[MS-FILESYNC]:

File Synchronization Protocol

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Revision Summary

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7/24/2018	0.1	New	Released new document.
8/2/2018	0.1	None	No changes to the meaning, language, or formatting of the technical content.
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Table of Contents

1 Introduction

The File Synchronization Protocol specifies the communication required between client to service to help replicate files stored on the service onto the local machine, and how to ensure the files are in sync with the service.

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

document library: A type of list that is a container for documents and folders.

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

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

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

Kerberos: An authentication system that enables two parties to exchange private information across an otherwise open network by assigning a unique key (called a ticket) to each user that logs on to the network and then embedding these tickets into messages sent by the users. For more information, see [MS-KILE].

NT LAN Manager (NTLM) Authentication Protocol: A protocol using a challenge-response mechanism for authentication in which clients are able to verify their identities without sending a password to the server. It consists of three messages, commonly referred to as Type 1 (negotiation), Type 2 (challenge) and Type 3 (authentication). For more information, see [MS-NLMP].

null value: A term that means "having no explicitly assigned value." In particular, a null value is different from a zero or a blank.

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

Security Assertion Markup Language (SAML): The set of specifications that describe security assertions encoded in XML, profiles for attaching assertions to protocols and frameworks, request/response protocols used to obtain assertions, and the protocol bindings to transfer protocols, such as SOAP and HTTP.

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

Unicode: A character encoding standard developed by the Unicode Consortium that represents almost all of the written languages of the world. The **Unicode** standard [UNICODE5.0.0/2007]

provides three forms (UTF-8, UTF-16, and UTF-32) and seven schemes (UTF-8, UTF-16, UTF-16 BE, UTF-16 LE, UTF-32, UTF-32 LE, and UTF-32 BE).

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

XML schema: A description of a type of XML document that is typically expressed in terms of constraints on the structure and content of documents of that type, in addition to the basic syntax constraints that are imposed by XML itself. An XML schema provides a view of a document type at a relatively high level of abstraction.

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

1.2 References

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

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[MS-AUTHWS] Microsoft Corporation, "Authentication Web Service Protocol".

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

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

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

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

[RFC4648] Josefsson, S., "The Base16, Base32, and Base64 Data Encodings", RFC 4648, October 2006, http://www.rfc-editor.org/rfc/rfc4648.txt

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

1.2.2 Informative References

[MS-SPO] Microsoft Corporation, "SharePoint Protocols Overview".

1.3 Overview

For a client to replicate files on a service to a local machine, the client MUST be able to perform a set of different actions.

Typical scenarios for using this protocol is to start the initial sync of a collection of files and folders onto a local machine, and to ensure any changes made locally or on the service and are replicated onto the other endpoint.

This protocol documentation will go into the details of how a client can:

- Authenticate against the service

- Discover and locate file store locations on the service

- Obtain specific settings from the service that dictate how a client behaves

- Register for notifications on changes to the files in the service

- Upload and download of files to and from the service

1.4   Relationship to Other Protocols

This protocol uses the XML message protocol for formatting request and response messages as described in [XMLSCHEMA1/2]. It transmits those messages by using **HTTP**, as described in [RFC2616] or Hypertext Transfer Protocol over Secure Sockets Layer (**HTTPS**), as described in [RFC2818].

1.5   Prerequisites/Preconditions

This protocol operates against a protocol server that is identified by a **URL** that is known by protocol clients.

1.6   Applicability Statement

This protocol is designed to sync a user defined file system between local and cloud storage.

1.7   Versioning and Capability Negotiation

None.

1.8   Vendor-Extensible Fields

None.

1.9   Standards Assignments

None.

2 Messages

2.1 Transport

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

Protocol messages MUST be formatted as specified in [XMLSCHEMA1/2]. Protocol server faults MUST be returned either using HTTP Status Codes, as specified in [RFC2616] section 10.

2.2 Common Data Types

This protocol specifies the following types as XML attribute values:

Binary: A base64-encoded string representation of the binary data, as defined in [RFC4648].

Hex String: A hexadecimal string attribute MUST consist of characters in the ranges 0 through 9 and "A" through "F". Hexadecimal strings MUST be compared as hexadecimal numbers.

Int: This attribute MUST be a decimal string representation of an integer in the range 0 through 2,147,483,647.

Null: A **null value** attribute that MUST be an empty string.

String: A **Unicode** string.

2.2.1 HTTP Headers

All **HTTP** requests contain headers with various metadata that can be used by client and server. Whether or not a specific header is required is dependent on the operation in question and is covered in section 3. The following is a glossary of known HTTP headers in client requests:

Header	Description
Accept	String value defining what type of response the client accepts from the server. See section 2.2.1.1.
Accept-Encoding	String value set by the client that tells the server what to do with the payload. See section 2.2.1.2.
Accept-Language	String value set by the client indicating what language the server response uses. See section 2.2.1.3.
Cookie	Authorization cookie used to authenticate a user between client and server. See section 2.2.1.4.
User-Agent	String indicating information about the client version and the operating system on which the client is running. See section 2.2.1.5.
Application	String indicating whether a request is a sync request or a diagnostic request. See section 2.2.1.6.
Scenario	String value indicating to the server what type of operation scenario is in progress. See section 2.2.1.7.

Header	Description
X-EnumerationReason	String value lets the service differentiate traffic from full enumerations based on the trigger and any additional context provided by the service. See section 2.2.1.8.
X-GeoMoveOptions	String value indicating an HTTP redirection has occurred. See section 2.2.1.9.
X-MachineDomainInfo	GUID value indicating domain permissions from the machine that originated the request. See section 2.2.1.10.
X-MachineId	GUID value indicating the ID of the machine that originated the request. See section 2.2.1.11.
X-RequestDigest	Digest cached by the client to authenticate with the server. See section 2.2.1.12.
X-RequestStats	String of concatenated key value pairs (KVP) that indicate statistics about the request. See section 2.2.1.13.
X-ResponseStructure	Used to specify which change enumeration format to request and identify which format the server responded with. See section 2.2.1.14.
X-RestrictedReadCapabilities	Represents sync client capabilities in request header to read only sync for library features. See section 2.2.1.15.
X-RestrictedWriteCapabilities	Represents sync client capabilities in request header to handle writes for library features. See section 2.2.1.16.
X-SyncFeatures	Used to specify which features the sync engine supports. See section 2.2.1.17.
X-TransactionId	String containing a server generated GUID concatenated with the scenario. See section 2.2.1.18.
Host	String value containing the server URL. See section 2.2.1.19.

2.2.1.1 Accept

The Accept header defines what type of response the client accepts from the server. Potential values include: "application/xml", "application/web3s+xml" and "application/json".

2.2.1.2 Accept-Encoding

The Accept-Encoding header defines a string value set by the client that tells the server what to do with the payload. Values include "peerdist", "gzip" and "deflate".

2.2.1.3 Accept-Language

The Accept-Language header defines a string value set by the client indicating what language the server response uses.

2.2.1.4 Cookie

The Cookie header defines the authorization cookie used to authenticate a user between client and server. For example:

Azure Active Directory to SharePoint Online:

Cookie: SPOIDCRL=<ticket string>

2.2.1.5 User-Agent

The User-Agent header defines a string indicating information about the client version and the operating system on which the client is running. For example: Microsoft SkyDriveSync 18.131.0701.0002 ship; Windows NT 10.0 (15063). New clients SHOULD pass a unique product name beginning with their company name followed by a recognizable product name. This name SHOULD remain consistent throughout the lifetime of a product. Product version number SHOULD update with each new build of a product that interacts with a protocol server.

2.2.1.6 Application

The Application header defines a string indicating whether a request is a sync request or a diagnostic request. Values are "SkyDriveSync" for a diagnostic request and a "OneDriveSync" for a sync request. New clients SHOULD pass a product name similar to that described in the User-Agent header.

2.2.1.7 Scenario

The Scenario header defines a string value indicating to the server what type of operation scenario is in progress. Scenario types and definitions are in section 2.2.3.3.

2.2.1.8 X-EnumerationReason

The X-EnumerationReason header defines a string value which lets the service differentiate traffic from full enumerations based on the trigger and any additional context provided by the service.

2.2.1.9 X-GeoMoveOptions

The X-GeoMoveOptions header defines a string value indicating an HTTP redirection has occurred. This header will not appear without a redirection. Valid value is "HttpRedirection".

2.2.1.10   X-MachineDomainInfo

This X-MachineDomainInfo header is a GUID value indicating domain permissions from the machine that originated the request. Server will validate the information by checking whether the calls from that machine are enabled (i.e. "white-listed") for given domain. Tied to X-MachineId.

2.2.1.11   X-MachineId

The X-MachineId header is a GUID value indicating the ID of the machine that originated the request.

2.2.1.12   X-RequestDigest

The X-RequestDigest header defines the digest cached by the client to authenticate with the server. Server will return an HTTP FORBIDDEN error if this field is missing. This is provided by the server at initial user authentication.

2.2.1.13   X-RequestStats

The X-RequestStats header is a string of concatenated key value pairs (KVP) that indicate statistics about the request. Categories include: "FilesToUploadCount", "BytesToUploadCount", "RetryCount", "RetryReason", "DeviceID", "FailureInfo", "BandwidthLimitedRate", "MachineName" and "TempSyncID". Pairs are delimited by the "?" character and subentries are delimited by the "|" character. Primarily used for debugging.

2.2.1.14   X-ResponseStructure

The X-ResponseStructure header is used to specify which change enumeration format to request and identify which format the server responded with. Values MUST be "Hierarchical" or "Flat".

2.2.1.15   X-RestrictedReadCapabilities

The X-RestrictedReadCapabilities header represents sync client capabilities in request header to read only sync for library features (Require Check out, Content Approval)

2.2.1.16   X-RestrictedWriteCapabilities

The X-RestrictedWriteCapabilities header represents sync client capabilities in request header to handle writes for library features (Require Check out, Content Approval).

2.2.1.17   X-SyncFeatures

The X-SyncFeatures header is used to specify which features the sync engine supports. Possible values are: "None", "RESERVED", "SpecialFolders", "ParsableFileEnumeration", "RequestSharingStatus", "EncodeUrls" and "LastFeature".

2.2.1.18   X-TransactionId

The X-TransactionId header is a string containing a server generated GUID concatenated with the scenario (see section 2.2.3.3).

2.2.1.19   Host

The Host header is a string value containing the server URL.

2.2.2 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
Folder	Defines a resource object. MUST be used as the root element of any XML.
ItemType	String value declares the type of item in this entry. Possible values include "Folder", "Document", "Item" and "Photo".
ResourceID	Value is a hexadecimal string used to identify the defined resource.
ETag	ETags are essentially version numbers for items in storage. They are updated by the server every time a change is made to an item in storage. The client MUST

Simple Type	Description
	NOT make any assumption about their structure (they're considered a black box) and only uses equality operations to compare them.
DateCreated	Value defines the date that the resource object was created.
DateModified	Value defines the date that the resource object was last modified.
Path	Relative file path of the resource object with respect to the root folder.
Items	Contains the subset of the resource objects contained in the root folder.
RelationshipName	Contains the display name of the resource object
ParentResourceID	Contains the ResourceID of the parent containing the resource object.
TotalSubItemSize	Total size of the resource object.
QuotaState	Defines the quota state of the root folder. Values include "Unknown", "Normal", "Nearing", "Critical", "Full" and "OverLimit".
SpaceUsed	Defines the server space used by the resource object in bytes.
SpaceGranted	Defines the total space on the server granted to the user in bytes.

2.2.3 Data Structures

2.2.3.1 ClientPolicy

The ClientPolicy is the name given to the list of user-specific settings downloaded during protocol client initialization. These settings are unique to the user and the **site** hosting the user's data and are downloaded in XML format during the initialization or first run process and refreshed periodically. The following **XML schema** fragment defines this XML document.

```
<xsd:element name="PolicyDocument" xmlns:xsd=http://www.w3.org/2001/XMLSchema>
  <xsd:complexType>
    <xs:all >
      <xsd:element name="RangeRule" type="RangeRuleType" minOccurs="1"
maxOccurs="unbounded"/>
      <xsd:element name="Rule" type="RuleType" minOccurs="1" maxOccurs="unbounded"/>
      <xsd:element name="DavUrlMatches" type="DavUrlMatchesType"/>
    </xsd:all>
  </xsd:complexType>
</xsd:element>

<xsd:complexType name="RangeRuleType" xmlns:xsd=http://www.w3.org/2001/XMLSchema>
  <xsd:attribute name="Name" type="xsd:string" />
  <xsd:attribute name="Start" type="xsd:string" />
  <xsd:attribute name="End" type="xsd:string" />
</xsd:complexType>

<xsd:complexType name="RuleType" xmlns:xsd=http://www.w3.org/2001/XMLSchema>
  <xsd:attribute name="Name" type="xsd:string" />
  <xsd:attribute name="Value" type="xds:string" />
</xsd:complexType>

<xsd:complexType name="DavUrlMatchesType" xmlns:xsd=http://www.w3.org/2001/XMLSchema>
  <xsd:sequence >
    <xsd:element name="DavUrlMatch" type="xsd:string"/>
```

```
        </xsd:sequence>
    </xsd:complexType>
```

PolicyDocument: container of the client policies.

PolicyDocument.RangeRule: Specifies a range rule.

PolicyDocument.RangeRule.Name: Specifies the name of the range rule. The values are:

Value	Description
PolicyDocumentPollIntervalSeconds	Time in seconds of how often the client will poll for client policy changes.
PolicyDocumentPrefetchIntervalSeconds	Time in seconds of how long until the client will poll for client policy changes.
BackgroundPollShortIntervalSeconds	Number of seconds the client will wait before requesting new changes from server when Push Notification has not been successfully configured.
BackgroundPollLongIntervalSeconds	Number of seconds the client will wait before requesting new changes from server when Push Notification has been successfully configured.

PolicyDocument.RangeRule.Start: The start value of the range rule.

PolicyDocument.RangeRule.End: The end value of the range rule.

PolicyDocument.Rule: Specifies a single policy rule.

PolicyDocument.Rule.Name: Specifies the name of the rule. The values are:

Value	Description
UploadBlockSizeKB	Size in kilobytes of each uploaded file block.
DownloadBlockSizeKB	Size in kilobytes of each downloaded file block.
MaxClientRequestsPerDay	Maximum number of times the client can poll the policy per day. Client SHOULD self-throttle requests if over this limit.
MaxClientMBTransferredPerDay	Max number of megabytes of data the client can transfer per day. Client SHOULD self-throttle requests if over this limit.
MaxFileSizeBytes	Maximum file size in bytes that the client can transfer.
HighVisibilityFileExclusionList	List of files/folders that MUST NOT be sent to the server by the client.
DavUrlTemplate	String template for the sync site's folder structure. Used in conjunction with the local file path to determine a file's path on the server.
ShareUrlTemplate	Used for generating the client site URL.
ShareUrlTemplateV2	Not used. See ShareUrlTemplate.

Value	Description
OfficeExcludeList	List of file types to be excluded from client scope. Consists of only file types associated with Microsoft Office.
WacUrlTemplate	Template URL used to generate URL using other values from the Client Policy.
SkyDriveURI	URI of the root folder in the client scope.
SkyDriveItemsURI	Used to construct a URI for a specific resource within the client scope.
QosCollectionEnabled	Deprecated. Set to false.
HashAlgorithm	Name of the hash algorithm to use for the connected sync scopes. Can be set to "XORHash" or "SHA1Hash".
DavUrlNamespace	Root folder namespace.
MaxUrlLength	Length of the maximum URL generated for every change on the service in characters.
MaxInlineUploadSizeKB	Maximum size in kilobytes to allow inlining the file in a single upload request.
StorageManagementURI	URL for the Manage Storage page.
ViewOnlineUrlTemplate	Template URL used for the "View Online" option in the explorer context menu.
DownloadUrlTemplate	Template URL used for the downloading of files.
DownloadStreamingMaxStreamSizeKB	Maximum size in kilobytes to request from the service in one HTTP request if download streaming is enabled.
RecycleBinURI	URI for the server-side Recycle Bin.
DisableReportProblemDialog	Set to "true" in order to force the Report Problem Dialog feature to turn off.
WebPushAppServerPublicKey	Web push public key of the server. If non-empty, Web Push protocol can be registered by the client using this key for push notifications of server-side changes to files being synced.
CollabVectorClockURI	The URI to fetch server clock data.
SiteTitle	Name of the site hosting the library from the policy document containing this setting.
LibraryTitle	Name of the library for which this policy document was downloaded.
TelemetryId	When non-empty this indicates the server administrator has opted into telemetry sending. The client can send this value as part of telemetry events to uniquely identify the protocol server they are communicating with.

PolicyDocument.Rule.Value: Specifies the value of the rule.

PolicyDocument.DavUrlMatches: A **DavUrlMatch** that specifies a regular expression value that determines the acceptable format for the user's sync site URL.

2.2.3.2 DefaultDocumentLib

Typically, when adding a user to a protocol server, a site is created for that user which includes a **document library**. The client determines the URL of this "DefaultDocumentLib" when first configuring the client for the user. If the user's default document library exists, a sync relationship with this library is established and its content is downloaded during initialization of protocol client. See [MS-SPO] for more information on document libraries.

2.2.3.3 Scenarios

There are multiple scenarios that occur during normal operations of the file sync client. Any implementation of the file sync protocol MUST include the following scenarios:
- StorageProvisioningScenario
- StorageSubScopeChangeEnumerationScenario
- StorageChangeEnumerationScenario
- StorageSubScopeStartupChangeEnumerationScenario
- StorageStartupChangeEnumerationScenario
- StorageSubScopeWNSNotificationChangeEnumerationScenario
- StorageWNSNotificationChangeEnumerationScenario
- StorageSubScopePollingChangeEnumerationScenario
- StoragePollingChangeEnumerationScenario
- StorageSelectiveSyncEnumerationScenario

3   Protocol Details

3.1   Client 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 client-based protocol that communicates with the protocol server to sync files between a local system and the cloud. The protocol does so through a series of **HTTP** GET and SET requests that contain XML payloads defining resource objects shared between the endpoints.

The protocol follows a set pattern of steps while running, detailed as follows:

1. First Time Initialization – see section 3.1.3 for more detail
    1. Authenticate the user credentials
    2. Gets user's properties, policies and default information
    3. Get root folder information and file structure
    4. Download or Upload any files that don't currently exist on the local disk or on the server respectively
2. Any operations after initialization is completed (also known as the Nth run operations) see section 3.1.5.3 and section 3.1.5.4 for more detail
    1. Request server status
    2. Sync any changes made between client and server. This includes all file operations on both client and server sides.
    3. Perform file operations as indicated by the sync response.
    4. Query the server to ensure changes match local changes.

3.1.1   Abstract Data Model

Not available.

3.1.2   Timers

Not available.

3.1.3   Initialization

Client initialization contains a series of **HTTP**, GET, and POST communications known as the first run. During the first run the client syncs with the protocol server, authenticates the user's credentials, downloads the **ClientPolicy** (section 2.2.3.1), determines the **DefaultDocumentLib** (section 2.2.3.2) and downloads or uploads files as needed from the server. The list of HTTP requests can be found in the following table:

HTTP Request	Description
GET https://<serverurl>/	Authenticates a user against the protocol server. There will be several back and forth requests and responses depending on the authorization scheme being used.
GET https://<serverurl>/_api/sp.userprofiles.peoplemanager/getmy properties	Gets properties of a user logged into local client to determine **personal site URL**. Gets a response as XML. See section 4.1.1.
GET https://<serverurl>/personal/<useralias>/_api/web/DefaultDo cumentLibrary/ID	Gets the relative path to a user's personal site. Retrieved from response in previous request XML data (PersonalURL element). See section

HTTP Request	Description
	4.1.2.
GET https://<serverurl>/personal/<useralias>/_api/Site/Id	Gets a user's personal site ID.
GET https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/policy/	Gets a user's personal site global client policy as an XML response using the personal site ID (a **GUID**) from the previous response. See section 4.1.3.
GET https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/policy/	Gets the server specific client policy for a user's personal site as an XML response. Though this seems to duplicate the previous call a different XML response is received. See section 2.2.3.1.
GET https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder	Gets a personal site root folder properties as an XML response. See section 4.1.4.
GET https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/Items/<ResourceID>?View=SkyDriveSync&Depth=0&FoldersOnly=true&web3s.paging=0,100 GET https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder?web3s.expand=QuotaState	Using the RootFolder response above and responses to these calls, recursively walks the tree of nested folders until all server folders have been obtained. For each folder the client MAY determine the server allocated quota to inform the user. See section 4.1.5.
POST https://<server url>/personal/<useralias>/_api/spfilesync/sync/<personalsiteid>/Subscription	Subscribes to web push notifications from the protocol server for future changes.

3.1.4 Higher-Layer Triggered Events

This protocol SHOULD NOT support any triggered events outside of the protocol client. Though user actions might be taken on the server side of the protocol no protocol events are triggered. Instead, if the push service channel was successfully provided to the protocol server via the Subscription method in described in 3.1.3, the protocol server will attempt to notify the client via the established push service channel. Also, a timed sync MAY be initiated from the client side to get and process any updates that have occurred server side at an interval which MUST be no quicker than client policy defined **BackgroundPollShortIntervalSeconds** value. If the push service channel was established the sync client SHOULD use the client policy defined **BackgroundPollLongIntervalSeconds** value for the interval.

3.1.5 Message Processing Events and Sequencing Rules

The following are events that occur during normal runtime of this protocol and the associated requests and responses. Collectively these events are known as Nth Run Operations, i.e. a standard set of events that occur during regular usage of the protocol. These events include but are not limited to file operations (e.g. renaming, moving, creation, deletion, etc.) from both client side and server side. Operations also include **personal site** syncing and the file operations associated with such.

3.1.5.1 Authentication

The client MUST authenticate with the server using a server recognized user identity. The details on this authentication profile can be found in [MS-AUTHWS]. Also this protocol supports authentication over multiple transfer protocols:

- HTTP/HTTPS

- **NTLM**

- Forms based Authentication (FBA)

- **Kerberos**

- **SAML**

3.1.5.2 File Verification

To verify that the client version of a file matches the server's version a hash value is used. In its response to any file changes the server will include an "XORHash" element in its response XML (see section 4.7). The client MUST generate a value from the local version of the file and compare it to the server's provided hash to determine if a resync is needed. The XOR hash algorithm is detailed below:

Let's say a block is a 160 bit block of bits.

block zero() returns a block with all zero bits.

block extend8(byte b) returns a block with all zero bits except for the lower 8 bits which come from b.

block extend64(int64 i) returns a block of all zero bits except for the lower 64 bits which come from i.

block rotate(block bl, int n) returns bl rotated left by n bits.

block xor(block bl1, block bl2) returns a bitwise xor of bl1 with bl2

byte[] xorArray(byte rgb1[], byte rgb2[], cb) returns the bitwise xor of each element.

Then XorHash0(byte rgb[], int cb) is { block ret = zero(); for (int i = 0; i < cb; i ++) { ret = xor(ret, rotate(extend8(rgb[i]), i * 11)); } return ret;} and

XorHash(byte rgb[], int cb) is { return xor(extend64(cb), XorHash0(rgb, cb)); }

For a code example of the above, see https://docs.microsoft.com/en-us/onedrive/developer/code-snippets/quickxorhash?view=odsp-graph-online.

3.1.5.3 Client-Side Nth Run Operations

HTTP Request	Description
POST https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder?View=SkyDriveSync&SyncToken=<synctoken>	Inform the protocol server of a file move to another location inside the scope of the syncing folder. See section 4.4 for an example of the XML payload.
GET https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=<synctoken>&View=SkyDriveSync	Client requests server status via XML payload to ensure the operation above was carried out successfully. This type of request MUST follow any file operation request.
POST https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder?View=SkyDriveSync&SyncToken=<synctoken>	Rename file inside syncing folder. (NOTE: While the http request is very similar to moving a file, the XML payload associated with the request is different. See section 4)

HTTP Request	Description
POST https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder?View=SkyDriveSync&SyncToken=<synctoken>	Delete a file inside the syncing folder. (NOTE: While the http request is very similar to moving a file, the XML payload associated with the request is different. See section 4)
POST https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder?View=SkyDriveSync	Move a file into the scope of the syncing folder. (NOTE: While the http request is very similar to moving a file, the XML payload associated with the request is different. See section 4)
POST https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/<personalsiteid>/RootFolder?View=SkyDriveSync&SyncToken=<synctoken>	Move a file out of the scope of the syncing folder. (NOTE: While the http request is very similar to moving a file, the XML payload associated with the request is different. See section 4)

One key to understanding the requests above is the SyncToken. Note that in all the above examples there is a SyncToken= followed by a series of values; this is received during the initialization phase (see section 3.1.3) and cached to authorize against the server when sync requests are made. Any requests made MUST contain this token or the server will reject the request.

3.1.5.4 Server Side Nth Run Operations

All server-side operations are evaluated by the client during a client-initiated sync call. The **HTTP** requests for these sync calls are all very similar regardless of the type of operations that occur server side; the primary difference is in the XML payload response received from the server. An example of the sync request is as follows:

GET https://<serverurl>/personal/<useralias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff05/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=3;%234;%231;3;be100e28-dd1c-4f2f-8e83-acdb6fffff05;636699581579070000;58172;%23;%23;%234&View=SkyDriveSync

The primary indicator of what sort of sync (if any) needs to be made is a header value in the response called X-SyncStatus. This header MUST contain one of the following string values: NoChanges, IncrementalChanges, FullData, ResyncNeeded and CurrentSyncTokenOnly.

The most common values of SyncStatus are NoChanges, IncrementalChanges and FullData. If the value is NoChanges then the client and server are in sync and no further operations are required. IncrementalChanges indicates that changes need to be synced from the server to the client. FullData is used during the first run; it indicates that a full download from the server is required and the client MUST request a complete sync. CurrentSyncTokenOnly informs the client that it MUST delete its cached sync token and retrieve a new one from the server.

ResyncNeeded is used to tell the client to perform a type of resync and has a corollary field: ResyncAction. This field has three potential values: "ResetReupload", "Reupload" and "DifferentialUpload". This field informs the client what type of resync is required and the client MUST support reset resyncs, reupload resyncs and differential upload resyncs. If no resync action is received the client MUST default to a reupload resync. During a reset resync the client MUST delete all local data and redownload it from the server. During a reupload resync the client MUST get the list of files on the server, compare it to its local files and reupload any files missing on the server. During a differential resync the server will send a list of files and the client MUST determine what files are not present on the list and modify the local file structure to mirror the list.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

To establish a sync relationship with a team site **document library**, the client can register a URL moniker web browser handler for address that start with "odopen://" called ODOpen here. A user opens the site in their web browser (they might have received a link in email or followed hyperlinks to reach the site). They then click the Sync menu item on the protocol server provided web UI. This invokes the URL protocol handler for ODOpen. If the sync client has registered as a handler of ODOpen a new instance of the client will be started and be passed the contents of the ODOpen URL as defined in their ODOpen handler registration with the host operating system. The sync client is then able to follow a sequence very similar to the initialization sequence starting with the client policy request in section 3.1.3.

4 Protocol Examples

This section will contain examples of client requests and responses returned by the server in various scenarios. For descriptions of the various XML elements see section 2.2.2 and section 2.2.2.

4.1 Initialization Examples

4.1.1 Retrieve User Properties

4.1.1.1 Client Request

```
GET https://<server_url>/_api/sp.userprofiles.peoplemanager/getmyproperties HTTP/1.1
Connection: Keep-Alive
Accept-Encoding: peerdist
User-Agent: Microsoft SkyDriveSync 18.131.0701.0002 ship; Windows NT 10.0 (15063)
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <server_url>
Cookie: <cookie data>
```

4.1.1.2 Server Response

```
HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Content-Type: application/atom+xml;type=entry;charset=utf-8
Expires: Sun, 01 Jul 2018 19:55:29 GMT
Last-Modified: Mon, 16 Jul 2018 19:55:29 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
DATASERVICEVERSION: 3.0
SPClientServiceRequestDuration: 29
SPRequestDuration: 41
X-AspNet-Version: 4.0.30319
SPRequestGuid: 656d7b9e-6998-b069-12e9-e1295f5a8209
request-id: 656d7b9e-6998-b069-12e9-e1295f5a8209
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10325: 1; RequireReadOnly
Date: Mon, 16 Jul 2018 19:55:28 GMT
Content-Length: 15710
```

```xml
<?xml version="1.0" encoding="utf-8"?><entry xml:base="https://<server_url>/_api/"
xmlns="http://www.w3.org/2005/Atom"
xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata"
xmlns:georss="http://www.georss.org/georss"
xmlns:gml="http://www.opengis.net/gml"><id>https://<server_url>/_api/sp.userprofiles.peopleman
ager/getmyproperties</id><category term="SP.UserProfiles.PersonProperties"
scheme="http://schemas.microsoft.com/ado/2007/08/dataservices/scheme" /><link rel="edit"
href="sp.userprofiles.peoplemanager/getmyproperties" /><title /><updated>2018-07-
16T19:55:29Z</updated><author><name /></author><content
type="application/xml"><m:properties><d:AccountName> </d:AccountName><d:DirectReports
m:type="Collection(Edm.String)" /><d:DisplayName> </d:DisplayName><d:Email m:null="true"
/><d:ExtendedManagers m:type="Collection(Edm.String)" /><d:ExtendedReports
m:type="Collection(Edm.String)"><d:element> </d:element></d:ExtendedReports><d:IsFollowed
```

m:type="Edm.Boolean">false</d:IsFollowed><d:LatestPost m:null="true" /><d:Peers
m:type="Collection(Edm.String)" /><d:PersonalSiteHostUrl>
</d:PersonalSiteHostUrl><d:PersonalUrl></d:PersonalUrl><d:PictureUrl m:null="true" /><d:Title
m:null="true" /><d:UserProfileProperties><d:element
m:type="SP.KeyValue"><d:Key>UserProfile_GUID</d:Key><d:Value>f68c0dca-a3a5-43ff-97c6-
bdc3da5d24a0</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>SID</d:Key><d:Value>S-1-5-21-2127521184-1604012920-
1887927527-
32494674</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>ADGuid</d:Key><d:Value></d:Value><d:ValueType>Edm.String<
/d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>AccountName</d:Key><d:Value>
</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>FirstName</d:Key><d:Value></d:Value><d:ValueType>Edm.Strin
g</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-
PhoneticFirstName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:ele
ment><d:element
m:type="SP.KeyValue"><d:Key>LastName</d:Key><d:Value></d:Value><d:ValueType>Edm.Strin
g</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-
PhoneticLastName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:ele
ment><d:element m:type="SP.KeyValue"><d:Key>PreferredName</d:Key><d:Value>
</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>SPS-
PhoneticDisplayName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:
element><d:element
m:type="SP.KeyValue"><d:Key>WorkPhone</d:Key><d:Value></d:Value><d:ValueType>Edm.Stri
ng</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>Department</d:Key><d:Value></d:Value><d:ValueType>Edm.Stri
ng</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>Title</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:
ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-
Department</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element>
<d:element
m:type="SP.KeyValue"><d:Key>Manager</d:Key><d:Value></d:Value><d:ValueType>Edm.String
</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>AboutMe</d:Key><d:Value></d:Value><d:ValueType>Edm.String
</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>PersonalSpace</d:Key><d:Value>/personal/
d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>PictureURL</d:Key><d:Value></d:Value><d:ValueType>Edm.Strin
g</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>UserName</d:Key><d:Value>
</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>QuickLinks</d:Key><d:Value></d:Value><d:ValueType>Edm.Strin
g</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>WebSite</d:Key><d:Value></d:Value><d:ValueType>Edm.String
</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>PublicSiteRedirect</d:Key><d:Value></d:Value><d:ValueType>Ed
m.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-
JobTitle</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:e
lement m:type="SP.KeyValue"><d:Key>SPS-
DataSource</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element>
<d:element m:type="SP.KeyValue"><d:Key>SPS-
MemberOf</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><
d:element m:type="SP.KeyValue"><d:Key>SPS-Dotted-
line</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:elem
ent m:type="SP.KeyValue"><d:Key>SPS-
Peers</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:ele

ment m:type="SP.KeyValue"><d:Key>SPS-Responsibility</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-SipAddress</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-MySiteUpgrade</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-DontSuggestList</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ProxyAddresses</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-HireDate</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-DisplayOrder</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ClaimID</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ClaimProviderID</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-LastColleagueAdded</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-OWAUrl</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ResourceSID</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ResourceAccountName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-MasterAccountName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-UserPrincipalName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-O15FirstRunExperience</d:Key><d:Value>262160</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PersonalSiteInstantiationState</d:Key><d:Value>2</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-DistinguishedName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-SourceObjectDN</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-LastKeywordAdded</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ClaimProviderType</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-SavedAccountName</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-SavedSID</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ObjectExists</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PersonalSiteCapabilities</d:Key><d:Value>4</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PersonalSiteFirstCreationTime</d:Key><d:Value>7/10/2018 5:02:33 PM</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PersonalSiteLastCreationTime</d:Key><d:Value>7/10/2018 5:02:33 PM</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PersonalSiteNumberOfRetries</d:Key><d:Value>1</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-

PersonalSiteFirstCreationError</d:Key><d:Value>Personal Site already exists.</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-FeedIdentifier</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>WorkEmail</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>CellPhone</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>Fax</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>HomePhone</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>Office</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-Location</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>Assistant</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PastProjects</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-Skills</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-School</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-Birthday</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-StatusNotes</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-Interests</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-HashTags</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-EmailOptin</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PrivacyPeople</d:Key><d:Value>True</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PrivacyActivity</d:Key><d:Value>4095</d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PictureTimestamp</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PicturePlaceholderState</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-PictureExchangeSyncState</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-MUILanguages</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-ContentLanguages</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-TimeZone</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-RegionalSettings-FollowWeb</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-Locale</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-CalendarType</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-AltCalendarType</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:elem

ent><d:element m:type="SP.KeyValue"><d:Key>SPS-
AdjustHijriDays</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:eleme
nt><d:element m:type="SP.KeyValue"><d:Key>SPS-
ShowWeeks</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element>
<d:element m:type="SP.KeyValue"><d:Key>SPS-
WorkDays</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><
d:element m:type="SP.KeyValue"><d:Key>SPS-
WorkDayStartHour</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:ele
ment><d:element m:type="SP.KeyValue"><d:Key>SPS-
WorkDayEndHour</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:ele
ment><d:element m:type="SP.KeyValue"><d:Key>SPS-
Time24</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:e
lement m:type="SP.KeyValue"><d:Key>SPS-
FirstDayOfWeek</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:eleme
nt><d:element m:type="SP.KeyValue"><d:Key>SPS-
FirstWeekOfYear</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:elem
ent><d:element m:type="SP.KeyValue"><d:Key>SPS-RegionalSettings-
Initialized</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><
d:element
m:type="SP.KeyValue"><d:Key>OfficeGraphEnabled</d:Key><d:Value></d:Value><d:ValueType>
Edm.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-
UserType</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d
:element m:type="SP.KeyValue"><d:Key>SPS-
HideFromAddressLists</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:
element><d:element m:type="SP.KeyValue"><d:Key>SPS-
RecipientTypeDetails</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:e
lement><d:element
m:type="SP.KeyValue"><d:Key>DelveFlags</d:Key><d:Value></d:Value><d:ValueType>Edm.Strin
g</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>VideoUserPopup</d:Key><d:Value></d:Value><d:ValueType>Edm
.String</d:ValueType></d:element><d:element
m:type="SP.KeyValue"><d:Key>PulseMRUPeople</d:Key><d:Value></d:Value><d:ValueType>Edm
.String</d:ValueType></d:element><d:element m:type="SP.KeyValue"><d:Key>msOnline-
ObjectId</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element><d:
element m:type="SP.KeyValue"><d:Key>SPS-
PointPublishingUrl</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:ele
ment><d:element m:type="SP.KeyValue"><d:Key>SPS-
TenantInstanceId</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:ele
ment><d:element m:type="SP.KeyValue"><d:Key>SPS-
SharePointHomeExperienceState</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:Value
Type></d:element><d:element m:type="SP.KeyValue"><d:Key>SPS-
RefreshToken</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element
><d:element m:type="SP.KeyValue"><d:Key>SPS-
MultiGeoFlags</d:Key><d:Value></d:Value><d:ValueType>Edm.String</d:ValueType></d:element
></d:UserProfileProperties><d:UserUrl> </d:UserUrl></m:properties></content></entry>

4.1.2 Getting Default Document Library

4.1.2.1 Client Request

```
GET https://<server_url>/personal/<user_alias>/_api/web/DefaultDocumentLibrary/ID HTTP/1.1
Connection: Keep-Alive
Content-Type: application/json
Accept: application/json;odata=verbose
Accept-Encoding: peerdist
Cookie:
User-Agent: Microsoft SkyDriveSync 18.131.0701.0002 ship; Windows NT 10.0 (15063)
```

X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <server_url>
Authorization: NTLM

TlRMTVNTUAADAAAAGAAYAIgAAAAAgACoAAAAA4ADgBYAAAAEAAQAGYAAAASABIAdgAAAAAAACgA
gAABYKIogoA1zoAAAAPTEXP1vGy/wCbRGAwyp39x1IARQBEAE0ATwBOAEQAdgAtAGoAbwBzAG0AaQBs
AFYALQBKAE8AUwBNAEkATAAxAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAKDehWd+C1gHp7ZgakONN
DoABAQAAAAAAMhdv/I+HdQB3LY7BLq8rdvNLnvMAgASAE8ARgBGAAEkAQwBFAEQATwBHAAEAHAA5A
DkANwBDAC0AQgBOADMALQBQAQAEYARQAwADEABABKAG8AZgBmAGkAYwBlAGQAbwBnAC4AcwBlAGw
AZgBoAG8AcwB0AC4AYwBvAHIAcAAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYwBvAG0AAwBoADkAOQA3
AEMALQBCAE4AMwAtAFAARgBBADAAMQAuAG8AZgBmAGkAYwBlAGQAbwBnAC4AcwBlAGwAZgBoAG8A
cwB0AC4AYwBvAHIAcAAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYwBvAG0AQBKAG8AZgBmAGkAYwBlA
GQAbwBnAC4AcwBlAGwAZgBoAG8AcwB0AC4AYwBvAHIAcAAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYw
BvAG0ABwAIAMhdv/I+HdQBBgAEAAIAAAAIADAAMAAAAAAAAAABAAAAACAAAEL+zgz1IqYp/xIrHSzKD
nBt32sCBO9rX/whiiDzSlwDCgAQABwcwl/1STvycYrU5eIW0MYJACoASABUAFQAUAAvAHMAcAAtAG0AeQ
AuAG8AZgBmAGkAYwBlAC4AYwBvAG0AAAAAAAAAAACTj47d

4.1.2.2 Server Response

HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: application/json;odata=verbose;charset=utf-8
Expires: Sun, 01 Jul 2018 19:55:29 GMT
Last-Modified: Mon, 16 Jul 2018 19:55:29 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
DATASERVICEVERSION: 3.0
SPClientServiceRequestDuration: 14
SPRequestDuration: 130
X-AspNet-Version: 4.0.30319
SPRequestGuid: 656d7b9e-c9b0-b069-af86-d149c8e32d31
request-id: 656d7b9e-c9b0-b069-af86-d149c8e32d31
X-FRAME-OPTIONS: SAMEORIGIN
Persistent-Auth: true
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10325: 1; RequireReadOnly
Date: Mon, 16 Jul 2018 19:55:29 GMT

{"d":{"Id":"be100e28-dd1c-4f2f-8e83-acdb6fffff05"}}

4.1.3 Client Policy

4.1.3.1 Client Request

GET https://<server_url>/personal/<user_alias>/_api/SPFileSync/sync/be100e28-dd1c-4f2f-8e83-
acdb6fffff05/policy/ HTTP/1.1
Connection: Keep-Alive
Accept-Encoding: peerdist
Cookie:
User-Agent: Microsoft SkyDriveSync 18.131.0701.0002 ship; Windows NT 10.0 (15063)
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <server_url>

4.1.3.2 Server Response

```
HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Content-Type: Application/Xml
Expires: Sun, 01 Jul 2018 19:55:30 GMT
Last-Modified: Mon, 16 Jul 2018 19:55:30 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
SPClientServiceRequestDuration: 56
SPRequestDuration: 68
X-AspNet-Version: 4.0.30319
SPRequestGuid: 656d7b9e-59c4-b069-af86-d69301c136e1
request-id: 656d7b9e-59c4-b069-af86-d69301c136e1
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10325: 1; RequireReadOnly
Date: Mon, 16 Jul 2018 19:55:29 GMT
Content-Length: 3390
```

```xml
<?xml version="1.0"?>
<PolicyDocument xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" Id="SkyDriveSyncV1">
<RangeRule Name="PolicyDocumentPollIntervalSeconds" Start="21600" End="28800" />
<RangeRule Name="PolicyDocumentPrefetchIntervalSeconds" Start="3600" End="7200" />
<RangeRule Name="BackgroundPollShortIntervalSeconds" Start="90" End="110" />
<RangeRule Name="BackgroundPollLongIntervalSeconds" Start="7200" End="10800" />
<Rule Name="UploadBlockSizeKB" Value="8160" />
<Rule Name="DownloadBlockSizeKB" Value="8160" />
<Rule Name="MaxClientRequestsPerDay" Value="2500000" />
<Rule Name="MaxClientMBTransferredPerDay" Value="1048576" />
<Rule Name="MaxFileSizeBytes" Value="10737418240" />
<Rule Name="HighVisibilityFileExclusionList" Value="*.| *|*
|*_vti_*|~|~site|~sitecollection|~masterurl|~templatepageurl" />
<DavUrlMatches>
<DavUrlMatch>^https:\/\/<server_url>\/personal\/<user_alias>\/Documents((\/.*)?)</DavUrlMatch>
</DavUrlMatches>
<Rule Name="DavUrlTemplate"
Value="https://<server_url>/personal/<user_alias>/Documents/{Path}" />
<Rule Name="ShareUrlTemplate"
Value="https://<server_url>/personal/<user_alias>/_layouts/15/SkySyncRedir.aspx?Type=1&amp;ResourceId={ResourceID}" />
<Rule Name="ShareUrlTemplateV2"
Value="https://<server_url>/personal/<user_alias>/_layouts/15/SkySyncRedir.aspx?Type=3&amp;ResourceId={ResourceID}" />
<Rule Name="OfficeExcludeList" Value="|" />
<Rule Name="WacUrlTemplate"
Value="https://<server_url>/personal/<user_alias>/?d=w{ResourceID}&amp;cid={hexcid}" />
<Rule Name="SkyDriveURI"
Value="https://<server_url>/personal/<user_alias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff05/RootFolder" />
<Rule Name="SkyDriveItemsURI"
Value="https://<server_url>/personal/<user_alias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff05/Items/{ResourceID}" />
<Rule Name="QosCollectionEnabled" Value="False" />
<Rule Name="HashAlgorithm" Value="XORHash" />
```

```
<Rule Name="DavUrlNamespace" Value="https://<server_url>/personal/<user_alias>/Documents/"
/>
<Rule Name="MaxUrlLength" Value="400" />
<Rule Name="MaxInlineUploadSizeKB" Value="4080" />
<Rule Name="StorageManagementURI"
Value="https://<server_url>/personal/<user_alias>/_layouts/15/storman.aspx" />
<Rule Name="ViewOnlineUrlTemplate"
Value="https://<server_url>/personal/<user_alias>/_layouts/15/SkySyncRedir.aspx?Type=2&amp;R
esourceId={ResourceID}" />
<Rule Name="DownloadUrlTemplate"
Value="https://<server_url>/personal/<user_alias>/_layouts/15/download.aspx?UniqueId={Resourc
eID}" />
<Rule Name="DownloadStreamingMaxStreamSizeKB" Value="102400" />
<Rule Name="RecycleBinURI"
Value="https://<server_url>/personal/<user_alias>/_layouts/15/onedrive.aspx?view=5" />
<Rule Name="DisableReportProblemDialog" Value="False" />
<Rule Name="WebPushAppServerPublicKey"
Value="BNA2iwHRTFRscrz2QLzludxneeSoidjeTAaE9qjDkCtGsqb24M7dqTfVbs5FzDCbBp4BL11YX6b1e3
ROu051nMo=" />
<Rule Name="CollabVectorClockURI"
Value="https://<server_url>/personal/<user_alias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acd
b6fffff05/CollabVectorClock/{ResourceID}" />
<Rule Name="SiteTitle" Value="<user_alias>" />
<Rule Name="LibraryTitle" Value="Documents" />
<Rule Name="TelemetryId" Value="wJBxr+Bqwxv9nQ2FVj95Y13x1nNy8Zz6BpVo9KyvFFU=" />
</PolicyDocument>
```

4.1.4 Getting Root Folder Information

4.1.4.1 Client Request

```
GET
https://<server_url>/personal/<user_alias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff0
5/RootFolder HTTP/1.1
Connection: Keep-Alive
Accept-Encoding: peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.131.0701.0002 ship; Windows NT 10.0 (15063)
Application: OneDriveSync
Scenario: StorageProvisioningScenario
X-GeoMoveOptions: HttpRedirection
X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestStats: btuc=0;did=5b77f027-7d0d-9974-6c89-d8c6d08d911a;ftuc=0;mn=<user_alias>1;
X-RestrictedWriteCapabilities: Irm
X-TransactionId: c0cd3f16-1d82-401c-b506-04c1b4daae54StorageProvisioningScenario
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <server_url>
```

4.1.4.2 Server Response

```
HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Text/Xml
```

Expires: Sun, 01 Jul 2018 19:55:34 GMT
Last-Modified: Mon, 16 Jul 2018 19:55:34 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-QuotaState: Normal
SPClientServiceRequestDuration: 108
SPRequestDuration: 120
X-AspNet-Version: 4.0.30319
SPRequestGuid: 666d7b9e-a9b8-b069-12e9-e01ab324b2be
request-id: 666d7b9e-a9b8-b069-12e9-e01ab324b2be
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10325: 1; RequireReadOnly
Date: Mon, 16 Jul 2018 19:55:33 GMT

```xml
<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-07-10T21:34:35.0000000Z</DateModified>
<Path>/RootFolder</Path>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
<TotalSubItemSize>5494630</TotalSubItemSize>
<QuotaState>Normal</QuotaState>
<SpaceUsed>18125149</SpaceUsed>
<SpaceGranted>109951162777600</SpaceGranted>
</Folder>
```

4.1.5 Getting File/Folder Data

4.1.5.1 Client Request

GET
https://<server_url>/personal/<user_alias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff0
5/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=500&View=SkyDriveSync HTTP/1.1
Connection: Keep-Alive
Accept: application/web3s+xml
Accept-Encoding: gzip, peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.131.0701.0002 ship; Windows NT 10.0 (15063)
Application: OneDriveSync
Scenario: StorageStartupChangeEnumerationScenario
X-EnumerationReason: 1
X-GeoMoveOptions: HttpRedirection
X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestStats: btuc=0;did=5b77f027-7d0d-9974-6c89-d8c6d08d911a;ftuc=0;mn=<user_alias>1;
X-RestrictedWriteCapabilities: Irm
X-SyncFeatures: 2
X-SyncOptions: HierarchicalKnowledge
X-TransactionId: d2f02665-e637-4664-8e50-
31c60514634bStorageStartupChangeEnumerationScenario

X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <server_url>

4.1.5.2 Server Response

```
HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Application/Web3s+xml
Expires: Sun, 01 Jul 2018 19:55:41 GMT
Last-Modified: Mon, 16 Jul 2018 19:55:41 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-SyncStatus: FullData
X-QuotaState: Normal
X-SyncToken: 3;%234;%231;3;be100e28-dd1c-4f2f-8e83-
acdb6fffff05;636673676570600000;26124;%23;%23;%234
SPClientServiceRequestDuration: 77
SPRequestDuration: 105
X-AspNet-Version: 4.0.30319
SPRequestGuid: 686d7b9e-296c-b069-12e9-ea74ec042f1e
request-id: 686d7b9e-296c-b069-12e9-ea74ec042f1e
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10325: 1; RequireReadOnly
Date: Mon, 16 Jul 2018 19:55:40 GMT

<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-07-10T21:34:35.0000000Z</DateModified>
<Path>/RootFolder</Path>
<Items>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>f94adb0b6a924d678ede7b662c2761c3</ResourceID>
<ETag>"{F94ADB0B-6A92-4D67-8EDE-7B662C2761C3},1"</ETag>
<DateCreated>2018-07-10T17:02:01.0000000Z</DateCreated>
<DateModified>2018-07-10T17:02:01.0000000Z</DateModified>
<Path>/RootFolder/Shared with Everyone</Path>
<RelationshipName>Shared with Everyone</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<TotalSubItemSize>0</TotalSubItemSize>
</Folder>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>103c22e18d1c4b4d9faf686ed01bddb5</ResourceID>
<ETag>"{103C22E1-8D1C-4B4D-9FAF-686ED01BDDB5},4"</ETag>
<DateCreated>2018-07-10T18:32:34.0000000Z</DateCreated>
<DateModified>2018-07-10T18:32:34.0000000Z</DateModified>
```

```
<Path>/RootFolder/Testfolder</Path>
<Items>
<Document>
<ItemType>Document</ItemType>
<ResourceID>d2b54d1b1cd04b3e9d7c1661c73dba0c</ResourceID>
<ETag>"{D2B54D1B-1CD0-4B3E-9D7C-1661C73DBA0C},2"</ETag>
<DateCreated>2018-07-10T11:34:32.0000000Z</DateCreated>
<DateModified>2018-07-10T16:29:20.0000000Z</DateModified>
<Path>/RootFolder/Testfolder/AppXManifest.xml</Path>
<RelationshipName>AppXManifest.xml</RelationshipName>
<ParentResourceID>103c22e18d1c4b4d9faf686ed01bddb5</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<Hash>/CpmlTh83VyyU7MvGMlyMrf5TY4=</Hash>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>58696b7f-4868-42ea-9688-7386daa6b5bf</Value>
</CustomIdentity>
</ModifierIdentity>
<DocumentStreams>
<DocumentStream>
<DocumentStreamName>Binary</DocumentStreamName>
<MimeType>text/xml</MimeType>
<DataSize>5494630</DataSize>
<PreAuthURL>https://<server_url>/personal/<user_alias>/_layouts/15/download.aspx?UniqueId=%
7Bd2b54d1b%2D1cd0%2D4b3e%2D9d7c%2D1661c73dba0c%7D&amp;UserAgent=SkySync</PreAut
hURL>
<XORHash>/CpmlTh83VyyU7MvGMlyMrf5TY4=</XORHash>
<WriteValidationToken>/CpmlTh83VyyU7MvGMlyMrf5TY4=</WriteValidationToken>
</DocumentStream>
</DocumentStreams>
</Document>
</Items>
<RelationshipName>Testfolder</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>ef0580be-9492-42da-ba18-7075744ff7da</Value>
</CustomIdentity>
</ModifierIdentity>
<TotalSubItemSize>5494630</TotalSubItemSize>
</Folder>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>5d3bbf778e6f4a4dad89c2229233bb07</ResourceID>
<ETag>"{5D3BBF77-8E6F-4A4D-AD89-C2229233BB07},4"</ETag>
<DateCreated>2018-07-10T18:32:48.0000000Z</DateCreated>
<DateModified>2018-07-10T18:32:48.0000000Z</DateModified>
<Path>/RootFolder/Testfolder2</Path>
<RelationshipName>Testfolder2</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
```

<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>ef0580be-9492-42da-ba18-7075744ff7da</Value>
</CustomIdentity>
</ModifierIdentity>
<TotalSubItemSize>0</TotalSubItemSize>
</Folder>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>fd888fe1020a40418b1d649a72514bcf</ResourceID>
<ETag>"{FD888FE1-020A-4041-8B1D-649A72514BCF},2"</ETag>
<DateCreated>2018-07-10T19:25:30.0000000Z</DateCreated>
<DateModified>2018-07-10T19:25:38.0000000Z</DateModified>
<Path>/RootFolder/OneDrive - Microsoft</Path>
<RelationshipName>OneDrive - Microsoft</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>0840bd32-ea71-4911-9fef-25098cccc466</Value>
</CustomIdentity>
</ModifierIdentity>
<TotalSubItemSize>0</TotalSubItemSize>
</Folder>
</Items>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
<QuotaState>Normal</QuotaState>
<SpaceUsed>18125149</SpaceUsed>
<SpaceGranted>109951162777600</SpaceGranted>
</Folder>

4.2   Adding a file to the scope of the file share

4.2.1   Client Request

GET
https://<sync_site_url>/personal/<useralias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff
05/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=3;%234;%231;3;b
e100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699580792830000;58169;%23;%23;%234&View=SkyDriveSync HTTP/1.1
Connection: Keep-Alive
Accept: application/web3s+xml
Accept-Encoding: gzip, peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.139.0711.0001 debug; Windows NT 10.0 (17134)
Application: OneDriveSync
Scenario: StorageChangeEnumerationScenario
X-EnumerationReason: 65536
X-GeoMoveOptions: HttpRedirection

[MS-FILESYNC] - v20190319
File Synchronization Protocol
Copyright © 2019 Microsoft Corporation
Release: March 19, 2019

X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestDigest:
0x10AAC7970CFA50BFBB11040622D141717251207A9F6AF7AD68C91A239FEF9718F26AEEE930A306
64BF313463ED26FE59CDF13F10CB85E24A664792DB8F93A898,15 Aug 2018 19:25:13 -0000
X-RequestStats: btuc=11060;did=5b77f027-7d0d-9974-6c89-
d8c6d08d911a;ftuc=1;mn=<useralias>1;
X-ResponseStructure: Flat
X-RestrictedWriteCapabilities: Irm
X-SyncFeatures: a
X-SyncOptions: HierarchicalKnowledge
X-TransactionId: d06b0acc-836e-40d9-a122-54964b357672StorageChangeEnumerationScenario
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <sync_site_url>

4.2.2 Server Response

HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Application/Web3s+xml
Expires: Tue, 31 Jul 2018 19:28:27 GMT
Last-Modified: Wed, 15 Aug 2018 19:28:27 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-SyncStatus: IncrementalChanges
X-QuotaState: Normal
X-SyncToken: 3;%234;%231;3;be100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699581074230000;58171;%23;%23;%234
SPClientServiceRequestDuration: 203
SPRequestDuration: 214
X-AspNet-Version: 4.0.30319
SPRequestGuid: c613859e-792a-b069-12e9-ee4f82a7df2f
request-id: c613859e-792a-b069-12e9-ee4f82a7df2f
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10331: 1; RequireReadOnly
Date: Wed, 15 Aug 2018 19:28:27 GMT

```
<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-08-15T19:28:27.0000000Z</DateModified>
<Path>/RootFolder</Path>
<Items>
<Document>
<ItemType>Document</ItemType>
<ResourceID>4f7967954615409eb8de64aaa31e4e7e</ResourceID>
<ETag>"{4F796795-4615-409E-B8DE-64AAA31E4E7E},2"</ETag>
<DateCreated>2018-08-06T00:11:07.0000000Z</DateCreated>
<DateModified>2018-08-07T22:03:44.0000000Z</DateModified>
<Path>/RootFolder/Document1.docx</Path>
```

```
<RelationshipName>Document1.docx</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<Hash>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</Hash>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>e3ef9d74-9186-42ba-9fd1-b5450e6b7235</Value>
</CustomIdentity>
</ModifierIdentity>
<DocumentStreams>
<DocumentStream>
<DocumentStreamName>Binary</DocumentStreamName>
<MimeType>application/vnd.openxmlformats-
officedocument.wordprocessingml.document</MimeType>
<DataSize>11060</DataSize>
<PreAuthURL>https://<sync_site_url>/personal/<useralias>/_layouts/15/download.aspx?UniqueId=
%7B4f796795%2D4615%2D409e%2Db8de%2D64aaa31e4e7e%7D&amp;UserAgent=SkySync</PreA
uthURL>
<XORHash>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</XORHash>
<WriteValidationToken>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</WriteValidationToken>
</DocumentStream>
</DocumentStreams>
</Document>
</Items>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
<QuotaState>Normal</QuotaState>
<SpaceUsed>7304813</SpaceUsed>
<SpaceGranted>109951162777600</SpaceGranted>
</Folder>
```

4.3   Deleting a file from the file share

4.3.1   Client Request

```
GET
https://<sync_site_url>/personal/<useralias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff
05/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=3;%234;%231;3;b
e100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699579579600000;58167;%23;%23;%234&View=SkyDriveSync HTTP/1.1
Connection: Keep-Alive
Accept: application/web3s+xml
Accept-Encoding: gzip, peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.139.0711.0001 debug; Windows NT 10.0 (17134)
Application: OneDriveSync
Scenario: StorageChangeEnumerationScenario
X-EnumerationReason: 16
X-GeoMoveOptions: HttpRedirection
X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestDigest:
0x10AAC7970CFA50BFBB11040622D141717251207A9F6AF7AD68C91A239FEF9718F26AEEE930A306
```

64BF313463ED26FE59CDF13F10CB85E24A664792DB8F93A898,15 Aug 2018 19:25:13 -0000
X-RequestStats: btuc=0;did=5b77f027-7d0d-9974-6c89-d8c6d08d911a;ftuc=0;mn=<useralias>1;
X-ResponseStructure: Flat
X-RestrictedWriteCapabilities: Irm
X-SyncFeatures: a
X-SyncOptions: HierarchicalKnowledge
X-TransactionId: 446945cc-f831-49fb-a8c9-5186e87ec554StorageChangeEnumerationScenario
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <sync_site_url>

4.3.2 Server Response

HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Application/Web3s+xml
Expires: Tue, 31 Jul 2018 19:26:16 GMT
Last-Modified: Wed, 15 Aug 2018 19:26:16 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-SyncStatus: IncrementalChanges
X-QuotaState: Normal
X-SyncToken: 3;%234;%231;3;be100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699579765370000;58168;%23;%23;%234
SPClientServiceRequestDuration: 62
SPRequestDuration: 69
X-AspNet-Version: 4.0.30319
SPRequestGuid: a613859e-2926-b069-7de0-4fe9f98273e8
request-id: a613859e-2926-b069-7de0-4fe9f98273e8
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10331: 1; RequireReadOnly
Date: Wed, 15 Aug 2018 19:26:16 GMT

<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-08-15T19:26:17.0000000Z</DateModified>
<Path>/RootFolder</Path>
<Items>
<Document>
<IsDeleted>True</IsDeleted>
<ItemType>Document</ItemType>
<ResourceID>e837ab1ce8e245e98f5353bd32e16ba8</ResourceID>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>e3ef9d74-9186-42ba-9fd1-b5450e6b7235</Value>
</CustomIdentity>
</ModifierIdentity>
</Document>

```
</Items>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
<QuotaState>Normal</QuotaState>
<SpaceUsed>7293104</SpaceUsed>
<SpaceGranted>109951162777600</SpaceGranted>
</Folder>
```

4.4 Moving a file inside the scope of the file share

4.4.1 Client Request

```
GET
https://<sync_site_url>/personal/<useralias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff
05/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=3;%234;%231;3;b
e100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699579166800000;58161;%23;%23;%234&View=SkyDriveSync HTTP/1.1
Connection: Keep-Alive
Accept: application/web3s+xml
Accept-Encoding: gzip, peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.139.0711.0001 debug; Windows NT 10.0 (17134)
Application: OneDriveSync
Scenario: StorageChangeEnumerationScenario
X-EnumerationReason: 16
X-GeoMoveOptions: HttpRedirection
X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestDigest:
0x10AAC7970CFA50BFBB11040622D141717251207A9F6AF7AD68C91A239FEF9718F26AEEE930A306
64BF313463ED26FE59CDF13F10CB85E24A664792DB8F93A898,15 Aug 2018 19:25:13 -0000
X-RequestStats: btuc=0;did=5b77f027-7d0d-9974-6c89-d8c6d08d911a;ftuc=0;mn=<useralias>1;
X-ResponseStructure: Flat
X-RestrictedWriteCapabilities: Irm
X-SyncFeatures: a
X-SyncOptions: HierarchicalKnowledge
X-TransactionId: 81ecf1f7-c78a-4ff4-9a70-af5a2de5e0ecStorageChangeEnumerationScenario
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <sync_site_url>
```

4.4.2 Server Response

```
HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Application/Web3s+xml
Expires: Tue, 31 Jul 2018 19:25:39 GMT
Last-Modified: Wed, 15 Aug 2018 19:25:39 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-SyncStatus: IncrementalChanges
```

X-QuotaState: Normal
X-SyncToken: 3;%234;%231;3;be100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699579388970000;58164;%23;%23;%234
SPClientServiceRequestDuration: 70
SPRequestDuration: 77
X-AspNet-Version: 4.0.30319
SPRequestGuid: 9c13859e-99fa-b069-7de0-419eb46bac6a
request-id: 9c13859e-99fa-b069-7de0-419eb46bac6a
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10331: 1; RequireReadOnly
Date: Wed, 15 Aug 2018 19:25:38 GMT

```xml
<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-08-15T19:25:39.0000000Z</DateModified>
<Path>/RootFolder</Path>
<Items>
<Document>
<ItemType>Document</ItemType>
<ResourceID>e837ab1ce8e245e98f5353bd32e16ba8</ResourceID>
<ETag>"{E837AB1C-E8E2-45E9-8F53-53BD32E16BA8},8"</ETag>
<DateCreated>2018-08-07T22:53:12.0000000Z</DateCreated>
<DateModified>2018-08-07T23:03:45.0000000Z</DateModified>
<Path>/RootFolder/sdafasdfawe.docx</Path>
<RelationshipName>sdafasdfawe.docx</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<Hash>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</Hash>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>e3ef9d74-9186-42ba-9fd1-b5450e6b7235</Value>
</CustomIdentity>
</ModifierIdentity>
<DocumentStreams>
<DocumentStream>
<DocumentStreamName>Binary</DocumentStreamName>
<MimeType>application/vnd.openxmlformats-
officedocument.wordprocessingml.document</MimeType>
<DataSize>11060</DataSize>
<PreAuthURL>https://sp-
my.office.com/personal/<useralias>/_layouts/15/download.aspx?UniqueId=%7Be837ab1c%2De8e2%
2D45e9%2D8f53%2D53bd32e16ba8%7D&amp;UserAgent=SkySync</PreAuthURL>
<XORHash>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</XORHash>
<WriteValidationToken>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</WriteValidationToken>
</DocumentStream>
</DocumentStreams>
</Document>
</Items>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
```

<QuotaState>Normal</QuotaState>
<SpaceUsed>7293104</SpaceUsed>
<SpaceGranted>109951162777600</SpaceGranted>
</Folder>

4.5   Renaming a file

4.5.1   Client Request

GET
https://<sync_site_url>/personal/<useralias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff
05/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=3;%234;%231;3;b
e100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699579388970000;58164;%23;%23;%234&View=SkyDriveSync HTTP/1.1
Connection: Keep-Alive
Accept: application/web3s+xml
Accept-Encoding: gzip, peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.139.0711.0001 debug; Windows NT 10.0 (17134)
Application: OneDriveSync
Scenario: StorageChangeEnumerationScenario
X-EnumerationReason: 16
X-GeoMoveOptions: HttpRedirection
X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestDigest:
0x10AAC7970CFA50BFBB11040622D141717251207A9F6AF7AD68C91A239FEF9718F26AEEE930A306
64BF313463ED26FE59CDF13F10CB85E24A664792DB8F93A898,15 Aug 2018 19:25:13 -0000
X-RequestStats: btuc=0;did=5b77f027-7d0d-9974-6c89-d8c6d08d911a;ftuc=0;mn=<useralias>1;
X-ResponseStructure: Flat
X-RestrictedWriteCapabilities: Irm
X-SyncFeatures: a
X-SyncOptions: HierarchicalKnowledge
X-TransactionId: a6f20ed4-9127-45cc-801c-77fe772367f6StorageChangeEnumerationScenario
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <sync_site_url>

4.5.2   Server Response

HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Application/Web3s+xml
Expires: Tue, 31 Jul 2018 19:25:58 GMT
Last-Modified: Wed, 15 Aug 2018 19:25:58 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-SyncStatus: IncrementalChanges
X-QuotaState: Normal
X-SyncToken: 3;%234;%231;3;be100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699579579600000;58167;%23;%23;%234

SPClientServiceRequestDuration: 79
SPRequestDuration: 86
X-AspNet-Version: 4.0.30319
SPRequestGuid: a113859e-59a0-b069-7de0-40b2597671df
request-id: a113859e-59a0-b069-7de0-40b2597671df
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10331: 1; RequireReadOnly
Date: Wed, 15 Aug 2018 19:25:57 GMT

```xml
<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-08-15T19:25:58.0000000Z</DateModified>
<Path>/RootFolder</Path>
<Items>
<Document>
<ItemType>Document</ItemType>
<ResourceID>e837ab1ce8e245e98f5353bd32e16ba8</ResourceID>
<ETag>"{E837AB1C-E8E2-45E9-8F53-53BD32E16BA8},11"</ETag>
<DateCreated>2018-08-07T22:53:12.0000000Z</DateCreated>
<DateModified>2018-08-07T23:03:45.0000000Z</DateModified>
<Path>/RootFolder/xcfgbzdsfv.docx</Path>
<RelationshipName>xcfgbzdsfv.docx</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<Hash>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</Hash>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAADAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>e3ef9d74-9186-42ba-9fd1-b5450e6b7235</Value>
</CustomIdentity>
</ModifierIdentity>
<DocumentStreams>
<DocumentStream>
<DocumentStreamName>Binary</DocumentStreamName>
<MimeType>application/vnd.openxmlformats-
officedocument.wordprocessingml.document</MimeType>
<DataSize>11060</DataSize>
<PreAuthURL>https://sp-
my.office.com/personal/<useralias>/_layouts/15/download.aspx?UniqueId=%7Be837ab1c%2De8e2%
2D45e9%2D8f53%2D53bd32e16ba8%7D&amp;UserAgent=SkySync</PreAuthURL>
<XORHash>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</XORHash>
<WriteValidationToken>gzQZ4BqOp7uIMC7P5MhioA6NYIs=</WriteValidationToken>
</DocumentStream>
</DocumentStreams>
</Document>
</Items>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
<QuotaState>Normal</QuotaState>
<SpaceUsed>7293104</SpaceUsed>
```

<SpaceGranted>109951162777600</SpaceGranted>
</Folder>

4.6   Moving a file outside the scope of the sync folder

4.6.1   Client Request

GET
https://<sync_site_url>/personal/<useralias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff
05/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=3;%234;%231;3;b
e100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699581074230000;58171;%23;%23;%234&View=SkyDriveSync HTTP/1.1
Connection: Keep-Alive
Accept: application/web3s+xml
Accept-Encoding: gzip, peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.139.0711.0001 debug; Windows NT 10.0 (17134)
Application: OneDriveSync
Scenario: StorageChangeEnumerationScenario
X-EnumerationReason: 16
X-GeoMoveOptions: HttpRedirection
X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestDigest:
0x10AAC7970CFA50BFBB11040622D141717251207A9F6AF7AD68C91A239FEF9718F26AEEE930A306
64BF313463ED26FE59CDF13F10CB85E24A664792DB8F93A898,15 Aug 2018 19:25:13 -0000
X-RequestStats: btuc=0;did=5b77f027-7d0d-9974-6c89-d8c6d08d911a;ftuc=0;mn=<useralias>1;
X-ResponseStructure: Flat
X-RestrictedWriteCapabilities: Irm
X-SyncFeatures: a
X-SyncOptions: HierarchicalKnowledge
X-TransactionId: ae5aaddf-ae0f-4b09-bf04-d83770fd535dStorageChangeEnumerationScenario
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <sync_site_url>

4.6.2   Server Response

HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Application/Web3s+xml
Expires: Tue, 31 Jul 2018 19:29:18 GMT
Last-Modified: Wed, 15 Aug 2018 19:29:18 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-SyncStatus: IncrementalChanges
X-QuotaState: Normal
X-SyncToken: 3;%234;%231;3;be100e28-dd1c-4f2f-8e83-
acdb6fffff05;636699581579070000;58172;%23;%23;%234
SPClientServiceRequestDuration: 64
SPRequestDuration: 77
X-AspNet-Version: 4.0.30319
SPRequestGuid: d213859e-b96c-b069-12e9-e7afa1b167f4

request-id: d213859e-b96c-b069-12e9-e7afa1b167f4
X-FRAME-OPTIONS: SAMEORIGIN
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10331: 1; RequireReadOnly
Date: Wed, 15 Aug 2018 19:29:17 GMT

```
<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-08-15T19:29:18.0000000Z</DateModified>
<Path>/RootFolder</Path>
<Items>
<Document>
<IsDeleted>True</IsDeleted>
<ItemType>Document</ItemType>
<ResourceID>4f7967954615409eb8de64aaa31e4e7e</ResourceID>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<ModifierIdentity>
<CustomIdentity>
<Name>SkyDriveSync</Name>
<Value>e3ef9d74-9186-42ba-9fd1-b5450e6b7235</Value>
</CustomIdentity>
</ModifierIdentity>
</Document>
</Items>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
<QuotaState>Normal</QuotaState>
<SpaceUsed>7304813</SpaceUsed>
<SpaceGranted>109951162777600</SpaceGranted>
</Folder>
```

4.7   Updating File Contents

4.7.1   Client Request
GET
https://<server_url>/personal/<user_alias>/_api/SPFileSync/sync/be100e28dd1c4f2f8e83acdb6fffff0
5/RootFolder?Filter=changes&InlineBlobs=false&MaxItemCount=50&SyncToken=3;%234;%231;3;be
100e28-dd1c-4f2f-8e83-
acdb6fffff05;636693593555070000;44657;%23;%23;%234&View=SkyDriveSync HTTP/1.1
Connection: Keep-Alive
Accept: application/web3s+xml
Accept-Encoding: gzip, peerdist
Accept-Language: en-US
Cookie:
User-Agent: Microsoft SkyDriveSync 18.139.0711.0001 debug; Windows NT 10.0 (17134)
Application: OneDriveSync
Scenario: StorageWNSNotificationChangeEnumerationScenario
X-EnumerationReason: 2
X-GeoMoveOptions: HttpRedirection
X-MachineDomainInfo: {F488EF59-EEEF-11D2-A5DA-00805F9F21F5}
X-MachineId: 3c74e7fe-93e2-4f83-8380-4e540517617a
X-RequestDigest:

0xFE2A2678E2BBEAD60F76A2B221D9768029BC94E3F4139E407A26B3B10CD0F8D2DACBEABDAB778
5DD0725D6053A0BDAE7B1591C391E94C89209D3A7B54EF9516E,08 Aug 2018 21:09:15 -0000
X-RequestStats: btuc=0;did=5b77f027-7d0d-9974-6c89-d8c6d08d911a;ftuc=0;mn=v-josmil1;
X-ResponseStructure: Flat
X-RestrictedWriteCapabilities: Irm
X-SyncFeatures: a
X-SyncOptions: HierarchicalKnowledge
X-TransactionId: 41794ac7-b72a-46b9-97f0-
6fe86856bc0eStorageWNSNotificationChangeEnumerationScenario
X-WNSDiagnostics: 1,7c7d4c12-e73c-4be8-9e15-d9cff4a22675,dcd8829e-7946-b069-7de0-
4071805f7468,7
X-P2P-PeerDist: Version=1.1
X-P2P-PeerDistEx: MinContentInformation=1.0, MaxContentInformation=2.0
Host: <server_url>
Authorization: NTLM

TlRMTVNTUAADAAAAGAAYAIgAAAAAgACoAAAAA4ADgBYAAAAEAAQAGYAAAASABIAdgAAAAAAAACgA
gAABYKIogoA7kIAAAAP2JEuY3FKQBa63l4VKA7hblIARQBEAE0ATwBOAEQAdgAtAGoAbwBzAG0AaQBsAF
YALQBKAE8AUwBNAEkATAAxAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAMqL+KeaLsHu6GoInnfwjQsB
AQAAAAAAAM1Hu1FcL9QBxhlHvyO9hbcCtk5/AgASAE8ARgBGAEkAQwBFAEQATwBHAAEAHAA5ADkANw
BDAC0AQgBOADMALQBPAEYARQAwADMABABKAG8AZgBmAGkAYwBlAGQAbwBnAC4AcwBlAGwAZgBoA
G8AcwB0AC4AYwBvAHIAcAAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYwBvAG0AAwoADkAOQA3AEMALQ
BCAE4AMwAtAFAARgBFADAAMwAuAG8AZgBmAGkAYwBlAGQAbwBnAC4AcwBlAGwAZgBoAG8AcwB0AC
4AYwBvAHIAcAAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYwBvAG0AABQBKAG8AZgBmAGkAYwBlAGQAbwB
nAC4AcwBlAGwAZgBoAG8AcwB0AC4AYwBvAHIAcAAuAG0AaQBjAHIAbwBzAG8AZgB0AC4AYwBvAG0ABQ
wAIAM1Hu1FcL9QBBgAEAAIAAAAIADAAMAAAAAAAAAABAAAACAAACVFHc4Et5qjfAIz2QWlbNruOWu2
2yy/szb823jjgESqCgAQABwcwl/1STvycYrU5eIW0MYJACoASABUAFQAUAAvAHMAcAAtAG0AeQAuAG8AZ
gBmAGkAYwBlAC4AYwBvAG0AAAAAAAAAAACBBtgE

4.7.2 Server Response

HTTP/1.1 200 OK
Cache-Control: private, max-age=0
Transfer-Encoding: chunked
Content-Type: Application/Web3s+xml
Expires: Tue, 24 Jul 2018 21:11:06 GMT
Last-Modified: Wed, 08 Aug 2018 21:11:06 GMT
Server: Microsoft-IIS/10.0
X-SharePointHealthScore: 0
X-SP-SERVERSTATE: ReadOnly=0
X-SyncStatus: IncrementalChanges
X-QuotaState: Normal
X-SyncToken: 3;%234;%231;3;be100e28-dd1c-4f2f-8e83-
acdb6fffff05;636693594626730000;44658;%23;%23;%234
SPClientServiceRequestDuration: 69
SPRequestDuration: 169
X-AspNet-Version: 4.0.30319
SPRequestGuid: ddd8829e-597c-b069-7de0-4f35fc147dc3
request-id: ddd8829e-597c-b069-7de0-4f35fc147dc3
X-FRAME-OPTIONS: SAMEORIGIN
Persistent-Auth: true
X-Powered-By: nosniff
MicrosoftSharePointTeamServices: 16.0.0.10331: 1; RequireReadOnly
Date: Wed, 08 Aug 2018 21:11:06 GMT

```
<?xml version="1.0" encoding="utf-8"?>
<Folder>
<ItemType>Folder</ItemType>
```

<ResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ResourceID>
<ETag>eb99ad0e96e64d1fb3547dff4fddbfa0</ETag>
<DateCreated>2018-06-05T06:41:43.0000000Z</DateCreated>
<DateModified>2018-08-08T21:11:03.0000000Z</DateModified>
<Path>/RootFolder</Path>
<Items>
<Document>
<ItemType>Document</ItemType>
<ResourceID>d81edff30a944eb4a948835569237fca</ResourceID>
<ETag>"{D81EDFF3-0A94-4EB4-A948-835569237FCA},10"</ETag>
<DateCreated>2018-08-07T22:02:53.0000000Z</DateCreated>
<DateModified>2018-08-08T21:11:01.0000000Z</DateModified>
<Path>/RootFolder/foo.docx</Path>
<RelationshipName>foo.docx</RelationshipName>
<ParentResourceID>eb99ad0e96e64d1fb3547dff4fddbfa0</ParentResourceID>
<fsshttpstate.xschema.storage.live.com>
<Hash>EtMPxlRIX8IedoGkAUB1ww88QQY=</Hash>
<VersionToken>KgnhZnsBN0y8qh354QbmegUkAAUJRAAHAAAA</VersionToken>
</fsshttpstate.xschema.storage.live.com>
<DocumentStreams>
<DocumentStream>
<DocumentStreamName>Binary</DocumentStreamName>
<MimeType>application/vnd.openxmlformats-
officedocument.wordprocessingml.document</MimeType>
<DataSize>11756</DataSize>
<PreAuthURL>https://<server_url>/personal/<user_alias>/_layouts/15/download.aspx?UniqueId=%
7Bd81edff3%2D0a94%2D4eb4%2Da948%2D835569237fca%7D&UserAgent=SkySync</PreAuth
URL>
<XORHash>EtMPxlRIX8IedoGkAUB1ww88QQY=</XORHash>
<WriteValidationToken>EtMPxlRIX8IedoGkAUB1ww88QQY=</WriteValidationToken>
</DocumentStream>
</DocumentStreams>
</Document>
</Items>
<RelationshipName>RootFolder</RelationshipName>
<ParentResourceID>be100e28dd1c4f2f8e83acdb6fffff05</ParentResourceID>
<QuotaState>Normal</QuotaState>
<SpaceUsed>18270508</SpaceUsed>
<SpaceGranted>109951162777600</SpaceGranted>
</Folder>

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 XML Schema

None.

7   Appendix B: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include updates to those products.

- Microsoft SharePoint Server 2019

- Microsoft OneDrive

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates 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.

8 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

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.
- A document revision that captures changes to protocol functionality.

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 **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

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

Section	Description	Revision class
4.2.2 Server Response	Updated example for DateCreated and DateModified elements.	Minor

9 Index