs:element name="dateTime" nillable="true" type="xs:dateTime"/>
  <xs:element name="decimal" nillable="true" type="xs:decimal"/>
  <xs:element name="double" nillable="true" type="xs:double"/>
  <xs:element name="float" nillable="true" type="xs:float"/>
  <xs:element name="int" nillable="true" type="xs:int"/>
  <xs:element name="long" nillable="true" type="xs:long"/>
  <xs:element name="QName" nillable="true" type="xs:QName"/>
  <xs:element name="short" nillable="true" type="xs:short"/>
  <xs:element name="string" nillable="true" type="xs:string"/>
  <xs:element name="unsignedByte" nillable="true" type="xs:unsignedByte"/>
  <xs:element name="unsignedInt" nillable="true" type="xs:unsignedInt"/>
  <xs:element name="unsignedLong" nillable="true" type="xs:unsignedLong"/>
  <xs:element name="unsignedShort" nillable="true" type="xs:unsignedShort"/>
  <xs:element name="char" nillable="true" type="tns1:char"/>
  <xs:simpleType name="char">
    <xs:restriction base="xs:int"/>
  </xs:simpleType>
  <xs:element name="duration" nillable="true" type="tns1:duration"/>
  <xs:simpleType name="duration">
    <xs:restriction base="xs:duration">
      <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?"/>
      <xs:minInclusive value="-P10675199DT2H48M5.4775808S"/>
      <xs:maxInclusive value="P10675199DT2H48M5.4775807S"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="guid" nillable="true" type="tns1:guid"/>
  <xs:simpleType name="guid">
    <xs:restriction base="xs:string">
      <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{12}"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:attribute name="FactoryType" type="xs:QName"/>
  <xs:attribute name="Id" type="xs:ID"/>
  <xs:attribute name="Ref" type="xs:IDREF"/>
</xs:schema>

```

### 7.3 http://Microsoft/Office/Server/UserProfiles Schema

```

<?xml version="1.0"?>
<xs:schema xmlns:tns1="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:q1="http://Microsoft/Office/Server/UserProfiles" elementFormDefault="qualified"
targetNamespace="http://Microsoft/Office/Server/UserProfiles"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays" />
  <xs:complexType name="UserSearchCriteria">
    <xs:sequence>
      <xs:element minOccurs="0" name="AllowAlternateAccountName" type="xs:boolean"/>
      <xs:element minOccurs="0" name="CorrelationID" type="tns1:guid"/>
      <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="EmailCollection" nillable="true" type="q3:ArrayOfstring"/>

```

```

    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="NTNameCollection" nillable="true" type="q3:ArrayOfstring"/>
    <xs:element minOccurs="0" name="PartitionID" type="tnsl:guid"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="RecordIDCollection" nillable="true" type="q3:ArrayOflong"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="SIDCollection" nillable="true" type="q3:ArrayOfbase64Binary"/>
    <xs:element minOccurs="0" name="SearchColumn" nillable="true" type="xs:string"/>
    <xs:element xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
minOccurs="0" name="UserIDCollection" nillable="true" type="q3:ArrayOfguid"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="UserSearchCriteria" nillable="true" type="q1:UserSearchCriteria"/>
<xs:complexType name="ConfigurationFault">
  <xs:complexContent mixed="false">
    <xs:extension base="q1:UserProfileFault">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ConfigurationFault" nillable="true" type="q1:ConfigurationFault"/>
<xs:complexType name="UserProfileFault">
  <xs:sequence>
    <xs:element minOccurs="0" name="FailureDetail" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="FaultCode" type="q1:FaultCodes"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="UserProfileFault" nillable="true" type="q1:UserProfileFault"/>
<xs:simpleType name="FaultCodes">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UnknownError"/>
    <xs:enumeration value="InvalidInput"/>
    <xs:enumeration value="InvalidConfiguration"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="FaultCodes" nillable="true" type="q1:FaultCodes"/>
<xs:complexType name="InputFault">
  <xs:complexContent mixed="false">
    <xs:extension base="q1:UserProfileFault">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="InputFault" nillable="true" type="q1:InputFault"/>
<xs:complexType name="UnknownFault">
  <xs:complexContent mixed="false">
    <xs:extension base="q1:UserProfileFault">
      <xs:sequence/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="UnknownFault" nillable="true" type="q1:UnknownFault"/>
<xs:complexType name="ArrayOfUserData">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="UserData" nillable="true"
type="q1:UserData"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ArrayOfUserData" nillable="true" type="q1:ArrayOfUserData"/>

```

```

<xs:complexType name="UserData">
  <xs:sequence>
    <xs:element minOccurs="0" name="Department" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Email" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LastUpdate" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="MasterRecordID" type="xs:long"/>
    <xs:element minOccurs="0" name="NTName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="PartitionID" type="tns1:guid"/>
    <xs:element minOccurs="0" name="PictureUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="PreferredName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ProfileSubtypeID" type="xs:int"/>
    <xs:element minOccurs="0" name="RecordID" type="xs:long"/>
    <xs:element minOccurs="0" name="SID" nillable="true" type="xs:base64Binary"/>
    <xs:element minOccurs="0" name="SipAddress" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Title" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="UserID" type="tns1:guid"/>
    <xs:element minOccurs="0" name="PersonalSpace" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="FeedIdentifier" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="FeedPrivacyActivity" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="IsPeopleListPublic" nillable="true" type="xs:boolean"/>
    <xs:element minOccurs="0" name="EmailOptin" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="StatusNote" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="UserData" nillable="true" type="q1:UserData"/>
</xs:schema>

```

## 7.4 <http://schemas.microsoft.com/2003/10/Serialization/Arrays> Schema

```

<?xml version="1.0"?>
<xs:schema xmlns:q3="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:tns1="http://schemas.microsoft.com/2003/10/Serialization/"
elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
  <xs:complexType name="ArrayOfstring">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfstring" nillable="true" type="q3:ArrayOfstring"/>
  <xs:complexType name="ArrayOflong">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="long" type="xs:long"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOflong" nillable="true" type="q3:ArrayOflong"/>
  <xs:complexType name="ArrayOfbase64Binary">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="base64Binary" nillable="true"
type="xs:base64Binary"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfbase64Binary" nillable="true" type="q3:ArrayOfbase64Binary"/>
  <xs:complexType name="ArrayOfguid">
    <xs:sequence>

```

```

    <xs:element minOccurs="0" maxOccurs="unbounded" name="guid" type="tns1:guid"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ArrayOfguid" nillable="true" type="q3:ArrayOfguid"/>
</xs:schema>

```

## 7.5

### <http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache> Schema

```

<?xml version="1.0"?>
<xs:schema
  xmlns:q2="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache"
  elementFormDefault="qualified"
  targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.UserProfiles.Cache"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System.IO"/>
  <xs:complexType name="StreamedDataOfArrayOfUserDatajHCugpoN">
    <xs:sequence>
      <xs:element xmlns:q4="http://schemas.datacontract.org/2004/07/System.IO" minOccurs="0"
        name="DataStream" nillable="true" type="q4:MemoryStream"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="StreamedDataOfArrayOfUserDatajHCugpoN" nillable="true"
    type="q2:StreamedDataOfArrayOfUserDatajHCugpoN"/>
</xs:schema>

```

## 7.6 <http://schemas.datacontract.org/2004/07/System.IO> Schema

```

<?xml version="1.0"?>
<xs:schema xmlns:q4="http://schemas.datacontract.org/2004/07/System.IO"
  elementFormDefault="qualified"
  targetNamespace="http://schemas.datacontract.org/2004/07/System.IO"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.datacontract.org/2004/07/System"/>
  <xs:complexType name="MemoryStream">
    <xs:complexContent mixed="false">
      <xs:extension base="q4:Stream">
        <xs:sequence>
          <xs:element name="_buffer" nillable="true" type="xs:base64Binary"/>
          <xs:element name="_capacity" type="xs:int"/>
          <xs:element name="_expandable" type="xs:boolean"/>
          <xs:element name="_exposable" type="xs:boolean"/>
          <xs:element name="_isOpen" type="xs:boolean"/>
          <xs:element name="_length" type="xs:int"/>
          <xs:element name="_origin" type="xs:int"/>
          <xs:element name="_position" type="xs:int"/>
          <xs:element name="_writable" type="xs:boolean"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="MemoryStream" nillable="true" type="q4:MemoryStream"/>
  <xs:complexType name="Stream">
    <xs:complexContent mixed="false">
      <xs:extension xmlns:q5="http://schemas.datacontract.org/2004/07/System"
        base="q5:MarshalByRefObject">

```

```
        <xs:sequence/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="Stream" nillable="true" type="q4:Stream"/>
</xs:schema>
```

## 7.7 <http://schemas.datacontract.org/2004/07/System> Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:q5="http://schemas.datacontract.org/2004/07/System"
  elementFormDefault="qualified"
  targetNamespace="http://schemas.datacontract.org/2004/07/System"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType name="MarshalByRefObject">
    <xs:sequence>
      <xs:element name="__identity" nillable="true" type="xs:anyType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="MarshalByRefObject" nillable="true" type="q5:MarshalByRefObject"/>
</xs:schema>
```

## 8 Appendix C: Product Behavior

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

- Microsoft® SharePoint® Server 2010
- Microsoft® SharePoint® Server 2013

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.



## 9 Change Tracking

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

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

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

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

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

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

The revision class **No change** means that no new technical or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

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

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

- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- Obsolete document removed.

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

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

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

The changes made to this document are listed in the following table. For more information, please contact [protocol@microsoft.com](mailto:protocol@microsoft.com).

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
<a href="#">1.3 Overview</a>	Changed the name from 'Protocol Overview (Synopsis)' to read 'Overview'.	N	Content updated for template compliance.
<a href="#">3.1.4.1.3.7 MemoryStream</a>	Added definition number for term "stream" throughout section.	N	New content added.

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