High-Level API Test Plan

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Revision History

Version	Date	Notes
1.0	Sept 2023	Initial release from Certification Technical Working Group

Test Organization

This document organizes tests by group based on related test methodology or goals. Each group begins with a brief set of comments pertaining to all tests within that group. This is followed by a series of description blocks; each block describes a single test. The format of the description block is as follows:

Test Label	The Test Label and Title comprise the first line of the test block. The Test Label is composed of the short test suite name, the group number, and the test number within the group, separated by periods.
Purpose	The Purpose is a short statement describing what the test attempts to achieve. It is usually phrased as a simple assertion of the feature or capability to be tested.
Reference	The References section lists cross-references to the specifications and documentation that might be helpful in understanding and evaluating the test and results.
Functionality Tag	The functionality tag indicates whether the test is mandatory or optional as defined in prpl Certification Guide.
Procedure	The procedure indicates the steps, in order, taken to perform the test. Actions are steps taken by the test tool. Expected Behavior is what a device under test is required for passing the test.

Table of Contents

Results

Each test in the High-Level API (HL-API) Test Plan must have a pass and fail metric, per Section 5.2 of the [prpl Certification Program Guide](#). Test cases require that each test metric pass for all the required parameters. If one parameter in the data model fails a metric in the test case, the entire test case fails.

The HL-API Data Model profile(s) and version(s) used for testing will be recorded and published as part of test results.

Testing via USP iMTP

The HL-API is defined as a combination of TR-369 USP and TR-181, both with new extensions to enable internal microservices. The "**i**nternal" **i**MTP/UDS-MTP with a USP broker using Data-Model Decentralisation and Registration is the preferred method for implementing and testing the HL-API.

USP over iMTP was not yet available in prplOS when the initial version of the HL-API Test Plan was published.   When it becomes available this test plan will be revised to support testing over iMTP, and we recommend that testing begins on that as soon as it's available.

Common Test Setup (CTS)

USP Setup

USP Controller has a remote management connection to DUT using MQTT as the MTP.
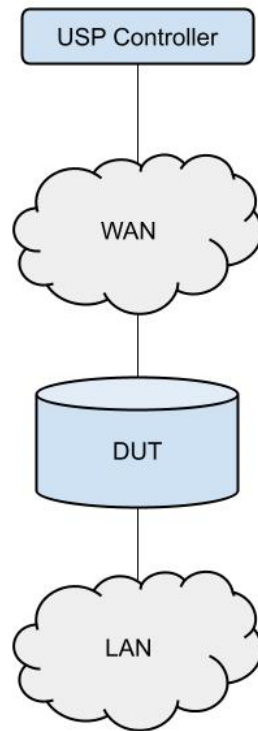
prpl HL-API Data Model Profile

The prpl HL-API data model is required for testing the HL-API.

All of the following profiles and associated parameters MUST be supported by the DUT.

- X_PRPL-COM_Baseline:1

The following profiles and associated parameters are required if the DUT has support for components in the profile.

- prpl GPON (Example)
- prpl Docsis (Example)
- prpl LCM (Example)

The following profiles and associated parameters SHOULD/MAY be supported by the DUT..

- Advanced Routing (Example)

Additional prpl HL-API Data Model profiles may be added over time, any profile and version listed on the page is considered active and available for us. If a profile or version is removed from the page the HL-API Test Plan MUST be revised.

Group 1: USP

Scope

The following test covers using USP to verify prpl HL-API data model profile.

Overview

The tests in this group verify the DUT properly implements the prpl HL-API and all the associated objects and parameters.

Test HL-API.1.1: Profile GetSupportedDM

Purpose: Verify prpl HL-API Data Model profile using GetSupportedDM from top level object for the profile.

Reference:
- BBF USP Data Model
- BBF USP TR-369

Functionality Tags: Core Feature

Test Setup: Common Test Setup is used at the beginning of each part.

Procedure:

Step	Action	Expected Behavior
1.	Initiate a GetSupportedDM on the top level object for the profile with the following arguments: • first _level_only false • return_commands true • return_events true • return_params true	Verify all returned names against the profile definitions. All the required parameters must be present.

Test HL-API.1.2: Profile Parameters Write

Purpose: Verify prpl HL-API Data Model profile parameters with 'Write' requirement have Writable flag.

Reference:
- BBF USP Data Model
- BBF USP TR-369

Functionality Tags: Core

Test Setup: Common Test Setup is used at the beginning of each part.

Procedure:

Step	Action	Expected Behavior
1.	Initiate a GetSupportedDM on the top level object for the profile with the following arguments: • first_level_only false • return_commands true • return_events true • return_params true	Verify the returned parameter requirements fields match the profile. All the required parameters must be present.
2.		Verify the object is listed as 'W' in the profile definition, make sure the 'Writable' flag is set.

Test HL-API.1.3: Get

Purpose: Verify prpl HL-API Data Model profile using GET.

Reference:
- BBF USP Data Model
- BBF USP TR-369

Functionality Tags: Core

Test Setup: Common Test Setup is used at the beginning of each part.

Procedure:

Step	Action	Expected Behavior
1.	Initiate a Get on the top level object for the profile.	Verify all returned parameters against the profile definition. All the required parameters must be present.

Test HL-API.1.4: Set

Purpose: Verify prpl HL-API Data Model profile using SET.

Reference:
- BBF USP Data Model
- BBF USP TR-369

Functionality Tags: Core

Test Setup: Common Test Setup is used at the beginning of each part.

Procedure:

Step	Action	Expected Behavior
1.	Initiate a Get on the top level object for the profile.	
2.	Find all parameters that should be writable based on the prpl HL-API Data model profile definition.	
3.	For each parameter, attempt to set its current value using Set.	The DUT must allow all the Sets. Any failed Sets will result in failing the test case.
4.		Report a summary of all Set at the end of the test.

Test HL-API.1.5: Add and Delete

Purpose: Verify prpl HL-API Data Model profile using Add and Delete on all creatable objects

Reference:
- BBF USP Data Model
- BBF USP TR-369

Functionality Tags: Core

Test Setup: Common Test Setup is used at the beginning of each part.

Procedure:

Step	Action	Expected Behavior
1.	Initiate a Get on the top level object for the profile.	
2.	Find all objects that can be created based on the profile definition.	
3.	For each object, attempt to create a new instance using Add.	The DUT must allow all the Adds. If any Add fails, the test fails.
4.	Initiate a Get on new object instance.	Verify all sub parameters have been created based on the prpl HL-API Data Model profile.
5.	After creating all objects, delete each object using Delete.	The DUT must allow all the Deletes. If any Delete fails, the test fails.

References

- BBF USP Data Model
    - https://usp-data-models.broadband-forum.org
- BBF USP TR-369
    - https://usp.technology/specification/index.html