ONVIF®

PTZ Device Test Specification

Version 18.12

December 2018
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# REVISION HISTORY

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<td>First issue of PTZ Test Specification</td>
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<td>11.12</td>
<td>Dec 22, 2011</td>
<td>New version numbering scheme has been applied. Requirement level terms have been removed. Term &quot;NVT&quot; is removed in each test case.</td>
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18.06 Jun 21, 2018 | Reformatting document using new template

18.12 Oct 01, 2018 | The following were changed according to #1663:
Annex A.1 Media Profile Configuration for PTZ Control (reformatted, step 5 added)
Annex A.4 Create Profile for PTZ Control (step 6 changed, step 7 added)
Annex A.28 Configure Empty Media Profile (new)

18.12 Oct 22, 2018 | The following were changed according to #1545:
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<td>Switching Hub description in 'Network Configuration for DUT' section was updated according to #1737</td>
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MEDIA2_PTZ-4-2-2 GENERIC ZOOM VELOCITY SPACE (10s timeout was replaced with Operation Delay timeout)
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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 implementation from different vendors. The set of ONVIF test specification describes the test cases need to verify the [ONVIF Network Interface Specs] and [ONVIF Conformance] requirements. In addition, the test cases are to be basic inputs for some Profile specification requirements. It also describes the test framework, test setup, pre-requisites, test policies needed for the execution of the described test cases.

This ONVIF PTZ Device Test Specification acts as a supplementary document to the [ONVIF Network Interface Specs], illustrating test cases that need to be executed and passed. And also this specification also acts as an input document to the development of test tool which will be used to test the ONVIF device implementation conformance towards ONVIF standard. As the test tool performs as a Client during testing, this test tool is referred as ONVIF Client hereafter.

1.1 Scope

This ONVIF PTZ Test Specification defines and regulates the conformance testing procedure for the ONVIF conformant devices. Conformance testing is meant to be functional black-box testing. The objective of this specification is to provide the test cases to test individual requirements of ONVIF devices according to ONVIF PTZ service which are defined in [ONVIF Network Interface Specs].

The principal intended purposes are:

- Provide self-assessment tool for implementations.
- Provide comprehensive test suite coverage for [ONVIF Network Interface Specs].

This specification does not address the following:

- Product use cases and non-functional (performance and regression) testing.
- 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, HTTP, RTP and RTSP protocols.
- Wi-Fi Conformance test

The set of ONVIF Test Specification will not cover the complete set of requirements as defined in [ONVIF Network Interface Specs]; instead it would cover subset of it.

This ONVIF PTZ Test Specification covers core parts of functional blocks in [ONVIF Network Interface Specs]. The following sections describe the brief overview and scope of each functional block.
1.1.1 PTZ Common

The PTZ Common section covers the test cases needed for getting capabilities, PTZ Nodes from an ONVIF Device, and for PTZ Configuration management.

The scope of this specification section is to cover the following functions described in Table 1.1.

Table 1.1. PTZ Common Commands Under Test

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<td>PTZ Service Capabilities</td>
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1.1.2 PTZ Control Using Media Service

The PTZ Control Using Media Service section covers the test cases needed for PTZ Control using Media Service.

The scope of this specification section is to cover the following functions described in Table 1.2.

Table 1.2. PTZ Control Commands Under Test (Media Service)

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<td>AbsoluteMove, RelativeMove, ContinuousMove, Stop, GetStatus</td>
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<tr>
<td>Preset Operations</td>
<td>SetPreset</td>
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1.1.3 PTZ Control Using Media2 Service

The PTZ Control Using Media2 Service section covers the test cases needed for PTZ Control using Media2 Service.

The scope of this specification section is to cover the following functions described in Table 1.3.

Table 1.3. PTZ Control Commands Under Test (Media 2 Service)

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<td><a href="http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees">http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees</a></td>
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<tr>
<td></td>
<td><a href="http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace">http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace">http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace">http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace</a></td>
</tr>
</tbody>
</table>
2 Normative references

- [ONVIF Conformance] ONVIF Conformance Process Specification:
  https://www.onvif.org/profiles/conformance/

- [ONVIF Profile Policy] ONVIF Profile Policy:
  https://www.onvif.org/profiles/

- [ONVIF Network Interface Specs] ONVIF Network Interface Specification documents:
  https://www.onvif.org/profiles/specifications/

- [ONVIF Core Specs] ONVIF Core Specifications:
  https://www.onvif.org/profiles/specifications/

- [ONVIF PTZ Specs] ONVIF PTZ Specifications:
  https://www.onvif.org/profiles/specifications/

- [ONVIF Media Specs] ONVIF Media Specifications:
  https://www.onvif.org/profiles/specifications/

- [ONVIF Media2 Specs] ONVIF Media2 Specifications:
  https://www.onvif.org/profiles/specifications/

- [ONVIF Base Test] ONVIF Base Device Test Specifications:
  https://www.onvif.org/profiles/conformance/device-test/

  http://www.iso.org/directives


- [SOAP 1.2, Part 1] W3C SOAP 1.2, Part 1, Messaging Framework:
  http://www.w3.org/TR/soap12-part1/

  http://www.w3.org/TR/xmlschema-1/
  
  http://www.w3.org/TR/xmlschema-2/

  OASIS Standard, February 2006.:

  http://www.oasis-open.org/committees/download.php/16790/wss-v1.1-spec-os-
  SOAPMessageSecurity.pdf
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.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile</td>
<td>See ONVIF Profile Policy.</td>
</tr>
<tr>
<td>ONVIF Device</td>
<td>Computer appliance or software program that exposes one or multiple ONVIF Web Services.</td>
</tr>
<tr>
<td>ONVIF Client</td>
<td>Computer appliance or software program that uses ONVIF Web Services.</td>
</tr>
<tr>
<td>SOAP</td>
<td>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.</td>
</tr>
<tr>
<td>Device Test Tool</td>
<td>ONVIF Device Test Tool that tests ONVIF Device implementation towards the ONVIF Test Specification set.</td>
</tr>
<tr>
<td>Media Service/Media2 Service</td>
<td>Services to determine the streaming properties of requested media streams.</td>
</tr>
<tr>
<td>PTZ Service</td>
<td>Services to configure and control PTZ movement.</td>
</tr>
<tr>
<td>Pan</td>
<td>Horizontal movement or rotation of a camera or device.</td>
</tr>
<tr>
<td>Tilt</td>
<td>Vertical movement or rotation of a camera or device.</td>
</tr>
<tr>
<td>Zoom</td>
<td>Adjustment of the focal length of a zoom lens, causing the subject, scene to be brought closer or made to recede.</td>
</tr>
<tr>
<td>PTZ</td>
<td>The capability of a camera to pan, tilt, and zoom.</td>
</tr>
<tr>
<td>PTZ node</td>
<td>Low-level PTZ entity that maps to the PTZ device and its capabilities.</td>
</tr>
<tr>
<td>Media Profile</td>
<td>A media profile maps a video and/or audio source to a video and/or an audio encoder, PTZ and analytics configurations.</td>
</tr>
<tr>
<td>Capability</td>
<td>The capability commands allow a client to ask for the services provided by an ONVIF device.</td>
</tr>
<tr>
<td>Network</td>
<td>A network is an interconnected group of devices communicating using the Internet protocol.</td>
</tr>
<tr>
<td>Proxy Server</td>
<td>A server that services the requests of its clients by forwarding requests to other servers. A Proxy provides indirect network connections to its clients.</td>
</tr>
</tbody>
</table>
Switching Hub  A device for connecting multiple Ethernet devices together, making them act as a single network segment.

Target Service  An endpoint that makes itself available for discovery.

3.3 Abbreviations

This section describes abbreviations used in this document.

- **HTTP**  Hyper Text Transport Protocol.
- **WSDL**  Web Services Description Language.
- **XML**  eXtensible Markup Language.
- **PTZ**  Pan/Tilt/Zoom.
4 Test Overview

This section describes about the test setup and prerequisites needed, and the test policies that should be followed for test case execution.

4.1 Test Setup

4.1.1 Network Configuration for DUT

The generic test configuration for the execution of test cases defined in this document is as shown below (Figure 4.1).

Based on the individual test case requirements, some of the entities in the below setup may not be needed for the execution of those corresponding test cases.

**Figure 4.1. Test Configuration for DUT**

- **DHCP Server**
- **DNS Server**
- **Wireless Access Point**
- **NTP Server**
- **Switching Hub**
- **HTTP Proxy**
- **DUT (Device Under Test)**
- **Router**
- **ONVIF Client (Test Tool)**

**DUT**: ONVIF device to be tested. Hereafter, this is referred to as DUT (Device Under Test).

**ONVIF Client (Test Tool)**: Tests are executed by this system and it controls the behavior of the DUT. It handles both expected and unexpected behavior.

**HTTP Proxy**: provides facilitation in case of RTP and RTSP tunneling over HTTP.

**Wireless Access Point**: provides wireless connectivity to the devices that support wireless connection.
DNS Server: provides DNS related information to the connected devices.

DHCP Server: provides IPv4 Address to the connected devices.

NTP Server: provides time synchronization between ONVIF Client and DUT.

Switching Hub: provides network connectivity among all the test equipments in the test environment. All devices should be connected to the Switching Hub. When running multiple test instances in parallel on the same network, the Switching Hub should be configured to use filtering in order to avoid multicast traffic being flooded to all ports, because this may affect test stability.

Router: provides router advertisements for IPv6 configuration.

### 4.2 Prerequisites

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

1. The DUT shall be configured with an IPv4 address.
2. The DUT shall be IP reachable [in the test configuration].
3. The DUT shall be able to be discovered by the Test Tool.
4. The DUT shall be configured with the time i.e. manual configuration of UTC time and if NTP is supported by the DUT, then NTP time shall be synchronized with NTP Server.
5. The DUT time and Test tool time shall be synchronized with each other either manually or by common NTP server.

### 4.3 Test Policy

This section describes the test policies specific to the test case execution of each functional block.

The DUT shall adhere to the test policies defined in this section.

#### 4.3.1 PTZ

To start with ONVIF Client shall check device capabilities of PTZ. If the DUT doesn’t have PTZ capability, this test case will skip.

The device under test shall support at least one media profile with PTZ configuration. Moreover, the DUT shall include video source configuration and video encoder configuration in the same media profile to see the video and to confirm movement. A PTZ configuration shall include a PTZ node.

Poor PTZ performance test is outside the scope of the ONVIF Test Specification.
In certain test cases, ONVIF Client may register new preset position into PTZ configuration. In such cases, the test procedure will delete those modified configuration at the end of the test procedure.

If DUT does not support PTZ Configuration commands (ex. RelativeMove, AbsoluteMove request) then it SHALL respond to the request with SOAP 1.2 fault message (ActionNotSupported).

Please refer to Section 5 for PTZ Test Cases.
5 PTZ Test Cases

5.1 PTZ Common

5.1.1 PTZ Node

5.1.1.1 PTZ NODES

Test Case ID: PTZ-1-1-1

Specification Coverage: GetNodes

Feature Under Test: GetNodes

WSDL Reference: ptz.wsdl

Test Purpose: To verify GetNodes command and return all PTZ Nodes available on the device.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client will invoke GetNodes request to retrieve the list of PTZ nodes supported by DUT.

4. Verify that the DUT returns at least one PTZNode in the GetNodesResponse message.

5. Validate PTZNodes of GetNodesResponse message (check mandatory element of SupportedPTZSpaces, MaximumNumberOfPresets, and HomeSupported.)

Test Result:

PASS –

• DUT passes all assertions.
FAIL –

• The DUT did not send **GetNodesResponse** message.
• The DUT did not send a valid **GetNodesResponse** message.
• The DUT did not send **GetNodesResponse** message with at least one PTZNode.

5.1.1.2 PTZ NODE

**Test Case ID:** PTZ-1-1-2

**Specification Coverage:** GetNode

**Feature Under Test:** GetNode

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify GetNode command and return the properties of the requested PTZ Node, if it exists.

**Pre-Requisite:** PTZ Service is received from the DUT.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke **GetNodes** request to retrieve a list of the existing PTZNodes.
4. Verify that DUT returns at least one PTZNode in the **GetNodesResponse** message.
5. ONVIF Client will invoke **GetNode** request (NodeToken of existing PTZNode) to retrieve the specific PTZNode
6. Verify that DUT returns a PTZNode in **GetNodeResponse** message.
7. Validate PTZNode of **GetNodeResponse** message (check mandatory element of SupportedPTZSpaces, MaximumNumberOfPresets, and HomeSupported.)

**Test Result:**

PASS –

• DUT passes all assertions.

FAIL –
• The DUT did not send GetNodesResponse message.
• The DUT did not send a valid GetNodesResponse message.
• The DUT did not send GetNodesResponse message with at least one PTZNode.
• The DUT did not send GetNodeResponse message.
• The DUT did not send a valid GetNodeResponse message.

5.1.1.3 SOAP FAULT MESSAGE

Test Case ID: PTZ-1-1-4

Specification Coverage: GetNode

Feature Under Test: GetNode

WSDL Reference: ptz.wsdl

Test Purpose: To verify that DUT generates a SOAP fault message to invalid GetNode message.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke GetNode request with invalid NodeToken (not NodeToken of existing PTZNode. For example, NodeToken ReferenceToken = "xyz").

Test Result:

PASS –
• DUT passes all assertions.

FAIL –
• The DUT did not send SOAP 1.2 fault message.
• The DUT did not send a correct SOAP 1.2 fault message (fault code, namespace, etc.).

Note: See Annex A.2 for Name and Token Parameters Length limitations.
5.1.2 PTZ Configuration

5.1.2.1 PTZ CONFIGURATIONS

Test Case ID: PTZ-2-1-1

Specification Coverage: GetConfigurations

Feature Under Test: GetConfigurations

WSDL Reference: ptz.wsdl

Test Purpose: To retrieve DUT PTZ Configurations setting.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke GetConfigurations request to retrieve a list of existing PTZConfigurations on the DUT.
4. Verify that the DUT returns at least one PTZConfiguration in the GetConfigurationsResponse message.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send GetConfigurationsResponse message.

• The DUT did not send a valid GetConfigurationsResponse message.

• The DUT did not send GetConfigurationsResponse message with at least one PTZConfiguration.

5.1.2.2 PTZ CONFIGURATION

Test Case ID: PTZ-2-1-2
Specification Coverage: GetConfiguration

Feature Under Test: GetConfiguration

WSDL Reference: ptz.wsdl

Test Purpose: To retrieve DUT PTZ Configuration setting.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client will invoke GetConfigurations request to retrieve a list of existing PTZConfigurations.

4. Verify the GetConfigurationsResponse message from DUT (a list of existing PTZConfigurations).

5. ONVIF Client will invoke GetConfiguration request (PTZConfigurationToken of existing PTZConfiguration) to retrieve requested PTZConfiguration.

6. Verify the GetConfigurationResponse message from DUT (PTZConfiguration includes a NodeToken, and at least one parameter (DefaultAbsolutePanTiltPositionSpace, DefaultAbsoluteZoomPositionSpace, DefaultRelativePanTiltTranslationSpace, DefaultRelativeZoomTranslationSpace, DefaultContinuousPanTiltVelocitySpace, DefaultContinuousZoomVelocitySpace, DefaultPTZSpeed, DefaultPTZTimeout, PanTiltLimits, and ZoomLimits)).

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send GetConfigurationsResponse message.

• The DUT did not send a valid GetConfigurationsResponse message.

• The DUT did not send GetConfigurationsResponse message with at least one PTZConfiguration.

• The DUT did not send GetConfigurationResponse message.
The DUT did not send a valid **GetConfigurationResponse** message.

The DUT did not send **GetConfigurationResponse** message with NodeToken.

The DUT did not send **GetConfigurationResponse** message with at least one parameter (excluding NodeToken).

### 5.1.2.3 PTZ CONFIGURATION OPTIONS

**Test Case ID:** PTZ-2-1-3

**Specification Coverage:** GetConfigurationOptions

**Feature Under Test:** GetConfigurationOptions

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To retrieve returns the list of supported coordinate systems including their range limitations in the DUT PTZ Configuration Options setting.

**Pre-Requisite:** PTZ Service is received from the DUT.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke **GetConfigurations** request to retrieve a list of existing PTZConfigurations on the DUT.
4. Verify the **GetConfigurationsResponse** message from DUT (a list of existing PTZConfiguration).
5. ONVIF Client will invoke **GetConfigurationOptions** request to retrieve PTZConfigurationOptions.
6. Verify the **GetConfigurationsResponse** message from DUT (valid Spaces and PTZTimeout).

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –
• The DUT did not send \texttt{GetConfigurationsResponse} message.

• The DUT did not send a valid \texttt{GetConfigurationsResponse} message.

• The DUT did not send \texttt{GetConfigurationsResponse} message with at least one PTZConfiguration.

• The DUT did not send \texttt{GetConfigurationsResponse} message.

• The DUT did not send a valid \texttt{GetConfigurationsResponse} message.

• The DUT did not send \texttt{GetConfigurationsResponse} message with valid Spaces and PTZTimeout.

5.1.2.4 PTZ CONFIGURATIONS AND PTZ CONFIGURATION CONSISTENCY

\textbf{Test Case ID:} PTZ-2-1-5

\textbf{Specification Coverage:} GetConfigurations, GetConfiguration

\textbf{Feature Under Test:} GetConfigurations, GetConfiguration

\textbf{WSDL Reference:} ptz.wsdl

\textbf{Test Purpose:} To verify the capability to set the DUT PTZ Configuration.

\textbf{Pre-Requisite:} PTZ Service is received from the DUT.

\textbf{Test Configuration:} ONVIF Client and DUT.

\textbf{Test Procedure:}

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client invokes \texttt{GetConfigurations} request to retrieve a list of PTZ Configurations from device.

4. The DUT sends \texttt{GetConfigurationsResponse} message.

5. ONVIF Client invokes \texttt{GetConfiguration} message (ConfigurationToken) to retrieve parameters of PTZ configuration from device.

6. The DUT sends \texttt{GetConfigurationResponse} message.

7. Check that all parameters values in \texttt{GetConfigurationResponse} message are same as in the \texttt{GetConfigurationsResponse} message.
8. Repeat steps 5-7 for all other configurations from the `GetConfigurationsResponse` message.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send `GetConfigurationsResponse` message.

• The DUT did not send a valid `GetConfigurationsResponse` message.

• The DUT did not send `GetConfigurationsResponse` message with at least one `PTZConfiguration`.

• The DUT did not send `GetConfigurationResponse` message.

• The DUT did not send a valid `GetConfigurationResponse` message.

5.1.2.5 PTZ CONFIGURATIONS AND PTZ NODES CONSISTENCY

Test Case ID: PTZ-2-1-6

Specification Coverage: GetNodes, GetConfigurations

Feature Under Test: GetNodes, GetConfigurations

WSDL Reference: ptz.wsdl

Test Purpose: To check that GetConfigurations command and GetNodes command are consistent.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client invokes `GetConfigurations` request to retrieve a list of PTZ Configurations from device.
4. The DUT sends `GetConfigurationsResponse` message.

5. ONVIF Client invokes `GetNodes` request to retrieve list of available PTZ nodes from device.

6. The DUT sends `GetNodesResponse` message.

7. Check that parameters for every PTZConfiguration are correct according to `GetNodesResponse` message.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send `GetConfigurationsResponse` message.
- The DUT did not send a valid `GetConfigurationsResponse` message.
- The DUT did not send `GetNodesResponse` message.
- The DUT did not send a valid `GetNodesResponse` message.
- For at least one PTZConfiguration there is at least one of the following items:
  - NodeToken from PTZConfiguration is not present in `GetNodesResponse` message (PTZNode.token) or is present more than one time.
  - DefaultAbsolutePanTiltPositionSpace from PTZConfiguration is not included in one of SupportedPTZSpaces.AbsolutePanTiltPositionSpace from `GetNodesResponse` message.
  - DefaultAbsoluteZoomPositionSpace from PTZConfiguration is not included in one of SupportedPTZSpaces.AbsoluteZoomPositionSpace from `GetNodesResponse` message.
  - DefaultRelativePanTiltTranslationSpace from PTZConfiguration is not included in one of SupportedPTZSpaces.RelativePanTiltTranslationSpace from `GetNodesResponse` message.
  - DefaultRelativeZoomTranslationSpace from PTZConfiguration is not included in one of SupportedPTZSpaces.RelativeZoomTranslationSpace from `GetNodesResponse` message.
  - DefaultContinuousPanTiltVelocitySpace from PTZConfiguration is not included in one of SupportedPTZSpaces.ContinuousPanTiltVelocitySpace from `GetNodesResponse` message.
• DefaultContinuousZoomVelocitySpace from PTZConfiguration is not included in one of SupportedPTZSpaces.ContinuousZoomVelocitySpace from GetNodesResponse message.

• DefaultPTZSpeed.PanTilt.space from PTZConfiguration is not included in one of PanTiltSpeedSpace.URI section from GetNodesResponse message.

• DefaultPTZSpeed.PanTilt.x is not between SupportedPTZSpaces.PanTiltSpeedSpace.XRange.Min and SupportedPTZSpaces.PanTiltSpeedSpace.XRange.Max for appropriate PanTiltSpeedSpace.URI from GetNodesResponse message.

• DefaultPTZSpeed.PanTilt.y is not between SupportedPTZSpaces.PanTiltSpeedSpace.XRange.Min and SupportedPTZSpaces.PanTiltSpeedSpace.XRange.Max for appropriate PanTiltSpeedSpace.URI from GetNodesResponse message.

• DefaultPTZSpeed.Zoom.Space is not included in one of ZoomSpeedSpace.URI section of GetNodesResponse message.

• DefaultPTZSpeed.Zoom.x is not between SupportedPTZSpaces.ZoomSpeedSpace.XRange.Min and SupportedPTZSpaces.ZoomSpeedSpace.XRange.Max for appropriate ZoomSpeedSpace.URI from GetNodesResponse message.

5.1.2.6 PTZ CONFIGURATIONS AND PTZ CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: PTZ-2-1-7

Specification Coverage: GetConfigurations, GetConfigurationOptions

Feature Under Test: GetConfigurations, GetConfigurationOptions

WSDL Reference: ptz.wsdl

Test Purpose: To check that PTZ Configurations and PTZ Configuration Options are consistent.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.

3. ONVIF Client invokes **GetConfigurations** request to retrieve a list of PTZ Configurations from device.

4. The DUT sends **GetConfigurationsResponse** message.

5. ONVIF Client invokes **GetConfigurationOptions** request (ConfigurationToken) to retrieve options for PTZConfiguration from device.

6. The DUT sends **GetConfigurationsResponse** message.

7. Check that parameters for PTZ configuration are corresponded to **PTZConfigurationOptions**.

8. Repeat Steps 5-7 for other PTZConfigurations from the **GetConfigurationsResponse** message.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- The DUT did not send **GetConfigurationsResponse** message.
- The DUT did not send a valid **GetConfigurationsResponse** message.
- The DUT did not send **GetConfigurationOptions** message.
- The DUT did not send a valid **GetConfigurationOptions** message.
- For at least one PTZConfiguration there is at least one of the following items:
  - DefaultAbsolutePantTiltPositionSpace from PTZConfiguration is not included in one of Spaces.AbsolutePanTiltPositionSpace from **GetConfigurationOptions** message.
  - DefaultAbsoluteZoomPositionSpace from PTZConfiguration is not included in one of Spaces.AbsoluteZoomPositionSpace from **GetConfigurationOptions** message.
  - DefaultRelativePanTiltTranslationSpace from PTZConfiguration is not included in one of Spaces.RelativePanTiltTranslationSpace from **GetConfigurationOptions** message.
  - DefaultRelativeZoomTranslationSpace from PTZConfiguration is not included in one of Spaces.RelativeZoomTranslationSpace from **GetConfigurationOptions** message.
  - DefaultContinuousPanTiltVelocitySpace from PTZConfiguration is not included in one of Spaces.ContinuousPanTiltVelocitySpace from **GetConfigurationOptions** message.
• DefaultContinuousZoomVelocitySpace from PTZConfiguration is not included in one of Spaces.ContinuousZoomVelocitySpace from GetConfigurationOptions message.

• DefaultPTZSpeed.PanTilt.space from PTZConfiguration is not included in one of Spaces.PanTiltSpeedSpace.URI section from GetConfigurationOptions message.

• DefaultPTZSpeed.PanTilt.x is not between Spaces.PanTiltSpeedSpace.Xrange.Min and Spaces.PanTiltSpeedSpace.Xrange.Max for appropriate Spaces.PanTiltSpeedSpace.URI from GetConfigurationOptions message.

• DefaultPTZSpeed.PanTilt.y is not between Spaces.PanTiltSpeedSpace.Yrange.Min and Spaces.PanTiltSpeedSpace.Yrange.Max for appropriate Spaces.PanTiltSpeedSpace.URI from GetConfigurationOptions message.

• DefaultPTZSpeed.Zoom.Space is not included in one of Spaces.ZoomSpeedSpace.URI section of GetConfigurationOptions message.

• DefaultPTZSpeed.Zoom.x is not between Spaces.ZoomSpeedSpace.Xrange.Min and PTZSpaces.ZoomSpeedSpace.Xrange.Max for appropriate Spaces.ZoomSpeedSpace.URI from GetConfigurationOptions message.

• DefaultPTZTimeout is not between PTZTimeout.Min and PTZTimeout.Max from GetConfigurationOptions message.

5.1.2.7 PTZ SET CONFIGURATION

Test Case ID: PTZ-2-1-9

Specification Coverage: SetConfiguration

Feature Under Test: SetConfiguration

WSDL Reference: ptz.wsdl

Test Purpose: To verify the capability to set the DUT PTZ Configuration.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.
3. ONVIF Client will invoke GetConfigurations request to retrieve a list of existing PTZConfigurations.

4. Verify the GetConfigurationsResponse message from DUT (a list of existing PTZConfigurations).

5. ONVIF Client will invoke GetConfigurationOptions request (ConfigurationToken of existing PTZConfiguration) to retrieve the range of PTZTimeout that can be changed.

6. Verify that DUT returns PTZConfigurationOptions in GetConfigurationsResponse message.

7. ONVIF Client will invoke SetConfiguration request (DefaultPTZTimeout = [Max or Min of duration value], and force persistence = false). DefaultPTZTimeout will be set to Max of the duration value. If DefaultPTZTimeout of DUT is same value with Max of duration value, this value will be set to Min of the duration value.

8. DUT modifies PTZ Configuration and return with SetConfigurationResponse message indicating success.

9. ONVIF Client will verify the modified PTZ configuration by invoking GetConfiguration request.

10. Verify that DUT returns the modified PTZ Configuration in the GetConfigurationResponse message (DefaultPTZTimeout = [Max or Min of the duration value]).

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send GetConfigurationsResponse message.

• The DUT did not send a valid GetConfigurationsResponse message.

• The DUT did not send GetConfigurationResponse message.

• The DUT did not send a valid GetConfigurationResponse message.

• The DUT did not send equal parameters for one or more PTZConfiguration in the GetConfigurationResponse message and in the GetConfigurationsResponse message.

Note: See Annex A.2 for Name and Token Parameters Length limitations.
5.1.2.8 SOAP FAULT MESSAGE

Test Case ID: PTZ-2-1-10

Specification Coverage: SetConfiguration

Feature Under Test: SetConfiguration

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the DUT generates a SOAP fault message if an invalid PTZ Configuration message is sent.

Pre-Requisite: PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke SetConfiguration request with an invalid Configuration token.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send SOAP 1.2 fault message.

• The DUT did not send a correct SOAP 1.2 fault message (fault code, namespace etc).

Note: See Annex A.2 for Name and Token Parameters Length limitations.

5.1.3 Capabilities

5.1.3.1 PTZ SERVICE CAPABILITIES

Test Case ID: PTZ-8-1-1

Specification Coverage: Capability exchange
Feature Under Test: GetServiceCapabilities (for PTZ Service)

WSDL Reference: ptz.wsdl

Test Purpose: To verify PTZ Service Capabilities of the DUT.

Pre-Requisite: PTZ Service is received from the DUT. GetServices is supported by the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke GetServiceCapabilities request to retrieve PTZ service capabilities of the DUT.
4. Verify the GetServiceCapabilitiesResponse message from the DUT.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send a valid GetServiceCapabilitiesResponse.

5.1.3.2 GET SERVICES AND GET PTZ SERVICE CAPABILITIES CONSISTENCY

Test Case ID: PTZ-8-1-2

Specification Coverage: Capability exchange

Feature Under Test: GetServices, GetServiceCapabilities (for PTZ Service)

WSDL Reference: ptz.wsdl

Test Purpose: To verify Get Services and PTZ Service Capabilities consistency.

Pre-Requisite: PTZ Service is received from the DUT. GetServices is supported by the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:
1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client will invoke `GetServices` request (IncludeCapability = true) to retrieve all services of the DUT with service capabilities.

4. Verify the `GetServicesResponse` message from the DUT.

5. ONVIF Client will invoke `GetServiceCapabilities` request to retrieve PTZ service capabilities of the DUT.

6. Verify the `GetServiceCapabilitiesResponse` message from the DUT.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- The DUT did not send a valid `GetServicesResponse` message.
- The DUT did not send a valid `GetServiceCapabilitiesResponse` message.
- The DUT sent different Capabilities in `GetServicesResponse` message and in `GetServiceCapabilitiesResponse` message.

**Note:** Service will be defined as PTZ service if it will have Namespace element that is equal to "http://www.onvif.org/ver20/ptz/wsdl".

### 5.2 PTZ Control Using Media Service

#### 5.2.1 Move Operation

##### 5.2.1.1 PTZ ABSOLUTE MOVE

**Test Case ID:** PTZ-3-1-1

**Specification Coverage:** AbsoluteMove request

**Feature Under Test:** AbsoluteMove request

**WSDL Reference:** ptz.wsdl
**Test Purpose:** To verify absolute Pan/Tilt or absolute Zoom movements using the DUT PTZ AbsoluteMove request operation.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. ONVIF Client will invoke `GetConfigurationOptions` request to retrieve PTZConfigurationOptions.
5. Verify that DUT returns `GetConfigurationsResponse` message with valid Spaces and PTZTimeout, and has the function of Absolute movement.
6. ONVIF Client will invoke `GetStatus` request to get a current PTZStatus.
7. The DUT returns a current PTZStatus in the `GetStatusResponse` message.
8. If Absolute move is supported for 'Pan Tilt', ONVIF Client will invoke `AbsoluteMove` request (ProfileToken, Position:PanTilt = ["x", "y"], Speed:PanTilt = ["x", "y"]). The Speed:PanTilt parameter is added if supported Speed:PanTilt.
9. If ONVIF Client invoked `AbsoluteMove` request for PanTilt, verify that DUT returns `AbsoluteMoveResponse` message indicating success.
10. If Absolute move is supported for 'Zoom', ONVIF Client will invoke `AbsoluteMove` request (ProfileToken, Position:Zoom = ["x"], Speed:Zoom = ["x"]). The Speed:Zoom parameter is added if supported Speed:Zoom.
11. If ONVIF Client invoked `AbsoluteMove` request for Zoom, verify that DUT returns `AbsoluteMoveResponse` message indicating success.
12. ONVIF Client will invoke `GetStatus` request to get a current PTZStatus.
13. Verify that the DUT moves to the specified position by `GetStatusResponse` message.

**Test Result:**
PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send `GetConfigurationsResponse` message.

• The DUT did not send a valid `GetConfigurationsResponse` message.

• The DUT did not send `GetConfigurationsResponse` message with valid Spaces and PTZTimeout.

• The DUT did not send `GetStatusResponse` message.

• The DUT did not send a valid `GetStatusResponse` message.

• The DUT did not send `AbsoluteMoveResponse` message.

• The DUT did not send `GetStatusResponse` message with the specified position after moved by ONVIF Client.

**Note:** If DUT does not return a current position by `GetStatusResponse` message, the specified position after being moved by ONVIF Client is not checked by ONVIF Client.

**Note:** PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the `GetStatusResponse` message does not have to be exactly the same as the position requested by the ONVIF Client in the `AbsoluteMove` request.

**Note:** If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration then these limitations will be taken into account for x, y values of PanTilt or Zoom in `AbsoluteMove` request.

### 5.2.1.2 SOAP_FAULT MESSAGE

**Test Case ID:** PTZ-3-1-2

**Specification Coverage:** `AbsoluteMove` request

**Feature Under Test:** `AbsoluteMove` request

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that DUT generates a SOAP fault message to `AbsoluteMove` request operation with out of bounds values.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st
PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. ONVIF Client will invoke `GetConfigurationOptions` request (PTZConfigurationToken).
5. DUT returns existing PTZConfiguration in the `GetConfigurationsResponse` message.
6. ONVIF Client will invoke `AbsoluteMove` request (ProfileToken, PanTilt = ["x (Out of range)", "y (Out of range)"]).

**Test Result:**

**PASS** –
- DUT passes all assertions.

**FAIL** –
- The DUT did not send `GetConfigurationsResponse` message.
- The DUT did not send a valid `GetConfigurationsResponse` message.
- The DUT did not send SOAP 1.2 fault message against `AbsoluteMove` request.
- The DUT did not send a correct SOAP 1.2 fault message (fault code, namespace etc) against `AbsoluteMove` request.

### 5.2.1.3 PTZ RELATIVE MOVE

**Test Case ID:** PTZ-3-1-3

**Specification Coverage:** RelativeMove

**Feature Under Test:** RelativeMove

**WSDL Reference:** ptz.wsdl
**Test Purpose:** To verify relative Pan/Tilt or relative Zoom movements using the DUT PTZ RelativeMove operation.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. Relative movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. ONVIF Client will invoke `GetConfigurationOptions` request to retrieve `PTZConfigurationOptions`.
5. Verify that DUT returns `GetConfigurationsResponse` message with valid Spaces and PTZTimeout, and has the function of Relative movement.
6. ONVIF Client will invoke `GetStatus` request to get a current PTZStatus.
7. DUT returns a current PTZStatus in the `GetStatusResponse` message.
8. If PanTilt of Relative movement is supported (there is a parameter of RelativePanTiltTranslationSpace in PTZConfigurationOptions), ONVIF Client will invoke `RelativeMove` request (ProfileToken, Position:PanTilt = ["x", "y"], Speed:PanTilt = ["x", "y"]). The Speed:PanTilt parameter is added if supported Speed:PanTilt.
9. If ONVIF Client invoked `RelativeMove` request for PanTilt, verify that DUT returns `RelativeMoveResponse` message indicating success.
10. If Zoom Relative movement is supported (there is a parameter of RelativeZoomTranslationSpace in PTZConfigurationOptions), ONVIF Client will invoke `RelativeMove` request (ProfileToken, Position:Zoom = ["x"], Speed:Zoom = ["x"]). The Speed:Zoom parameter is added if supported Speed:Zoom.
11. If ONVIF Client invoked `RelativeMove` request for Zoom, verify that DUT returns `RelativeMoveResponse` message indicating success.
12. ONVIF Client will invoke `GetStatus` request to get a current PTZStatus.
13. Verify that DUT moves to the specified position by `GetStatusResponse` message.
Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send GetConfigurationsResponse message.
• The DUT did not send a valid GetConfigurationsResponse message.
• The DUT did not send GetConfigurationsResponse message with valid Spaces and PTZTimeout.
• The DUT did not send GetStatusResponse message.
• The DUT did not send a valid GetStatusResponse message.
• The DUT did not send RelativeMoveResponse message.
• The DUT did not send GetStatusResponse message with the specified position after moved by ONVIF Client.

Note: If DUT does not return a current position by GetStatusResponse message, the specified position after being moved by ONVIF Client is not checked by ONVIF Client.

Note: PTZ accuracy is out of scope for this Test Specification. Therefore the position reported by the DUT in the GetStatusResponse message does not have to be exactly the same as the position requested by the ONVIF Client in the RelativeMove request.

5.2.1.4 PTZ CONTINUOUS MOVE

Test Case ID: PTZ-3-1-4

Specification Coverage: ContinuousMove

Feature Under Test: ContinuousMove

WSDL Reference: ptz.wsdl

Test Purpose: To verify continuous Pan/Tilt or continuous Zoom movements using the DUT PTZ ContinuousMove operation with timeout parameter.

Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.
Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. ONVIF Client will invoke `GetConfigurationOptions` request to retrieve `PTZConfigurationOptions`.
5. Verify that DUT returns `GetConfigurationsResponse` message with valid Spaces and `PTZTimeout`, and has the function of Relative movement.
6. If PanTilt of Continuous movement is supported (there is a parameter of `ContinuousPanTiltVelocitySpace` in `PTZConfigurationOptions`), ONVIF Client will invoke `ContinuousMove` request (ProfileToken, Velocity:PanTilt = ["x", "y"], Timeout = PT60S).
7. If ONVIF Client invoked `ContinuousMove` request for PanTilt, verify that DUT returns `ContinuousMoveResponse` message indicating success.
8. If ONVIF Client invoked `ContinuousMove` request for PanTilt, ONVIF Client will invoke `GetStatus` request to get a current `PTZStatus` after 60 second.
9. If ONVIF Client invoked `ContinuousMove` request for PanTilt, verify that the DUT returns `GetStatusResponse` message with `MoveStatus` = IDLE or UNKNOWN.
10. If Zoom of Continuous movement is supported (there is a parameter of `ContinuousZoomVelocitySpace` in `PTZConfigurationOptions`), ONVIF Client will invoke `ContinuousMove` request (ProfileToken, Velocity:Zoom = ["x"], Timeout = PT60S).
11. If ONVIF Client invoked `ContinuousMove` request for Zoom, verify that DUT returns `ContinuousMoveResponse` message indicating success.
12. If ONVIF Client invoked `ContinuousMove` request for Zoom, ONVIF Client will invoke `GetStatus` request to get a current `PTZStatus` after 60 second.
13. If ONVIF Client invoked `ContinuousMove` request for PanTilt, verify that the DUT returns `GetStatusResponse` message with `MoveStatus` = IDLE or UNKNOWN.

Test Result:

PASS –

• DUT passes all assertions.
FAIL –

- The DUT did not send `GetConfigurationsResponse` message.
- The DUT did not send a valid `GetConfigurationsResponse` message.
- The DUT did not send `GetConfigurationsResponse` message with valid Spaces and PTZTimeout.
- The DUT did not send `GetStatusResponse` message.
- The DUT did not send a valid `GetStatusResponse` message.
- The DUT did not send `ContinuousMoveResponse` message.
- The DUT did not send `GetStatusResponse` message with MoveStatus = MOVING or UNKNOWN after executing Test Procedure 9 and 15.
- The DUT did not send `GetStatusResponse` message with MoveStatus = IDLE or UNKNOWN after executing Test Procedure 11 and 17.

**Note:** If DUT does not return a current MoveStatus by `GetStatusResponse` message, the MoveStatus is not checked by ONVIF Client.

### 5.2.1.5 PTZ CONTINUOUS MOVE & STOP

**Test Case ID:** PTZ-3-1-5

**Specification Coverage:** ContinuousMove, Stop

**Feature Under Test:** ContinuousMove, Stop

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify continuous Pan/Tilt or continuous Zoom movements using the DUT PTZ ContinuousMove operation without timeout parameter and to stop all ongoing pan, tilt and zoom movements.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.

4. ONVIF Client will invoke **GetConfigurationOptions** request to retrieve PTZConfigurationOptions.

5. Verify that DUT returns **GetConfigurationsResponse** message with valid Spaces and PTZTimeout, and has the function of Relative movement.

6. If PanTilt of Continuous movement is supported (there is a parameter of ContinuousPanTiltVelocitySpace in PTZConfigurationOptions), ONVIF Client will invoke **ContinuousMove** request (ProfileToken, Velocity:PanTilt = ["x", "y"]).

7. If ONVIF Client invoked **ContinuousMove** request for PanTilt, verify that DUT returns **ContinuousMoveResponse** message indicating success.

8. If ONVIF Client invoked **ContinuousMove** request for PanTilt, ONVIF Client will invoke **Stop** request to stop continuous move.

9. If ONVIF Client invoked **ContinuousMove** request for PanTilt, ONVIF Client will invoke **GetStatus** request to get a current PTZStatus.

10. If ONVIF Client invoked **ContinuousMove** request for PanTilt, verify that the DUT returns **StopResponse** message indicating success.

11. If ONVIF Client invoked **ContinuousMove** request for PanTilt, verify that the DUT returns **GetStatusResponse** message with MoveStatus = IDLE or UNKNOWN.

12. If Zoom of Continuous movement is supported (there is a parameter of ContinuousZoomVelocitySpace in PTZConfigurationOptions), ONVIF Client will invoke **ContinuousMove** request (ProfileToken, Velocity:Zoom = ["x"]).

13. If ONVIF Client invoked **ContinuousMove** request for Zoom, verify that DUT returns **ContinuousMoveResponse** message indicating success.

14. If ONVIF Client invoked **ContinuousMove** request for Zoom, ONVIF Client will invoke **Stop** request to stop continuous move.

15. If ONVIF Client invoked **ContinuousMove** request for Zoom, verify that the DUT returns **StopResponse** message indicating success.

16. If ONVIF Client invoked **ContinuousMove** request for Zoom, ONVIF Client will invoke **GetStatus** request to get a current PTZStatus.

17. If ONVIF Client invoked **ContinuousMove** request for PanTilt, verify that the DUT returns **GetStatusResponse** message with MoveStatus = IDLE or UNKNOWN.

Test Result:
PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send `GetConfigurationsResponse` message.
- The DUT did not send a valid `GetConfigurationsResponse` message.
- The DUT did not send `GetConfigurationsResponse` message with valid Spaces and PTZTimeout.
- The DUT did not send `GetStatusResponse` message.
- The DUT did not send a valid `GetStatusResponse` message.
- The DUT did not send `ContinuousMoveResponse` message.
- The DUT did not send `StopResponse` message.
- The DUT did not send `GetStatusResponse` message with MoveStatus = MOVING or UNKNOWN after executing Test Procedure 9 and 17.
- The DUT did not send `GetStatusResponse` message with MoveStatus = IDLE or UNKNOWN after executing Test Procedure 13 and 21.

Note: If DUT does not return a current MoveStatus by `GetStatusResponse` message, the MoveStatus is not checked by ONVIF Client.

5.2.2 Preset operations

5.2.2.1 SET AND GET PRESET

Test Case ID: PTZ-4-1-4

Specification Coverage: SetPreset, GetPresets

Feature Under Test: SetPreset, GetPresets

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the DUT supports the setting of presets using the SetPreset operation and the retrieval of presets using the GetPresets operation.

Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. Presets is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if
PTZ node is not selected on Management tab. Absolute or Relative movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. Position the DUT so that it is at PTZPosition X using a move request supported by the DUT (e.g. **AbsoluteMove** request or **RelativeMove** request depending of features for PTZ Node selected on Management tab).
5. Create a new preset using **SetPreset** request (Name = "Test").
6. Verify that the DUT sends a **SetPresetResponse** message and a PresetToken for the preset. The PresetToken will need to be used in the following test steps. The PresetToken can have any valid value but it will be referred to as PresetToken = "A" in this test case.
7. ONVIF Client sends a **GetPresets** request.
8. The DUT sends a list of presets in the **GetPresetsResponse** message.
9. Verify that the **GetPresetsResponse** message has a preset with PresetToken = "A" and with Name = "Test".
10. If the DUT supports absolute Pan/Tilt movement for PTZ Node selected on Management tab, the ONVIF Client checks that **GetPresetsResponse** message contains PTZPosition.PanTilt field with values that are equal to X.
11. If the DUT supports absolute Zoom movement for PTZ Node selected on Management tab, the ONVIF Client checks that **GetPresetsResponse** message contains PTZPosition.Zoom field with values that are equal to X.
12. If the DUT does not support absolute Pan/Tilt movement for PTZ Node selected on Management tab and **GetPresetsResponse** message contains PTZPosition.PanTilt field, the ONVIF Client checks that values of PanTilt that are equal to X.
13. If the DUT does not support absolute Zoom movement for PTZ Node selected on Management tab and **GetPresetsResponse** message contains PTZPosition.Zoom field, the ONVIF Client checks that values of PanTilt that are equal to X.
14. Position the DUT so that is at PTZPosition Y using a move request supported by the DUT (e.g. **AbsoluteMove** request or **RelativeMove** request depending of features for PTZ Node selected on Management tab).

15. Overwrite the preset using **SetPreset** request (PresetToken = "A").

16. ONVIF Client sends a **GetPresets** request.

17. The DUT sends a list of presets in the **GetPresetsResponse** message.

18. Verify that there is a preset with PresetToken = "A" and with Name = “Test.”

19. If the DUT supports absolute Pan/Tilt movement for PTZ Node selected on Management tab, the ONVIF Client checks that **GetPresetsResponse** message contains PTZPosition.PanTilt field with values that correspond to Y.

20. If the DUT supports absolute Zoom movement for PTZ Node selected on Management tab, the ONVIF Client checks that **GetPresetsResponse** message contains PTZPosition.Zoom field with values that correspond to Y.

21. If the DUT does not support absolute Pan/Tilt movement for PTZ Node selected on Management tab and **GetPresetsResponse** message contains PTZPosition.PanTilt field, the ONVIF Client checks that values of PanTilt that correspond to Y.

22. If the DUT does not support absolute Zoom movement for PTZ Node selected on Management tab and **GetPresetsResponse** message contains PTZPosition.Zoom field, the ONVIF Client checks that values of PanTilt that correspond to X.

23. ONVIF Client sends a **RemovePreset** request (PresetToken = "A") to the DUT and the DUT removes the preset.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- The DUT’s move operation failed.
- The DUT did not send **SetPresetResponse** message.
- The DUT did not include a PresetToken in the **SetPresetResponse** message.
- The DUT did not send **GetPresetsResponse** message.
- The DUT did not include the correct PTZPosition in the **GetPresetsResponse** message.
• The DUT did not include the correct name (Name = “Test”) in the `GetPresetsResponse` message.

**Note:** There are no specific requirements on what the exact values for PTZPositions X and Y should be used in this test, other than they shall be different positions.

**Note:** If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration then these limitations will be taken into account for x, y values of PanTilt in `AbsoluteMove` request.

**Note:** PTZ accuracy is out of scope for this Test Specification. Therefore the position reported by the DUT in the GetPresetResponse does not have to be exactly the same as the position of the preset created with the `SetPreset` request.

**Note:** See Annex A.2 for Name and Token Parameters Length limitations.

### 5.2.2.2 GOTO PRESET

**Test Case ID:** PTZ-4-1-5

**Specification Coverage:** GotoPreset, SetPreset

**Feature Under Test:** GotoPreset

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that it is possible to go to presets using the GotoPreset operation.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. Presets is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). Absolute or Relative movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. Position the DUT so that it is at PTZPosition X using a move request supported by the DUT (e.g. `AbsoluteMove` request or `RelativeMove` request depending of features for PTZ Node selected on Management tab).
5. Create a new preset using \textbf{SetPreset} request (Name = "Test").

6. Verify that the DUT sends a \textbf{SetPresetResponse} message and a PresetToken for the preset. The PresetToken will need to be used in the following test steps. The PresetToken can have any valid value but it will be referred to as PresetToken = "A" in this test case.

7. Move the DUT so that it is not at PTZPosition X (e.g. using \textbf{AbsoluteMove} request Y).

8. ONVIF Client sends \textbf{GotoPreset} request (PresetToken = "A").

9. The DUT goes to the preset PTZ position and sends a \textbf{GotoPresetResponse} message.

10. Verify that the DUT is at PTZPosition X. \textbf{GetStatus} request (Position) can be used if it is supported; else this will have to be done manually.

11. ONVIF Client sends a \textbf{RemovePreset} request (PresetToken = "A") to the DUT and the DUT removes the preset.

\textbf{Test Result:}

\textbf{PASS –}

- DUT passes all assertions.

\textbf{FAIL –}

- The DUT’s move operation failed.
- The DUT did not send \textbf{SetPresetResponse} message with a PresetToken.
- The DUT did not go to the correct position after \textbf{GotoPreset} request was sent.
- The DUT did not send \textbf{GotoPresetResponse} message.

\textbf{Note:} There is no specific requirement on what the exact value for PTZPosition X should be used in this test case.

\textbf{Note:} If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration, then these limitations will be taken into account for x, y values of PanTilt in \textbf{AbsoluteMove} request.

\textbf{Note:} PTZ accuracy is out of scope for this Test Specification. Therefore the position reported by the DUT in the \textbf{GetStatusResponse} message does not have to be exactly the same as the position of the preset created with the \textbf{SetPreset} request.

\textbf{Note:} See Annex A.2 for Name and Token Parameters Length limitations.

\subsection*{5.2.2.3 REMOVE PRESET}

\textbf{Test Case ID:} PTZ-4-1-6
Specification Coverage: RemovePreset, SetPreset, GetPresets

Feature Under Test: RemovePreset

WSDL Reference: ptz.wsdl

Test Purpose: To verify that it is possible to remove presets using the RemovePreset operation.

Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. Presets is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. ONVIF Client creates a new preset using SetPreset request (Name = "Test").
5. DUT saves the preset and sends a SetPresetResponse message. Verify that the DUT sent a SetPresetResponse message and a PresetToken for the preset. The PresetToken will need to be used in the following test steps. The PresetToken can have any valid value but it will be referred to as "PresetToken = "A" in this test case.
6. ONVIF Client sends a GetPresets request.
7. DUT sends a list of presets in the GetPresetsResponse message.
8. Verify that there is a preset with PresetToken = "A" and Name = "Test".
9. ONVIF Client sends RemovePreset request (PresetToken = "A").
10. DUT removes preset and sends a RemovePresetResponse message.
11. ONVIF Client sends a GetPresets request.
12. DUT sends a list of presets in the GetPresetsResponse message.
13. Verify that there is no preset with PresetToken = "A" and Name = "Test".

Test Result:
PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send `SetPresetResponse` message with a PresetToken.
• DUT did not send `GetPresetsResponse` message.
• DUT did not remove a preset after `RemovePreset` request was sent.
• DUT did not send `RemovePresetResponse` message.

Note: See Annex A.2 for Name and Token Parameters Length limitations.

5.2.3 Home Position operations

5.2.3.1 HOME POSITION OPERATIONS (CONFIGURABLE)

Test Case ID: PTZ-5-1-1

Specification Coverage: GotoHomePosition, SetHomePosition

Feature Under Test: GotoHomePosition, SetHomePosition

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented.

Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. Configurable Home Position is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). Absolute or Relative movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. Position the DUT so that it is at PTZPosition X using a move request supported by the DUT (e.g. `AbsoluteMove` request or `RelativeMove` depending on features for PTZ Node selected on Management tab).

5. ONVIF Client sends a `SetHomePosition` request.

6. DUT sets the Home position to the current position and sends a `SetHomePositionResponse` message.

7. Move DUT so that it is not at PTZPosition X (e.g. using `AbsoluteMove` request Y).

8. ONVIF Client sends a `GotoHomePosition` request.

9. DUT goes to the Home PTZ position and sends a `GotoHomePositionResponse` message.

10. Verify that the DUT is at PTZPosition X (`GetStatus` request/Position can be used if it is supported, else this will have to be done manually).

**Test Result:**

**PASS –**

- DUT passes all assertions.

**FAIL –**

- The DUT’s move operation failed.
- The DUT did not send `SetHomePositionResponse` message.
- The DUT did not save the new position as Home position.
- The DUT did not send `GotoHomePositionResponse` message.
- The DUT did not go to Home position.

**Note:** PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the `GetStatusResponse` message does not have to be exactly the same as the position of the Home position.

**Note:** If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration then these limitations will be taken into account for x, y values of PanTilt in `AbsoluteMove` request.

### 5.2.3.2 HOME POSITION OPERATIONS (FIXED)

**Test Case ID:** PTZ-5-1-2

**Specification Coverage:** Capability exchange
Feature Under Test: GetCapabilities

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented.

Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. Fixed Home Position is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). Absolute or Relative movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client configures and selects a media profile as described in Annex A.1.

4. ONVIF Client sends a GotoHomePosition request.

5. The DUT goes to the Home position and sends a GotoHomePositionResponse message.

6. Note at which PTZPosition the DUT is (GetStatus request/Position can be used if it is supported, else this will have to be done manually). This position will be referred to as "PTZPosition A" below.

7. Position the DUT so that is at PTZPosition Y using a move request supported by the DUT (e.g. AbsoluteMove request or RelativeMove request depending of features for PTZ Node selected on Management tab).

8. ONVIF Client sends a SetHomePosition request.

9. DUT responds with "Cannot Overwrite Home" message.

10. ONVIF Client sends a GotoHomePosition request.

11. DUT goes to the Home PTZ position and sends a GotoHomePositionResponse message.

12. Verify that the DUT is back at PTZPosition A (GetStatus request/Position can be used if it is supported, else this will have to be done manually).

Test Result:
PASS –

• DUT passes all assertions.

FAIL –

• The DUT did not send SOAP Fault message (CannotOverwriteHome).
• The DUT’s move operation failed.
• The DUT did not save the new position ("PTZPosition Y") as Home position.
• The DUT did not send GotoHomePositionResponse message.
• The DUT did not go to original Home position ("PTZPosition A").

Note: PTZ accuracy is out of scope for this Test Specification. Therefore the position reported by the DUT in the GetStatusResponse message does not have to be exactly the same as the position of the Home position.

Note: If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration then these limitations will be taken into account for x, y values of PanTilt in AbsoluteMove request.

5.2.3.3 PTZ – HOME POSITION OPERATIONS (USAGE OF FIXEDHOMEPOSITION FLAG)

Test Case ID: PTZ-5-1-3

Specification Coverage: SetHomePosition

Feature Under Test: SetHomePosition

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented.

Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.

4. ONVIF Client invokes GetNode request (Node Token) to get PTZ node capabilities.

5. Verify the GetNodeResponse message from the DUT. If GetNodeResponse message does not contain FixedHomePosition attribute skip other steps and go to the next test.

6. ONVIF Client invokes SetHomePosition request message (Profile Token) to get PTZ node capabilities.

7. Verify the SetHomePositionResponse message or SOAP 1.2 fault message (Action/CannotOverwriteHome or ActionNotSupported) from the DUT. Verify that SetHomePositionResponse message was relieved if FixedHomePosition = "false". Verify that SOAP 1.2 fault message (Action/CannotOverwriteHome or ActionNotSupported) was relieved if FixedHomePosition = "true".

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send SetHomePositionResponse message if FixedHomePosition = false.

• DUT did not send a valid SOAP 1.2 fault message if FixedHomePosition = true.

5.2.3.4 PTZ HOME POSITION OPERATIONS USING CUSTOM MEDIA PROFILE

Test Case ID: PTZ-5-1-4

Specification Coverage: None

Feature Under Test: SetHomePosition, GotoHomePosition

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented in the case of custom created profile.

Pre-Requisite: Media Service is received from the DUT. PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:
1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client retrieves PTZ Nodes list by following the procedure mentioned in Annex A.3 with the following input and output parameters

   • out ptzNodeList PTZ Node List

4. For each PTZ Node ptzNode from ptzNodeList list with HomeSupported = true repeat the following steps:

   4.1. ONVIF Client creates Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.4 with the following input and output parameters

       • in ptzNodeToken1 - token of the PTZ Node, with which Media Profile should be configured

       • out profile - Media Profile with Video Source Configuration and PTZ Configuration

   4.2. ONVIF Client defines features of PTZ Node ptzNode by following the procedure mentioned in Annex A.5 with the following input and output parameters

       • in ptzNode - PTZ Node,

       • out continuousPanTilt - Supporting of Continuous Pan/Tilt movement,

       • out continuousZoom - Supporting of Continuous Zoom movement,

       • out absolutePanTilt - Supporting of Absolute Pan/Tilt movement,

       • out absoluteZoom - Supporting of Absolute Zoom movement,

       • out relativePanTilt - Supporting of Relative Pan/Tilt movement,

       • out relativeZoom - Supporting of Relative Zoom movement.

   4.3. ONVIF Client gets PTZ Configuration Options ptzConfigurationOptions by following the procedure mentioned in Annex A.6 with the following input and output parameters

       • in profile.Configurations.PTZ.@token - PTZ Configuration token,

       • out ptzConfigurationOptions - PTZ Configuration Options.

   4.4. ONVIF Client changes PTZ position to minimum by following the procedure mentioned in Annex A.7 with the following input and output parameters
• in *profile* - Media Profile with PTZ Configuration,

• in *ptzConfigurationOptions* - PTZ Configuration Options,

• in *continuousPanTilt* - Supporting of Continuous Pan/Tilt movement,

• in *continuousZoom* - Supporting of Continuous Zoom movement,

• in *absolutePanTilt* - Supporting of Absolute Pan/Tilt movement,

• in *absoluteZoom* - Supporting of Absolute Zoom movement,

• in *relativePanTilt* - Supporting of Relative Pan/Tilt movement,

• in *relativeZoom* - Supporting of Relative Zoom movement,

4.5. ONVIF Client invokes **GetStatus** request with parameters

    • ProfileToken := *profile*.@token

4.6. The DUT responds with **GetStatusResponse** with parameters

    • PTZStatus =: *ptzStatus1*

4.7. ONVIF Client invokes **SetHomePosition** request with parameters

    • ProfileToken := *profile*.@token

4.8. The DUT returns **env:Receiver/ter:Action/ter:CannotOverwriteHome** or **env:Receiver/ter:ActionNotSupported** SOAP 1.2 fault or **SetHomePositionResponse** message.

4.9. If DUT returns **env:Receiver/ter:Action/ter:CannotOverwriteHome** or **env:Receiver/ter:ActionNotSupported** SOAP 1.2 fault at step 4.8:

    • set *fixedHomePosition* := true

4.10. If DUT returns **SetHomePositionResponse** message at step 4.8:

    • set *fixedHomePosition* := false

4.11. If *ptzNode*.@FixedHomePosition is specified:

    4.11.1. If *ptzNode*.@FixedHomePosition = true and *fixedHomePosition* = false, FAIL the test and skip other steps.
4.11.2. If ptzNode.@FixedHomePosition = false and fixedHomePosition = true, FAIL the test and skip other steps.

4.12. If fixedHomePosition = true:

4.12.1. ONVIF Client invokes GotoHomePosition request with parameters

   • ProfileToken := profile.@token
   • Speed skipped


4.12.3. Wait until timeout1 timeout expires.

4.12.4. ONVIF Client invokes GetStatus request with parameters

   • ProfileToken := profile.@token

4.12.5. The DUT responds with GetStatusResponse with parameters

   • PTZStatus =: ptzStatus1

4.13. ONVIF Client changes PTZ position to maximum by following the procedure mentioned in Annex A.12 with the following input and output parameters

   • in profile - Media Profile with PTZ Configuration,
   • in ptzConfigurationOptions - PTZ Configuration Options,
   • in continuousPanTilt - Supporting of Continuous Pan/Tilt movement,
   • in continuousZoom - Supporting of Continuous Zoom movement,
   • in absolutePanTilt - Supporting of Absolute Pan/Tilt movement,
   • in absoluteZoom - Supporting of Absolute Zoom movement,
   • in relativePanTilt - Supporting of Relative Pan/Tilt movement,
   • in relativeZoom - Supporting of Relative Zoom movement,

4.14. ONVIF Client invokes GotoHomePosition request with parameters

   • ProfileToken := profile.@token
   • Speed skipped
4.15. The DUT responds with **GotoHomePositionResponse** message.

4.16. Wait until **timeout1** timeout expires.

4.17. ONVIF Client invokes **GetStatus** request with parameters

   - ProfileToken := profile.@token

4.18. The DUT responds with **GetStatusResponse** with parameters

   - PTZStatus =: ptzStatus2

4.19. If **ptzStatus2.Position.PanTilt** is specified:

   4.19.1. If difference between ptzStatus2.Position.PanTilt.x and ptzStatus1.Position.PanTilt.x is more than 10% of full range, write WARNING.

   4.19.2. If difference between ptzStatus2.Position.PanTilt.y and ptzStatus1.Position.PanTilt.y is more than 10% of full range, write WARNING.

4.20. If **ptzStatus2.Position.Zoom** is specified:

   4.20.1. If difference between ptzStatus2.Position.Zoom.x and ptzStatus1.Position.Zoom.x is more than 10% of full range, write WARNING.

4.21. If PTZ Configuration profile.Configurations.PTZ was changed at step 4.4 or at step 4.13, ONVIF Client restores PTZ Configuration.

4.22. If Media Profile profile was changed at step 4.1, ONVIF Client restores Media Profile.

Test Result:

**PASS** –

- DUT passes all assertions.

**FAIL** –

- DUT did not send **GetConfigurationOptionsResponse** message.

- DUT did not send **GetStatusResponse** message.

- DUT did not send **SetHomePositionResponse** message.

- DUT did not send **GotoHomePositionResponse** message.
Note: PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the `GetStatusResponse` does not have to be exactly the same as the position requested by the ONVIF Client in the `AbsoluteMove` request.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

Note: `timeout1` will be taken from Operation Delay field of ONVIF Device Test Tool.

Note: To calculate full range for Pan Tilt for step 4.19.1 and for step 4.19.2 ONVIF Client uses `ptzStatus2.Position.PanTilt`.

Note: To calculate full range for Zoom for step 4.20.1 ONVIF Client uses `ptzStatus2.Position.Zoom`.

5.2.4 Auxiliary operations

5.2.4.1 SEND AUXILIARY COMMAND

Test Case ID: PTZ-6-1-1

Specification Coverage: SendAuxiliaryCommand

Feature Under Test: SendAuxiliaryCommand

WSDL Reference: ptz.wsdl

Test Purpose: To verify that it is possible to send an auxiliary command using the SendAuxiliaryCommand operation.

Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. Auxiliary operations is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures and selects a media profile as described in Annex A.1.
4. ONVIF Client sends a `GetNode` request.
5. DUT sends a **GetNodeResponse** message that includes a list of the supported auxiliary commands.

6. Send an Auxiliary command that matches the supported command listed in the PTZ Node, using **SendAuxiliaryCommand** request.

7. Verify that the DUT sends a **SendAuxiliaryCommandResponse** message.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- DUT did not list the available auxiliary commands in the PTZ Node properties.
- DUT did not send **SendAuxiliaryCommandResponse** message.

**Note:** It is outside the scope of this test case to verify that the functionality connected to an Auxiliary command works as intended. This should be independently verified by the person executing the test.

5.2.5 Predefined PTZ spaces

5.2.5.1 Absolute Position Spaces

5.2.5.1.1 GENERIC PAN/TILT POSITION SPACE

**Test Case ID:** PTZ-7-1-3

**Specification Coverage:** Generic Pan/Tilt Position Space

**Feature Under Test:** Generic Pan/Tilt Position Space

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the node supports the Generic Pan/Tilt Position Space for AbsolutePanTilt.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.
Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke GetNodes request to retrieve a complete list of PTZNodes.
4. Verify the GetNodesResponse message from the DUT.
5. Select the first PTZNode that supports Absolute Pan/Tilt movement. If there is no such PTZNodes skip other steps and go to the next test.
6. Verify that the node’s Absolute Position Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Pan/Tilt Position Space description for AbsolutePanTilt.
7. ONVIF Client configures and selects a media profile as described in Annex A.1 for PTZ Configuration that refers to the selected PTZNode.
8. ONVIF Client sends a valid AbsoluteMove request using the min XRange/YRange values from the space description and with Generic Pan/Tilt Position Space.
9. Verify that the AbsoluteMove request is accepted.
10. ONVIF Client sends a valid AbsoluteMove request using the max XRange/YRange values from the space description and with Generic Pan/Tilt Position Space.
11. Verify that the AbsoluteMove request is accepted.
12. Repeat test procedure for all PTZNodes available that supports Absolute Pan/Tilt movement in the DUT.

Test Result:

PASS –
- DUT passes all assertions.

FAIL –
- The DUT does not have a Generic Pan/Tilt Position Space description for AbsolutePanTilt.
- The allowed range is not specified.
- A valid AbsoluteMove request operation does not succeed.

Note: This test case shall be repeated for all PTZNodes with Absolute Pan/Tilt move support that are available in the DUT.
**Note**: Absolute Pan/Tilt Move is regarded as supported for PTZNode, if PTZNode contains at least one AbsolutePanTiltPositionSpace tag.

**Note**: If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration then these limitations will be taken into account for x, y values of PanTilt or Zoom in `AbsoluteMove` request.

### 5.2.5.1.2 GENERIC ZOOM POSITION SPACE

**Test Case ID**: PTZ-7-1-4

**Specification Coverage**: Generic Zoom Position Space

**Feature Under Test**: Generic Zoom Position Space

**WSDL Reference**: ptz.wsdl

**Test Purpose**: To verify that the node supports the Generic Zoom Position Space for Absolute Zoom.

**Pre-Requisite**: PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration**: ONVIF Client and DUT.

**Test Procedure**:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke `GetNodes` request to retrieve a complete list of PTZNodes.
4. Verify the `GetNodesResponse` message from the DUT.
5. Select the first PTZNode that supports Absolute Zoom movement. If there is no such PTZNodes, skip other steps and go to the next test.
6. Verify that the node’s Absolute Position Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Zoom Position Space description for AbsoluteZoom.
7. ONVIF Client configures and selects a media profile as described in Annex A.1 for PTZ Configuration that refers to selected PTZNode.
8. ONVIF Client sends a valid `AbsoluteMove` request using the max XRange values from the space description and with Generic Zoom Position Space.
9. Verify that the **AbsoluteMove** request is accepted.

10. ONVIF Client sends a valid **AbsoluteMove** request using the min XRange values from the space description and with Generic Zoom Position Space.

11. Verify that the **AbsoluteMove** request is accepted.

12. Repeat test procedure for all PTZNodes available that supports Absolute Zoom movement in the DUT.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- The DUT does not have a Generic Zoom Position Space description for **AbsoluteZoom**.
- The allowed range is not specified.
- A valid **AbsoluteMove** request operation does not succeed.

**Note:** This test case shall be repeated for all PTZNodes with Absolute Zoom move support that are available in the DUT.

**Note:** Absolute Zoom Move is regarded as supported for PTZNode, if PTZNode contains at least one **AbsoluteZoomPositionSpace** tag.

**Note:** If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration then these limitations will be taken into account for x, y values of PanTilt or Zoom in **AbsoluteMove** request.

### 5.2.5.2 Relative Translation Spaces

#### 5.2.5.2.1 GENERIC PAN/TILT TRANSLATION SPACE

**Test Case ID:** PTZ-7-2-3

**Specification Coverage:** Generic Pan/Tilt Translation Space

**Feature Under Test:** Generic Pan/Tilt Translation Space

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the node supports the Generic Pan/Tilt Translation Space for Relative Pan/Tilt.
**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client will invoke **GetNodes** request to retrieve a complete list of PTZNodes.

4. Verify the **GetNodesResponse** message from the DUT.

5. Select the first PTZNode that supports Relative Pan/Tilt movement. If there is no such PTZNodes, skip other steps and go to the next test.

6. Verify that the node’s Relative Translation Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Pan/Tilt Translation Space description for RelativePanTilt.

7. ONVIF Client configures and selects a media profile as described in Annex A.1 for PTZ Configuration that refers to selected PTZNode.

8. ONVIF Client sends a valid **RelativeMove** request using the min XRange/YRange values from the space description and with Generic Pan/Tilt Translation Space.

9. Verify that the **RelativeMove** request is accepted.

10. ONVIF Client sends a valid **RelativeMove** request using the max XRange/YRange values from the space description and with Generic Pan/Tilt Translation Space.

11. Verify that the **RelativeMove** request is accepted.

12. Repeat test procedure for all PTZNodes available that supports Relative Pan/Tilt movement in the DUT.

**Test Result:**

**PASS –**

- DUT passes all assertions.

**FAIL –**

- The DUT does not have a Generic Pan/Tilt Translation Space description for Relative Pan/Tilt.
• The allowed range is not specified.

• A valid RelativeMove operation does not succeed.

**Note:** This test case shall be repeated for all PTZNodes with Relative Pan/Tilt move support that are available in the DUT.

**Note:** Relative Pan/Tilt Move is regarded as supported for PTZNode, if PTZNode contains at least one RelativePanTiltTranslationSpace tag.

### 5.2.5.2.2 GENERIC ZOOM TRANSLATION SPACE

**Test Case ID:** PTZ-7-2-4

**Specification Coverage:** Generic Zoom Translation Space

**Feature Under Test:** Generic Zoom Translation Space

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the node supports the Generic Zoom Translation Space for Relative Zoom.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client will invoke **GetNodes** request to retrieve a complete list of PTZNodes.

4. Verify the **GetNodesResponse** message from the DUT.

5. Select the first PTZNode that supports Relative Zoom movement. If there is no such PTZNodes skip, other steps and go to the next test.

6. Verify that the node’s Relative Translation Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Zoom Translation Space description for RelativeZoom.

7. ONVIF Client configures and selects a media profile as described in **Annex A.1** for PTZ Configuration that refers to selected PTZNode.
8. ONVIF Client sends a valid `RelativeMove` request using the max XRange values from the space description and with Generic Zoom Translation Space.

9. Verify that the `RelativeMove` request is accepted.

10. ONVIF Client sends a valid `RelativeMove` request using the min XRange values from the space description and with Generic Zoom Translation Space.

11. Verify that the `RelativeMove` request is accepted.

12. Repeat test procedure for all PTZNodes available that supports Relative Zoom movement in the DUT.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- The DUT does not have a Generic Zoom Translation Space description for RelativeZoom.
- The allowed range is not specified.
- A valid RelativeMove operation does not succeed.

**Note:** This test case shall be repeated for all PTZNodes with Relative Zoom move support that are available in the DUT.

**Note:** Relative Zoom Move is regarded as supported for PTZNode, if PTZNode contains at least one RelativeZoomTranslationSpace tag.

### 5.2.5.3 Continuous Velocity Spaces

#### 5.2.5.3.1 GENERIC PAN/TILT VELOCITY SPACE

**Test Case ID:** PTZ-7-3-3

**Specification Coverage:** Generic Pan/Tilt Velocity Space

**Feature Under Test:** Generic Pan/Tilt Velocity Space

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the node supports the Generic Pan/Tilt Velocity Space for Continuous Pan/Tilt.
Pre-Requisite: PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client will invoke GetNodes request to retrieve a complete list of PTZNodes.

4. Verify the GetNodesResponse message from the DUT.

5. Select the first PTZNode that supports Continuous Pan/Tilt movement. If there is no such PTZNodes, skip other steps and go to the next test.

6. Verify that the node’s Continuous Velocity Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Pan/Tilt Velocity Space description for ContinuousPanTilt.

7. ONVIF Client configures and selects a media profile as described in Annex A.1 for PTZ Configuration that refers to selected PTZNode.

8. ONVIF Client sends a valid ContinuousMove request using the min XRange/YRange values from the space description and with Generic Pan/Tilt Velocity Space.

9. Verify that the ContinuousMove request is accepted.

10. ONVIF Client sends a valid ContinuousMove request using the max XRange/YRange values from the space description and with Generic Pan/Tilt Velocity Space.

11. Verify that the ContinuousMove request is accepted.

12. Repeat test procedure for all PTZNodes available that supports Continuous Pan/Tilt movement in the DUT.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT does not have a Generic Pan/Tilt Velocity Space description for Continuous Pan/Tilt.
- The allowed range is not specified
- A valid ContinuousMove operation does not succeed

**Note:** This test case shall be repeated for all PTZNodes with Continuous Pan/Tilt move support that are available in the DUT.

**Note:** Continuous Pan/Tilt Move is regarded as supported for PTZNode, if PTZNode contains at least one ContinuousPanTiltVelocitySpace tag.

#### 5.2.5.3.2 GENERIC ZOOM VELOCITY SPACE

**Test Case ID:** PTZ-7-3-4

**Specification Coverage:** Generic Zoom Velocity Space

**Feature Under Test:** Generic Zoom Velocity Space

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the node supports the Generic Zoom Velocity Space for Continuous Zoom.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke **GetNodes** request to retrieve a complete list of PTZNodes.
4. Verify the **GetNodesResponse** message from the DUT.
5. Select the first PTZNode that supports Continuous Zoom movement. If there is no such PTZNodes, skip other steps and go to the next test.
6. Verify that the node’s Continuous Velocity Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Zoom Velocity Space description for ContinuousZoom.
7. ONVIF Client configures and selects a media profile as described in **Annex A.1** for PTZ Configuration that refers to selected PTZNode.
8. ONVIF Client sends a valid ContinuousMove request using the max XRange values from the space description and with Generic Zoom Velocity Space.

9. Verify that the ContinuousMove request is accepted.

10. ONVIF Client sends a valid ContinuousMove request using the min XRange values from the space description and with Generic Zoom Velocity Space.

11. Verify that the ContinuousMove request is accepted.

12. Repeat test procedure for all PTZNodes available that supports Continuous Zoom movement in the DUT.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• The DUT does not have a Generic Zoom Velocity Space description for ContinuousZoom.
• The allowed range is not specified
• A valid ContinuousMove operation does not succeed

Note: This test case shall be repeated for all PTZNodes with Continuous Zoom move support that are available in the DUT.

Note: Continuous Zoom Move is regarded as supported for PTZNode, if PTZNode contains at least one ContinuousZoomVelocitySpace tag.

5.2.5.4 Speed Spaces

5.2.5.4.1 GENERIC PAN/ TILT SPEED SPACE

Test Case ID: PTZ-7-4-3

Specification Coverage: Generic Pan/Tilt Speed Space

Feature Under Test: Generic Pan/Tilt Speed Space

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the node supports the Generic Pan/Tilt Speed Space for pan/tilt.
**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client will invoke **GetNodes** request to retrieve a complete list of PTZNodes.

4. Verify the **GetNodesResponse** message from the DUT.

5. Select the first PTZNode that supports Speed for Pan/Tilt movement. If there is no such PTZNodes, skip other steps and go to the next test.

6. Verify that the node’s Speed Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Pan/Tilt Speed Space description for PanTiltSpeedSpace.

7. ONVIF Client configures and selects a media profile as described in Annex A.1 for PTZ Configuration that refers to selected PTZNode.

8. ONVIF Client sends a valid **AbsoluteMove** request or **RelativeMove** request (depending on which is supported by the PTZNode) using the min XRange/YRange values from the space description for Pan/Tilt position, min XRange/YRange values from the space description for Pan/Tilt speed and with Generic Pan/Tilt Speed Space.

9. Verify that the **AbsoluteMove** request (or **RelativeMove** request) is accepted.

10. ONVIF Client sends a valid **AbsoluteMove** request or **RelativeMove** request (depending on which is supported by the PTZNode) using the max XRange/YRange values from the space description for Pan/Tilt position, max XRange/YRange values from the space description for Pan/Tilt speed and with Generic Pan/Tilt Speed Space.

11. Verify that the **AbsoluteMove** request (or **RelativeMove** request) is accepted.

12. Repeat test procedure for all PTZNodes available that supports Speed for Pan/Tilt movement in the DUT.

**Test Result:**

**PASS –**

- DUT passes all assertions.
FAIL –

- The DUT does not have a Generic Pan/Tilt Position Space description for Speed Pan/Tilt.
- The allowed range is not specified
- A valid **AbsoluteMove** request or **RelativeMove** request (depending on which is supported by the PTZNode) does not succeed.

**Note:** This test case shall be repeated for all PTZNodes with supported Speed for Pan/Tilt move that are available in the DUT.

**Note:** Speed for Pan/Tilt is regarded as supported for PTZNode, if PTZNode contains at least one PanTiltSpeedSpace tag.

**Note:** If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration, then these limitations will be taken into account for x, y values of PanTilt or Zoom in **AbsoluteMove** request.

5.2.5.4.2 GENERIC ZOOM SPEED SPACE

**Test Case ID:** PTZ-7-4-4

**Specification Coverage:** Generic Zoom Speed Space

**Feature Under Test:** Generic Zoom Speed Space

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the node supports the Generic Zoom Speed Space for zoom.

**Pre-Requisite:** PTZ Service is received from the DUT. Media Service is received from the DUT. A ProfileToken that refers to a Media Profile that includes a PTZConfiguration for the PTZNode is required.

**Test Configuration:** ONVIF Client and DUT.

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client will invoke **GetNodes** request to retrieve a complete list of PTZNodes.
4. Verify the **GetNodesResponse** message from the DUT.
5. Select the first PTZNode that supports Speed for Zoom movement. If there is no such PTZNodes, skip other steps and go to the next test.
6. Verify that the node’s Speed Space description is correctly formed and that the allowed range is specified. Verify that there is Generic Zoom Speed Space description for ZoomSpeedSpace.

7. ONVIF Client configures and selects a media profile as described in Annex A.1 for PTZ Configuration that refers to selected PTZNode.

8. ONVIF Client sends a valid **AbsoluteMove** request or **RelativeMove** request (depending on which is supported by the PTZNode) using the max XRange values from the space description for Zoom position, max XRange values from the space description for Zoom speed and with Generic Zoom Speed Space.

9. Verify that the **AbsoluteMove** request (or **RelativeMove** request) is accepted.

10. ONVIF Client sends a valid **AbsoluteMove** request or **RelativeMove** request (depending on which is supported by the PTZNode) using the min XRange values from the space description for Zoom position, min XRange values from the space description for Zoom speed and with Generic Zoom Speed Space.

11. Verify that the **AbsoluteMove** request (or **RelativeMove** request) is accepted.

12. Repeat test procedure for all PTZNodes available that supports Speed for Zoom movement in the DUT.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- The DUT does not have a Generic Zoom Speed Space description for SpeedZoom.

- The allowed range is not specified.

**Note:** This test case shall be repeated for all PTZNodes with supported Speed for Zoom move that are available in the DUT.

**Note:** Speed for Zoom is regarded as supported for PTZNode, if PTZNode contains at least one ZoomSpeedSpace tag.

**Note:** If profile selected for test contains PanTiltLimits or ZoomLimits in the PTZConfiguration, then these limitations will be taken into account for x, y values of PanTilt or Zoom in **AbsoluteMove** request.
5.3 PTZ Control Using Media2 Service

5.3.1 Move Operation

5.3.1.1 PTZ ABSOLUTE MOVE USING MEDIA2 PROFILE

Test Case ID: MEDIA2_PTZ-1-1-1

Specification Coverage: None

Feature Under Test: AbsoluteMove

WSDL Reference: ptz.wsdl

Test Purpose: To verify absolute Pan/Tilt or absolute Zoom movements using the DUT PTZ AbsoluteMove operation.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab).

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

   • in ptzNodeToken - token of the PTZ Node, with which Media Profile should be configured

   • out profile - Media Profile with Video Source Configuration and PTZ Configuration

4. ONVIF Client invokes GetConfigurationOptions request with parameters

   • ConfigurationToken := profileConfigurations.PTZ.@token

5. The DUT responds with GetConfigurationOptionsResponse with parameters

   • PTZConfigurationOptions =: ptzConfigurationOptions
6. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in Annex A.19 with the following input and output parameters

   - in `ptzConfigurationOptions` - PTZ Configuration Options

7. If `ptzConfigurationOptions.Spaces` does not have at least one of the `AbsolutePanTiltPositionSpace` element or `AbsoluteZoomPositionSpace` element, FAIL the test and skip other steps.

8. ONVIF Client configures Default Absolute Spaces by following the procedure mentioned in Annex A.20 with the following input and output parameters

   - in `ptzConfigurationOptions` - PTZ Configuration Options
   - in `profile` - Media Profile with PTZ Configuration
   - out `profile` - Media Profile with PTZ Configuration with configured Absolute Position Default Spaces
   - out `pantiltSpace` - Options for Absolute Pan/Tilt Position Default Space
   - out `zoomSpace` - Options for Absolute Zoom Position Default Space

9. ONVIF Client change PTZ position to initial state by following the procedure mentioned in Annex A.21 with the following input and output parameters

   - in `profile` - Media Profile with PTZ Configuration
   - in `pantiltSpace` - Options for Absolute Pan/Tilt Position Default Space
   - in `zoomSpace` - Options for Absolute Zoom Position Default Space

10. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

10.1. ONVIF Client invokes **AbsoluteMove** request with parameters

   - `ProfileToken := profile.@token`
   - `Position.PanTilt.x := profile.Configurations.PTZ.PanTiltLimits.Range.Xrange.Max` if it is specified, otherwise, `pantiltSpace.Xrange.Max`
   - `Position.PanTilt.y := profile.Configurations.PTZ.PanTiltLimits.Range.Yrange.Max` if it is specified, otherwise, `pantiltSpace.Yrange.Max`
   - `Position.PanTilt.space := pantiltSpace.URI`
   - `Position.Zoom skipped`
• If the DUT supports Speed for Pan/Tilt for PTZ Node selected on Management tab:
  
  • Speed.PanTilt.x := ptzConfigurationOptions.Spaces.PanTiltSpeedSpace[0].XRange.Max
  
  • Speed.PanTilt.y := ptzConfigurationOptions.Spaces.PanTiltSpeedSpace[0].XRange.Max
  
  • Speed.PanTilt.space := ptzConfigurationOptions.Spaces.PanTiltSpeedSpace[0].URI
  
  • Speed.Zoom skipped

  otherwise, Speed skipped.

10.2. The DUT responds with **AbsoluteMoveResponse** message.

10.3. Wait until \( timeout1 \) timeout expires.

10.4. If the DUT supports Move Status:

   10.4.1. Until \( timeout1 \) expires repeat the following steps:

      10.4.1.1. ONVIF Client invokes **GetStatus** request with parameters

                • ProfileToken := profile.@token

      10.4.1.2. The DUT responds with **GetStatusResponse** with parameters

                • PTZStatus =: ptzStatus

      10.4.1.3. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

          10.4.1.3.1. If \( ptzStatus.MoveStatus.Zoom \) is not specified, FAIL the test and skip other steps.

          10.4.1.3.2. If \( ptzStatus.MoveStatus.Zoom \) is other than IDLE, FAIL the test and skip other steps.

      10.4.1.4. If \( ptzStatus.MoveStatus.PanTilt \) is not specified, FAIL the test and skip other steps.

      10.4.1.5. If \( ptzStatus.MoveStatus.PanTilt = \) UNKNOWN, FAIL the test and skip other steps.
10.4.1.6. If ptzStatus.MoveStatus.PanTilt = IDLE, go to the step 11.

10.4.2. If timeout1 expires for step 10.4.1 and the last ptzStatus.MoveStatus.PanTilt is other than IDLE, FAIL the test and skip other steps.

11. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

11.1. ONVIF Client invokes **AbsoluteMove** request with parameters

- ProfileToken := profile.@token
- Position.PanTilt skipped
- Position.Zoom.x := profile.Configurations.PTZ.ZoomLimits.Range.Xrange.Max if it is specified, otherwise, zoomSpace.Xrange.Max
- Position.Zoom.space := zoomSpace.URI
- If the DUT supports Speed for Zoom for PTZ Node selected on Management tab:
  - Speed.PanTilt skipped
  - Speed.Zoom.x := ptzConfigurationOptions.Spaces.ZoomSpeedSpace[0].Xrange.Max
  - Speed.Zoom.space := ptzConfigurationOptions.Spaces.ZoomSpeedSpace[0].URI
  - otherwise, Speed skipped.

11.2. The DUT responds with **AbsoluteMoveResponse** message.

11.3. Wait until timeout1 timeout expires.

11.4. If the DUT supports Move Status:

11.4.1. Until timeout1 expires repeat the following steps:

11.4.1.1. ONVIF Client invokes **getStatus** request with parameters

- ProfileToken := profile.@token

11.4.1.2. The DUT responds with **getStatusResponse** with parameters

- PTZStatus := ptzStatus
11.4.1.3. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

11.4.1.3.1. If \( ptzStatus.\)MoveStatus.PanTilt is not specified, FAIL the test and skip other steps.

11.4.1.3.2. If \( ptzStatus.\)MoveStatus.PanTilt is other than IDLE, FAIL the test and skip other steps.

11.4.1.4. If \( ptzStatus.\)MoveStatus.Zoom is not specified, FAIL the test and skip other steps.

11.4.1.5. If \( ptzStatus.\)MoveStatus.Zoom = UNKNOWN, FAIL the test and skip other steps.

11.4.1.6. If \( ptzStatus.\)MoveStatus.Zoom = IDLE, got to the step 12.

11.4.2. If timeout1 expires for step 11.4.1 and the last \( ptzStatus.\)MoveStatus.Zoom is other than IDLE, FAIL the test and skip other steps.

12. ONVIF Client invokes \texttt{GetStatus} request with parameters

\[
\text{ProfileToken := profile} \_\text{@token}
\]

13. The DUT responds with \texttt{GetStatusResponse} with parameters

\[
\text{PTZStatus := ptzStatus}
\]

14. If the DUT supports Status Position:

14.1. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

14.1.1. If \( ptzStatus.\)Position.PanTilt is not specified, FAIL the test and skip other steps.

14.1.2. If difference between \( Position.\)PanTilt.x value from step 10.1 and \( ptzStatus.\)Position.PanTilt.x is more than 10% of full range, write WARNING.

14.1.3. If difference between \( Position.\)PanTilt.y value from step 10.1 and \( ptzStatus.\)Position.PanTilt.y is more than 10% of full range, write WARNING.

14.2. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

14.2.1. If \( ptzStatus.\)Position.Zoom is not specified, FAIL the test and skip other steps.
14.2.2. If difference between Position.Zoom.x value from step 11.1 and ptzStatus.Position.Zoom.x is more than 10% of full range, write WARNING.

15. If PTZ Configuration profile.Configurations.PTZ was changed at step 8, ONVIF Client restores PTZ Configuration.

16. If Media Profile profile was changed at step 3, ONVIF Client restores Media Profile.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send GetConfigurationOptionsResponse message.

• DUT did not send GetStatusResponse message.

• DUT did not send AbsoluteMoveResponse message.

Note: timeout1 will be taken from Operation Delay field of ONVIF Device Test Tool.

Note: PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the GetStatusResponse does not have to be exactly the same as the position requested by the ONVIF Client in the AbsoluteMove request.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

Note: ptzNodeToken1 will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the GetNodesResponse will be used.

5.3.1.2 PTZ CONTINUOUS MOVE USING MEDIA2 PROFILE

Test Case ID: MEDIA2_PTZ-1-1-2

Specification Coverage: None

Feature Under Test: ContinuousMove, GetStatus

WSDL Reference: ptz.wsdl

Test Purpose: To verify continuous Pan/Tilt or continuous Zoom movements using the DUT PTZ ContinuousMove operation with timeout parameter.
**Pre-Requisite:** Media2 Service is received from the DUT. PTZ Service is received from the DUT. Continuous movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab).

**Test Configuration:** ONVIF Client and DUT

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters
   - in `ptzNodeToken1` - token of the PTZ Node, with which Media Profile should be configured
   - out `profile` - Media Profile with Video Source Configuration and PTZ Configuration
4. ONVIF Client invokes `GetConfigurationOptions` request with parameters
   - ConfigurationToken := `profileConfigurations.PTZ.@token`
5. The DUT responds with `GetConfigurationOptionsResponse` with parameters
   - `PTZConfigurationOptions` = `ptzConfigurationOptions`
6. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in Annex A.19 with the following input and output parameters
   - in `ptzConfigurationOptions` - PTZ Configuration Options
7. If `ptzConfigurationOptions.Spaces` does not have at least one of the `ContinuousPanTiltVelocitySpace` element or `ContinuousZoomVelocitySpace` element, FAIL the test and skip other steps.
9. ONVIF Client change PTZ position to initial state by following the procedure mentioned in Annex A.22 with the following input and output parameters
   - in `profile` - Media Profile with PTZ Configuration
   - in `ptzConfigurationOptions` - PTZ Configuration Options
10. If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab:
10.1. ONVIF Client invokes **ContinuousMove** request with parameters

- ProfileToken := `profile.@token`

- Velocity.PanTilt.x := `ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].XRange.Max`

- Velocity.PanTilt.y := `ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].YRange.Max`

- Velocity.PanTilt.space := `ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].URI`

- Velocity.Zoom skipped

- Timeout := `moveTimeout`

10.2. The DUT responds with **ContinuousMoveResponse** message.

10.3. Wait until `moveTimeout + timeout1` timeout expires.

10.4. If the DUT supports Move Status:

10.4.1. Until `moveTimeout + timeout1` timeout expires repeat the following steps:

10.4.1.1. ONVIF Client invokes **GetStatus** request with parameters

- ProfileToken := `profile.@token`

10.4.1.2. The DUT responds with **GetStatusResponse** with parameters

- PTZStatus := `ptzStatus`

10.4.1.3. If the DUT supports Continuous Zoom Movement for PTZ Node selected on Management tab:

10.4.1.3.1. If `ptzStatus.MoveStatus.Zoom` is not specified, FAIL the test and skip other steps.

10.4.1.3.2. If `ptzStatus.MoveStatus.Zoom` is other than IDLE, FAIL the test and skip other steps.

10.4.1.4. If `ptzStatus.MoveStatus.PanTilt` is not specified, FAIL the test and skip other steps.
10.4.1.5. If \( ptzStatus.MoveStatus.PanTilt = \) UNKNOWN, FAIL the test and skip other steps.

10.4.1.6. If \( ptzStatus.MoveStatus.PanTilt = \) IDLE, go to the step 11.

10.4.2. If \( moveTimeout + \) \( timeout1 \) timeout expires for step 10.4.1 and the last \( ptzStatus.MoveStatus.PanTilt \) is other than IDLE, FAIL the test and skip other steps.

11. If the DUT supports Continuous Zoom Movement for PTZ Node selected on Management tab:

11.1. ONVIF Client invokes \texttt{ContinuousMove} request with parameters

- ProfileToken := \( profile.@token \)
- Velocity.PanTilt skipped
- Velocity.Zoom.x := \( ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].XRange.Max \)
- Velocity.Zoom.space := \( ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].URI \)
- Timeout := \( moveTimeout \)

11.2. The DUT responds with \texttt{ContinuousMoveResponse} message.

11.3. Wait until \( moveTimeout + \) \( timeout1 \) timeout expires.

11.4. If the DUT supports Move Status:

11.4.1. Until \( moveTimeout + \) \( timeout1 \) timeout expires repeat the following steps:

11.4.1.1. ONVIF Client invokes \texttt{GetStatus} request with parameters

- ProfileToken := \( profile.@token \)

11.4.1.2. The DUT responds with \texttt{GetStatusResponse} with parameters

- PTZStatus := \( ptzStatus \)

11.4.1.3. If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab:
11.4.1.3.1. If \textit{ptzStatus.MoveStatus.PanTilt} is not specified, FAIL the test and skip other steps.

11.4.1.3.2. If \textit{ptzStatus.MoveStatus.PanTilt} is other than IDLE, FAIL the test and skip other steps.

11.4.1.4. If \textit{ptzStatus.MoveStatus.Zoom} is not specified, FAIL the test and skip other steps.

11.4.1.5. If \textit{ptzStatus.MoveStatus.Zoom} = UNKNOWN, FAIL the test and skip other steps.

11.4.1.6. If \textit{ptzStatus.MoveStatus.Zoom} = IDLE, go to the step 12.

11.4.2. If \textit{moveTimeout} + \textit{timeout1} timeout expires for step 11.4.1 and the last \textit{ptzStatus.MoveStatus.Zoom} is other than IDLE, FAIL the test and skip other steps.

12. If Media Profile \textit{profile} was changed at step 3, ONVIF Client restores Media Profile.

\textbf{Test Result:}

\textbf{PASS} –

\begin{itemize}
  \item DUT passes all assertions.
\end{itemize}

\textbf{FAIL} –

\begin{itemize}
  \item DUT did not send \texttt{GetConfigurationOptionsResponse} message.
  \item DUT did not send \texttt{GetStatusResponse} message.
  \item DUT did not send \texttt{ContinuousMoveResponse} message.
\end{itemize}

\textbf{Note:} \textit{timeout1} will be taken from Operation Delay field of ONVIF Device Test Tool.

\textbf{Note:} The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

\textbf{Note:} \textit{ptzNodeToken1} will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the \texttt{GetNodesResponse} will be used.

\section*{5.3.1.3 PTZ CONTINUOUS MOVE & STOP USING MEDIA2 PROFILE}

\textbf{Test Case ID: MEDIA2\_PTZ-1-1-3}
Specification Coverage: None

Feature Under Test: ContinuousMove, Stop, GetStatus

WSDL Reference: ptz.wsdl

Test Purpose: To verify continuous Pan/Tilt or continuous Zoom movements using the DUT PTZ ContinuousMove operation without timeout parameter and to stop all ongoing pan, tilt and zoom movements.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Continuous movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab).

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters
   - \textit{in ptzNodeToken1} - token of the PTZ Node, with which Media Profile should be configured
   - \textit{out profile} - Media Profile with Video Source Configuration and PTZ Configuration

4. ONVIF Client invokes \textit{GetConfigurationOptions} request with parameters
   - ConfigurationToken := profileConfigurations.PTZ.@token

5. The DUT responds with \textit{GetConfigurationOptionsResponse} with parameters
   - PTZConfigurationOptions := ptzConfigurationOptions

6. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in Annex A.19 with the following input and output parameters
   - \textit{in ptzConfigurationOptions} - PTZ Configuration Options

7. If \textit{ptzConfigurationOptions}.Spaces does not have at least one of the ContinuousPanTiltVelocitySpace element or ContinuousZoomVelocitySpace element, FAIL the test and skip other steps.
8. ONVIF Client change PTZ position to initial state by following the procedure mentioned in Annex A.22 with the following input and output parameters

- in profile - Media Profile with PTZ Configuration
- in ptzConfigurationOptions - PTZ Configuration Options

9. If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab:

9.1. ONVIF Client invokes **ContinuousMove** request with parameters

- ProfileToken := profile.@token
- Velocity.PanTilt.x := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].XRange.Max
- Velocity.PanTilt.y := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].YRange.Max
- Velocity.PanTilt.space := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].URI
- Velocity.Zoom skipped
- Timeout skipped

9.2. The DUT responds with **ContinuousMoveResponse** message.

9.3. Wait until *timeout1* timeout expires.

9.4. ONVIF Client invokes **Stop** request with parameters

- ProfileToken := profile.@token
- PanTilt skipped
- Zoom skipped

9.5. The DUT responds with **StopResponse** message.

9.6. Wait until *timeout1* timeout expires.

9.7. If the DUT supports Move Status:

9.7.1. Until *timeout1* timeout expires repeat the following steps:

9.7.1.1. ONVIF Client invokes **GetStatus** request with parameters
9.7.1.2. The DUT responds with GetStatusResponse with parameters

- ProfileToken := profile.@token

9.7.1.3. If the DUT supports Continuous Zoom Movement for PTZ Node selected on Management tab:

9.7.1.3.1. If ptzStatus.MoveStatus.Zoom is not specified, FAIL the test and skip other steps.

9.7.1.3.2. If ptzStatus.MoveStatus.Zoom is other than IDLE, FAIL the test and skip other steps.

9.7.1.4. If ptzStatus.MoveStatus.PanTilt is not specified, FAIL the test and skip other steps.

9.7.1.5. If ptzStatus.MoveStatus.PanTilt = UNKNOWN, FAIL the test and skip other steps.


9.7.2. If timeout1 timeout expires for step 9.7.1 and the last ptzStatus.MoveStatus.PanTilt is other than IDLE, FAIL the test and skip other steps.

10. If the DUT supports Continuous Zoom Movement for PTZ Node selected on Management tab:

10.1. ONVIF Client invokes ContinuousMove request with parameters

- ProfileToken := profile.@token

- Velocity.PanTilt skipped

- Velocity.Zoom.x := ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].XRange.Max

- Velocity.Zoom.space := ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].URI

- Timeout skipped

10.2. The DUT responds with ContinuousMoveResponse message.
10.3. Wait until timeout1 timeout expires.

10.4. ONVIF Client invokes **Stop** request with parameters

- ProfileToken := profile.@token
- PanTilt skipped
- Zoom skipped

10.5. The DUT responds with **StopResponse** message.

10.6. Wait until timeout1 timeout expires.

10.7. If the DUT supports Move Status:

10.7.1. Until timeout1 timeout expires repeat the following steps:

10.7.1.1. ONVIF Client invokes **GetStatus** request with parameters

- ProfileToken := profile.@token

10.7.1.2. The DUT responds with **GetStatusResponse** with parameters

- PTZStatus := ptzStatus

10.7.1.3. If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab:

10.7.1.3.1. If ptzStatus.MoveStatus.PanTilt is not specified, FAIL the test and skip other steps.

10.7.1.3.2. If ptzStatus.MoveStatus.PanTilt is other than IDLE, FAIL the test and skip other steps.

10.7.1.4. If ptzStatus.MoveStatus.Zoom is not specified, FAIL the test and skip other steps.

10.7.1.5. If ptzStatus.MoveStatus.Zoom = UNKNOWN, FAIL the test and skip other steps.


10.7.2. If timeout1 timeout expires for step 10.7.1 and the last ptzStatus.MoveStatus.Zoom is other than IDLE, FAIL the test and skip other steps.
11. If Media Profile profile was changed at step 3, ONVIF Client restores Media Profile.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send GetConfigurationOptionsResponse message.

• DUT did not send GetStatusResponse message.

• DUT did not send ContinuousMoveResponse message.

• DUT did not send StopResponse message.

Note: timeout1 will be taken from Operation Delay field of ONVIF Device Test Tool.

Note: ptzNodeToken1 will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the GetNodesResponse will be used.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

5.3.2 Preset Operations

5.3.2.1 PTZ SET AND GET PRESET USING MEDIA2 PROFILE

Test Case ID: MEDIA2_PTZ-2-1-1

Specification Coverage: None

Feature Under Test: SetPreset, GetPresets

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the DUT supports the setting of presets using the SetPreset operation and the retrieval of presets using the GetPresets operation.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). Presets are supported by the DUT for PTZ Node selected on Management tab.
**Test Configuration:** ONVIF Client and DUT

**Test Procedure:**

1. Start an ONVIF Client.

2. Start the DUT.

3. If the DUT does not support Absolute Movement for PTZ Node selected on Management tab, FAIL the test and skip other steps.

4. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters
   - in \textit{ptzNodeToken1} - token of the PTZ Node, with which Media Profile should be configured
   - out \textit{profile} - Media Profile with Video Source Configuration and PTZ Configuration

5. ONVIF Client invokes \texttt{GetConfigurationOptions} request with parameters
   - \texttt{ConfigurationToken := \textit{profileConfigurations.PTZ.@token}}

6. The DUT responds with \texttt{GetConfigurationOptionsResponse} with parameters
   - \texttt{PTZConfigurationOptions := \textit{ptzConfigurationOptions}}

7. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in Annex A.19 with the following input and output parameters
   - in \textit{ptzConfigurationOptions} - PTZ Configuration Options

8. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:
   8.1. Set \( \texttt{pantiltSpace} := \textit{ptzConfigurationOptions}.\texttt{Spaces.AbsolutePanTiltPositionSpace[\textit{genericPanTiltSpace}]} \), where \textit{\text{genericPanTiltSpace}} is the index number of the first item on the \textit{ptzConfigurationOptions}.\texttt{Spaces.AbsolutePanTiltPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"

9. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:
   9.1. Set \( \texttt{zoomSpace} := \textit{ptzConfigurationOptions}.\texttt{Spaces.AbsoluteZoomPositionSpace[\textit{genericZoomSpace}]} \), where \textit{\text{genericZoomSpace}} is the index number of the first item on the \textit{ptzConfigurationOptions}.\texttt{Spaces.AbsoluteZoomPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace"
10. ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters

- in `pantiltSpace` - Pan/Tilt Space
- in `zoomSpace` - Zoom Space
- in `profile.Configurations.PTZ` - PTZ Configuration
- out `profile.Configurations.PTZ` - PTZ Configuration with adjusted Pan/Tilt and Zoom limits

11. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

11.1. If `profile.Configurations.PTZ.PanTiltLimits` is specified:

   - set \( x_1 := \) \( profile.Configurations.PTZ.PanTiltLimits.XRange.Min + \)
     \( (profile.Configurations.PTZ.PanTiltLimits.XRange.Max - \)
     \( profile.Configurations.PTZ.PanTiltLimits.XRange.Min)/3 \)

   - set \( y_1 := \) \( profile.Configurations.PTZ.PanTiltLimits.YRange.Min + \)
     \( (profile.Configurations.PTZ.PanTiltLimits.YRange.Max - \)
     \( profile.Configurations.PTZ.PanTiltLimits.YRange.Min)/3 \)

   otherwise:

   - set \( x_1 := \) \( pantiltSpace.XRange.Min + (pantiltSpace.XRange.Max - \)
     pantiltSpace.XRange.Min)/3 \)

   - set \( y_1 := \) \( pantiltSpace.YRange.Min + (pantiltSpace.YRange.Max - \)
     pantiltSpace.YRange.Min)/3 \)

12. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

12.1. If `profile.Configurations.PTZ.ZoomLimits` is specified:

   - set \( z_1 := \) \( profile.Configurations.PTZ.ZoomLimits.XRange.Min \)

   otherwise:

   - set \( z_1 := zoomSpace.XRange.Min \)

13. ONVIF Client invokes **AbsoluteMove** request with parameters

   - ProfileToken := `profile.@token`

   - Position.PanTilt.x := \( x_1 \)

   - Position.PanTilt.y := \( y_1 \)
• Position.PanTilt.space := pantiltSpace.URI
• Position.Zoom.x := z1
• Position.Zoom.space := zoomSpace.URI

• Speed skipped

14. The DUT responds with AbsoluteMoveResponse message.

15. Wait until timeout1 timeout expires.

16. ONVIF Client invokes SetPreset request with parameters
• ProfileToken := profile.@token
• PresetName := "Test"
• PresetToken skipped

17. The DUT responds with SetPresetResponse with parameters
• PresetToken =: presetToken1

18. ONVIF Client invokes GetPresets request with parameters
• ProfileToken := profile.@token

19. The DUT responds with GetPresetsResponse with parameters
• Preset list =: presetList1

20. If presetList1 does not contain item with @token = presetToken1, FAIL the test and skip other steps.

21. Set preset := item from presetList1 with @token = presetToken1.

22. If preset.Name != "Test", FAIL the test and skip other steps.

23. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

23.1. If preset does not contains PTZPosition.PanTilt, FAIL the test and skip other steps.

23.2. If difference between preset.PTZPosition.PanTilt.x and x1 is more than 10% of full range, write WARNING.

23.3. If difference between preset.PTZPosition.PanTilt.y and y1 is more than 10% of full range, write WARNING.
24. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

24.1. If `preset` does not contain `PTZPosition.Zoom`, FAIL the test and skip other steps.

24.2. If the difference between `preset.PTZPosition.Zoom.x` and `z1` is more than 10% of full range, write WARNING.

25. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

25.1. If `profile.Configurations.PTZ.PanTiltLimits` is specified:

   • set \( x2 \) := \( \text{profile.Configurations.PTZ.PanTiltLimits.XRange.Max} - \) \( \frac{\text{profile.Configurations.PTZ.PanTiltLimits.XRange.Max} - \text{profile.Configurations.PTZ.PanTiltLimits.XRange.Min}}{3} \)

   • set \( y2 \) := \( \text{profile.Configurations.PTZ.PanTiltLimits.YRange.Max} - \) \( \frac{\text{profile.Configurations.PTZ.PanTiltLimits.YRange.Max} - \text{profile.Configurations.PTZ.PanTiltLimits.YRange.Min}}{3} \)

   otherwise:

   • set \( x2 \) := \( \text{pantiltSpace.XRange.Max} - \) \( \frac{\text{pantiltSpace.XRange.Max} - \text{pantiltSpace.XRange.Min}}{3} \)

   • set \( y2 \) := \( \text{pantiltSpace.YRange.Max} - \) \( \frac{\text{pantiltSpace.YRange.Max} - \text{pantiltSpace.YRange.Min}}{3} \)

26. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

26.1. If `profile.Configurations.PTZ.ZoomLimits` is specified:

   • set \( z2 \) := \( \text{profile.Configurations.PTZ.ZoomLimits.XRange.Max} \)

   otherwise:

   • set \( z2 \) := \( \text{zoomSpace.XRange.Max} \)

27. ONVIF Client invokes **AbsoluteMove** request with parameters

   • `ProfileToken` := `profile.@token`
   
   • `Position.PanTilt.x` := \( x2 \)
   
   • `Position.PanTilt.y` := \( y2 \)
   
   • `Position.PanTilt.space` := `pantiltSpace.URI`
   
   • `Position.Zoom.x` := \( z2 \)
28. The DUT responds with \texttt{AbsoluteMoveResponse} message.

29. Wait until \texttt{timeout1} timeout expires.

30. ONVIF Client invokes \texttt{SetPreset} request with parameters

   - \texttt{ProfileToken := profile.@token}
   - \texttt{PresetName := "Test"}
   - \texttt{PresetToken := presetToken1}

31. The DUT responds with \texttt{SetPresetResponse} with parameters

   - \texttt{PresetToken =: presetToken2}

32. ONVIF Client invokes \texttt{GetPresets} request with parameters

   - \texttt{ProfileToken := profile.@token}

33. The DUT responds with \texttt{GetPresetsResponse} with parameters

   - \texttt{Preset list =: presetList2}

34. If \texttt{presetList2} does not contain item with \texttt{@token = presetToken1}, FAIL the test and skip other steps.

35. Set \texttt{preset := item from presetList2 with \texttt{@token = presetToken1}}.

36. If \texttt{preset.Name != "Test"}, FAIL the test and skip other steps.

37. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

   37.1. If \texttt{preset does not contains PTZPosition.PanTilt}, FAIL the test and skip other steps.

   37.2. If difference between \texttt{preset.PTZPosition.PanTilt.x} and \texttt{x2} is more than 10\% of full range, write WARNING.

   37.3. If difference between \texttt{preset.PTZPosition.PanTilt.y} and \texttt{y2} is more than 10\% of full range, write WARNING.

38. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

   38.1. If \texttt{preset does not contains PTZPosition.Zoom}, FAIL the test and skip other steps.
38.2. If difference between \textit{preset}\textunderscore \textit{PTZPosition} \textunderscore \textit{Zoom} \textunderscore \textit{x} and \textit{z2} is more than 10% of full range, write WARNING.

39. ONVIF Client invokes \textbf{RemovePreset} request with parameters

- ProfileToken := \textit{profile} \textunderscore @token
- PresetToken := \textit{presetToken2}

40. The DUT responds with \textbf{RemovePresetResponse} message.

41. If PTZ Configuration \textit{profile}\textunderscore \textit{Configurations} \textit{PTZ} was changed at step 10, ONVIF Client restores PTZ Configuration.

42. If Media Profile \textit{profile} was changed at step 4, ONVIF Client restores Media Profile.

\textbf{Test Result:}

\textbf{PASS –}

- DUT passes all assertions.

\textbf{FAIL –}

- DUT did not send \textbf{GetConfigurationOptionsResponse} message.
- DUT did not send \textbf{RemovePresetResponse} message.
- DUT did not send \textbf{GetPresetsResponse} message.
- DUT did not send \textbf{SetPresetResponse} message.
- DUT did not send \textbf{AbsoluteMoveResponse} message.

\textbf{Note:} PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the \textbf{GetPresetsResponse} does not have to be exactly the same as the position requested by the ONVIF Client in the \textbf{AbsoluteMove} request.

\textbf{Note:} The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

\textbf{Note:} \textit{timeout1} will be taken from Operation Delay field of ONVIF Device Test Tool.

\textbf{Note:} \textit{ptzNodeToken1} will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the \textbf{GetNodesResponse} will be used.
5.3.2.2 PTZ GOTO PRESET USING MEDIA2 PROFILE

Test Case ID: MEDIA2_PTZ-2-1-2

Specification Coverage: None

Feature Under Test: GotoPreset

WSDL Reference: ptz.wsdl

Test Purpose: To verify that it is possible to go to presets using the GotoPreset operation.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). Presets are supported by the DUT for PTZ Node selected on Management tab.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. If the DUT does not supports Absolute Movement for PTZ Node selected on Management tab, FAIL the test and skip other steps.

4. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

   • in \textit{ptzNodeToken1} - token of the PTZ Node, with which Media Profile should be configured

   • out \textit{profile} - Media Profile with Video Source Configuration and PTZ Configuration

5. ONVIF Client invokes \textbf{GetConfigurationOptions} request with parameters

   • \textbf{ConfigurationToken := profileConfigurations.PTZ.@token}

6. The DUT responds with \textbf{GetConfigurationOptionsResponse} with parameters

   • \textbf{PTZConfigurationOptions =: ptzConfigurationOptions}

7. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in Annex A.19 with the following input and output parameters

   • in \textit{ptzConfigurationOptions} - PTZ Configuration Options
8. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

8.1. Set \( \text{pantiltSpace} \) := \( \text{ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace[genericPanTiltSpace]} \), where \( \text{genericPanTiltSpace} \) is the index number of the first item on the \( \text{ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace} \) list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"

9. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

9.1. Set \( \text{zoomSpace} \) := \( \text{ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace[genericZoomSpace]} \), where \( \text{genericZoomSpace} \) is the index number of the first item on the \( \text{ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace} \) list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace"

10. ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters

   • in \( \text{pantiltSpace} \) - Pan/Tilt Space
   • in \( \text{zoomSpace} \) - Zoom Space
   • in \( \text{profile.Configurations.PTZ} \) - PTZ Configuration
   • out \( \text{profile.Configurations.PTZ} \) - PTZ Configuration with adjusted Pan/Tilt and Zoom limits

11. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

11.1. If \( \text{profile.Configurations.PTZ.PanTiltLimits} \) is specified:

   • set \( x1 := \text{profile.Configurations.PTZ.PanTiltLimits.XRange.Min} \)
   • set \( y1 := \text{profile.Configurations.PTZ.PanTiltLimits.YRange.Min} \)

   otherwise:

   • set \( x1 := \text{pantiltSpace.XRRange.Min} \)
   • set \( y1 := \text{pantiltSpace.YRange.Min} \)

12. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

12.1. If \( \text{profile.Configurations.PTZ.ZoomLimits} \) is specified:

   • set \( z1 := \text{profile.Configurations.PTZ.ZoomLimits.XRange.Min} \)

   otherwise:
• set \( z1 := zoomSpace.XRange.Min \)

13. ONVIF Client invokes **AbsoluteMove** request with parameters

- **ProfileToken** := `profile.@token`
- **Position.PanTilt.x** := \( x1 \)
- **Position.PanTilt.y** := \( y1 \)
- **Position.PanTilt.space** := `pantiltSpace.URI`
- **Position.Zoom.x** := \( z1 \)
- **Position.Zoom.space** := `zoomSpace.URI`
- **Speed** skipped

14. The DUT responds with **AbsoluteMoveResponse** message.

15. Wait until timeout1 timeout expires.

16. If the DUT supports Move Status:

    16.1. Until timeout1 expires repeat the following steps:

        16.1.1. ONVIF Client invokes **GetStatus** request with parameters

            - **ProfileToken** := `profile.@token`

        16.1.2. The DUT responds with **GetStatusResponse** with parameters

            - **PTZStatus** := `ptzStatus`

        16.1.3. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

            16.1.3.1. If `ptzStatus.MoveStatus.PanTilt` is not specified, FAIL the test and skip other steps.

            16.1.3.2. If `ptzStatus.MoveStatus.PanTilt` = UNKNOWN, FAIL the test and skip other steps.

        16.1.4. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

            16.1.4.1. If `ptzStatus.MoveStatus.Zoom` is not specified, FAIL the test and skip other steps.
16.1.4.2. If \texttt{ptzStatus.MoveStatus.Zoom} = \texttt{UNKNOWN}, FAIL the test and skip other steps.

16.1.5. If \texttt{ptzStatus.MoveStatus.PanTilt} = \texttt{IDLE} or skipped and \texttt{ptzStatus.MoveStatus.Zoom} = \texttt{IDLE} or skipped, go to the step 17.

16.2. If \texttt{timeout1} expires for step 16.1 and the last \texttt{ptzStatus.MoveStatus} has \texttt{PanTilt} element and its value is other than \texttt{IDLE} and it has \texttt{MoveStatus.Zoom} element and its value is other than \texttt{IDLE}, FAIL the test and skip other steps.

17. ONVIF Client invokes \texttt{SetPreset} request with parameters

- ProfileToken := \texttt{profile.@token}
- PresetName := "Test"
- PresetToken skipped

18. The DUT responds with \texttt{SetPresetResponse} with parameters

- PresetToken =: \texttt{presetToken1}

19. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

19.1. If \texttt{profile.Configurations.PTZ.PanTiltLimits} is specified:

- set \texttt{x2} := \texttt{profile.Configurations.PTZ.PanTiltLimits.XRANGE.Max}
- set \texttt{y2} := \texttt{profile.Configurations.PTZ.PanTiltLimits.YRange.Max}

otherwise:

- set \texttt{x2} := \texttt{pantiltSpace.XRANGE.Max}
- set \texttt{y2} := \texttt{pantiltSpace.YRange.Max}

20. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

20.1. If \texttt{profile.Configurations.PTZ.ZoomLimits} is specified:

- set \texttt{z2} := \texttt{profile.Configurations.PTZ.ZoomLimits.XRANGE.Max}

otherwise:

- set \texttt{z2} := \texttt{zoomSpace.XRANGE.Max}

21. ONVIF Client invokes \texttt{AbsoluteMove} request with parameters
• ProfileToken := profile.@token

• Position.PanTilt.x := x2

• Position.PanTilt.y := y2

• Position.PanTilt.space := pantiltSpace.URI

• Position.Zoom.x := z2

• Position.Zoom.space := zoomSpace.URI

• Speed skipped

22. The DUT responds with AbsoluteMoveResponse message.

23. Wait until timeout1 timeout expires.

24. If the DUT supports Move Status:

   24.1. Until timeout1 expires repeat the following steps:

      24.1.1. ONVIF Client invokes GetStatus request with parameters

              • ProfileToken := profile.@token

      24.1.2. The DUT responds with GetStatusResponse with parameters

              • PTZStatus := ptzStatus

      24.1.3. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

              24.1.3.1. If ptzStatus.MoveStatus.PanTilt is not specified, FAIL the test and skip other steps.

              24.1.3.2. If ptzStatus.MoveStatus.PanTilt = UNKNOWN, FAIL the test and skip other steps.

      24.1.4. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

              24.1.4.1. If ptzStatus.MoveStatus.Zoom is not specified, FAIL the test and skip other steps.

              24.1.4.2. If ptzStatus.MoveStatus.Zoom = UNKNOWN, FAIL the test and skip other steps.
24.1.5. If ptzStatus.MoveStatus.PanTilt = IDLE or skipped and ptzStatus.MoveStatus.Zoom = IDLE or skipped, go to the step 25.

24.2. If timeout1 expires for step 24.1 and the last ptzStatus.MoveStatus has PanTilt element and its value is other than IDLE and it has MoveStatus.Zoom element and its value is other than IDLE, FAIL the test and skip other steps.

25. ONVIF Client invokes GotoPreset request with parameters

- ProfileToken := profile.@token
- PresetToken := presetToken1
- Speed skipped


27. Wait until timeout1 timeout expires.

28. If the DUT supports Move Status:

28.1. Until timeout1 expires repeat the following steps:

28.1.1. ONVIF Client invokes GetStatus request with parameters

- ProfileToken := profile.@token

28.1.2. The DUT responds with GetStatusResponse with parameters

- PTZStatus =: ptzStatus

28.1.3. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

28.1.3.1. If ptzStatus.MoveStatus.PanTilt is not specified, FAIL the test and skip other steps.

28.1.3.2. If ptzStatus.MoveStatus.PanTilt = UNKNOWN, FAIL the test and skip other steps.

28.1.4. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

28.1.4.1. If ptzStatus.MoveStatus.Zoom is not specified, FAIL the test and skip other steps.
28.1.4.2. If \( ptzStatus.MoveStatus.Zoom \) = UNKNOWN, FAIL the test and skip other steps.

28.1.5. If \( ptzStatus.MoveStatus.PanTilt \) = IDLE or skipped and \( ptzStatus.MoveStatus.Zoom \) = IDLE or skipped, go to the step 29.

28.2. If \( timeout1 \) expires for step 28.1 and the last \( ptzStatus.MoveStatus \) has PanTilt element and its value is other than IDLE and it has MoveStatus.Zoom element and its value is other than IDLE, FAIL the test and skip other steps.

29. ONVIF Client invokes \textbf{GetStatus} request with parameters

\begin{itemize}
  \item ProfileToken := profile.@token
\end{itemize}

30. The DUT responds with \textbf{GetStatusResponse} with parameters

\begin{itemize}
  \item PTZStatus =: ptzStatus
\end{itemize}

31. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab and \( ptzStatus \).Position.PanTilt is specified:

\begin{itemize}
  \item 31.1. If difference between \( x1 \) and \( ptzStatus \).Position.PanTilt.x is more than 10\% of full range, write WARNING.
  \item 31.2. If difference between \( y1 \) and \( ptzStatus \).Position.PanTilt.y is more than 10\% of full range, write WARNING.
\end{itemize}

32. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab and \( ptzStatus \).Position.Zoom is specified:

\begin{itemize}
  \item 32.1. If difference between \( z1 \) and \( ptzStatus \).Position.Zoom.x is more than 10\% of full range, write WARNING.
\end{itemize}

33. ONVIF Client invokes \textbf{RemovePreset} request with parameters

\begin{itemize}
  \item ProfileToken := profile.@token
  \item PresetToken := presetToken1
\end{itemize}

34. The DUT responds with \textbf{RemovePresetResponse} message.

35. If PTZ Configuration \( profile \).Configurations.PTZ was changed at step 10, ONVIF Client restores PTZ Configuration.

36. If Media Profile \( profile \) was changed at step 4, ONVIF Client restores Media Profile.

\textbf{Test Result:}
PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send `GetConfigurationOptionsResponse` message.
• DUT did not send `RemovePresetResponse` message.
• DUT did not send `GotoPresetResponse` message.
• DUT did not send `SetPresetResponse` message.
• DUT did not send `AbsoluteMoveResponse` message.

Note: PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the `GetPresetsResponse` does not have to be exactly the same as the position requested by the ONVIF Client in the `AbsoluteMove` request.

Note: `ptzNodeToken1` will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the `GetNodesResponse` will be used.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

Note: `timeout1` will be taken from Operation Delay field of ONVIF Device Test Tool.

5.3.2.3 PTZ REMOVE PRESET USING MEDIA2 PROFILE

Test Case ID: MEDIA2_PTZ-2-1-3

Specification Coverage: None

Feature Under Test: RemovePreset

WSDL Reference: ptz.wsdl

Test Purpose: To verify that it is possible to remove presets using the RemovePreset operation.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Presets are supported by the DUT for PTZ Node selected on Management tab.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

- in `ptzNodeToken1` - token of the PTZ Node, with which Media Profile should be configured
- out `profile` - Media Profile with Video Source Configuration and PTZ Configuration

4. ONVIF Client invokes `SetPreset` request with parameters

- ProfileToken := `profile.@token`
- PresetName := "Test"
- PresetToken skipped

5. The DUT responds with `SetPresetResponse` with parameters

- PresetToken = `presetToken1`

6. ONVIF Client invokes `GetPresets` request with parameters

- ProfileToken := `profile.@token`

7. The DUT responds with `GetPresetsResponse` with parameters

- Preset list = `presetList1`

8. If `presetList1` does not contain item with `@token = presetToken1`, FAIL the test and skip other steps.

9. Set `preset` := item from `presetList1` with `@token = presetToken1`.

10. If `preset.Name != "Test"`, FAIL the test and skip other steps.

11. ONVIF Client invokes `RemovePreset` request with parameters

- ProfileToken := `profile.@token`
- PresetToken := `presetToken1`

12. The DUT responds with `RemovePresetResponse` message.

13. ONVIF Client invokes `GetPresets` request with parameters

- ProfileToken := `profile.@token`

14. The DUT responds with `GetPresetsResponse` with parameters

- Preset list = `presetList2`
15. If presetList2 contains item with @token = presetToken1, FAIL the test and skip other steps.

16. If Media Profile profile was changed at step 3, ONVIF Client restores Media Profile.

Test Result:

PASS –
  • DUT passes all assertions.

FAIL –
  • DUT did not send RemovePresetResponse message.
  • DUT did not send GetPresetsResponse message.
  • DUT did not send SetPresetResponse message.

Note: ptzNodeToken1 will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the GetNodesResponse will be used.

5.3.3 Home Position Operations

5.3.3.1 PTZ HOME POSITION OPERATIONS (CONFIGURABLE) USING MEDIA2 PROFILE

Test Case ID: MEDIA2_PTZ-3-1-1

Specification Coverage: None

Feature Under Test: SetHomePosition, GotoHomePosition

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab) . Configurable Home Position is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab) .

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.

3. If the DUT does not support Absolute Movement for PTZ Node selected on Management tab, FAIL the test and skip other steps.

4. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

   • in `ptzNodeToken1` - token of the PTZ Node, with which Media Profile should be configured
   • out `profile` - Media Profile with Video Source Configuration and PTZ Configuration

5. ONVIF Client invokes `GetConfigurationOptions` request with parameters

   • `ConfigurationToken := profileConfigurations.PTZ.@token`

6. The DUT responds with `GetConfigurationOptionsResponse` with parameters

   • `PTZConfigurationOptions := ptzConfigurationOptions`

7. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in Annex A.19 with the following input and output parameters

   • in `ptzConfigurationOptions` - PTZ Configuration Options

8. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

   8.1. Set `pantiltSpace := ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace[genericPanTiltSpace]`, where `genericPanTiltSpace` is the index number of the first item on the `ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace` list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"

9. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

   9.1. Set `zoomSpace := ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace[genericZoomSpace]`, where `genericZoomSpace` is the index number of the first item on the `ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace` list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace"

10. ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters

    • in `pantiltSpace` - Pan/Tilt Space
11. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

11.1. If `profile.Configurations.PTZ.PanTiltLimits` is specified:
   - set \( x_1 \) := `profile.Configurations.PTZ.PanTiltLimits.XRange.Min`
   - set \( y_1 \) := `profile.Configurations.PTZ.PanTiltLimits.YRange.Min`
   otherwise:
     - set \( x_1 \) := `pantiltSpace.XRANGE.Min`
     - set \( y_1 \) := `pantiltSpace.YRANGE.Min`

12. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

12.1. If `profile.Configurations.PTZ.ZoomLimits` is specified:
   - set \( z_1 \) := `profile.Configurations.PTZ.ZoomLimits.XRange.Min`
   otherwise:
     - set \( z_1 \) := `zoomSpace.XRANGE.Min`

13. ONVIF Client invokes **AbsoluteMove** request with parameters

   - ProfileToken := `profile.@token`
   - Position.PanTilt.x := \( x_1 \)
   - Position.PanTilt.y := \( y_1 \)
   - Position.PanTilt.space := `pantiltSpace.URI`
   - Position.Zoom.x := \( z_1 \)
   - Position.Zoom.space := `zoomSpace.URI`
   - Speed skipped

14. The DUT responds with **AbsoluteMoveResponse** message.

15. Wait until `timeout1` timeout expires.
16. ONVIF Client invokes **SetHomePosition** request with parameters

- ProfileToken := *profile.@token*

17. The DUT responds with **SetHomePositionResponse** message.

18. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

18.1. If *profile.Configurations.PTZ.PanTiltLimits* is specified:

- set *x2 := profile.Configurations.PTZ.PanTiltLimits.XRange.Max*
- set *y2 := profile.Configurations.PTZ.PanTiltLimits.YRange.Max*

otherwise:

- set *x2 := pantiltSpace.XRange.Max*
- set *y2 := pantiltSpace.YRange.Max*

19. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

19.1. If *profile.Configurations.PTZ.ZoomLimits* is specified:

- set *z2 := profile.Configurations.PTZ.ZoomLimits.XRange.Max*

otherwise:

- set *z2 := zoomSpace.XRange.Max*

20. ONVIF Client invokes **AbsoluteMove** request with parameters

- ProfileToken := *profile.@token*
- Position.PanTilt.x := *x2*
- Position.PanTilt.y := *y2*
- Position.PanTilt.space := *pantiltSpace.URI*
- Position.Zoom.x := *z2*
- Position.Zoom.space := *zoomSpace.URI*
- Speed skipped

21. The DUT responds with **AbsoluteMoveResponse** message.

22. Wait until **timeout1** timeout expires.
23. ONVIF Client invokes **GotoHomePosition** request with parameters

- ProfileToken := profile.@token
- Speed skipped

24. The DUT responds with **GotoHomePositionResponse** message.

25. Wait until timeout1 timeout expires.

26. ONVIF Client invokes **GetStatus** request with parameters

- ProfileToken := profile.@token

27. The DUT responds with **GetStatusResponse** with parameters

- PTZStatus =: ptzStatus

28. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab and ptzStatus.Position.PanTilt is specified:

   28.1. If difference between $x1$ and ptzStatus.Position.PanTilt.x is more than 10% of full range, write WARNING.

   28.2. If difference between $y1$ and ptzStatus.Position.PanTilt.y is more than 10% of full range, write WARNING.

29. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab and ptzStatus.Position.Zoom is specified:

   29.1. If difference between $z1$ and ptzStatus.Position.Zoom.x is more than 10% of full range, write WARNING.

30. If PTZ Configuration profile.Configurations.PTZ was changed at step 10, ONVIF Client restores PTZ Configuration.

31. If Media Profile profile was changed at step 4, ONVIF Client restores Media Profile.

**Test Result:**

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetConfigurationOptionsResponse** message.
- DUT did not send **GetStatusResponse** message.
• DUT did not send **SetHomePositionResponse** message.
• DUT did not send **GotoHomePositionResponse** message.
• DUT did not send **AbsoluteMoveResponse** message.

**Note:** PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the **GetStatusResponse** does not have to be exactly the same as the position requested by the ONVIF Client in the **AbsoluteMove** request.

**Note:** The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

**Note:** `ptzNodeToken1` will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the **GetNodesResponse** will be used.

**Note:** `timeout1` will be taken from Operation Delay field of ONVIF Device Test Tool.

### 5.3.3.2 PTZ HOME POSITION OPERATIONS (FIXED) USING MEDIA2 PROFILE

**Test Case ID:** MEDIA2_PTZ-3-1-2

**Specification Coverage:** None

**Feature Under Test:** SetHomePosition, GotoHomePosition

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented.

**Pre-Requisite:** Media2 Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). Fixed Home Position is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab).

**Test Configuration:** ONVIF Client and DUT

**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. If the DUT does not support Absolute Movement for PTZ Node selected on Management tab, FAIL the test and skip other steps.
4. ONVIF Client configures or selects a Media Profile with Video Source Configuration and
   PTZ Configuration by following the procedure mentioned in Annex A.17 with the following
   input and output parameters
   - in \textit{ptzNodeToken1} - token of the PTZ Node, with which Media Profile should be configured
   - out \textit{profile} - Media Profile with Video Source Configuration and PTZ Configuration

5. ONVIF Client invokes \texttt{GetConfigurationOptions} request with parameters
   - ConfigurationToken := \textit{profileConfigurations.PTZ.@token}

6. The DUT responds with \texttt{GetConfigurationOptionsResponse} with parameters
   - PTZConfigurationOptions =: \textit{ptzConfigurationOptions}

7. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in
   Annex A.19 with the following input and output parameters
   - in \textit{ptzConfigurationOptions} - PTZ Configuration Options

8. ONVIF Client invokes \texttt{GotoHomePosition} request with parameters
   - ProfileToken := \textit{profile.@token}
   - Speed skipped

9. The DUT responds with \texttt{GotoHomePositionResponse} message.

10. Wait until \textit{timeout1} timeout expires.

11. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:
   11.1. Set \textit{pantiltSpace} := \textit{ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace[genericPanTiltSpace]},
        where \textit{genericPanTiltSpace} is the index number of the first item on the
        \textit{ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace} list that has URI =
        "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"

12. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:
   12.1. Set \textit{zoomSpace} := \textit{ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace[genericZoomSpace]},
        where \textit{genericZoomSpace} is the index number of the first item on the
        \textit{ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace} list that has URI =
        "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace"
13. ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters

- in `pantiltSpace` - Pan/Tilt Space
- in `zoomSpace` - Zoom Space
- in `profile.Configurations.PTZ` - PTZ Configuration
- out `profile.Configurations.PTZ` - PTZ Configuration with adjusted Pan/Tilt and Zoom limits

14. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

14.1. If `profile.Configurations.PTZ.PanTiltLimits` is specified:
   - set \( x_1 := profile.Configurations.PTZ.PanTiltLimits.XRange.Max \)
   - set \( y_1 := profile.Configurations.PTZ.PanTiltLimits.YRange.Max \)

   Otherwise:
   - set \( x_1 := pantiltSpace.XRange.Max \)
   - set \( y_1 := pantiltSpace.YRange.Max \)

15. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

15.1. If `profile.Configurations.PTZ.ZoomLimits` is specified:
   - set \( z_1 := profile.Configurations.PTZ.ZoomLimits.XRange.Max \)

   Otherwise:
   - set \( z_1 := zoomSpace.XRange.Max \)

16. ONVIF Client invokes `GetStatus` request with parameters

   - `ProfileToken := profile.@token`

17. The DUT responds with `GetStatusResponse` with parameters

   - `PTZStatus =: ptzStatus1`

18. If `ptzStatus1.Position.PanTilt` is specified and equal to vector \( x_1, y_1 \) and if `ptzStatus1.Position.Zoom` is specified and equal to vector \( z_1 \):

18.1. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:
18.1.1. If \( profile.\text{Configurations.PTZ.PanTiltLimits} \) is specified:

- set \( x_1 := profile.\text{Configurations.PTZ.PanTiltLimits.XRange.Min} \)
- otherwise:
  - set \( x_1 := 0 \)

18.2. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

18.2.1. If \( profile.\text{Configurations.PTZ.ZoomLimits} \) is specified:

- set \( z_1 := profile.\text{Configurations.PTZ.ZoomLimits.XRange.Min} \)
- otherwise:
  - set \( z_1 := 0 \)

19. ONVIF Client invokes \textit{AbsoluteMove} request with parameters

- ProfileToken \(:= profile.@token \)
- Position.PanTilt.x \(:= x_1 \)
- Position.PanTilt.y \(:= y_1 \)
- Position.PanTilt.space \(:= \text{pantiltSpace.URI} \)
- Position.Zoom.x \(:= z_1 \)
- Position.Zoom.space \(:= \text{zoomSpace.URI} \)
- Speed skipped

20. The DUT responds with \textit{AbsoluteMoveResponse} message.

21. Wait until \textit{timeout1} timeout expires.

22. ONVIF Client invokes \textit{SetHomePosition} request with parameters

- ProfileToken \(:= profile.@token \)


24. ONVIF Client invokes \textit{GotoHomePosition} request with parameters

- ProfileToken \(:= profile.@token \)
25. The DUT responds with **GotoHomePositionResponse** message.

26. Wait until **timeout1** timeout expires.

27. ONVIF Client invokes **GetStatus** request with parameters

   • ProfileToken := *profile*.@token

28. The DUT responds with **GetStatusResponse** with parameters

   • PTZStatus =: *ptzStatus2*

29. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab and *ptzStatus*.Position.PanTilt is specified:

   29.1. If difference between *ptzStatus1*.Position.PanTilt.x and *ptzStatus2*.Position.PanTilt.x is more than 10% of full range, write WARNING.

   29.2. If difference between *ptzStatus1*.Position.PanTilt.y and *ptzStatus2*.Position.PanTilt.y is more than 10% of full range, write WARNING.

30. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab and *ptzStatus*.Position.Zoom is specified:

   30.1. If difference between *ptzStatus1*.Position.Zoom.x and *ptzStatus2*.Position.Zoom.x is more than 10% of full range, write WARNING.

31. If PTZ Configuration *profile*.Configurations.PTZ was changed at step 13, ONVIF Client restores PTZ Configuration.

32. If Media Profile *profile* was changed at step 4, ONVIF Client restores Media Profile.

**Test Result:**

**PASS** –

• DUT passes all assertions.

**FAIL** –

• DUT did not send **GetConfigurationOptionsResponse** message.

• DUT did not send **GetStatusResponse** message.

• DUT did not send the **env:Receiver/ter:Action/ter:CannotOverwriteHome** SOAP 1.2 fault message.
• DUT did not send \texttt{GotoHomePositionResponse} message.

• DUT did not send \texttt{AbsoluteMoveResponse} message.

\textbf{Note:} PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the first \texttt{GetStatusResponse} does not have to be exactly the same as the position in the second \texttt{GetStatusResponse}.

\textbf{Note:} The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

\textbf{Note:} \texttt{timeout1} will be taken from Operation Delay field of ONVIF Device Test Tool.

\textbf{Note:} \texttt{ptzNodeToken1} will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the \texttt{GetNodesResponse} will be used.

5.3.3.3 PTZ – HOME POSITION OPERATIONS (USAGE OF \texttt{FIXEDHOMEPOSITION} FLAG) USING MEDIA2 PROFILE

\textbf{Test Case ID:} MEDIA2\_PTZ-3-1-3

\textbf{Specification Coverage:} None

\textbf{Feature Under Test:} SetHomePosition

\textbf{WSDL Reference:} ptz.wsdl

\textbf{Test Purpose:} To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented.

\textbf{Pre-Requisite:} Media2 Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab). Home Position is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab).

\textbf{Test Configuration:} ONVIF Client and DUT

\textbf{Test Procedure:}

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters
• in `ptzNodeToken1` - token of the PTZ Node, with which Media Profile should be configured
• out `profile` - Media Profile with Video Source Configuration and PTZ Configuration

4. ONVIF Client invokes `GetNode` request with parameters
   • `NodeToken := profile.Configurations.PTZ.NodeToken`

5. The DUT responds with `GetNodeResponse` with parameters
   • `PTZNode := ptzNode`

6. If `ptzNode.@FixedHomePosition` is not specified, skip other steps.

7. ONVIF Client invokes `SetHomePosition` request with parameters
   • `ProfileToken := profile.@token`


9. If `ptzNode.@FixedHomePosition = true` and the DUT did not return `env:Receiver/ter:Action/ter:CannotOverwriteHome` or `env:Receiver/ter:ActionNotSupported` SOAP 1.2 fault at step 8, FAIL the test and skip other steps.

10. If `ptzNode.@FixedHomePosition = false` and the DUT did not return `SetHomePositionResponse` message at step 8, FAIL the test and skip other steps.

11. If Media Profile `profile` was changed at step 3, ONVIF Client restores Media Profile.

Test Result:

PASS –
   • DUT passes all assertions.

FAIL –
   • DUT did not send `GetNodeResponse` message.
   • DUT did not send the `env:Receiver/ter:Action/ter:CannotOverwriteHome` or `env:Receiver/ter:ActionNotSupported` SOAP 1.2 fault message `SetHomePositionResponse` message.

Note: `ptzNodeToken1` will be taken from PTZ Node for test field of ONVIF Device Test Tool, if it is not defined the first PTZ Node at the list provided in the `GetNodesResponse` will be used.
5.3.3.4 PTZ HOME POSITION OPERATIONS USING CUSTOM MEDIA2 PROFILE

**Test Case ID:** MEDIA2_PTZ-3-1-4

**Specification Coverage:** None

**Feature Under Test:** SetHomePosition, GotoHomePosition

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the SetHomePosition and GotoHomePosition operations are correctly implemented in the case of custom created profile.

**Pre-Requisite:** Media2 Service is received from the DUT. PTZ Service is received from the DUT.

**Test Configuration:** ONVIF Client and DUT

**Test Procedure:**

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client retrieves PTZ Nodes list by following the procedure mentioned in Annex A.3 with the following input and output parameters
   - out `ptzNodeList` PTZ Node List

4. For each PTZ Node `ptzNode` from `ptzNodeList` list with HomeSupported = true repeat the following steps:

   4.1. ONVIF Client creates Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.27 with the following input and output parameters
      - in `ptzNodeToken1` - token of the PTZ Node, with which Media Profile should be configured
      - out `profile` - Media Profile with Video Source Configuration and PTZ Configuration

   4.2. ONVIF Client defines features of PTZ Node `ptzNode` by following the procedure mentioned in Annex A.5 with the following input and output parameters
      - in `ptzNode` - PTZ Node,
      - out `continuousPanTilt` - Supporting of Continuous Pan/Tilt movement,
• out continuousZoom - Supporting of Continuous Zoom movement,

• out absolutePanTilt - Supporting of Absolute Pan/Tilt movement,

• out absoluteZoom - Supporting of Absolute Zoom movement,

• out relativePanTilt - Supporting of Relative Pan/Tilt movement,

• out relativeZoom - Supporting of Relative Zoom movement.

4.3. ONVIF Client gets PTZ Configuration Options ptzConfigurationOptions by following the procedure mentioned in Annex A.6 with the following input and output parameters

• in profile.Configurations.PTZ.@token - PTZ Configuration token,

• out ptzConfigurationOptions - PTZ Configuration Options.

4.4. ONVIF Client changes PTZ position to minimum by following the procedure mentioned in Annex A.7 with the following input and output parameters

• in profile - Media Profile with PTZ Configuration,

• in ptzConfigurationOptions - PTZ Configuration Options,

• in continuousPanTilt - Supporting of Continuous Pan/Tilt movement,

• in continuousZoom - Supporting of Continuous Zoom movement,

• in absolutePanTilt - Supporting of Absolute Pan/Tilt movement,

• in absoluteZoom - Supporting of Absolute Zoom movement,

• in relativePanTilt - Supporting of Relative Pan/Tilt movement,

• in relativeZoom - Supporting of Relative Zoom movement,

4.5. ONVIF Client invokes GetStatus request with parameters

• ProfileToken := profile.@token

4.6. The DUT responds with GetStatusResponse with parameters

• PTZStatus := ptzStatus1

4.7. ONVIF Client invokes SetHomePosition request with parameters

• ProfileToken := profile.@token

4.9. If DUT returns `env:Receiver/ter:Action/ter:CannotOverwriteHome` or `env:Receiver/ter:ActionNotSupported` SOAP 1.2 fault at step 4.8:

   • set `fixedHomePosition := true`

4.10. If DUT returns `SetHomePositionResponse` message at step 4.8:

   • set `fixedHomePosition := false`

4.11. If `ptzNode.@FixedHomePosition` is specified:

   4.11.1. If `ptzNode.@FixedHomePosition = true` and `fixedHomePosition = false`, FAIL the test and skip other steps.

   4.11.2. If `ptzNode.@FixedHomePosition = false` and `fixedHomePosition = true`, FAIL the test and skip other steps.

4.12. If `fixedHomePosition = true`:

   4.12.1. ONVIF Client invokes `GotoHomePosition` request with parameters

       • ProfileToken := `profile.@token`

       • Speed skipped


   4.12.3. Wait until `timeout1` timeout expires.

   4.12.4. ONVIF Client invokes `GetStatus` request with parameters

       • ProfileToken := `profile.@token`

   4.12.5. The DUT responds with `GetStatusResponse` with parameters

       • PTZStatus =: `ptzStatus1`

4.13. ONVIF Client changes PTZ position to maximum by following the procedure mentioned in Annex A.12 with the following input and output parameters

   • in `profile` - Media Profile with PTZ Configuration,

   • in `ptzConfigurationOptions` - PTZ Configuration Options,
- in `continuousPanTilt` - Supporting of Continuous Pan/Tilt movement,
- in `continuousZoom` - Supporting of Continuous Zoom movement,
- in `absolutePanTilt` - Supporting of Absolute Pan/Tilt movement,
- in `absoluteZoom` - Supporting of Absolute Zoom movement,
- in `relativePanTilt` - Supporting of Relative Pan/Tilt movement,
- in `relativeZoom` - Supporting of Relative Zoom movement,

4.14. ONVIF Client invokes **GotoHomePosition** request with parameters

- ProfileToken := `profile.@token`
- Speed skipped

4.15. The DUT responds with **GotoHomePositionResponse** message.

4.16. Wait until `timeout1` timeout expires.

4.17. ONVIF Client invokes **GetStatus** request with parameters

- ProfileToken := `profile.@token`

4.18. The DUT responds with **GetStatusResponse** with parameters

- `PTZStatus` = `ptzStatus2`

4.19. If `ptzStatus2.Position.PanTilt` is specified:

4.19.1. If difference between `ptzStatus2.Position.PanTilt.x` and `ptzStatus1.Position.PanTilt.x` is more than 10% of full range, write WARNING.

4.19.2. If difference between `ptzStatus2.Position.PanTilt.y` and `ptzStatus1.Position.PanTilt.y` is more than 10% of full range, write WARNING.

4.20. If `ptzStatus2.Position.Zoom` is specified:

4.20.1. If difference between `ptzStatus2.Position.Zoom.x` and `ptzStatus1.Position.Zoom.x` is more than 10% of full range, write WARNING.

4.21. If PTZ Configuration `profile.Configurations.PTZ` was changed at step 4.4 or at step 4.13, ONVIF Client restores PTZ Configuration.

4.22. If Media Profile `profile` was changed at step 4.1, ONVIF Client restores Media Profile.
Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send GetConfigurationOptionsResponse message.

• DUT did not send GetStatusResponse message.

• DUT did not send SetHomePositionResponse message.

• DUT did not send GotoHomePositionResponse message.

Note: PTZ accuracy is out of scope for this Test Specification. Therefore, the position reported by the DUT in the GetStatusResponse does not have to be exactly the same as the position requested by the ONVIF Client in the AbsoluteMove request.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

Note: timeout1 will be taken from Operation Delay field of ONVIF Device Test Tool.

Note: To calculate full range for Pan Tilt for step 4.19.1 and for step 4.19.2 ONVIF Client uses ptzStatus2.Position.PanTilt.@space space.

Note: To calculate full range for Zoom for step 4.20.1 ONVIF Client uses ptzStatus2.Position.Zoom.@space space.

5.3.4 Predefined PTZ Spaces

5.3.4.1 Absolute Position Spaces

5.3.4.1.1 ABSOLUTE PAN/TILT POSITION SPACE

Test Case ID: MEDIA2_PTZ-4-1-1

Specification Coverage: Absolute Pan/Tilt Position Space

Feature Under Test: Absolute Pan/Tilt Position Space

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the node supports the "http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees" PTZ space.
Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Profile T is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client invokes GetNodes request.

4. The DUT responds with GetNodesResponse with parameters

   • PTZNode list = ptzNodeList

5. For each PTZ Node ptzNode from ptzNodeList list, which contains SupportedPTZSpaces.AbsolutePanTiltPositionSpace.URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees", repeat the following steps:

   5.1. Set sphericalSpace := ptzNode.SupportedPTZSpaces.AbsolutePanTiltPositionSpace[sphericalSpaceId], where sphericalSpaceId is the index number of the first item on the ptzNode.SupportedPTZSpaces.AbsolutePanTiltPositionSpace list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees"

   5.2. If sphericalSpace.XRange.Max < sphericalSpace.XRange.Min, FAIL the test and skip other steps.

   5.3. If sphericalSpace.YRange.Max < sphericalSpace.YRange.Min, FAIL the test and skip other steps.

   5.4. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

      • in ptzNode.@token - token of the PTZ Node, with which Media Profile should be configured

      • out profile - Media Profile with Video Source Configuration and PTZ Configuration

   5.5. ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters

      • in sphericalSpace - Pan/Tilt Space
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• in profile.Configurations.PTZ - PTZ Configuration

• out profile.Configurations.PTZ - PTZ Configuration with adjusted Pan/Tilt and Zoom limits

5.6. ONVIF Client invokes AbsoluteMove request with parameters

• ProfileToken := profile.@token

• Position.PanTilt.x := profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min if it is specified, otherwise, sphericalSpace.XRange.Min

• Position.PanTilt.y := profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min if it is specified, otherwise, sphericalSpace.YRange.Min

• Position.PanTilt.space := sphericalSpace.URI

• Position.Zoom skipped

• Position.Speed skipped

5.7. The DUT responds with AbsoluteMoveResponse message.

5.8. ONVIF Client invokes AbsoluteMove request with parameters

• ProfileToken := profile.@token

• Position.PanTilt.x := profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Max if it is specified, otherwise, sphericalSpace.XRange.Max

• Position.PanTilt.y := profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max if it is specified, otherwise, sphericalSpace.YRange.Max

• Position.PanTilt.space := sphericalSpace.URI

• Position.Zoom skipped

• Position.Speed skipped

5.9. The DUT responds with AbsoluteMoveResponse message.

5.10. If PTZ Configuration profile.Configurations.PTZ was changed at step 5.5, ONVIF Client restores PTZ Configuration.

5.11. If Media Profile profile was changed at step 5.4, ONVIF Client restores Media Profile.

Test Result:
PASS –
• DUT passes all assertions.

FAIL –
• DUT did not send GetNodesResponse message.
• DUT did not send AbsoluteMoveResponse message.

5.3.4.1.2 ABSOLUTE PAN/TILT GENERIC POSITION SPACE

Test Case ID: MEDIA2_PTZ-4-1-2

Specification Coverage: Generic Pan/Tilt Position Space (ONVIF PTZ Service spec)

Feature Under Test: Generic Pan/Tilt Position Space

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the node supports the "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace" PTZ space.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes GetNodes request.
4. The DUT responds with GetNodesResponse with parameters
   • PTZNode list = ptzNodeList
5. For each PTZ Node ptzNode from ptzNodeList list, which contains at least one SupportedPTZSpaces.AbsolutePanTiltPositionSpace element repeat the following steps:

   5.1. If ptzNode does not contain SupportedPTZSpaces.AbsolutePanTiltPositionSpace.URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace", FAIL the test and skip other steps.

   5.2. Set genericSpace := ptzNode.SupportedPTZSpaces.AbsolutePanTiltPositionSpace[genericSpaceId], where genericSpaceId is the index number of the first item on the
ptzNode.SupportedPTZSpaces.AbsolutePanTiltPositionSpace list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"

5.3. If \( genericSpace.XRange.Max < genericSpace.XRange.Min \), FAIL the test and skip other steps.

5.4. If \( genericSpace.YRange.Max < genericSpace.YRange.Min \), FAIL the test and skip other steps.

5.5. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

   • in ptzNode.@token - token of the PTZ Node, with which Media Profile should be configured

   • out profile - Media Profile with Video Source Configuration and PTZ Configuration

5.6. ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters

   • in genericSpace - Pan/Tilt Space

   • in profile.Configurations.PTZ - PTZ Configuration

   • out profile.Configurations.PTZ - PTZ Configuration with adjusted Pan/Tilt and Zoom limits

5.7. ONVIF Client invokes **AbsoluteMove** request with parameters

   • ProfileToken := profile.@token

   • Position.PanTilt.x := profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min if it is specified, otherwise, genericSpace.XRange.Min

   • Position.PanTilt.y := profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min if it is specified, otherwise, genericSpace.YRange.Min

   • Position.PanTilt.space := genericSpace.URI

   • Position.Zoom skipped

   • Position.Speed skipped

5.8. The DUT responds with **AbsoluteMoveResponse** message.

5.9. ONVIF Client invokes **AbsoluteMove** request with parameters
• ProfileToken := profile.@token

• Position.PanTilt.x := profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Max if it is specified, otherwise, genericSpace.XRange.Max

• Position.PanTilt.y := profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max if it is specified, otherwise, genericSpace.YRange.Max

• Position.PanTilt.space := genericSpace.URI

• Position.Zoom skipped

• Position.Speed skipped

5.10. The DUT responds with AbsoluteMoveResponse message.

5.11. If PTZ Configuration profile.Configurations.PTZ was changed at step 5.5, ONVIF Client restores PTZ Configuration.

5.12. If Media Profile profile was changed at step 5.4, ONVIF Client restores Media Profile.

Test Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send GetNodesResponse message.

• DUT did not send AbsoluteMoveResponse message.

5.3.4.1.3 ABSOLUTE ZOOM GENERIC POSITION SPACE

Test Case ID: MEDIA2_PTZ-4-1-3

Specification Coverage: Generic Zoom Position Space (ONVIF PTZ Service spec)

Feature Under Test: Generic Zoom Position Space

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the node supports the "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace" PTZ space.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT
Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client invokes **GetNodes** request.

4. The DUT responds with **GetNodesResponse** with parameters
   - PTZNode list =: *ptzNodeList*

5. For each PTZ Node *ptzNode* from *ptzNodeList* list, which contains at least one SupportedPTZSpaces.AbsoluteZoomPositionSpace element repeat the following steps:

5.1. If *ptzNode* does not contain SupportedPTZSpaces.AbsoluteZoomPositionSpace.URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace", FAIL the test and skip other steps.

5.2. Set
   
   $$ genericSpace := ptzNode.SupportedPTZSpaces.AbsoluteZoomPositionSpace[genericSpaceId], $$
   
   where *genericSpaceId* is the index number of the first item on the *ptzNode*.SupportedPTZSpaces.AbsoluteZoomPositionSpace list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace".

5.3. If *genericSpace*.XRange.Max < *genericSpace*.XRange.Min, FAIL the test and skip other steps.

5.4. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters
   
   - in *ptzNode*.@token - token of the PTZ Node, with which Media Profile should be configured
   - out *profile* - Media Profile with Video Source Configuration and PTZ Configuration

5.5. ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters
   
   - in *genericSpace* - Pan/Tilt Space
   - in *profile*.Configurations.PTZ - PTZ Configuration
   - out *profile*.Configurations.PTZ - PTZ Configuration with adjusted Pan/Tilt and Zoom limits
5.6. ONVIF Client invokes **AbsoluteMove** request with parameters

- ProfileToken := profile.@token
- Position.PanTilt skipped
- Position.Zoom.x := profile.Configurations.PTZ.ZoomLimits.Range.Xrange.Min if it is specified, otherwise, genericSpace.Xrange.Min
- Position.Zoom.space := genericSpace.URI
- Position.Speed skipped

5.7. The DUT responds with **AbsoluteMoveResponse** message.

5.8. ONVIF Client invokes **AbsoluteMove** request with parameters

- ProfileToken := profile.@token
- Position.PanTilt skipped
- Position.Zoom.x := profile.Configurations.PTZ.ZoomLimits.Range.Xrange.Max if it is specified, otherwise, genericSpace.Xrange.Max
- Position.Zoom.space := genericSpace.URI
- Position.Speed skipped

5.9. The DUT responds with **AbsoluteMoveResponse** message.

5.10. If PTZ Configuration profile.Configurations.PTZ was changed at step 5.5, ONVIF Client restores PTZ Configuration.

5.11. If Media Profile profile was changed at step 5.4, ONVIF Client restores Media Profile.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- DUT did not send **GetNodesResponse** message.
- DUT did not send **AbsoluteMoveResponse** message.
5.3.4.2 Continuous Velocity Spaces

5.3.4.2.1 CONTINUOUS PAN/TILT VELOCITY SPACE

Test Case ID: MEDIA2_PTZ-4-2-1

Specification Coverage: Continuous Pan/Tilt Velocity Space

Feature Under Test: Continuous Pan/Tilt Velocity Space

WSDL Reference: ptz.wsdl

Test Purpose: To verify that the node supports the "http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace" PTZ space for Continuous Pan/Tilt movement.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Profile T is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes GetNodes request.
4. The DUT responds with GetNodesResponse with parameters
   • PTZNode list =: ptzNodeList
5. For each PTZ Node ptzNode from ptzNodeList list, which contains SupportedPTZSpaces.ContinuousPanTiltVelocitySpace, repeat the following steps:
   5.1. If ptzNode. SupportedPTZSpaces. ContinuousPanTiltVelocitySpace list does not contain item with URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace", FAIL the test and skip other steps.
   5.2. Set velocitySpace := ptzNode. SupportedPTZSpaces. ContinuousPanTiltVelocitySpace[velocitySpaceId], where velocitySpaceId is the index number of the first item on the ptzNode. SupportedPTZSpaces. ContinuousPanTiltVelocitySpace list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace"
   5.3. If velocitySpace.XRange.Max < velocitySpace.XRange.Min, FAIL the test and skip other steps.
5.4. If \( \text{velocitySpace.YRange.Max} < \text{velocitySpace.YRange.Min} \), FAIL the test and skip other steps.

5.5. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

- in \( \text{ptzNode.@token} \) - token of the PTZ Node, with which Media Profile should be configured
- out \( \text{profile} \) - Media Profile with Video Source Configuration and PTZ Configuration

5.6. ONVIF Client invokes **ContinuousMove** request with parameters

- ProfileToken := \( \text{profile.@token} \)
- Velocity.PanTilt.x := \( \text{velocitySpace.Xrange.Min} \)
- Velocity.PanTilt.y := \( \text{velocitySpace.Yrange.Min} \)
- Velocity.PanTilt.space := \( \text{sphericalSpace.URI} \)
- Velocity.Zoom skipped
- Timeout skipped

5.7. The DUT responds with **ContinuousMoveResponse** message.

5.8. Wait until \( \text{timeout1} \) timeout expires.

5.9. ONVIF Client invokes **ContinuousMove** request with parameters

- ProfileToken := \( \text{profile.@token} \)
- Velocity.PanTilt.x := \( \text{velocitySpace.Xrange.Max} \)
- Velocity.PanTilt.y := \( \text{velocitySpace.Yrange.Max} \)
- Velocity.PanTilt.space := \( \text{sphericalSpace.URI} \)
- Velocity.Zoom skipped
- Timeout skipped

5.10. The DUT responds with **ContinuousMoveResponse** message.

5.11. Wait until \( \text{timeout1} \) timeout expires.
5.12. ONVIF Client invokes **Stop** request with parameters

- ProfileToken := *profile.*@token
- PanTilt := true
- Zoom := false

5.13. The DUT responds with **StopResponse** message.

5.14. If Media Profile *profile* was changed at step 5.5, ONVIF Client restores Media Profile.

**Test Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- DUT did not send **GetNodesResponse** message.
- DUT did not send **ContinuousMoveResponse** message.

**Note:** *timeout1* will be taken from Operation Delay field of ONVIF Device Test Tool.

5.3.4.2.2 GENERIC ZOOM VELOCITY SPACE

**Test Case ID:** MEDIA2_PTZ-4-2-2

**Specification Coverage:** Generic Zoom Velocity Space

**Feature Under Test:** Generic Zoom Velocity Space

**WSDL Reference:** ptz.wsdl

**Test Purpose:** To verify that the node supports the "http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace" PTZ space for Continuous Zoom movement.

**Pre-Requisite:** Media2 Service is received from the DUT. PTZ Service is received from the DUT. Profile T is supported by the DUT.

**Test Configuration:** ONVIF Client and DUT

**Test Procedure:**
1. Start an ONVIF Client.

2. Start the DUT.

3. ONVIF Client invokes GetNodes request.

4. The DUT responds with GetNodesResponse with parameters

   - PTZNode list =: ptzNodeList

5. For each PTZ Node ptzNode from ptzNodeList list, which contains SupportedPTZSpaces.ContinuousZoomVelocitySpace, repeat the following steps:

   5.1. If ptzNode. SupportedPTZSpaces.ContinuousZoomVelocitySpace list does not contain item with URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace", FAIL the test and skip other steps.

   5.2. Set velocitySpace := ptzNode. SupportedPTZSpaces.ContinuousZoomVelocitySpace[velocitySpaceId], where velocitySpaceId is the index number of the first item on the ptzNode. SupportedPTZSpaces. ContinuousZoomVelocitySpace list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace"

   5.3. If velocitySpace.XRange.Max < velocitySpace.XRange.Min, FAIL the test and skip other steps.

   5.4. ONVIF Client configures or selects a Media Profile with Video Source Configuration and PTZ Configuration by following the procedure mentioned in Annex A.17 with the following input and output parameters

      - in ptzNode.@token - token of the PTZ Node, with which Media Profile should be configured

      - out profile - Media Profile with Video Source Configuration and PTZ Configuration

5.5. ONVIF Client invokes ContinuousMove request with parameters

   - ProfileToken := profile.@token

   - Velocity.PanTilt skipped

   - Velocity.Zoom.x := velocitySpace.XRange.Min

   - Velocity.Zoom.space := sphericalSpace.URI

   - Timeout skipped
5.6. The DUT responds with `ContinuousMoveResponse` message.

5.7. Wait until `timeout1` timeout expires.

5.8. ONVIF Client invokes `ContinuousMove` request with parameters

   • ProfileToken := `profile.@token`
   • Velocity.PanTilt skipped
   • Velocity.Zoom.x := `velocitySpace.XRRange.Max`
   • Velocity.Zoom.space := `sphericalSpace.URI`
   • Timeout skipped

5.9. The DUT responds with `ContinuousMoveResponse` message.

5.10. Wait until `timeout1` timeout expires.

5.11. ONVIF Client invokes `Stop` request with parameters

   • ProfileToken := `profile.@token`
   • PanTilt := false
   • Zoom := true

5.12. The DUT responds with `StopResponse` message.

5.13. If Media Profile `profile` was changed at step 5.4, ONVIF Client restores Media Profile.

**Test Result:**

**PASS** –

• DUT passes all assertions.

**FAIL** –

• DUT did not send `GetNodesResponse` message.

• DUT did not send `ContinuousMoveResponse` message.

**Note:** `timeout1` will be taken from Operation Delay field of ONVIF Device Test Tool.
Annex A Helper Procedures and Additional Notes

A.1 Media Profile Configuration for PTZ Control

For the execution of PTZ control test cases, ONVIF Client has to select and configure the media profile as follows:

1. Retrieve media profiles by invoking GetProfiles request.

2. The DUT responds with GetProfilesResponse message with parameters
   - Profile list = profileList

3. If profileList contains profile with PTZ configuration:
   - Set profile := profileList[0], where profileList[0] is the first profile with PTZConfiguration.
   - Go to step 6.

4. If DUT does not support Get Compatible Configurations feature:
   - Retrieve PTZ configurations by invoking GetConfigurations request.
   - Add PTZ configuration to media profile by invoking AddPTZConfiguration request.
   - Get PTZ configuration options for the added PTZ Configuration by invoking GetConfigurationOptions request.
   - Skip other steps.

5. If DUT supports Get Compatible Configurations feature:
   - ONVIF Client configures an empty Media Profile by following the procedure mentioned in Annex A.28 with the following input and output parameters
     - in profileList - Media Profile List
     - out profile - Media Profile
   - ONVIF Client invokes GetCompatibleVideoSourceConfigurations request with parameters
     - ProfileToken := profile.@token
   - DUT responds with GetCompatibleVideoSourceConfigurationsResponse message with parameters
• Configurations list := vscList

• If vscList is empty, FAIL the test and skip other steps.

• For each Video Source Configuration vsc in vscList repeat the following steps:

5.1. ONVIF Client invokes AddVideoSourceConfiguration request with parameters

• ProfileToken := profile.@token

• ConfigurationToken := vsc.@token

5.2. DUT responds with AddVideoSourceConfigurationResponse message.

5.3. ONVIF Client invokes GetCompatibleConfigurations request with parameters

• ProfileToken := profile.@token

5.4. DUT responds with GetCompatibleConfigurationsResponse message with parameters

• PTZ Configurations list := ptzConfigList

5.5. If ptzConfigList is not empty:

• ONVIF Client invokes AddPTZConfiguration request with parameters

• ProfileToken := profile.@token

• ConfigurationToken := ptzConfigList[0].@token

• DUT responds with AddPTZConfigurationResponse message.

• Go to step 6.

5.6. If ptzConfigList is empty for all Video Source Configurations from vscList, FAIL the test and skip other steps.

6. ONVIF Client gets PTZ Configuration Options ptzConfigurationOptions by following the procedure mentioned in Annex A.6 with the following input and output parameters

• in profile.PTZConfiguration.@token - PTZ Configuration token,

• out ptzConfigurationOptions - PTZ Configuration Options.
A.2 Name and Token Parameters Maximum Length

There are the following limitations on maximum length of Name and Token parameters that shall be used during tests by ONVIF Device Test Tool to prevent faults from the DUT:

- Name shall be less than or equal to 64 characters (only readable characters are accepted).
- Token shall be less than or equal to 64 characters (only readable characters are accepted).

UTF-8 character set shall be used for Name and Token.

Note: these limitations will not be used if ONVIF Device Test Tool re-uses values that were received from the DUT.

A.3 Get PTZ Node List

Name: HelperGetPTZNodeList

Procedure Purpose: Helper procedure to retrieve PTZ Node List.

Pre-requisite: PTZ Service is received from the DUT.

Input: None.

Returns: PTZ Node List (ptzNodeList).

Procedure:

1. ONVIF Client invokes GetNodes request.
2. The DUT responds with GetNodesResponse with parameters
   - PTZNode list =: ptzNodeList
3. If ptzNodeList is empty, FAIL the test.

Procedure Result:

PASS –
- DUT passes all assertions.

FAIL –
- DUT did not send GetNodesResponse message.

A.4 Create Profile for PTZ Control

Name: HelperCreateMediaProfile
Procedure Purpose: Helper procedure to create Media Profile with Video Source Configuration and PTZ Configuration.

Pre-requisite: Media Service is received from the DUT. PTZ Service is received from the DUT.

Input: Token of the PTZ Node, with which Media Profile should be configured (ptzNodeToken).

Returns: Media Profile (profile) with Video Source Configuration and PTZ Configuration.

Procedure:

1. ONVIF Client invokes CreateProfile request with parameters
   • Name := "testMedia"

2. DUT responds with env:Receiver/ter:Action/ter:MaxNVTProfiles SOAP 1.2 fault or with CreateProfileResponse message with parameters
   • Profile =: clearProfile

3. If DUT returns env:Receiver/ter:Action/ter:MaxNVTProfiles SOAP 1.2 fault at step 2:
   3.1. ONVIF Client invokes GetProfiles request.
   3.2. The DUT responds with GetProfilesResponse message with parameters
       • Profiles list =: profileList
   3.3. If profileList does not contain at least one profile with @fixed = false skip other steps and end test procedure with 'PASSED' result.
   3.4. ONVIF Client invokes DeleteProfile request with parameters
       • Token := @token of item with @fixed = false from profileList
   3.5. The DUT responds with DeleteProfileResponse message.
   3.6. ONVIF Client invokes CreateProfile request with parameters
       • Name := "testMedia"
   3.7. DUT responds with CreateProfileResponse message with parameters
       • Profile =: clearProfile

4. ONVIF Client invokes GetCompatibleVideoSourceConfigurations request with parameters
   • ProfileToken := clearProfile.@token
5. The DUT responds with `GetCompatibleVideoSourceConfigurationsResponse` with parameters

- Configurations list =: `videoSourceConfigurationList1`

6. If DUT does not support Get Compatible Configurations feature:

- ONVIF Client invokes `AddVideoSourceConfiguration` request with parameters
  - `ProfileToken := clearProfile.@token`
  - `ConfigurationToken := videoSourceConfigurationList1[0].@token`

- The DUT responds with `AddVideoSourceConfigurationResponse` message.

- ONVIF Client invokes `GetConfigurations` request

- The DUT responds with `GetConfigurationsResponse` message with parameters
  - `PTZConfiguration list =: ptzConfigurationList`
  - If `ptzConfigurationList` does not contain item with `ptzConfiguration.NodeToken = ptzNodeToken`, FAIL the test and skip other steps.

- ONVIF Client invokes `AddPTZConfiguration` request with parameters
  - `ProfileToken := clearProfile.@token`
  - `ConfigurationToken := ptzConfiguration.@token`

- The DUT responds with `AddPTZConfigurationResponse` message.

- Return `clearProfile` and skip other steps.

7. If DUT supports Get Compatible Configurations feature:

- For each Video Source Configuration `vsc` in `videoSourceConfigurationList1` repeat the following steps:

  7.1. ONVIF Client invokes `AddVideoSourceConfiguration` request with parameters
      - `ProfileToken := clearProfile.@token`
      - `ConfigurationToken := vsc.@token`

  7.2. The DUT responds with `AddVideoSourceConfigurationResponse` message.

  7.3. ONVIF Client invokes `GetCompatibleConfigurations` request with parameters
7.4. DUT responds with `GetCompatibleConfigurationsResponse` message with parameters

- PTZ Configurations list := `ptzConfigList`

7.5. If `ptzConfigList` contains PTZConfiguration item (`ptzConfig`) with `NodeToken = ptzNodeToken`:

- ONVIF Client invokes `AddPTZConfiguration` request with parameters
  - `ProfileToken := clearProfile.@token`
  - `ConfigurationToken := ptzConfig.@token`
  - DUT responds with `AddPTZConfigurationResponse` message.
  - Return `clearProfile` and skip other steps.

7.6. If `ptzConfigList` does not contain PTZConfiguration item with `NodeToken = ptzNodeToken` for all Video Source Configurations from `videoSourceConfigurationList1`, FAIL the test and skip other steps.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send `CreateProfileResponse` message.
- DUT did not send `GetCompatibleVideoSourceConfigurations` message.
- DUT did not send `AddVideoSourceConfigurationResponse` message(s).
- DUT did not send `AddPTZConfigurationResponse` message(s).
- DUT did not send `GetConfigurationsResponse` message.
- DUT did not send `GetCompatibleVideoSourceConfigurationsResponse` message.

A.5 Node's Features

Name: HelperNodeFeatures
**Procedure Purpose:** Helper procedure to define features of a Node.

**Pre-requisite:** PTZ Service is received from the DUT.

**Input:** PTZ Node (`ptzNode`).


**Procedure:**

1. Set the following:
   1.1. \( \text{continuousPanTilt} := \text{false} \)
   1.2. \( \text{continuousZoom} := \text{false} \)
   1.3. \( \text{absolutePanTilt} := \text{false} \)
   1.4. \( \text{absoluteZoom} := \text{false} \)
   1.5. \( \text{relativePanTilt} := \text{false} \)
   1.6. \( \text{relativeZoom} := \text{false} \)

2. If `ptzNode` contains at least one `SupportedPTZSpaces.ContinuousPanTiltVelocitySpace` set `continuousPanTilt := true`

3. If `ptzNode` contains at least one `SupportedPTZSpaces.ContinuousZoomVelocitySpace` set `continuousZoom := true`

4. If `ptzNode` contains at least one `SupportedPTZSpaces.AbsolutePanTiltPositionSpace` set `absolutePanTilt := true`

5. If `ptzNode` contains at least one `SupportedPTZSpaces.AbsoluteZoomPositionSpace` set `absoluteZoom := true`

6. If `ptzNode` contains at least one `SupportedPTZSpaces.RelativePanTiltTranslation` set `relativePanTilt := true`

7. If `ptzNode` contains at least one `SupportedPTZSpaces.RelativeZoomTranslationSpace` set `relativeZoom := true`

**Procedure Result:**

PASS –
A.6 Get PTZ Configuration Options

**Name:** HelperGetPTZConfOptions

**Procedure Purpose:** Helper procedure to retrieve PTZ Configuration Options.

**Pre-requisite:** PTZ Service is received from the DUT.

**Input:** Configuration Token (`ptzConfToken`).

**Returns:** PTZ Configuration Options (`ptzConfigurationOptions`).

**Procedure:**

1. ONVIF Client invokes `GetConfigurationOptions` request with parameters
   - `ConfigurationToken := ptzConfToken`
2. The DUT responds with `GetConfigurationOptionsResponse` with parameters
   - `PTZConfigurationOptions =: ptzConfigurationOptions`

**Procedure Result:**

**PASS –**
- DUT passes all assertions.

**FAIL –**
- DUT did not send `GetConfigurationOptionsResponse` message.

A.7 Change PTZ Position to Minimum Position

**Name:** HelperMoveToMinPosition

**Procedure Purpose:** Helper procedure to change PTZ position to minimum position for PTZ test cases.

**Pre-requisite:** None.

Returns: None.

Procedure:

1. If \texttt{continuousPanTilt} = true or \texttt{continuousZoom} = true:
   - ONVIF Client changes PTZ position to minimum using continuous movement by following the procedure mentioned in Annex A.8 with the following input and output parameters
     - in \texttt{profile} - Media Profile with PTZ Configuration
     - in \texttt{ptzConfigurationOptions} - PTZ Configuration Options
     - in \texttt{continuousPanTilt} - Supporting of Continuous Pan/Tilt movement
     - in \texttt{continuousZoom} - Supporting of Continuous Zoom movement
   - Return to test procedure.

2. If \texttt{absolutePanTilt} = true or \texttt{absoluteZoom} = true:
   - If \texttt{absolutePanTilt} = true:
     2.1. Set \texttt{pantiltSpace} := ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace[genericPanTiltSpace], where \texttt{genericPanTiltSpace} is the index number of the first item on the \texttt{ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"
   - If \texttt{absoluteZoom} = true:
     2.1. Set \texttt{zoomSpace} := ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace[genericZoomSpace], where \texttt{genericZoomSpace} is the index number of the first item on the \texttt{ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace"
   - ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters
• in \textit{pantiltSpace} - Pan/Tilt Space

• in \textit{zoomSpace} - Zoom Space

• in \textit{profile.Configurations.PTZ} - PTZ Configuration

• out \textit{profile.Configurations.PTZ} - PTZ Configuration with adjusted Pan/Tilt and Zoom limits

• ONVIF Client changes PTZ position to minimum using absolute movement by following the procedure mentioned in Annex A.10 with the following input and output parameters

• in \textit{profile} - Media Profile with PTZ Configuration

• in \textit{pantiltSpace} - Options for Absolute Pan/Tilt Position Default Space

• in \textit{zoomSpace} - Options for Absolute Zoom Position Default Space

• Return to test procedure.

3. If \textit{relativePanTilt} = true or \textit{relativeZoom} = true:

• If \textit{relativePanTilt} = true:

3.1. Set \textit{pantiltSpace} := \textit{ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace}[\textit{genericPanTiltSpace}], where \textit{genericPanTiltSpace} is the index number of the first item on the \textit{ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/TranslationGenericSpace"

• If \textit{relativeZoom} = true:

3.1. Set \textit{zoomSpace} := \textit{ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace}[\textit{genericZoomSpace}], where \textit{genericZoomSpace} is the index number of the first item on the \textit{ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/TranslationGenericSpace"

• ONVIF Client changes PTZ position to minimum using relative movement by following the procedure mentioned in Annex A.11 with the following input and output parameters

• in \textit{profile} - Media Profile with PTZ Configuration

• in \textit{pantiltSpace} - Options for Relative Pan/Tilt Position Default Space

• in \textit{zoomSpace} - Options for Relative Zoom Position Default Space
• in relativePanTilt - Supporting of Relative Pan/Tilt movement
• in relativeZoom - Supporting of Relative Zoom movement

Procedure Result:

PASS –
• DUT passes all assertions.

FAIL –
• None.

A.8 Continuous Move - Change PTZ Position to Initial State

Name: HelperContinuousMoveTestInitialPosition2

Procedure Purpose: Helper procedure to change PTZ position to initial state for PTZ test cases.

Pre-requisite: Media Service is received from the DUT. PTZ Service is received from the DUT. Continuous movement is supported by the DUT.


Returns: None.

Procedure:

1. Set moveTimeout := MIN( MAX(PT30S, ptzConfigurationOptions.PTZTimeout.Min), ptzConfigurationOptions.PTZTimeout.Max)

2. ONVIF Client invokes ContinuousMove request with parameters
   • ProfileToken := profile.@token
   • If continuousPanTilt = true:
     • Velocity.PanTilt.x := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].XRange.Min
     • Velocity.PanTilt.y := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].YRange.Min
• Velocity.PanTilt.space :=
  ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].URI
otherwise, Velocity.PanTilt skipped.

• If continuousZoom = true:

  • Velocity.Zoom.x :=
    ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].XRange.Min
  • Velocity.Zoom.space :=
    ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].URI
otherwise, Velocity.Zoom skipped.

• Timeout := moveTimeout.

3. The DUT responds with ContinuousMoveResponse message.

4. Wait until moveTimeout+timeout1 timeout expires.

5. If DUT supports Move Status:

  5.1. Until moveTimeout+timeout1 expires repeat the following steps:

    5.1.1. ONVIF Client invokes GetStatus request with parameters

      • ProfileToken := profile.@token

    5.1.2. The DUT responds with GetStatusResponse with parameters

      • PTZStatus =: ptzStatus

    5.1.3. If continuousPanTilt = true and ptzStatus.MoveStatus.PanTilt = IDLE and if
continuousZoom = true and ptzStatus.MoveStatus.Zoom = IDLE, skip other
steps, end procedure and return to the test.

  5.2. If moveTimeout+timeout1 expires for step 5.1, FAIL the test and skip other steps.

Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send ContinuousMoveResponse message.
• DUT did not send **GetStatusResponse** message.

**Note**: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

**Note**: **timeout1** will be taken from Operation Delay field of ONVIF Device Test Tool.

### A.9 Adjust Pan/Tilt and Zoom Limits

**Name**: HelperAdjustLimits

**Procedure Purpose**: Helper procedure to adjust Pan/Tilt and Zoom limits if required.

**Pre-requisite**: None

**Input**: Pan/Tilt Space (*panTiltSpace*), could be skipped. Zoom Space (*zoomSpace*), could be skipped. PTZ Configuration (*ptzConfiguration*).

**Returns**: PTZ Configuration (*ptzConfiguration*) with adjusted Pan/Tilt and Zoom limits.

**Procedure**:

1. If *panTiltSpace* is not skipped:
   
   1.1. If *ptzConfiguration*.PanTiltLimits is specified and *ptzConfiguration*.PanTiltLimits.Range.URI != *panTiltSpace*.URI:
      
      1.1.1. Set *ptzConfiguration*.PanTiltLimits.Range := *panTiltSpace*.
      
      1.1.2. Set *updateNeeded* := true.

2. If *zoomSpace* is not skipped:
   
   2.1. If *ptzConfiguration*.ZoomLimits is specified and *ptzConfiguration*.ZoomLimits.Range.URI != *zoomSpace*.URI:
      
      2.1.1. Set *ptzConfiguration*.ZoomLimits.Range := *zoomSpace*.
      
      2.1.2. Set *updateNeeded* := true.

3. If *updateNeeded* = true:
   
   3.1. ONVIF Client invokes **SetConfiguration** request with parameters
      
      • **PTZConfiguration** := *ptzConfiguration*

   3.2. DUT responds with **SetConfigurationResponse** message.

**Procedure Result**:
PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send `SetConfigurationResponse` message.

A.10 Absolute Move - Change PTZ Position to Initial State

**Name:** HelperAbsoluteMoveTestInitialPosition2

**Procedure Purpose:** Helper procedure to change PTZ position to initial state for PTZ test cases.

**Pre-requisite:** Media Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT.


**Returns:** None.

**Procedure:**

1. ONVIF Client invokes `AbsoluteMove` request with parameters

   - ProfileToken := `profile.@token`

   - If `absolutePanTilt` = true:

     - Position.PanTilt.x := `profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min` if it is specified, otherwise, `panTiltSpace.XrRange.Min`

     - Position.PanTilt.y := `profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min` if it is specified, otherwise, `panTiltSpace.YRange.Min`

     - Position.PanTilt.space := `panTiltSpace.URI`

     otherwise, Position.PanTilt skipped.

   - If `absoluteZoom` = true:

     - Position.Zoom.x := `profile.Configurations.PTZ.ZoomLimits.Range.XrRange.Min` if it is specified, otherwise, `zoomSpace.XrRange.Min`

     - Position.Zoom.space := `zoomSpace.URI`
otherwise, Position.Zoom skipped.

- Position.Speed skipped

2. The DUT responds with `AbsoluteMoveResponse` message.

3. Wait until `timeout1` timeout expires.

4. If the DUT supports Move Status:
   4.1. Until `timeout1` expires repeat the following steps:
      4.1.1. ONVIF Client invokes `GetStatus` request with parameters
      - `ProfileToken := profile.@token`
      4.1.2. The DUT responds with `GetStatusResponse` with parameters
      - `PTZStatus := ptzStatus`
      4.1.3. If `absolutePanTilt = true` and `ptzStatus.MoveStatus.PanTilt = IDLE` and if `absoluteZoom = true` and `ptzStatus.MoveStatus.Zoom = IDLE`, skip other steps, end procedure and return to the test.

4.2. If `timeout1` expires for step 4.1, FAIL the test and skip other steps.

**Procedure Result:**

**PASS** –
- DUT passes all assertions.

**FAIL** –
- DUT did not send `AbsoluteMoveResponse` message.
- DUT did not send `GetStatusResponse` message.

**Note:** The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

**Note:** `timeout1` will be taken from Operation Delay field of ONVIF Device Test Tool.

**A.11 Relative Move - Change PTZ Position to Minimum Position**

**Name:** HelperRelativeMoveTestMinPosition
Procedure Purpose: Helper procedure to change PTZ position to minimum position for PTZ test cases using Relative Move.

Pre-requisite: Media Service is received from the DUT. PTZ Service is received from the DUT. Relative movement is supported by the DUT.


Returns: None.

Procedure:

1. ONVIF Client invokes RelativeMove request with parameters
   - ProfileToken := profile.@token
   - If relativePanTilt = true:
     - Translation.PanTilt.x := panTiltSpace.Xrange.Min
     - Translation.PanTilt.y := panTiltSpace.Yrange.Min
     - Translation.PanTilt.space := panTiltSpace.URI
       otherwise, Translation.PanTilt skipped.
   - If relativeZoom = true:
     - Translation.Zoom.x := zoomSpace.Xrange.Min
     - Translation.Zoom.space := zoomSpace.URI
       otherwise, Translation.Zoom skipped.
   - Translation.Speed skipped

2. The DUT responds with RelativeMoveResponse message.

3. Wait until timeout1 timeout expires.

4. If the DUT supports Move Status:

   4.1. Until timeout1 expires repeat the following steps:

   4.1.1. ONVIF Client invokes GetStatus request with parameters
       - ProfileToken := profile.@token
4.1.2. The DUT responds with \textit{GetStatusResponse} with parameters

\begin{itemize}
\item PTZStatus =: ptzStatus
\end{itemize}

4.1.3. If relativePanTilt = true and ptzStatus.MoveStatus.PanTilt = IDLE and if relativeZoom = true and ptzStatus.MoveStatus.Zoom = IDLE, skip other steps, end procedure and return to the test.

4.2. If \textit{timeout1} expires for step 4.1, FAIL the test and skip other steps.

\textbf{Procedure Result:}

\textbf{PASS –}

\begin{itemize}
\item DUT passes all assertions.
\end{itemize}

\textbf{FAIL –}

\begin{itemize}
\item DUT did not send \textit{RelativeMoveResponse} message.
\item DUT did not send \textit{GetStatusResponse} message.
\end{itemize}

\textit{Note:} \textit{timeout1} will be taken from Operation Delay field of ONVIF Device Test Tool.

\section{A.12 Change PTZ Position to Maximum Position}

\textbf{Name:} HelperMoveToMaxPosition

\textbf{Procedure Purpose:} Helper procedure to change PTZ position to maximum position for PTZ test cases.

\textbf{Pre-requisite:} None.

\textbf{Input:} Media Profile with PTZ Configuration (\textit{profile}). PTZ Configuration Options (\textit{ptzConfigurationOptions}). Supporting of Absolute Pan/Tilt movement (\textit{absolutePanTilt}). Supporting of Absolute Zoom movement (\textit{absoluteZoom}). Supporting of Continuous Pan/Tilt movement (\textit{continuousPanTilt}). Supporting of Continuous Zoom movement (\textit{continuousZoom}). Supporting of Relative Pan/Tilt movement (\textit{relativePanTilt}). Supporting of Relative Zoom movement (\textit{relativeZoom}).

\textbf{Returns:} None.

\textbf{Procedure:}

\begin{enumerate}
\item If \textit{continuousPanTilt} = true or \textit{continuousZoom} = true:

\begin{itemize}
\item ONVIF Client changes PTZ position to maximum using continuous movement by following the procedure mentioned in \textit{Annex A.13} with the following input and output parameters
\end{itemize}
\end{enumerate}
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- in profile - Media Profile with PTZ Configuration

- in ptzConfigurationOptions - PTZ Configuration Options

- in continuousPanTilt - Supporting of Continuous Pan/Tilt movement

- in continuousZoom - Supporting of Continuous Zoom movement

- Return to test procedure.

2. If absolutePanTilt = true or absoluteZoom = true:

- If absolutePanTilt = true:

  2.1. Set pantiltSpace := ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace[genericPanTiltSpace], where genericPanTiltSpace is the index number of the first item on the ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"

- If absoluteZoom = true:

  2.1. Set zoomSpace := ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace[genericZoomSpace], where genericZoomSpace is the index number of the first item on the ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace"

- ONVIF Client adjusts Pan/Tilt and Zoom limits if required by following the procedure mentioned in Annex A.9 with the following input and output parameters

  - in pantiltSpace - Pan/Tilt Space

  - in zoomSpace - Zoom Space

  - in profile.Configurations.PTZ - PTZ Configuration

- out profile.Configurations.PTZ - PTZ Configuration with adjusted Pan/Tilt and Zoom limits

- ONVIF Client changes PTZ position to maximum using absolute movement by following the procedure mentioned in Annex A.14 with the following input and output parameters

  - in profile - Media Profile with PTZ Configuration

  - in pantiltSpace - Options for Absolute Pan/Tilt Position Default Space
• in \textit{zoomSpace} - Options for Absolute Zoom Position Default Space

• Return to test procedure.

3. If \textit{relativePanTilt} = true or \textit{relativeZoom} = true:

• If \textit{relativePanTilt} = true:

3.1. Set \( pantiltSpace := \text{ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace[genericPanTiltSpace]}, \) where \textit{genericPanTiltSpace} is the index number of the first item on the \text{ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/TranslationGenericSpace"

• If \textit{relativeZoom} = true:

3.1. Set \( zoomSpace := \text{ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace[genericZoomSpace]}, \) where \textit{genericZoomSpace} is the index number of the first item on the \text{ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace} list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/TranslationGenericSpace"

• ONVIF Client changes PTZ position to maximum using relative movement by following the procedure mentioned in \hyperref[Annex A.15]{Annex A.15} with the following input and output parameters

• in \textit{profile} - Media Profile with PTZ Configuration

• in \textit{pantiltSpace} - Options for Relative Pan/Tilt Position Default Space

• in \textit{zoomSpace} - Options for Relative Zoom Position Default Space

• in \textit{relativePanTilt} - Supporting of Relative Pan/Tilt movement

• in \textit{relativeZoom} - Supporting of Relative Zoom movement

• Return to test procedure.

\textbf{Procedure Result:}

\begin{itemize}
  \item \textbf{PASS} –
    \begin{itemize}
      \item DUT passes all assertions.
    \end{itemize}
  \item \textbf{FAIL} –
    \begin{itemize}
      \item None.
    \end{itemize}
\end{itemize}
A.13 Continuous Move - Change PTZ Position to Maximum Position

Name: HelperContinuousMoveTestMaxPosition2

Procedure Purpose: Helper procedure to change PTZ position to maximum for PTZ test cases.

Pre-requisite: Media Service is received from the DUT. PTZ Service is received from the DUT. Continuous movement is supported by the DUT.


Returns: None.

Procedure:

1. Set $moveTimeout := \text{MIN}(\text{MAX}(PT30S, ptzConfigurationOptions.PTZTimeout.Min), ptzConfigurationOptions.PTZTimeout.Max)$

2. ONVIF Client invokes ContinuousMove request with parameters
   - ProfileToken := profile.@token
   - If continuousPanTilt = true:
     - Velocity.PanTilt.x := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].XRange.Max
     - Velocity.PanTilt.y := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].YRange.Max
     - Velocity.PanTilt.space := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].URI
     - Otherwise, Velocity.PanTilt skipped.
   - If continuousZoom = true:
     - Velocity.Zoom.x := ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].XRange.Max
     - Velocity.Zoom.space := ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].URI
     - Otherwise, Velocity.Zoom skipped.
• Timeout := moveTimeout.

3. The DUT responds with ContinuousMoveResponse message.

4. Wait until moveTimeout+timeout1 timeout expires.

5. If DUT supports Move Status:
   
   5.1. Until moveTimeout+timeout1 expires repeat the following steps:

   5.1.1. ONVIF Client invokes GetStatus request with parameters
   
   • ProfileToken := profile.@token

   5.1.2. The DUT responds with GetStatusResponse with parameters
   
   • PTZStatus =: ptzStatus

   5.1.3. If continuousPanTilt = true and ptzStatus.MoveStatus.PanTilt = IDLE and if
   continuousZoom = true and ptzStatus.MoveStatus.Zoom = IDLE, skip other
   steps, end procedure and return to the test.

   5.2. If moveTimeout+timeout1 expires for step 5.1, FAIL the test and skip other steps.

Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send ContinuousMoveResponse message.
• DUT did not send GetStatusResponse message.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

Note: timeout1 will be taken from Operation Delay field of ONVIF Device Test Tool.

A.14 Absolute Move - Change PTZ Position to Maximum Position

Name: HelperAbsoluteMoveTestMaxPosition

Procedure Purpose: Helper procedure to change PTZ position to maximum position for PTZ test cases using Absolute Move.
**Pre-requisite:** Media Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT.

**Input:** Pan/Tilt Space \((\text{panTiltSpace})\). Zoom Space \((\text{zoomSpace})\). Media Profile with PTZ Configuration \((\text{profile})\). Supporting of Absolute Pan/Tilt movement \((\text{absolutePanTilt})\). Supporting of Absolute Zoom movement \((\text{absoluteZoom})\).

**Returns:** None.

**Procedure:**

1. ONVIF Client invokes **AbsoluteMove** request with parameters
   - ProfileToken := \(\text{profile}.@\text{token}\)
   - If \(\text{absolutePanTilt} = \text{true}\):
     - Position.PanTilt.x := \(\text{profile}.\text{Configurations.PTZ.PanTiltLimits.Range.XRange.Max}\) if it is specified, otherwise, \(\text{panTiltSpace}.\text{XRange.Max}\)
     - Position.PanTilt.y := \(\text{profile}.\text{Configurations.PTZ.PanTiltLimits.Range.YRange.Max}\) if it is specified, otherwise, \(\text{panTiltSpace}.\text{YRange.Max}\)
     - Position.PanTilt.space := \(\text{panTiltSpace}.\text{URI}\)
     - otherwise, Position.PanTilt skipped.
   - If \(\text{absoluteZoom} = \text{true}\):
     - Position.Zoom.x := \(\text{profile}.\text{Configurations.PTZ.ZoomLimits.Range.XRange.Max}\) if it is specified, otherwise, \(\text{zoomSpace}.\text{XRange.Max}\)
     - Position.Zoom.space := \(\text{zoomSpace}.\text{URI}\)
   - Position.Speed skipped
2. The DUT responds with **AbsoluteMoveResponse** message.
3. Wait until \(\text{timeout1}\) timeout expires.
4. If the DUT supports Move Status:
   4.1. Until \(\text{timeout1}\) expires repeat the following steps:
      4.1.1. ONVIF Client invokes **GetStatus** request with parameters
          - ProfileToken := \(\text{profile}.@\text{token}\)
4.1.2. The DUT responds with `GetStatusResponse` with parameters

- `PTZStatus = ptzStatus`

4.1.3. If `absolutePanTilt = true` and `ptzStatus.MoveStatus.PanTilt = IDLE` and if `absoluteZoom = true` and `ptzStatus.MoveStatus.Zoom = IDLE`, skip other steps, end procedure and return to the test.

4.2. If `timeout1` expires for step 4.1, FAIL the test and skip other steps.

**Procedure Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- DUT did not send `AbsoluteMoveResponse` message.
- DUT did not send `GetStatusResponse` message.

**Note:** The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

**Note:** `timeout1` will be taken from Operation Delay field of ONVIF Device Test Tool.

### A.15 Relative Move - Change PTZ Position to Maximum Position

**Name:** HelperRelativeMoveTestMaxPosition

**Procedure Purpose:** Helper procedure to change PTZ position to maximum position for PTZ test cases using Relative Move.

**Pre-requisite:** Media Service is received from the DUT. PTZ Service is received from the DUT. Relative movement is supported by the DUT.

**Input:** Pan/Tilt Space (`panTiltSpace`). Zoom Space (`zoomSpace`). Media Profile with PTZ Configuration (`profile`). Supporting of Relative Pan/Tilt movement (`relativePanTilt`). Supporting of Relative Zoom movement (`relativeZoom`).

**Returns:** None.

**Procedure:**
1. ONVIF Client invokes **RelativeMove** request with parameters

   - ProfileToken := `profile.@token`

   - If `relativePanTilt` = true:
     
     - Translation.PanTilt.x := `pantiltSpace.XRANGE_MAX`
     - Translation.PanTilt.y := `pantiltSpace.YRANGE_MAX`
     - Translation.PanTilt.space := `pantiltSpace.URI`
     
     otherwise, Translation.PanTilt skipped.

   - If `relativeZoom` = true:
     
     - Translation.Zoom.x := `zoomSpace.XRANGE_MAX`
     - Translation.Zoom.space := `zoomSpace.URI`
     
     otherwise, Translation.Zoom skipped.

   - Translation.Speed skipped

2. The DUT responds with **RelativeMoveResponse** message.

3. Wait until `timeout1` timeout expires.

4. If the DUT supports Move Status:
   
   4.1. Until `timeout1` expires repeat the following steps:
     
     4.1.1. ONVIF Client invokes **GetStatus** request with parameters
     
     - ProfileToken := `profile.@token`

     4.1.2. The DUT responds with **GetStatusResponse** with parameters
     
     - PTZStatus := `ptzStatus`

     4.1.3. If `relativePanTilt` = true and `ptzStatus.MoveStatus.PanTilt = IDLE` and if `relativeZoom` = true and `ptzStatus.MoveStatus.Zoom = IDLE`, skip other steps, end procedure and return to the test.

     4.2. If `timeout1` expires for step 4.1, FAIL the test and skip other steps.

**Procedure Result:**

PASS –
FAIL –

• DUT did not send `RelativeMoveResponse` message.
• DUT did not send `GetStatusResponse` message.

Note: `timeout1` will be taken from Operation Delay field of ONVIF Device Test Tool.

A.16 Name Parameters

There are the following limitations on maximum length of the Name parameters that shall be used during tests by ONVIF Device Test Tool to prevent faults from DUT:

• Name shall be less than or equal to 64 characters (only readable characters accepted).
• Token shall be less than or equal to 64 characters (only readable characters are accepted).
• UTF-8 character set shall be used for Name.

Note: these limitations will not be used, if ONVIF Device Test Tool reuses values that were received from the DUT.

A.17 Media Profile Configuration for PTZ Control

Name: HelperMediaProfileConfiguration

Procedure Purpose: Helper procedure to find, create or configure Media Profile with Video Source Configuration and PTZ Configuration.

Pre-requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. `GetCompatibleConfigurations` is supported by Device as indicated by the `GetCompatibleConfigurations = true` capability.

Input: Token of the PTZ Node, with which Media Profile should be configured (`ptzNodeToken`).

Returns: Media Profile (`profile`) with Video Source Configuration and PTZ Configuration.

Procedure:

1. ONVIF Client invokes `GetProfiles` request with parameters
   • Token skipped
   • `Type[0] := PTZ`
   • `Type[1] := VideoSource`
2. The DUT responds with `GetProfilesResponse` message with parameters
   - Profiles list \(= \text{profileList}\)

3. If `profileList` is empty, FAIL the test and skip other steps.

4. If `profileList` contains Media Profile, which includes Configurations.PTZ.NodeToken \(= \text{ptzNodeToken}\):
   4.1. Set `profile` := item from `profileList` list, which includes Configurations.PTZ.NodeToken \(= \text{ptzNodeToken}\)
   4.2. If `profile` does not contain Configurations.VideoSource:
       4.2.1. ONVIF Client adds Video Source to Media Profile by following the procedure mentioned in Annex A.18 with the following input and output parameters
           - in `profile` - Media Profile
           - out `profile` - Media Profile with Video Source Configuration
   4.3. Skip other steps in the procedure.

5. For each profile (`profile`) with Video Source Configuration from `profileList`:
   5.1. ONVIF Client invokes `GetCompatibleConfigurations` request.
   5.2. The DUT responds with `GetCompatibleConfigurationsResponse` message with parameters
       - PTZConfiguration list \(= \text{ptzConfigurationList}\)
   5.3. If `ptzConfigurationList` contains item with NodeToken \(= \text{ptzNodeToken}\):
       5.3.1. ONVIF Client invokes `AddConfiguration` request with parameters
           - ProfileToken := `profile`.@token
           - Name skipped
           - Configuration[0].Type := PTZ
           - Configuration[0].Token := `ptzConfiguration`.@token
       5.3.2. The DUT responds with `AddConfigurationResponse` message.
       5.3.3. Return `profile` and skip other steps.
   6. FAIL the test and skip other steps.
Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send `GetProfilesResponse` message.

• DUT did not send `GetConfigurationsResponse` message.

• DUT did not send `AddConfigurationResponse` message.

A.18 Media Profile Configuration with Video Source Configuration

Name: HelperMediaProfileConfigurationVS

Procedure Purpose: Helper procedure to add Video Source Configuration to Media Profile.

Pre-requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT.

Input: Media Profile (`profile`).

Returns: Media Profile (`profile`) with Video Source Configuration.

Procedure:

1. ONVIF Client invokes `GetVideoSourceConfigurations` request with parameters
   
   • ConfigurationToken skipped

   • ProfileToken = `profile.@token`

2. The DUT responds with `GetVideoSourceConfigurationsResponse` with parameters
   
   • Configurations list =: `videoSourceConfigurationList`

3. If `videoSourceConfigurationList` is empty, FAIL the test and skip other steps.

4. ONVIF Client invokes `AddConfiguration` request with parameters
   
   • ProfileToken := `profile.@token`

   • Name skipped

   • Configuration[0].Type := VideoSource
5. The DUT responds with AddConfigurationResponse message.

Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send GetVideoSourceConfigurationsResponse message.
• DUT did not send AddConfigurationResponse message.

A.19 Verify PTZ Configuration Options

Name: HelperValidatePTZConfOptions

Procedure Purpose: Helper procedure to verify PTZ Configuration Options.

Pre-requisite: None

Input: PTZ Configuration Options (ptzConfigurationOptions).

Returns: None

Procedure:

1. If ptzConfigurationOptions.Spaces is empty, FAIL the test and skip other steps.

2. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

   2.1. If ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace list does not contain item with URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace", FAIL the test and skip other steps.

3. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

   3.1. If ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace list does not contain item with URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace", FAIL the test and skip other steps.

4. If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab:
4.1. If \texttt{ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace} list does not contain item with URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace", FAIL the test and skip other steps.

5. If the DUT supports Continuous Zoom Movement for PTZ Node selected on Management tab:

5.1. If \texttt{ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace} list does not contain item with URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace", FAIL the test and skip other steps.

6. If the DUT supports Relative Pan/Tilt Movement for PTZ Node selected on Management tab:

6.1. If \texttt{ptzConfigurationOptions.Spaces.RelativePanTiltTranslationSpace} list does not contain item with URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/TranslationGenericSpace", FAIL the test and skip other steps.

7. If the DUT supports Relative Zoom Movement for PTZ Node selected on Management tab:

7.1. If \texttt{ptzConfigurationOptions.Spaces.RelativeZoomTranslationSpace} list does not contain item with URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/TranslationGenericSpace", FAIL the test and skip other steps.

8. If the DUT supports Speed for Pan/Tilt for PTZ Node selected on Management tab:

8.1. If \texttt{ptzConfigurationOptions.Spaces.PanTiltSpeedSpace} list does not contain item with URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/GenericSpeedSpace", FAIL the test and skip other steps.

9. If the DUT supports Speed for Zoom for PTZ Node selected on Management tab:

9.1. If \texttt{ptzConfigurationOptions.Spaces.ZoomSpeedSpace} list does not contain item with URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/ZoomGenericSpeedSpace", FAIL the test and skip other steps.

10. If \texttt{ptzConfigurationOptions.PTZTimeout.Min > ptzConfigurationOptions.PTZTimeout.Max}, FAIL the test and skip other steps.

**Procedure Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –
• None.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

A.20 Configure Default Absolute Spaces

Name: HelperConfigureDefaultAbsoluteSpaces

Procedure Purpose: Helper procedure to configure Default Absolute Spaces and adjust Pan/Tilt and Zoom limits if required.

Pre-requisite: None

Input: PTZ Configuration Options (ptzConfigurationOptions). Media Profile with PTZ Configuration (profile).

Returns: Media Profile with PTZ Configuration with configured Absolute Position Default Spaces (profile). Options for Absolute Pan/Tilt Position Default Space (pantiltSpace). Options for Absolute Zoom Position Default Space (zoomSpace).

Procedure:

1. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:
   1.1. Set pantiltSpace := ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace[0].
   1.2. If profile.Configurations.PTZ.DefaultAbsolutePantTiltPositionSpace != pantiltSpace.URI:
      1.2.1. Set profile.Configurations.PTZ.DefaultAbsolutePantTiltPositionSpace := pantiltSpace.URI.
      1.2.2. Set updateNeeded := true.
   1.3. If profile.Configurations.PTZ.PanTiltLimits is specified and profile.Configurations.PTZ.PanTiltLimits.Range.URI != pantiltSpace.URI:
      1.3.2. Set updateNeeded := true.

2. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:
   2.1. Set zoomSpace := ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace[0].
2.2. If \( \text{profile}.\text{Configurations.PTZ.DefaultAbsoluteZoomPositionSpace} \neq \text{zoomSpace}.\text{URI} \):

   2.2.1. Set \( \text{profile}.\text{Configurations.PTZ.DefaultAbsoluteZoomPositionSpace} := \text{zoomSpace}.\text{URI} \).

   2.2.2. Set \( \text{updateNeeded} := \text{true} \).

2.3. If \( \text{profile}.\text{Configurations.PTZ.ZoomLimits} \) is specified and \( \text{profile}.\text{Configurations.PTZ.ZoomLimits.Range.URI} \neq \text{zoomSpace}.\text{URI} \):

   2.3.1. Set \( \text{profile}.\text{Configurations.PTZ.ZoomLimits.Range} := \text{zoomSpace} \).

   2.3.2. Set \( \text{updateNeeded} := \text{true} \).

3. If \( \text{updateNeeded} = \text{true} \):

   3.1. ONVIF Client invokes \textbf{SetConfiguration} request with parameters

       \begin{itemize}
       \item PTZConfiguration := \text{profile}.\text{Configurations.PTZ}
       \end{itemize}

   3.2. DUT responds with \textbf{SetConfigurationResponse} message.

\section*{Procedure Result:}

\textbf{PASS} –

\begin{itemize}
\item DUT passes all assertions.
\end{itemize}

\textbf{FAIL} –

\begin{itemize}
\item DUT did not send \textbf{SetConfigurationResponse} message.
\end{itemize}

\textbf{Note:} The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

\section*{A.21 Absolute Move - Change PTZ Position to Initial State}

\textbf{Name:} HelperAbsoluteMoveTestInitialPosition

\textbf{Procedure Purpose:} Helper procedure to change PTZ position to initial state for PTZ test cases.

\textbf{Pre-requisite:} Media2 Service is received from the DUT. PTZ Service is received from the DUT. Absolute movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab).

\textbf{Input:} Pan/Tilt Space (\textit{panTiltSpace}). Zoom Space (\textit{zoomSpace}). Media Profile with PTZ Configuration (\textit{profile}).
Returns: None.

Procedure:

1. ONVIF Client invokes **AbsoluteMove** request with parameters

   - ProfileToken := profile.@token

   - If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:

     - Position.PanTilt.x := profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min if it is specified, otherwise, pantiltSpace.Xrange.Min
     
     - Position.PanTilt.y := profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min if it is specified, otherwise, pantiltSpace.YRange.Min
     
     - Position.PanTilt.space := pantiltSpace.URI

   otherwise, Position.PanTilt skipped.

   - If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:

     - Position.Zoom.x := profile.Configurations.PTZ.ZoomLimits.Range.XRange.Min if it is specified, otherwise, zoomSpace.Xrange.Min
     
     - Position.Zoom.space := zoomSpace.URI

   otherwise, Position.Zoom skipped.

   - Position.Speed skipped

2. The DUT responds with **AbsoluteMoveResponse** message.

3. Wait until **timeout1** timeout expires.

4. If the DUT supports Move Status:

   4.1. Until **timeout1** expires repeat the following steps:

      4.1.1. ONVIF Client invokes **GetStatus** request with parameters

          - ProfileToken := profile.@token

      4.1.2. The DUT responds with **GetStatusResponse** with parameters

          - PTZStatus =: ptzStatus
4.1.3. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab and \texttt{ptzStatus.MoveStatus.PanTilt = IDLE} and if the DUT supports Absolute Zoom Movement and \texttt{ptzStatus.MoveStatus.Zoom = IDLE}, skip other steps, end procedure and return to the test.

4.2. If \textit{timeout1} expires for step 4.1, FAIL the test and skip other steps.

**Procedure Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- DUT did not send \texttt{AbsoluteMoveResponse} message.
- DUT did not send \texttt{GetStatusResponse} message.

**Note:** The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

**Note:** \textit{timeout1} will be taken from Operation Delay field of ONVIF Device Test Tool.

### A.22 Continuous Move - Change PTZ Position to Initial State

**Name:** HelperContinuousMoveTestInitialPosition

**Procedure Purpose:** Helper procedure to change PTZ position to initial state for PTZ test cases.

**Pre-requisite:** Media2 Service is received from the DUT. PTZ Service is received from the DUT. Continuous movement is supported by the DUT for PTZ Node selected on Management tab or by 1st PTZ Node (if PTZ node is not selected on Management tab).

**Input:** PTZ Configuration Options (\texttt{ptzConfigurationOptions}). Media Profile with PTZ Configuration (\texttt{profile}).

**Returns:** None.

**Procedure:**

1. Set \textit{moveTimeout} := \texttt{MIN( MAX(PT30S, ptzConfigurationOptions.PTZTimeout.Min), ptzConfigurationOptions.PTZTimeout.Max)}

2. ONVIF Client invokes \texttt{ContinuousMove} request with parameters
• ProfileToken := profile.@token

• If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab:
  • Velocity.PanTilt.x := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].XRange.Min
  • Velocity.PanTilt.y := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].YRange.Min
  • Velocity.PanTilt.space := ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].URI
    otherwise, Velocity.PanTilt skipped.

• If the DUT supports Continuous Zoom Movement for PTZ Node selected on Management tab:
  • Velocity.Zoom.x := ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].XRange.Min
  • Velocity.Zoom.space := ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].URI
    otherwise, Velocity.Zoom skipped.

• Timeout := moveTimeout.

3. The DUT responds with ContinuousMoveResponse message.

4. Wait until moveTimeout+timeout1 timeout expires.

5. If the DUT supports Move Status:

5.1. Until moveTimeout+timeout1 expires repeat the following steps:

   5.1.1. ONVIF Client invokes GetStatus request with parameters
   • ProfileToken := profile.@token

   5.1.2. The DUT responds with GetStatusResponse with parameters
   • PTZStatus =: ptzStatus

   5.1.3. If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab and ptzStatus.MoveStatus.PanTilt = IDLE and if the
DUT supports Continuous Zoom Movement and \texttt{ptzStatus.MoveStatus.Zoom} = IDLE, skip other steps, end procedure and return to the test.

5.2. If \texttt{moveTimeout+timeout1} expires for step 5.1, FAIL the test and skip other steps.

**Procedure Result:**

**PASS –**

- DUT passes all assertions.

**FAIL –**

- DUT did not send \texttt{ContinuousMoveResponse} message.
- DUT did not send \texttt{GetStatusResponse} message.

**Note:** The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

**Note:** \texttt{timeout1} will be taken from Operation Delay field of ONVIF Device Test Tool.

### A.23 Continuous Move - Change PTZ Position to Maximum Position

**Name:** HelperContinuousMoveTestMaxPosition

**Procedure Purpose:** Helper procedure to change PTZ position to maximum for PTZ test cases.

**Pre-requisite:** Media2 Service is received from the DUT. PTZ Service is received from the DUT. Continuous movement is supported by the DUT.

**Input:** PTZ Configuration Options (\texttt{ptzConfigurationOptions}). Media Profile with PTZ Configuration (\texttt{profile}).

**Returns:** None.

**Procedure:**

1. Set \texttt{moveTimeout} := MIN(MAX(PT30S, \texttt{ptzConfigurationOptions.PTZTimeout.Min}), \texttt{ptzConfigurationOptions.PTZTimeout.Max})

2. ONVIF Client invokes \texttt{ContinuousMove} request with parameters

   - ProfileToken := \texttt{profile.@token}
• If the DUT supports Continuous Pan/Tilt Movement:

  • Velocity.PanTilt.x := $ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].XRange.Max$
  • Velocity.PanTilt.y := $ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].YRange.Max$
  • Velocity.PanTilt.space := $ptzConfigurationOptions.Spaces.ContinuousPanTiltVelocitySpace[0].URI$

otherwise, Velocity.PanTilt skipped.

• If the DUT supports Continuous Zoom Movement:

  • Velocity.Zoom.x := $ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].XRange.Max$
  • Velocity.Zoom.space := $ptzConfigurationOptions.Spaces.ContinuousZoomVelocitySpace[0].URI$

otherwise, Velocity.Zoom skipped.

• Timeout := moveTimeout.

3. The DUT responds with **ContinuousMoveResponse** message.

4. Wait until moveTimeout+timeout1 timeout expires.

5. If the DUT supports Move Status:

  5.1. Until moveTimeout+timeout1 expires repeat the following steps:

      5.1.1. ONVIF Client invokes **GetStatus** request with parameters
      • ProfileToken := profile.@token

      5.1.2. The DUT responds with **GetStatusResponse** with parameters
      • PTZStatus := ptzStatus

      5.1.3. If the DUT supports Continuous Pan/Tilt Movement and ptzStatus.MoveStatus.PanTilt = IDLE and if the DUT supports Continuous Zoom Movement and ptzStatus.MoveStatus.Zoom = IDLE, skip other steps, end procedure and return to the test.

  5.2. If moveTimeout+timeout1 expires for step 5.1, FAIL the test and skip other steps.
Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send ContinuousMoveResponse message.
• DUT did not send GetStatusResponse message.

Note: The DUT features support are defined by the procedure mentioned in [ONVIF Feature Discovery].

Note: timeout1 will be taken from Operation Delay field of ONVIF Device Test Tool.

A.24 Get Absolute Pan/Tilt and Zoom Position Space

Name: HelperGetAbsolutePositionSpace

Procedure Purpose: Helper procedure to get new Pan/Tilt and Zoom position spaces.

Pre-requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT. Continuous movement is supported by the DUT.

Input: Media Profile with PTZ Configuration (profile).

Returns: Pan/Tilt Space (pantiltSpace), Zoom Space (zoomSpace).

Procedure:

1. ONVIF Client invokes GetConfigurationOptions request with parameters
   • ConfigurationToken := profile.Configurations.PTZ.@token

2. The DUT responds with GetConfigurationOptionsResponse with parameters
   • PTZConfigurationOptions =: ptzConfigurationOptions

3. ONVIF Client verifies PTZ Configuration Options by following the procedure mentioned in Annex A.19 with the following input and output parameters
   • in ptzConfigurationOptions - PTZ Configuration Options

4. If the DUT supports Absolute Pan/Tilt Movement:
4.1. Set \( \text{ptzConfigurationOptions}.\text{Spaces.AbsolutePanTiltPositionSpace}[\text{genericPanTiltSpace}] \), where \( \text{genericPanTiltSpace} \) is the index number of the first item on the \( \text{ptzConfigurationOptions}.\text{Spaces.AbsolutePanTiltPositionSpace} \) list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace"

5. If the DUT supports Absolute Zoom Movement:

5.1. Set \( \text{zoomSpace} := \text{ptzConfigurationOptions}.\text{Spaces.AbsoluteZoomPositionSpace}[\text{genericZoomSpace}] \), where \( \text{genericZoomSpace} \) is the index number of the first item on the \( \text{ptzConfigurationOptions}.\text{Spaces.AbsoluteZoomPositionSpace} \) list that has URI = "http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace"

**Procedure Result:**

**PASS** –

- DUT passes all assertions.

**FAIL** –

- DUT did not send \text{GetConfigurationOptionsResponse} message.

A.25 Get Service Capabilities

**Name:** HelperGetServiceCapabilities

**Procedure Purpose:** Helper procedure to retrieve Media2 Service Capabilities.

**Pre-requisite:** Media2 Service is received from the DUT.

**Input:** None.

**Returns:** Media2 Service Capabilities (\( \text{cap} \)).

**Procedure:**

1. ONVIF Client invokes \text{GetServiceCapabilities} request.

2. The DUT responds with \text{GetServiceCapabilitiesResponse} message with parameters

   - Capabilities =: \( \text{cap} \)

**Procedure Result:**
PASS –
  • DUT passes all assertions.

FAIL –
  • DUT did not send \texttt{GetServiceCapabilitiesResponse} message.

A.26 Delete Media Profile if Max Reached

Name: \texttt{HelperDeleteMediaProfileWhenMaxProfiles}

Procedure Purpose: Helper procedure to delete Media Profile if maximum number of Media Profiles is reached.

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: None.

Procedure:

1. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in Annex A.25 with the following input and output parameters
   • out \texttt{cap} - Media2 Service Capabilities

2. ONVIF Client invokes \texttt{GetProfiles} request with parameters
   • Token skipped
   • Type[0] := All

3. The DUT responds with \texttt{GetProfilesResponse} message with parameters
   • Profiles list =: \texttt{profileList}

4. If number of items in \texttt{profileList} = \texttt{cap}.ProfileCapabilities.MaximumNumberOfProfiles:
   4.1. If \texttt{profileList} does not contain items with \texttt{@fixed} = false, FAIL the test and skip other steps.
   4.2. ONVIF Client invokes \texttt{DeleteProfile} request with parameters
       • Token := \texttt{@token} of item with \texttt{@fixed} = false from \texttt{profileList}

4.3. The DUT responds with \texttt{DeleteProfileResponse} message.
Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send GetProfilesResponse message.

• DUT did not send DeleteProfileResponse message.

A.27 Create Profile for PTZ Control (Media2)

Name: HelperCreateMedia2Profile

Procedure Purpose: Helper procedure to create Media Profile with Video Source Configuration and PTZ Configuration.

Pre-requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT.

Input: Token of the PTZ Node, with which Media Profile should be configured (ptzNodeToken).

Returns: Media Profile (profile) with Video Source Configuration and PTZ Configuration.

Procedure:

1. ONVIF Client deletes Media Profile if Maximum Number of Media Profiles is reached by following the procedure mentioned in Annex A.26.

2. ONVIF Client invokes CreateProfile request with parameters

   • Name := "testMedia"

   • Configuration list - skipped

3. DUT responds with CreateProfileResponse message with parameters

   • Token =: clearProfileToken1

4. ONVIF Client invokes GetVideoSourceConfigurations request with parameters

   • ConfigurationToken skipped

   • ProfileToken := clearProfileToken1

5. The DUT responds with GetVideoSourceConfigurationsResponse with parameters
6. For each Video Source Configuration `videoSourceConfiguration` in `videoSourceConfList` repeat the following steps:

6.1. ONVIF Client invokes `AddConfiguration` request with parameters

   - ProfileToken := `clearProfileToken1`
   - Name skipped
   - Configuration[0].Type := VideoSource
   - Configuration[0].Token := `videoSourceConfiguration.@token`

6.2. The DUT responds with `AddConfigurationResponse` message.

6.3. ONVIF Client invokes `GetCompatibleConfigurations` request with parameters

   - ProfileToken := `clearProfileToken1`

6.4. The DUT responds with `GetCompatibleConfigurationsResponse` message with parameters

   - PTZConfiguration list := `ptzConfigurationList`

6.5. If `ptzConfigurationList` contains item with `ptzConfiguration.NodeToken` = `ptzNodeToken`:

   6.5.1. ONVIF Client invokes `AddConfiguration` request with parameters

       - ProfileToken := `clearProfileToken1`
       - Name skipped
       - Configuration[0].Type := PTZ
       - Configuration[0].Token := `ptzConfiguration.@token`

   6.5.2. The DUT responds with `AddConfigurationResponse` message.

   6.5.3. Return profile with @token = `clearProfileToken1` and skip other steps.

6.6. ONVIF Client invokes `RemoveConfiguration` request with parameters

   - ProfileToken = `clearProfileToken1`
   - Configuration[0].Type = VideoSource
6.7. The DUT responds with `RemoveConfigurationResponse` message.

7. FAIL the test and skip other steps.

**Procedure Result:**

**PASS** –  
- DUT passes all assertions.

**FAIL** –  
- DUT did not send `CreateProfileResponse` message.
- DUT did not send `GetVideoSourceConfigurationsResponse` message.
- DUT did not send `AddConfigurationResponse` message(s).
- DUT did not send `GetCompatibleConfigurationsResponse` message.
- DUT did not send `RemoveConfigurationResponse` message.

**A.28 Configure Empty Media Profile**

**Name:** HelperConfigureEmptyMediaProfile

**Procedure Purpose:** Helper procedure to create or configure an empty Media Profile (Media Service).

**Pre-requisite:** Media Service is received from the DUT.

**Input:** Media Profile List (`profileList`).

**Returns:** Empty Media Profile (`profile`).

**Procedure:**

1. ONVIF Client invokes `CreateProfile` request with parameters
   - Name := TestName

2. DUT responds with `env:Receiver/ter:Action/ter:MaxNVTProfiles` SOAP 1.2 fault or with `CreateProfileResponse` message with parameters
   - Profile =: `profile`
3. If DUT returns `env:Receiver/ter:Action/ter:MaxNVTProfiles` SOAP 1.2 fault at step 2:

   3.1. Set `profile := profileList[0]`

   3.2. ONVIF Client removes all configurations from `profile`.

Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send `CreateProfileResponse` message.