[MS-UPSCHNG]:
User Profile Change Log Stored Procedure Protocol Specification

Revision Summary

Date	Revision History	Revision Class	Comments
04/04/2008	0.1		Initial Availability
06/27/2008	1.0	Major	Revised and edited the technical content
12/12/2008	1.01	Editorial	Revised and edited the technical content
03/18/2009	1.02	Editorial	Revised and edited the technical content
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03/31/2010	2.01	Editorial	Revised and edited the technical content
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06/29/2010	2.04	Editorial	Changed language and formatting in the technical content.
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07/16/2012	2.5	No change	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1 Introduction

This document provides specific details of the User Profile Change Log Stored Procedure protocol. This protocol allows multiple ways for the protocol client to interact with the **user profile change events** on the protocol server.

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]:

GUID
Security Support Provider Interface (SSPI)

The following terms are defined in [MS-OFCGLOS]:

blog
change log
change token
colleague
datetime
display name
distribution list
e-mail address
event
front-end Web server
item
membership
multivalue property
organization
personal site
result set
return code
Session Initiation Protocol (SIP) address
single-value property
stored procedure
Structured Query Language (SQL)
Transact-Structured Query Language (T-SQL)
Uniform Resource Locator (URL)
user profile
user profile change event
user profile privacy policy

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. 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.

[Iseminger] Microsoft Corporation, "SQL Server 2000 Architecture and XML/Internet Support", Volume 1 of Microsoft SQL Server 2000 Reference Library, Microsoft Press, 2001, ISBN 0-7356-1280-3, http://www.microsoft.com/mspress/books/5001.aspx

[MSDN-TSQL-Ref] Microsoft Corporation, "Transact-SQL Reference", http://msdn.microsoft.com/en-us/library/ms189826(SQL.90).aspx

[MS-TDS] Microsoft Corporation, "Tabular Data Stream Protocol Specification".

[MS-UPSPROF] Microsoft Corporation, "User Profile Stored Procedures Protocol Specification".

[MS-WSSFO] Microsoft Corporation, "Windows SharePoint Services (WSS): File Operations Database Communications 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

[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".

1.3 Protocol Overview (Synopsis)

This protocol allows clients to add, or delete user profile change events from a log on the protocol server, as well as retrieve those user profile change events using pre-defined criteria such as events which have happened after a specified time or with a specific user.

The following diagram shows the data flow between the protocol client and the protocol server.

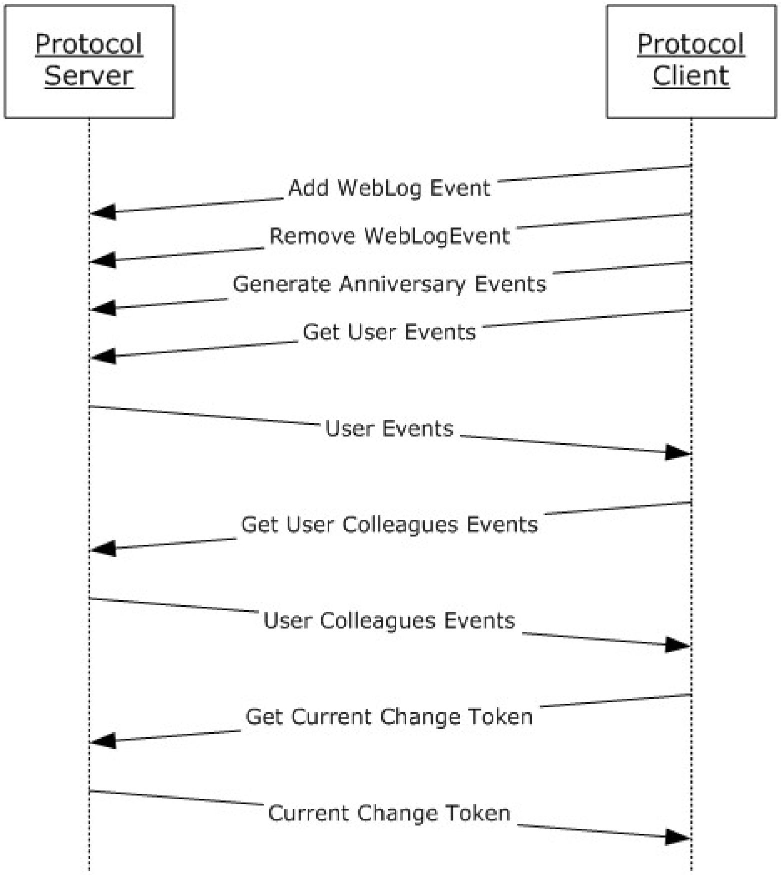

Figure 1: User Profile Change Log protocol data flow

The protocol client can ask the protocol server to add or remove a **blog** post user profile change event, or the protocol client **can** ask the protocol server to generate all user profile change events with an Object Type of "Anniversary" (see section 2.2.2.3).

The protocol client can request the protocol server to provide all user profile change events for a particular user or for all of the **colleague** properties for a specified user. In another possible operation, the protocol client can request the protocol server to provide the **change token** for the last read user profile change event.

1.4 Relationship to Other Protocols

The following diagram shows the transport stack for this protocol and the relationship to other protocols:

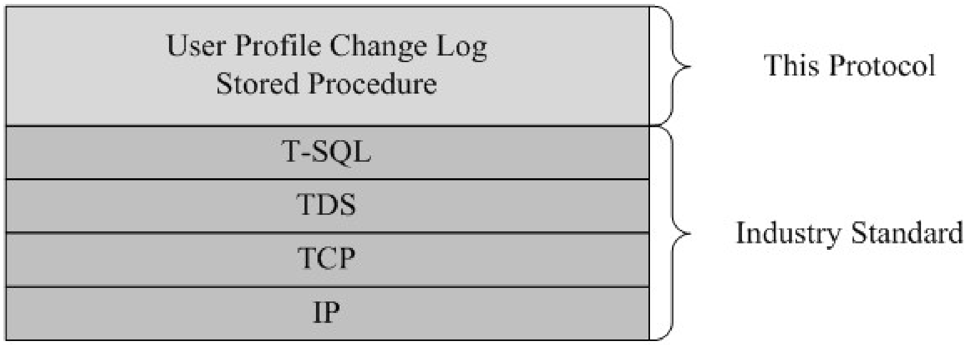

Figure 2: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

None.

1.6 Applicability Statement

This protocol is used to interact with a **change log** of user **events** on protocol server.

1.7 Versioning and Capability Negotiation

Versions of the data structures or **stored procedures** in the database need to be the same as expected by the **front-end Web server**. If the stored procedures do not provide the calling parameters or return values as expected, the results of the call are indeterminate.

The version negotiation process for this protocol is identical to the process defined in [MS-WSSFO], section 1.7.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

[MS-TDS] specifies the transport protocol used to call the stored procedures, query **SQL** views or SQL tables, get **return codes**, and return **result sets.**

2.2 Common Data Types

The following are common data types used in conjunction with this protocol.

2.2.1 Simple Data Types and Enumerations

2.2.2 Simple Data Types

2.2.2.1 Privacy Policy Type

A 32-bit signed integer. The only valid values of a **user profile privacy policy** type for a specified **item** are as follows.

Value	Meaning
1	The items that have this privacy policy setting are mandatory.
2	The items that have this privacy policy setting are enabled.
4	The items that have this privacy policy were opted to be disabled.
8	The items that have this privacy policy are disabled.

2.2.2.2 Change Type

A 32-bit signed integer. Change Type MUST be composed doing a BINARY OR of 1 or more values from the following table.

Value	Type	Meaning
1	Add	An object has been added to the **user profile.**
2	Modify	An existing object has been modified
4	Delete	An existing object has been deleted.
8	Metadata	The metadata of the object has been modified

2.2.2.3 Object Type

A 32-bit signed integer.

For a stored procedure input parameter, the Object Type value MUST be composed by using a binary OR of one or more values from the following table.

For stored procedure result sets, the Object Type value MUST be one and only one of the values in the following table.

Value	Type	Meaning
1	SingleValueProperty	A **single-value property** change for a user profile.
2	MultiValueProperty	A **multivalue property** change for a user profile.
4	Anniversary	An anniversary property change for a user profile.
8	DLMembership	A **distribution list membership** change for a user profile.
16	SiteMembership	A site membership change.
32	QuickLink	A link item change.
64	Colleague	Colleague relationship addition, deletion or update.
128	PersonalizationSite	Personalization site item change.
256	UserProfile	User profile change
512	WebLog	User profile blog post change

2.2.2.4 Value

The value of a user profile change entry defined by the Object Type (Section 2.2.2.3) and MUST be one of the following representations:

Object Type	Value Representation
Anniversary	T-SQL nvarchar value containing the anniversary UTC date and time, and uses the following format: "yyyy-MM-dd HH:mm:ss".
DLMembership	T-SQL nvarchar value that uniquely identifies the distribution list.
SiteMembership	T-SQL nvarchar value containing the site **GUID**.
QuickLink	T-SQL nvarchar value containing the **Uniform Resource Locator (URL)** for the link.
Colleague	T-SQL nvarchar value containing the user name of the colleague.
PersonalizationSite	T-SQL nvarchar value containing a link for the specified **personal site**.
UserProfile	T-SQL nvarchar value containing the name of the user whose user profile was changed.
WebLog	MUST be NULL.
SingleValueProperty or MultiValueProperty	Any of the following, depending on the property type: ▪ Boolean value represented as a string containing 0 or 1. ▪ T-SQL nvarchar value. ▪ UTC Date – encoded as "yyyy-MM-dd HH:mm:ss". ▪ Float –in single precision SQL-defined floating point number encoded as a string in the current culture.

Object Type	Value Representation
	▪ int32 – 32 bit signed integer. ▪ int64 – 64 bit signed integer.

2.2.3 Bit Fields and Flag Structures

None.

2.2.4 Binary Structures

None.

2.2.5 Result Sets

None.

2.2.6 Tables and Views

None.

2.2.7 XML Structures

The syntax of the definitions in this section use XML Schema as defined in [XMLSCHEMA1] and [XMLSCHEMA2].

2.2.7.1 Namespaces

None.

2.2.7.2 Simple Types

This specification does not define any common XML Schema simple type definitions.

2.2.7.3 Complex Types

XML Schema complex type definitions that are specific to a particular operation are described with each operation.

2.2.7.3.1 WebLogPostDescription

The **WebLogPostDescription** type contains data about a blog post as specified as follows.

Usage Scenario

```
<WebLog>
   <Title>value</Title>
   <Permalink>value</Permalink>
</WebLog>
```

2.2.7.3.1.1 WebLogPostDescription Schema

```
<s:element name="WebLog">
   <s:complexType>
      <s:sequence>
         <s:element name="Title" type="s:string" />
         <s:element name="Permalink" type="s:string" />
      </s:sequence>
   </s:complexType>
</s:element>
```

Title: This element specifies the name of the blog post as a string.

Permalink: This element specifies a URL which can be used to access the blog.

2.2.7.4 Elements

None.

2.2.7.5 Attributes

None.

2.2.7.6 Groups

None.

2.2.7.7 Attribute Groups

None.

3 Protocol Details

3.1 User Profile Change Log Server Details

3.1.1 Abstract Data Model

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

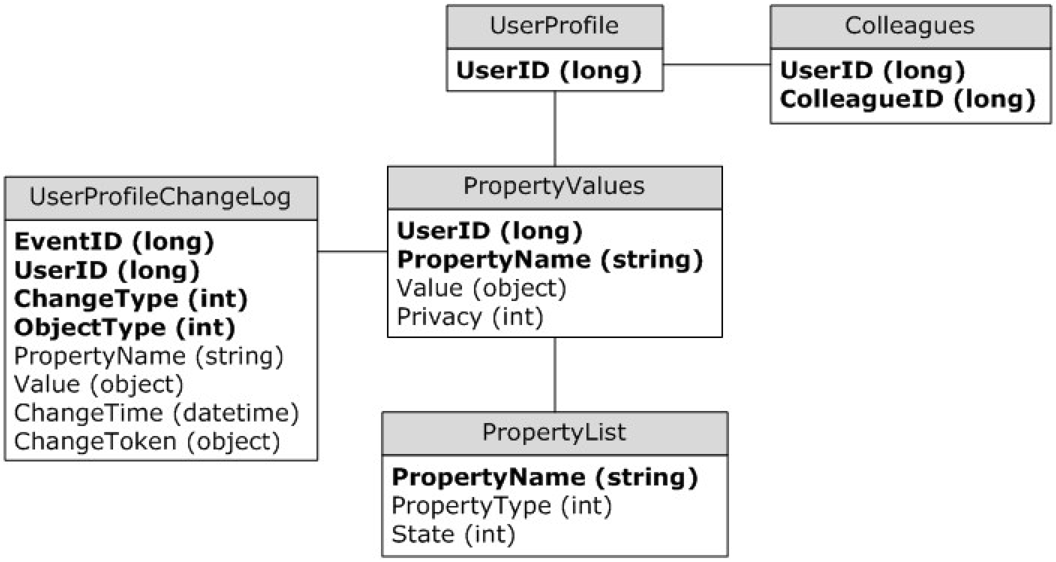

Figure 3: Abstract data model

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

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

- **UserID:** A unique identifier for a user.

Colleagues Table: A collection of entries, where each one corresponds to a colleague of a user.

- **UserID:** The unique identifier of the user.
- **ColleagueID:** The unique identifier of the user colleague.

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 is the privacy policy 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 the user profile change log entry was created

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Higher-Layer Triggered Events

None.

3.1.5 Message Processing Events and Sequencing Rules

The **Transact-Structured Query Language (T-SQL)** syntax for each stored procedure and result set**,** and the variables they are composed of, is defined in the [MSDN-TSQL-Ref] protocol. In the T-SQL syntax, the variable name is followed by the type of the variable which can optionally have a length value in brackets and can optionally have a default value indicated by an equals sign followed by the default value. Unless otherwise specified, all stored procedures defined in this section are located in the Content database.

Any column in the result sets that does not have a defined name in the current implementation. is designated curly braces in the form {*name*}. This does not affect the operation of the result set, as the ordinal position of any column with no defined name is expected by the front-end Web server.

3.1.5.1 profile_AddWebLogEvent

The **profile_AddWebLogEvent** stored procedure is called to create a user profile change event describing an added blog post. The created user profile change event MUST have a user profile Change Type of "Add" and an Object Type of "WebLog".

profile_AddWebLogEvent is defined using T-SQL syntax as follows:

```
PROCEDURE profile_AddWebLogEvent(
    @RecordId                   bigint,
    @Data                       sql_variant
);
```

@RecordId: The record identifier that identifies the user who added the blog post. This parameter MUST not be NULL.

@Data: A **WebLogPostDescription** (Section 2.2.7.3.1) which specifies the blog post corresponding to the user profile change event to be created. This parameter MUST be specified.

Return Code Values: profile_AddWebLogEvent MUST return 0.

Result Sets: profile_AddWebLogEvent MUST NOT return any result set.

3.1.5.2 profile_RemoveWebLogEvent

The **profile_RemoveWebLogEvent** stored procedure is called to remove a user profile change event that has a user profile Change Type of "Add" and an Object Type of "WebLog".

profile_RemoveWebLogEvent is defined using T-SQL syntax as follows:

```
PROCEDURE profile_RemoveWebLogEvent (
    @RecordId                   bigint,
    @Data                       sql_variant
);
```

@RecordId: The Record Identifier that identifies the user who created the blog post. This parameter MUST not be NULL.

@Data: A **WebLogPostDescription** (Section 2.2.7.3.1) specifying the blog post corresponding to the user profile change event to be removed. This parameter MUST be specified.

Return Code Values: profile_RemoveWebLogEvent MUST return 0.

Result Sets: profile_RemoveWebLogEvent MUST NOT return any result set.

3.1.5.3 profile_GetUserEvents

The **profile_GetUserEvents** stored procedure is called to retrieve user profile change events.

profile_GetUserEvents is defined using T-SQL syntax as follows:

```
PROCEDURE profile_GetUserEvents (
    @RecordId                   bigint = NULL,
    @ViewerRights               int,
    @MinEventId                 bigint = NULL,
    @MinEventTime               datetime = NULL,
    @ChangeTypeMask             int,
    @ObjectTypeMask             int
);
```

@RecordId: A record identifier of a user, or NULL. If *@RecordId* is specified, **profile_GetUserEvents** MUST return the user profile change events for the user identified. If *@RecordId* is NULL, then **profile_GetUserEvents** MUST return all available user profile change events for existing users.

@ViewerRights: A bitmask specifiying the privacy policy type that MUST be satisfied by the returned user profile change events. Each bit corresponds to a privacy level. If *@RecordId* is not NULL, then this value MUST be specified.

Value	Description
1	All users are allowed to access the resource.
2	The only users allowed to access the resource are the owner of the resource and the owner's colleagues.
4	The only users allowed to access the resource are the owner of the resource and the owner's workgroup colleagues.
8	The only two users allowed to access the resource are the owner of the resource and the manager of the owner.
16	The only user allowed to access the resource is the owner of the resource.

For example, 0x0C signifies the Manager and **organization** Privacy Policy Type values. This parameter SHOULD be at least 0x01 (Public).

@MinEventId: A unique identifier for user profile change events. If *@MinEventId* is not NULL then all user profile change events with identifiers greater than this value MUST be returned. If *@MinEventId* is NULL then *@MinEventTime* MUST NOT be NULL.

@MinEventTime: A value representing the date and time for which all returned user profile change events MUST be more recent. If NULL then it MUST return all available user profile change events. If *@MinEventId* is NULL then *@MinEventTime* MUST NOT be NULL. If *@MinEventId* is specified then *@MinEventTime* MUST be ignored.

@ChangeTypeMask: A Change Type value that specifies the user profile Change Types of the user profile change events that MUST be returned.

@ObjectTypeMask:An Object Type value that specifies the Object Type of the user profile change events that MUST be returned.

Return Code Values: profile_GetUserEvents MUST return 0.

Result Sets: profile_GetUserEvents MUST return two of the following three result sets:

- profile_GetUserEvents_LastEvent
- profile_GetUserEvents_Event_Log_1
- profile_GetUserEvents_Event_Log_2

If *@RecordId* is NULL then **profile_GetUserEvents** MUST return the profile_GetUserEvents_LastEvent and profile_GetUserEvents_Event_Log_1 result sets.

If *@RecordId* is not NULL then **profile_GetUserEvents** MUST return the profile_GetUserEvents_LastEvent and profile_GetUserEvents_Event_Log_2 result sets.

3.1.5.3.1 profile_GetUserEvents_Last_Event Result Set

The profile_GetUserEvents_Last_Event result set MUST contain one record identifying the most recent user profile change event prior to the specified *@MinEventTime* or *@MinEventId* parameter.

The profile_GetUserEvents_Last_Event result set is defined using T-SQL syntax as follows:

```
EventTime                          datetime,
EventId                            bigint;
```

EventTime: The date and time when the user profile change event occurred.

EventId: Unique identifier for the user profile change event.

3.1.5.3.2 profile_GetUserEvents_Event_Log_1 Result Set

The profile_GetUserEvents_Event_Log_1 result set returns the user profile change events for all existing users up to a maximum of 1000 records ordered from the earliest to the most recent.

The profile_GetUserEvents_Event_Log_1 result set is defined using T-SQL syntax as follows:

```
EventId                             bigint,
RecordId                            bigint,
ChangeType                          int,
EventTime                           datetime,
OldValue                            bigint,
NewValueData                        sql_variant,
NewValueChecksum                    int,
ObjectType                          int,
ItemSecurity                        int,
ChangedLinkId                       bigint,
ChangedColleagueId                  bigint,
ChangedMemberGroupId                bigint,
ChangedPropertyId                   bigint,
ChangedSourceId                     uniqueidentifier,
UserId                              uniqueidentifier,
NTName                              nvarchar(400),
Email                               nvarchar(256),
SipAddress                          nvarchar(250),
PreferredName                       nvarchar(256);
```

EventId: Unique identifier for the user profile change event.

RecordId: Identifier for the user that created the user profile change event.

ChangeType: Numeric value representing the user profile Change Type of the user profile event.

EventTime: Date and time when the user profile change event occurred.

OldValue: This value MUST be NULL.

NewValueData: The current value.

NewValueChecksum: Numeric value as returned by the T-SQL CHECKSUM function of the actual value.

ObjectType: The Object Type of the user profile event.

ItemSecurity: The Privacy Policy Type value. This value MUST NOT be NULL if the Object Type is either of the values QuickLink or PersonalizationSite.

ChangedLinkId: Unique identifier for the changed link. This value MUST NOT be NULL if the Object Type is either of the values QuickLink or PersonalizationSite.

ChangedColleagueId: The record identifier of the Colleague property that has changed. This value MUST NOT be NULL if the Object Type is the value Colleague.

ChangedMemberGroupId: The record identifier of a Member Group which corresponds to the user's membership which changed. This value MUST NOT be NULL if the Object Type is either of the values DLMembership or SiteMembership.

ChangedPropertyId: The unique identifier for user profile property that has changed. This value MUST NOT be NULL if the Object Type is either of the values SingleValueProperty or MultiValueProperty.

ChangedSourceId: GUID for the Privacy Policy record. This value MUST NOT be NULL for all Object Type values, with the exception of WebLog and UserProfile.

UserId: Record identifier for the user with whom the event is associated. This value MUST be NULL if *@RecordId* is not NULL.

NTName: User name for the user with whom the event is associated. This value MUST be NULL if *@RecordId* is not NULL.

Email: An **e-mail address** for the user with whom the event is associated. This value MUST be NULL if *@RecordId* is not NULL.

SipAddress: The **Session Initiation Protocol (SIP) address** for the user with whom the event is associated. This value MUST be NULL if *@RecordId* is not NULL.

PreferredName: **Display name** for the user with whom the event is associated. This value MUST be NULL if *@RecordId* is not NULL.

3.1.5.3.3 profile_GetUserEvents_Event_Log_2 Result Set

The profile_GetUserEvents_Event_Log_2 result set returns the user profile change events for the specified user, up to a maximum of 1000 records ordered from the earliest to the latest.

The profile_GetUserEvents_Event_Log_2 result set is defined using T-SQL syntax as follows:

```
      EventId                                   bigint,
      RecordId                                  bigint,
      ChangeType                                int,
      EventTime                                 datetime,
      OldValue                                  bigint,
      NewValueData                              sql_variant,
      NewValueChecksum                          int,
      ObjectType                                int,
      ItemSecurity                              int,
      ChangedLinkId                             bigint,
      ChangedColleagueId                        bigint,
      ChangedMemberGroupId                      bigint,
      ChangedPropertyId                         bigint,
    ChangedSourceId                         uniqueidentifier;
```

EventId: A unique identifier for the user profile change event.

RecordId: An identifier for the user that created the user profile change event.

ChangeType: A numeric value representing the user profile Change Type of the user profile event.

EventTime: The date and time when the user profile change event occurred.

OldValue: This value MUST be NULL.

NewValueData: The current value.

NewValueChecksum: Numeric value as returned by the T-SQL CHECKSUM function of the actual value.

ObjectType: The Object Type of the user profile event.

ItemSecurity: The Privacy Policy Type value. This value MUST NOT be NULL if the Object Type is either of the values QuickLink or PersonalizationSite.

ChangedLinkId: A unique identifier for the changed link. This value MUST NOT be NULL if the Object Type is either of the values QuickLink or PersonalizationSite.

ChangedColleagueId: A record identifier of the Colleague property that has changed. This value MUST NOT be NULL if the Object Type is the value Colleague.

ChangedMemberGroupId: A record identifier of a Member Group which corresponds to the membership of the specified user which changed. This value MUST NOT be NULL if the Object Type is either of the values DLMembership or SiteMembership.

ChangedPropertyId: The unique identifier for user profile property that has changed. This value MUST NOT be NULL if the Object Type is either of the values SingleValueProperty or MultiValueProperty.

ChangedSourceId: A GUID for a Privacy Policy record. This value MUST NOT be NULL for all Object Type values, with the exception of the values WebLog and UserProfile.

3.1.5.4 profile_DeleteUserEvents

The **profile_DeleteUserEvents** stored procedure is called to delete all user profile change events older than a given date and time.

profile_DeleteUserEvents is defined using T-SQL syntax as follows:

```
PROCEDURE profile_DeleteUserEvents (
    @MinEventTime                        datetime
);
```

@MinEventTime: A **datetime** value which specifies the date and time prior to which all user profile change events MUST be removed from the database table. This parameter MUST NOT be NULL.

Return Code Values: profile_DeleteUserEvents MUST return an integer return code that represents the number of user profile change events that were removed from the database table.

Result Sets: profile_DeleteUserEvents MUST NOT return any result set.

3.1.5.5 profile_GetUserColleagueEvents

The **profile_GetUserColleagueEvents** stored procedure is called to retrieve user profile change events for all Colleague properties of a specified user**.**

The **profile_GetUserColleagueEvents** stored procedure is defined using T-SQL syntax as follows:

```
PROCEDURE profile_GetUserColleagueEvents (
    @RecordId                           bigint,
    @MinEventTime                       datetime,
    @ChangeTypeMask                     int,
    @ObjectTypeMask                     int
);
```

@RecordId: The record identifier of a user. It MUST return the user profile change events for all Colleague properties of the specified user.

@MinEventTime: Specifies a date and time for which each of the returned user profile change events MUST be more recent**.** If NULL then **profile_GetUserColleagueEvents** MUST return all available Colleague property-related user profile change events.

@ChangeTypeMask: Specifies which of the user profile Change Type values of the user profile change events MUST be returned.

@ObjectTypeMask: Specifies the Object Type of the user profile change events that MUST be returned.

Return Code Values: profile_GetUserColleagueEvents MUST return 0.

Result Sets: profile_GetUserColleagueEvents MUST return one Event Log result set.

3.1.5.5.1 Event Log Result Set

The Event Log result set contains the user profile change events of the Colleagues property of the specified user, in order from the earliest to the most recent.

The Event Log result set is defined using T-SQL syntax as follows:

```
    EventId                             bigint,
    RecordId                            bigint,
    ChangeType                          int,
    EventTime                           datetime,
    OldValue                            bigint,
    NewValueData                        sql_variant,
    NewValueChecksum                    int,
    ObjectType                          int,
    ItemSecurity                        int,
    ChangedLinkId                       bigint,
    ChangedColleagueId                  bigint,
    ChangedMemberGroupId                bigint,
    ChangedPropertyId                   bigint,
    ChangedSourceId                     uniqueidentifier;
```

EventId: A unique identifier for the user profile change event.

RecordId: An identifier for the user that created the user profile change event.

ChangeType: A numeric value representing the user profile Change Type of the user profile event.

EventTime: Specifies the date and time when the user profile change event occurred.

OldValue: MUST be NULL.

NewValueData: The current value.

NewValueChecksum: A numeric value that is the checksum of the actual value as returned by the T-SQL CHECKSUM function.

ObjectType:The Object Type of the user profile event.

ItemSecurity: The Privacy Policy Type value. This value MUST NOT be NULL if Object Type is either of the values QuickLink or PersonalizationSite.

ChangedLinkId: A unique identifier for the changed link. This value MUST NOT be NULL if the Object Type is either of the values QuickLink or PersonalizationSite.

ChangedColleagueId: A record identifier of the Colleague property that has changed. This value MUST NOT be NULL if the Object Type is the value Colleague.

ChangedMemberGroupId: A record identifier of a Member Group which corresponds to the specified user membership which changed. This value MUST NOT be NULL if the Object Type is either of the values DLMembership or SiteMembership.

ChangedPropertyId: The unique identifier for user profile Property that has changed. This value MUST NOT be NULL if the Object Type is either of the values SingleValueProperty or MultiValueProperty.

ChangedSourceId: A GUID for a Privacy Policy record. This value MUST NOT be NULL for all Object Type values, with the exception of WebLog or UserProfile.

3.1.5.6 profile_GenerateAnniversaryEvents

The **profile_GenerateAnniversaryEvents** stored procedure is called to create a user profile change event for each upcoming **Anniversary** property of all date properties, unless the Anniversary Privacy Policy Type is disabled.

In this case, a user profile change event MUST NOT be created. Each user profile change event that is created MUST have a user profile Change Type of "Add" and an Object Type of "Anniversary".

If executed multiple times, **profile_GenerateAnniversaryEvents** MUST NOT create more than one user profile change event for the same anniversary.

profile_GenerateAnniversaryEvents is defined using T-SQL syntax as follows:

```
PROCEDURE profile_GenerateAnniversaryEvents (
    @DaysAheadToScan                         int
);
```

@DaysAheadToScan: specifies the number of days, starting from the current date, to scan ahead for an anniversary. This parameter MUST be 3.

Return Code Values: profile_GenerateAnniversaryEvents returns an integer return code which MUST return 0.

Result Sets: profile_GenerateAnniversaryEvents MUST NOT return any result set.

3.1.5.7 profile_GetCurrentChangeToken

The **profile_GetCurrentChangeToken** stored procedure is called to retrieve the user profile Change Token of the most recent user profile change event.

profile_GetCurrentChangeToken is defined using T-SQL syntax as follows:

```
PROCEDURE profile_GetCurrentChangeToken();
```

Return Code Values: profile_GetCurrentChangeToken MUST return 0.

Result Sets: profile_GetCurrentChangeToken MUST return one result set.

3.1.5.7.1 profile_GetCurrentChangeToken Result Set

The **profile_GetCurrentChangeToken** result set MUST return one record identifying the user profile Change Token of the most recent user profile change event.

The **profile_GetCurrentChangeToken** result set is defined using T-SQL syntax as follows:

```
    EventTime                          datetime,
    EventId                            bigint;
```

EventTime: The date and time of the most recent user profile change event.

EventId: The unique identifier of the most recent user profile change event.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

4 Protocol Examples

4.1 Sample Data

In the following examples, the user profile store contains five user profiles representing five different users.

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 Type values.

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

The user profile property store contains nine 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 five 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		`<?xml version="1.0"`
					`encoding="utf-16"?>`
					`<WebLog>`
					`<Title>`
					`My New Post`
					`</Title>`
					`<Permalink>`
					`http://site/p5/newpost`
					`</Permalink>`
					`</WebLog>`
						02/13/2008 3:45:07 PM

5	3	Remove	WebLog		`<?xml version="1.0"`
					`encoding="utf-16"?>`
					`<WebLog>`
					`<Title>`
					`My Old Post`
					`</Title>`
					`<Permalink>`
					`http://site/p3/oldpost`
					`</Permalink>`
					`</WebLog>`
						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 Retrieve All Changes for the Colleagues of a User

One of the possible scenarios is when is necessary to retrieve user profile change events of the Colleague properties of a specified user. The following steps can be taken.

- With the user name, use the **membership_getColleagueSuggestions** stored procedure (specified in [MS-UPSPROF], section 3.1.4.3) to get the user identifier (**RecordId**).
- Call `profile_GetUserColleagueEvents (RecordId, Date, ChangeTypeMask, ObjectTypeMask )`

For example, suppose an operation to get all "Add" and "Modify" events for the Colleague properties of "User1" since "02/13/2008 2:00:00 PM". The steps to be taken would be:

- Get "1" from the user profile store using membership_getColleagueSuggestions [MS-UPSPROF].
- Call `profile_GetUserColleagueEvents (1, 02/13/2008 2:00:00 PM, 0x03, 0x03FF).`

In this example, a simplified version of the result set is returned from **profile_GetUserColleagueEvents**, with only a subset of the columns

The returned result set would consist of:

EventId	User	Change Type	ObjectType	Value	Change Time
2	2	Add	Colleague	Another User4	02/13/2008 2:34:56 PM

4.3 Retrieve All Changes for a Specified User

Using the stored procedures in this protocol, it is possible to retrieve the user profile change events that have occurred for a specific **user**.

This can be accomplished by calling **profile_GetUserEvents**. For example:

- Retrieve the RecordId for user 1.
- Retrieve the ViewerRights for user 1.
- Call GetUserEvents with these parameters.

Parameter	Value
@RecordId	The RecordId for user 1
@ViewerRights	The ViewerRights for user 1
@MinEventId	NULL
@MinEventTime	02/01/2008 12:00:00 AM
@ChangeTypeMask	0x07
@ObjectTypeMask	0x0100

- This call would return the following result set. (Non-relevant columns have been omitted for clarity.)

RecordId	Change Type	EventTime	NewValueData	ItemSecurity
RecordId for user 1	0x02	02/13/2008 1:23:45 PM	123 New Road, New City, ST	0x08
RecordId for user 1	0x01	03/01/2008 3:21:17 PM	02/29/2008	0x01

4.4 Synchronization

This protocol can be used to maintain the data synchronization between two or more servers. By calling some of these protocol procedures periodically, it is possible for a server to keep track of the latest changes on the other servers. In this example, Server A gets the most recent changes from Server B. The following steps are applied:

- Server A retrieves the date and time of its most recent user profile change event (**lastChangeTime**).
- Call `profile_GetUserEvents (NULL, NULL, NULL, lastChangeTime, 0x0F, 0x03FF).`
- If the number of user profile change events returned is less than 1000, then Server A applies those records. Otherwise, Server A synchronizes all of the data with Server B.

Suppose that Server B contains all the data from the example data section, and Server A contains only the first three user profile change events in its user profile change log. The steps to be taken to synchronize Server A and Server B would be as follows:

- Server A gets "02/13/2008 2:23:56 PM" from user profile change event with the **EventId** 3.
- Server A calls `profile_GetUserEvents (NULL, NULL, NULL, "02/13/2008 2:23:56 PM", 0x0F, 0x03FF )` on Server B.

The following result set would be returned.

In this example, only a subset of the returned columns is being displayed.

EventId	User	Change Type	ObjectType	Value	Change Time

4	5	Add	WebLog	`<?xml version="1.0"`
				`encoding="utf-16"?>`
				`<WebLog>`
				`<Title>`
				`My New Post`
				`</Title>`
				`<Permalink>`
				`http://site/p5/newpost`
				`</Permalink>`
				`</WebLog>`
					02/13/2008
					3:45:07 PM

5	3	Remove	WebLog	`<?xml version="1.0"`
				`encoding="utf-16"?>`
				`<WebLog>`
				`<Title>`
				`My Old Post`
				`</Title>`
				`<Permalink>`
				`http://site/p3/oldpost`
				`</Permalink>`
				`</WebLog>`
					02/13/2008
					4:56:18 PM

5 Security

5.1 Security Considerations for Implementers

This protocol supports the **Security Support Provider Interface (SSPI)** and SQL authentication with the protocol server role. These authentication methods are defined in [MS-TDS].

5.2 Index of Security Parameters

None.

6 Appendix A: 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

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.

7 Change Tracking

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

8 Index