

ONVIF[®]

PTZ Device Test Specification

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REVISION HISTORY

Vers.	Date	Description
1.02.4	Jul 29, 2011	First issue of PTZ Test Specification
11.12	Dec 22, 2011	New version numbering scheme has been applied. Requirement level terms have been removed. Term "NVT" is removed in each test case.
12.06	Jun 18, 2012	PTZ Service Capabilities test cases have been added.
12.12	Dec 20, 2012	New test PTZ – HOME POSITION OPERATIONS (USAGE OF FIXEDHOMEPOSITION FLAG) was added.
13.06	June, 2013	The following test cases were updated: GENERIC PAN/TILT POSITION SPACE GENERIC ZOOM POSITION SPACE GENERIC PAN/TILT TRANSLATION SPACE GENERIC ZOOM TRANSLATION SPACE GENERIC PAN/TILT VELOCITY SPACE GENERIC ZOOM VELOCITY SPACE GENERIC PAN/TILT SPEED SPACE GENERIC ZOOM SPEED SPACE
13.12	Dec, 2013	Minor changes
14.06	Feb, 2014	New Note was added in the following test cases: PTZ ABSOLUTE MOVE SET AND GET PRESET GOTO PRESET HOME POSITION OPERATIONS (CONFIGURABLE) HOME POSITION OPERATIONS (FIXED) GENERIC PAN/TILT POSITION SPACE GENERIC ZOOM POSITION SPACE GENERIC PAN/TILT SPEED SPACE GENERIC ZOOM SPEED SPACE
15.06	Jul, 2015	The following test case was updated: SET AND GET PRESET
17.06	Jun 21, 2017	Current document name was changed from PTZ Test Specification to PTZ Device Test Specification.

		The document formatting were updated.
17.12	Jul 31, 2017	<p>The following test cases and annexes were added according to #1330:</p> <p>PTZ HOME POSITION OPERATIONS USING CUSTOM MEDIA PROFILE</p> <p>Annex Get PTZ Node List</p> <p>Annex Create Profile for PTZ Control</p> <p>Annex Node's Features</p> <p>Annex Get PTZ Configuration Options</p> <p>Annex Change PTZ Position to Minimum Position</p> <p>Annex Continuous Move - Change PTZ Position to Initial State</p> <p>Annex Adjust Pan/Tilt and Zoom Limits</p> <p>Annex Absolute Move - Change PTZ Position to Initial State</p> <p>Annex Relative Move - Change PTZ Position to Minimum Position</p> <p>Annex Change PTZ Position to Maximum Position</p> <p>Annex Continuous Move - Change PTZ Position to Maximum Position</p> <p>Annex Absolute Move - Change PTZ Position to Maximum Position</p> <p>Annex Relative Move - Change PTZ Position to Maximum Position</p>
17.12	Nov 29, 2017	Content from ONVIF PTZ Using Media2 Device Test Specification was merged with current document.
18.06	Feb 20, 2018	<p>The following test cases and annexes were added according to #1535:</p> <p>PTZ-3-1-1 PTZ ABSOLUTE MOVE (pre-requisite was updated)</p> <p>PTZ-3-1-2 SOAP FAULT MESSAGE (pre-requisite was updated)</p> <p>PTZ-3-1-3 PTZ RELATIVE MOVE (pre-requisite was updated)</p> <p>PTZ-4-1-4 SET AND GET PRESET (pre-requisite was updated, steps 4, 10-14, 19-22 were updated)</p> <p>PTZ-4-1-5 GOTO PRESET (pre-requisite updated, step 4 was updated)</p> <p>PTZ-4-1-6 REMOVE PRESET (pre-requisite was updated)</p> <p>PTZ-5-1-1 HOME POSITION OPERATIONS (CONFIGURABLE) (pre-requisite was updated, step 4 was updated)</p> <p>PTZ-5-1-2 HOME POSITION OPERATIONS (FIXED) (pre-requisite was updated, step 7 was updated)</p> <p>PTZ-5-1-3 PTZ – HOME POSITION OPERATIONS (USAGE OF FIXEDHOMEPOSITION FLAG) (pre-requisite was updated)</p> <p>PTZ-6-1-1 SEND AUXILIARY COMMAND (pre-requisite was updated)</p>

		<p>MEDIA2_PTZ-1-1-1 PTZ ABSOLUTE MOVE USING MEDIA2 PROFILE (pre-requisite was updated, steps 10, 11, 10.1, 10.4.1.3, 11.1, 11.4.1.3, 14.1, 14.2 were updated)</p> <p>MEDIA2_PTZ-1-1-2 PTZ CONTINUOUS MOVE USING MEDIA2 PROFILE (pre-requisite was updated, steps 10, 11, 10.4.1.3, 11.4.1.3 were updated)</p> <p>MEDIA2_PTZ-1-1-3 PTZ CONTINUOUS MOVE & STOP USING MEDIA2 PROFILE (pre-requisite was updated, steps 9, 10, 9.7.1.3, 10.7.1.3 were updated)</p> <p>MEDIA2_PTZ-2-1-1 PTZ SET AND GET PRESET USING MEDIA2 PROFILE (pre-requisite was updated, steps 3, 8, 9, 11, 12, 23, 24, 25, 26, 37, 38 were updated)</p> <p>MEDIA2_PTZ-2-1-2 PTZ GOTO PRESET USING MEDIA2 PROFILE (pre-requisite was updated, steps 3, 8, 9, 11, 12, 16.1.3, 16.1.4, 19, 20, 24.1.3, 24.1.4, 28.1.3, 28.1.4, 31, 32 were updated)</p> <p>MEDIA2_PTZ-2-1-3 PTZ REMOVE PRESET USING MEDIA2 PROFILE (pre-requisite was updated)</p> <p>MEDIA2_PTZ-3-1-1 PTZ HOME POSITION OPERATIONS (CONFIGURABLE) USING MEDIA2 PROFILE (pre-requisite was updated, steps 3, 8, 9, 11, 12, 18, 19, 28, 29 were updated)</p> <p>MEDIA2_PTZ-3-1-2 PTZ HOME POSITION OPERATIONS (FIXED) USING MEDIA2 PROFILE (pre-requisite was updated, steps 3, 11, 12, 14, 15, 18.1, 18.2, 29, 30 were updated)</p> <p>MEDIA2_PTZ-3-1-3 PTZ – HOME POSITION OPERATIONS (USAGE OF FIXEDHOMEPOSITION FLAG) USING MEDIA2 PROFILE (pre-requisite was updated)</p> <p>Annex A.19 Verify PTZ Configuration Options (steps 2-9 were updated)</p> <p>Annex A.20 Configure Default Absolute Spaces (steps 1, 2 were updated)</p> <p>Annex A.21 Absolute Move - Change PTZ Position to Initial State (pre-requisite was updated, steps 1, 4.1.3 were updated)</p> <p>Annex A.22 Continuous Move - Change PTZ Position to Initial State (pre-requisite was updated, steps 1, 5.1.3 were updated)</p>
18.06	Jun 21, 2018	Reformatting document using new template
18.12	Oct 01, 2018	<p>The following were changed according to #1663:</p> <p>Annex A.1 Media Profile Configuration for PTZ Control (reformatted, step 5 added)</p> <p>Annex A.4 Create Profile for PTZ Control (step 6 changed, step 7 added)</p> <p>Annex A.28 Configure Empty Media Profile (new)</p>
18.12	Oct 22, 2018	<p>The following were changed according to #1545:</p> <p>MEDIA2_PTZ-4-2-1 CONTINUOUS PAN/TILT VELOCITY SPACE (10s timeout was replaced with Operation Delay timeout)</p>

		MEDIA2_PTZ-4-2-2 GENERIC ZOOM VELOCITY SPACE (10s timeout was replaced with Operation Delay timeout)
18.12	Dec 21, 2018	Switching Hub description in 'Network Configuration for DUT' section was updated according to #1737
20.06	Dec 26, 2019	Annex A.4 Create Profile for PTZ Control was updated according to #1986 (step 6 updated)
24.12	Nov 03, 2024	<p>The following test cases were updated with check that Position in GetStatusResponse is not out of range.</p> <p>Change was added according to ticket #163.</p> <p>MEDIA2_PTZ-1-1-1 PTZ ABSOLUTE MOVE USING MEDIA2 PROFILE (steps 14.1.4-14.1.12 and 14.2.3-14.2.7 were added)</p> <p>MEDIA2_PTZ-1-1-2 PTZ CONTINUOUS MOVE USING MEDIA2 PROFILE (steps 8 and 13 were added)</p> <p>PTZ-3-1-1 PTZ ABSOLUTE MOVE (steps 6 and 17 were added)</p> <p>PTZ-3-1-3 PTZ RELATIVE MOVE (steps 6 and 15 were added)</p> <p>PTZ-3-1-4 PTZ CONTINUOUS MOVE (steps 6 and 15 were added)</p> <p>Annex A.20 Configure Default Absolute Spaces (steps 1.1 and 2.1 were added)</p>

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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

Feature	Messages
PTZ Node	GetNodes GetNode
PTZ Configuration	GetConfigurations GetConfiguration GetConfigurationOptions SetConfiguration
PTZ Service Capabilities	GetServiceCapabilities GetServices

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)

Feature	Messages
Move Operations	AbsoluteMove RelativeMove ContinuousMove Stop GetStatus
Preset Operations	SetPreset

Feature	Messages
	GetPresets GotoPreset RemovePreset
Home Position Operations	GotoHomePosition SetHomePosition
Auxiliary operations	SendAuxiliaryCommand
Predefined PTZ spaces	http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace http://www.onvif.org/ver10/tptz/PanTiltSpaces/TranslationGenericSpace http://www.onvif.org/ver10/tptz/ZoomSpaces/TranslationGenericSpace http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace http://www.onvif.org/ver10/tptz/PanTiltSpaces/GenericSpeedSpace http://www.onvif.org/ver10/tptz/ZoomSpaces/ZoomGenericSpeedSpace

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)

Feature	Messages
Move Operations	AbsoluteMove

Feature	Messages
	ContinuousMove Stop GetStatus
Preset Operations	SetPreset GetPresets GotoPreset RemovePreset
Home Position Operations	GotoHomePosition SetHomePosition
Predefined PTZ spaces	http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace

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/>
- [ISO/IEC Directives, Part 2] ISO/IEC Directives, Part 2, Annex H:
<http://www.iso.org/directives>
- [ISO 16484-5] ISO 16484-5:2014-09 Annex P:
<https://www.iso.org/obp/ui/#iso:std:63753:en>
- [SOAP 1.2, Part 1] W3C SOAP 1.2, Part 1, Messaging Framework:
<http://www.w3.org/TR/soap12-part1/>
- [XML-Schema, Part 1] W3C XML Schema Part 1: Structures Second Edition:
<http://www.w3.org/TR/xmlschema-1/>

- [XML-Schema, Part 2] W3C XML Schema Part 2: Datatypes Second Edition:

<http://www.w3.org/TR/xmlschema-2/>

- [WS-Security] "Web Services Security: SOAP Message Security 1.1 (WS-Security 2004)", 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.

Profile	See ONVIF Profile Policy.
ONVIF Device	Computer appliance or software program that exposes one or multiple ONVIF Web Services.
ONVIF Client	Computer appliance or software program that uses ONVIF Web Services.
SOAP	SOAP is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It uses XML technologies to define an extensible messaging framework providing a message construct that can be exchanged over a variety of underlying protocols.
Device Test Tool	ONVIF Device Test Tool that tests ONVIF Device implementation towards the ONVIF Test Specification set.
Media Service/Media2 Service	Services to determine the streaming properties of requested media streams.
PTZ Service	Services to configure and control PTZ movement.
Pan	Horizontal movement or rotation of a camera or device.
Tilt	Vertical movement or rotation of a camera or device.
Zoom	Adjustment of the focal length of a zoom lens, causing the subject, scene to be brought closer or made to recede.
PTZ	The capability of a camera to pan, tilt, and zoom.
PTZ node	Low-level PTZ entity that maps to the PTZ device and its capabilities.
Media Profile	A media profile maps a video and/or audio source to a video and/or an audio encoder, PTZ and analytics configurations.
Capability	The capability commands allow a client to ask for the services provided by an ONVIF device.
Network	A network is an interconnected group of devices communicating using the Internet protocol.
Proxy Server	A server that services the requests of its clients by forwarding requests to other servers. A Proxy provides indirect network connections to its clients.

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.

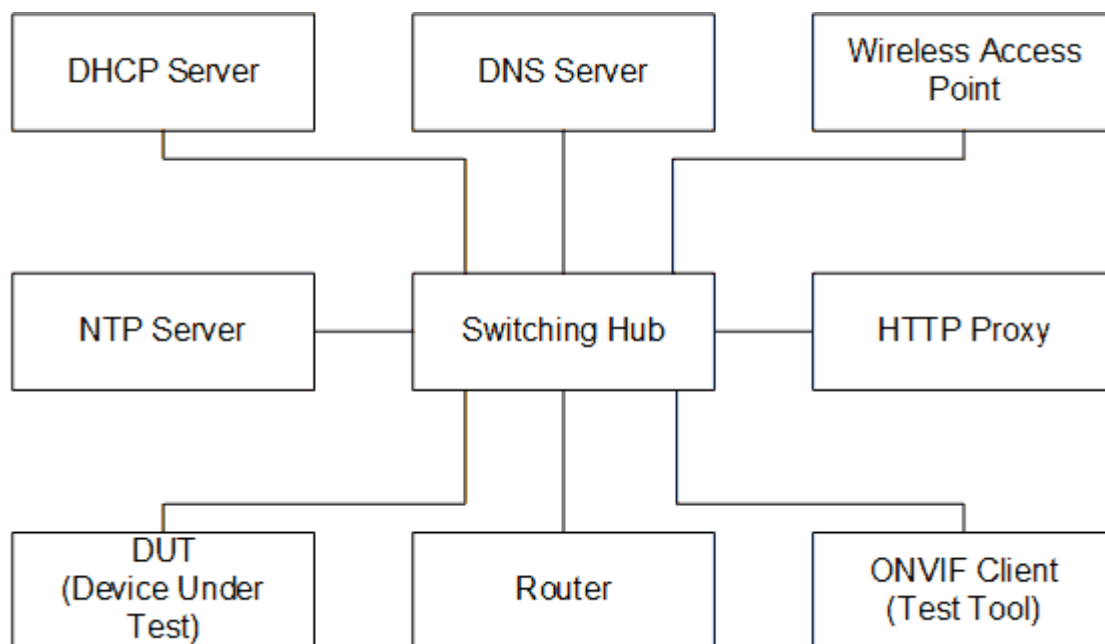
4.1 Test Setup

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



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").
4. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoEntity** SOAP 1.2 fault.

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-Requirement: 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 **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 **GetConfigurationsResponse** message.
- The DUT did not send a valid **GetConfigurationsResponse** message.
- The DUT did not send **GetConfigurationsResponse** message with valid Spaces and PTZTimeout.

5.1.2.4 PTZ CONFIGURATIONS AND PTZ CONFIGURATION CONSISTENCY

Test Case ID: PTZ-2-1-5**Specification Coverage:** GetConfigurations, GetConfiguration**Feature Under Test:** GetConfigurations, GetConfiguration**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 invokes **GetConfigurations** request to retrieve a list of PTZ Configurations from device.
4. The DUT sends **GetConfigurationsResponse** message.
5. ONVIF Client invokes **GetConfiguration** message (ConfigurationToken) to retrieve parameters of PTZ configuration from device.
6. The DUT sends **GetConfigurationResponse** message.
7. Check that all parameters values in **GetConfigurationResponse** message are same as in the **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.
 - DefaultAbsolutePantTiltPositionSpace 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.RelativePanTiltTranlationSpace from **GetNodesResponse** message.
 - DefaultRelativeZoomTranslationSpace from PTZConfiguration is not included in one of SupportedPTZSpaces.RelativeZoomTranlationSpace 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:
 - DefaultAbsolutePanTiltPositionSpace 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.RelativePanTiltTranlationSpace from **GetConfigurationOptions** message.
 - DefaultRelativeZoomTranslationSpace from PTZConfiguration is not included in one of Spaces.RelativeZoomTranlationSpace 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.
4. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault.

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-Requirement: 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-Requirement: 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](#).
 - 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 will invoke **GetConfigurationOptions** request to retrieve PTZConfigurationOptions.
5. Verify that DUT returns **GetConfigurationOptionsResponse** message with valid Spaces and PTZTimeout, and has the function of Absolute movement
 - PTZConfigurationOptions =: *ptzConfigurationOptions*
6. 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 *absolutPantiltSpaceOptins* - Options for Absolute Pan/Tilt Position Default Space
 - out *absolutZoomSpaceOptins* - Options for Absolute Zoom Position Default Space
7. ONVIF Client will invoke **GetStatus** request to get a current PTZStatus.
8. The DUT returns a current PTZStatus in the **GetStatusResponse** message.
9. 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.
10. If ONVIF Client invoked **AbsoluteMove** request for PanTilt, verify that DUT returns **AbsoluteMoveResponse** message indicating success.
11. 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.
12. If ONVIF Client invoked **AbsoluteMove** request for Zoom, verify that DUT returns **AbsoluteMoveResponse** message indicating success.

13. ONVIF Client will invoke **GetStatus** request to get a current PTZStatus.
14. Verify that the DUT moves to the specified position by **GetStatusResponse** message.
15. ONVIF Client invokes **GetStatus** request with parameters
 - ProfileToken := *profile.@token*
16. The DUT responds with **GetStatusResponse** with parameters
 - PTZStatus =: *ptzStatus*
17. If the DUT supports Status Position:
 - 17.1. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:
 - 17.1.1. If *ptzStatus.Position.PanTilt* is not specified, FAIL the test and skip other steps.
 - 17.1.2. If difference between *Position.PanTilt.x* value from step 9 and *ptzStatus.Position.PanTilt.x* is more than 10% of full range, write WARNING.
 - 17.1.3. If difference between *Position.PanTilt.y* value from step 9 and *ptzStatus.Position.PanTilt.y* is more than 10% of full range, write WARNING.
 - 17.1.4. If *ptzStatus.Position.PanTilt.space* is not equal to *absolutPantiltSpaceOptins.URI*, FAIL the test and skip other steps.
 - 17.1.5. Set *maxPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Max*.
 - 17.1.6. Set *minPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Min*.
 - 17.1.7. Set *maxPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Max*.
 - 17.1.8. Set *minPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Min*.
 - 17.1.9. If *ptzStatus.Position.PanTilt.x* is more than *maxPanTiltX*, FAIL the test and skip other steps.

- 17.1.10. If *ptzStatus.Position.PanTilt.x* is less than *minPanTiltX*, FAIL the test and skip other steps.
- 17.1.11. If *ptzStatus.Position.PanTilt.y* is more than *maxPanTiltY*, FAIL the test and skip other steps.
- 17.1.12. If *ptzStatus.Position.PanTilt.y* is less than *minPanTiltY*, FAIL the test and skip other steps.
- 17.2. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:
- 17.2.1. If *ptzStatus.Position.Zoom* is not specified, FAIL the test and skip other steps.
- 17.2.2. If difference between *Position.Zoom.x* value from step 11 and *ptzStatus.Position.Zoom.x* is more than 10% of full range, write WARNING.
- 17.2.3. If *ptzStatus.Position.Zoom.space* is not equal to *absolutZoomSpaceOptins.URI*, FAIL the test and skip other steps.
- 17.2.4. Set *maxZoomX* := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Max* if it is specified, otherwise, *absolutZoomSpaceOptins.XRange.Max*.
- 17.2.5. Set *minZoomX* := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Min* if it is specified, otherwise, *absolutZoomSpaceOptins.XRange.Min*.
- 17.2.6. If *ptzStatus.Position.Zoom.x* is more than *maxZoomX*, FAIL the test and skip other steps.
- 17.2.7. If *ptzStatus.Position.Zoom.x* is less than *minZoomX*, FAIL the test and skip other steps.

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.

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.

5.2.1.2 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-Requirement: 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)"]).
7. The DUT returns **env:Sender/ter:InvalidArgVal/ter:InvalidPosition** SOAP 1.2 fault.

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.
 - PTZConfigurationOptions =: *ptzConfigurationOptions*
6. 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 *absolutPantiltSpaceOptins* - Options for Absolute Pan/Tilt Position Default Space
 - out *absolutZoomSpaceOptins* - Options for Absolute Zoom Position Default Space
7. ONVIF Client will invoke **GetStatus** request to get a current PTZStatus.
8. DUT returns a current PTZStatus in the **GetStatusResponse** message.
9. 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.
10. If ONVIF Client invoked **RelativeMove** request for PanTilt, verify that DUT returns **RelativeMoveResponse** message indicating success.
11. 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.

12. If ONVIF Client invoked **RelativeMove** request for Zoom, verify that DUT returns **RelativeMoveResponse** message indicating success.

13. ONVIF Client will invoke **GetStatus** request to get a current PTZStatus.

14. Verify that DUT moves to the specified position by **GetStatusResponse** message.

15. If the DUT supports Status Position:

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

- ProfileToken := *profile.@token*

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

- PTZStatus =: *ptzStatus*

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

15.3.1. If *ptzStatus.Position.PanTilt* is not specified, FAIL the test and skip other steps.

15.3.2. If *ptzStatus.Position.PanTilt.space* is not equal to *absolutPantiltSpaceOptins.URI*, FAIL the test and skip other steps.

15.3.3. Set *maxPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Max*.

15.3.4. Set *minPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Min*.

15.3.5. Set *maxPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Max*.

15.3.6. Set *minPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Min*.

15.3.7. If *ptzStatus.Position.PanTilt.x* is more than *maxPanTiltX*, FAIL the test and skip other steps.

- 15.3.8. If *ptzStatus.Position.PanTilt.x* is less than *minPanTiltX*, FAIL the test and skip other steps.
- 15.3.9. If *ptzStatus.Position.PanTilt.y* is more than *maxPanTiltY*, FAIL the test and skip other steps.
- 15.3.10. If *ptzStatus.Position.PanTilt.y* is less than *minPanTiltY*, FAIL the test and skip other steps.
- 15.4. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:
- 15.4.1. If *ptzStatus.Position.Zoom* is not specified, FAIL the test and skip other steps.
- 15.4.2. If *ptzStatus.Position.Zoom.space* is not equal to *absolutZoomSpaceOptins.URI*, FAIL the test and skip other steps.
- 15.4.3. Set *maxZoomX* := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Max* if it is specified, otherwise, *absolutZoomSpaceOptins.XRange.Max*.
- 15.4.4. Set *minZoomX* := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Min* if it is specified, otherwise, *absolutZoomSpaceOptins.XRange.Min*.
- 15.4.5. If *ptzStatus.Position.Zoom.x* is more than *maxZoomX*, FAIL the test and skip other steps.
- 15.4.6. If *ptzStatus.Position.Zoom.x* is less than *minZoomX*, FAIL the test and skip other steps.

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.
 - PTZConfigurationOptions =: *ptzConfigurationOptions*
5. Verify that DUT returns **GetConfigurationOptionsResponse** message with valid Spaces and PTZTimeout, and has the function of Continuous movement.

6. 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 *absolutPantiltSpaceOptins* - Options for Absolute Pan/Tilt Position Default Space
 - out *absolutZoomSpaceOptins* - Options for Absolute Zoom Position Default Space
7. 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).
8. If ONVIF Client invoked **ContinuousMove** request for PanTilt, verify that DUT returns **ContinuousMoveResponse** message indicating success.
9. If ONVIF Client invoked **ContinuousMove** request for PanTilt, ONVIF Client will invoke **GetStatus** request to get a current PTZStatus after 60 second.
10. If ONVIF Client invoked **ContinuousMove** request for PanTilt, verify that the DUT returns **GetStatusResponse** message with MoveStatus = IDLE or UNKNOWN.
11. 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).
12. If ONVIF Client invoked **ContinuousMove** request for Zoom, verify that DUT returns **ContinuousMoveResponse** message indicating success.
13. If ONVIF Client invoked **ContinuousMove** request for Zoom, ONVIF Client will invoke **GetStatus** request to get a current PTZStatus after 60 second.
14. If ONVIF Client invoked **ContinuousMove** request for PanTilt, verify that the DUT returns **GetStatusResponse** message with MoveStatus = IDLE or UNKNOWN.
15. If the DUT supports Status Position:
 - 15.1. ONVIF Client invokes **GetStatus** request with parameters
 - ProfileToken := *profile.@token*
 - 15.2. The DUT responds with **GetStatusResponse** with parameters

- PTZStatus =: *ptzStatus*

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

15.3.1. If *ptzStatus.Position.PanTilt* is not specified, FAIL the test and skip other steps.

15.3.2. If *ptzStatus.Position.PanTilt.space* is not equal to *absolutPantiltSpaceOptins.URI*, FAIL the test and skip other steps.

15.3.3. Set *maxPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Max*.

15.3.4. Set *minPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Min*.

15.3.5. Set *maxPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Max*.

15.3.6. Set *minPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Min*.

15.3.7. If *ptzStatus.Position.PanTilt.x* is more than *maxPanTiltX*, FAIL the test and skip other steps.

15.3.8. If *ptzStatus.Position.PanTilt.x* is less than *minPanTiltX*, FAIL the test and skip other steps.

15.3.9. If *ptzStatus.Position.PanTilt.y* is more than *maxPanTiltY*, FAIL the test and skip other steps.

15.3.10. If *ptzStatus.Position.PanTilt.y* is less than *minPanTiltY*, FAIL the test and skip other steps.

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

15.4.1. If *ptzStatus.Position.Zoom* is not specified, FAIL the test and skip other steps.

15.4.2. If *ptzStatus.Position.Zoom.space* is not equal to *absolutZoomSpaceOptins.URI*, FAIL the test and skip other steps.

- 15.4.3. Set $maxZoomX$:= $profile.Configurations.PTZ.ZoomLimits.Range.XRange.Max$ if it is specified, otherwise, $absolutZoomSpaceOptins.XRange.Max$.
- 15.4.4. Set $minZoomX$:= $profile.Configurations.PTZ.ZoomLimits.Range.XRange.Min$ if it is specified, otherwise, $absolutZoomSpaceOptins.XRange.Min$.
- 15.4.5. If $ptzStatus.Position.Zoom.x$ is more than $maxZoomX$, FAIL the test and skip other steps.
- 15.4.6. If $ptzStatus.Position.Zoom.x$ is less than $minZoomX$, FAIL the test and skip other steps.

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, verify that the DUT returns **StopResponse** message indicating success.
10. If ONVIF Client invoked **ContinuousMove** request for PanTilt, ONVIF Client will invoke **GetStatus** request to get a current PTZStatus.
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 **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. Move the DUT so that it is not at PTZPosition X (e.g. using **AbsoluteMove** request Y).
8. ONVIF Client sends **GotoPreset** request (PresetToken = "A").
9. The DUT goes to the preset PTZ position and sends a **GotoPresetResponse** 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.
11. 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 with a PresetToken.
- The DUT did not go to the correct position after **GotoPreset** request was sent.
- The DUT did not send **GotoPresetResponse** message.

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

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 **GetStatusResponse** message 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.

5.2.2.3 REMOVE PRESET

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 of 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 contains 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

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

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:
- 4.19.1f difference between *ptzStatus2.Position.PanTilt.x* and *ptzStatus1.Position.PanTilt.x* is more than 10% of full range, write WARNING.
- 4.19.2f 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:
- 4.20.1f 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.

5.2.4 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-Requirement: 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-Requirement: 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-Requirement: 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 *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 *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 *absolutPantiltSpaceOptins* - Options for Absolute Pan/Tilt Position Default Space
 - out *absolutZoomSpaceOptins* - Options for Absolute Zoom Position Default Space
9. ONVIF Client changes 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 *absolutPantiltSpaceOptins* - Options for Absolute Pan/Tilt Position Default Space
 - in *absolutZoomSpaceOptins* - 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.XRRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRRange.Max*
 - Position.PanTilt.y := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Max*
 - Position.PanTilt.space := *absolutPantiltSpaceOptins.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.XRRange.Max* if it is specified, otherwise, *absolutZoomSpaceOptins.XRRange.Max*
- Position.Zoom.space := *absolutZoomSpaceOptins.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].XRRange.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 **GetStatus** request with parameters

- ProfileToken := *profile.@token*

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

- 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.

14.1.4. If *ptzStatus.Position.PanTilt.space* is not equal to *absolutPantiltSpaceOptins.URI*, FAIL the test and skip other steps.

- 14.1.5. Set *maxPanTiltX* :=
profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Max if it is specified,
otherwise, *absolutPantiltSpaceOptins.XRange.Max*.
- 14.1.6. Set *minPanTiltX* :=
profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min if it is specified,
otherwise, *absolutPantiltSpaceOptins.XRange.Min*.
- 14.1.7. Set *maxPanTiltY* :=
profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max if it is specified,
otherwise, *absolutPantiltSpaceOptins.YRange.Max*.
- 14.1.8. Set *minPanTiltY* :=
profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min if it is specified,
otherwise, *absolutPantiltSpaceOptins.YRange.Min*.
- 14.1.9. If *ptzStatus.Position.PanTilt.x* is more than *maxPanTiltX*, FAIL the test and skip
other steps.
- 14.1.10. If *ptzStatus.Position.PanTilt.x* is less than *minPanTiltX*, FAIL the test and skip
other steps.
- 14.1.11. If *ptzStatus.Position.PanTilt.y* is more than *maxPanTiltY*, FAIL the test and skip
other steps.
- 14.1.12. If *ptzStatus.Position.PanTilt.y* is less than *minPanTiltY*, FAIL the test and skip
other steps.
- 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.
- 14.2.3. If *ptzStatus.Position.Zoom.space* is not equal to
absolutZoomSpaceOptins.URI, FAIL the test and skip other steps.
- 14.2.4. Set *maxZoomX* :=
profile.Configurations.PTZ.ZoomLimits.Range.XRange.Max if it is specified,
otherwise, *absolutZoomSpaceOptins.XRange.Max*.

14.2.5. Set *minZoomX* := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Min* if it is specified, otherwise, *absolutZoomSpaceOptins.XRange.Min*.

14.2.6. If *ptzStatus.Position.Zoom.x* is more than *maxZoomX*, FAIL the test and skip other steps.

14.2.7. If *ptzStatus.Position.Zoom.x* is less than *minZoomX*, FAIL the test and skip other steps.

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.
8. If the DUT supports Status Position:
 - 8.1. 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 *absolutPanTiltSpaceOptins* - Options for Absolute Pan/Tilt Position Default Space
 - out *absolutZoomSpaceOptins* - Options for Absolute Zoom Position Default Space
9. Set *moveTimeout* := MIN(MAX(PT30S, *ptzConfigurationOptions*.PTZTimeout.Min), *ptzConfigurationOptions*.PTZTimeout.Max)
10. 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
11. If the DUT supports Continuous Pan/Tilt Movement for PTZ Node selected on Management tab:
- 11.1. 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*
- 11.2. The DUT responds with **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 **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 Continuous Zoom Movement for PTZ Node selected on Management tab:

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

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

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

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

11.4.1.6. If *ptzStatus.MoveStatus.PanTilt* = IDLE, got to the step 11.

11.4.2. 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.

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

12.1. 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 := *moveTimeout*

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

12.3. Wait until *moveTimeout* + *timeout1* timeout expires.

12.4. If the DUT supports Move Status:

12.4.1. Until *moveTimeout* + *timeout1* timeout expires repeat the following steps:

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

- ProfileToken := *profile.@token*

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

- PTZStatus =: *ptzStatus*

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

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

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

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

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

12.4.1.6. If *ptzStatus.MoveStatus.Zoom* = IDLE, got to the step 12.

12.4.2. If *moveTimeout* + *timeout1* timeout expires for step 11.4.1 and the last *ptzStatus.MoveStatus.Zoom* is other than IDLE, FAIL the test and skip other steps.

13. If the DUT supports Status Position:

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

- ProfileToken := *profile.@token*

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

- PTZStatus =: *ptzStatus*

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

13.3.1. If *ptzStatus.Position.PanTilt* is not specified, FAIL the test and skip other steps.

13.3.2. If *ptzStatus.Position.PanTilt.space* is not equal to *absolutPantiltSpaceOptins.URI*, FAIL the test and skip other steps.

13.3.3. Set *maxPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Max*.

13.3.4. Set *minPanTiltX* := *profile.Configurations.PTZ.PanTiltLimits.Range.XRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.XRange.Min*.

13.3.5. Set *maxPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Max*.

13.3.6. Set *minPanTiltY* := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Min* if it is specified, otherwise, *absolutPantiltSpaceOptins.YRange.Min*.

13.3.7. If *ptzStatus.Position.PanTilt.x* is more than *maxPanTiltX*, FAIL the test and skip other steps.

13.3.8. If *ptzStatus.Position.PanTilt.x* is less than *minPanTiltX*, FAIL the test and skip other steps.

13.3.9. If *ptzStatus.Position.PanTilt.y* is more than *maxPanTiltY*, FAIL the test and skip other steps.

13.3.10. If *ptzStatus.Position.PanTilt.y* is less than *minPanTiltY*, FAIL the test and skip other steps.

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

13.4.1. If *ptzStatus.Position.Zoom* is not specified, FAIL the test and skip other steps.

13.4.2. If *ptzStatus.Position.Zoom.space* is not equal to *absolutZoomSpaceOptins.URI*, FAIL the test and skip other steps.

13.4.3. Set *maxZoomX* := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Max* if it is specified, otherwise, *absolutZoomSpaceOptins.XRange.Max*.

13.4.4. Set *minZoomX* := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Min* if it is specified, otherwise, *absolutZoomSpaceOptins.XRange.Min*.

13.4.5. If *ptzStatus.Position.Zoom.x* is more than *maxZoomX*, FAIL the test and skip other steps.

13.4.6. If *ptzStatus.Position.Zoom.x* is less than *minZoomX*, FAIL the test and skip other steps.

14. If Media Profile *profile* was changed at step 3 or 8.1, 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 **ContinuousMoveResponse** message.

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

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.

5.3.1.3 PTZ CONTINUOUS MOVE & STOP USING MEDIA2 PROFILE

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
 - 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.
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
 - ProfileToken := *profile.@token*
 - 9.7.1.2. The DUT responds with **GetStatusResponse** with parameters
 - PTZStatus =: *ptzStatus*

- 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.
 - 9.7.1.6. If *ptzStatus.MoveStatus.PanTilt* = IDLE, got to the step 10.
- 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.

10.7.1.6. If *ptzStatus.MoveStatus.Zoom* = IDLE, got to the step 11.

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 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 *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/tpz/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/tpz/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 $x1 := \frac{\text{profile.Configurations.PTZ.PanTiltLimits.XRange.Min} + (\text{profile.Configurations.PTZ.PanTiltLimits.XRange.Max} - \text{profile.Configurations.PTZ.PanTiltLimits.XRange.Min})}{3}$ + -
- set $y1 := \frac{\text{profile.Configurations.PTZ.PanTiltLimits.YRange.Min} + (\text{profile.Configurations.PTZ.PanTiltLimits.YRange.Max} - \text{profile.Configurations.PTZ.PanTiltLimits.YRange.Min})}{3}$ + -

otherwise:

- set $x1 := \frac{\text{pantiltSpace.XRRange.Min} + (\text{pantiltSpace.XRRange.Max} - \text{pantiltSpace.XRRange.Min})}{3}$ + -
- set $y1 := \frac{\text{pantiltSpace.YRange.Min} + (\text{pantiltSpace.YRange.Max} - \text{pantiltSpace.YRange.Min})}{3}$ + -

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 $z1 := \text{profile.Configurations.PTZ.ZoomLimits.XRRange.Min}$

otherwise:

- set $z1 := \text{zoomSpace.XRRange.Min}$

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. 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 contains PTZPosition.Zoom, FAIL the test and skip other steps.

24.2. If 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* := *profile.Configurations.PTZ.PanTiltLimits.XRRange.Max* -
(*profile.Configurations.PTZ.PanTiltLimits.XRRange.Max* -
profile.Configurations.PTZ.PanTiltLimits.XRRange.Min)/3
- set *y2* := *profile.Configurations.PTZ.PanTiltLimits.YRange.Max* -
(*profile.Configurations.PTZ.PanTiltLimits.YRange.Max* -
profile.Configurations.PTZ.PanTiltLimits.YRange.Min)/3

otherwise:

- set *x2* := *pantiltSpace.XRRange.Max* - (*pantiltSpace.XRRange.Max* -
pantiltSpace.XRRange.Min)/3
- set *y2* := *pantiltSpace.YRange.Max* - (*pantiltSpace.YRange.Max* -
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* := *profile.Configurations.PTZ.ZoomLimits.XRRange.Max*

otherwise:

- set *z2* := *zoomSpace.XRRange.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*
- Position.Zoom.space := *zoomSpace.URI*

- Speed skipped
28. The DUT responds with **AbsoluteMoveResponse** message.
29. Wait until *timeout1* timeout expires.
30. ONVIF Client invokes **SetPreset** request with parameters
- ProfileToken := *profile.@token*
 - PresetName := "Test"
 - PresetToken := *presetToken1*
31. The DUT responds with **SetPresetResponse** with parameters
- PresetToken =: *presetToken2*
32. ONVIF Client invokes **GetPresets** request with parameters
- ProfileToken := *profile.@token*
33. The DUT responds with **GetPresetsResponse** with parameters
- Preset list =: *presetList2*
34. If *presetList2* does not contain item with @token = *presetToken1*, FAIL the test and skip other steps.
35. Set *preset* := item from *presetList2* with @token = *presetToken1*.
36. If *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 *preset* does not contains PTZPosition.PanTilt, FAIL the test and skip other steps.
 - 37.2. If difference between *preset.PTZPosition.PanTilt.x* and *x2* is more than 10% of full range, write WARNING.
 - 37.3. If difference between *preset.PTZPosition.PanTilt.y* and *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 *preset* does not contains PTZPosition.Zoom, FAIL the test and skip other steps.
 - 38.2. If difference between *preset.PTZPosition.Zoom.x* and *z2* is more than 10% of full range, write WARNING.

39. ONVIF Client invokes **RemovePreset** request with parameters

- ProfileToken := *profile.@token*
- PresetToken := *presetToken2*

40. The DUT responds with **RemovePresetResponse** message.

41. If PTZ Configuration *profile.Configurations.PTZ* was changed at step 10, ONVIF Client restores PTZ Configuration.

42. 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 **RemovePresetResponse** message.
- DUT did not send **GetPresetsResponse** 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: 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: *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.

5.3.2.2 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 *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
 - 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 *x1* := *profile.Configurations.PTZ.PanTiltLimits.XRange.Min*
 - set *y1* := *profile.Configurations.PTZ.PanTiltLimits.YRange.Min*
- otherwise:
- set *x1* := *panTiltSpace.XRange.Min*
 - set *y1* := *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 *z1* := *profile.Configurations.PTZ.ZoomLimits.XRange.Min*
- otherwise:

- set *z1* := *zoomSpace.XRRange.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 *ptzStatus.MoveStatus.Zoom* = UNKNOWN, FAIL the test and skip other steps.

16.1.5. If *ptzStatus.MoveStatus.PanTilt* = IDLE or skipped and *ptzStatus.MoveStatus.Zoom* = IDLE or skipped, go to the step 17.

16.2. If *timeout1* expires for step 16.1 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.

17. ONVIF Client invokes **SetPreset** request with parameters

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

18. The DUT responds with **SetPresetResponse** with parameters

- PresetToken =: *presetToken1*

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

19.1. 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*

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

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

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

otherwise:

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

21. 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

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

26. The DUT responds with **GotoPresetResponse** message.

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 **GetStatus** request with parameters
- ProfileToken := *profile.@token*
30. The DUT responds with **GetStatusResponse** with parameters
- PTZStatus =: *ptzStatus*
31. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab and *ptzStatus.Position.PanTilt* is specified:
- 31.1. If difference between *x1* and *ptzStatus.Position.PanTilt.x* is more than 10% of full range, write WARNING.
- 31.2. If difference between *y1* and *ptzStatus.Position.PanTilt.y* is more than 10% of full range, write WARNING.
32. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab and *ptzStatus.Position.Zoom* is specified:
- 32.1. If difference between *z1* and *ptzStatus.Position.Zoom.x* is more than 10% of full range, write WARNING.
33. ONVIF Client invokes **RemovePreset** request with parameters
- ProfileToken := *profile.@token*
 - PresetToken := *presetToken1*
34. The DUT responds with **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.

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 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 *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/tpz/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/tpz/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 *x1* := *profile.Configurations.PTZ.PanTiltLimits.XRange.Min*
 - set *y1* := *profile.Configurations.PTZ.PanTiltLimits.YRange.Min*
- otherwise:
- set *x1* := *pantiltSpace.XRange.Min*
 - set *y1* := *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 *z1* := *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. 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 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 *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. ONVIF Client invokes **GotoHomePosition** request with parameters
 - ProfileToken := *profile.@token*
 - Speed skipped
9. The DUT responds with **GotoHomePositionResponse** message.
10. Wait until *timeout1* timeout expires.
11. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:
 - 11.1. 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"
12. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:
 - 12.1. 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"

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 *x1* := *profile.Configurations.PTZ.PanTiltLimits.XRange.Max*
- set *y1* := *profile.Configurations.PTZ.PanTiltLimits.YRange.Max*

otherwise:

- set *x1* := *panTiltSpace.XRange.Max*
- set *y1* := *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 *z1* := *profile.Configurations.PTZ.ZoomLimits.XRange.Max*

otherwise:

- set *z1* := *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 *x1*, *y1* and if *ptzStatus1.Position.Zoom* is specified and equal to vector *z1*:

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

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

- set *x1* := *profile.Configurations.PTZ.PanTiltLimits.XRange.Min*

otherwise:

- set *x1* := 0

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

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

- set *z1* := *profile.Configurations.PTZ.ZoomLimits.XRange.Min*

otherwise:

- set *z1* := 0

19. 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

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

21. Wait until *timeout1* timeout expires.

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

- ProfileToken := *profile.@token*

23. The DUT returns **env:Receiver/ter:Action/ter:CannotOverwriteHome** SOAP 1.2 fault.

24. ONVIF Client invokes **GotoHomePosition** request with parameters

- ProfileToken := *profile.@token*

- Speed skipped
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 **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 first **GetStatusResponse** does not have to be exactly the same as the position in the second **GetStatusResponse**.

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: *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.

5.3.3.3 PTZ – HOME POSITION OPERATIONS (USAGE OF FIXEDHOMEPOSITION FLAG) USING MEDIA2 PROFILE

Test Case ID: MEDIA2_PTZ-3-1-3

Specification Coverage: None

Feature Under Test: SetHomePosition

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

- 4.8. 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
- 4.12.2. The DUT responds with **GotoHomePositionResponse** message.
- 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:

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

4.19.2f 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:

4.20.1f 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

- 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.XRRange.Min if it is specified, otherwise, *sphericalSpace*.XRRange.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.XRRange.Max if it is specified, otherwise, *sphericalSpace*.XRRange.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.XRRange.Max* if it is specified, otherwise, *genericSpace.XRRange.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.XRRange.Min* if it is specified, otherwise, *genericSpace.XRRange.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.XRRange.Max* if it is specified, otherwise, *genericSpace.XRRange.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 *velocitySpace.YRange.Max* < *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 *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 invokes **ContinuousMove** request with parameters
 - ProfileToken := *profile.@token*
 - Velocity.PanTilt.x := *velocitySpace.XRange.Min*
 - Velocity.PanTilt.y := *velocitySpace.YRange.Min*
 - Velocity.PanTilt.space := *sphericalSpace.URI*
 - Velocity.Zoom skipped
 - Timeout skipped
- 5.7. The DUT responds with **ContinuousMoveResponse** message.
- 5.8. Wait until *timeout1* timeout expires.
- 5.9. ONVIF Client invokes **ContinuousMove** request with parameters
 - ProfileToken := *profile.@token*
 - Velocity.PanTilt.x := *velocitySpace.XRange.Max*
 - Velocity.PanTilt.y := *velocitySpace.YRange.Max*
 - Velocity.PanTilt.space := *sphericalSpace.URI*
 - Velocity.Zoom skipped
 - Timeout skipped
- 5.10. The DUT responds with **ContinuousMoveResponse** message.
- 5.11. Wait until *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

Name: HelperMediaProfileConfiguration_MediaService

Procedure Purpose: Helper procedure to find, create or configure 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.

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:MaxNVTPProfiles** SOAP 1.2 fault or with **CreateProfileResponse** message with parameters
 - Profile =: *clearProfile*
3. If DUT returns **env:Receiver/ter:Action/ter:MaxNVTPProfiles** 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:
 - 6.1. ONVIF Client invokes **GetConfigurations** request
 - 6.2. The DUT responds with **GetConfigurationsResponse** message with parameters
 - PTZConfiguration list =: *ptzConfigurationList*
 - 6.3. If *ptzConfigurationList* does not contain item with *ptzConfiguration.NodeToken* = *ptzNodeToken*, FAIL the test and skip other steps.
 - 6.4. For each Video Source Configuration *vsc* in *videoSourceConfigurationList1* repeat the following steps:
 - 6.4.1. ONVIF Client invokes **AddVideoSourceConfiguration** request with parameters
 - ProfileToken := *clearProfile.@token*
 - ConfigurationToken := *vsc.@token*
 - 6.4.2. The DUT responds with **AddVideoSourceConfigurationResponse** message.
 - 6.4.3. For each PTZ Configuration *ptzConfiguration* with NodeToken = *ptzNodeToken* in *ptzConfigurationList* repeat the following steps:
 - 6.4.3.1. ONVIF Client invokes **AddPTZConfiguration** request with parameters
 - ProfileToken := *clearProfile.@token*
 - ConfigurationToken := *ptzConfiguration.@token*
 - 6.4.3.2. The DUT responds with **AddPTZConfigurationResponse** message or with **SOAP fault** message.

6.4.3.3. If **AddPTZConfigurationResponse** message was returned at step 6.4.3.2, go to step 6.5.

6.5. 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

- ProfileToken := *clearProfile.@token*

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*).

Returns: Supporting of Continuous Pan/Tilt movement (*continuousPanTilt*). Supporting of Continuous Zoom movement (*continuousZoom*). Supporting of Absolute Pan/Tilt movement (*absolutePanTilt*). Supporting of Absolute Zoom movement (*absoluteZoom*). Supporting of Relative Pan/Tilt movement (*relativePanTilt*). Supporting of Relative Zoom movement (*relativeZoom*).

Procedure:

1. Set the following:
 - 1.1. *continuousPanTilt* := false
 - 1.2. *continuousZoom* := false
 - 1.3. *absolutePanTilt* := false
 - 1.4. *absoluteZoom* := false
 - 1.5. *relativePanTilt* := false
 - 1.6. *relativeZoom* := 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.RelativePanTiltTranlation set *relativePanTilt* := true
7. If *ptzNode* contains at least one SupportedPTZSpaces.RelativeZoomTranlationSpace set *relativeZoom* := true

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- None.

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.

Input: Media Profile with PTZ Configuration (*profile*). PTZ Configuration Options (*ptzConfigurationOptions*). Supporting of Absolute Pan/Tilt movement (*absolutePanTilt*). Supporting of Absolute Zoom movement (*absoluteZoom*). Supporting of Continuous Pan/Tilt movement (*continuousPanTilt*). Supporting of Continuous Zoom movement (*continuousZoom*). Supporting of Relative Pan/Tilt movement (*relativePanTilt*). Supporting of Relative Zoom movement (*relativeZoom*).

Returns: None.

Procedure:

1. If *continuousPanTilt* = true or *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 *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 minimum using absolute movement by following the procedure mentioned in [Annex A.10](#) 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
 - Return to test procedure.
3. If *relativePanTilt* = true or *relativeZoom* = true:
- If *relativePanTilt* = true:

3.1. Set *panTiltSpace* :=
ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace[genericPanTiltSpace],
 where *genericPanTiltSpace* is the index number of the first item on the
ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace list that has URI =
 "http://www.onvif.org/ver10/tpz/PanTiltSpaces/TranslationGenericSpace"

- If *relativeZoom* = true:

3.1. Set *zoomSpace* :=
ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace[genericZoomSpace],
 where *genericZoomSpace* is the index number of the first item on the
ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace list that has URI =
 "http://www.onvif.org/ver10/tpz/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 *profile* - Media Profile with PTZ Configuration
 - in *panTiltSpace* - Options for Relative Pan/Tilt Position Default Space
 - in *zoomSpace* - Options for Relative Zoom Position Default Space
 - in *relativePanTilt* - Supporting of Relative Pan/Tilt movement
 - in *relativeZoom* - Supporting of Relative Zoom movement
- Return to test procedure.

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.

Input: PTZ Configuration Options (*ptzConfigurationOptions*). Media Profile with PTZ Configuration (*profile*). Supporting of Continuous Pan/Tilt movement (*continuousPanTilt*). Supporting of Continuous Zoom movement (*continuousZoom*).

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.

Input: Pan/Tilt Space (`panTiltSpace`). Zoom Space (`zoomSpace`). Media Profile with PTZ Configuration (`profile`). Supporting of Absolute Pan/Tilt movement (`absolutePanTilt`). Supporting of Absolute Zoom movement (`absoluteZoom`).

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.XRRange.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.

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.XRRange.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 **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 –**

- DUT passes all assertions.

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.12 Change PTZ Position to Maximum Position

Name: HelperMoveToMaxPosition

Procedure Purpose: Helper procedure to change PTZ position to maximum position for PTZ test cases.

Pre-requisite: None.

Input: Media Profile with PTZ Configuration (*profile*). PTZ Configuration Options (*ptzConfigurationOptions*). Supporting of Absolute Pan/Tilt movement (*absolutePanTilt*). Supporting of Absolute Zoom movement (*absoluteZoom*). Supporting of Continuous Pan/Tilt movement (*continuousPanTilt*). Supporting of Continuous Zoom movement (*continuousZoom*). Supporting of Relative Pan/Tilt movement (*relativePanTilt*). Supporting of Relative Zoom movement (*relativeZoom*).

Returns: None.

Procedure:

1. If *continuousPanTilt* = true or *continuousZoom* = true:
 - ONVIF Client changes PTZ position to maximum using continuous movement by following the procedure mentioned in [Annex A.13](#) 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
 - 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 *zoomSpace* - Options for Absolute Zoom Position Default Space
 - Return to test procedure.
3. If *relativePanTilt* = true or *relativeZoom* = true:
- If *relativePanTilt* = true:

3.1. Set *panTiltSpace* := *ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace[genericPanTiltSpace]*, where *genericPanTiltSpace* is the index number of the first item on the *ptzConfigurationOptions.Spaces.RelativePanTiltPositionSpace* list that has URI = "http://www.onvif.org/ver10/tptz/PanTiltSpaces/TranslationGenericSpace"
 - If *relativeZoom* = true:

3.1. Set *zoomSpace* := *ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace[genericZoomSpace]*, where *genericZoomSpace* is the index number of the first item on the

ptzConfigurationOptions.Spaces.RelativeZoomPositionSpace list that has URI = "http://www.onvif.org/ver10/ptz/ZoomSpaces/TranslationGenericSpace"

- ONVIF Client changes PTZ position to maximum using relative movement by following the procedure mentioned in [Annex A.15](#) with the following input and output parameters
 - in *profile* - Media Profile with PTZ Configuration
 - in *panTiltSpace* - Options for Relative Pan/Tilt Position Default Space
 - in *zoomSpace* - Options for Relative Zoom Position Default Space
 - in *relativePanTilt* - Supporting of Relative Pan/Tilt movement
 - in *relativeZoom* - Supporting of Relative Zoom movement
- Return to test procedure.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- None.

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.

Input: PTZ Configuration Options (*ptzConfigurationOptions*). Media Profile with PTZ Configuration (*profile*). Supporting of Continuous Pan/Tilt movement (*continuousPanTilt*). Supporting of Continuous Zoom movement (*continuousZoom*).

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.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 (*panTiltSpace*). Zoom Space (*zoomSpace*). Media Profile with PTZ Configuration (*profile*). Supporting of Absolute Pan/Tilt movement (*absolutePanTilt*). Supporting of Absolute Zoom movement (*absoluteZoom*).

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.XRRange.Max* if it is specified, otherwise, *panTiltSpace.XRRange.Max*

- Position.PanTilt.y := *profile.Configurations.PTZ.PanTiltLimits.Range.YRange.Max* if it is specified, otherwise, *panTiltSpace.YRange.Max*
 - Position.PanTilt.space := *panTiltSpace.URI*
- otherwise, Position.PanTilt skipped.
- If *absoluteZoom* = true:
 - Position.Zoom.x := *profile.Configurations.PTZ.ZoomLimits.Range.XRange.Max* if it is specified, otherwise, *zoomSpace.XRange.Max*
 - 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.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 –**

- DUT passes all assertions.

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 =: *profileList*
3. If *profileList* is empty, FAIL the test and skip other steps.
4. If *profileList* contains Media Profile, which includes Configurations.PTZ.NodeToken = *ptzNodeToken*:
 - 4.1. Set *profile* := item from *profileList* list, which includes Configurations.PTZ.NodeToken = *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 =: *ptzConfigurationList*
 - 5.3. If *ptzConfigurationList* contains item with NodeToken = *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
 - Configuration[0].Token := *videoSourceConfigurationList[0]*
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 *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 *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 *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 *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 *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 *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 *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 (*absolutPantiltSpaceOptins*). Options for Absolute Zoom Position Default Space (*absolutZoomSpaceOptins*).

Procedure:

1. If the DUT supports Absolute Pan/Tilt Movement for PTZ Node selected on Management tab:
 - 1.1. If *ptzConfigurationOptions.Spaces* does not have at least one of the AbsolutePanTiltPositionSpace element, FAIL the test and skip other steps.
 - 1.2. Set *pantiltSpace* := *ptzConfigurationOptions.Spaces.AbsolutePanTiltPositionSpace[0]*.
 - 1.3. If *profile.Configurations.PTZ.DefaultAbsolutePantTiltPositionSpace* != *pantiltSpace.URI*:
 - 1.3.1. Set *profile.Configurations.PTZ.DefaultAbsolutePantTiltPositionSpace* := *pantiltSpace.URI*.
 - 1.3.2. Set *updateNeeded* := true.
 - 1.4. If *profile.Configurations.PTZ.PanTiltLimits* is specified and *profile.Configurations.PTZ.PanTiltLimits.Range.URI* != *pantiltSpace.URI*:
 - 1.4.1. Set *profile.Configurations.PTZ.PanTiltLimits.Range* := *pantiltSpace*.
 - 1.4.2. Set *updateNeeded* := true.
2. If the DUT supports Absolute Zoom Movement for PTZ Node selected on Management tab:
 - 2.1. If *ptzConfigurationOptions.Spaces* does not have at least one of the AbsoluteZoomPositionSpace element, FAIL the test and skip other steps.
 - 2.2. Set *zoomSpace* := *ptzConfigurationOptions.Spaces.AbsoluteZoomPositionSpace[0]*.
 - 2.3. If *profile.Configurations.PTZ.DefaultAbsoluteZoomPositionSpace* != *zoomSpace.URI*:
 - 2.3.1. Set *profile.Configurations.PTZ.DefaultAbsoluteZoomPositionSpace* := *zoomSpace.URI*.
 - 2.3.2. Set *updateNeeded* := true.

- 2.4. If `profile.Configurations.PTZ.ZoomLimits` is specified and `profile.Configurations.PTZ.ZoomLimits.Range.URI != zoomSpace.URI`:
 - 2.4.1. Set `profile.Configurations.PTZ.ZoomLimits.Range := zoomSpace`.
 - 2.4.2. Set `updateNeeded := true`.
3. If `updateNeeded = true`:
 - 3.1. ONVIF Client invokes **SetConfiguration** request with parameters
 - `PTZConfiguration := profile.Configurations.PTZ`
 - 3.2. DUT responds with **SetConfigurationResponse** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

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

A.21 Absolute Move - Change PTZ Position to Initial State

Name: HelperAbsoluteMoveTestInitialPosition

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. 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) .

Input: Pan/Tilt Space (`panTiltSpace`). Zoom Space (`zoomSpace`). Media Profile with PTZ Configuration (`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*.URIotherwise, 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*.URIotherwise, 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 *ptzStatus*.MoveStatus.PanTilt = IDLE and if the DUT supports Absolute Zoom Movement 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.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 (*ptzConfigurationOptions*). Media Profile with PTZ Configuration (*profile*).

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 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 *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.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 (*ptzConfigurationOptions*). Media Profile with PTZ Configuration (*profile*).

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 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 *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"
5. If the DUT supports Absolute Zoom Movement:
 - 5.1. 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"

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **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 (*cap*).

Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.26 Delete Media Profile if Max Reached

Name: 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 *cap* - Media2 Service Capabilities
2. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
3. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
4. If number of items in *profileList* = *cap.ProfileCapabilities.MaximumNumberOfProfiles*:
 - 4.1. If *profileList* does not contain items with @fixed = false, FAIL the test and skip other steps.
 - 4.2. ONVIF Client invokes **DeleteProfile** request with parameters
 - Token := @token of item with @fixed = false from *profileList*
 - 4.3. The DUT responds with **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
 - Configurations list =: *videoSourceConfigurationList1*
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
 - Configuration[0].Token skipped
 - 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 of 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:MaxNVTPProfiles** SOAP 1.2 fault or with **CreateProfileResponse** message with parameters
 - Profile =: *profile*
3. If DUT returns **env:Receiver/ter:Action/ter:MaxNVTPProfiles** 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.