ONVIF®

OSD Client Test Specification

Version 19.06

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REVISION HISTORY

Vers.	Date	Description
19.06	Jun 14, 2019	The following was done according to #309: 'Validated Feature' section for each feature updated to be synchronized with feature ID used in feature list. 'Feature Under Test' section for each test case updated to be synchronized with sub-feature ID used in feature list. 'Validated Feature List' test case section removed.
18.06	Jun 21, 2018	Reformatting document using new template
18.06	Apr 05, 2018	'Required Number of Devices Summary' Annex added according to #241
18.06	Feb 14, 2018	The following were updated in the scope of #241: Feature Level Requirement (updated with new rules) Each Feature Level Requirement (updated with Check Condition based on Device Features and Required Number of Devices)
17.06	Jun 15, 2017	Links in Normative references section were updated.
16.07	Mar 14, 2016	www.onvif.org was removed from Copyright section.
16.07	Dec 21, 2016	Initial version: General parts added Get OSD List Test Cases added OSD Configuration Test Cases added Get OSD Configuration added

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1 Introduction

The goal of the ONVIF Test Specification set is to make it possible to realize fully interoperable IP physical security implementations from different vendors. This specification also acts as an input document to the development of a test tool which will be used to test the ONVIF Client implementation conformance towards ONVIF standard. This Client Test Tool analyzes network communications between ONVIF Devices and Clients being tested and determines whether a specific Client is ONVIF conformant (see ONVIF Conformance Process Specification).

This particular document defines test cases required for testing OSD features of a Client application e.g. getting of OSD configuration, OSD list, OSD configuration. It also describes the test framework, test setup, prerequisites, test policies needed for the execution of the described test cases.

1.1 Scope

This ONVIF OSD Client Test Specification defines and regulates the conformance testing procedure for the ONVIF conformant Clients in the scope of OSD features. Conformance testing is meant to be black-box network traces analysis and verification. The objective of this specification is to provide the test cases to test individual requirements of ONVIF Clients in the scope of OSD features according to ONVIF Media Service Specification.

The principal intended purposes are:

- Provide self-assessment tool for implementations.

- Provide comprehensive test suite coverage for OSD features.

This specification **does not** address the following:

- 3rd parties Client use cases

- Non-functional (performance and regression) testing and analysis.

- SOAP Implementation Interoperability test i.e. Web Services Interoperability Basic Profile version 2.0 (WS-I BP2.0).

- Network protocol implementation Conformance test for HTTPS and HTTP protocols.

The following sections cover test cases needed for the verification of relevant features as mentioned in the ONVIF Profile Specifications.

1.2 Get OSD Configuration

Get OSD Configuration section specifies Client ability to request OSD configuration from Device.

1.3 Get OSD List

Get OSD List section specifies Client ability to request OSD list from Device.

1.4 OSD Configuration

OSD Configuration section specifies Client ability to change OSD settings on Device.

2 Normative references

- ONVIF Conformance Process Specification:

  https://www.onvif.org/profiles/conformance/

- ONVIF Profile Policy:

  https://www.onvif.org/profiles/

- ONVIF Core Specifications:

  https://www.onvif.org/profiles/specifications/

- ONVIF Core Client Test Specification:

  https://www.onvif.org/profiles/conformance/client-test/

- ONVIF Media Service Specification:

  https://www.onvif.org/profiles/specifications/

- ISO/IEC Directives, Part 2, Annex H:

  http://www.iso.org/directives

- ISO 16484-5:2014-09 Annex P:

  https://www.iso.org/obp/ui/#!iso:std:63753:en

- WS-BaseNotification:

  http://docs.oasis-open.org/wsn/wsn-ws_base_notification-1.3-spec-os.pdf

- W3C SOAP 1.2, Part 1, Messaging Framework:

  http://www.w3.org/TR/soap12-part1/

- W3C XML Schema Part 1: Structures Second Edition:

  http://www.w3.org/TR/xmlschema-1/

- W3C XML Schema Part 2: Datatypes Second Edition:

  "http://www.w3.org/TR/xmlschema-2/ [http://www.w3.org/TR/xmlschema-2/]

- W3C Web Services Addressing 1.0 – Core:

  http://www.w3.org/TR/ws-addr-core/

3 Terms and Definitions

3.1 Conventions

The key words "shall", "shall not", "should", "should not", "may", "need not", "can", "cannot" in this specification are to be interpreted as described in [ISO/IEC Directives Part 2].

3.2 Definitions

This section describes terms and definitions used in this document.

Profile	See ONVIF Profile Policy.
ONVIF Device	Computer appliance or software program that exposes one or multiple ONVIF Web Services.
ONVIF Client	Computer appliance or software program that uses ONVIF Web Services.
Conversation	A Conversation is all exchanges between two MAC addresses that contains SOAP request and response.
Network	A network is an interconnected group of devices communicating using the Internet protocol.
Network Trace Capture file	Data file created by a network protocol analyzer software (such as Wireshark). Contains network packets data recorded during a live network communications.
SOAP	SOAP is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It uses XML technologies to define an extensible messaging framework providing a message construct that can be exchanged over a variety of underlying protocols.
Client Test Tool	ONVIF Client Test Tool that tests ONVIF Client implementation towards the ONVIF Test Specification set.
Configuration Entity	A network video device media abstract component that is used to produce a media stream on the network, i.e. video and/or audio stream.
Valid Device Response	Device has responded to specific request with code HTTP 200 OK and SOAP fault message has not appeared.

3.3 Abbreviations

This section describes abbreviations used in this document.

HTTP   Hyper Text Transport Protocol.

HTTPS   Hyper Text Transport Protocol over Secure Socket Layer.

URI   Uniform Resource Identifier.

WSDL   Web Services Description Language.

XML   eXtensible Markup Language.

OSD   On-Screen Display.

3.4 Namespaces

Prefix and namespaces used in this test specification are listed in Table 1. **These prefixes are not part of the standard and an implementation can use any prefix.**

Table 3.1. Defined namespaces in this specification

Prefix	Namespace URI	Description
soapenv	http://www.w3.org/2003/05/soap-envelope	Envelope namespace as defined by SOAP 1.2 [SOAP 1.2, Part 1]
xs	http://www.w3.org/2001/XMLSchema	Instance namespace as defined by XS [XML-Schema, Part1] and [XMLSchema,Part 2]
xsi	http://www.w3.org/2001/XMLSchema-instance	XML schema instance namespace
tns1	http://www.onvif.org/ver10/topics	The namespace for the ONVIF topic namespace
tt	http://www.onvif.org/ver10/schema	ONVIF XML schema descriptions
trt	http://www.onvif.org/ver10/media/wsdl	The namespace for the WSDL media service
tev	http://www.onvif.org/ver10/events/wsdl	The namespace for the WSDL event service
wsnt	http://docs.oasis-open.org/wsn/b-2	Schema namespace of the [WS-BaseNotification] specification.

4 Test Overview

This section provides information for the test setup procedure and required prerequisites that should be followed during test case execution.

An ONVIF client with OSD features support can provide OSD configuration.

An ONVIF Profile is described by a fixed set of functionalities through a number of services that are provided by the ONVIF standard. A number of services and functionalities are mandatory for each type of ONVIF Profile. An ONVIF Device and ONVIF Client may support any combination of Profiles and other optional services and functionalities.

4.1 General

Test Cases are grouped depending on features. Each Test Cases group provides description of feature requirement level for Profiles, expected scenario under test and related test cases:

- Feature Level Requirement

- Expected Scenarios Under Test

- List of Test Cases

4.1.1 Feature Level Requirement

Feature Level Requirement item contains a feature ID, check condition based on Device features, required number of Devices and feature requirement level for the Profiles, which will be used for Profiles conformance.

To claim this Feature as supported Client shall pass Expected Scenario Under Test:

- for each Device, which supports Device Features defined in Check Condition Based on Device Features

- for at least with number of Devices specified in Required Number of Devices

If Feature Level Requirement is defined as Mandatory for some Profile, Client shall support this Feature to claim this Profile Conformance.

4.1.2 Expected Scenarios Under Test

Expected Scenarios Under Test item contains expected scenario under test, conditions when the feature will be defined as supported and as not supported.

4.1.3 Test Cases

Test Case items contain list of test cases which are related to feature. Test cases provide exact procedure of testing feature support conditions.

Each Test Case contains the following parts:

- Test Label - Unique label for each test

- Test Case ID - Unique ID for each test

- Profile Normative References - Requirement level for the feature under test is defined in Profile Specification. This reference is informative and will not be used in conformance procedure.

- Feature Under Test - Feature which is under current test. Typically a particular command or an event.

- Test Purpose - The purpose of current test case.

- Pre-Requisite - The pre-requisite defines when the test should be performed. In case if pre-reqiusite does not match, the test result will be NOT DETECTED.

- Test Procedure - scenario expected to be reflected in network trace file.

- Test Result - Passed and failed criteria of the test case. Depending on these criteria test result will be defined as PASSED or FAILED.

4.2 Test Setup

Collect Network Traces files required by the test cases.

Collect Feature List XML files for Devices detected in the Network Trace files.

Client shall support all mandatory and conditional features listed in the Device Feature List XML file supplied for the Profiles supported by the Client.

For ONVIF compatibility, the ONVIF Client shall follow the requirements of the conformance process. For details please see the latest ONVIF Conformance Process Specification.

4.3 Prerequisites

The pre-requisites for executing the test cases described in this Test Specification include:

The Device shall be configured with an IPv4 address.

The Device shall be able to be discovered by the Client.

5 Get OSD Configuration Test Cases

5.1 Feature Level Requirement:

Validated Feature: Get OSD Configuration (GetOSD)

Check Condition based on Device Features: TO BE DISCUSSED

Required Number of Devices: 1

5.2 Expected Scenarios Under Test:

1. Client connects to Device to retrieve a OSD configuration.

2. Client is considered as supporting Get OSD Configuration if the following conditions are met:

   • Client is able to retrieve a OSD configuration using **GetOSD** operation.

3. Client is considered as NOT supporting Get OSD Configuration if ANY of the following is TRUE:

   • No valid responses for **GetOSD** request.

5.3 GET OSD

Test Label: Get OSD - Get OSD

Test Case ID: GETOSD-1

Feature Under Test: Get OSD (GetOSD_GetOsd)

Test Purpose: To verify that OSD list for Device is received by Client using the **GetOSD** operation.

Pre-Requisite:

   • The Network Trace Capture files contains at least one Conversation between Client and Device with **GetOSD** operation present.

   • Device supports Media Service.

Test Procedure (expected to be reflected in network trace file):

1. Client invokes **GetOSD** request message to retrieve OSD configuration from the Device.

2. Device responds with code HTTP 200 OK and **GetOSDResponse** message.

Test Result:

PASS -

- Client **GetOSD** request messages are valid according to XML Schemas listed in Namespaces AND

- Client **GetOSD** request in Test Procedure fulfills the following requirements:

  - [S1] **soapenv:Body** element has child element **trt:GetOSD** AND

  - [S2] **trt:OSDToken** element has non-empty string value of specific OSD token AND

- Device response on the **GetOSD** request fulfills the following requirements:

  - [S3] It has HTTP 200 response code AND

  - [S4] **soapenv:Body** element has child element **trt:GetOSDResponse**.

FAIL -

- The Client failed PASS criteria.

6 Get OSD List Test Cases

6.1 Feature Level Requirement:

Validated Feature: Get OSD List (GetOSDs)

Check Condition based on Device Features: TO BE DISCUSSED

Required Number of Devices: 1

6.2 Expected Scenarios Under Test:

1. Client connects to Device to retrieve a OSD list.

2. Client is considered as supporting Get OSD List if the following conditions are met:

    • Client is able to retrieve a OSD list using **GetOSDs** operation.

3. Client is considered as NOT supporting Get OSD List if ANY of the following is TRUE:

    • No valid responses for **GetOSDs** request.

6.3 GET OSDS

Test Label: Get OSDs - Get OSDs

Test Case ID: GETOSDS-1

Feature Under Test: Get OSDs (GetOSDs_GetOsds)

Test Purpose: To verify that OSD list for Device is received by Client using the **GetOSDs** operation.

Pre-Requisite:

• The Network Trace Capture files contains at least one Conversation between Client and Device with **GetOSDs** operation present.

• Device supports Media Service.

Test Procedure (expected to be reflected in network trace file):

1. Client invokes **GetOSDs** request message to retrieve OSD list from the Device.

2. Device responds with code HTTP 200 OK and **GetOSDsResponse** message.

Test Result:

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PASS -

- Client **GetOSDs** request messages are valid according to XML Schemas listed in Namespaces AND

- Client **GetOSDs** request in Test Procedure fulfills the following requirements:

  - [S1] **soapenv:Body** element has child element **trt:GetOSDs** AND

  - If it contains **trt:ConfigurationToken** element then it fulfills the following requirements (else skip the check):

    - [S2] **trt:ConfigurationToken** element has non-empty string value of specific video source configuraton token AND

- Device response on the **GetOSDs** request fulfills the following requirements:

  - [S3] It has HTTP 200 response code AND

  - [S4] **soapenv:Body** element has child element **trt:GetOSDsResponse**.

FAIL -

- The Client failed PASS criteria.

7 OSD Configuration Test Cases

7.1 Feature Level Requirement:

Validated Feature: OSD Configuration (SetOSD)

Check Condition based on Device Features: TO BE DISCUSSED

Required Number of Devices: 1

7.2 Expected Scenarios Under Test:

1. Client connects to Device to change OSD settings.

2. Client is considered as supporting OSD Configuration if the following conditions are met:

   • Client is able to retrieve a OSD options using **GetOSDOptions** operation AND

   • Client is able to change a OSD settings using **SetOSD** operation.

3. Client is considered as NOT supporting OSD Configuration if ANY of the following is TRUE:

   • No valid responses for **GetOSDOptions** request OR

   • No valid responses for **SetOSD** request.

7.3 GET OSD OPTIONS

Test Label: OSD Configuration - Get OSD Options

Test Case ID: SETOSD-1

Feature Under Test: Get OSD Options (SetOSD_GetOsdOptions)

Test Purpose: To verify that OSD options for Device is received by Client using the **GetOSDOptions** operation.

Pre-Requisite:

   • The Network Trace Capture files contains at least one Conversation between Client and Device with **GetOSDOptions** operation present.

   • Device supports Media Service.

Test Procedure (expected to be reflected in network trace file):

1. Client invokes **GetOSDOptions** request message to retrieve OSD options for specified Video Source Configuration from the Device.

2. Device responds with code HTTP 200 OK and **GetOSDOptionsResponse** message.

Test Result:

PASS -

- Client **GetOSDOptions** request messages are valid according to XML Schemas listed in Namespaces AND

- Client **GetOSDOptions** request in Test Procedure fulfills the following requirements:

  - [S1] **soapenv:Body** element has child element **trt:GetOSDOptions** AND

  - [S2] **trt:ConfigurationToken** element has non-empty string value of specific video source configuraton token AND

- Device response on the **GetOSDOptions** request fulfills the following requirements:

  - [S3] It has HTTP 200 response code AND

  - [S4] **soapenv:Body** element has child element **trt:GetOSDOptionsResponse**.

FAIL -

- The Client failed PASS criteria.

7.4 SET OSD

Test Label: OSD Configuration - Set OSD

Test Case ID: SETOSD-2

Feature Under Test: Set OSD (SetOSD_SetOsd)

Test Purpose: To verify that Client is able to change OSD settings on Device using the **SetOSD** operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one Conversation between Client and Device with **SetOSD** operation present.

- Device supports Media Service.

Test Procedure (expected to be reflected in network trace file):

1. Client invokes **GetOSDOptions** request message to retrieve OSD options for specified Video Source Configuration from the Device.

2. Device responds with code HTTP 200 OK and **GetOSDOptionsResponse** message.

3. Client invokes **SetOSD** request message to change OSD settings for specified OSD which are correspond to the recieved options on the Device.

4. Device responds with code HTTP 200 OK and **SetOSDResponse** message.

Test Result:

PASS -

- Client **SetOSD** request messages are valid according to XML Schemas listed in Namespaces AND

- Client **SetOSD** request in Test Procedure fulfills the following requirements:

    - [S1] **soapenv:Body** element has child element **trt:SetOSD** AND

- Device response on the **SetOSD** request fulfills the following requirements:

    - [S2] It has HTTP 200 response code AND

    - [S3] **soapenv:Body** element has child element **trt:SetOSDResponse** AND

- There is a Client **GetOSDOptions** request in Test Procedure fulfills the following requirements:

    - [S4] It invoked for the same Device as for the Client **SetOSD** request AND

    - [S5] It invoked before the Client **SetOSD** request AND

    - [S6] **trt:ConfigurationToken** element value is equal to **trt:OSD/ tt:VideoSourceConfigurationToken** element from the **SetOSD** request AND

- Device response on the **GetOSDOptions** request fulfills the following requirements:

    - [S7] It has HTTP 200 response code.

FAIL -

- The Client failed PASS criteria.

Annex A Test for Appendix A

A.1 Required Number of Devices Summary

Required number of devices and Device feature dependency used in this test specification are listed in the Table.

Table A.1. Required Number of Devices Summary

Feature ID	Feature Name	Required Number of Devices	Check Condition based on Device Features	Check Condition based on Device Features ID
tc.GetOSD	Get OSD Configuration	1	TO BE DISCUSSED	TBD
tc.GetOSDs	Get OSD List	1	TO BE DISCUSSED	TBD
tc.SetOSD	OSD Configuration	1	TO BE DISCUSSED	TBD