ONVIF®

PTZ Client Test Specification

Version 19.06

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REVISION HISTORY

Vers.	Date	Description
19.06	Jun 17, 2019	The following was done according to #309: 'Validated Feature' section for each feature updated to be synchronized with feature ID used in feature list. 'Feature Under Test' section for each test case updated to be synchronized with sub-feature ID used in feature list. 'Validated Feature List' test case section removed.
19.06	Apr 12, 2019	The follwing were changed according to #303: PTZ - Continuous Positioning Test Cases replaced with PTZ Pan Tilt Continuous Positioning Test Cases and PTZ Zoom Continuous Positioning Test Cases. PTZ STOP test case splitted up to PTZ PAN TILT STOP and PTZ ZOOM STOP test cases. Step [S3] is added in both test cases. Pre-Requisite is updated in both test cases. STOP MOVEMENT USING PTZ CONTINUOUS MOVE test case splitted up to STOP PAN TILT MOVEMENT USING PTZ CONTINUOUS MOVE and STOP ZOOM MOVEMENT USING PTZ CONTINUOUS MOVE. Pre-Requisite and NOTE are updated in both test cases. Steps for non-tested type of movement are removed. PTZ - Absolute Positioning Test Cases replaced with PTZ Pan Tilt Absolute Positioning Test Cases and PTZ Zoom Absolute Positioning Test Cases. PTZ - Relative Positioning Test Cases replaced with PTZ Pan Tilt Relative Positioning Test Cases and PTZ Zoom Relative Positioning Test Cases. Introduction section updated.
18.06	Jun 21, 2018	Reformatting document using new template
18.06	Apr 27, 2018	PTZ Using Media2 Absolute Positioning feature was replaced with the following features according to #244: PTZ Using Media2 Absolute Positioning - Spherical Position Space Degrees PTZ Using Media2 Absolute Positioning - Pan Tilt Position Generic Space PTZ Using Media2 Absolute Positioning - Zoom Position Generic Space PTZ Using Media2 Continuous Positioning feature was replaced with the following features according to #245: PTZ Using Media2 Pan Tilt Continuous Positioning PTZ Using Media2 Zoom Continuous Positioning

18.06	Apr 05, 2018	'Required Number of Devices Summary' Annex added according to #241
18.06	Feb 14, 2018	The following were updated in the scope of #241: Feature Level Requirement (updated with new rules) Each Feature Level Requirement (updated with Check Condition based on Device Features and Required Number of Devices)
17.12	Aug 15, 2017	Requirement level of Profile T of the following features was changed from Mandatory to Cconditional according to #220: PTZ Presets PTZ Home Position PTZ - Set Preset
17.06	Jun 15, 2017	Links in Normative references section were updated.
17.06	Jun 8, 2017	The following test cases added according to #201: PTZ Get Compatible Configurations Test Cases PTZ Media2 Profile Configuration Test Cases PTZ Set Configuration Test Cases
17.06	Jun 6, 2017	First issue of PTZ Client Test Specification. The following PTZ test cases moved from ONVIF Profile S Client Test Specification according to #194: PTZ - Listing PTZ - Configuration PTZ - Continuous Positioning PTZ - Absolute Positioning PTZ - Relative Positioning PTZ Presets PTZ Home Position PTZ - Auxiliary Command PTZ - Auxiliary Command The following PTZ test cases moved from ONVIF Profile T Client Test Specification according to #194: PTZ Using Media2 Absolute Positioning PTZ Using Media2 Continuous Positioning PTZ - Set Preset Annex A.1 Get default PTZ space of PTZ Configuration corresponding to Move Operation

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1 Introduction

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

This particular document defines test cases required for testing PTZ features of a Client application e.g. PTZ listing, configuration, continuous positioning, absolute positioning, relative positioning, presets, home position, and PTZ auxiliary command. It also describes the test framework, test setup, prerequisites, test policies needed for the execution of the described test cases.

1.1 Scope

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

The principal intended purposes are:

- Provide self-assessment tool for implementations.
- Provide comprehensive test suite coverage for PTZ Service features.

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

- Product use cases and non-functional (performance and regression) testing and analysis.
- SOAP Implementation Interoperability test i.e. Web Services Interoperability Basic Profile version 2.0 (WS-I BP2.0).
- Network protocol implementation Conformance test for HTTPS, HTTP, RTP and RTSP protocols.

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

1.2 PTZ - Listing

PTZ - Listing section specifies Client ability to read PTZ capabilities.

1.3 PTZ - Configuration

PTZ - Configuration section specifies Client ability to add PTZ configuration to a media profile.

1.4 PTZ Pan Tilt Continuous Positioning

PTZ Pan Tilt Continuous Move section specifies Client ability to move a PTZ Device using ContinuousMove operation for Pan Tilt and stop ongoing pan tilt movement using Stop operation or sending zero values for Pan/Tilt.

1.5 PTZ Zoom Continuous Positioning

PTZ Zoom Continuous Move section specifies Client ability to move a PTZ Device using ContinuousMove operation for Zoom and stop ongoing pan tilt movement using Stop operation or sending zero values for Zoom.

1.6 PTZ Pan Tilt Absolute Positioning

PTZ Pan Tilt Absolute Positioning section specifies Client ability to move a PTZ Device using the AbsoluteMove operation for Pan Tilt.

1.7 PTZ Zoom Absolute Positioning

PTZ Zoom Absolute Positioning section specifies Client ability to move a PTZ Device using the AbsoluteMove operation for Zoom.

1.8 PTZ Pan Tilt Relative Positioning

PTZ Pan Tilt Relative Positioning section specifies Client ability to move a PTZ Device using the RelativeMove operation for Pan Tilt.

1.9 PTZ Zoom Relative Positioning

PTZ Zoom Relative Positioning section specifies Client ability to move a PTZ Device using the RelativeMove operation for Zoom.

1.10 PTZ Presets

PTZ Presets section specifies Client ability to list the presets of a PTZ Node and move a PTZ Device to a specific preset.

1.11 PTZ Home Position

PTZ Home Position section specifies Client ability to move a PTZ Device to its home position.

1.12 PTZ - Auxiliary Command

PTZ - Auxiliary Command section specifies Client ability to send auxiliary commands to a PTZ Device.

1.13 PTZ Using Media2 Absolute Positioning - Spherical Position Space Degrees

PTZ Using Media2 Absolute Positioning - Spherical Position Space Degrees section specifies Client ability to move a PTZ Device using the AbsoluteMove operation for Media2 profile with Spherical Position Space.

1.14 PTZ Using Media2 Absolute Positioning - Pan Tilt Position Generic Space

PTZ Using Media2 Absolute Positioning Test Cases - Pan Tilt Position Generic Space section specifies Client ability to move a PTZ Device using the Pan Tilt AbsoluteMove operation for Media2 profile with Generic Space.

1.15 PTZ Using Media2 Absolute Positioning - Zoom Position Generic Space

PTZ Using Media2 Absolute Positioning Test Cases - Zoom Position Generic Space section specifies Client ability to move a PTZ Device using the Zoom AbsoluteMove operation for Media2 profile with Generic Space.

1.16 PTZ Using Media2 Pan Tilt Continuous Positioning

PTZ Using Media2 Pan Tilt Continuous Positioning section specifies Client ability to move a PTZ Device using pan tilt ContinuousMove operation for Media2 profile.

1.17 PTZ Using Media2 Zoom Continuous Positioning

PTZ Using Media2 Zoom Continuous Positioning section specifies Client ability to move a PTZ Device using zoom ContinuousMove operation for Media2 profile.

1.18 PTZ - Set Preset

PTZ - Set Preset section specifies Client ability to store a preset.

1.19 PTZ Get Compatible Configurations

PTZ Get Compatible Configurations specifies Client ability to get PTZ configurations compatible with media profile from the device.

1.20 PTZ Media2 Profile Configuration

PTZ Media2 Profile Configuration specifies Client ability to add compatible with media profile PTZ configuration to a Media2 profile.

1.21 PTZ Set Configuration

PTZ Set Configuration specifies Client ability to modify PTZ configuration on the device.

2 Normative references

- ONVIF Conformance Process Specification:

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

- ONVIF Profile Policy:

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

- ONVIF Core Specifications:

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

- ONVIF Core Client Test Specification:

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

- ONVIF PTZ Service Specification:

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

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

  www.iso.org/directives

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

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

- W3C SOAP 1.2, Part 1, Messaging Framework:

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

- W3C XML Schema Part 1: Structures Second Edition:

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

- W3C XML Schema Part 2: Datatypes Second Edition:

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

- W3C Web Services Addressing 1.0 – Core:

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

3 Terms and Definitions

3.1 Conventions

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

3.2 Definitions

This section describes terms and definitions used in this document.

Address	An address refers to a URI.
Profile	See ONVIF Profile Policy.
ONVIF Device	Computer appliance or software program that exposes one or multiple ONVIF Web Services.
ONVIF Client	Computer appliance or software program that uses ONVIF Web Services.
Conversation	A Conversation is all exchanges between two MAC addresses that contains SOAP request and response.
Network	A network is an interconnected group of devices communicating using the Internet protocol.
Network Trace Capture file	Data file created by a network protocol analyzer software (such as Wireshark). Contains network packets data recorded during a live network communications.
Media Profile	A media profile maps a video and/or audio source to a video and/or an audio encoder, PTZ and analytics configurations.
SOAP	SOAP is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It uses XML technologies to define an extensible messaging framework providing a message construct that can be exchanged over a variety of underlying protocols.
Client Test Tool	ONVIF Client Test Tool that tests ONVIF Client implementation towards the ONVIF Test Specification set.
Valid Device Response	Device has responded to specific request with code HTTP or RTSP 200 OK and SOAP fault message has not appeared.
PTZ Node	Low-level PTZ entity that maps to the PTZ Device and its capabilities.
PTZ Service	The web service interface for configuration and operation of pan tilt zoom controllers.

3.3 Abbreviations

This section describes abbreviations used in this document.

HTTP Hyper Text Transport Protocol.

HTTPS Hyper Text Transport Protocol over Secure Socket Layer.

URI Uniform Resource Identifier.

WSDL Web Services Description Language.

XML eXtensible Markup Language.

PTZ Pan/Tilt/Zoom.

3.4 Namespaces

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

Table 3.1. Defined namespaces in this specification

Prefix	Namespace URI	Description
soapenv	http://www.w3.org/2003/05/soap-envelope	Envelope namespace as defined by SOAP 1.2 [SOAP 1.2, Part 1]
tt	http://www.onvif.org/ver10/schema	ONVIF XML schema descriptions
tptz	http://www.onvif.org/ver20/ptz/wsdl	The namespace for the WSDL PTZ service

4 Test Overview

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

An ONVIF Client with PTZ features supports for control of PTZ.

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

4.1 General

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

- Feature Level Requirement
- Expected Scenarios Under Test
- List of Test Cases

4.1.1 Feature Level Requirement

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

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

- for each Device, which supports Device Features defined in Check Condition Based on Device Features
- for at least with number of Devices specified in Required Number of Devices

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

4.1.2 Expected Scenarios Under Test

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

4.1.3 Test Cases

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

Each Test Case contains the following parts:

- Test Label - Unique label for each test
- Test Case ID - Unique ID for each test
- Profile Normative References - Requirement level for the feature under test is defined in Profile Specification. This reference is informative and will not be used in conformance procedure.
- Feature Under Test - Feature which is under current test. Typically a particular command or an event.
- Test Purpose - The purpose of current test case.
- Pre-Requisite - The pre-requisite defines when the test should be performed. In case if pre-reqiusite does not match, the test result will be NOT DETECTED.
- Test Procedure - scenario expected to be reflected in network trace file.
- Test Result - Passed and failed criteria of the test case. Depending on these criteria test result will be defined as PASSED or FAILED.

4.2 Test Setup

Collect Network traces files required by the test cases.

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

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

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

4.3 Prerequisites

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

The Device shall be configured with an IPv4 address.

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

5 PTZ - Listing Test Cases

5.1 Feature Level Requirement:

Validated Feature: PTZ Listing (PtzListing)

Check Condition based on Device Features: PTZ Service is supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

Profile T Requirement: Conditional

5.2 Expected Scenarios Under Test:

1. Client connects to Device to read PTZ capabilities.
2. Client is considered as supporting PTZ - Listing if the following conditions are met:
   - Client is able to read PTZ capabilities from PTZ Node using EITHER GetNodes OR GetNode operations.
3. Client is considered as NOT supporting PTZ - Listing if ANY of the following is TRUE:
   - No Valid Device Response to GetNodes request AND
   - No Valid Device Response to GetNode request.

5.3 GET NODES

Test Label: PTZ Listing - GetNodes

Test Case ID: PTZLISTING-1

Feature Under Test: Get Nodes (PtzListing_GetNodes)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Conditional

Test Purpose: To verify that list of all existing PTZ capabilities from Device is received by Client using the GetNodes operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with GetNodes operation present.

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

1. Client invokes GetNodes request message to retrieve complete PTZ capabilities list from Device.
2. Device responds with code HTTP 200 OK and GetNodesResponse message.

Test Result:

PASS -

- Client **GetNodes** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **GetNodes** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<GetNodes>" tag after the "<Body>" tag AND
  - [S2] Device response contains "HTTP/* 200 OK" AND
  - [S3] Device response contains "<GetNodesResponse>" tag.

FAIL -

- The Client failed PASS criteria.

5.4 GET NODE

Test Label: PTZ Listing - GetNode

Test Case ID: PTZLISTING-2

Feature Under Test: Get Node (PtzListing_GetNode)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to retrieve a specific PTZ capability properties from Device using the GetNode operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with GetNode operation present.

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

1. Client invokes GetNode request message to retrieve a specific PTZ capability properties from Device.
2. Device responds with code HTTP 200 OK and GetNodeResponse message.

Test Result:

PASS -

- Client **GetNode** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **GetNode** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<GetNode>" tag after the "<Body>" tag AND
  - [S2] "<GetNode>" includes tag: "<NodeToken>" with non-empty string value of specific token AND
  - [S3] Device response contains "HTTP/* 200 OK" AND
  - [S4] Device response contains "<GetNodeResponse>" tag.

FAIL -

- The Client failed PASS criteria.

6 PTZ - Configuration Test Cases

6.1 Feature Level Requirement:

Validated Feature: PTZ Configuration (PtzConfiguration)

Check Condition based on Device Features: PTZ Service and Media Service are supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

6.2 Expected Scenarios Under Test:

1. Client connects to Device to add PTZ configuration to a media profile.
2. Client is considered as supporting PTZ - Configuration if the following conditions are met:
   - Client is able to add PTZ configuration to an existing media profile using GetConfigurations operation AND AddPTZConfiguration operation.
3. Client is considered as NOT supporting PTZ - Configuration if ANY of the following is TRUE:
   - No Valid Device Response to GetConfigurations request OR
   - No Valid Device Response to AddPTZConfiguration request.

6.3 ADD PTZ CONFIGURATION

Test Label: PTZ Configuration - Add PTZ Configuration

Test Case ID: PTZCONFIGURATION-1

Feature Under Test: Add PTZ Configuration to Media Profile (PtzConfiguration_AddPtzConfiguration)

Profile S Normative Reference: Conditional

Test Purpose: To verify that Client is able to add PTZ configuration to a profile using GetConfigurations and AddPTZConfiguration operations.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with GetConfigurations and AddPTZConfiguration operations present.

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

1. Client invokes GetConfigurations request message to retrieve all available PTZ configurations from Device.
2. Device responds with code HTTP 200 OK and GetConfigurationsResponse message.
3. Client invokes AddPTZConfiguration request message to add a PTZ configuration to an existing media profile.
4. Device responds with code HTTP 200 OK and AddPTZConfigurationResponse message.

Test Result:

PASS -

- Client **GetConfigurations** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **GetConfigurations** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<GetConfigurations>" tag after the "<Body>" tag AND
  - [S2] Device response contains "HTTP/* 200 OK" AND
  - [S3] Device response contains "<GetConfigurationsResponse>" tag AND
- Client **AddPTZConfiguration** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **AddPTZConfiguration** request in Test Procedure fulfills the following requirements:
  - [S4] Client request contains "<AddPTZConfiguration>" tag after the "<Body>" tag AND
  - [S5] "<AddPTZConfiguration>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S6] "<AddPTZConfiguration>" includes tag: "<ConfigurationToken>" with non-empty string value of specific token AND
  - [S7] Device response contains "HTTP/* 200 OK" AND
  - [S8] Device response contains "<AddPTZConfigurationResponse>" tag.

FAIL -

- The Client failed PASS criteria.

7 PTZ Pan Tilt Continuous Positioning Test Cases

7.1 Feature Level Requirement:

Validated Feature: Continuous Move (PtzPanTiltContinuousPositioning)

Check Condition based on Device Features: PTZ Continuous Pan Tilt movement is supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

Profile T Requirement: Mandatory

7.2 Expected Scenarios Under Test:

1. Client connects to Device to control PTZ Pan Tilt position using continuous move.
2. Client is considered as supporting PTZ Pan Tilt Continuous Positioning if the following conditions are met:
   - Client is able to move PTZ Device using the ContinuousMove operation with specified PanTilt element AND
   - Client is able to stop PTZ Pan Tilt Device movement using the Stop operation OR using ContinuousMove operation with zero values in PanTilt element.
3. Client is considered as NOT supporting PTZ Pan Tilt Continuous Positioning if ANY of the following is TRUE:
   - Client is unable to move a PTZ device using the ContinuousMove operation with specified PanTilt element OR
   - Client is unable to stop PTZ Pan Tilt movement using EITHER Stop operation OR using ContinuousMove operation OR
   - No Valid Device Response to **Stop** request if detected OR
   - No Valid Device Response to **ContinuousMove** request with zero "x" and "y" attributes values in PanTilt element if detected.

7.3 PTZ CONTINUOUS MOVE PAN/TILT

Test Label: PTZ Continuous Positioning - ContinuousMove PanTilt

Test Case ID: PTZPANTILTCONTINUOUSPOSITIONING-1

Feature Under Test: Pan Tilt Continuous Move (PtzPanTiltContinuousPositioning_ContinuousMovePanTilt)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to move a PTZ Device using the ContinuousMove operation with specified PanTilt element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with ContinuousMove operation present.
- Device supports PTZContinuousPanTilt.

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

1. Client invokes ContinuousMove request message to start move of PTZ Device using specific value of PanTilt element.
2. Device responds with code HTTP 200 OK and ContinuousMoveResponse message.

Test Result:

PASS -

- Client **ContinuousMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **ContinuousMove** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<ContinuousMove>" tag after the "<Body>" tag AND
  - [S2] "<ContinuousMove>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S4] "<Velocity>" includes tag: "<PanTilt>" AND
  - [S7] Device response contains "HTTP/* 200 OK" AND
  - [S8] Device response contains "<ContinuousMoveResponse>" tag.

FAIL -

- The Client failed PASS criteria.

7.4 PTZ PAN TILT STOP

Test Label: PTZ Pan Tilt Continuous Positioning - Stop

Test Case ID: PTZPANTILTCONTINUOUSPOSITIONING-2

Feature Under Test: Stop Pan Tilt Movement (PtzPanTiltContinuousPositioning_PanTiltStop)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to stop a PTZ Pan Tilt Device movement using the Stop operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with Stop operation with skipped PanTilt element or with PanTilt = true present

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

1. Client invokes Stop request message to stop ongoing pan tilt movements of PTZ Device.
2. Device responds with code HTTP 200 OK and StopResponse message.

Test Result:

PASS -

- Client **Stop** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **Stop** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:Stop** AND
  - [S2] **tptz:Stop/tptz:ProfileToken** element has non-empty string value of specific token AND
  - [S3] If **tptz:Stop** contains **tptz:PanTilt** element then **tptz:Stop/tptz:PanTilt** = true AND
- Device response on the **Stop** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:StopResponse**.

FAIL -

- The Client failed PASS criteria.

7.5 STOP PAN TILT MOVEMENT USING PTZ CONTINUOUS MOVE

Test Label: PTZ Continuous Positioning - Stop Pan Tilt Movement using ContinuousMove

Test Case ID: PTZPANTILTCONTINUOUSPOSITIONING-3

Feature Under Test: Stop Pan Tilt Movement using Continuous Move (PtzPanTiltContinuousPositioning_PanTiltStopUsingPTZContinuousMove)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to stop a PTZ Pan Tilt Device movement using ContinuousMove operation with zero values in PanTilt element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with ContinuousMove operation present.

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

1. Client invokes ContinuousMove request message with zero "x" and "y" attributes values in PanTilt element.
2. Device responds with code HTTP 200 OK and ContinuousMoveResponse message.

Test Result:

NOTE: In case Client does not send ContinuousMove request message with zero "x" and "y" attributes values in PanTilt element then the test shall be deemed as "NOT DETECTED".

PASS -

- There is client **ContinuousMove** request messages which corresponds to the following requirements (else skip the check):
  - Client **ContinuousMove** request messages are valid according to XML Schemas listed in Namespaces AND

- Client **ContinuousMove** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:ContinuousMove** AND
  - [S2] **tptz:ContinuousMove/tptz:ProfileToken** element has non-empty string value of specific token AND
  - [S3] **tptz:ContinuousMove/tptz:Velocity** containt tag **tt:PanTilt** AND
  - [S4] **tptz:ContinuousMove/tptz:Velocity/tt:PanTilt/@x** attribute value is equal to 0 AND
  - [S5] **tptz:ContinuousMove/tptz:Velocity/tt:PanTilt/@y** attribute value is equal to 0 AND
- Device response on the **ContinuousMove** request fulfills the following requirements:
  - [S6] It has HTTP 200 response code AND
  - [S7] **soapenv:Body** element has child element **tptz:ContinuousMoveResponse**.

FAIL -

- The Client failed PASS criteria.

8 PTZ Zoom Continuous Positioning Test Cases

8.1 Feature Level Requirement:

Validated Feature: Zoom Continuous Move (PtzZoomContinuousPositioning)

Check Condition based on Device Features: PTZ Continuous Zoom movement is supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

Profile T Requirement: Mandatory

8.2 Expected Scenarios Under Test:

1. Client connects to Device to control PTZ Zoom position using continuous move.
2. Client is considered as supporting PTZ Zoom Continuous Positioning if the following conditions are met:
   - Client is able to move PTZ Device using the ContinuousMove operation with specified Zoom element AND
   - Client is able to stop PTZ Zoom Device movement using the Stop operation OR using ContinuousMove operation with zero values in Zoom element.
3. Client is considered as NOT supporting PTZ Zoom Continuous Positioning if ANY of the following is TRUE:
   - Client is unable to move a PTZ device using the ContinuousMove operation with specified Zoom element OR
   - Client is unable to stop PTZ Zoom movement using EITHER Stop operation OR using ContinuousMove operation OR
   - No Valid Device Response to **Stop** request if detected OR
   - No Valid Device Response to **ContinuousMove** request with zero "x" attributes values in Zoom element if detected.

8.3 PTZ CONTINUOUS MOVE ZOOM

Test Label: PTZ Continuous Positioning - ContinuousMove Zoom

Test Case ID: PTZZOOMCONTINUOUSPOSITIONING-1

Feature Under Test: Zoom Continuous Move (PtzZoomContinuousPositioning_ContinuousMoveZoom)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to change zoom of PTZ Device using the ContinuousMove operation with specified Zoom element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with ContinuousMove operation present.
- Device supports PTZContinuousZoom.

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

1. Client invokes ContinuousMove request message to change zoom of PTZ Device using specific value of Zoom element.
2. Device responds with code HTTP 200 OK and ContinuousMoveResponse message.

Test Result:

PASS -

- Client **ContinuousMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **ContinuousMove** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<ContinuousMove>" tag after the "<Body>" tag AND
  - [S2] "<ContinuousMove>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S4] "<Velocity>" includes tag: "<Zoom>" AND
  - [S6] Device response contains "HTTP/* 200 OK" AND
  - [S7] Device response contains "<ContinuousMoveResponse>" tag.

FAIL -

- The Client failed PASS criteria.

8.4 PTZ ZOOM STOP

Test Label: PTZ Zoom Continuous Positioning - Stop

Test Case ID: PTZZOOMCONTINUOUSPOSITIONING-2

Feature Under Test: Stop Zoom Movement (PtzZoomContinuousPositioning_ZoomStop)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to stop a PTZ Zoom Device movement using the Stop operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with Stop operation with skipped Zoom element or with Zoom = true present

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

1. Client invokes Stop request message to stop ongoing zoom movements of PTZ Device.
2. Device responds with code HTTP 200 OK and StopResponse message.

Test Result:

PASS -

- Client **Stop** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **Stop** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:Stop** AND
  - [S2] **tptz:Stop/tptz:ProfileToken** element has non-empty string value of specific token AND
  - [S3] If **tptz:Stop** contains **tptz:Zoom** element then **tptz:Stop/tptz:Zoom** = true AND
- Device response on the **Stop** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:StopResponse**.

FAIL -

- The Client failed PASS criteria.

8.5 STOP ZOOM MOVEMENT USING PTZ CONTINUOUS MOVE

Test Label: PTZ Continuous Positioning - Stop Zoom Movement using ContinuousMove

Test Case ID: PTZZOOMCONTINUOUSPOSITIONING-3

Feature Under Test: Stop Zoom Movement using Continuous Move (PtzZoomContinuousPositioning_ZoomStopUsingPTZContinuousMove)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to stop a PTZ Zoom Device movement using ContinuousMove operation with zero values in Zoom element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with ContinuousMove operation present.

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

1. Client invokes ContinuousMove request message with zero "x" attribute value in Zoom element.
2. Device responds with code HTTP 200 OK and ContinuousMoveResponse message.

Test Result:

NOTE: In case Client does not send ContinuousMove request message with zero "x" attribute value in Zoom element if device supports PTZContinuousZoom then the test shall be deemed as "NOT DETECTED".

PASS -

- There is client **ContinuousMove** request messages which corresponds to the following requirements (else skip the check):
  - Client **ContinuousMove** request messages are valid according to XML Schemas listed in Namespaces AND

- Client **ContinuousMove** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:ContinuousMove** AND
  - [S2] **tptz:ContinuousMove/tptz:ProfileToken** element has non-empty string value of specific token AND
  - [S3] **tptz:ContinuousMove/tptz:Velocity** containt tag **tt:Zoom** AND
  - [S4] **tptz:ContinuousMove/tptz:Velocity/tt:Zoom/@x** attribute value is equal to 0.
- Device response on the **ContinuousMove** request fulfills the following requirements:
  - [S5] It has HTTP 200 response code AND
  - [S6] **soapenv:Body** element has child element **tptz:ContinuousMoveResponse**.

FAIL -

- The Client failed PASS criteria.

9 PTZ Pan Tilt Absolute Positioning Test Cases

9.1 Feature Level Requirement:

Validated Feature: PTZ Pan Tilt Absolute Positioning (PtzPanTiltAbsolutePositioning)

Check Condition based on Device Features: Pan Tilt Absolute Movement and Profile S are supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

Profile T Requirement: None

9.2 Expected Scenarios Under Test:

1. Client connects to Device to control the pan tilt position using absolute positioning.
2. Client is considered as supporting PTZ Pan Tilt Absolute Positioning if the following conditions are met:
   - Client is able to move PTZ Device using the AbsoluteMove operation by Move a PTZ Device using the AbsoluteMove operation with specified PanTilt element.
3. Client is considered as NOT supporting PTZ Pan Tilt Absolute Positioning if ANY of the following is TRUE:
   - No Valid Device Response to AbsoluteMove request with specified PanTilt element.

9.3 PTZ ABSOLUTE MOVE PAN/TILT

Test Label: PTZ Absolute Positioning - AbsoluteMove PanTilt

Test Case ID: PTZPANTILTABSOLUTEPOSITIONING-1

Feature Under Test: Pan Tilt Absolute Move (PtzPanTiltAbsolutePositioning_AbsoluteMovePanTilt)

Profile S Normative Reference: Conditional

Test Purpose: To verify that Client is able to move a PTZ Device using the AbsoluteMove operation with specified PanTilt element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with AbsoluteMove operation present.

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

1. Client invokes AbsoluteMove request message to move of PTZ Device using specific value of PanTilt element.
2. Device responds with code HTTP 200 OK and AbsoluteMoveResponse message.

Test Result:

NOTE: If Client AbsoluteMove request message does not contain "<PanTilt>" tag inside "<Position>" tag then Test shall be deemed as "NOT DETECTED".

PASS -

- Client **AbsoluteMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **AbsoluteMove** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<AbsoluteMove>" tag after the "<Body>" tag AND
  - [S2] "<AbsoluteMove>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S4] "<Position>" includes tag: "<PanTilt>" AND
  - [S7] Device response contains "HTTP/* 200 OK" AND
  - [S8] Device response contains "<AbsoluteMoveResponse>" tag.

FAIL -

- The Client failed PASS criteria.

10 PTZ Zoom Absolute Positioning Test Cases

10.1 Feature Level Requirement:

Validated Feature: PTZ Zoom Absolute Positioning (PtzZoomAbsolutePositioning)

Check Condition based on Device Features: Zoom Absolute Movement and Profile S are supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

Profile T Requirement: None

10.2 Expected Scenarios Under Test:

1. Client connects to Device to control the zoom position using absolute positioning.
2. Client is considered as supporting PTZ Zoom Absolute Positioning if the following conditions are met:
   - Client is able to change zoom of PTZ Device using the AbsoluteMove operation with specified Zoom element.
3. Client is considered as NOT supporting PTZ Zoom Absolute Positioning if ANY of the following is TRUE:
   - No Valid Device Response to AbsoluteMove request with specified Zoom element.

10.3 PTZ ABSOLUTE MOVE ZOOM

Test Label: PTZ Absolute Positioning - AbsoluteMove Zoom

Test Case ID: PTZZOOMABSOLUTEPOSITIONING-1

Feature Under Test: Zoom Absolute Move (PtzZoomAbsolutePositioning_AbsoluteZoom)

Profile S Normative Reference: Conditional

Test Purpose: To verify that Client is able to change zoom of PTZ Device using the AbsoluteMove operation with specified Zoom element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with AbsoluteMove operation present.

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

1. Client invokes AbsoluteMove request message to change zoom of PTZ Device using specific value of Zoom element.
2. Device responds with code HTTP 200 OK and AbsoluteMoveResponse message.

Test Result:

PASS -

- Client **AbsoluteMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **AbsoluteMove** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<AbsoluteMove>" tag after the "<Body>" tag AND
  - [S2] "<AbsoluteMove>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S4] "<Position>" includes tag: "<Zoom>" AND
  - [S6] Device response contains "HTTP/* 200 OK" AND
  - [S7] Device response contains "<AbsoluteMoveResponse>" tag.

FAIL -

- The Client failed PASS criteria.

11 PTZ Pan Tilt Relative Positioning Test Cases

11.1 Feature Level Requirement:

Validated Feature: PTZ Pan Tilt Relative Positioning (PtzPanTiltRelativePositioning)

Check Condition based on Device Features: Relative Tan Tilt move and Profile S are supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

11.2 Expected Scenarios Under Test:

1. Client connects to Device to control the position using relative positioning.
2. Client is considered as supporting PTZ Pan Tilt Relative Positioning if the following conditions are met:
   - Client is able to move PTZ Device using the RelativeMove operation by Move a PTZ Device using the RelativeMove operation with specified PanTilt element.
3. Client is considered as NOT supporting PTZ Pan Tilt Relative Positioning if ANY of the following is TRUE:
   - No Valid Device Response to RelativeMove request with specified PanTilt element.

11.3 PTZ RELATIVE MOVE PAN/TILT

Test Label: PTZ Relative Positioning - Relative Move PanTilt

Test Case ID: PTZPANTILTRELATIVEPOSITIONING-1

Feature Under Test: Pan Tilt Relative Move (PtzPanTiltRelativePositioning_PtzRelativeMovePanTilt)

Profile S Normative Reference: Conditional

Test Purpose: To verify that Client is able to move a PTZ Device using the RelativeMove operation with specified PanTilt element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with RelativeMove operation present.

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

1. Client invokes RelativeMove request message to move of PTZ Device using specific value of PanTilt element.
2. Device responds with code HTTP 200 OK and RelativeMoveResponse message.

Test Result:

NOTE: If Client RelativeMove request message does not contain "<PanTilt>" tag inside "<Translation>" tag then Test shall be deemed as "NOT DETECTED".

PASS -

- Client **RelativeMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **RelativeMove** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<RelativeMove>" tag after the "<Body>" tag AND
  - [S2] "<RelativeMove>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S4] "<Translation>" includes tag: "<PanTilt>" AND
  - [S7] Device response contains "HTTP/* 200 OK" AND
  - [S8] Device response contains "<RelativeMoveResponse>" tag.

FAIL -

- The Client failed PASS criteria.

12 PTZ Zoom Relative Positioning Test Cases

12.1 Feature Level Requirement:

Validated Feature: PTZ Pan Tilt Relative Positioning (PtzZoomRelativePositioning)

Check Condition based on Device Features: Relative Zoom move and Profile S are supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

12.2 Expected Scenarios Under Test:

1. Client connects to Device to control the position using relative positioning.
2. Client is considered as supporting PTZ Zoom Relative Positioning if the following conditions are met:
   - Client is able to change zoom of PTZ Device using the RelativeMove operation with specified Zoom element.
3. Client is considered as NOT supporting PTZ Zoom Relative Positioning if ANY of the following is TRUE:
   - No Valid Device Response to RelativeMove request with specified Zoom element.

12.3 PTZ RELATIVE MOVE ZOOM

Test Label: PTZ Relative Positioning - Relative Move Zoom

Test Case ID: PTZZOOMRELATIVEPOSITIONING-1

Feature Under Test: Zoom Relative Move (PtzZoomRelativePositioning_PtzRelativeMoveZoom)

Profile S Normative Reference: Conditional

Test Purpose: To verify that Client is able to change zoom of PTZ Device using the RelativeMove operation with specified Zoom element.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with RelativeMove operation present.

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

1. Client invokes RelativeMove request message to change zoom of PTZ Device using specific value of Zoom element.
2. Device responds with code HTTP 200 OK and RelativeMoveResponse message.

Test Result:

NOTE: If Client AbsoluteMove request message does not contain "<Zoom>" tag inside "<Translation>" tag then Test shall be deemed as "NOT DETECTED".

PASS -

- Client **RelativeMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **RelativeMove** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<RelativeMove>" tag after the "<Body>" tag AND
  - [S2] "<RelativeMove>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S4] "<Translation>" includes tag: "<Zoom>" AND
  - [S6] Device response contains "HTTP/* 200 OK" AND
  - [S7] Device response contains "<RelativeMoveResponse>" tag.

FAIL -

- The Client failed PASS criteria.

13 PTZ Presets Test Cases

13.1 Feature Level Requirement:

Validated Feature: PTZ Presets (PtzPresets)

Check Condition based on Device Features: PTZ Presets is supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

Profile T Requirement: Conditional

13.2 Expected Scenarios Under Test:

1. Client connects to Device to manage the presets of a PTZ Node.
2. Client is considered as supporting PTZ Presets if the following conditions are met:
   - Client is able to list the presets using the GetPresets operation AND
   - Client is able to move a PTZ Device to a specific preset using the GotoPreset operation.
3. Client is considered as NOT supporting PTZ Presets if ANY of the following is TRUE:
   - No Valid Device Response to GetPresets request OR
   - No Valid Device Response to GotoPreset request.

13.3 PTZ GET PRESETS

Test Label: PTZ Presets - GetPresets

Test Case ID: PTZPRESETS-1

Feature Under Test: Get Presets (PtzPresets_PtzGetPresets)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to list the presets using the GetPresets operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with GetPresets operation present.

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

1. Client invokes GetPresets request message to list the available presets from Device.
2. Device responds with code HTTP 200 OK and GetPresetsResponse message.

Test Result:

PASS -

- Client **GetPresets** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **GetPresets** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<GetPresets>" tag after the "<Body>" tag AND
  - [S2] "<GetPresets>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S3] Device response contains "HTTP/* 200 OK" AND
  - [S4] Device response contains "<GetPresetsResponse>" tag.

FAIL -

- The Client failed PASS criteria.

13.4 PTZ GOTO PRESET

Test Label: PTZ Presets - GotoPreset

Test Case ID: PTZPRESETS-2

Feature Under Test: Goto Preset (PtzPresets_PtzGotoPreset)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to move a PTZ Device to a specific preset using the GotoPreset operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with GotoPreset operation present.

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

1. Client invokes GotoPreset request message to move PTZ Device to specific preset.
2. Device responds with code HTTP 200 OK and GotoPresetResponse message.

Test Result:

PASS -

- Client **GotoPreset** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **GotoPreset** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<GotoPreset>" tag after the "<Body>" tag AND
  - [S2] "<GotoPreset>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S3] "<GotoPreset>" includes tag: "<PresetToken>" with non-empty string value of specific token AND
  - [S4] Device response contains "HTTP/* 200 OK" AND
  - [S5] Device response contains "<GotoPresetResponse>" tag.

FAIL -

- The Client failed PASS criteria.

14 PTZ Home Position Test Cases

14.1 Feature Level Requirement:

Validated Feature: PTZ Home Position (PtzHomePosition)

Check Condition based on Device Features: PTZ Home Position is supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

Profile T Requirement: Conditional

14.2 Expected Scenarios Under Test:

1. Client connects to Device to manage the home position of a PTZ Node.
2. Client is considered as supporting PTZ Home Position if the following conditions are met:
   - Client is able to move PTZ Device to its home position using the GotoHomePosition operation
3. Client is considered as NOT supporting PTZ Home Position if ANY of the following is TRUE:
   - No Valid Device Response to GotoHomePosition request.

14.3 PTZ HOME POSITION

Test Label: PTZ Presets - GotoHomePosition

Test Case ID: PTZHOMEPOSITION-1

Feature Under Test: Goto Home Position (PtzHomePosition_PtzGotoHomePosition)

Profile S Normative Reference: Conditional

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to move PTZ Device to its home position using the GotoHomePosition operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with GotoHomePosition operation present.

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

1. Client invokes GotoHomePosition request message to move PTZ Device to its home position.
2. Device responds with code HTTP 200 OK and GotoHomeResponse message.

Test Result:

PASS -

- Client **GotoHomePosition** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **GotoHomePosition** request in Test Procedure fulfills the following requirements:
  - [S1] Client request contains "<GotoHomePosition>" tag after the "<Body>" tag AND
  - [S2] "<GotoHomePosition>" includes tag: "<ProfileToken>" with non-empty string value of specific token AND
  - [S3] Device response contains "HTTP/* 200 OK" AND
  - [S4] Device response contains "<GotoHomePositionResponse>" tag.

FAIL -

- The Client failed PASS criteria.

15 PTZ - Auxiliary Command Test Cases

15.1 Feature Level Requirement:

Validated Feature: PTZ Auxiliary Command (PtzAuxiliaryCommand)

Check Condition based on Device Features: Auxiliary Operations (PTZ Service) and Profile S are supported by Device.

Required Number of Devices: 1

Profile S Requirement: Conditional

15.2 Expected Scenarios Under Test:

1. Client connects to Device to manage the auxiliary commands of a PTZ Node.
2. Client is considered as supporting PTZ - Auxiliary Command if the following conditions are met:
   - Client is able to read PTZ capabilities from PTZ Node using EITHER GetNodes OR GetNode operations AND
   - Client is able to call an auxiliary operation on Device using the SendAuxiliaryCommand operation.
3. Client is considered as NOT supporting PTZ - Auxiliary Command if ANY of the following is TRUE:
   - BOTH (No Valid Device Response to GetNodes request AND No Valid Device Response to GetNode request) OR
   - No Valid Device Response to SendAuxiliaryCommand request.

15.3 PTZ SEND AUXILIARY COMMAND

Test Label: PTZ Auxiliary Command - Send Auxiliary Command

Test Case ID: PTZAUXILIARYCOMMAND-1

Feature Under Test: Send Auxiliary Command (PtzAuxiliaryCommand_PtzSendAuxiliaryCommand)

Profile S Normative Reference: Conditional

Test Purpose: To verify that Client is able to call an auxiliary operation on Device using the **SendAuxiliaryCommand** operation (PTZ Service).

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with **SendAuxiliaryCommand** operation (PTZ Service) present.

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

1. Client invokes **SendAuxiliaryCommand** request message (PTZ Service) to call an auxiliary operation on Device.
2. Device responds with code HTTP 200 OK and **SendAuxiliaryCommandResponse** message.

Test Result:

PASS -

- Client **SendAuxiliaryCommand** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **SendAuxiliaryCommand** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:SendAuxiliaryCommand** AND
  - [S2] It contains **tptz:ProfileToken** element with non-empty string value AND
  - [S3] It contains **tptz:AuxiliaryData** element with non-empty string value AND
- Device response on the **SendAuxiliaryCommand** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:SendAuxiliaryCommandResponse**.

FAIL -

- The Client failed PASS criteria.

16 PTZ Using Media2 Absolute Positioning - Spherical Position Space Degrees Test Cases

16.1 Feature Level Requirement:

Validated Feature: Absolute Positioning using Media2 - Spherical Position Space Degrees Media2_PanTiltSpaces_SphericalPositionSpaceDegrees

Check Condition based on Device Features: Profile T, PTZ Absolute Move and PTZ Spherical Coordinate Spaces are supported by Device.

Required Number of Devices: 3

Profile T Requirement: Mandatory

16.2 Expected Scenarios Under Test:

1. Client connects to Device control the position using absolute positioning with SphericalPositionSpaceDegrees PTZ space.

2. Client is considered as supporting PTZ Using Media2 Absolute Positioning with Spherical Position Space Degrees if the following conditions are met:

   - Client is able to move PTZ Device using the **AbsoluteMove** operation with specified PanTilt element EITHER using space attribute in PanTilt element with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** value OR using Media Profile with PTZConfiguration with DefaultAbsolutePantTiltPositionSpace value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees**

3. Client is considered as NOT supporting PTZ Using Media2 Absolute Positioning with Spherical Position Space Degrees if ANY of the following is TRUE:

   - No valid response to **AbsoluteMove** request with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** PTZ space if detected AND

   - No valid response to **AbsoluteMove** request with skipped PTZ space attribute for **AbsoluteMove** operations which use media profile with DefaultAbsolutePantTiltPositionSpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** if detected OR

- No **AbsoluteMove** request with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** PTZ space is detected AND no **AbsoluteMove** request with skipped PTZ space attribute which use media profile with DefaultAbsolutePantTiltPositionSpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** is detected

16.3 PTZ ABSOLUTE MOVE PAN/TILT SPHERICAL POSITION SPACE DEGREES

Test Label: PTZ Using Media2 Absolute Positioning - AbsoluteMove PanTilt with SphericalPositionSpace

Test Case ID: MEDIA2_PANTILTSPACES_SPHERICALPOSITIONSPACEDEGREES-1

Feature Under Test: Absolute PanTilt Move with SphericalPositionSpace (Media2_PanTiltSpaces_SphericalPositionSpaceDegrees_PTZAbsolutePositioningPanTiltSphericalPositionSpace

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to move a PTZ Device using the AbsoluteMove operation with specified PanTilt element using **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** PTZ space.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with AbsoluteMove operation present.
- Device supports PTZ Service.
- Device supports Absolute Pan/Tilt movement (PTZAbsolutePanTilt).

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

1. Client invokes **AbsoluteMove** request message to move of PTZ Device using specific value of PanTilt element with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** space attribute value OR
2. Client find or configure media profile to contain PTZConfiguration with DefaultAbsolutePantTiltPositionSpace with value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** and invokes **AbsoluteMove** request message using specific value of PanTilt element with no space attribute.

3. Device responds with code HTTP 200 OK and **AbsoluteMoveResponse** message.

Test Result:

- Client **AbsoluteMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **AbsoluteMove** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:AbsoluteMove** AND
  - [S2] It contains **tptz:Position/tt:PanTilt** element AND
  - [S3] If it contains **tptz:Position/tt:PanTilt/@space** attribute, THEN **tptz:Position/tt:PanTilt/@space** element value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees** AND
  - [S4] ELSE PTZConfiguration that corresponding to media profile used in **AbsoluteMove** request (PTZ Move operation) has DefaultAbsolutePantTiltPositionSpace (Default space element name to get) value is equal to http://www.onvif.org/ver10/tptz/PanTiltSpaces/SphericalPositionSpaceDegrees (see Annex A.1 HelperGetDefaultPtzSpaceOfPtzConfigurationCorrespondingToMove)
- Device response on the **AbsoluteMove** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:AbsoluteMoveResponse**.

FAIL -

- The Client failed PASS criteria.

17 PTZ Using Media2 Absolute Positioning - Pan Tilt Position Generic Space Test Cases

17.1 Feature Level Requirement:

Validated Feature: Absolute Move Using Media2 - Pan Tilt Position Generic Space (Media2_PanTiltSpaces_PositionGenericSpace)

Check Condition based on Device Features: PTZ Absolute Pan/Tilt Move and PTZ Generic Coordinate Spaces are supported by Device.

Required Number of Devices: 3

Profile T Requirement: Mandatory

17.2 Expected Scenarios Under Test:

1. Client connects to Device control the position using absolute positioning with Pan/Tilt PositionGenericSpace PTZ space.

2. Client is considered as supporting PTZ Using Media2 Absolute Positioning with Pan/Tilt PositionGenericSpace PTZ space if the following conditions are met:

   - Client is able to move PTZ Device using the **AbsoluteMove** operation with specified PanTilt element EITHER using space attribute in PanTilt element with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** value OR using Media Profile with PTZConfiguration with DefaultAbsolutePantTiltPositionSpace value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace**

3. Client is considered as NOT supporting PTZ Using Media2 Absolute Positioning with Pan/Tilt PositionGenericSpace PTZ space if ANY of the following is TRUE:

   - No valid response to **AbsoluteMove** request with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** PTZ space if detected AND

   - No valid response to **AbsoluteMove** request with skipped PTZ space attribute for **AbsoluteMove** operations which use media profile with DefaultAbsolutePantTiltPositionSpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** if detected OR

   - No **AbsoluteMove** request with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** PTZ space is detected AND no **AbsoluteMove**

request with skipped PTZ space attribute which use media profile with DefaultAbsolutePantTiltPositionSpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** is detected

17.3 PTZ ABSOLUTE MOVE PAN/TILT POSITION GENERIC SPACE

Test Label: PTZ Using Media2 Absolute Positioning - AbsoluteMove PanTilt with PositionGeneric Space

Test Case ID: MEDIA2_PANTILTSPACES_POSITIONGENERICSPACE-1

Feature Under Test: Absolute Move PanTilt with PositionGeneric Space (Media2_PanTiltSpaces_PositionGenericSpace_PTZAbsolutePositioningPanTiltPositionGenericSpace)

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to move a PTZ Device using the AbsoluteMove operation with specified PanTilt element using **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** PTZ space.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with AbsoluteMove operation present.
- Device supports PTZ Service.
- Device supports Absolute Pan/Tilt movement (PTZAbsolutePanTilt).

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

1. Client invokes **AbsoluteMove** request message to move of PTZ Device using specific value of PanTilt element with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** space attribute value OR
2. Client find or configure media profile to contain PTZConfiguration with DefaultAbsolutePantTiltPositionSpace with value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** and invokes **AbsoluteMove** request message using specific value of PanTilt element with no space attribute.
3. Device responds with code HTTP 200 OK and **AbsoluteMoveResponse** message.

Test Result:

- Client **AbsoluteMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **AbsoluteMove** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:AbsoluteMove** AND
  - [S2] It contains **tptz:Position/tt:PanTilt** element AND
  - [S3] If it contains **tptz:Position/tt:PanTilt/@space** attribute, THEN **tptz:Position/tt:PanTilt/@space** element value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace** AND
  - [S4] ELSE PTZConfiguration that corresponding to media profile used in **AbsoluteMove** request (PTZ Move operation) has DefaultAbsolutePantTiltPositionSpace (Default space element name to get) value is equal to http://www.onvif.org/ver10/tptz/PanTiltSpaces/PositionGenericSpace (see Annex A.1 HelperGetDefaultPtzSpaceOfPtzConfigurationCorrespondingToMove)
- Device response on the **AbsoluteMove** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:AbsoluteMoveResponse**.

FAIL -

- The Client failed PASS criteria.

18 PTZ Using Media2 Absolute Positioning - Zoom Position Generic Space Test Cases

18.1 Feature Level Requirement:

Validated Feature: Absolute Positioning Using Media2 - Zoom Position Generic Space (Media2_ZoomSpaces_PositionGenericSpace)

Check Condition based on Device Features: PTZ Absolute Zoom Move and PTZ Generic Coordinate Spaces are supported by Device.

Required Number of Devices: 3

Profile T Requirement: Mandatory

18.2 Expected Scenarios Under Test:

1. Client connects to Device control the position using absolute positioning with Zoom PositionGenericSpace PTZ space.
2. Client is considered as supporting PTZ Using Media2 Absolute Positioning with Zoom PositionGenericSpace PTZ space if the following conditions are met:
   - Client is able to move PTZ Device using the **AbsoluteMove** operation with specified Zoom element EITHER using space attribute in Zoom element with **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** value OR using Media Profile with PTZConfiguration with DefaultAbsolutePantTiltPositionSpace value is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace**
3. Client is considered as NOT supporting PTZ Using Media2 Absolute Positioning with Zoom PositionGenericSpace PTZ space if ANY of the following is TRUE:
   - No valid response to **AbsoluteMove** request with **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** PTZ space if detected AND
   - No valid response to **AbsoluteMove** request with skipped PTZ space attribute for **AbsoluteMove** operations which use media profile with DefaultAbsolutePantTiltPositionSpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** if detected OR
   - No **AbsoluteMove** request with **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** PTZ space is detected AND no **AbsoluteMove**

request with skipped PTZ space attribute which use media profile with DefaultAbsolutePantTiltPositionSpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** is detected

18.3 PTZ ABSOLUTE MOVE ZOOM POSITION GENERIC SPACE

Test Label: PTZ Using Media2 Absolute Positioning - AbsoluteMove Zoom with PositionGeneric Space

Test Case ID: MEDIA2_ZOOMSPACES_POSITIONGENERICSPACE-1

Feature Under Test: Absolute Positioning Using Media2 - AbsoluteMove Zoom with PositionGeneric Space (Media2_ZoomSpaces_PositionGenericSpace_PTZAbsolutePositioningZoomPositionGenericSpace)

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to move a PTZ Device using the AbsoluteMove operation with specified Zoom element using **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** PTZ space.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with AbsoluteMove operation present.
- Device supports PTZ Service.
- Device supports Absolute Zoom movement (PTZAbsoluteZoom).

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

1. Client invokes **AbsoluteMove** request message to move of PTZ Device using specific value of Zoom element with **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** space attribute value OR
2. Client find or configure media profile to contain PTZConfiguration with DefaultAbsolutePantTiltPositionSpace with value is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** and invokes **AbsoluteMove** request message using specific value of Zoom element with no space attribute.
3. Device responds with code HTTP 200 OK and **AbsoluteMoveResponse** message.

Test Result:

- Client **AbsoluteMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **AbsoluteMove** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:AbsoluteMove** AND
  - [S2] It contains **tptz:Position/tt:Zoom** element AND
  - [S3] If it contains **tptz:Position/tt:Zoom/@space** attribute, THEN **tptz:Position/tt:Zoom/@space** element value is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace** AND
  - [S4] ELSE PTZConfiguration that corresponding to media profile used in **AbsoluteMove** request (PTZ Move operation) has DefaultAbsolutePantTiltPositionSpace (Default space element name to get) value is equal to http://www.onvif.org/ver10/tptz/ZoomSpaces/PositionGenericSpace (see Annex A.1 HelperGetDefaultPtzSpaceOfPtzConfigurationCorrespondingToMove)
- Device response on the **AbsoluteMove** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:AbsoluteMoveResponse**.

FAIL -

- The Client failed PASS criteria.

19 PTZ Using Media2 Pan Tilt Continuous Positioning Test Cases

19.1 Feature Level Requirement:

Validated Feature: PTZ Using Media2 Pan Tilt Continuous Positioning (Media2_PanTiltSpaces_VelocityGenericSpace)

Check Condition based on Device Features: PTZ Continuous PanTilt and Media2 Service are supported by Device.

Required Number of Devices: 3

Profile T Requirement: Mandatory

19.2 Expected Scenarios Under Test:

1. Client connects to Device control the pan tilt position using absolute positioning with VelocityGenericSpace PTZ spaces.
2. Client is considered as supporting PTZ Using Media2 Pan Tilt Continuous Positioning if the following conditions are met:
   - Client is able to move PTZ Device using the **ContinuousMove** operation with specified PanTilt element EITHER using space attribute in PanTilt element with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** value OR using Media Profile with PTZConfiguration with DefaultContinuousPanTiltVelocitySpace value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** AND
   - Client supports PtzContinuousPositioning.Stop feature OR PtzContinuousPositioning.StopMovementUsingContinuousMove feature.
3. Client is considered as NOT supporting PTZ Using Media2 Pan Tilt Continuous Positioning if ANY of the following is TRUE:
   - No valid response to **ContinuousMove** request with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** PTZ space if detected AND
   - No valid response to **ContinuousMove** request with skipped PTZ space attribute for **ContinuousMove** operations which use media profile with DefaultContinuousPanTiltVelocitySpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** if detected OR

- No **ContinuousMove** request with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** PTZ space is detected AND no **ContinuousMove** request with skipped PTZ space attribute which use media profile with DefaultContinuousPanTiltVelocitySpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** is detected AND
- Client does not support PtzContinuousPositioning.Stop feature AND PtzContinuousPositioning.StopMovementUsingContinuousMove feature.

19.3 PTZ CONTINUOUS MOVE PAN/TILT VELOCITY GENERIC SPACE

Test Label: PTZ Using Media2 Continuous Positioning - ContinuousMove PanTilt

Test Case ID: MEDIA2_PANTILTSPACES_VELOCITYGENERICSPACE-1

Feature Under Test: Pan Tilt Continuous Move Using Media2 - Velocity Generic Space (Media2_PanTiltSpaces_VelocityGenericSpace_PTZContinuousPositioningPanTiltVelocityGenericSpace)

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to move a PTZ Device using the ContinuousMove operation with specified PanTilt element using **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** PTZ space.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with ContinuousMove operation present.
- Device supports PTZ Service.
- Device supports Continuous Pan/Tilt movement (PTZContinuousPanTilt).

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

1. Client invokes **ContinuousMove** request message to move of PTZ Device using specific value of PanTilt element with **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** space attribute value OR
2. Client find or configure media profile to contain PTZConfiguration with DefaultContinuousPanTiltVelocitySpace with value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** and invokes **ContinuousMove** request message using specific value of PanTilt element with no space attribute.

3. Device responds with code HTTP 200 OK and **ContinuousMoveResponse** message.

Test Result:

- Client **ContinuousMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **ContinuousMove** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:ContinuousMove** AND
  - [S2] It contains **tptz:Velocity/tt:PanTilt** element AND
  - [S3] If it contains **tptz:Velocity/tt:PanTilt/@space** attribute, THEN **tptz:Velocity/tt:PanTilt/@space** element value is equal to **http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace** AND
  - [S4] ELSE PTZConfiguration that corresponding to media profile used in **ContinuousMove** request (PTZ Move operation) has DefaultContinuousPanTiltVelocitySpace (Default space element name to get) value is equal to http://www.onvif.org/ver10/tptz/PanTiltSpaces/VelocityGenericSpace (see Annex A.1 HelperGetDefaultPtzSpaceOfPtzConfigurationCorrespondingToMove)
- Device response on the **ContinuousMove** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:ContinuousMoveResponse**.

FAIL -

- The Client failed PASS criteria.

20 PTZ Using Media2 Zoom Continuous Positioning Test Cases

20.1 Feature Level Requirement:

Validated Feature: PTZ Using Media2 Zoom Continuous Positioning (Media2_ZoomSpaces_VelocityGenericSpace)

Check Condition based on Device Features: PTZ Continuous Zoom and Medis2 Service are supported by Device.

Required Number of Devices: 3

Profile T Requirement: Mandatory

20.2 Expected Scenarios Under Test:

1. Client connects to Device control the zoom position using absolute positioning with VelocityGenericSpace PTZ spaces.
2. Client is considered as supporting PTZ Using Media2 Zoom Continuous Positioning if the following conditions are met:
   - Client is able to move PTZ Device using the **ContinuousMove** operation with specified Zoom element EITHER using space attribute in Zoom element with **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** value OR using Media Profile with PTZConfiguration with DefaultContinuousZoomVelocitySpace value is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** AND
   - Client supports PtzContinuousPositioning.Stop feature OR PtzContinuousPositioning.StopMovementUsingContinuousMove feature.
3. Client is considered as NOT supporting PTZ Using Media2 Zoom Continuous Positioning if ANY of the following is TRUE:
   - No valid response to **ContinuousMove** request with **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** PTZ space if detected AND
   - No valid response to **ContinuousMove** request with skipped PTZ space attribute for **ContinuousMove** operations which use media profile with DefaultContinuousZoomVelocitySpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** if detected OR

- No **ContinuousMove** request with **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** PTZ space is detected AND no **ContinuousMove** request with skipped PTZ space attribute which use media profile with DefaultContinuousZoomVelocitySpace value in PTZConfiguration is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** is detected AND
- Client does not support PtzContinuousPositioning.Stop feature AND PtzContinuousPositioning.StopMovementUsingContinuousMove feature.

20.3 PTZ CONTINUOUS MOVE ZOOM VELOCITY GENERIC SPACE

Test Label: PTZ Using Media2 Continuous Positioning - ContinuousMove Zoom

Test Case ID: MEDIA2_ZOOMSPACES_VELOCITYGENERICSPACE-1

Feature Under Test: Zoom Continuous Move Using Media2 - Velocity Generic Space (Media2_ZoomSpaces_VelocityGenericSpace_PTZContinuousPositioningZoomVelocityGenericSpace)

Profile T Normative Reference: Mandatory

Test Purpose: To verify that Client is able to move a PTZ Device using the ContinuousMove operation with specified Zoom element using **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** PTZ space.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with ContinuousMove operation present.
- Device supports PTZ Service.
- Device supports Continuous Zoom movement (PTZContinuousZoom).

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

1. Client invokes **ContinuousMove** request message to move of PTZ Device using specific value of Zoom element with **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** space attribute value OR
2. Client find or configure media profile to contain PTZConfiguration with DefaultContinuousZoomVelocitySpace with value is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** and invokes **ContinuousMove** request message using specific value of Zoom element with no space attribute.

3. Device responds with code HTTP 200 OK and **ContinuousMoveResponse** message.

Test Result:

- Client **ContinuousMove** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **ContinuousMove** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:ContinuousMove** AND
  - [S2] It contains **tptz:Velocity/tt:Zoom** element AND
  - [S3] If it contains **tptz:Velocity/tt:Zoom/@space** attribute, THEN **tptz:Velocity/tt:Zoom/@space** element value is equal to **http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace** AND
  - [S4] ELSE PTZConfiguration that corresponding to media profile used in **ContinuousMove** request (PTZ Move operation) has DefaultContinuousZoomVelocitySpace (Default space element name to get) value is equal to http://www.onvif.org/ver10/tptz/ZoomSpaces/VelocityGenericSpace (see Annex A.1 HelperGetDefaultPtzSpaceOfPtzConfigurationCorrespondingToMove)
- Device response on the **ContinuousMove** request fulfills the following requirements:
  - [S4] It has HTTP 200 response code AND
  - [S5] **soapenv:Body** element has child element **tptz:ContinuousMoveResponse**.

FAIL -

- The Client failed PASS criteria.

21 PTZ - Set Preset Test Cases

21.1 Feature Level Requirement:

Validated Feature: PTZ - Set Preset (PtzSetPreset)

Check Condition based on Device Features: PTZ Presets is supported by Device.

Required Number of Devices: 1

Profile T Requirement: Conditional

21.2 Expected Scenarios Under Test:

1. Client connects to Device to store a preset using the **SetPreset** operation.
2. Client is considered as supporting PTZ - SetPreset if the following conditions are met:
   - Client is able to store a preset using the **SetPreset** operation.
3. Client is considered as NOT supporting PTZ - SetPreset if ANY of the following is TRUE:
   - No Valid Device Response to **SetPreset** request.

21.3 PTZ SET PRESET

Test Label: PTZ SetPreset

Test Case ID: PTZSETPRESET-1

Feature Under Test: Set Preset (PtzSetPreset_PtzSetPresetRequest)

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to to store a preset using the **SetPreset** operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with SetPreset operation present.
- Device supports PTZ Presets (PTZPresets).

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

1. Client invokes SetPreset request message to store a preset on the Device.

2. Device responds with code HTTP 200 OK and SetPresetResponse message.

Test Result:

PASS -

- Client **SetPreset** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **SetPreset** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:SetPreset** AND
- Device response on the **SetPreset** request fulfills the following requirements:
  - [S2] It has HTTP 200 response code AND
  - [S3] **soapenv:Body** element has child element **tptz:SetPresetResponse**.

FAIL -

- The Client failed PASS criteria.

22 PTZ Get Compatible Configurations Test Cases

22.1 Feature Level Requirement:

Validated Feature: Get Compatible Configurations (PtzGetCompatibleConfigurations)

Check Condition based on Device Features: GetCompatibleConfigurations (PTZ Service) is supported by Device.

Required Number of Devices: 1

Profile T Requirement: Conditional

22.2 Expected Scenarios Under Test:

1. Client connects to Device to retrieve PTZ configurations compatible with profile using the **GetCompatibleConfigurations** operation.
2. Client is considered as supporting PTZ Get Compatible Configurations if the following conditions are met:
   - Client is able to retrieve PTZ configurations compatible with profile using the **GetCompatibleConfigurations** operation.
3. Client is considered as NOT supporting PTZ Get Compatible Configurations if ANY of the following is TRUE:
   - No Valid Device Response to **GetCompatibleConfigurations** request.

22.3 PTZ GET COMPATIBLE CONFIGURATIONS

Test Label: PTZ GetCompatibleConfigurations

Test Case ID: PTZGETCOMPATIBLECONFIGURATIONS-1

Feature Under Test: Get Compatible Configurations (PtzGetCompatibleConfigurations_PTZGetCompatibleConfigurationsRequest)

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to retrieve PTZ configurations compatible with profile using the **GetCompatibleConfigurations** operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with GetCompatibleConfigurations operation present.
- Device supports Get Compatible Configurations feature (PTZGetCompatibleConfigurations).

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

1. Client invokes GetCompatibleConfigurations request message to get TPZ configurations compatible with profile.
2. Device responds with code HTTP 200 OK and GetCompatibleConfigurationsResponse message.

Test Result:

PASS -

- Client **GetCompatibleConfigurations** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **GetCompatibleConfigurations** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:GetCompatibleConfigurations** AND
- Device response on the **GetCompatibleConfigurations** request fulfills the following requirements:
  - [S2] It has HTTP 200 response code AND
  - [S3] **soapenv:Body** element has child element **tptz:GetCompatibleConfigurationsResponse**.

FAIL -

- The Client failed PASS criteria.

23 PTZ Media2 Profile Configuration Test Cases

23.1 Feature Level Requirement:

Validated Feature: PTZ Using Media2 Profile Configuration (PTZUsingMedia2ProfileConfiguration)

Check Condition based on Device Features: PTZ Service and Media2 Service are supported by Device.

Required Number of Devices: 1

Profile T Requirement: Conditional

23.2 Expected Scenarios Under Test:

1. Client connects to Device to add compatible ptz configuration to a Media Profile.
2. Client is considered as supporting PTZ Media2 Profile Configuration if the following conditions are met:
   - Client supports **PtzGetCompatibleConfigurations** feature AND
   - Client is able to add compatible ptz configuration using **GetCompatibleConfigurations** operation and **AddConfiguration** operation with Type element value is equal to **PTZ**.
3. Client is considered as NOT supporting PTZ Media2 Profile Configuration if ANY of the following is TRUE:
   - Client does not support **PtzGetCompatibleConfigurations** feature OR
   - Client is unable to add an ptz configuration compatible with profile using **GetCompatibleConfigurations** operation and **AddConfiguration** operation OR
   - No valid responses for **GetCompatibleConfigurations** request OR
   - No valid responses for **AddConfiguration** request with Type element value is equal to **PTZ**.

23.3 ADD PTZ CONFIGURATION USING MEDIA2

Test Label: Add PTZ Configuration to Media2 Profile

Test Case ID: PTZUSINGMEDIA2PROFILECONFIGURATION-1

Feature Under Test: Add PTZ Configuration in Media2 Profile (PTZUsingMedia2ProfileConfiguration_AddPTZConfigurationToMedia2Profile)

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to add an ptz configuration to a media profile using the **AddConfiguration** operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one Conversation between Client and Device with **AddConfiguration** operation with Type value is equal to **PTZ** present.
- Device supports Media2 Service (Media2Service).
- Device supports PTZ service (PTZService).

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

1. Client invokes **GetCompatibleConfigurations** request message with specified **ProfileToken** to retrieve compatible ptz configurations for specified media profile from the Device.
2. Device responds with code HTTP 200 OK and **GetCompatibleConfigurationsResponse** message.
3. Client invokes **AddConfiguration** request message with Type element value is equal to PTZ and with Configuration token that was recieved in **GetCompatibleConfigurationsResponse** message for the same media profile to add an ptz configuration to specified media profile on the Device.
4. Device responds with code HTTP 200 OK and **AddConfigurationResponse** message.

Test Result:

PASS -

- Client **AddConfiguration** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **AddConfiguration** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tr2:AddConfiguration** AND
  - [S2] It has **tr2:Configuration/tr2:Type** element with value is equal to **PTZ** AND
- Device response to the **AddConfiguration** request fulfills the following requirements:

- [S3] It has HTTP 200 response code AND
- [S4] **soapenv:Body** element has child element **tr2:AddConfigurationResponse**.

- There is Client **GetCompatibleConfigurations** request in Test Procedure that fulfills the following requirements:
  - [S5] It is invoked before the Client **AddConfiguration** request AND
  - [S6] It has **tptz:ProfileToken** element with value is equal to **tr2:ProfileToken** element value from the **AddConfiguration** request AND
  - [S7] It is the last **GetCompatibleConfigurations** request which corresponds to [S5], AND [S6] AND
- Device response to the **GetCompatibleConfigurations** request fulfills the following requirements:
  - [S8] It has HTTP 200 response code AND
  - [S9] **soapenv:Body** element has child element **tptz:GetCompatibleConfigurationsResponse** AND
  - [S10] It contains **tptz:PTZConfiguration** element with **@token** attribute value is equal to **tr2:Configuration/tr2:Token** value for Configuration with **tr2:Configuration/tr2:Type** value is equal to PTZ from the **AddConfiguration** request message.

FAIL -

- The Client failed PASS criteria.

24 PTZ Set Configuration Test Cases

24.1 Feature Level Requirement:

Validated Feature: Set Configuration (PtzSetConfiguration)

Check Condition based on Device Features: PTZ Service is supported by Device.

Required Number of Devices: 1

Profile T Requirement: Conditional

24.2 Expected Scenarios Under Test:

1. Client connects to Device to modify a PTZ configuration using the **SetConfiguration** operation.
2. Client is considered as supporting PTZ Set Configuration if the following conditions are met:
   - Client is able to modify a PTZ configuration using the **SetConfiguration** operation.
3. Client is considered as NOT supporting PTZ Set Configuration if ANY of the following is TRUE:
   - No Valid Device Response to **SetConfiguration** request.

24.3 PTZ SET CONFIGURATION

Test Label: PTZ Set Configuration

Test Case ID: PTZSETCONFIGURATION-1

Feature Under Test: Set Configuration (PtzSetConfiguration_PtzSetConfigurationRequest)

Profile T Normative Reference: Conditional

Test Purpose: To verify that Client is able to to modify a PTZ configuration using the **SetConfiguration** operation.

Pre-Requisite:

- The Network Trace Capture files contains at least one conversation between Client and Device with SetConfiguration operation present.
- Device supports PTZ Service (PTZService).

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

1. Client invokes SetConfiguration request message to modify a PTZ configuration on the Device.
2. Device responds with code HTTP 200 OK and SetConfigurationResponse message.

Test Result:

PASS -

- Client **SetConfiguration** request messages are valid according to XML Schemas listed in Namespaces AND
- Client **SetConfiguration** request in Test Procedure fulfills the following requirements:
  - [S1] **soapenv:Body** element has child element **tptz:SetConfiguration** AND
- Device response on the **SetConfiguration** request fulfills the following requirements:
  - [S2] It has HTTP 200 response code AND
  - [S3] **soapenv:Body** element has child element **tptz:SetConfigurationResponse**.

FAIL -

- The Client failed PASS criteria.

Annex A Test for Appendix A

A.1 Get default PTZ space of PTZ Configuration corresponding to Move Operation

Name: HelperGetDefaultPtzSpaceOfPtzConfigurationCorrespondingToMove

Procedure Purpose: Get default PTZ space of PTZ Configuration corresponding to PTZ Move Operation.

Pre-requisite:

- The Network Trace Capture files contains at least one Conversation between Client and Device with **GetProfiles** (Media2 Service) or **AddConfiguration** (Media2 Service) operations present.

Input: PTZ Move Opertaion request (AbsoluteMove or ContinuousMove) (*moveOpertaion*), Default space element name to get (*defaultSpace*)

Returns: Default PTZ space value (*spaceValue*).

Annex Procedure:

- The Client Test Tool checks that there is Client **AddConfiguration** request or Device **GetProfilesResponse** in Test Procedure that fulfills the following requirements:
  - [S1] It is invoked before *moveOpertaion* request AND
  - If it is **AddConfiguration** request:
    - [S2] **tr2:AddConfiguration/tr2:ProfileToken** value is equal to **ProfileToken** value from *moveOpertaion* request AND
    - [S3] **tr2:AddConfiguration** has **tr2:Configuration** element with **tr2:Type** value is equal to **PTZ** AND

    If it is **GetProfilesResponse** message:
    - [S4] It contains **tr2:Profiles** element with **tr2:Profiles/@token** value is equal to **ProfileToken** value from *moveOpertaion* request (hereinafter *profile*) AND
    - [S5] *profile* has **tr2:Configurations/tr2:PTZ** element AND
  - [S6] It is the closest one preceding *moveOpertaion* request that fullfils ([S2] and [S3]) or ([S4] and [S5]) requirements AND

- The Client Test Tool checks if there is **SetConfiguration** command that fulfills the following requirements:
  - If **AddConfiguration** request was found during previous steps:
    - [S7] It invoked after **AddConfiguration** request AND
    - [S8] It is the closest one preceding the *moveOpertaion* request AND
    - [S9] **tptz:SetConfiguration/tptz:PTZConfiguration/@token** value is equal to **tr2:AddConfiguration/tr2:Configuration/tr2:Token** value of **tr2:Configuration** with **tr2:Type** value is equal to **PTZ** AND
  - If **GetProfiles** request was found during previous steps:
    - [S10] It invoked after **GetProfiles** request AND
    - [S11] It is the closest one preceding the *moveOpertaion* request AND
    - [S12] **tptz:SetConfiguration/tptz:PTZConfiguration/@token** value is equal to **tr2:PTZ/@token** value of *profile* AND
- IF **SetConfiguration** command was detected during previous steps then *defaultSpace* element value of **tptz:SetConfiguration/tptz:PTZConfiguration** will be returened as result of current procedure
- ELSE IF **GetProfiles** response was found during previous steps then *defaultSpace* value of **tr2:Configurations/tr2:PTZ** from *profile* will be returened as result of current procedure
- ELSE IF **AddConfiguration** request was found during previous steps and no **SetConfiguration** was found during previous steps, the Client Test Tool checks the following:
  - There is **GetCompatibleConfigurations** request in Test Procedure that fulfills the following requirements:
    - [S13] It is the closest one preceding the **AddConfiguration** request AND
    - [S14] **tptz:GetCompatibleConfigurations/tptz:ProfileToken** value is equal to **ProfileToken** value from *moveOpertaion* request AND
  - Device response on the **GetCompatibleConfigurations** request fulfills the following requirements:
    - [S15] It has HTTP 200 response code AND
    - [S16] **soapenv:Body** element has child element **tptz:GetCompatibleConfigurationsResponse** AND

- [S17] It contains **tptz:PTZConfiguration/@token** value is equal to **tr2:AddConfiguration/tr2:Configuration/tr2:Token** value of **tr2:Configuration** with **tr2:Type** value is equal to **PTZ** AND

- [S18] *defaultSpace* value from **tptz:GetCompatibleConfigurationsResponse/ tptz:PTZConfiguration** element with @token is equal to **tr2:AddConfiguration/ tr2:Configuration/tr2:Token** value of **tr2:Configuration** with **tr2:Type** value is equal to **PTZ** will be returened as result of current procedure.

A.2 Required Number of Devices Summary

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

Table A.1. Required Number of Devices Summary

Feature ID	Feature Name	Required Number of Devices	Check Condition based on Device Features	Check Condition based on Device Features ID
tc.PtzListing	PTZ - Listing	1	PTZ Service is supported by Device.	PTZService
tc.PtzConfiguration	PTZ - Configuration	1	PTZ Service and Media Service are supported by Device.	PTZService AND MediaService
tc.PtzPanTiltContinuousPositioning	PTZ Pan Tilt Continuous Positioning	1	PTZ Continuous Pan Tilt movement is supported by Device.	PTZContinuousPanTilt
tc.PtzZoomContinuousPositioning	PTZ Zoom Continuous Positioning	1	PTZ Continuous Zoom movement is supported by Device.	PTZContinuousZoom
tc.PtzPanTiltAbsolutePositioning	PTZ Pan Tilt Absolute Positioning	1	Pan Tilt Absolute Movement and Profile S are supported by Device.	PTZAbsolutePanTilt AND S

Feature ID	Feature Name	Required Number of Devices	Check Condition based on Device Features	Check Condition based on Device Features ID
tc.PtzZoomAbsolutePositioning	PTZ Zoom Absolute Positioning	1	Zoom Absolute Movement and Profile S are supported by Device.	PTZAbsoluteZoom AND S
tc.PtzPanTiltRelativePositioning	PTZ Pan Tilt Relative Positioning	1	Relative Tan Tilt move and Profile S are supported by Device.	PTZRelativePanTilt AND S
tc.PtzZoomRelativePositioning	PTZ Zoom Relative Positioning	1	Relative Zoom move and Profile S are supported by Device.	PTZRelativeZoom AND S
tc.PtzPresets	PTZ Presets	1	PTZ Presets is supported by Device.	PTZPresets
tc.PtzHomePosition	PTZ Home Position	1	PTZ Home Position is supported by Device.	PTZHome
tc.PtzAuxiliaryCommand	PTZ - Auxiliary Command	1	Auxiliary Operations (PTZ Service) and Profile S are supported by Device.	PTZAuxiliary AND S
tc.Media2_PanTiltSpaces_SphericalPositionSpaceDegrees	PTZ Using Media2 Absolute Positioning - Spherical Position Space Degrees	3	Profile T, PTZ Absolute Move and PTZ Spherical Coordinate Spaces are supported by Device.	PTZAbsolute AND PTZSpherical CoordinateSpaces AND ProfileTSupported
tc.Media2_PanTiltSpaces_P	PTZ Using Media2 Absolute Positioning -	3	PTZ Absolute Pan/Tilt Move and PTZ Generic	PTZAbsolutePanTilt AND PTZGenericCo

Feature ID	Feature Name	Required Number of Devices	Check Condition based on Device Features	Check Condition based on Device Features ID
ositionGeneri cSpace	Pan Tilt Position Generic Space		Coordinate Spaces are supported by Device.	ordinateSpace s AND Media2Service
tc.Media2_Zo omSpaces_Posi tionGenericSpace	PTZ Using Media2 Absolute Positioning - Zoom Position Generic Space	3	PTZ Absolute Zoom Move and PTZ Generic Coordinate Spaces are supported by Device.	PTZAbsoluteZ oom AND PTZGenericCo ordinateSpace s AND Media2Service
tc.Media2_Pa nTiltSpaces_V elocityGeneri cSpace	PTZ Using Media2 Pan Tilt Continuous Positioning	3	PTZ Continuous PanTilt and Media2 Service are supported by Device.	PTZContinuou sPanTilt AND Media2Service
tc.Media2_Zo omSpaces_Velo cityGenericSpace	PTZ Using Media2 Zoom Continuous Positioning	3	PTZ Continuous Zoom and Medis2 Service are supported by Device.	PTZContinuou sZoom AND Media2Service
tc.PtzSetPreset	PTZ - Set Preset	1	PTZ Presets is supported by Device.	PTZPresets
tc.PtzGetCom patibleConfig urations	PTZ Get Compatible Configurations	1	GetCompatibl eConfigurations (PTZ Service) is supported by Device.	PTZGetCompat ibleConfigurations
tc.PTZUsingM edia2ProfileC onfiguration	PTZ Media2 Profile Configuration	1	PTZ Service and Media2 Service are supported by Device.	PTZService AND Medi2Service
tc.PtzSetCon figuration	PTZ Set Configuration	1	PTZ Service is supported by Device.	PTZService