

**SharePoint File Sync and WOPI Protocol Test Suites Specification**

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# Introduction

The SharePoint File Sync and WOPI Protocol Test Suites are implemented as synthetic clients running against a server-side implementation of a given SharePoint protocol. They are designed in a client-to-server relationship and were originally developed for the in-house testing of the Microsoft Open Specifications. Test suites have been used extensively in Plugfests and Interoperability Labs to test partner implementations.

This document describes how the SharePoint File Sync and WOPI Protocol Test Suites are designed to verify that the server behaves in the way that is compliant with normative protocol requirements as described in the technical specification.

The Microsoft Open Specifications were written using the normative language defined in [RFC2119](http://go.microsoft.com/fwlink/?LinkId=117453). The statements of them are extracted as protocol requirements which are listed in the requirement specification described in section 2. The test suites are developed to test the normative protocol requirements. In a single test suite, similar or related requirements are grouped into one test case, and the test cases about same command or operation are grouped into one scenario.

The technical specifications listed in the following table are included in the SharePoint File Sync and WOPI Protocol Suites package. The version of these technical specifications is v20130726.

SharePoint File Sync and WOPI protocol technical specifications

|  |  |  |
| --- | --- | --- |
| Technical specification | | Protocol name |
| **MS-WOPI** | [Web Application Open Platform Interface Protocol](http://go.microsoft.com/fwlink/?LinkId=389443) | |
| **MS-FSSHTTP** | [File Synchronization via SOAP over HTTP Protocol](http://go.microsoft.com/fwlink/?LinkId=389444) | |
| **MS-FSSHTTPB** | [Binary Requests for File Synchronization via SOAP Protocol](http://go.microsoft.com/fwlink/?LinkId=389445) | |
| **MS-FSSHTTPD** | [Binary Data Format for File Synchronization via SOAP](http://go.microsoft.com/fwlink/?LinkId=389446) | |
| **MS-ONESTORE** | [OneNote Revision Store File Format](https://go.microsoft.com/fwlink/?linkid=2080738) | |

# Requirement specification

A requirement specification contains a list of requirements that are extracted from statements in the technical specification. Each technical specification has one corresponding requirement specification named as MS-XXXX\_RequirementSpecification.xlsx, which can be found in the Docs\MS-XXXX folder in the SharePoint File Sync and WOPI Protocol Test Suites package together with the technical specification.

The requirements are categorized as normative or informative. If the statement of the requirement is required for interoperability, the requirement is normative. If the statement of the requirement is clarifying information or high-level introduction, and removal of it does not affect interoperability, the requirement is informative.

Each requirement applies to a specific scope: server, client, or both. If the requirement describes a behavior performed by the responder, the scope of the requirement is server. If the requirement describes a behavior performed by the initiator, the scope of the requirement is client. If the requirement describes a behavior performed by both initiator and responder, the scope of the requirement is both.

The test suites cover normative requirements which describes a behavior performed by the responder. For a detailed requirements list and classification, see the MS-XXXX\_RequirementSpecification.xlsx.

# Design considerations

## Assumptions

* The MS-FSSHTTP-FSSHTTPB test suite tests one client and one connection.

This is because there is no specification stated in the open specification. By default, it is assumed that the server performs the same behavior to multiple clients or to a single client.

* Here are the prerequisities of the system under test (SUT) in the MS-WOPI test suite:
* The SUT can store files of the following three file types in a document library:
* \*.txt
* \*.zip
* \*.one
* The SUT enables a user to upload files of the above three file types into the specified document library.
* Make sure the HTTP port 80 can be used by the MS-WOPI test suite.
* Make sure there is no SharePoint WOPI binding for the client machine in the SUT before running any test cases.
* ***Note*** *In Microsoft SharePoint Foundation 2013 Service Pack 1 (SP1), Microsoft SharePoint Server 2013 Service Pack 1 (SP1) and Microsoft SharePoint Server 2016*

*, the command* ***Get-SPWOPIBinding*** *can be used to get the binding information, and the command* ***Remove-SPWOPIBinding*** *can be used to remove the binding.*

## Dependencies

All SharePoint File Sync and WOPI Protocol Test Suites depend on the Protocol Test Framework (PTF) to derive managed adapters.

# Package design

The SharePoint File Sync and WOPI Protocol Test Suites are implemented as synthetic clients running against a server-side implementation of a given SharePoint protocol. The test suites verify the server-side and testable requirements.

## Architecture

The following figure illustrates the SharePoint File Sync and WOPI Protocol Test Suites architecture.



**Figure 1: Architecture**

The following outlines the details of the test suites architecture:

**SUT**

The SUT hosts the server-side implementation of the protocol, which test suites run against.

* From a third-party user’s point of view, the SUT is the protocol server implementation.
* The following products have been tested with the test suite on the Windows platform.
* Microsoft SharePoint Foundation 2010 Service Pack 2 (SP2)
* Microsoft SharePoint Foundation 2013 Service Pack 1 (SP1)
* Microsoft SharePoint Server 2010 Service Pack 2 (SP2)
* Microsoft SharePoint Server 2013 Service Pack 1 (SP1)
* Microsoft SharePoint Server 2016
* Microsoft SharePoint Server 2019

**Test Suite Client**

The test suites act as clients to communicate with the SUT and validate the requirements gathered from technical specifications. The SharePoint File Sync and WOPI Protocol Test Suites include one common library, two adapters and three test suites.

* The test suites communicate with the SUT via a protocol adapter and an SUT control adapter to verify if the SUT behaves in the way that is compliant with normative protocol requirements.
* Shared test suite implements MS-FSSHTTP, and shared for MS-WOPI to verify whether the MS-FSSHTTP can be sent as HTTP body by using MS-WOPI transport format.
* MS-ONESTORE can be transmitted using the File Synchronization via SOAP over HTTP Protocol by Shared adapter.
* All protocol adapters communicate directly with the SUT.

## Common library

The common library provides implementation of the common messages structures and helper methods.

### Helper methods

The common library defines a series of helper methods. The helper methods can be classified into following categories.

* Access the properties in the configuration file.
* Generate resource name.
* Verify the remote Secure Sockets Layer (SSL) certificate.
* Other methods which are used by multiple test suites.

### Message structures

Becuase the C# proxy class is used by the MS-FSSHTTP-FSSHTTPB test suite, MS-WOPI test suite and MS-ONESTORE test suite. So the the C# proxy class is defined in the common library.

## Adapter

Adapters are interfaces between the test suites and the SUT. There are two types of adapter: protocol adapter and SUT control adapter. In most cases, modifications to the protocol adapter will not be required for non-Microsoft SUT implementations. However, the SUT control adapter should be appropriately configured to connect to a non-Microsoft SUT implementation. All test suites in the package contain a protocol adapter and an SUT control adapter.

### Protocol Adapter

The protocol adapter is a managed adapter, which is derived from the ManagedAdapterBase class in the PTF. It provides an interface that is used by the test cases to construct protocol request messages that will be sent to the SUT. The protocol adapter also acts as an intermediary between the test cases and the transport classes, receiving messages, sending messages, parsing responses from the transport classes, and validating the SUT response according to the normative requirement in the technical specification.

All protocols in SharePoint File Sync and WOPI Protocol Test Suites package use HTTP transport communicate with the SUT.

### SUT Control Adapter

The SUT control adapter manages all the control functions of the test suites that are not associated with the protocol. For example, the setup and tear down are managed through the SUT control adapter (that is, enabling or disabling the asynchronous RPC notification on the SUT). The SUT control adapter is designed to work with the Microsoft implementation of the SUT. However, it is configurable to allow the test suites to run against non-Microsoft implementations of the SUT.

All protocols in SharePoint File Sync and WOPI Protocol Test Suites package have an SUT control adapter.

## Test suites

The test suites verify the server-side and testable requirements listed in the requirement specification. The test suites call the protocol adapter to send and receive messages between the protocol adapter and the SUT, and call the SUT control adapter to change the SUT state. The test suites consists of a series of test cases which are categorized to several scenarios.

### Shared Test Suite

17 shared test scenarios are designed to cover testable requirements for MS-FSSHTTP behaviors in both MS-WOPI and MS-FSSHTTP-FSSHTTPB test suites. The following table lists the scenarios designed in the shared test suite:

|  |  |
| --- | --- |
| Scenario | Description |
| S01\_Cell | Verifies the cell sub-request operation. |
| S02\_Coauth | Verifies the co-authoring sub-request operation. |
| S03\_SchemaLock | Verifies the schema lock sub-request operation. |
| S04\_ExclusiveLock | Verifies the exclusive lock sub-request operation. |
| S05\_WhoAmI | Verifies the WhoAmI sub-request operation. |
| S06\_ServerTime | Verifies the ServerTime sub-request operation. |
| S07\_EditorsTable | Verifies the EditorsTable sub-request operation. |
| S08\_GetDocMetaInfo | Verifies the GetDocMetaInfo sub-request operations. |
| S09\_GetVersions | Verifies the GetVersions sub-request operations. |
| S10\_MultipleSubRequests | Verifies at least two sub-requests with various dependency types. |
| S11\_QueryAccess | Verifies the QueryAccess sub-request operation. |
| S12\_QueryChanges | Verifies the QueryChanges sub-request operation. |
| S13\_PutChanges | Verifies the PutChanges sub-request operation. |
| S14\_AllocateExtendedGuidRange | Verifies the allocate extended GUID range sub-request operations. |
| S15\_CreateFile | Verifies the PutChanges sub-request to create a new file on the server. |
| S16\_Versioning | Verifies the GetVersions operation. |
| S17\_FileOperation | Verifies CellSubRequest operation for fileOperation request. |
| S18\_AmIAlone | Verifies the AmIAlone sub-request operation |
| S19\_LockStatus | Verifies the LockStatus sub-request operation |
| S20\_Properties | Verifies the Properties sub-request operation |

### MS-FSSHTTP-FSSHTTPB

17 test scenarios are designed to cover testable requirements in the MS-FSSHTTP-FSSHTTPB test suite. The following table lists the scenarios designed in the MS-FSSHTTP-FSSHTTPB test suite:

|  |  |
| --- | --- |
| Scenario | Description |
| MS\_FSSHTTP\_FSSHTTPB\_S01\_Cell | Verifies the cell sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S02\_Coauth | Verifies the co-authoring sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S03\_SchemaLock | Verifies the schema lock sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S04\_ExclusiveLock | Verifies the exclusive lock sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S05\_WhoAmI | Verifies the WhoAmI sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S06\_ServerTime | Verifies the ServerTime sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S07\_EditorsTable | Verifies the EditorsTable sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S08\_GetDocMetaInfo | Verifies the GetDocMetaInfo sub-request operations. |
| MS\_FSSHTTP\_FSSHTTPB\_S09\_GetVersions | Verifies the GetVersions sub-request operations. |
| MS\_FSSHTTP\_FSSHTTPB\_S10\_MultipleSubRequests | Verifies at least two sub-requests with various dependency types. |
| MS\_FSSHTTP\_FSSHTTPB\_S11\_QueryAccess | Verifies the QueryAccess sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S12\_QueryChanges | Verifies the QueryChanges sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S13\_PutChanges | Verifies the PutChanges sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S14\_AllocateExtendedGuidRange | Verifies the allocate extended GUID range sub-request operations. |
| MS\_FSSHTTP\_FSSHTTPB\_S15\_CreateFile | Verifies the PutChanges sub-request to create a new file on the server. |
| MS\_FSSHTTP\_FSSHTTPB\_S16\_Versioning | Verifies the GetVersions operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S17\_FileOperation | Verifies CellSubRequest operation for fileOperation request. |
| MS\_FSSHTTP\_FSSHTTPB\_S18\_AmIAlone | Verifies the AmIAlone sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S19\_LockStatus | Verifies the LockStatus sub-request operation. |
| MS\_FSSHTTP\_FSSHTTPB\_S20\_Properties | Verifies the Properties sub-request operation. |

### MS-WOPI

In the MS-WOPI test suite, there are a total of 22 scenarios that are designed to cover the server-side, testable requirements.

18 scenarios (from MSWOPI\_S01 to MSWOPI\_S16, MSWOPI\_S21 and MSWOPI\_S22) are designed to verify the MS-FSSHTTP request embedded in the HTTP body depending on whether MS-FSSHTTP is implemented or not.

4 scenarios(from MSWOPI\_S17 to MSWOPI\_S20) are designed to verify the operations fully defined in the MS-WOPI Open Specification.

The following table lists the scenarios designed in the MS-WOPI test suite:

|  |  |
| --- | --- |
| Scenario | Description |
| MS\_WOPI\_S01\_Cell | Verifies the cell sub-request operation. |
| MS\_WOPI\_S02\_Coauth | Verifies the co-authoring sub-request operation. |
| MS\_WOPI\_S03\_SchemaLock | Verifies the schema lock sub-request operation. |
| MS\_WOPI\_S04\_ExclusiveLock | Verifies the exclusive lock sub-request operation. |
| MS\_WOPI\_S05\_WhoAmI | Verifies the WhoAmI sub-request operation. |
| MS\_WOPI\_S06\_ServerTime | Verifies the ServerTime sub-request operation. |
| MS\_WOPI\_S07\_EditorsTable | Verifies the EditorsTable sub-request operation. |
| MS\_WOPI\_S08\_GetDocMetaInfo | Verifies the GetDocMetaInfo sub-request operations. |
| MS\_WOPI\_S09\_GetVersions | Verifies the GetVersions sub-request operations. |
| MS\_WOPI\_S10\_MultipleSubRequests | Verifies at least two sub-requests with various dependency types. |
| MS\_WOPI\_S11\_QueryAccess | Verifies the QueryAccess sub-request operation. |
| MS\_WOPI\_S12\_QueryChanges | Verifies the QueryChanges sub-request operation. |
| MS\_WOPI\_S13\_PutChanges | Verifies the PutChanges sub-request operation. |
| MS\_WOPI\_S14\_AllocateExtendedGuidRange | Verifies the allocate extended GUID range sub-request operations. |
| MS\_WOPI\_S15\_CreateFile | Verifies the PutChanges sub-request to create a new file on the server. |
| MS\_WOPI\_S16\_CellWithRelative | Verifies the cell sub-request operation by sending the data with “X-WOPI-RelativeTarget” header which is specified in section 3.3.5.1.8 in MS-WOPI. |
| MS\_WOPI\_S17\_FileLevelItems | Verify CheckFileInfo, PutRelativeFile, Lock, Unlock, RefreshLock, UnlockAndRelock, ExecuteCellStorageRequest, ExecuteCellStorageRelativeRequest, DeleteFile operation. |
| MS\_WOPI\_S18\_FolderLevelItems | Verify CheckFolderInfo operation. |
| MS\_WOPI\_S19\_FileContentLevelItems | Verify GetFile, PutFile operation. |
| MS\_WOPI\_S20\_FolderChildrenLevelItems | Verify EnumerateChildren operation. |
| MS\_WOPI\_S21\_Versioning | Verifies the GetVersions operation. |
| MS\_WOPI\_S22\_FileOperation | Verifies CellSubRequest operation for fileOperation request. |

### MS-ONESTORE

In the MS-ONESTORE test suite, there are a total of two scenarios that are designed to cover the server-side, testable requirements.

The following table lists the scenarios designed in the MS-ONESTORE test suite:

|  |  |
| --- | --- |
| Scenario | Description |
| MS\_ONESTORE\_S01\_TransmissionByFSSHTTP | Verifies the revision store files are transmitted using the File Synchronization via SOAP over HTTP Protocol. |
| MS\_ONESTORE\_S02\_OneNoteRevisionStore | Verifies the fileformat of the revision store files. |