

ONVIF®

Media2 Configuration Device Test Specification

Version 25.12

December 2025

© 2025 ONVIF, Inc. All rights reserved.

Recipients of this document may copy, distribute, publish, or display this document so long as this copyright notice, license and disclaimer are retained with all copies of the document. No license is granted to modify this document.

THIS DOCUMENT IS PROVIDED "AS IS," AND THE CORPORATION AND ITS MEMBERS AND THEIR AFFILIATES, MAKE NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, OR TITLE; THAT THE CONTENTS OF THIS DOCUMENT ARE SUITABLE FOR ANY PURPOSE; OR THAT THE IMPLEMENTATION OF SUCH CONTENTS WILL NOT INFRINGE ANY PATENTS, COPYRIGHTS, TRADEMARKS OR OTHER RIGHTS.

IN NO EVENT WILL THE CORPORATION OR ITS MEMBERS OR THEIR AFFILIATES BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, ARISING OUT OF OR RELATING TO ANY USE OR DISTRIBUTION OF THIS DOCUMENT, WHETHER OR NOT (1) THE CORPORATION, MEMBERS OR THEIR AFFILIATES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR (2) SUCH DAMAGES WERE REASONABLY FORESEEABLE, AND ARISING OUT OF OR RELATING TO ANY USE OR DISTRIBUTION OF THIS DOCUMENT. THE FOREGOING DISCLAIMER AND LIMITATION ON LIABILITY DO NOT APPLY TO, INVALIDATE, OR LIMIT REPRESENTATIONS AND WARRANTIES MADE BY THE MEMBERS AND THEIR RESPECTIVE AFFILIATES TO THE CORPORATION AND OTHER MEMBERS IN CERTAIN WRITTEN POLICIES OF THE CORPORATION.

REVISION HISTORY

Vers.	Date	Description
16.06	Feb 12, 2016	Original publication
16.06	Feb 19, 2016	Step 11 and diagram have been updated in test 4.1.3 updated according to the feedback of Bhetanabottla Sriram
16.06	Feb 25, 2016	The issue in last step in tests MEDIA2-4-2-3 has been fixed
16.06	Mar 8, 2016	The tests 4.1.1 – 4.1.3 have been updated according to the feedback from F2F Tokyo. OSD configuration tests have been added
16.06	Mar 15, 2016	The tests MEDIA2-4-4-1 - MEDIA2-4-4-4 have been updated according to Fredrik's feedback.
16.06	Apr 4, 2016	The response for SetOSD and DeleteOSD requests have been updated according to the notes from Sano Hiroyuki
16.07	Jun 23, 2016	Test numbering and document version have been fixed
16.07	Jul 13, 2016	F2F commnets implemented.
16.07	Jul 14, 2016	Notes from F. Svensson implemented. Tests sequences updated.
16.07	Jul 27, 2016	Review comments implemented
16.07	Aug 8, 2016	Comments from Nicolas Brochu implemented
17.01	Oct 4, 2016	The test MEDIA2-4-4-2 have been updated. Pre-Requisite of the tests MEDIA2-4-4-1 - MEDIA2-4-4-4 have been updated.
17.01	Oct 13, 2016	Test case MEDIA2-4-5-1 SNAPSHOT URI has been added. Annex A.5 Configure Media profile with Video Source Configuration and Video Encoder Configuration has been added.
17.01	Oct 26, 2016	The following test cases and annexes were added in the scope of #1154: MEDIA2-5-1-1 GET VIDEO SOURCE CONFIGURATION OPTIONS MEDIA2-5-1-2 GET VIDEO SOURCE CONFIGURATIONS MEDIA2-5-1-3 VIDEO SOURCE CONFIGURATIONS AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY MEDIA2-5-1-4 PROFILES AND VIDEO SOURCE CONFIGURATIONS CONSISTENCY MEDIA2-5-1-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS MEDIA2-5-1-6 GET VIDEO SOURCE CONFIGURATIONS – INVALID TOKEN A.8 Get Service Capabilities A.7 Get Video Source Configurations List

		A.6 Configure Media profile with Video Source Configuration
17.01	Oct 26, 2016	The following test cases and annexes were added in the scope of #1160: MEDIA2-6-1-1 GET AUDIO SOURCE CONFIGURATION OPTIONS MEDIA2-6-1-2 GET AUDIO SOURCE CONFIGURATIONS MEDIA2-6-1-3 AUDIO SOURCE CONFIGURATIONS AND AUDIO SOURCE CONFIGURATION OPTIONS CONSISTENCY MEDIA2-6-1-4 PROFILES AND AUDIO SOURCE CONFIGURATIONS CONSISTENCY MEDIA2-6-1-5 MODIFY ALL SUPPORTED AUDIO SOURCE CONFIGURATIONS MEDIA2-6-1-6 GET AUDIO SOURCE CONFIGURATIONS – INVALID TOKEN A.9 Get Audio Source Configurations List A.10 Configure Media profile with Audio Source Configuration
17.01	Oct 26, 2016	The following test cases and annexes were added in the scope of #1166: MEDIA2-4-5-1 SNAPSHOT URI A.5 Configure Media profile with Video Source Configuration and Video Encoder Configuration
17.01	Oct 26, 2016	The following test cases and annexes were added in the scope of #1170: MEDIA2-4-1-2 CREATE MEDIA PROFILE WITH PRE-DEFINED CONFIGURATION MEDIA2-4-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION MEDIA2-4-2-4 VIDEO ENCODER CONFIGURATIONS – ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS MEDIA2-4-3-1 G.711 AUDIO ENCODER CONFIGURATION MEDIA2-4-3-2 AAC AUDIO ENCODER CONFIGURATION MEDIA2-6-1-5 MODIFY ALL SUPPORTED AUDIO SOURCE CONFIGURATIONS MEDIA2-5-1-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS The following annexes were added in the scope of #1170: A.11 Delete Media Profile if Max Reached A.12 Create PullPoint Subscription A.14 Retrieve Profile Changed Event by PullPoint A.13 Delete Subscription A.16 Get Video Encoder Configurations List

		A.17 Get Audio Encoder Configurations List A.15 Retrieve Configuration Changed Event by PullPoint
17.01	Oct 27, 2016	MEDIA2-4-4-2 was updated to get last PositionOption for second create
17.01	Oct 28, 2016	The following test cases and annexes were added in the scope of #1162: MEDIA2-7-1-1 GET AUDIO OUTPUT CONFIGURATION OPTIONS MEDIA2-7-1-2 GET AUDIO OUTPUT CONFIGURATIONS MEDIA2-7-1-3 AUDIO OUTPUT CONFIGURATIONS AND AUDIO OUTPUT CONFIGURATION OPTIONS CONSISTENCY MEDIA2-7-1-4 PROFILES AND AUDIO OUTPUT CONFIGURATIONS CONSISTENCY MEDIA2-7-1-5 MODIFY ALL SUPPORTED AUDIO OUTPUT CONFIGURATIONS MEDIA2-7-1-6 GET AUDIO OUTPUT CONFIGURATIONS – INVALID TOKEN MEDIA2-8-1-1 GET AUDIO DECODER CONFIGURATION OPTIONS MEDIA2-8-1-2 GET AUDIO DECODER CONFIGURATIONS MEDIA2-8-1-3 PROFILES AND AUDIO DECODER CONFIGURATIONS CONSISTENCY MEDIA2-8-1-4 MODIFY ALL SUPPORTED AUDIO DECODER CONFIGURATIONS MEDIA2-8-1-5 GET AUDIO DECODER CONFIGURATIONS – INVALID TOKEN A.18 Get Audio Output Configurations List A.19 Configure Media profile with Audio Output Configuration A.20 Get Audio Decoder Configurations List A.21 Configure Media profile with Audio Output Configuration and Audio Decoder Configuration
17.01	Oct 28, 2016	The following test cases and annexes were added in the scope of #1172: MEDIA2-9-1-1 READY TO USE MEDIA PROFILE FOR PTZ
17.01	Oct 28, 2016	The following test cases and annexes were added in the scope of #1180: MEDIA2-10-1-1 GET VIDEO SOURCE MODES MEDIA2-10-1-2 SET VIDEO SOURCE MODES A.22 Get Video Sources List A.23 Waiting for Reboot

17.01	Nov 13, 2016	The following test cases and annexes were added in the scope of #1156: MEDIA2-4-2-5 VIDEO ENCODER INSTANCES A.24 Find Guaranteed Number of Media Profiles for Video Source Configuration A.25 Configure Video Encoder Configuration to Get Guaranteed Number of Media Profiles for Video Source Configuration A.26 Add Video Encoder Configuration to Get Guaranteed Number of Media Profiles for Video Source Configuration A.27 Create New or Configure Fixed Media Profiles to Get Guaranteed Number of Media Profiles for Video Source Configuration
17.01	Nov 23, 2016	The following test case was added in the scope of #1174: MEDIA2-9-1-2 DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ
17.01	Nov 27, 2016	The Annexes format was changed according to comment in #1166.
17.01	Nov 27, 2016	The test MEDIA2-2-4-2 was updated according comments in #1180: Typos were fixed. The first not enabled will be used for first Set.
17.01	Nov 27, 2016	The following were updated according #1215: Command under test were updated. Step 8 was removed from MEDIA2-2-3-1. Step 5.1 was updated with description in MEDIA2-2-3-3.
17.01	Nov 27, 2016	The format was updated according #1238.
17.01	Nov 27, 2016	Test Structures and test IDs were updated according #1265.
17.01	Nov 27, 2016	The following annexes were updated in the scope of #1260: A.4 OSDConfigurationOptions and OSDConfiguration mapping
17.01	Dec 07, 2016	Annex A.27 were renamed. Annex A.27 Procedure Purpose were updated. Annex A.27 Procedure was fixed to Create Media Profile if maxProfiles was not reached.
17.01	Dec 08, 2016	Fixed typos and link according description in #1162. Fixed typos and link according description in #1166. Fixed typos and link according description in #1161. Fixed typos and link according description in #1170. Fixed typos and link according description in #1180. Fixed responses according in #1178.

17.01	Dec 12, 2016	MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION was updated: subscription creation were moved to the loop to prevent receiving messages after Annex A.1.
17.01	Jan 09, 2017	MEDIA2-2-2-5 was updated according #1294 and #1154: Step 5.9 was updated. Step 5.3 was updated. Some typos was fixed according #1154. Step 5.9 was updated. MEDIA2-4-1-1 was updated according #1174: ONVIF Core Specification Coverage and Pre-Requisite were updated.
17.01	Jan 18, 2017	The test MEDIA2-2-3-4 VIDEO ENCODER CONFIGURATIONS – ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS was updated according to #1293: GovLength parameter in SetVideoEncoderConfiguration request was updated.
17.06	Jan 26, 2017	The following test cases were added according to #1296: MEDIA2-7-1-1 MEDIA2 SERVICE CAPABILITIES MEDIA2-7-1-2 GET SERVICES AND GET MEDIA2 SERVICE CAPABILITIES CONSISTENCY
17.06	Jan 30, 2017	MEDIA2-3-4-4 MODIFY ALL SUPPORTED AUDIO DECODER CONFIGURATIONS test case was updated according to #1295.
17.06	Feb 09, 2017	MEDIA2-1-1-1 READY TO USE MEDIA PROFILE FOR VIDEO STREAMING test case was updated according to #1284. MEDIA2-2-3-5 VIDEO ENCODER CONFIGURATION OPTIONS test case was added according to #1273.
17.06	Feb 20, 2017	MEDIA2-2-3-1 VIDEO ENCODER CONFIGURATION test case was updated according to #1215.
17.06	Mar 03, 2017	MEDIA2-1-1-1 READY TO USE MEDIA PROFILE FOR VIDEO STREAMING test case was updated according to #1284 and #1345.
17.06	Mar 06, 2017	MEDIA2-4-1-2 DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ test case was updated according to #1307.
17.06	Mar 22, 2017	MEDIA2-1-1-4 GET PROFILES test case was added according to #1333.
17.06	Mar 24, 2017	Media2-2-2-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS test case was updated according to #1312.
17.06	Mar 31, 2017	MEDIA2-7-1-1 MEDIA2 SERVICE CAPABILITIES test case was updated according to #1288. The following test cases were updated according to #1367: MEDIA2-3-2-1 G.711 AUDIO ENCODER CONFIGURATION

		MEDIA2-3-2-2 AAC AUDIO ENCODER CONFIGURATION
17.06	Apr 03, 2017	MEDIA2-1-1-5 CREATE MEDIA PROFILE WITH CONFIGURATIONS test case was added according to #1344.
17.06	Apr 24, 2017	MEDIA2-2-1-1 VIDEO ENCODER INSTANCES test case was updated according to #1156. Annex A.28 was added.
17.06	May 24, 2017	MEDIA2-2-3-1 VIDEO ENCODER CONFIGURATION test case was updated according to #1363.
17.12	Jul 13, 2017	MEDIA2-6-1-5 GET OSDS test case was added according to #1347.
17.12	Jul 14, 2017	MEDIA2-1-1-6 REMOVE ALL CONFIGURATIONS FROM MEDIA PROFILE test case was added according to #1404.
17.12	Sept 28, 2017	MEDIA2-2-2-7 PROFILES AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY test case was added according to #1484. MEDIA2-2-3-1 VIDEO ENCODER CONFIGURATION test case was changed according to #1485. The following test cases and annexes were added in the scope of #1488: MEDIA2-3-2-3 GET AUDIO ENCODER CONFIGURATION OPTIONS MEDIA2-3-2-4 AUDIO ENCODER CONFIGURATIONS AND AUDIO ENCODER CONFIGURATION OPTIONS CONSISTENCY
17.12	Oct 24, 2017	MEDIA2-1-1-7 FIXED MEDIA PROFILE CONFIGURATION test case was added according to #1472.
17.12	Oct 31, 2017	The following test case waere added according to #1500: MEDIA2-6-1-6 GET OSD OPTIONS MEDIA2-6-1-7 OSD CONFIGURATIONS AND OSD OPTIONS CONSISTENCY
17.12	Nov 03, 2017	The following test case waere added according to #1487: MEDIA2-4-1-2 DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ
17.12	Nov 24, 2017	MEDIA2-6-1-6 GET OSD OPTIONS updated according to #1534
17.12	Nov 27, 2017	MEDIA2-7-1-1 MEDIA2 SERVICE CAPABILITIES updated according to #1522
17.12	Nov 28, 2017	MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION was updated according to #1499 Annex A.1 Create Empty Profile was updated according to #1499 MEDIA2-6-1-7 OSD CONFIGURATIONS AND OSD OPTIONS CONSISTENCY was updated according to #1500
17.12	Nov 29, 2017	Media Configuration Test Cases\Video Configuration\General section was removed. Annex A.28 Remove all non-fixed Media Profiles and remove all configurations from fixed Media Profiles was removed.

		Annex A.27 Create New Media Profiles to Get Guaranteed Number of Media Profiles for Video Source Configuration
17.12	Dec 01, 2017	MEDIA2-8-1-1 MODIFY ALL SUPPORTED METADATA CONFIGURATIONS was added according to #1486.
18.06	Jan 16, 2018	MEDIA2-6-1-4 SET OSD CONFIGURATION TEXT OVERLAY was changed according to #1519.
18.06	Jan 17, 2018	MEDIA2-7-1-1 MEDIA2 SERVICE CAPABILITIES was changed according to #1521.
18.06	Jan 23, 2018	The following test cases were updated according to #1483: MEDIA2-6-1-6 GET OSD OPTIONS MEDIA2-6-1-2 CREATE OSD CONFIGURATION FOR IMAGE OVERLAY MEDIA2-6-1-3 SET OSD CONFIGURATION IMAGE OVERLAY The following annex was added according to #1483: Annex A.28 OSD Picture File Parameters
18.06	Jan 24, 2018	The following test cases were updated according to #1546: MEDIA2-6-1-1 CREATE OSD CONFIGURATION FOR TEXT OVERLAY MEDIA2-6-1-2 CREATE OSD CONFIGURATION FOR IMAGE OVERLAY
18.06	Jan 24, 2018	MEDIA2-6-1-6 GET OSD OPTIONS was updated according to #1511.
18.06	Jan 24, 2018	The following test cases were updated according to #1575: MEDIA2-8-1-1 MODIFY ALL SUPPORTED METADATA CONFIGURATIONS (note and steps 5.3 and 5.9 were updated)
18.06	Jan 24, 2018	The following test cases were updated according to #1560: MEDIA2-2-3-4 VIDEO ENCODER CONFIGURATIONS – ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS (step 5.3.12 was removed, step 7 was added)
18.06	Mar 20, 2018	The following test cases were updated according to #1581: MEDIA2-6-1-6 GET OSD OPTIONS (step 4.3 and step 5 added) MEDIA2-6-1-7 OSD CONFIGURATIONS AND OSD OPTIONS CONSISTENCY (step 4.6.2 added)
18.06	Mar 21, 2018	The following test cases were updated according to #1547: Annex A.30 Device Configuration to Create OSD with Required Type added Annex A.29 Delete OSD added MEDIA2-6-1-1 CREATE OSD CONFIGURATION FOR TEXT OVERLAY (Pre-Requisite about maximum number of OSD removed, step 4.6, step 4.7, step 4.15, step 4.16, and step 4.25 added)

		MEDIA2-6-1-2 CREATE OSD CONFIGURATION FOR IMAGE OVERLAY (Pre-Requisite about maximum number of OSD removed, step 4.6, and step 4.24 added) MEDIA2-6-1-3 SET OSD CONFIGURATION IMAGE OVERLAY (Pre-Requisite about maximum number of OSD removed, step 4.7, and step 4.19 added) MEDIA2-6-1-4 SET OSD CONFIGURATION TEXT OVERLAY (Pre-Requisite about maximum number of OSD removed, step 4.7, and step 4.18 added)
18.06	Apr 09, 2018	Annex A.30 Device Configuration to Create OSD with Required Type updated according to #1608 Annex A.31 Delete All Text OSDs added according to #1608
18.06	Apr 18, 2018	MEDIA2-7-1-1 MEDIA2 SERVICE CAPABILITIES updated according to #1595 (step 16 added)
18.06	Apr 24, 2018	MEDIA2-2-3-4 SET ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS updated according to #1617
18.06	May 07, 2018	The following were updated according to #1620: MEDIA2-5-1-2 VIDEO ENCODER INSTANCES PER VIDEO SOURCE (added)
18.06	Jun 21, 2018	Reformatting document using new template
18.12	Aug 07, 2018	MEDIA2-7-1-1 MEDIA2 SERVICE CAPABILITIES updated according to #1691
18.06 SR1	Sep 19, 2018	The following were updated according to #1641: MEDIA2-2-3-4 SET ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS (note was updated to remove Quality, RateControl.FrameRateLimit, and RateControl.BitrateLimit from comparison)
18.12	Dec 07, 2018	The following were updated according to #1762: DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ (PTZConfiguration.Name value in 6.3.6 step was updated)
18.12	Dec 21, 2018	Switching Hub description in 'Network Configuration for DUT' section was updated according to #1737
19.06	Jan 10, 2019	The following were updated according to #1762: DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ (step 5 added, step 7.3.3 updated)
19.06	Apr 10, 2019	The following were updated according to #1764: MEDIA2-3-2-2 AAC AUDIO ENCODER CONFIGURATION (step 5.3 and step 5.3.1 updated)
19.06	Apr 26, 2019	The following were updated according to #1813: MEDIA2-4-1-2 DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ (steps 7.3.6 - 7.3.11 added)
19.12	Sep 23, 2019	The following were updated according to #1926: MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION (steps 7- 8 replaced with steps 6.34-6.57)

19.12	Sep 25, 2019	The following were updated according to #1913: MEDIA2-1-1-4 GET PROFILES (steps 16 and 17 added)
19.12	Oct 08, 2019	The following were updated according to #1894: MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION (steps with metadata moved under Metadata feature, see step 6.34) MEDIA2-8-1-1 MODIFY ALL SUPPORTED METADATA CONFIGURATIONS (Metadata feature added into Pre-Requisite)
19.12	Oct 09, 2019	The following were done according to #1913: MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION (step 7 added) MEDIA2-9-1-1 GET ANALYTICS CONFIGURATIONS (test case added) MEDIA2-9-1-2 PROFILES AND ANALYTICS CONFIGURATIONS CONSISTENCY (test case added) MEDIA2-9-1-3 GET ANALYTICS CONFIGURATIONS – INVALID TOKEN (test case added) A.32 Get Analytics Configurations List (annex case added) MEDIA2-8-1-2 GET METADATA CONFIGURATIONS (test case added) MEDIA2-8-1-3 PROFILES AND METADATA CONFIGURATIONS CONSISTENCY (test case added) MEDIA2-8-1-4 GET METADATA CONFIGURATIONS – INVALID TOKEN (test case added)
19.12	Oct 11, 2019	The following were done according to #1957: MEDIA2-3-2-3 GET AUDIO ENCODER CONFIGURATION OPTIONS (Type parameter in step 7 updated, step 9 updated)
20.06	Mar 03, 2020	Minor changes according to #1913: MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION (invalid step ID fixed) MEDIA2-1-1-4 GET PROFILES (Specification coverage section updated)
20.06	May 12, 2020	The following were updated according to #1901 and #1999: MEDIA2-1-1-2 CREATE MEDIA PROFILE WITH PRE-DEFINED CONFIGURATION (steps 5, 8, 17, 18 updated) MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION (all steps with calling of A.12, A.14, and A.13 updated) MEDIA2-2-2-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS (steps 4, 5.5, 5.11, 6 updated) MEDIA2-2-3-4 SET ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS (steps 4, 5.3.3, 5.3.9, 7 updated) MEDIA2-3-1-5 MODIFY ALL SUPPORTED AUDIO SOURCE CONFIGURATIONS (steps 4, 5.5, 6 updated)

		MEDIA2-3-2-1 G.711 AUDIO ENCODER CONFIGURATION (steps 4, 5.3.4, 5.3.11, 6 updated) MEDIA2-3-2-2 AAC AUDIO ENCODER CONFIGURATION (steps 4, 5.3.4, 5.3.11, 6 updated) MEDIA2-3-3-5 MODIFY ALL SUPPORTED AUDIO OUTPUT CONFIGURATIONS (steps 4, 5.5, 5.11, 6 updated) MEDIA2-4-1-2 DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ (steps 6, 7.3.3, 7.3.14, 7.3.27, 9 updated) MEDIA2-8-1-1 MODIFY ALL SUPPORTED METADATA CONFIGURATIONS (steps 4, 5.5, 5.11, 6 updated)
20.12	Jul 30, 2020	The following were updated according to #2072: MEDIA2-1-1-5 CREATE MEDIA PROFILE WITH CONFIGURATIONS (separated CreateProfile for each configuration)
20.12	Sep 28, 2020	The following were updated according to #2088: MEDIA2-2-3-1-v17.12 VIDEO ENCODER CONFIGURATION (Video feature was added in Pre-Requisite) MEDIA2-2-3-2 VIDEO ENCODER CONFIGURATIONS AND VIDEO ENCODER CONFIGURATION OPTIONS CONSISTENCY (Video feature was added in Pre-Requisite) MEDIA2-2-3-3 PROFILES AND VIDEO ENCODER CONFIGURATION OPTIONS CONSISTENCY (Video feature was added in Pre-Requisite) MEDIA2-2-3-4-v20.06 SET ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS (Video feature was added in Pre-Requisite) MEDIA2-2-3-5-v17.06 VIDEO ENCODER CONFIGURATION OPTIONS VALIDATION (Video feature was added in Pre-Requisite) MEDIA2-5-1-2 VIDEO ENCODER INSTANCES PER VIDEO SOURCE (Video feature was added in Pre-Requisite) MEDIA2-1-1-3 DYNAMIC MEDIA PROFILE CONFIGURATION (Step 6.10 was changed: steps for Video Encoder were moved under condition that Video is supported)
20.12	Oct 01, 2020	The following were updated according to #2099: MEDIA2-5-1-1 SNAPSHOT URI (step 4 added)
20.12	Nov 09, 2020	The following test case was added according to #2025: MEDIA2-1-1-8 READY TO USE MEDIA PROFILE FOR METADATA STREAMING
20.12	Dec 17, 2020	The following test case was added according to #2120: MEDIA2-1-1-9 READY TO USE MEDIA PROFILE FOR VIDEO STREAMING (PROFILE M)
21.06	Apr 09, 2021	The following annex was updated according to #2124: A.23 Waiting for Reboot (condition with Discovery feature supporting added)

21.06	May 27, 2021	The following test case was updated according to #2216: MEDIA2-2-2-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS (step 5.3 and 5.9 modified to skip change of Rotate if Reboot=true)
21.12	Aug 31, 2021	The following test case was updated according to #2216: MEDIA2-2-2-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS (step 7 added)
21.12	Oct 07, 2021	The following test cases and annexes were added in the scope of #2222: MEDIA2-10-1-1 CREATE MASKS MEDIA2-10-1-2 GET MASKS MEDIA2-10-1-3 SET MASKS MEDIA2-10-1-4 GET MASK OPTIONS MEDIA2-10-1-5 MASK CONFIGURATIONS AND MASK OPTIONS CONSISTENCY A.34 Device Configuration For Create Mask A.35 Delete Mask A.36 Create Mask
21.12	Oct 13, 2021	The following test cases and annexes were added in the scope of #2222: MEDIA2-10-1-6 SINGLE COLOR ONLY PARAMETER A.37 Remove all Masks from Video Source Configuration
22.12	Oct 18, 2022	The following test cases were updated in the scope of #33: MEDIA2-10-1-2 GET MASKS (step 3 was added) The following annex was added in the scope of #33: Annex A.38 Device Configuration For Get Masks Test Case
22.12	Nov 15, 2022	The following test cases were updated in the scope of #33: MEDIA2-10-1-1 CREATE MASKS (Note about comparison at step 8 was added, editorial changes) MEDIA2-10-1-3 CREATE MASKS (Note about comparison at step 10 was added, editorial changes)
23.06	Mar 19, 2023	MEDIA2-2-2-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS updated (according to #81): Steps 7.3.1, 7.3.2, 7.3.3, 7.3.4 added. Step 7.3.5 with SetVideoSourceConfiguration updated to choose rotate mode value different from current mode and to choose degree different from 0.
24.12	Oct 21, 2024	Video Source Configuration feature was added into Pre-Requisite of the following test cases in the scope of #242 ticket:

		MEDIA2-2-2-1 GET VIDEO SOURCE CONFIGURATION OPTIONS MEDIA2-2-2-2 GET VIDEO SOURCE CONFIGURATIONS MEDIA2-2-2-3 VIDEO SOURCE CONFIGURATIONS AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY MEDIA2-2-2-4 PROFILES AND VIDEO SOURCE CONFIGURATIONS CONSISTENCY MEDIA2-2-2-5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS MEDIA2-2-2-6 GET VIDEO SOURCE CONFIGURATIONS – INVALID TOKEN MEDIA2-2-2-7 PROFILES AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY MEDIA2-1-1-2 CREATE MEDIA PROFILE WITH PRE-DEFINED CONFIGURATION
24.12	Nov 4, 2024	Validation of ViewMode value added according of #269 ticket: MEDIA2-2-2-2 GET VIDEO SOURCE CONFIGURATIONS (step 7.1 added)
25.06	Feb 12, 2025	Validation of Fisheye ViewMode value added according of #220 ticket: MEDIA2-2-2-2 GET VIDEO SOURCE CONFIGURATIONS (step 7.1.2 added)
25.06	Mar 24, 2025	Audio Clip test cases added according to #291 ticket: MEDIA2-11-1-1 GET AUDIO CLIPS MEDIA2-11-1-2 ADD AUDIO CLIP MEDIA2-11-1-3 ADD AUDIO CLIP - WITH TOKEN IN REQUEST MEDIA2-11-1-4 SET AUDIO CLIP MEDIA2-11-2-1 PLAY AUDIO CLIP - WAV with LPCM MEDIA2-11-2-2 PLAY AUDIO CLIP - OGG-Opus MEDIA2-11-2-3 PLAY AUDIO CLIP - STOP PLAYING MEDIA2-11-2-4 PLAY AUDIO CLIP - NEW PARAMETERS IN PLAY REQUEST MEDIA2-11-2-5 PLAY SCHEDULED AUDIO CLIP MEDIA2-12-1-1 REALTIME PULLPOINT SUBSCRIPTION – AUDIO CLIP STATE EVENT The following test case was updated according to #291 ticket: MEDIA2-7-1-1 MEDIA2 SERVICE CAPABILITIES (step 19 was added to check AudioClip capabilities) MEDIA2-7-1-2 GET SERVICES AND GET MEDIA2 SERVICE CAPABILITIES CONSISTENCY (Audio Clip Capabilities added into Note)

25.12	Aug 10, 2025	The following test and annexes were updated according #334: MEDIA2-1-1-10 READY TO USE MEDIA PROFILE FOR VIDEO STREAMING (H.264) (new)
25.12	Oct 14, 2025	The following test and annexes were updated according #334: MEDIA2-14-1-1 GET AND SET WEBRTC CONFIGURATIONS (new) MEDIA2-14-1-2 SET WEBRTC CONFIGURATIONS FAULTS (new)
25.12	Oct 20, 2025	The following test and annexes were added according #286: MEDIA2-13-1-1 SET EQ PRESETS MEDIA2-13-1-2 SET EQ PRESETS - SCHEDULE MEDIA2-13-1-3 SET EQ PRESETS - FREQUENCY DECIBEL Annex A.49 Choose Audio Output Configuration With EQ Presets Supporting Annex A.50 Choose Audio Output Configuration With EQ Presets Scheduling Supporting Annex A.51 Choose Audio Output Configuration with EQ Preset with Frequency Decibel Management Supporting

Table of Contents

1	Introduction	24
1.1	Scope	24
1.2	Media Configuration	25
2	Normative references	27
3	Terms and Definitions	29
3.1	Conventions	29
3.2	Definitions	29
3.3	Abbreviations	29
4	Test Overview	30
4.1	Test Setup	30
4.1.1	Network Configuration for DUT	30
4.2	Prerequisites	31
4.3	Test Policy	31
4.3.1	Media Configuration	31
5	Media Configuration Test Cases	33
5.1	Media Profile	33
5.1.1	READY TO USE MEDIA PROFILE FOR VIDEO STREAMING	33
5.1.2	CREATE MEDIA PROFILE WITH PRE-DEFINED CONFIGURATION	34
5.1.3	DYNAMIC MEDIA PROFILE CONFIGURATION	37
5.1.4	GET PROFILES	57
5.1.5	CREATE MEDIA PROFILE WITH CONFIGURATIONS	61
5.1.6	REMOVE ALL CONFIGURATIONS FROM MEDIA PROFILE	65
5.1.7	FIXED MEDIA PROFILE CONFIGURATION	66
5.1.8	READY TO USE MEDIA PROFILE FOR METADATA STREAMING	68
5.1.9	READY TO USE MEDIA PROFILE FOR VIDEO STREAMING (PROFILE M)	69
5.1.10	READY TO USE MEDIA PROFILE FOR VIDEO STREAMING (H.264)	71
5.2	Video Configuration	72
5.2.1	Video Source Configuration	72
5.2.1.1	GET VIDEO SOURCE CONFIGURATION OPTIONS	72

5.2.1.2	GET VIDEO SOURCE CONFIGURATIONS	74
5.2.1.3	VIDEO SOURCE CONFIGURATIONS AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY	76
5.2.1.4	PROFILES AND VIDEO SOURCE CONFIGURATIONS CONSISTENCY	79
5.2.1.5	MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS	81
5.2.1.6	GET VIDEO SOURCE CONFIGURATIONS – INVALID TOKEN	88
5.2.1.7	PROFILES AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY	89
5.2.2	Video Encoder Configuration	92
5.2.2.1	VIDEO ENCODER CONFIGURATION	92
5.2.2.2	VIDEO ENCODER CONFIGURATIONS AND VIDEO ENCODER CONFIGURATION OPTIONS CONSISTENCY	94
5.2.2.3	PROFILES AND VIDEO ENCODER CONFIGURATION OPTIONS CONSISTENCY	95
5.2.2.4	SET ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS	96
5.2.2.5	VIDEO ENCODER CONFIGURATION OPTIONS	101
5.2.3	Video Source	103
5.2.3.1	GET VIDEO SOURCE MODES	103
5.2.3.2	SET VIDEO SOURCE MODES	105
5.3	Audio Configuration	107
5.3.1	Audio Source Configuration	107
5.3.1.1	GET AUDIO SOURCE CONFIGURATION OPTIONS	107
5.3.1.2	GET AUDIO SOURCE CONFIGURATIONS	109
5.3.1.3	AUDIO SOURCE CONFIGURATIONS AND AUDIO SOURCE CONFIGURATION OPTIONS CONSISTENCY	111
5.3.1.4	PROFILES AND AUDIO SOURCE CONFIGURATIONS CONSISTENCY	112
5.3.1.5	MODIFY ALL SUPPORTED AUDIO SOURCE CONFIGURATIONS	113

5.3.1.6	GET AUDIO SOURCE CONFIGURATIONS – INVALID TOKEN	116
5.3.2	Audio Encoder Configuration	117
5.3.2.1	G.711 AUDIO ENCODER CONFIGURATION	117
5.3.2.2	AAC AUDIO ENCODER CONFIGURATION	122
5.3.2.3	GET AUDIO ENCODER CONFIGURATION OPTIONS	126
5.3.2.4	AUDIO ENCODER CONFIGURATIONS AND AUDIO ENCODER CONFIGURATION OPTIONS CONSISTENCY	128
5.3.3	Audio Output Configuration	129
5.3.3.1	GET AUDIO OUTPUT CONFIGURATION OPTIONS	129
5.3.3.2	GET AUDIO OUTPUT CONFIGURATIONS	131
5.3.3.3	AUDIO OUTPUT CONFIGURATIONS AND AUDIO OUTPUT CONFIGURATION OPTIONS CONSISTENCY	133
5.3.3.4	PROFILES AND AUDIO OUTPUT CONFIGURATIONS CONSISTENCY	135
5.3.3.5	MODIFY ALL SUPPORTED AUDIO OUTPUT CONFIGURATIONS	136
5.3.3.6	GET AUDIO OUTPUT CONFIGURATIONS – INVALID TOKEN	140
5.3.4	Audio Decoder Configuration	141
5.3.4.1	GET AUDIO DECODER CONFIGURATION OPTIONS	141
5.3.4.2	GET AUDIO DECODER CONFIGURATIONS	143
5.3.4.3	PROFILES AND AUDIO DECODER CONFIGURATIONS CONSISTENCY	145
5.3.4.4	MODIFY ALL SUPPORTED AUDIO DECODER CONFIGURATIONS	146
5.3.4.5	GET AUDIO DECODER CONFIGURATIONS – INVALID TOKEN ...	148
5.4	PTZ Configuration	149
5.4.1	READY TO USE MEDIA PROFILE FOR PTZ	149
5.4.2	DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ	150
5.5	Media Streaming	159
5.5.1	SNAPSHOT URI	159
5.5.2	VIDEO ENCODER INSTANCES PER VIDEO SOURCE	160

5.6	OSD Configuration	162
5.6.1	CREATE OSD CONFIGURATION FOR TEXT OVERLAY	162
5.6.2	CREATE OSD CONFIGURATION FOR IMAGE OVERLAY	165
5.6.3	SET OSD CONFIGURATION IMAGE OVERLAY	169
5.6.4	SET OSD CONFIGURATION TEXT OVERLAY	173
5.6.5	GET OSDS	176
5.6.6	GET OSD OPTIONS	177
5.6.7	OSD CONFIGURATIONS AND OSD OPTIONS CONSISTENCY	179
5.7	Capabilities	185
5.7.1	MEDIA2 SERVICE CAPABILITIES	185
5.7.2	GET SERVICES AND GET MEDIA2 SERVICE CAPABILITIES CONSISTENCY	187
5.8	Metadata Configuration	189
5.8.1	Metadata Configuration	189
5.8.1.1	MODIFY ALL SUPPORTED METADATA CONFIGURATIONS	189
5.8.1.2	GET METADATA CONFIGURATIONS	194
5.8.1.3	PROFILES AND METADATA CONFIGURATIONS CONSISTENCY	196
5.8.1.4	GET METADATA CONFIGURATIONS – INVALID TOKEN	198
5.9	Analytics Configuration	199
5.9.1	GET ANALYTICS CONFIGURATIONS	199
5.9.2	PROFILES AND ANALYTICS CONFIGURATIONS CONSISTENCY	201
5.9.3	GET ANALYTICS CONFIGURATIONS – INVALID TOKEN	203
5.10	Masks Configuration	204
5.10.1	CREATE MASKS	204
5.10.2	GET MASKS	206
5.10.3	SET MASKS	209
5.10.4	GET MASK OPTIONS	212
5.10.5	MASK CONFIGURATIONS AND MASK OPTIONS CONSISTENCY	213
5.10.6	SINGLE COLOR ONLY PARAMETER	216
5.11	Audio Clip	220

5.11.1	Audio Clip Configuration	220
5.11.1.1	GET AUDIO CLIPS	220
5.11.1.2	ADD AUDIO CLIP	223
5.11.1.3	ADD AUDIO CLIP - WITH TOKEN IN REQUEST	226
5.11.1.4	SET AUDIO CLIP	228
5.11.2	Audio Clip Playing	231
5.11.2.1	PLAY AUDIO CLIP - WAV with LPCM	231
5.11.2.2	PLAY AUDIO CLIP - OGG-Opus	235
5.11.2.3	PLAY AUDIO CLIP - STOP PLAYING	239
5.11.2.4	PLAY AUDIO CLIP - NEW PARAMETERS IN PLAY REQUEST	243
5.11.2.5	PLAY SCHEDULED AUDIO CLIP	246
5.12	Events	250
5.12.1	REALTIME PULLPOINT SUBSCRIPTION – AUDIO CLIP STATE EVENT	250
5.13	EQ Presets	254
5.13.1	SET EQ PRESETS	254
5.13.2	SET EQ PRESETS - SCHEDULE	256
5.13.3	SET EQ PRESETS - FREQUENCY DECIBEL	258
5.14	WebRTC Configuration	260
5.14.1	WebRTC Configuration	260
5.14.1.1	GET AND SET WEBRTC CONFIGURATIONS	260
5.14.1.2	SET WEBRTC CONFIGURATIONS FAULTS	265
A	Helper Procedures and Additional Notes	268
A.1	Delete Media Profile if Max Reached	268
A.2	Get Service Capabilities	269
A.3	Get Video Source Configurations List	269
A.4	Create Pull Point Subscription	270
A.5	Retrieve Profile Changed Event by PullPoint	271
A.6	Delete Subscription	272
A.7	Name Parameters	273
A.8	Create Empty Profile	273

A.9	Get Audio Source Configurations List	275
A.10	Get Audio Output Configurations List	275
A.11	Delete Media Profile	276
A.12	Configure Media profile with Video Source Configuration	277
A.13	View Modes List	278
A.14	Retrieve Configuration Changed Event by PullPoint	279
A.15	Waiting for Reboot	280
A.16	VideoEncoderConfigurationOptions and VideoEncoderConfiguration mapping ...	281
A.17	Get Video Encoder Configurations List	281
A.18	Get Video Sources List	282
A.19	Configure Media profile with Audio Source Configuration	283
A.20	Get Audio Encoder Configurations List	284
A.21	Configure Media profile with Audio Output Configuration	285
A.22	Get Audio Decoder Configurations List	287
A.23	Configure Media profile with Audio Output Configuration and Audio Decoder Configuration	287
A.24	Configure Media profile with Video Source Configuration and Video Encoder Configuration	290
A.25	Device Configuration to Create OSD with Required Type	292
A.26	Delete OSD	294
A.27	Delete All Text OSDs	294
A.28	OSDConfigurationOptions and OSDConfiguration mapping	295
A.29	OSD Picture File Parameters	298
A.30	Get Metadata Configurations List	299
A.31	Get Analytics Configurations List	299
A.32	Device Configuration For Create Mask	300
A.33	Delete Mask	302
A.34	Device Configuration For Get Masks Test Case	302
A.35	Create Mask	305
A.36	Remove all Masks from Video Source Configuration	306
A.37	Get Audio Outputs List	307

A.38	Get schedules information list	308
A.39	Prepare Free Space for Audio Clip adding	309
A.40	Delete Audio Clip	310
A.41	Retrieve Output Token and Corresponding Output Level Range	311
A.42	Get Audio Clips List	312
A.43	Add and Upload Audio Clip	312
A.44	Retrieve Changed Audio Clip Event by PullPoint	314
A.45	Create Schedule	315
A.46	Get service capabilities (Schedule)	316
A.47	Generate iCalendar value for Schedule	317
A.48	Generate UID value for iCalendar	318
A.49	Choose Audio Output Configuration With EQ Presets Supporting	318
A.50	Choose Audio Output Configuration With EQ Presets Scheduling Supporting	320
A.51	Choose Audio Output Configuration with EQ Preset with Frequency Decibel Management Supporting	322
A.52	Get service capabilities for Advanced Security service	324
A.53	Create a certification path validation policy for authentication server configuration	325
A.54	Provide CA certificate	327
A.55	Signature Algorithm Selection	328
A.56	Generate a key pair	329
A.57	Determine key pair generation params	330
A.58	Create a certification path validation policy with provided certificate identifier	332
A.59	Configure Authorization Server On Device and Start It	333
A.60	Make Sure That At Least One Authorization Server Configuration Could Be Created	336
A.61	Get Authorization Server Configurations List	337
A.62	Provide certificate signed by private key of other certificate	338
A.63	Authorization Server Configuration Type And Authentication Method Selection ..	340
A.64	Create Key Pair and Receive Public Key	341
A.65	Create a key pair	342

A.66	Delete a key pair	344
A.67	Subject for a server certificate	345
A.68	Find Media Profile for Streaming	345

1 Introduction

The goal of the ONVIF test specification set is to make it possible to realize fully interoperable IP physical security implementation from different vendors. The set of ONVIF test specification describes the test cases need to verify the [ONVIF Network Interface Specs] and [ONVIF Conformance] requirements. In addition, the test cases are to be basic inputs for some Profile specification requirements. It also describes the test framework, test setup, pre-requisites, test policies needed for the execution of the described test cases.

This ONVIF Media2 Test Specification acts as a supplementary document to the [ONVIF Network Interface Specs], illustrating test cases need to be executed and passed. And this specification acts as an input document to the development of test tool, which will be used to test the ONVIF device implementation conformance towards ONVIF standard. This test tool is referred as ONVIF Client hereafter.

1.1 Scope

This ONVIF Media2 Test Specification defines and regulates the conformance testing procedure for the ONVIF conformant devices. Conformance testing is meant to be functional black-box testing. The objective of this specification is to provide test cases to test individual requirements of ONVIF devices according to ONVIF Media2 Service, which is defined in [ONVIF Network Interface Specs].

The principal intended purposes are:

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

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

- Product use cases and non-functional (performance and regression) testing.
- SOAP Implementation Interoperability test i.e. Web Service Interoperability Basic Profile version 2.0 (WS-I BP 2.0).
- Network protocol implementation Conformance test for HTTP, HTTPS, RTP and RTSP protocol.
- Poor streaming performance test (audio/video distortions, missing audio/video frames, incorrect lib synchronization etc.).

Wi-Fi Conformance test

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

is to derive all the normative requirements of [ONVIF Network Interface Specs], which are related to ONVIF Media2 Service and some of the optional requirements.

This ONVIF Media2 Test Specification covers ONVIF Media2 service, which is a functional block of [ONVIF Network Interface Specs]. The following sections describe the brief overview of and scope of each functional block.

1.2 Media Configuration

Media Configuration section covers the test cases needed for the verification of media2 service features as mentioned in [ONVIF Network Interface Specs]. Media2 service is used to configure the media configurations.

Briefly it covers the following things:

- Manage media profiles.
- Manage configuration entities.
- Getting snapshot
- Manage OSD configurationd

The scope of this specification is to cover following configuration entities and Audio/Video media formats:

- Configuration Entities:
 - Video source configuration
 - Audio source configuration
 - Video encoder configuration
 - Audio encoder configuration
- Video Codec:
 - H.264
 - H.265
- Audio Codec:
 - G.711
 - AAC

- OSD:
 - Text Overlay
 - Image Overlay

2 Normative references

- [ONVIF Conformance] ONVIF Conformance Process Specification:
<https://www.onvif.org/profiles/conformance/>
- [ONVIF Profile Policy] ONVIF Profile Policy:
<https://www.onvif.org/profiles/>
- [ONVIF Network Interface Specs] ONVIF Network Interface Specification documents:
<https://www.onvif.org/profiles/specifications/>
- [ONVIF Core Specs] ONVIF Core Specification:
<https://www.onvif.org/profiles/specifications/>
- [ONVIF Media2 Spec] ONVIF Media 2 Specification:
<https://www.onvif.org/profiles/specifications/>
- [ONVIF Base Test] ONVIF Base Device Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ISO/IEC Directives, Part 2] ISO/IEC Directives, Part 2, Annex H:
<http://www.iso.org/directives>
- [ISO 16484-5] ISO 16484-5:2014-09 Annex P:
<https://www.iso.org/obp/ui/#iso:std:63753:en>
- [SOAP 1.2, Part 1] W3C SOAP 1.2, Part 1, Messaging Framework:
<http://www.w3.org/TR/soap12-part1/>
- [XML-Schema, Part 1] W3C XML Schema Part 1: Structures Second Edition:
<http://www.w3.org/TR/xmlschema-1/>
- [XML-Schema, Part 2] W3C XML Schema Part 2: Datatypes Second Edition:
<http://www.w3.org/TR/xmlschema-2/>
- [WS-Security] "Web Services Security: SOAP Message Security 1.1 (WS-Security 2004)", OASIS Standard, February 2006.:

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

- [RFC 2396] "Uniform Resource Identifiers (URI): Generic Syntax", T. Berners-Lee, MIT/LCS, R. Fielding, U.C. Irvine, L. Masinter, Xerox Corporation, August 1998:

<https://www.ietf.org/rfc/rfc2396.txt>

3 Terms and Definitions

3.1 Conventions

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

3.2 Definitions

This section describes terms and definitions used in this document.

Profile	See ONVIF Profile Policy.
ONVIF Device	Computer appliance or software program that exposes one or multiple ONVIF Web Services.
ONVIF Client	Computer appliance or software program that uses ONVIF Web Services.
Configuration Entity	A network video device media abstract component that is used to produce a media stream on the network, i.e. video and/or audio stream.
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.
Device Test Tool	ONVIF Device Test Tool that tests ONVIF Device implementation towards the ONVIF Test Specification set.
Media 2 Service	Services to determine the streaming properties of requested media streams.

3.3 Abbreviations

This section describes abbreviations used in this document.

HTTP	Hyper Text Transport Protocol.
AAC	Advanced Audio Coding.
URI	Uniform Resource Identifier.
WSDL	Web Services Description Language.
XML	eXtensible Markup Language.
JPEG	Joint Photographic Experts Group.
TTL	Time To Live.

4 Test Overview

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

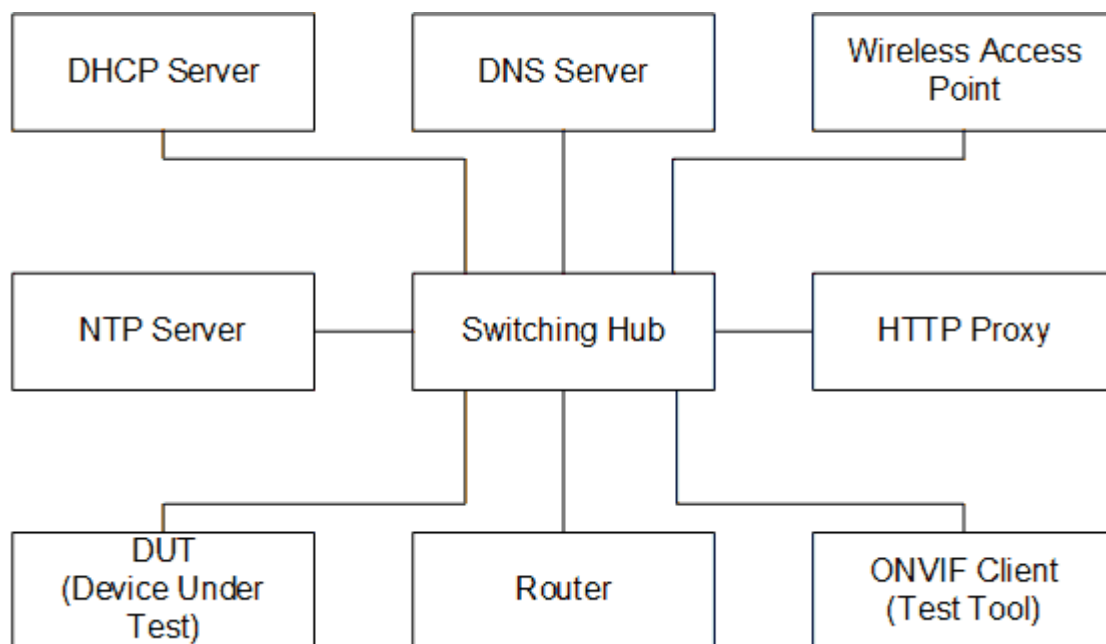
4.1 Test Setup

4.1.1 Network Configuration for DUT

The generic test configuration for the execution of test cases defined in this document is as shown below (Figure 1).

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

Figure 4.1. Test Configuration for DUT



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

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

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

Wireless Access Point: provides wireless connectivity to the devices that support wireless connection.

DNS Server: provides DNS related information to the connected devices.

DHCP Server: provides IPv4 Address to the connected devices.

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

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

Router: provides router advertisements for IPv6 configuration.

4.2 Prerequisites

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

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

4.3 Test Policy

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

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

4.3.1 Media Configuration

Prior to the execution of Media Configuration test cases, DUT shall be discovered by ONVIF Client using device management service, and it shall demonstrate media capabilities to ONVIF Client using GetServiceCapabilities command.

DUT shall support at least one media profile with Video Configuration. Video Configuration shall include video source and video encoder media entities.

DUT shall support either H.264 or H.265 encoding.

ONVIF Client shall explicitly specify the optional media formats supported by DUT.

ONVIF Client shall explicitly specify if the DUT supports Audio and PTZ.

DUT shall allow creation of at least one media profile by ONVIF Client. In certain test cases, ONVIF Client may create new media configuration (i.e. media profile and media entities). In such cases, the test procedure will delete those modified configurations at the end of the test procedure.

DUT should respond with proper response message for all SOAP actions. Sending fault messages such as "ter:ConfigurationConflict" will be treated as FAILURE of the test cases.

Please refer to [Section 5](#) for Media Configuration Test Cases.

5 Media Configuration Test Cases

5.1 Media Profile

5.1.1 READY TO USE MEDIA PROFILE FOR VIDEO STREAMING

Test Case ID: MEDIA2-1-1-1

Specification Coverage: Video Streaming (Profile T Specification)

Feature Under Test: GetProfiles

WSDL Reference: media2.wsdl, deviceio.wsdl

Test Purpose: To verify that DUT has a ready-to-use Media Service 2.0 Profile for streaming video (either H.264 or H.265) per video source.

Pre-Requisite: Media2 Service is received from the DUT, DeviceIO Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoSources** request.
4. The DUT responds with **GetVideoSourcesResponse** message with parameters
 - Token list =: *videoSourceTokenList*
5. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
6. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
7. For each Video Source token *videoSourceToken* in *videoSourceTokenList* repeat the following steps:

- 7.1. If *profileList* does not contain at least one Media Profile with Configurations.VideoSource.SourceToken value is equal to *videoSourceToken* and with Configurations.VideoEncoder, which Configurations.VideoEncoder.Encoding equals to "H264" or "H265", FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoSourcesResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.1.2 CREATE MEDIA PROFILE WITH PRE-DEFINED CONFIGURATION

Test Case ID: MEDIA2-1-1-2

Specification Coverage: Get media profiles, Create media profile, Delete media profile.

Feature Under Test: GetProfiles, CreateProfile, DeleteProfile

WSDL Reference: media2.wsdl

Test Purpose: To verify the DUT can create media profile with populated configuration parameter.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. Subscription ONVIF Client deletes Media Profile if Maximum Number of Media Profiles is reached by following the procedure mentioned in [Annex A.1](#).
4. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfCompleteList* - Video Source Configurations list

5. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ProfileChanged"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
6. ONVIF Client invokes **CreateProfile** request with parameters
 - Name := "testMedia2"
 - Configuration[0].Type := VideoSource
 - Configuration[0].Token = *videoSourceConfCompleteList*[0].@token
7. The DUT responds with **CreateProfileResponse** with parameters
 - Token =: *profileToken*
8. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *profileToken* - Media Profile token
9. ONVIF Client invokes **GetProfiles** request with parameters
 - Token := *profileToken*
 - Type[0] := VideoSource
10. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
11. If *profileList* is empty, FAIL the test and skip other steps.

12. If *profileList* contains more than one item, FAIL the test and skip other steps.
13. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.
14. If *profileList*[0].Configurations.VideoSource.@token !=
videoSourceConfCompleteList[0].@token, FAIL the test and skip other steps.
15. ONVIF Client invokes **DeleteProfile** request with parameters
 - Token := *profileToken*
16. The DUT responds with **DeleteProfileResponse** message.
17. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *profileToken* - Media Profile token
18. If subscription was created at step [5](#), ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
 - in *s* - Subscription reference
19. ONVIF Client invokes **GetProfiles** request with parameters
 - Token := *profileToken*
 - Type skipped
20. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoProfile** SOAP 1.2 fault.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

- DUT did not send **DeleteProfileResponse** message.
- DUT did not send **CreateProfileResponse** message.
- The DUT did not send the **env:Sender/ter:Action/ter:NoConfig** SOAP 1.2 fault message.

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

Note: See Annex in [ONVIF Base Test] for Invalid SOAP 1.2 fault message definition.

Note: See [Annex A.7](#) for Name and Token Parameters Length limitations.

5.1.3 DYNAMIC MEDIA PROFILE CONFIGURATION

Test Case ID: MEDIA2-1-1-3

Specification Coverage: Get media profiles, Create media profile, Delete media profile, Add one or more configurations to a profile, Remove one or more configurations from a profile, Get configurations.

Feature Under Test: GetProfiles, CreateProfile, DeleteProfile, AddConfiguration, RemoveConfiguration, GetVideoEncoderConfigurations, GetVideoSourceConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify the behavior of the DUT for dynamic media profile configuration.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client creates new Media Profile or removes all configurations from fixed Media Profile by following the procedure mentioned in [Annex A.8](#) with the following input and output parameters
 - out *newProfileFlag* - flag that indicates that new Media Profile was created
 - out *profileToken* - empty Media Profile
4. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters

- in **"tns1:Media/ProfileChanged"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
5. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
- out *videoSourceConfList* - Video Source Configurations list
6. For each Video Source Configuration *videoSourceConfiguration* in *videoSourceConfList* repeat the following steps:
- 6.1. ONVIF Client invokes **AddConfiguration** request with parameters
- ProfileToken = *profileToken*
 - Name skipped
 - Configuration[0].Type = VideoSource
 - Configuration[0].Token = *videoSourceConfiguration.@token*
- 6.2. The DUT responds with **AddConfigurationResponse** message.
- 6.3. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *profileToken* - Media Profile token
- 6.4. ONVIF Client invokes **GetProfiles** request with parameters
- Token := *profileToken*
 - Type[0] := VideoSource

- 6.5. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
- 6.6. If *profileList* is empty, FAIL the test and skip other steps.
- 6.7. If *profileList* contains more than one item, FAIL the test and skip other steps.
- 6.8. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.
- 6.9. If *profileList*[0].Configurations.VideoSource.@token != *videoSourceConfiguration*.@token, FAIL the test and skip other steps.
- 6.10. If DUT supports Video
- 6.10.1. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters
- ConfigurationToken skipped
 - ProfileToken = *profileToken*
- 6.10.2. The DUT responds with compatible video encoder configurations in **GetVideoEncoderConfigurationsResponse** with parameters
- Configurations list =: *videoEncoderConfigurationList*
- 6.10.3. If *videoEncoderConfigurationList*.Configurations is skipped or empty, FAIL the test and skip other steps.
- 6.10.4. Set *videoEncoderConfiguration* := *videoEncoderConfigurationList*.Configurations[0].
- 6.10.5. ONVIF Client invokes **AddConfiguration** request with parameters
- ProfileToken := *profileToken*
 - Name skipped
 - Configuration[0].Type := VideoEncoder
 - Configuration[0].Token := *videoEncoderConfiguration*.@token
- 6.10.6. The DUT responds with **AddConfigurationResponse** message.
- 6.10.7. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged**

event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

6.10.8. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := VideoSource
- Type[1] := VideoEncoder

6.10.9. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

6.10.10.If *profileList* is empty, FAIL the test and skip other steps.

6.10.11.If *profileList* contains more than one item, FAIL the test and skip other steps.

6.10.12.If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.

6.10.13.If *profileList*[0].Configurations.VideoSource.@token !=
videoSourceConfiguration.@token, FAIL the test and skip other steps.

6.10.14.If *profileList*[0].Configurations.VideoEncoder.@token !=
videoEncoderConfiguration.@token, FAIL the test and skip other steps.

6.10.15.ONVIF Client invokes **RemoveConfiguration** request with parameters

- ProfileToken := *profileToken*
- Configuration[0].Type := VideoEncoder
- Configuration[0].Token skipped

6.10.16.The DUT responds with **RemoveConfigurationResponse** message.

6.10.17.If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged**

event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

6.10.18. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := VideoSource
- Type[1] := VideoEncoder

6.10.19. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

6.10.20. If *profileList* is empty, FAIL the test and skip other steps.

6.10.21. If *profileList* contains more than one item, FAIL the test and skip other steps.

6.10.22. If *profileList*[0].Configurations.VideoSource.@token != *videoSourceConfiguration*.@token, FAIL the test and skip other steps.

6.10.23. If *profileList*[0].Configurations contains VideoEncoder, FAIL the test and skip other steps.

6.11. If the DUT supports Analytics:

6.11.1. ONVIF Client invokes **GetAnalyticsConfigurations** request with parameters

- ConfigurationToken skipped
- ProfileToken = *profileToken*

6.11.2. The DUT responds with compatible analytics configurations in **GetAnalyticsConfigurationsResponse** with parameters

- Configurations list =: *analyticsConfigurationList*

6.11.3. If *analyticsConfigurationList*.Configurations is skipped or empty, go to the step [6.13](#).

6.11.4. Set *analyticsConfiguration* := *analyticsConfigurationList.Configurations*[0].

6.11.5. ONVIF Client invokes **AddConfiguration** request with parameters

- ProfileToken := *profileToken*
- Name skipped
- Configuration[0].Type := Analytics
- Configuration[0].Token := *analyticsConfiguration.@token*

6.11.6. The DUT responds with **AddConfigurationResponse** message.

6.11.7. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

6.11.8. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := "VideoSource"
- Type[1] := "Analytics"

6.11.9. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

6.11.10.If *profileList* is empty, FAIL the test and skip other steps.

6.11.11.If *profileList* contains more than one item, FAIL the test and skip other steps.

6.11.12.If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.

6.11.13.If *profileList*[0].Configurations.VideoSource.@token !=
videoSourceConfiguration.@token, FAIL the test and skip other steps.

6.11.14.If *profileList*[0].Configurations.Analytics.@token !=
analyticsConfiguration.@token, FAIL the test and skip other steps.

6.11.15.ONVIF Client invokes **RemoveConfiguration** request with parameters

- ProfileToken := *profileToken*
- Configuration[0].Type := Analytics
- Configuration[0].Token skipped

6.11.16.The DUT responds with **RemoveConfigurationResponse** message.

6.11.17.If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

6.11.18.ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := VideoSource
- Type[1] := Analytics

6.11.19.The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

6.11.20.If *profileList* is empty, FAIL the test and skip other steps.

6.11.21.If *profileList* contains more than one item, FAIL the test and skip other steps.

6.11.22.If *profileList*[0].Configurations.VideoSource.@token !=
videoSourceConfiguration.@token, FAIL the test and skip other steps.

6.11.23.If *profileList*[0].Configurations contains Analytics, FAIL the test and skip other steps.

6.12. If the DUT supports Metadata:

6.12.1. ONVIF Client invokes **GetMetadataConfigurations** request with parameters

- ConfigurationToken skipped
- ProfileToken = *profileToken*

6.12.2. The DUT responds with compatible metadata configurations in **GetMetadataConfigurationsResponse** with parameters

- Configurations list =: *metadataConfigurationList*

6.12.3. If *metadataConfigurationList.Configurations* is skipped or empty, go to the step [6.13](#).

6.12.4. Set *metadataConfiguration* := *metadataConfigurationList.Configurations*[0].

6.12.5. ONVIF Client invokes **AddConfiguration** request with parameters

- ProfileToken = *profileToken*
- Name skipped
- Configuration[0].Type = Metadata
- Configuration[0].Token = *metadataConfiguration.@token*

6.12.6. The DUT responds with **AddConfigurationResponse** message.

6.12.7. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

6.12.8. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*

- Type[0] := VideoSource
- Type[1] := Metadata

6.12.9. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

6.12.10.If *profileList* is empty, FAIL the test and skip other steps.

6.12.11.If *profileList* contains more than one item, FAIL the test and skip other steps.

6.12.12.If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.

6.12.13.If *profileList*[0].Configurations.VideoSource.@token !=
videoSourceConfiguration.@token, FAIL the test and skip other steps.

6.12.14.If *profileList*[0].Configurations.Metadata.@token !=
metadataConfiguration.@token, FAIL the test and skip other steps.

6.12.15.ONVIF Client invokes **RemoveConfiguration** request with parameters

- ProfileToken = *profileToken*
- Configuration[0].Type = Metadata
- Configuration[0].Token skipped

6.12.16.The DUT responds with **RemoveConfigurationResponse** message.

6.12.17.If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

6.12.18.ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*

- Type[0] := VideoSource
- Type[1] := Metadata

6.12.19. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

6.12.20. If *profileList* is empty, FAIL the test and skip other steps.

6.12.21. If *profileList* contains more than one item, FAIL the test and skip other steps.

6.12.22. If *profileList*[0].ConfigurationsVideoSource.@token != *videoSourceConfiguration*.@token, FAIL the test and skip other steps.

6.12.23. If *profileList*[0].Configurations contains Metadata, FAIL the test and skip other steps.

6.13. ONVIF Client invokes **RemoveConfiguration** request with parameters

- ProfileToken = *profileToken*
- Configuration[0].Type = VideoSource
- Configuration[0].Token = *videoSourceConfiguration*.@token

6.14. The DUT responds with **RemoveConfigurationResponse** message.

6.15. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

6.16. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := VideoSource

- 6.17. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
- 6.18. If *profileList* is empty, FAIL the test and skip other steps.
- 6.19. If *profileList* contains more than one item, FAIL the test and skip other steps.
- 6.20. If *profileList*[0].Configurations contains VideoSource, FAIL the test and skip other steps.
7. If *analyticsConfigurationList*.Configurations was skipped or empty for each *videoSourceConfiguration* at step 6.11.3, FAIL the test, restore DUT settings and skip other steps.
8. If the DUT supports Audio:
- 8.1. ONVIF Client retrieves Audio Source Configurations list by following the procedure mentioned in [Annex A.9](#) with the following input and output parameters
- out *audioSourceConfList* - Audio Source Configurations list
- 8.2. For each Audio Source Configuration *audioSourceConfiguration* in *audioSourceConfList* repeat the following steps:
- 8.2.1. ONVIF Client invokes **AddConfiguration** request with parameters
- ProfileToken = *profileToken*
 - Name skipped
 - Configuration[0].Type = AudioSource
 - Configuration[0].Token = *audioSourceConfiguration*.@token
- 8.2.2. The DUT responds with **AddConfigurationResponse** message.
- 8.2.3. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time

- in *profileToken* - Media Profile token
- 8.2.4. ONVIF Client invokes **GetProfiles** request with parameters
- Token := *profileToken*
 - Type[0] := AudioSource
- 8.2.5. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
- 8.2.6. If *profileList* is empty, FAIL the test and skip other steps.
- 8.2.7. If *profileList* contains more than one item, FAIL the test and skip other steps.
- 8.2.8. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.
- 8.2.9. If *profileList*[0].Configurations.AudioSource.@token != *audioSourceConfiguration*.@token, FAIL the test and skip other steps.
- 8.2.10. ONVIF Client invokes **GetAudioEncoderConfigurations** request with parameters
- ConfigurationToken skipped
 - ProfileToken = *profileToken*
- 8.2.11. The DUT responds with **GetAudioEncoderConfigurationsResponse** with parameters
- Configurations list =: *audioEncoderConfigurationList*
- 8.2.12. If *audioEncoderConfigurationList*.Configurations is skipped or empty, FAIL the test and skip other steps.
- 8.2.13. Set *audioEncoderConfiguration* := *audioEncoderConfigurationList*.Configurations[0].
- 8.2.14. ONVIF Client invokes **AddConfiguration** request with parameters
- ProfileToken := *profileToken*
 - Name skipped
 - Configuration[0].Type := AudioEncoder

- Configuration[0].Token := *audioEncoderConfiguration.@token*

8.2.15. The DUT responds with **AddConfigurationResponse** message.

8.2.16. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

8.2.17. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := AudioSource
- Type[0] := AudioEncoder

8.2.18. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

8.2.19. If *profileList* is empty, FAIL the test and skip other steps.

8.2.20. If *profileList* contains more than one item, FAIL the test and skip other steps.

8.2.21. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.

8.2.22. If *profileList*[0].Configurations.AudioSource.@token != *audioSourceConfiguration.@token*, FAIL the test and skip other steps.

8.2.23. If *profileList*[0].Configurations.AudioEncoder.@token != *audioEncoderConfiguration.@token*, FAIL the test and skip other steps.

8.2.24. ONVIF Client invokes **RemoveConfiguration** request with parameters

- ProfileToken := *profileToken*
- Configuration[0].Type := AudioEncoder

- Configuration[0].Token skipped

8.2.25. The DUT responds with **RemoveConfigurationResponse** message.

8.2.26. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

8.2.27. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := AudioSource
- Type[1] := AudioEncoder

8.2.28. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

8.2.29. If *profileList* is empty, FAIL the test and skip other steps.

8.2.30. If *profileList* contains more than one item, FAIL the test and skip other steps.

8.2.31. If *profileList*[0].Configurations.AudioSource.@token != *audioSourceConfiguration*.@token, FAIL the test and skip other steps.

8.2.32. If *profileList*[0].Configurations contains AudioEncoder, FAIL the test and skip other steps.

8.2.33. ONVIF Client invokes **RemoveConfiguration** request with parameters

- ProfileToken = *profileToken*
- Configuration[0].Type = AudioSource
- Configuration[0].Token skipped

8.2.34. The DUT responds with **RemoveConfigurationResponse** message.

8.2.35. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

8.2.36. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := AudioSource

8.2.37. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

8.2.38. If *profileList* is empty, FAIL the test and skip other steps.

8.2.39. If *profileList* contains more than one item, FAIL the test and skip other steps.

8.2.40. If *profileList*[0].Configurations contains AudioSource, FAIL the test and skip other steps.

9. If the DUT supports Audio Output:

9.1. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters

- out *audioOutputConfList* - Audio Output Configurations list

9.2. For each Audio Output Configuration *audioOutputConfiguration* in *audioOutputConfList* repeat the following steps:

9.2.1. ONVIF Client invokes **AddConfiguration** request with parameters

- ProfileToken = *profileToken*
- Name skipped

- Configuration[0].Type = AudioOutput
 - Configuration[0].Token = *audioOutputConfiguration.@token*
- 9.2.2. The DUT responds with **AddConfigurationResponse** message.
- 9.2.3. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *profileToken* - Media Profile token
- 9.2.4. ONVIF Client invokes **GetProfiles** request with parameters
- Token := *profileToken*
 - Type[0] := AudioOutput
- 9.2.5. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
- 9.2.6. If *profileList* is empty, FAIL the test and skip other steps.
- 9.2.7. If *profileList* contains more than one item, FAIL the test and skip other steps.
- 9.2.8. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.
- 9.2.9. If *profileList*[0].Configurations.AudioOutput.@token != *audioOutputConfiguration.@token*, FAIL the test and skip other steps.
- 9.2.10. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
- ConfigurationToken skipped
 - ProfileToken = *profileToken*
- 9.2.11. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters

- Configurations list =: *audioDecoderConfigurationList*

9.2.12. If *audioDecoderConfigurationList.Configurations* is skipped or empty, FAIL the test and skip other steps.

9.2.13. Set *audioDecoderConfiguration* := *audioDecoderConfigurationList.Configurations[0]*.

9.2.14. ONVIF Client invokes **AddConfiguration** request with parameters

- ProfileToken := *profileToken*
- Name skipped
- Configuration[0].Type := AudioDecoder
- Configuration[0].Token := *audioDecoderConfiguration.@token*

9.2.15. The DUT responds with **AddConfigurationResponse** message.

9.2.16. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

9.2.17. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := AudioOutput
- Type[1] := AudioDecoder

9.2.18. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

9.2.19. If *profileList* is empty, FAIL the test and skip other steps.

9.2.20. If *profileList* contains more than one item, FAIL the test and skip other steps.

9.2.21. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.

9.2.22. If *profileList*[0].Configurations.AudioOutput.@token !=
audioOutputConfiguration.@token, FAIL the test and skip other steps.

9.2.23. If *profileList*[0].Configurations.AudioDecoder.@token !=
audioDecoderConfiguration.@token, FAIL the test and skip other steps.

9.2.24. ONVIF Client invokes **RemoveConfiguration** request with parameters

- ProfileToken := *profileToken*
- Configuration[0].Type := AudioDecoder
- Configuration[0].Token skipped

9.2.25. The DUT responds with **RemoveConfigurationResponse** message.

9.2.26. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *profileToken* - Media Profile token

9.2.27. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := AudioOutput
- Type[1] := AudioDecoder

9.2.28. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

9.2.29. If *profileList* is empty, FAIL the test and skip other steps.

- 9.2.30. If *profileList* contains more than one item, FAIL the test and skip other steps.
- 9.2.31. If *profileList*[0].Configurations.AudioOutput.@token != *audioOutputConfiguration*.@token, FAIL the test and skip other steps.
- 9.2.32. If *profileList*[0].Configurations contains AudioDecoder, FAIL the test and skip other steps.
- 9.2.33. ONVIF Client invokes **RemoveConfiguration** request with parameters
- ProfileToken = *profileToken*
 - Configuration[0].Type = AudioOutput
 - Configuration[0].Token skipped
- 9.2.34. The DUT responds with **RemoveConfigurationResponse** message.
- 9.2.35. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *profileToken* - Media Profile token
- 9.2.36. ONVIF Client invokes **GetProfiles** request with parameters
- Token := *profileToken*
 - Type[0] := AudioOutput
- 9.2.37. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
- 9.2.38. If *profileList* is empty, FAIL the test and skip other steps.
- 9.2.39. If *profileList* contains more than one item, FAIL the test and skip other steps.
- 9.2.40. If *profileList*[0].Configurations contains AudioOutput, FAIL the test and skip other steps.

10. If *newProfileFlag* = true, do the following steps:

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

- Token := *profileToken*

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

10.3. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type skipped

10.4. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoProfile** SOAP 1.2 fault.

11. If subscription was created at step 4, ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in *s* - Subscription reference

12. ONVIF Client restores DUT configuration if required.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **DeleteProfileResponse** message.
- DUT did not send **AddConfigurationResponse** message.
- DUT did not send **RemoveConfigurationResponse** message.
- DUT did not send **GetVideoEncoderConfigurationsResponse** message.
- DUT did not send **GetAnalyticsConfigurationsResponse** message.
- DUT did not send **GetAudioEncoderConfigurationsResponse** message.
- DUT did not send **GetAudioDecoderConfigurationsResponse** message.
- DUT did not send the **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault message.

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

Note: See Annex in [ONVIF Base Test] for Invalid SOAP 1.2 fault message definition.

Note: See [Annex A.7](#) for Name and Token Parameters Length limitations.

5.1.4 GET PROFILES

Test Case ID: MEDIA2-1-1-4

Specification Coverage: GetProfiles (Media2 Service Specification)

Feature Under Test: GetProfiles

WSDL Reference: media2.wsdl

Test Purpose: To verify the behavior of the DUT for GetProfiles with different Type parameters.

Pre-Requisite: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] =: All
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList1*
5. If *profileList1* contains at least two items with the same @token, FAIL the test and skip other steps.
6. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type skipped
7. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList2*

8. If *profileList2* contains at least two items with the same @token, FAIL the test and skip other steps.
9. If amount of profiles in *profileList2* is not equal to amount of profiles in *profileList1*, FAIL the test and skip other steps.
10. For each Profile *profile* in *profileList2* repeat the following steps:
 - 10.1. If *profileList1* does not contain profile with token equals to *profile.token*, FAIL the test and skip other steps.
 - 10.2. If *profile* contains not empty Configurations element, FAIL the test and skip other steps.
11. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] =: VideoSource
12. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList3*
13. If *profileList3* contains at least two items with the same @token, FAIL the test and skip other steps.
14. If amount of profiles in *profileList3* is not equal to amount of profiles in *profileList1*, FAIL the test and skip other steps.
15. For each Profile *profile* in *profileList3* repeat the following steps:
 - 15.1. If *profile* contains at least one configuration in Configurations element differs from VideoSource, FAIL the test and skip other steps.
 - 15.2. If amount of VideoSource elements in *profile* is not equal to amount of VideoSource elements in *profileList1*[0], where *profileList1*[0] is profile with token equals to *profile.token*, FAIL the test and skip other steps.
 - 15.3. If *profile.Configurations.VideoSource* element is not equal to *profileList1*[0].Configurations.VideoSource element, where *profileList1*[0] is profile with token equals to *profile.token*, FAIL the test and skip other steps.
16. If Analytics feature is supported:
 - 16.1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped

- Type[0] =: Analytics

16.2. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList4*

16.3. If *profileList4* contains at least two items with the same @token, FAIL the test and skip other steps.

16.4. If amount of profiles in *profileList4* is not equal to amount of profiles in *profileList1*, FAIL the test and skip other steps.

16.5. For each Profile *profile* in *profileList4* repeat the following steps:

16.5.1f *profile* contains at least one configuration in Configurations element differs from Analytics, FAIL the test and skip other steps.

16.5.2f amount of Analytics elements in *profile* is not equal to amount of Analytics elements in *profileList1*[0], where *profileList1*[0] is profile with token equals to *profile.token*, FAIL the test and skip other steps.

16.5.3f *profile.Configurations.Analytics* element is not equal to *profileList1*[0].*Configurations.Analytics* element, where *profileList1*[0] is profile with token equals to *profile.token*, FAIL the test and skip other steps.

17. If Metadata feature is supported:

17.1. ONVIF Client invokes **GetProfiles** request with parameters

- Token skipped
- Type[0] =: Metadata

17.2. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList5*

17.3. If *profileList5* contains at least two items with the same @token, FAIL the test and skip other steps.

17.4. If amount of profiles in *profileList5* is not equal to amount of profiles in *profileList1*, FAIL the test and skip other steps.

17.5. For each Profile *profile* in *profileList5* repeat the following steps:

17.5.1f *profile* contains at least one configuration in Configurations element differs from Metadata, FAIL the test and skip other steps.

17.5.2f amount of Metadata elements in *profile* is not equal to amount of Metadata elements in *profileList1*[0], where *profileList1*[0] is profile with token equals to *profile.token*, FAIL the test and skip other steps.

17.5.3f *profile.Configurations.Metadata* element is not equal to *profileList1*[0].*Configurations.Metadata* element, where *profileList1*[0] is profile with token equals to *profile.token*, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

Note: The following fields are compared at step 15.3:

- SourceToken
- Name
- Bounds.x
- Bounds.y
- Bounds.width
- Bounds.height
- Extension.Rotate
- Extension.Rotate.Mode
- Extension.Rotate.Degree
- Extension.Extension.LensDescription list (XFactor will be used as a key)
- Extension.Extension.LensDescription.FocalLength
- Extension.Extension.LensDescription.Offset.x

- Extension.Extension.LensDescription.Offset.y
- Extension.Extension.LensDescription.Projection list (Angle and Radius will be used as key)
- Extension.Extension.LensDescription.Projection.Transmittance

Note: The following fields are compared at step [16.5.3 \[59\]](#):

- Name
- AnalyticsEngineConfiguration.AnalyticsModule list (Type and Name will be used as key. Parameters item will not be compared).
- AnalyticsEngineConfiguration.RuleEngineConfiguration list (Type and Name will be used as key. Parameters item will not be compared).

Note: The following fields are compared at step [16.5.3 \[60\]](#):

- Name
- CompressionType
- GeoLocation
- PTZStatus.Status
- PTZStatus.Position
- Events.Filter (only field presence will be compared)
- Events.SubscriptionPolicy (only field presence will be compared)
- Analytics
- AnalyticsEngineConfiguration.AnalyticsModule list (Type and Name will be used as key. Parameters item will not be compared).

5.1.5 CREATE MEDIA PROFILE WITH CONFIGURATIONS

Test Case ID: MEDIA2-1-1-5

Specification Coverage: Get media profiles, Create media profile.

Feature Under Test: GetProfiles, CreateProfile

WSDL Reference: media2.wsdl

Test Purpose: To verify the DUT can create media profile with video source configuration parameter, audio source configuration parameter and audio output configuration parameter.

Pre-Requisite: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. Subscription ONVIF Client deletes Media Profile if Maximum Number of Media Profiles is reached by following the procedure mentioned in [Annex A.1](#).
4. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfCompleteList* - Video Source Configurations list
5. ONVIF Client invokes **CreateProfile** request with parameters
 - Name := "testMedia"
 - Configuration[0].Type := VideoSource
 - Configuration[0].Token = *videoSourceConfCompleteList*[0].@token
6. The DUT responds with **CreateProfileResponse** with parameters
 - Token =: *profileToken*
7. ONVIF Client invokes **GetProfiles** request with parameters
 - Token := *profileToken*
 - Type[0] := All
8. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
9. If *profileList* is empty, FAIL the test and skip other steps.
10. If *profileList* contains more than one item, FAIL the test and skip other steps.
11. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.

12. If `profileList[0].Configurations.VideoSource.@token` `!=` `videoSourceConfCompleteList[0].@token`, FAIL the test and skip other steps.
13. ONVIF Client deletes created profile by following the procedure mentioned in [Annex A.11](#) with the following input and output parameters
 - in `profileToken` - Media profile token
14. If Media2 Audio is supported
 - 14.1. ONVIF Client retrieves Audio Source Configurations list by following the procedure mentioned in [Annex A.9](#) with the following input and output parameters
 - out `audioSourceConfCompleteList` - Audio Source Configurations list
 - 14.2. ONVIF Client invokes **CreateProfile** request with parameters
 - Name := "testMedia"
 - Configuration[1].Type := AudioSource
 - Configuration[1].Token = `audioSourceConfCompleteList[0].@token`
 - 14.3. The DUT responds with **CreateProfileResponse** with parameters
 - Token =: `profileToken`
 - 14.4. ONVIF Client invokes **GetProfiles** request with parameters
 - Token := `profileToken`
 - Type[0] := All
 - 14.5. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: `profileList`
 - 14.6. If `profileList` is empty, FAIL the test and skip other steps.
 - 14.7. If `profileList` contains more than one item, FAIL the test and skip other steps.
 - 14.8. If `profileList[0].@token != profileToken`, FAIL the test and skip other steps.
 - 14.9. If `profileList[0].Configurations.AudioSource.@token` `!=` `audioSourceConfCompleteList[0].@token`, FAIL the test and skip other steps.
 - 14.10 ONVIF Client deletes created profile by following the procedure mentioned in [Annex A.11](#) with the following input and output parameters

- in *profileToken* - Media profile token

15. If Media2 Audio Outputs is supported

15.1. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters

- out *audioOutputConfCompleteList* - Audio Output Configurations list

15.2. ONVIF Client invokes **CreateProfile** request with parameters

- Name := "testMedia"
- Configuration[0].Type := AudioOutput
- Configuration[0].Token = *audioOutputConfCompleteList*[0].@token

15.3. The DUT responds with **CreateProfileResponse** with parameters

- Token =: *profileToken*

15.4. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := All

15.5. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

15.6. If *profileList* is empty, FAIL the test and skip other steps.

15.7. If *profileList* contains more than one item, FAIL the test and skip other steps.

15.8. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.

15.9. If *profileList*[0].Configurations.AudioOutput.@token != *audioOutputConfCompleteList*[0].@token, FAIL the test and skip other steps.

15.10 ONVIF Client deletes created profile by following the procedure mentioned in [Annex A.11](#) with the following input and output parameters

- in *profileToken* - Media profile token

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **CreateProfileResponse** message.

Note: See [Annex A.7](#) for Name and Token Parameters Length limitations.

5.1.6 REMOVE ALL CONFIGURATIONS FROM MEDIA PROFILE

Test Case ID: MEDIA2-1-1-6

Specification Coverage: Remove one or more configurations from a profile (Media 2 Service Specification)

Feature Under Test: RemoveConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify the removal of all configurations from Media Profile with RemoveConfiguration command and Type = All.

Pre-Requisite: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList* list repeat the following steps:

- 5.1. ONVIF Client invokes **RemoveConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - Configuration[0].Type := All
 - Configuration[0].Token skipped
- 5.2. The DUT responds with **RemoveConfigurationResponse** message.
- 5.3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token := *profile.@token*
 - Type[0] := All
- 5.4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList1*
- 5.5. If *profileList1[0].Configurations* is not empty, FAIL the test and skip other steps.
- 5.6. ONVIF Client restores configurations of Media Profile with @token = *profile.@token*.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message(s).
- DUT did not send **RemoveConfigurationResponse** message(s).

5.1.7 FIXED MEDIA PROFILE CONFIGURATION

Test Case ID: MEDIA2-1-1-7

Specification Coverage: Media profiles (Media 2 Service Specification)

Feature Under Test: RemoveConfiguration, AddConfiguration, GetProfiles.

WSDL Reference: media2.wsdl

Test Purpose: To verify the removal of all configurations from fixed Media Profile. To verify adding of configurations to fixed Media Profile.

Pre-Requisite: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList* list with *@fixed* = true repeat the following steps:
 - 5.1. ONVIF Client invokes **RemoveConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - Configuration[0].Type := All
 - Configuration[0].Token skipped
 - 5.2. The DUT responds with **RemoveConfigurationResponse** message.
 - 5.3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token := *profile.@token*
 - Type[0] := All
 - 5.4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList1*
 - 5.5. If *profileList1[0].Configurations* is not empty, FAIL the test and skip other steps.
 - 5.6. ONVIF Client invokes **AddConfiguration** request to restore configurations of Media Profile *profile* with parameters
 - ProfileToken := *profile.@token*
 - For each configuration item *configuration* in *profile.Configurations* list:

- Configuration[0].Type := *configuration*
 - Configuration[0].Token := *configuration.@token*
- 5.7. The DUT responds with **AddConfigurationResponse** message.
- 5.8. ONVIF Client invokes **GetProfiles** request with parameters
- Token := *profile.@token*
 - Type[0] := All
- 5.9. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList2*
- 5.10. If list of configurations in *profileList2[0].Configurations* is not equal to list of configurations in *profileList[0].Configurations*, were *profileList[0]* is profile with token = *profile.@token*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message(s).
- DUT did not send **RemoveConfigurationResponse** message(s).
- DUT did not send **AddConfigurationResponse** message(s).

5.1.8 READY TO USE MEDIA PROFILE FOR METADATA STREAMING

Test Case ID: MEDIA2-1-1-8

Specification Coverage: Metadata streaming (Profile M Specification)

Feature Under Test: GetProfiles

WSDL Reference: media2.wsdl

Test Purpose: To verify that DUT has a ready-to-use Media Service 2.0 Profile for streaming metadata.

Pre-Requisite: Media2 Service is received from the DUT. Profile M scope. Metadata feature is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
6. For each video source configuration *videoSourceConf* in *videoSourceConfList*
 - 6.1. If *profileList* does not contain at least one Media Profile with Configurations.VideoSource.token = *videoSourceConf.token* and with Configurations.Metadata, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

5.1.9 READY TO USE MEDIA PROFILE FOR VIDEO STREAMING (PROFILE M)

Test Case ID: MEDIA2-1-1-9

Specification Coverage: Video streaming (Profile M Specification)

Feature Under Test: GetProfiles

WSDL Reference: media2.wsdl

Test Purpose: To verify that DUT has a ready-to-use Media Service 2.0 Profile for streaming video.

Pre-Requisite: Media2 Service is received from the DUT. Profile M scope. Video feature is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
6. For each video source configuration *videoSourceConf* in *videoSourceConfList*
 - 6.1. If *profileList* does not contain at least one Media Profile with Configurations.VideoSource.token = *videoSourceConf.token* and with Configurations.VideoEncoder, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

5.1.10 READY TO USE MEDIA PROFILE FOR VIDEO STREAMING (H.264)

Test Case ID: MEDIA2-1-1-10

Specification Coverage: Video Streaming (Profile V Specification)

Feature Under Test: GetProfiles

WSDL Reference: media2.wsdl, deviceio.wsdl

Test Purpose: To verify that DUT has a ready-to-use Media Service 2.0 Profile for streaming video (H.264) per video source.

Pre-Requisite: Media2 Service is received from the DUT, DeviceIO Service is received from the DUT. Profile V is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoSources** request.
4. The DUT responds with **GetVideoSourcesResponse** message with parameters
 - Token list =: *videoSourceTokenList*
5. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
6. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
7. For each Video Source token *videoSourceToken* in *videoSourceTokenList* repeat the following steps:
 - 7.1. If *profileList* does not contain at least one Media Profile with Configurations.VideoSource.SourceToken value is equal to *videoSourceToken* and

with `Configurations.VideoEncoder`, which `Configurations.VideoEncoder.Encoding` equals to "H264", FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoSourcesResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.2 Video Configuration

5.2.1 Video Source Configuration

5.2.1.1 GET VIDEO SOURCE CONFIGURATION OPTIONS

Test Case ID: MEDIA2-2-2-1

Specification Coverage: Get configuration *options*, Video source configuration.

Feature Under Test: GetVideoSourceConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving Video Source Configuration *options* for specified Video Source Configuration, for specified Profile, generic for the Device.

Pre-Requisite: Media2 Service is received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters
 - out *cap* - Media2 Service Capabilities

4. ONVIF Client invokes **GetVideoSourceConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
5. DUT responds with **GetVideoSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*
6. If *options.BoundsRange.XRange.Min* > *options.BoundsRange.XRange.Max*, FAIL the test and skip other steps.
7. If *options.BoundsRange.YRange.Min* > *options.BoundsRange.YRange.Max*, FAIL the test and skip other steps.
8. If *options.BoundsRange.WidthRange.Min* > *options.BoundsRange.WidthRange.Max*, FAIL the test and skip other steps.
9. If *options.BoundsRange.HeightRange.Min* > *options.BoundsRange.HeightRange.Max*, FAIL the test and skip other steps.
10. If *cap.@Rotation* = true:
 - 10.1. If *options.Extension.Rotate* is skipped, FAIL the test and skip other steps.
11. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
12. ONVIF Client invokes **GetVideoSourceConfigurationOptions** request with parameters
 - ConfigurationToken := *videoSourceConfList[0].@token*
 - ProfileToken skipped
13. DUT responds with **GetVideoSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*
14. ONVIF Client retrieves Media Profile, which contains Video Source Configuration by following the procedure mentioned in [Annex A.12](#) with the following input and output parameters
 - out *profile* - Media Profile with Video Source Configuration

15. ONVIF Client invokes **GetVideoSourceConfigurationOptions** request with parameters

- ConfigurationToken skipped
- ProfileToken := *profile.@token*

16. DUT responds with **GetVideoSourceConfigurationOptionsResponse** message with parameters

- Options =: *options*

17. If Media Profile *profile* was changed at step 14, ONVIF Client restores Media Profile.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

5.2.1.2 GET VIDEO SOURCE CONFIGURATIONS

Test Case ID: MEDIA2-2-2-2

Specification Coverage: Get configurations, Video source configuration.

Feature Under Test: GetVideoSourceConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving complete Video Source Configuration List, Video Source Configuration by Configuration token and compatible Video Source Configuration by Profile token.

Pre-Requisite: Media2 Service is received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters

- ConfigurationToken skipped
 - ProfileToken skipped
4. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
 - Configurations list =: *videoSourceConfCompleteList*
 5. If *videoSourceConfCompleteList* is empty, FAIL the test and skip other steps.
 6. If *videoSourceConfCompleteList* contains at least two items with the same @token, FAIL the test and skip other steps.
 7. For each *videoSourceConfiguration* in *videoSourceConfCompleteList* repeat the following steps:
 - 7.1. If *videoSourceConfiguration* contains ViewMode
 - 7.1.1. If *videoSourceConfiguration*.ViewMode value is not equal to one of value defined in tt:ViewModes list provided in the procedure [Annex A.13](#), FAIL the test and skip other steps.
 - 7.1.2. If *videoSourceConfiguration*.ViewMode = "tt:Fisheye"
 - 7.1.2.1. If *videoSourceConfiguration*.Extension does not contain at least one LensDescription element, PASS this step with a WARNING.
 - 7.2. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
 - ConfigurationToken := *videoSourceConfiguration*.@token
 - ProfileToken skipped
 - 7.3. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
 - Configurations list =: *videoSourceConfList*
 - 7.4. If *videoSourceConfList* is empty, FAIL the test and skip other steps.
 - 7.5. If *videoSourceConfList* contains more than one item, FAIL the test and skip other steps.
 - 7.6. If *videoSourceConfList* does not contain item with @token = *videoSourceConfiguration*.@token, FAIL the test and skip other steps.
 8. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped

- Type[0] := VideoSource
9. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
10. For each Media Profile *profile* in *profileList* repeat the following steps:
- 10.1. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
- ConfigurationToken skipped
 - ProfileToken := *profile.@token*
- 10.2. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
- Configurations list =: *videoSourceConfList*
- 10.3. If *videoSourceConfList* contains at least two items with the same @token, FAIL the test and skip other steps.
- 10.4. If *videoSourceConfCompleteList* does not contain at least one item with @token from *videoSourceConfList*, FAIL the test and skip other steps.
- 10.5. If *profile.Configurations* contains VideoSource:
- 10.5.1. If *videoSourceConfList* does not contain item with @token = *profile.Configurations.VideoSource.@token*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoSourceConfigurationsResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.2.1.3 VIDEO SOURCE CONFIGURATIONS AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: MEDIA2-2-2-3

Specification Coverage: Get configurations, Get configuration *options*, Video source configuration.

Feature Under Test: GetProfiles, GetVideoSourceConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify all Video Source Configurations are consistent with Video Source Configuration Options.

Pre-Requisite: Media2 Service is received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters
 - out *cap* - Media2 Service Capabilities
4. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
5. For each Video Source Configuration *videoSourceConfiguration* in *videoSourceConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetVideoSourceConfigurationOptions** request with parameters
 - ConfigurationToken := *videoSourceConfiguration.@token*
 - ProfileToken skipped
 - 5.2. DUT responds with **GetVideoSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*
 - 5.3. If *videoSourceConfiguration.SourceToken* is not in *options.VideoSourceTokensAvailable* list, FAIL the test and skip other steps.

- 5.4. If *videoSourceConfiguration.Bounds.x* < *options.BoundsRange.XRange.Min*, FAIL the test and skip other steps.
- 5.5. If *videoSourceConfiguration.Bounds.x* > *options.BoundsRange.XRange.Max*, FAIL the test and skip other steps.
- 5.6. If *videoSourceConfiguration.Bounds.y* < *options.BoundsRange.YRange.Min*, FAIL the test and skip other steps.
- 5.7. If *videoSourceConfiguration.Bounds.y* > *options.BoundsRange.YRange.Max*, FAIL the test and skip other steps.
- 5.8. If *videoSourceConfiguration.Bounds.width* < *options.BoundsRange.WidthRange.Min*, FAIL the test and skip other steps.
- 5.9. If *videoSourceConfiguration.Bounds.width* > *options.BoundsRange.WidthRange.Max*, FAIL the test and skip other steps.
- 5.10. If *videoSourceConfiguration.Bounds.height* < *options.BoundsRange.HeightRange.Min*, FAIL the test and skip other steps.
- 5.11. If *videoSourceConfiguration.Bounds.height* > *options.BoundsRange.HeightRange.Max*, FAIL the test and skip other steps.
- 5.12. If *cap.@Rotation* = true:
 - 5.12.1. If *options.Extension.Rotate* is skipped, FAIL the test and skip other steps.
 - 5.12.2. If *videoSourceConfiguration.Extension.Rotate* is skipped, FAIL the test and skip other steps.
 - 5.12.3. If *videoSourceConfiguration.Extension.Rotate.Mode* is not in the *options.Extension.Rotate.Mode* list, FAIL the test and skip other steps.
 - 5.12.4. If *options.Extension.Rotate.DegreeList* specified and contains at least one Item:
 - 5.12.4.1. If *videoSourceConfiguration.Extension.Rotate.Degree* is specified and not listed in *options.Extension.Rotate.DegreeList.Item* list, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

5.2.1.4 PROFILES AND VIDEO SOURCE CONFIGURATIONS CONSISTENCY

Test Case ID: MEDIA2-2-2-4

Specification Coverage: Get configurations, Get media profiles, Video source configuration.

Feature Under Test: GetVideoSourceConfigurations, GetProfiles

WSDL Reference: media2.wsdl

Test Purpose: To verify all Media Profiles are consistent with Video Source Configurations.

Pre-Requisite: Media2 Service is received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := VideoSource
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList*, which contains Configurations.VideoSource repeat the following steps:
 - 5.1. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
 - ConfigurationToken := *profile*.Configurations.VideoSource.@token
 - ProfileToken skipped
 - 5.2. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters

- Configurations list =: *videoSourceConfList*

5.3. If *videoSourceConfList*[0] is not equal to *profile.Configurations.VideoSource*, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetVideoSourceConfigurationsResponse** message.

Note: The following fields are compared at step 5.3:

- SourceToken
- Name
- Bounds.x
- Bounds.y
- Bounds.width
- Bounds.height
- Extension.Rotate
- Extension.Rotate.Mode
- Extension.Rotate.Degree
- Extension.Extension.LensDescription list (XFactor will be used as a key)
- Extension.Extension.LensDescription.FocalLength
- Extension.Extension.LensDescription.Offset.x
- Extension.Extension.LensDescription.Offset.y
- Extension.Extension.LensDescription.Projection list (Angle and Radius will be used as key)
- Extension.Extension.LensDescription.Projection.Transmittance

5.2.1.5 MODIFY ALL SUPPORTED VIDEO SOURCE CONFIGURATIONS

Test Case ID: MEDIA2-2-2-5

Specification Coverage: Get configurations, Get configuration *options*, Video source configuration, Modify a configuration.

Feature Under Test: GetVideoSourceConfigurationOptions, GetVideoSourceConfigurations, SetVideoSourceConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify whether all supported Video Source Configuration Options can be set.

Pre-Requisite: Media2 Service is received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ConfigurationChanged"** - Notification Topic
 - out *s* - Subscription reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription termination time
5. For each Video Source Configuration *videoSourceConfiguration* in *videoSourceConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetVideoSourceConfigurationOptions** request with parameters

- ConfigurationToken := *videoSourceConfiguration.@token*
 - ProfileToken skipped
- 5.2. DUT responds with **GetVideoSourceConfigurationOptionsResponse** message with parameters
- Options =: *options*
- 5.3. ONVIF Client invokes **SetVideoSourceConfiguration** request with parameters
- Configuration.@token := *videoSourceConfiguration.@token*
 - Configuration.Name := "TestName1"
 - Configuration.SourceToken := first value from *options.VideoSourceTokensAvailable* list
 - Configuration.Bounds.x := *options.BoundsRange.XRange.Min*
 - Configuration.Bounds.y := *options.BoundsRange.YRange.Min*
 - Configuration.Bounds.width := *options.BoundsRange.WidthRange.Min*
 - Configuration.Bounds.height := *options.BoundsRange.HeightRange.Min*
 - If *options.Extension.Rotate* specified and *options.Extension.Rotate.@Reboot* != true:
 - Configuration.Extension.Rotate.Mode := first value from *options.Extension.Rotate.Mode* list
 - If Configuration.Extension.Rotate.Mode = ON and *options.Extension.Rotate.@Reboot* != true:
 - If *options.Extension.Rotate.DegreeList* is specified and contains at least one Item:
 - Configuration.Extension.Rotate.Degree := first value from *options.Extension.Rotate.DegreeList.Item* list
 - If *options.Extension.Rotate.DegreeList* is not specified:
 - Configuration.Extension.Rotate.Degree := -180
- 5.4. DUT responds with **SetVideoSourceConfigurationResponse** message.

- 5.5. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *videoSourceConfiguration.@token* - Configuration token
 - in VideoSource - Configuration Type
- 5.6. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
- ConfigurationToken := *videoSourceConfiguration.@token*
 - ProfileToken skipped
- 5.7. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
- Configurations list := *videoSourceConfList*
- 5.8. If *videoSourceConfList*[0] is not equal to Configuration from step [5.3](#), FAIL the test and skip other steps.
- 5.9. ONVIF Client invokes **SetVideoSourceConfiguration** request with parameters
- Configuration.@token := *videoSourceConfiguration.@token*
 - Configuration.Name := "TestName2"
 - Configuration.SourceToken := last value from *options.VideoSourceTokensAvailable* list
 - If *options.BoundsRange.XRange.Min* = *options.BoundsRange.XRange.Max* and *options.BoundsRange.YRange.Min* = *options.BoundsRange.YRange.Max* and *options.BoundsRange.WidthRange.Min* = *options.BoundsRange.WidthRange.Max* and *options.BoundsRange.HeightRange.Min* = *options.BoundsRange.HeightRange.Max*:
 - Configuration.Bounds.x := *options.BoundsRange.XRange.Min*
 - Configuration.Bounds.y := *options.BoundsRange.YRange.Min*

- $\text{Configuration.Bounds.width} := \text{options.BoundsRange.WidthRange.Min}$
- $\text{Configuration.Bounds.height} := \text{options.BoundsRange.HeightRange.Min}$
- If $\text{options.BoundsRange.XRange.Min}$ does not equal to $\text{options.BoundsRange.XRange.Max}$ or $\text{options.BoundsRange.YRange.Min}$ does not equal to $\text{options.BoundsRange.YRange.Max}$ or $\text{options.BoundsRange.WidthRange.Min}$ does not equal to $\text{options.BoundsRange.WidthRange.Max}$ or $\text{options.BoundsRange.HeightRange.Min}$ does not equal to $\text{options.BoundsRange.HeightRange.Max}$:
 - $\text{Configuration.Bounds.x} := (\text{options.BoundsRange.XRange.Max} + \text{options.BoundsRange.XRange.Min} - \text{options.BoundsRange.WidthRange.Min}) / 2$
 - $\text{Configuration.Bounds.y} := (\text{options.BoundsRange.YRange.Max} + \text{options.BoundsRange.YRange.Min} - \text{options.BoundsRange.HeightRange.Min}) / 2$
 - $\text{Configuration.Bounds.width} := \min\{\text{options.BoundsRange.WidthRange.Max}, \text{options.BoundsRange.XRange.Max} - \text{Configuration.Bounds.x}\}$
 - $\text{Configuration.Bounds.height} := \min\{\text{options.BoundsRange.HeightRange.Max}, \text{options.BoundsRange.YRange.Max} - \text{Configuration.Bounds.y}\}$
- If $\text{options.Extension.Rotate}$ specified and $\text{options.Extension.Rotate.@Reboot} \neq \text{true}$:
 - $\text{Configuration.Extension.Rotate.Mode} := \text{last value from } \text{options.Extension.Rotate.Mode list}$
- If $\text{Configuration.Extension.Rotate.Mode} = \text{ON}$ and $\text{options.Extension.Rotate.@Reboot} \neq \text{true}$:
 - If $\text{options.Extension.Rotate.DegreeList}$ is specified and contains at least one Item:
 - $\text{Configuration.Extension.Rotate.Degree} := \text{last value from } \text{options.Extension.Rotate.DegreeList.Item list}$
 - If $\text{options.Extension.Rotate.DegreeList}$ is not specified:
 - $\text{Configuration.Extension.Rotate.Degree} := 180$

5.10. DUT responds with **SetVideoSourceConfigurationResponse** message.

- 5.11. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *videoSourceConfiguration.@token* - Configuration token
 - in VideoSource - Configuration Type
- 5.12. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
- ConfigurationToken := *videoSourceConfiguration.@token*
 - ProfileToken skipped
- 5.13. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
- Configurations list =: *videoSourceConfList*
- 5.14. If *videoSourceConfList*[0] is not equal to Configuration from step [5.9](#), FAIL the test and skip other steps.
- 5.15. ONVIF Client restores settings of Video Source Configuration with *@token* = *videoSourceConfiguration.@token*.
6. If subscription was created at step [4](#), ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
- in *s* - Subscription reference
7. For each Video Source Configuration *videoSourceConfiguration* in *videoSourceConfList* repeat the following steps:
- 7.1. ONVIF Client invokes **GetVideoSourceConfigurationOptions** request with parameters
- ConfigurationToken := *videoSourceConfiguration.@token*
 - ProfileToken skipped

7.2. DUT responds with **GetVideoSourceConfigurationOptionsResponse** message with parameters

- Options =: *options*

7.3. If *options.Extension.Rotate* specified and *options.Extension.Rotate.@Reboot* = true:

7.3.1.If *options.Extension.Rotate* list contains only "OFF" value, skip other steps.

7.3.2.If *options.Extension.Rotate* list contains only "AUTO" value, skip other steps.

7.3.3.If *options.Extension.Rotate* list contains only "ON" value and *options.Extension.Rotate.DegreeList.Item* list contains only 0 value, skip other steps.

7.3.4.If *videoSourceConfiguration* does not contain *Extension.Rotate* element, FAIL the test and skip other steps.

7.3.5.ONVIF Client invokes **SetVideoSourceConfiguration** request with parameters

- Configuration.@token := *videoSourceConfiguration.@token*
- Configuration.Name := "TestName1"
- Configuration.SourceToken := first value from *options.VideoSourceTokensAvailable* list
- Configuration.Bounds.x := *options.BoundsRange.XRange.Min*
- Configuration.Bounds.y := *options.BoundsRange.YRange.Min*
- Configuration.Bounds.width := *options.BoundsRange.WidthRange.Min*
- Configuration.Bounds.height := *options.BoundsRange.HeightRange.Min*
- Configuration.Extension.Rotate.Mode := first value from *options.Extension.Rotate.Mode* list differs from *videoSourceConfiguration.Extension.Rotate.Mode* (if applicable).
- If Configuration.Extension.Rotate.Mode = ON:
 - If *options.Extension.Rotate.DegreeList* is specified and contains at least one Item:
 - Configuration.Extension.Rotate.Degree := first value from *options.Extension.Rotate.DegreeList.Item* list differs from 0 (if applicable)

- If *options.Extension.Rotate.DegreeList* is not specified or empty:
 - *Configuration.Extension.Rotate.Degree* := -180

7.3.6.ONVIF Client waits for the Device reboot by following the procedure mentioned in [Annex A.15](#).

7.3.7.DUT responds with **SetVideoSourceConfigurationResponse** message.

7.3.8.ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters

- *ConfigurationToken* := *videoSourceConfiguration.@token*
- *ProfileToken* skipped

7.3.9.The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters

- *Configurations list* =: *videoSourceConfList*

7.3.10f *videoSourceConfList[0]* is not equal to Configuration from step [7.3.5](#), FAIL the test and skip other steps.

7.3.11ONVIF Client restores settings of Video Source Configuration with *@token* = *videoSourceConfiguration.@token*.

7.3.12ONVIF Client waits for the Device reboot by following the procedure mentioned in [Annex A.15](#).

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoSourceConfigurationsResponse** message.
- DUT did not send **SetVideoSourceConfigurationResponse** message.
- DUT did not send **GetVideoSourceConfigurationOptionsResponse** message.

Note: The following fields are compared at step [5.8](#) and [5.14](#):

- *SourceToken*

- Name
- Bounds.x
- Bounds.y
- Bounds.width
- Bounds.height
- Extension.Rotate
- Extension.Rotate.Mode
- Extension.Rotate.Degree
- Extension.Extension.LensDescription list (XFactor will be used as a key)
- Extension.Extension.LensDescription.FocalLength
- Extension.Extension.LensDescription.Offset.x
- Extension.Extension.LensDescription.Offset.y
- Extension.Extension.LensDescription.Projection list (Angle and Radius will be used as key)
- Extension.Extension.LensDescription.Projection.Transmittance

Note: The following fields are compared at step 7.3.7:

- Extension.Rotate
- Extension.Rotate.Mode
- Extension.Rotate.Degree

5.2.1.6 GET VIDEO SOURCE CONFIGURATIONS – INVALID TOKEN

Test Case ID: MEDIA2-2-2-6

Specification Coverage: Get configurations, Video source configuration.

Feature Under Test: GetVideoSourceConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify SOAP 1.2 Fault receiving in case of GetVideoSourceConfigurations with invalid token.

Pre-Requisite: Media2 Service is received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
4. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
 - ConfigurationToken := other than listed in *videoSourceConfList*
 - ProfileToken skipped
5. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send the **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault message

5.2.1.7 PROFILES AND VIDEO SOURCE CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: MEDIA2-2-2-7

Specification Coverage: None.

Feature Under Test: GetProfiles, GetVideoSourceConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To check that GetProfiles command and GetVideoSourceConfigurationOptions command are consistent.

Pre-Requisite: Media2 Service is received from the DUT. Video Source Configuration is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters:
 - Type = VideoSource
4. The DUT responds with **GetProfilesResponse** message with parameters:
 - Profiles List =: *profilesList*
5. For each media profile *profile1* from **profilesList** containing Configurations.VideoSource element do the following steps:
 - 5.1. ONVIF Client invokes **GetVideoSourceConfigurationOptions** request with parameters:
 - ConfigurationToken=*profile1.Configurations.VideoSource.@token*
 - ProfileToken =: *profile1.@token*
 - 5.2. The DUT responds with **GetVideoSourceConfigurationOptionsResponse** message with parameters:
 - Options =: *configurationOptions*
 - 5.3. If *profile1.Configurations.VideoSource.SourceToken* is not equal to one of *configurationOptions.VideoSourceTokensAvailable* items, FAIL the test and skip other steps.
 - 5.4. If *profile1.Configurations.VideoSource.Bounds.@x* < *configurationOptions.BoundsRange.XRange.Min*, FAIL the test and skip other steps.
 - 5.5. If *profile1.Configurations.VideoSource.Bounds.@x* > *configurationOptions.BoundsRange.XRange.Max*, FAIL the test and skip other steps.

- 5.6. If `profile1.Configurations.VideoSource.Bounds.@y` <
`configurationOptions.BoundsRange.YRange.Min`, FAIL the test and skip other steps.
- 5.7. If `profile1.Configurations.VideoSource.Bounds.@y` >
`configurationOptions.BoundsRange.YRange.Max`, FAIL the test and skip other steps.
- 5.8. If `profile1.Configurations.VideoSource.Bounds.@width` <
`configurationOptions.BoundsRange.WidthRange.Min`, FAIL the test and skip other steps.
- 5.9. If `profile1.Configurations.VideoSource.Bounds.@width` >
`configurationOptions.BoundsRange.WidthRange.Max`, FAIL the test and skip other steps.
- 5.10. If `profile1.Configurations.VideoSource.Bounds.@height` <
`configurationOptions.BoundsRange.HeightRange.Min`, FAIL the test and skip other steps.
- 5.11. If `profile1.Configurations.VideoSource.Bounds.@height` >
`configurationOptions.BoundsRange.HeightRange.Max`, FAIL the test and skip other steps.
- 5.12. If `profile1.Configurations.VideoSource` contains Extension element:
- 5.12.1. If `profile1.Configurations.VideoSource.Extension` contains Rotate element:
- 5.12.1.1. If `profile1.Configurations.VideoSource.Extension.Rotate.Mode` is not equal to one of `configurationOptions.Extension.Rotate.Mode` items, FAIL the test and skip other steps.
- 5.12.1.2. If `profile1.Configurations.VideoSource.Extension.Rotate` contains Degree element and `profile1.Configurations.VideoSource.Extension.Rotate.Degree` is not equal to one of `configurationOptions.Extension.Rotate.DegreeList.Items` items, FAIL the test and skip other steps.
- 5.12.2. If `profile1.Configurations.VideoSource.Extension` contains Extension element:
- 5.12.2.1. If `profile1.Configurations.VideoSource.Extension.Extension` contains SceneOrientation element and `profile1.Configurations.VideoSource.Extension.Extension.SceneOrientation.Mode` is not equal to one of `configurationOptions.Extension.Extension.SceneOrientationMode` items, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetVideoSourceConfigurationOptionsResponse** message.

5.2.2 Video Encoder Configuration

5.2.2.1 VIDEO ENCODER CONFIGURATION

Test Case ID: MEDIA2-2-3-1

Specification coverage: Get media profiles (Media2 Service), Get configurations (Media2 Service)

Feature under test: GetProfiles, GetVideoEncoderConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify DUT sends All Video Encoder Configurations, specific Video Encoder Configuration, and Video Encoder Configurations compatible with specific profile.

Pre-Requisite: Media2 Service is received from the DUT. Video feature is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters
 - ConfigurationToken - skipped
 - ProfileToken - skipped
4. The DUT responds with all video encoder configurations in **GetVideoEncoderConfigurationsResponse** with parameters

- Configurations list =: *videoEncoderConfCompleteList1*
- 5. If *videoEncoderConfCompleteList1* contains at least two items with the same @token, FAIL the test and skip other steps.
- 6. ONVIF Client invokes **GetProfiles** request with parameters
 - Token - skipped
 - Type list - skipped
- 7. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList1*
- 8. For each Media Profile *profile1* in *profileList1* repeat the following steps:
 - 8.1. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters
 - ConfigurationToken - skipped
 - ProfileToken := *profile1.@token*
 - 8.2. The DUT responds with compatible video encoder configurations in **GetVideoEncoderConfigurationsResponse** with parameters
 - Configurations list =: *videoEncoderConfList1*
 - 8.3. If *videoEncoderConfList1* contains at least two items with the same @token, FAIL the test and skip other steps.
 - 8.4. If *profile1.Configurations* contains VideoEncoder:
 - 8.4.1. If *videoEncoderConfList1* does not contain item with @token = *profile1.Configurations.VideoEncoder.@token*, FAIL the test and skip other steps.
 - 8.5. For each Video Encoder Configuration *videoEncoderConf1* in *videoEncoderConfList1* repeat the following steps:
 - 8.5.1. If *videoEncoderConfCompleteList1* does not contain item with @token = *videoEncoderConf1.@token*, FAIL the test and skip other steps.
- 9. For each Video Encoder Configuration *configuration1* in *videoEncoderConfCompleteList1* repeat the following steps:
 - 9.1. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters

- ConfigurationToken := *configuration1.@token*
- 9.2. The DUT responds with requested video encoder configuration in **GetVideoEncoderConfigurationsResponse** with parameters
- Configurations list =: *videoEncoderConfList2*
- 9.3. If *videoEncoderConfList2* does not contain only one item with the same @token, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetVideoEncoderConfigurationsResponse** message.

5.2.2.2 VIDEO ENCODER CONFIGURATIONS AND VIDEO ENCODER CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: MEDIA2-2-3-2

Specification Coverage: None.

Feature Under Test: GetVideoEncoderConfigurations, GetVideoEncoderConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify all video encoder configurations are consistent with video encoder configurations options.

Pre-Requisite: Media2 Service is received from the DUT. Video feature is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoEncoderConfigurations** to get all video encoder configurations from DUT.

4. DUT sends the list of video encoder configurations.
5. ONVIF Client verifies the list of video encoder configurations sent by DUT.
6. For each Video Encoder Configuration in **GetVideoEncoderConfigurationsResponse**, ONVIF Client saves this configuration in *Configuration1* and runs the following steps:
 - 6.1. ONVIF Client invokes **GetVideoEncoderConfigurationOptions** with *Configuration1* token as input argument.
 - 6.2. DUT sends **GetVideoEncoderConfigurationOptionsResponse** with the list of video encoder configuration options available for *Configuration1*.
 - 6.3. ONVIF Client verifies that *Configuration1* parameters are consistent with at least one option from **GetVideoEncoderConfigurationOptionsResponse**. See details of fields mapping in [Annex A.16](#) VideoEncoderConfigurationOptions and VideoEncoderConfiguration mapping.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoEncoderConfigurationsResponse** message.
- DUT did not send **GetVideoEncoderConfigurationOptionsResponse** message.
- DUT failed consistency check according to [Annex A.16](#).

5.2.2.3 PROFILES AND VIDEO ENCODER CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: MEDIA2-2-3-3

Specification Coverage: None.

Feature Under Test: GetProfiles, GetVideoEncoderConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To check that **GetProfiles** command and GetVideoEncoderConfigurationOptions command are consistent.

Pre-Requisite: Media2 Service is received from the DUT. Video feature is supported by the DUT.

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

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** with Type=VideoEncoder as input parameter.
4. DUT sends the list of existing media profiles in **GetProfilesResponse** message.
5. For each media profile from **GetProfilesResponse**, ONVIF Client saves this profile in *Profile1* variable, saves *Profile1* Configurations VideoEncoder configuration in *Configuration1* variable and runs the following steps:
 - 5.1. ONVIF Client invokes **GetVideoEncoderConfigurationOptions** with ConfigurationToken=*Configuration1* and ProfileToken=*Profile1* token as input arguments.
 - 5.2. DUT sends **GetVideoEncoderConfigurationOptionsResponse** with the list of configuration *options*.
 - 5.3. ONVIF Client verifies that *Configuration1* parameters are consistent with at least one option from **GetVideoEncoderConfigurationOptionsResponse**. See details of fields mapping in [Annex A.16](#) VideoEncoderConfigurationOptions and VideoEncoderConfiguration mapping. ONVIF Client saves this option in *Option1* variable.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetVideoEncoderConfigurationsResponse** message.
- DUT failed consistency check according to [Annex A.16](#)

5.2.2.4 SET ALL SUPPORTED VIDEO ENCODER CONFIGURATIONS

Test Case ID: MEDIA2-2-3-4

Specification Coverage: Get configurations, Get configuration *options*, Video encoder configuration, Modify a configuration

Feature Under Test: GetVideoEncoderConfigurationOptions, GetVideoEncoderConfigurations, SetVideoEncoderConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify whether all supported *options* can be set.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Video feature is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Encoder Configurations list by following the procedure mentioned in [Annex A.17](#) with the following input and output parameters
 - out *videoEncoderConfList* - Video Encoder Configurations list
4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ConfigurationChanged"** - Notification Topic
 - out *s* - Subscription reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription termination time
5. For each Video Encoder Configuration *videoEncoderConfiguration* in *videoEncoderConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetVideoEncoderConfigurationOptions** request with parameters
 - ConfigurationToken := *videoEncoderConfiguration.@token*
 - ProfileToken skipped

5.2. DUT responds with **GetVideoEncoderConfigurationOptionsResponse** message with parameters

- Options list =: *optionsList*

5.3. For each *options* in *optionsList* repeat the following steps:

5.3.1. ONVIF Client invokes **SetVideoEncoderConfiguration** request with parameters

- Configuration.@token := *videoEncoderConfiguration*.@token
- Configuration.Name := "TestName1"
- Configuration.@GovLength := if *options*.GovLengthRange is specified, set minimum value from *options*.GovLengthRange list, otherwise, skip the parameter
- Configuration.@Profile := if *videoEncoderConfiguration*.@Profile is specified and *options*.@ProfilesSupported is specified and contains at least one item, *options*.@ProfilesSupported[0], otherwise, skip the parameter
- Configuration.Encoding := *options*.Encoding
- Configuration.Resolution := *options*.ResolutionsAvailable[0]
- Configuration.RateControl.@ConstantBitRate skipped
- Configuration.RateControl.@FrameRateLimit := minimum value from *options*.FrameRatesSupported list
- Configuration.RateControl.@BitrateLimit := *options*.BitrateRange.Min
- Configuration.Multicast := *videoEncoderConfiguration*.Multicast
- Configuration.Quality := *options*.QualityRange.Min

5.3.2. DUT responds with **SetVideoEncoderConfigurationResponse** message.

5.3.3. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in s - Subscription reference

- in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *videoEncoderConfiguration.@token* - Configuration token
 - in VideoEncoder - Configuration Type
- 5.3.4. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters
- ConfigurationToken := *videoEncoderConfiguration.@token*
 - ProfileToken skipped
- 5.3.5. The DUT responds with requested video encoder configuration in **GetVideoEncoderConfigurationsResponse** with parameters
- Configurations list := *videoEncoderConfList*
- 5.3.6. If *videoEncoderConfList*[0] is not equal to Configuration from step 5.3.1, FAIL the test and skip other steps.
- 5.3.7. ONVIF Client invokes **SetVideoEncoderConfiguration** request with parameters
- Configuration.@token := *videoEncoderConfiguration.@token*
 - Configuration.Name := "TestName2"
 - Configuration.@GovLength := if *options.GovLengthRange* is specified, set maximum value from *options.GovLengthRange* list, otherwise, skip the parameter
 - Configuration.@Profile := if *videoEncoderConfiguration.@Profile* is specified and *options.@ProfilesSupported* is specified and contains at least one item, *options.@ProfilesSupported*[last], otherwise, skip the parameter
 - Configuration.Encoding := *options.Encoding*
 - Configuration.Resolution := *options.ResolutionsAvailable*[last]
 - Configuration.RateControl.@ConstantBitRate skipped
 - Configuration.RateControl.@FrameRateLimit := maximum value from *options.FrameRatesSupported* list

- Configuration.RateControl.@BitrateLimit := *options.BitrateRange.Max*
- Configuration.Multicast := *videoEncoderConfiguration.Multicast*
- Configuration.Quality := *options.QualityRange.Max*

5.3.8. DUT responds with **SetVideoEncoderConfigurationResponse** message.

5.3.9. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *videoEncoderConfiguration.@token* - Configuration token
- in VideoEncoder - Configuration Type

5.3.10. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters

- ConfigurationToken := *videoEncoderConfiguration.@token*
- ProfileToken skipped

5.3.11. The DUT responds with requested video encoder configuration in **GetVideoEncoderConfigurationsResponse** with parameters

- Configurations list =: *videoEncoderConfList*

5.3.12. If *videoEncoderConfList[0]* is not equal to Configuration from step [5.3.7](#), FAIL the test and skip other steps.

6. ONVIF Client restores settings for all Video Encoder Configurations.

7. If subscription was created at step [4](#), ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in *s* - Subscription reference

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoEncoderConfigurationsResponse** message.
- DUT did not send **SetVideoEncoderConfigurationsResponse** message.
- DUT did not send **SetVideoEncoderConfigurationOptionsResponse** message.

Note: The following fields are compared at step [5.3.6](#) and [5.3.12](#):

- Name
- Encoding
- Resolution.Height
- Resolution.Width
- GovLength

5.2.2.5 VIDEO ENCODER CONFIGURATION OPTIONS

Test Case ID: MEDIA2-2-3-5

Specification Coverage: Video Encoder Configuration Options.

Feature Under Test: GetVideoEncoderConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To validate video encoder configurations options.

Pre-Requisite: Media2 Service is received from the DUT. Video feature is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.
3. ONVIF Client invokes **GetVideoEncoderConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
4. DUT responds with **GetVideoEncoderConfigurationOptionsResponse** with parameters
 - Options list =: *vecOptionsList*
5. For each Options (*options*) in (*vecOptionsList*) repeat the following steps:
 - 5.1. If *options* contains GovLengthRange, ONVIF Client checks the following:
 - 5.1.1. If *options*.GovLengthRange list does not contain two values, FAIL the test and skip other steps.
 - 5.1.2. If *options*.GovLengthRange list contains more than two values, FAIL the test and skip other steps.
 - 5.1.3. If the first value in *options*.GovLengthRange list is greater than the second value, FAIL the test and skip other steps.
 - 5.2. If *options* contains FrameRatesSupported and *options*.FrameRatesSupported list is not sorted with descending sort order, FAIL the test and skip other steps.
6. ONVIF Client invokes **GetVideoEncoderConfigurations** with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
7. The DUT responds with all video encoder configurations in **GetVideoEncoderConfigurationsResponse** with parameters
 - Configurations list =: *vecList*
8. If *vecList* is empty, FAIL the test and skip other steps.
9. For each Video Encoder Configuration (*vec*) in *vecList* repeat the following steps:
 - 9.1. ONVIF Client invokes **GetVideoEncoderConfigurationOptions** request with parameters
 - ConfigurationToken := *vec*.@token
 - ProfileToken skipped

- 9.2. DUT responds with **GetVideoEncoderConfigurationOptionsResponse** with parameters
 - Options list =: *vecOptionsList*
- 9.3. For each Options (*options*) in (*vecOptionsList*) repeat the following steps:
 - 9.3.1. If *options* contains GovLengthRange, ONVIF Client checks the following:
 - 9.3.1.1. If *options*.GovLengthRange list does not contain two values, FAIL the test and skip other steps.
 - 9.3.1.2. If *options*.GovLengthRange list contains more than two values, FAIL the test and skip other steps.
 - 9.3.1.3. If the first value in *options*.GovLengthRange list is greater than the second value, FAIL the test and skip other steps.
 - 9.3.2. If *options* contains FrameRatesSupported and *options*.FrameRatesSupported list is not sorted with descending sort order, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoEncoderConfigurationOptionsResponse** message.
- DUT did not send **GetVideoEncoderConfigurationsResponse** message.

5.2.3 Video Source

5.2.3.1 GET VIDEO SOURCE MODES

Test Case ID: MEDIA2-2-4-1

Specification Coverage: Video source mode, GetVideoSourceModes.

Feature Under Test: GetVideoSourceModes

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving supported Video Source Modes for specified Video Source.

Pre-Requisite: Media2 Service is received from the DUT. Device IO Service is received from the DUT. Video sources modes is supported by Device as indicated by the VideoSourceMode=true capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Sources list by following the procedure mentioned in [Annex A.18](#) with the following input and output parameters
 - out *videoSourcesList* - Video Sources list
4. For each Video Source token *videoSourceToken* from *videoSourcesList* repeat the following steps:
 - 4.1. ONVIF Client invokes **GetVideoSourceModes** request with parameters
 - VideoSourceToken := *videoSourceToken*
 - 4.2. DUT responds with **GetVideoSourceModesResponse** message with parameters
 - VideoSourceModes list =: *videoSourceModesList*
 - 4.3. If *videoSourceModesList* contains at least two items with the same @token, FAIL the test and skip other steps.
 - 4.4. If *videoSourceModesList* contains at least two items with Enabled=true, FAIL the test and skip other steps.
 - 4.5. If *videoSourceModesList* contains no items with Enabled=true, FAIL the test and skip other steps.
 - 4.6. If *videoSourceModesList* contains at least one item with empty Encodings list, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

5.2.3.2 SET VIDEO SOURCE MODES

Test Case ID: MEDIA2-2-4-2

Specification Coverage: Video source mode, GetVideoSourceModes, SetVideoSourceModes.

Feature Under Test: GetVideoSourceModes, SetVideoSourceModes

WSDL Reference: media2.wsdl, deviceio.wsdl

Test Purpose: To verify change of Video Source Mode for specified Video Source.

Pre-Requisite: Media2 Service is received from the DUT. Device IO Service is received from the DUT. Video sources modes is supported by Device as indicated by the VideoSourceMode=true capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Sources list by following the procedure mentioned in [Annex A.18](#) with the following input and output parameters
 - out *videoSourcesList* - Video Sources list
4. For each Video Source token *videoSourceToken* from *videoSourcesList* repeat the following steps:
 - 4.1. ONVIF Client invokes **GetVideoSourceModes** request with parameters
 - VideoSourceToken := *videoSourceToken*
 - 4.2. DUT responds with **GetVideoSourceModesResponse** message with parameters
 - VideoSourceModes list := *videoSourceModesList*
 - 4.3. Set *modeToEnable* := *videoSourceModesList*[*first*].@token, where *first* is the index number of the first item on the *videoSourceModesList* list that has no @Enabled or @Enabled = false (if any).
 - 4.4. ONVIF Client invokes **SetVideoSourceMode** request with parameters
 - VideoSourceToken := *videoSourceToken*
 - VideoSourceModeToken := *modeToEnable*

- 4.5. DUT responds with **SetVideoSourceModeResponse** message with parameters
 - Reboot =: *rebootFlag*
- 4.6. If *rebootFlag* = true, ONVIF Client waits for the Device reboot by following the procedure mentioned in [Annex A.15](#).
- 4.7. ONVIF Client invokes **GetVideoSourceModes** request with parameters
 - VideoSourceToken := *videoSourceToken*
- 4.8. DUT responds with **GetVideoSourceModesResponse** message with parameters
 - VideoSourceModes list =: *videoSourceModesList*
- 4.9. If *videoSourceModesList* contains at least two items with @Enabled=true, FAIL the test and skip other steps.
- 4.10. If *videoSourceModesList* item with @token = *modeToEnable* has no @Enabled or @Enabled = false for it, FAIL the test and skip other steps.
- 4.11. If *videoSourceModesList* have only one item, go to step [4.20](#)
- 4.12. Set *modeToEnable* := *videoSourceModesList*[*last*].@token, where *last* is the index number of the last item on the *videoSourceModesList* list.
- 4.13. ONVIF Client invokes **SetVideoSourceMode** request with parameters
 - VideoSourceToken := *videoSourceToken*
 - VideoSourceModeToken := *modeToEnable*
- 4.14. DUT responds with **SetVideoSourceModeResponse** message with parameters
 - Reboot =: *rebootFlag*
- 4.15. If *rebootFlag* = true, ONVIF Client waits for the Device reboot by following the procedure mentioned in [Annex A.15](#).
- 4.16. ONVIF Client invokes **GetVideoSourceModes** request with parameters
 - VideoSourceToken := *videoSourceToken*
- 4.17. DUT responds with **GetVideoSourceModesResponse** message with parameters
 - VideoSourceModes list =: *videoSourceModesList*

4.18. If *videoSourceModesList* contains at least two items with @Enabled=true, FAIL the test and skip other steps.

4.19. If *videoSourceModesList* item with @token = *modeToEnable* has no @Enabled or @Enabled = false for it, FAIL the test and skip other steps.

4.20. ONVIF Client restores settings for *videoSourceModesList*.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetVideoSourceModesResponse** message.
- DUT did not send **SetVideoSourceModesResponse** message.

5.3 Audio Configuration

5.3.1 Audio Source Configuration

5.3.1.1 GET AUDIO SOURCE CONFIGURATION OPTIONS

Test Case ID: MEDIA2-3-1-1

Specification Coverage: Get configuration options, Audio source configuration.

Feature Under Test: GetAudioSourceConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving Audio Source Configuration options for specified Audio Source Configuration, for specified Profile, generic for the Device.

Pre-Requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioSourceConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
4. DUT responds with **GetAudioSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*
5. ONVIF Client retrieves Audio Source Configurations list by following the procedure mentioned in [Annex A.9](#) with the following input and output parameters
 - out *audioSourceConfCompleteList* - Audio Source Configurations list
6. ONVIF Client invokes **GetAudioSourceConfigurationOptions** request with parameters
 - ConfigurationToken := *audioSourceConfigurationList[0].@token*
 - ProfileToken skipped
7. DUT responds with **GetAudioSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*
8. ONVIF Client retrieves Media Profile, which contains Audio Source Configuration by following the procedure mentioned in [Annex A.19](#) with the following input and output parameters
 - out *profile* - Media Profile with Audio Source Configuration
9. ONVIF Client invokes **GetAudioSourceConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile.@token*
10. DUT responds with **GetAudioSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*

11. If Media Profile *profile* was changed at step 8, ONVIF Client restores Media Profile.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

5.3.1.2 GET AUDIO SOURCE CONFIGURATIONS

Test Case ID: MEDIA2-3-1-2

Specification Coverage: Get configurations, Audio source configuration.

Feature Under Test: GetAudioSourceConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving complete Audio Source Configuration List, Audio Source Configuration by Configuration token and compatible Audio Source Configuration by Profile token.

Pre-Requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
4. The DUT responds with **GetAudioSourceConfigurationsResponse** with parameters
 - Configurations list =: *audioSourceConfCompleteList*
5. If *audioSourceConfCompleteList* is empty, FAIL the test and skip other steps.

6. If *audioSourceConfCompleteList* contains at least two items with the same @token, FAIL the test and skip other steps.
7. For each Audio Source Configuration *audioSourceConfiguration* in *audioSourceConfCompleteList* repeat the following steps:
 - 7.1. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken := *audioSourceConfiguration.@token*
 - ProfileToken skipped
 - 7.2. The DUT responds with **GetAudioSourceConfigurationsResponse** with parameters
 - Configurations list =: *audioSourceConfList*
 - 7.3. If *audioSourceConfList* is empty, FAIL the test and skip other steps.
 - 7.4. If *audioSourceConfList* contains more than one item, FAIL the test and skip other steps.
 - 7.5. If *audioSourceConfList* does not contain item with @token = *audioSourceConfiguration.@token*, FAIL the test and skip other steps.
8. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioSource
9. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
10. For each Media Profile *profile* in *profileList* repeat the following steps:
 - 10.1. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile.@token*
 - 10.2. The DUT responds with **GetAudioSourceConfigurationsResponse** with parameters
 - Configurations list =: *audioSourceConfList*
 - 10.3. If *audioSourceConfList* contains at least two items with the same @token, FAIL the test and skip other steps.

10.4. If *audioSourceConfCompleteList* does not contain at least one item with @token from *audioSourceConfList*, FAIL the test and skip other steps.

10.5. If *profile.Configurations* contains AudioSource:

10.5.1. If *audioSourceConfList* does not contain item with @token = *profile.Configurations.AudioSource.@token*, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioSourceConfigurationsResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.3.1.3 AUDIO SOURCE CONFIGURATIONS AND AUDIO SOURCE CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: MEDIA2-3-1-3

Specification Coverage: Get configurations, Get configuration options, Audio source configuration.

Feature Under Test: GetProfiles, GetAudioSourceConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify all Audio Source Configurations are consistent with Audio Source Configuration Options.

Pre-Requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Test Configuration: ONVIF Client and DUT

Test Procedure:

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

3. ONVIF Client retrieves Audio Source Configurations list by following the procedure mentioned in [Annex A.9](#) with the following input and output parameters
 - out *audioSourceConfList* - Audio Source Configurations list
4. For each Audio Source Configuration *audioSourceConfiguration* in *audioSourceConfList* repeat the following steps:
 - 4.1. ONVIF Client invokes **GetAudioSourceConfigurationOptions** request with parameters
 - ConfigurationToken := *audioSourceConfiguration.@token*
 - ProfileToken skipped
 - 4.2. DUT responds with **GetAudioSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*
 - 4.3. If *audioSourceConfiguration.SourceToken* is not in *options.InputTokensAvailable* list, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

5.3.1.4 PROFILES AND AUDIO SOURCE CONFIGURATIONS CONSISTENCY

Test Case ID: MEDIA2-3-1-4

Specification Coverage: Get configurations, Get media profiles, Audio source configuration.

Feature Under Test: GetAudioSourceConfigurations, GetAudioSourceConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify all Media Profiles are consistent with Audio Source Configurations.

Pre-Requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

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

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioSource
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList* which contains Configurations.AudioSource repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken := *profile.Configurations.AudioSource.@token* ProfileToken skipped
 - 5.2. The DUT responds with **GetAudioSourceConfigurationsResponse** with parameters
 - Configurations list =: *audioSourceConfList*
 - 5.3. If *audioSourceConfList*[0] is not equal to *profile.Configurations.AudioSource*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetAudioSourceConfigurationsResponse** message.

5.3.1.5 MODIFY ALL SUPPORTED AUDIO SOURCE CONFIGURATIONS

Test Case ID: MEDIA2-3-1-5

Specification Coverage: Get configurations, Get configuration options, Audio source configuration, Modify a configuration

Feature Under Test: GetAudioSourceConfigurationOptions, GetAudioSourceConfigurations, SetAudioSourceConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify whether all supported Audio Source Configuration Options can be set.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Source Configurations list by following the procedure mentioned in [Annex A.9](#) with the following input and output parameters
 - out *audioSourceConfList* - Audio Source Configurations list
4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in "**tns1:Media/ConfigurationChanged**" - Notification Topic
 - out *s* - Subscription reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription termination time
5. For each Audio Source Configuration *audioSourceConfiguration* in *audioSourceConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAudioSourceConfigurationOptions** request with parameters
 - ConfigurationToken := *audioSourceConfiguration.@token*
 - ProfileToken skipped

- 5.2. DUT responds with **GetAudioSourceConfigurationOptionsResponse** message with parameters
 - Options =: *options*
- 5.3. ONVIF Client invokes **SetAudioSourceConfiguration** request with parameters
 - Configuration.@token := *audioSourceConfiguration.@token*
 - Configuration.Name := "TestName1"
 - Configuration.SourceToken := other then current value (if possible) from *options.InputTokensAvailable* list
- 5.4. DUT responds with **SetAudioSourceConfigurationResponse** message.
- 5.5. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioSourceConfiguration.@token* - Configuration token
 - in AudioSource - Configuration Type
- 5.6. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken := *audioSourceConfiguration.@token*
 - ProfileToken skipped
- 5.7. The DUT responds with **GetAudioSourceConfigurationsResponse** with parameters
 - Configurations list =: *audioSourceConfList*
- 5.8. If *audioSourceConfList[0]* is not equal to Configuration from step 5.3, FAIL the test and skip other steps.
- 5.9. ONVIF Client restores settings of Audio Source Configuration with @token = *audioSourceConfiguration.@token*.

6. If subscription was created at step 4, ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in s - Subscription reference

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioSourceConfigurationsResponse** message.
- DUT did not send **SetAudioSourceConfigurationResponse** message.
- DUT did not send **GetAudioSourceConfigurationOptionsResponse** message.

Note: The following fields are compared at step 5.8:

- SourceToken
- Name

5.3.1.6 GET AUDIO SOURCE CONFIGURATIONS – INVALID TOKEN

Test Case ID: MEDIA2-3-1-6

Specification Coverage: Get configurations, Audio source configuration.

Feature Under Test: GetAudioSourceConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify SOAP 1.2 Fault receiving in case of **GetAudioSourceConfigurations** with invalid token.

Pre-Requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Test Configuration: ONVIF Client and DUT

Test Procedure:

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

3. ONVIF Client retrieves Audio Source Configurations list by following the procedure mentioned in [Annex A.9](#) with the following input and output parameters
 - out *audioSourceConfCompleteList* - Audio Source Configurations list
4. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken := other than listed in *audioSourceConfCompleteList*
 - ProfileToken skipped
5. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send the **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault message.

5.3.2 Audio Encoder Configuration

5.3.2.1 G.711 AUDIO ENCODER CONFIGURATION

Test Case ID: MEDIA2-3-2-1

Specification Coverage: Get configurations, Get configuration options, Audio encoder configuration, Modify a configuration.

Feature Under Test: GetAudioEncoderConfigurations, GetAudioEncoderConfigurationOptions, SetAudioEncoderConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify that DUT changes audio configuration with G.711 Encoding properly.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Media2_G.711 feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.
3. ONVIF Client retrieves Audio Encoder Configurations list by following the procedure mentioned in [Annex A.20](#) with the following input and output parameters
 - out *audioEncoderConfList* - Audio Encoder Configurations list
4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ConfigurationChanged"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
5. For each Audio Encoder Configuration *audioEncoderConfiguration* in *audioEncoderConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAudioEncoderConfigurationOptions** request with parameters
 - ConfigurationToken := *audioEncoderConfiguration.@token*
 - ProfileToken skipped
 - 5.2. DUT responds with **GetAudioEncoderConfigurationOptionsResponse** message with parameters
 - Options list =: *optionsList*
 - 5.3. If *optionsList* contains an item with Encoding = PCMU, do the following steps:
 - 5.3.1. Set *options* := first item from *optionsList* with Encoding = PCMU.
 - 5.3.2. ONVIF Client invokes **SetAudioEncoderConfiguration** request with parameters
 - Configuration.@token := *audioEncoderConfiguration.@token*
 - Configuration.Name := string different from *audioEncoderConfiguration.Name* value (length shall be less than or equal to 64 characters and it shall contain only readable characters)

- Configuration.Encoding := *options.Encoding*
- Configuration.Bitrates := minimum value from *options.BitratesList.Items* list if *options.BitratesList.Items* list contains items, otherwise, *audioEncoderConfiguration.Bitrates*
- Configuration.SampleRate := minimum value from *options.SampleRateList.Items* list if *options.SampleRateList.Items* list contains items, otherwise, *audioEncoderConfiguration.SampleRate*
- Configuration.Multicast := *audioEncoderConfiguration.Multicast*

5.3.3. DUT responds with **SetAudioEncoderConfigurationResponse** message.

5.3.4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *audioEncoderConfiguration.@token* - Configuration token
- in AudioEncoder - Configuration Type

5.3.5. ONVIF Client invokes **GetAudioEncoderConfigurations** request with parameters

- ConfigurationToken := *audioEncoderConfiguration.@token*
- ProfileToken skipped

5.3.6. The DUT responds with **GetAudioEncoderConfigurationsResponse** with parameters

- Configurations list =: *audioEncoderConfList*

5.3.7. If *audioEncoderConfList* contains more items with *@token* = *audioEncoderConfiguration.@token* than 1, FAIL the test and skip other steps.

- 5.3.8. If *audioEncoderConfList*[0] is not equal to Configuration from step 5.3.2, FAIL the test and skip other steps.
- 5.3.9. ONVIF Client invokes **SetAudioEncoderConfiguration** request with parameters
- Configuration.@token := *audioEncoderConfiguration*.@token
 - Configuration.Name := *audioEncoderConfiguration*.Name
 - Configuration.Encoding := *options*.Encoding
 - Configuration.Bitrates := maximum value from *options*.BitrateList.Items list if *options*.BitrateList.Items list contains items, otherwise, *audioEncoderConfiguration*.Bitrate
 - Configuration.SampleRate := maximum value from *options*.SampleRateList.Items list if *options*.SampleRateList.Items list contains items, otherwise, *audioEncoderConfiguration*.SampleRate
 - Configuration.Multicast := *audioEncoderConfiguration*.Multicast
- 5.3.10. DUT responds with **SetAudioEncoderConfigurationResponse** message.
- 5.3.11. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioEncoderConfiguration*.@token - Configuration token
 - in AudioEncoder - Configuration Type
- 5.3.12. ONVIF Client invokes **GetAudioEncoderConfigurations** request with parameters
- ConfigurationToken := *audioEncoderConfiguration*.@token
 - ProfileToken skipped

5.3.13. The DUT responds with **GetAudioEncoderConfigurationsResponse** with parameters

- Configurations list =: *audioEncoderConfList*

5.3.14. If *audioEncoderConfList* contains more items with @token = *audioEncoderConfiguration.@token* than 1, FAIL the test and skip other steps.

5.3.15. If *audioEncoderConfList*[0] is not equal to Configuration from step 5.3.9, FAIL the test and skip other steps.

6. If subscription was created at step 4, ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in s - Subscription reference

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

Note: The following fields are compared at step 5.3.8 and 5.3.15:

- @token
- Name
- Encoding
- Multicast.Address.Type
- Multicast.Address.IPv4Address
- Multicast.Address.IPv6Address
- Multicast.Port
- Multicast.TTL
- Multicast.AutoStart
- Bitrate
- SampleRate

5.3.2.2 AAC AUDIO ENCODER CONFIGURATION

Test Case ID: MEDIA2-3-2-2

Specification Coverage: Get configurations, Get configuration options, Audio encoder configuration, Modify a configuration.

Feature Under Test: GetAudioEncoderConfigurations, GetAudioEncoderConfigurationOptions, SetAudioEncoderConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify that DUT changes audio configuration with AAC Encoding properly.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Media2_AAC feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Encoder Configurations list by following the procedure mentioned in [Annex A.20](#) with the following input and output parameters
 - out *audioEncoderConfList* - Audio Encoder Configurations list
4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ConfigurationChanged"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
5. For each Audio Encoder Configuration *audioEncoderConfiguration* in *audioEncoderConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAudioEncoderConfigurationOptions** request with parameters
 - ConfigurationToken := *audioEncoderConfiguration.@token*

- ProfileToken skipped
- 5.2. DUT responds with **GetAudioEncoderConfigurationOptionsResponse** message with parameters
- Options list =: *optionsList*
- 5.3. If *optionsList* contains an item with Encoding = MP4A-LATM or MPEG4-GENERIC, do the following steps:
- 5.3.1. Set *options* := first item from *optionsList* with Encoding = MP4A-LATM or MPEG4-GENERIC.
- 5.3.2. ONVIF Client invokes **SetAudioEncoderConfiguration** request with parameters
- Configuration.@token := *audioEncoderConfiguration*.@token
 - Configuration.Name := string different from *audioEncoderConfiguration*.Name value (length shall be less than or equal to 64 characters and it shall contain only readable characters)
 - Configuration.Encoding := *options*.Encoding
 - Configuration.Bitrates := minimum value from *options*.BitrateList.Items list if *options*.BitrateList.Items list contains items, otherwise, *audioEncoderConfiguration*.Bitrate
 - Configuration.SampleRate := minimum value from *options*.SampleRateList.Items list if *options*.SampleRateList.Items list contains items, otherwise, *audioEncoderConfiguration*.SampleRate
 - Configuration.Multicast := *audioEncoderConfiguration*.Multicast
- 5.3.3. DUT responds with **SetAudioEncoderConfigurationResponse** message.
- 5.3.4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT

- in *terminationTime* - subscription termination time
 - in *audioEncoderConfiguration.@token* - Configuration token
 - in AudioEncoder - Configuration Type
- 5.3.5. ONVIF Client invokes **GetAudioEncoderConfigurations** request with parameters
- ConfigurationToken := *audioEncoderConfiguration.@token*
 - ProfileToken skipped
- 5.3.6. The DUT responds with **GetAudioEncoderConfigurationsResponse** with parameters
- Configurations list =: *audioEncoderConfList*
- 5.3.7. If *audioEncoderConfList* contains more items with @token = *audioEncoderConfiguration.@token* than 1, FAIL the test and skip other steps.
- 5.3.8. If *audioEncoderConfList*[0] is not equal to Configuration from step 5.3.2, FAIL the test and skip other steps.
- 5.3.9. ONVIF Client invokes **SetAudioEncoderConfiguration** request with parameters
- Configuration.@token := *audioEncoderConfiguration.@token*
 - Configuration.Name := *audioEncoderConfiguration.Name*
 - Configuration.Encoding := *options.Encoding*
 - Configuration.Bitrates := maximum value from *options.BitratesList.Items* list if *options.BitratesList.Items* list contains items, otherwise, *audioEncoderConfiguration.Bitrates*
 - Configuration.SampleRate := maximum value from *options.SampleRateList.Items* list if *options.SampleRateList.Items* list contains items, otherwise, *audioEncoderConfiguration.SampleRate*
 - Configuration.Multicast := *audioEncoderConfiguration.Multicast*
- 5.3.10. DUT responds with **SetAudioEncoderConfigurationResponse** message.

5.3.11. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *audioEncoderConfiguration.@token* - Configuration token
- in AudioEncoder - Configuration Type

5.3.12. ONVIF Client invokes **GetAudioEncoderConfigurations** request with parameters

- ConfigurationToken := *audioEncoderConfiguration.@token*
- ProfileToken skipped

5.3.13. The DUT responds with **GetAudioEncoderConfigurationsResponse** with parameters

- Configurations list =: *audioEncoderConfList*

5.3.14. If *audioEncoderConfList* contains more items with *@token* = *audioEncoderConfiguration.@token* than 1, FAIL the test and skip other steps.

5.3.15. If *audioEncoderConfList*[0] is not equal to Configuration from step [5.3.9](#), FAIL the test and skip other steps.

6. If subscription was created at step [4](#), ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in *s* - Subscription reference

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

Note: The following fields are compared at step 5.3.8 and 5.3.15:

- @token
- Name
- Encoding
- Multicast.Address.Type
- Multicast.Address.Ipv4Address
- Multicast.Address.Ipv6Address
- Multicast.Port
- Multicast.TTL
- Multicast.AutoStart
- Bitrate
- SampleRate

5.3.2.3 GET AUDIO ENCODER CONFIGURATION OPTIONS

Test Case ID: MEDIA2-3-2-3

Specification Coverage: Get configuration options.

Feature Under Test: GetAudioEncoderConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving Audio Encoder Configuration Options for specified Audio Encoder Configuration, for specified Profile, generic for the Device.

Pre-Requisite: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioEncoderConfigurationOptions** request with parameters
 - ConfigurationToken skipped

- ProfileToken skipped
4. DUT responds with **GetAudioEncoderConfigurationOptionsResponse** message with parameters
 - Options =: *options*
 5. ONVIF Client retrieves Audio Encoder Configurations list by following the procedure mentioned in [Annex A.20](#) with the following input and output parameters
 - out *audioEncoderConfList* - Audio Encoder Configurations list
 6. For each Audio Encoder Configuration (*audioEncoderConf*) in *audioEncoderConfList*
 - 6.1. ONVIF Client invokes **GetAudioEncoderConfigurationOptions** request with parameters
 - ConfigurationToken := *audioEncoderConf.@token*
 - ProfileToken skipped
 - 6.2. DUT responds with **GetAudioEncoderConfigurationOptionsResponse** message with parameters
 - Options =: *options*
 7. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type := AudioSource
 8. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
 9. For each Profile (*profile*) in *profileList* that contains Configurations.AudioSource
 - 9.1. ONVIF Client invokes **GetAudioEncoderConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile.@token*
 - 9.2. DUT responds with **GetAudioEncoderConfigurationOptionsResponse** message with parameters

- Options =: *options*

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioEncoderConfigurationOptionsResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.3.2.4 AUDIO ENCODER CONFIGURATIONS AND AUDIO ENCODER CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: MEDIA2-3-2-4

Specification Coverage: Get configurations, Get configuration options, Audio encoder configuration.

Feature Under Test: GetProfiles, GetAudioEncoderConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify all Audio Encoder Configurations are consistent with Audio Encoder Configuration Options.

Pre-Requisite: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Encoder Configurations list by following the procedure mentioned in [Annex A.20](#) with the following input and output parameters
 - out *audioEncoderConfList* - Audio Encoder Configurations list
4. For each Audio Encoder Configuration *audioEncoderConfiguration* in *audioEncoderConfList* repeat the following steps:

- 4.1. ONVIF Client invokes **GetAudioEncoderConfigurationOptions** request with parameters
 - ConfigurationToken := *audioEncoderConfiguration.@token*
 - ProfileToken skipped
- 4.2. DUT responds with **GetAudioEncoderConfigurationOptionsResponse** message with parameters
 - Options List=: *optionsList*
- 4.3. If *optionsList* does not contain at least one Options.Encoding element with value is equal to *audioEncoderConfiguration.Encoding*, FAIL the test and skip other steps.
- 4.4. If *optionsList* does not contain at least one Options.Encoding element with value is equal to *audioEncoderConfiguration.Encoding* and with at least one Options.Bitrates.Items element with value is equal to *audioEncoderConfiguration.Bitrates*, FAIL the test and skip other steps.
- 4.5. If *optionsList* does not contain at least one Options.Encoding element with value is equal to *audioEncoderConfiguration.Encoding* and with at least one Options.SampleRateList.Items element with value is equal to *audioEncoderConfiguration.SampleRate*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

5.3.3 Audio Output Configuration

5.3.3.1 GET AUDIO OUTPUT CONFIGURATION OPTIONS

Test Case ID: MEDIA2-3-3-1

Specification Coverage: Get configuration options, Audio output configuration.

Feature Under Test: GetAudioOutputConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving Audio Output Configuration options for specified Audio Output Configuration, for specified Profile, generic for the Device.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
4. DUT responds with **GetAudioOutputConfigurationOptionsResponse** message with parameters
 - Options =: *options*
5. If *options.OutputLevelRange.Min* > *options.OutputLevelRange.Max*, FAIL the test and skip other steps.
6. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters
 - out *audioOutputConfList* - Audio Output Configurations list
7. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *audioOutputConfList[0].@token*
 - ProfileToken skipped
8. DUT responds with **GetAudioOutputConfigurationOptionsResponse** message with parameters
 - Options =: *options*
9. ONVIF Client retrieves Media Profile, which contains Audio Output Configuration by following the procedure mentioned in [Annex A.21](#) with the following input and output parameters
 - out *profile* - Media Profile with Audio Output Configuration

10. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters

- ConfigurationToken skipped
- ProfileToken := *profile.@token*

11. DUT responds with **GetAudioOutputConfigurationOptionsResponse** message with parameters

- Options =: *options*

12. If Media Profile *profile* was changed at step 9, ONVIF Client restores Media Profile.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

5.3.3.2 GET AUDIO OUTPUT CONFIGURATIONS

Test Case ID: MEDIA2-3-3-2

Specification Coverage: Get configurations, Audio output configuration.

Feature Under Test: GetAudioOutputConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving complete Audio Output Configuration List, Audio Output Configuration by Configuration token and compatible Audio Output Configuration by Profile token.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken skipped

- ProfileToken skipped
4. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters
 - Configurations list =: *audioOutputConfCompleteList*
 5. If *audioOutputConfCompleteList* is empty, FAIL the test and skip other steps.
 6. If *audioOutputConfCompleteList* contains at least two items with the same @token, FAIL the test and skip other steps.
 7. For each Audio Output Configuration *audioOutputConfiguration* in *audioOutputConfCompleteList* repeat the following steps:
 - 7.1. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
 - 7.2. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters
 - Configurations list =: *audioOutputConfList*
 - 7.3. If *audioOutputConfList* is empty, FAIL the test and skip other steps.
 - 7.4. If *audioOutputConfList* contains more than one item, FAIL the test and skip other steps.
 - 7.5. If *audioOutputConfList* does not contain item with @token = *audioOutputConfiguration.@token*, FAIL the test and skip other steps.
 8. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioOutput
 9. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
 10. For each Media Profile *profile* in *profileList* repeat the following steps:
 - 10.1. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile.@token*

10.2. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters

- Configurations list =: *audioOutputConfList*

10.3. If *audioOutputConfList* contains at least two items with the same @token, FAIL the test and skip other steps.

10.4. If *audioOutputConfCompleteList* does not contain at least one item with @token from *audioOutputConfList*, FAIL the test and skip other steps.

10.5. If *profile.Configurations* contains AudioOutput:

- 10.5.1. If *audioOutputConfList* does not contain item with @token = *profile.Configurations.AudioOutput.@token*, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.3.3.3 AUDIO OUTPUT CONFIGURATIONS AND AUDIO OUTPUT CONFIGURATION OPTIONS CONSISTENCY

Test Case ID: MEDIA2-3-3-3

Specification Coverage: Get configurations, Get configuration options, Audio output configuration.

Feature Under Test: GetProfiles, GetAudioOutputConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify all Audio Output Configurations are consistent with Audio Output Configuration Options.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters
 - out *audioOutputConfList* - Audio Output Configurations list
4. For each Audio Output Configuration *audioOutputConfiguration* in *audioOutputConfList* repeat the following steps:
 - 4.1. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
 - 4.2. DUT responds with **GetAudioOutputConfigurationOptionsResponse** message with parameters
 - Options =: *options*
 - 4.3. If *audioOutputConfiguration.OutputToken* is not in *options.OutputTokensAvailable* list, FAIL the test and skip other steps.
 - 4.4. If *audioOutputConfiguration.SendPrimacy* specified:
 - 4.4.1. If *audioOutputConfiguration.SendPrimacy* is not in *options.SendPrimacyOptions*, FAIL the test and skip other steps
 - 4.5. If *audioOutputConfiguration.OutputLevel* < *options.OutputLevelRange.Min*, FAIL the test and skip other steps.
 - 4.6. If *audioOutputConfiguration.OutputLevel* > *options.OutputLevelRange.Max*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

5.3.3.4 PROFILES AND AUDIO OUTPUT CONFIGURATIONS CONSISTENCY

Test Case ID: MEDIA2-3-3-4

Specification Coverage: Get configurations, Get media profiles, Audio output configuration.

Feature Under Test: GetAudioOutputConfigurations, GetAudioOutputConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify all Media Profiles are consistent with Audio Output Configurations.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioOutput
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList* which contains Configurations.AudioOutput repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken := *profile*.Configurations.AudioOutput.@token
 - ProfileToken skipped
 - 5.2. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters
 - Configurations list =: *audioOutputConfList*
 - 5.3. If *audioOutputConfList*[0] is not equal to *profile*.Configurations.AudioOutput, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioOutputConfigurationsResponse** message.
- DUT did not send **GetProfilesResponse** message.

Note: The following fields are compared at step [5.3](#):

- Name
- OutputToken
- SendPrimacy
- OutputLevel

5.3.3.5 MODIFY ALL SUPPORTED AUDIO OUTPUT CONFIGURATIONS

Test Case ID: MEDIA2-3-3-5

Specification Coverage: Get configurations, Get configuration options, Audio output configuration, Modify a configuration.

Feature Under Test: GetAudioOutputConfigurationOptions, GetAudioOutputConfigurations, SetAudioOutputConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify whether all supported Audio Output Configuration Options can be set.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters

- out *audioOutputConfList* - Audio Output Configurations list
4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ConfigurationChanged"** - Notification Topic
 - out *s* - Subscription reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription termination time
 5. For each Audio Output Configuration *audioOutputConfiguration* in *audioOutputConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
 - 5.2. DUT responds with **GetAudioOutputConfigurationOptionsResponse** message with parameters
 - Options =: *options*
 - 5.3. ONVIF Client invokes **SetAudioOutputConfiguration** request with parameters
 - Configuration.@token := *audioOutputConfiguration.@token*
 - Configuration.Name := "TestName1"
 - Configuration.OutputToken := first value from *options.OutputTokensAvailable* list
 - Configuration.SendPrimacy := if *options.SendPrimacyOptions* is specified, set first value from *options.SendPrimacyOptions* list, otherwise, set *audioOutputConfiguration.SendPrimacy*
 - Configuration.OutputLevel := *options.OutputLevelRange.Min*
 - 5.4. DUT responds with **SetAudioOutputConfigurationResponse** message.
 - 5.5. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged**

event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *audioOutputConfiguration.@token* - Configuration token
- in *AudioOutput* - Configuration Type

5.6. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters

- ConfigurationToken := *audioOutputConfiguration.@token*
- ProfileToken skipped

5.7. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters

- Configurations list =: *audioOutputConfList*

5.8. If *audioOutputConfList*[0] is not equal to Configuration from step 5.3, FAIL the test and skip other steps.

5.9. ONVIF Client invokes **SetAudioOutputConfiguration** request with parameters

- Configuration.@token := *audioOutputConfiguration.@token*
- Configuration.Name := "TestName2"
- Configuration.OutputToken := last value from *options.OutputTokensAvailable* list
- Configuration.SendPrimacy := if *options.SendPrimacyOptions* is specified, set last value from *options.SendPrimacyOptions* list, otherwise, set *audioOutputConfiguration.SendPrimacy*
- Configuration.OutputLevel := *options.OutputLevelRange.Max*

5.10. DUT responds with **SetAudioOutputConfigurationResponse** message.

5.11. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *audioOutputConfiguration.@token* - Configuration token
- in *AudioOutput* - Configuration Type

5.12. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters

- ConfigurationToken := *audioOutputConfiguration.@token*
- ProfileToken skipped

5.13. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters

- Configurations list =: *audioOutputConfList*

5.14. If *audioOutputConfList[0]* is not equal to Configuration from step 5.9, FAIL the test and skip other steps.

5.15. ONVIF Client restores settings of Audio Output Configuration with *@token* = *audioOutputConfiguration.@token*.

6. If subscription was created at step 4, ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in *s* - Subscription reference

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioOutputConfigurationsResponse** message.
- DUT did not send **SetAudioOutputConfigurationResponse** message.
- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.

Note: The following fields are compared at steps 5.8 and 5.14:

- OutputToken
- Name
- SendPrimacy
- OutputLevel

5.3.3.6 GET AUDIO OUTPUT CONFIGURATIONS – INVALID TOKEN

Test Case ID: MEDIA2-3-3-6

Specification Coverage: Get configurations, Audio output configuration.

Feature Under Test: GetAudioOutputConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify SOAP 1.2 Fault receiving in case of **GetAudioOutputConfigurations** with invalid token.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters
 - out *audioOutputConfList* - Audio Output Configurations list
4. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken := other than listed in *audioOutputConfList*
 - ProfileToken skipped
5. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send the **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault message.

5.3.4 Audio Decoder Configuration

5.3.4.1 GET AUDIO DECODER CONFIGURATION OPTIONS

Test Case ID: MEDIA2-3-4-1

Specification Coverage: Get configuration options, Audio decoder configuration.

Feature Under Test: GetAudioDecoderConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving Audio Decoder Configuration options for specified Audio Decoder Configuration, for specified Profile, generic for the Device.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability. Audio Decoder is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioDecoder capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioDecoderConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped

4. DUT responds with **GetAudioDecoderConfigurationOptionsResponse** message with parameters
 - Options list =: *optionsList*
5. ONVIF Client retrieves Audio Decoder Configurations list by following the procedure mentioned in [Annex A.22](#) with the following input and output parameters
 - out *audioDecoderConfList* - Audio Decoder Configurations list
6. ONVIF Client invokes **GetAudioDecoderConfigurationOptions** request with parameters
 - ConfigurationToken := *audioDecoderConfList*[0].@token
 - ProfileToken skipped
7. DUT responds with **GetAudioDecoderConfigurationOptionsResponse** message with parameters
 - Options list =: *optionsList*
8. ONVIF Client configures Media Profile containing Audio Output Configuration and Audio Decoder Configuration by following the procedure mentioned in [Annex A.23](#) with the following input and output parameters
 - out *profile* - Media Profile containing Audio Output Configuration and Audio Decoder Configuration
9. ONVIF Client invokes **GetAudioDecoderConfigurationOptions** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile*.@token
10. DUT responds with **GetAudioDecoderConfigurationOptionsResponse** message with parameters
 - Options list =: *optionsList*
11. If Media Profile *profile* was changed at step 8, ONVIF Client restores Media Profile.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

5.3.4.2 GET AUDIO DECODER CONFIGURATIONS

Test Case ID: MEDIA2-3-4-2

Specification Coverage: Get configurations, Audio decoder configuration.

Feature Under Test: GetAudioDecoderConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving complete Audio Decoder Configuration List, Audio Decoder Configuration by Configuration token and compatible Audio Decoder Configuration by Profile token.

Pre-Requisite: Media2 Service is received from the DUT. Audio decoder is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioDecoder capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
4. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters
 - Configurations list =: *audioDecoderConfCompleteList*
5. If *audioDecoderConfCompleteList* is empty, FAIL the test and skip other steps.
6. If *audioDecoderConfCompleteList* contains at least two items with the same @token, FAIL the test and skip other steps.
7. For each Audio Decoder Configuration *audioDecoderConfiguration* in *audioDecoderConfCompleteList* repeat the following steps:
 - 7.1. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters

- ConfigurationToken := *audioDecoderConfiguration.@token*
 - ProfileToken skipped
- 7.2. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters
- Configurations list =: *audioDecoderConfList*
- 7.3. If *audioDecoderConfList* is empty, FAIL the test and skip other steps.
- 7.4. If *audioDecoderConfList* contains more than one item, FAIL the test and skip other steps.
- 7.5. If *audioDecoderConfList* does not contain item with @token = *audioDecoderConfiguration.@token*, FAIL the test and skip other steps.
8. ONVIF Client invokes **GetProfiles** request with parameters
- Token skipped
 - Type[0] := AudioDecoder
9. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
10. For each Media Profile *profile* in *profileList* repeat the following steps:
- 10.1. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
- ConfigurationToken skipped
 - ProfileToken := *profile.@token*
- 10.2. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters
- Configurations list =: *audioDecoderConfList*
- 10.3. If *audioDecoderConfList* contains at least two items with the same @token, FAIL the test and skip other steps.
- 10.4. If *audioDecoderConfCompleteList* does not contain at least one item with @token from *audioDecoderConfList*, FAIL the test and skip other steps.
- 10.5. If *profile.Configurations* contains AudioDecoder:

10.5.1. If *audioDecoderConfList* does not contain item with @token = *profile.Configurations.AudioDecoder.@token*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioDecoderConfigurationsResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.3.4.3 PROFILES AND AUDIO DECODER CONFIGURATIONS CONSISTENCY

Test Case ID: MEDIA2-3-4-3

Specification Coverage: Get configurations, Get media profiles, Audio decoder configuration.

Feature Under Test: GetAudioDecoderConfigurations, GetAudioDecoderConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify all Media Profiles are consistent with Audio Decoder Configurations.

Pre-Requisite: Media2 Service is received from the DUT. Audio Decoder is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioDecoder capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioDecoder

4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList* which contains Configurations.AudioDecoder repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
Note: The following fields are compared at step 5.3:
 - ConfigurationToken := *profile.Configurations.AudioDecoder.@token*
 - ProfileToken skipped
 - 5.2. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters
Note: The following fields are compared at step 5.3:
 - Configurations list =: *audioDecoderConfList*
 - 5.3. If *audioDecoderConfList*[0] is not equal to *profile.Configurations.AudioDecoder*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioDecoderConfigurationsResponse** message.
- DUT did not send **GetProfilesResponse** message.

Note: The following fields are compared at step 5.3:

- Name

5.3.4.4 MODIFY ALL SUPPORTED AUDIO DECODER CONFIGURATIONS

Test Case ID: MEDIA2-3-4-4

Specification Coverage: Get configurations, Audio decoder configuration, Modify a configuration

Feature Under Test: GetAudioDecoderConfigurations, SetAudioDecoderConfiguration

WSDL Reference: media2.wsdl

Test Purpose: To verify change of Audio Decoder Configuration.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Audio Decoder is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioDecoder capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Decoder Configurations list by following the procedure mentioned in [Annex A.22](#) with the following input and output parameters
 - out *audioDecoderConfList* - Audio Decoder Configurations list
4. For each Audio Decoder Configuration *audioDecoderConfiguration* in *audioDecoderConfList* repeat the following steps:
 - 4.1. ONVIF Client invokes **SetAudioDecoderConfiguration** request with parameters
 - Configuration.@token := *audioDecoderConfiguration.@token*
 - Configuration.Name := "TestName1"
 - 4.2. DUT responds with **SetAudioDecoderConfigurationResponse** message.
 - 4.3. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
 - ConfigurationToken := *audioDecoderConfiguration.@token*
 - ProfileToken := *audioDecoderConfiguration*
 - 4.4. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters
 - Configurations list =: *audioDecoderConfList*
 - 4.5. If *audioDecoderConfList*[0] is not equal to Configuration from step 4.1, FAIL the test and skip other steps.
 - 4.6. ONVIF Client restores settings of Audio Decoder Configuration with @token = *audioDecoderConfiguration.@token*.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioDecoderConfigurationsResponse** message.
- DUT did not send **SetAudioDecoderConfigurationResponse** message.

Note: The following fields are compared at step 4.5:

- Name

5.3.4.5 GET AUDIO DECODER CONFIGURATIONS – INVALID TOKEN

Test Case ID: MEDIA2-3-4-5

Specification Coverage: Get configurations, Audio decoder configuration.

Feature Under Test: GetAudioDecoderConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify SOAP 1.2 Fault receiving in case of **GetAudioDecoderConfigurations** with invalid token.

Pre-Requisite: Media2 Service is received from the DUT. Audio Decoder is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioDecoder capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Audio Decoder Configurations list by following the procedure mentioned in [Annex A.22](#) with the following input and output parameters
 - out *audioDecoderConfList* - Audio Decoder Configurations list

4. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
 - ConfigurationToken := other than listed in *audioDecoderConfList*
 - ProfileToken skipped
5. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send the **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault message.

5.4 PTZ Configuration

5.4.1 READY TO USE MEDIA PROFILE FOR PTZ

Test Case ID: MEDIA2-4-1-1

Specification Coverage: Absolute PTZ Move (Profile T) or Continuous PTZ Move (Profile T), Media profiles (Media 2), PTZ Configuration (Media 2)

Feature Under Test: GetProfiles

WSDL Reference: media2.wsdl

Test Purpose: To verify that DUT has a ready-to-use Media Service 2.0 Profile for PTZ.

Pre-Requisite: Media2 Service is received from the DUT. PTZ Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters

- Token skipped
 - Type[0] := VideoSource
 - Type[1] := PTZ
4. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
5. If *profileList* contains no Media Profiles with both Configurations.VideoSource and Configurations.PTZ, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

5.4.2 DYNAMIC MEDIA PROFILE CONFIGURATION FOR PTZ

Test Case ID: MEDIA2-4-1-2

Specification Coverage: Get media profiles, Create media profile, Delete media profile, Add one or more configurations to a profile, Remove one or more configurations from a profile, Get configurations, GetConfigurations (PTZ Service), GetCompatibleConfigurations (PTZ Service).

Feature Under Test: GetProfiles, AddConfiguration for PTZ Configuration, RemoveConfiguration for PTZ Configuration, GetVideoSourceConfigurations, GetConfigurations, GetCompatibleConfigurations, SetConfiguration, tns1:Media/ProfileChanged, tns1:Media/ConfigurationChanged

WSDL Reference: media2.wsdl

Test Purpose: To verify the behavior of the DUT for dynamic media profile configuration with PTZ.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. PTZ Service was received from the DUT. GetCompatibleConfigurations is supported by Device as indicated by the GetCompatibleConfigurations = true capability.

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

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := VideoSource
 - Type[1] := PTZ
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList*, which contains Configurations.VideoSource repeat the following steps:
 - 5.1. If *profile*.Configurations contains PTZ repeat the following steps:
 - 5.1.1. ONVIF Client invokes **RemoveConfiguration** request with parameters
 - ProfileToken := *profileToken*
 - Configuration[0].Type := PTZ
 - Configuration[0].Token skipped
 - 5.1.2. The DUT responds with **RemoveConfigurationResponse** message.
6. If DUT supports Pull-Point Notification feature and (Profile Changed Notification or Configuration Changed Notification feature), ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ProfileChanged|tns1:Media/ConfigurationChanged"** - Notification Topic if both Profile Changed Notification and Configuration Changed Notification features are supported. Otherwise only supported topic is used as Notification Topic.
 - out *s* - Subscription reference
 - out *currentTime* - current time for the DUT

- out *terminationTime* - Subscription termination time
7. For each Media Profile *profile* in *profileList*, which contains Configurations.VideoSource repeat the following steps:
- 7.1. ONVIF Client invokes **GetCompatibleConfigurations** request with parameters
- ProfileToken := *profileToken*
- 7.2. The DUT responds with **GetCompatibleConfigurationsResponse** request with parameters
- PTZConfiguration list := *ptzConfigurationList*
- 7.3. For each PTZ Configuration *ptzConfiguration* in *ptzConfigurationList* repeat the following steps:
- 7.3.1. ONVIF Client invokes **AddConfiguration** request with parameters
- ProfileToken := *profileToken*
 - Name skipped
 - Configuration[0].Type := PTZ
 - Configuration[0].Token := *ptzConfiguration.@token*
- 7.3.2. The DUT responds with **AddConfigurationResponse** message.
- 7.3.3. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *profileToken* - Media Profile token
- 7.3.4. ONVIF Client invokes **GetConfigurationOptions** request with parameters
- ConfigurationToken := *ptzConfiguration.@token*

- 7.3.5. DUT responds with **GetConfigurationOptionsResponse** message with parameters
- PTZConfigurationOptions := *ptzOptions*
- 7.3.6. If *ptzOptions*.Spaces contains at least two AbsolutePanTiltPositionSpace elements with equal URI values, FAIL the test and skip other steps.
- 7.3.7. If *ptzOptions*.Spaces contains at least two AbsoluteZoomPositionSpace elements with equal URI values, FAIL the test and skip other steps.
- 7.3.8. If *ptzOptions*.Spaces contains at least two RelativePanTiltTranslationSpace elements with equal URI values, FAIL the test and skip other steps.
- 7.3.9. If *ptzOptions*.Spaces contains at least two RelativeZoomTranslationSpace elements with equal URI values, FAIL the test and skip other steps.
- 7.3.10. If *ptzOptions*.Spaces contains at least two ContinuousPanTiltVelocitySpace elements with equal URI values, FAIL the test and skip other steps.
- 7.3.11. If *ptzOptions*.Spaces contains at least two ContinuousZoomVelocitySpace elements with equal URI values, FAIL the test and skip other steps.
- 7.3.12. ONVIF Client invokes **SetConfiguration** request with parameters
- PTZConfiguration.@token := *ptzConfiguration*.@token
 - PTZConfiguration.Name := "TestNameN" (N is number that increases for each iteration of cycle beginning from 0)
 - PTZConfiguration.UseCount := *ptzConfiguration*.UseCount
 - PTZConfiguration.MoveRamp skipped
 - PTZConfiguration.PresetRamp skipped
 - PTZConfiguration.PresetTourRamp skipped
 - PTZConfiguration.NodeToken := *ptzConfiguration*.NodeToken
 - If *ptzOptions*.Spaces contains AbsolutePanTiltPositionSpace:
 - PTZConfiguration.DefaultAbsolutePanTiltPositionSpace :=

<i>ptzOptions</i> .Spaces.AbsolutePanTiltPositionSpace.URI	from	first
other	then	current
	(if possible)	item
<i>ptzOptions</i> .Spaces.AbsolutePanTiltPositionSpace list		from

otherwise, PTZConfiguration.DefaultAbsolutePantTiltPositionSpace
skipped

- If *ptzOptions*.Spaces contains AbsoluteZoomPositionSpace:

- PTZConfiguration.DefaultAbsoluteZoomPositionSpace :=
ptzOptions.Spaces.AbsoluteZoomPositionSpace.URI from first
other then current (if possible) item from
ptzOptions.Spaces.AbsoluteZoomPositionSpace list

otherwise, PTZConfiguration.DefaultAbsoluteZoomPositionSpace skipped

- If *ptzOptions*.Spaces contains RelativePanTiltTranslationSpace:

- PTZConfiguration.DefaultRelativePanTiltTranslationSpace :=
ptzOptions.Spaces.RelativePanTiltTranslationSpace.URI from first
other then current (if possible) item from
ptzOptions.Spaces.RelativePanTiltTranslationSpace list

otherwise, PTZConfiguration.DefaultRelativePanTiltTranslationSpace
skipped

- If *ptzOptions*.Spaces contains RelativeZoomTranslationSpace:

- PTZConfiguration.DefaultRelativeZoomTranslationSpace :=
ptzOptions.Spaces.RelativeZoomTranslationSpace.URI from first
other then current (if possible) item from
ptzOptions.Spaces.RelativeZoomTranslationSpace list

otherwise, PTZConfiguration.DefaultRelativeZoomTranslationSpace
skipped

- If *ptzOptions*.Spaces contains ContinuousPanTiltVelocitySpace:

- PTZConfiguration.DefaultContinuousPanTiltVelocitySpace :=
ptzOptions.Spaces.ContinuousPanTiltVelocitySpace.URI from first
other then current (if possible) item from
ptzOptions.Spaces.ContinuousPanTiltVelocitySpace list

otherwise, PTZConfiguration.DefaultContinuousPanTiltVelocitySpace
skipped

- If *ptzOptions*.Spaces contains ContinuousZoomVelocitySpace:

- PTZConfiguration.DefaultContinuousZoomVelocitySpace :=
ptzOptions.Spaces.ContinuousZoomVelocitySpace.URI from first
 other then current (if possible) item from
ptzOptions.Spaces.ContinuousZoomVelocitySpace list

- otherwise, PTZConfiguration.DefaultContinuousZoomVelocitySpace
skipped

- If *ptzOptions*.Spaces contains PanTiltSpeedSpace or ZoomSpeedSpace:

- If *ptzOptions*.Spaces contains PanTiltSpeedSpace:

- PTZConfiguration.DefaultPTZSpeed.PanTilt.space :=
ptzOptions.Spaces.PanTiltSpeedSpace.URI from first other then
 current (if possible) item from *ptzOptions*.Spaces.PanTiltSpeedSpace

- PTZConfiguration.DefaultPTZSpeed.PanTilt.x :=
ptzOptions.Spaces.PanTiltSpeedSpace.XRange.Max from the same
 item from *ptzOptions*.Spaces.PanTiltSpeedSpace as was used for
 PTZConfiguration.DefaultPTZSpeed.PanTilt.space

- PTZConfiguration.DefaultPTZSpeed.PanTilt.y :=
ptzOptions.Spaces.PanTiltSpeedSpace.XRange.Min from the same
 item from *ptzOptions*.Spaces.PanTiltSpeedSpace as was used for
 PTZConfiguration.DefaultPTZSpeed.PanTilt.space

- otherwise, PTZConfiguration.DefaultPTZSpeed.PanTilt skipped

- If *ptzOptions*.Spaces contains ZoomSpeedSpace:

- PTZConfiguration.DefaultPTZSpeed.Zoom.space :=
ptzOptions.Spaces.ZoomSpeedSpace.URI from first other then current
 (if possible) item from *ptzOptions*.Spaces.ZoomSpeedSpace

- PTZConfiguration.DefaultPTZSpeed.Zoom.x :=
ptzOptions.Spaces.ZoomSpeedSpace.XRange.Max from the same
 item from *ptzOptions*.Spaces.ZoomSpeedSpace as was used for
 PTZConfiguration.DefaultPTZSpeed.Zoom.space

- otherwise, PTZConfiguration.DefaultPTZSpeed.Zoom skipped

- otherwise, PTZConfiguration.DefaultPTZSpeed skipped

- PTZConfiguration.DefaultPTZTimeout =: PTZTimeout.Min

- PanTiltLimits skipped
- ZoomLimits skipped
- PTZConfiguration.PTControlDirection skipped

7.3.13. DUT responds with **SetConfigurationResponse** message.

7.3.14. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *ptzConfiguration.@token* - Configuration token
- in PTZ - Configuration Type

7.3.15. ONVIF Client invokes **GetConfiguration** request with parameters

- PTZConfigurationToken := *ptzConfiguration.@token*

7.3.16. The DUT responds with **GetConfigurationResponse** with parameters

- PTZConfiguration =: *ptzConfiguration*

7.3.17. If *ptzConfiguration* is not equal to PTZConfiguration from step 6.3.6, FAIL the test and skip other steps.

7.3.18. ONVIF Client invokes **GetProfiles** request with parameters

- Token := *profileToken*
- Type[0] := All

7.3.19. The DUT responds with **GetProfilesResponse** message with parameters

- Profiles list =: *profileList*

7.3.20. If *profileList* is empty, FAIL the test and skip other steps.

- 7.3.21. If *profileList* contains more than one item, FAIL the test and skip other steps.
- 7.3.22. If *profileList*[0].@token != *profileToken*, FAIL the test and skip other steps.
- 7.3.23. If *profileList*[0].Configurations.PTZ.@token != *ptzConfiguration*.@token, FAIL the test and skip other steps.
- 7.3.24. If *profileList*[0].Configurations.PTZ is not equal to PTZConfiguration from step 6.3.6, FAIL the test and skip other steps.
- 7.3.25. ONVIF Client invokes **RemoveConfiguration** request with parameters
- ProfileToken := *profileToken*
 - Configuration[0].Type := PTZ
 - Configuration[0].Token skipped
- 7.3.26. The DUT responds with **RemoveConfigurationResponse** message.
- 7.3.27. If DUT supports Pull-Point Notification feature and Profile Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ProfileChanged** event for the specified Media Profile by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *profileToken* - Media Profile token
- 7.3.28. ONVIF Client invokes **GetProfiles** request with parameters
- Token := *profileToken*
 - Type[0] := PTZ
- 7.3.29. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
- 7.3.30. If *profileList* is empty, FAIL the test and skip other steps.
- 7.3.31. If *profileList* contains more than one item, FAIL the test and skip other steps.

7.3.32. If *profileList[0].Configurations* contains PTZ, FAIL the test and skip other steps.

8. ONVIF Client restores Media Profiles and PTZ Configurations that were changed.
9. If subscription was created at step 6, ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
 - in *s* - Subscription reference

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **AddConfigurationResponse** message.
- DUT did not send **RemoveConfigurationResponse** message.
- DUT did not send **GetCompatibleConfigurationsResponse** message.
- DUT did not send **SetConfigurationResponse** message.

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

Note: The following fields are compared at steps 6.3.18 and 6.3.11:

- Name
- NodeToken
- DefaultAbsolutePanTiltPositionSpace
- DefaultAbsoluteZoomPositionSpace
- DefaultRelativePanTiltTranslationSpace
- DefaultRelativeZoomTranslationSpace
- DefaultContinuousPanTiltVelocitySpace
- DefaultContinuousZoomVelocitySpace
- DefaultPTZSpeed.PanTilt.x
- DefaultPTZSpeed.PanTilt.y

- DefaultPTZSpeed.PanTilt.space
- DefaultPTZSpeed.Zoom.x
- DefaultPTZSpeed.Zoom.space
- DefaultPTZTimeout

5.5 Media Streaming

5.5.1 SNAPSHOT URI

Test Case ID: MEDIA2-5-1-1

Specification Coverage: Get media profiles, Request snapshot URI

Feature Under Test: GetSnapshotUri

WSDL Reference: media2.wsdl

Test Purpose: To retrieve snapshot URI of DUT for given media profile

Pre-Requisite: SnapshotUri feature for Media2 service is supported by the DUT. Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. If DUT supports Video feature
 - 3.1. ONVIF Client configures Media Profile containing Video Source Configuration and Video Encoder Configuration by following the procedure mentioned in [Annex A.24](#) with the following input and output parameters
 - out *profile* - Media Profile containing Video Source Configuration and Video Encoder Configuration
4. If DUT does not support Video feature
 - 4.1. ONVIF Client configures Media Profile containing Video Source Configuration by following the procedure mentioned in [Annex A.12](#) with the following input and output parameters

- out *profile* - Media Profile containing Video Source Configuration
5. ONVIF Client invokes **GetSnapshotUri** request with parameters
 - ProfileToken := *profile.@token*
 6. DUT responds with **GetSnapshotUriResponse** message with parameters
 - Uri =: *snapshotUri*
 7. ONVIF Client invokes **HTTP GET** request on the *snapshotUri*.
 8. DUT responds with **HTTP 200 OK** message and the single shot JPEG image data.
 9. ONVIF Client verifies the JPEG image sent by the DUT.
 10. If media profile profile was changed at step 3, ONVIF Client restores media profile.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetSnapshotUriResponse** message.
- DUT did not send **200 OK** message to **HTTP GET** request.
- DUT did not send valid JPEG image data.

5.5.2 VIDEO ENCODER INSTANCES PER VIDEO SOURCE

Test Case ID: MEDIA2-5-1-2

Specification Coverage: GetVideoEncoderInstances

Feature Under Test: GetVideoEncoderInstances

WSDL Reference: media2.wsdl, deviceio.wsdl

Test Purpose: To verify that for each video source there is at least one video source configuration for which the GetVideoEncoderInstances returns a Total greater than 0.

Pre-Requisite: Media2 Service is received from the DUT. Device IO Service is received from the DUT. Video feature is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList1* - Video Source Configurations list
4. ONVIF Client retrieves Video Sources list by following the procedure mentioned in [Annex A.18](#) with the following input and output parameters
 - out *videoSourcesList1* - Video Sources list
5. For each Video Source *videoSource1* from *videoSourcesList* repeat the following steps:
 - 5.1. Set *totalGreaterThanZeroFlag* := false.
 - 5.2. For each Video Source Configuration *videoSourceConfig1* with SourceToken = *videoSource1* from *videoSourceConfList1* repeat the following steps:
 - 5.2.1. ONVIF Client invokes **GetVideoEncoderInstances** request with parameters
 - ConfigurationToken := *videoSourceConfig1.token*
 - 5.2.2. DUT responds with **GetVideoEncoderInstancesResponse** message with parameters
 - Info = *info1*
 - 5.2.3. If *info1.Total* > 0:
 - 5.2.3.1. Set *totalGreaterThanZeroFlag* := true.
 - 5.2.3.2. Go to step [5.3](#).
 - 5.3. If *totalGreaterThanZeroFlag* = false, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

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

5.6 OSD Configuration

5.6.1 CREATE OSD CONFIGURATION FOR TEXT OVERLAY

Test Case ID: MEDIA2-6-1-1

Specification Coverage: None

Feature Under Test: GetVideoSourceConfigurations, GetOSDs, GetOSDOptions, CreateOSD, DeleteOSD

WSDL Reference: media2.wsdl

Test Purpose: To verify the DUT creates OSD Configuration.

Pre-Requisite: Media2 Service feature is supported by DUT. OSD feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoSourceConfigurations** message to retrieve a list of existing Video Source Configurations on the DUT.
4. Verify that the DUT returns at least one Video Source Configuration in the **GetVideoSourceConfigurationsResponse** message. For each Video Source Configuration from **GetVideoSourceConfigurationsResponse**, ONVIF Client saves the token of this configuration in *VideoSourceConfigurationToken1* variable and runs the following steps:
 - 4.1. ONVIF Client invokes **GetOSDs** request with parameters
 - OSDToken - skipped
 - ConfigurationToken := *VideoSourceConfigurationToken1*
 - 4.2. The DUT responds with **GetOSDsResponse** with parameters
 - OSDs list =: *OSDConfigurationsList1*
 - 4.3. ONVIF Client invokes **GetOSDOptions** request with parameters

- ConfigurationToken := *VideoSourceConfigurationToken1*
- 4.4. DUT responds with **GetOSDOptionsResponse** message with parameters
- OSDOptions =: *OSDOptions1*
- 4.5. ONVIF Client checks if current Video Source Configuration supports OSD configurations of the Type = Text. Otherwise, skip steps 4.6-4.25 and go to the next Video Source Configuration.
- 4.6. Set *osdTextStringType1* := *OSDOptions1*.TextOption.Type[0], where Type[0] is the 1st in Type list from {Plain, Date, Time, DateAndTime} values
- 4.7. ONVIF Client configures Device to have free space to create OSD with Text type and with required TextString Type by following the procedure mentioned in [Annex A.25](#) with the following input and output parameters
- in *OSDConfigurationsList1* - OSD Configurations List
 - in *osdOptions* - OSD Options
 - in "Text" - OSD Type
 - out *OSDConfigurationsList1* - updated OSD Configurations List
- 4.8. ONVIF Client invokes **CreateOSD** with token = "testOSD" (note: this token can be ignored by DUT), *VideoSourceConfigurationToken* = *VideoSourceConfigurationToken1*, Type="Text" and the rest of parameter are populated using values from *OSDOptions1*. For this step, if the value has a range of available values, then minimum value (or the first value from list if list of available values is provided by DUT) from *OSDOptions1* should be used. See details of fields mapping in [Annex A.28](#).
- 4.9. DUT creates OSD Configuration and sends **CreateOSDResponse** message. ONVIF Client receives **CreateOSDResponse** with token of newly created OSD Configuration and saves this token to *OSDConfigurationToken1* variable.
- 4.10. ONVIF Client verifies that *OSDConfigurationsList1* does not contain configuration with token = *OSDConfigurationToken1*.
- 4.11. ONVIF Client invokes **GetOSDs** message with OSD Token = *OSDConfigurationToken1* as input parameter to retrieve newly created OSD Configuration.

- 4.12. DUT sends OSD Configuration for the given token. ONVIF Client verifies that response contains OSD Configuration with token = *OSDConfigurationToken1* and configuration fields equal to the fields set at 4.8 step.
- 4.13. ONVIF Client invokes **DeleteOSD** with OSD Token = *OSDConfigurationToken1* as input parameter.
- 4.14. DUT sends **DeleteOSDResponse**, which indicates that DUT has deleted OSD Configuration. ONVIF Client verifies the response.
- 4.15. Set *osdTextStringType2* := *OSDOptions1*.TextOption.Type[0], where Type[0] is the last in Type list from {Plain, Date, Time, DateAndTime} values
- 4.16. ONVIF Client invokes **CreateOSD** with token = "testOSD", VideoSourceConfigurationToken = *VideoSourceConfigurationToken1*, Type="Text" and the rest of parameters are populated using values from *OSDOptions1*. For this step, if the value has a range of available values, then maximum value (or the last value from list if list of available values is provided by DUT) from *OSDOptions1* should be used. See details of fields mapping in [Annex A.28](#).
- 4.17. DUT created OSD Configuration and sends **CreateOSDResponse** message. ONVIF Client receives **CreateOSDResponse** with token of newly created OSD Configuration and saves this token to *OSDConfigurationToken2* variable.
- 4.18. ONVIF Client verifies that *OSDConfigurationsList1* does not contain configuration with token = *OSDConfigurationToken2*.
- 4.19. ONVIF Client invokes **GetOSDs** message with configuration token = *OSDConfigurationsList1* as input parameter to retrieve the list of OSD Configurations, which includes newly created OSD Configuration.
- 4.20. DUT sends **GetOSDsResponse** with a list of OSD Configurations. ONVIF Client verifies that response contains OSD Configuration with token = *OSDConfigurationToken2* and the fields of this configuration equal to the fields set at step 4.15.
- 4.21. ONVIF Client invokes **DeleteOSD** with OSD Token = *OSDConfigurationToken2* as input parameter.
- 4.22. DUT sends **DeleteOSDResponse**, which indicates that DUT has deleted OSD Configuration. ONVIF Client verifies the response.

4.23. ONVIF Client invokes **GetOSDs** message with configuration token = *VideoSourceConfigurationToken1* as input parameter to retrieve the list of OSD Configurations, which includes newly created OSD Configuration.

4.24. DUT sends **GetOSDsResponse** with a list of OSD Configurations. ONVIF Client verifies that response does not contain OSD Configuration with token = *OSDConfigurationToken2*.

4.25. If OSD Configuration was deleted at 4.7 [163] step, ONVIF Client restores OSD Configuration.

Test Result:

PASS –

- DUT passes all assertions.
- DUT did not send at least one text overlay (Text Option is skipped) in **GetOSDOptionsResponse**

FAIL –

- The DUT did not send **GetVideoSourceConfigurationsResponse** message.
- The **GetVideoSourceConfigurationsResponse** does not contain at least one Video Source configuration.
- The DUT did not send **GetOSDsResponse** message.
- The DUT did not send **GetOSDOptionsResponse** message.
- The DUT did not send **CreateOSDResponse** message.
- The DUT did not send **GetOSDResponse** message.
- The DUT did not send **DeleteOSDResponse** message.
- The **GetOSDsResponse** contains deleted OSD Configuration

5.6.2 CREATE OSD CONFIGURATION FOR IMAGE OVERLAY

Test Case ID: MEDIA2-6-1-2

Specification Coverage: None

Feature Under Test: GetVideoSourceConfigurations, GetOSDs, GetOSDOptions, CreateOSD, DeleteOSD

WSDL Reference: media2.wsdl

Test Purpose: To verify the DUT creates OSD Configuration.

Pre-Requisite: Media2 Service feature is supported by DUT. OSD feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoSourceConfigurations** message to retrieve a list of existing Video Source Configurations on the DUT.
4. Verify that the DUT returns at least one Video Source Configuration in the **GetVideoSourceConfigurationsResponse** message. For each Video Source Configuration from **GetVideoSourceConfigurationsResponse**, ONVIF Client saves the token of this configuration in VideoSourceConfigurationToken1 variable and runs steps 4.1 - 4.24:
 - 4.1. ONVIF Client invokes **GetOSDs** request with parameters
 - OSDToken - skipped
 - ConfigurationToken := *VideoSourceConfigurationToken1*
 - 4.2. The DUT responds with **GetOSDsResponse** with parameters
 - OSDs list =: *OSDConfigurationsList1*
 - 4.3. ONVIF Client invokes **GetOSDOptions** request with parameters
 - ConfigurationToken := *VideoSourceConfigurationToken1*
 - 4.4. DUT responds with **GetOSDOptionsResponse** message with parameters
 - OSDOptions =: *OSDOptions1*
 - 4.5. ONVIF Client checks if current Video Source Configuration supports OSD configurations of the Type = Image. Otherwise, skip steps 4.6 – 4.24 and go to the next Video Source Configuration.

- 4.6. ONVIF Client configures Device to have free space to create OSD with Image type by following the procedure mentioned in [Annex A.25](#) with the following input and output parameters
- in *OSDConfigurationsList1* - OSD Configurations List
 - in *osdOptions* - OSD Options
 - in "Image" - OSD Type
 - out *OSDConfigurationsList1* - updated OSD Configurations List
- 4.7. If *osdOptions.ImageOption* contains *FormatsSupported* attribute:
- 4.7.1. Set *imagePath1* := *osdOptions.ImageOption.ImagePath*[0]
- 4.7.2. ONVIF client invokes **HTTP POST** to *imagePath1* with parameters
- HTTP Header [Content-Type] := "image/png"
 - HTTP Body := PNG picture (see [Annex A.29](#) for details)
- 4.7.3. The DUT responds with **HTTP 200 OK** message.
- 4.7.4. ONVIF Client waits *timeout1*.
- 4.7.5. If *osdOptions.ImageOption* contains more than one *ImagePath*:
- 4.7.5.1. Set *imagePath2* := *osdOptions.ImageOption.ImagePath*[last]
- 4.7.5.2. ONVIF client invokes **HTTP POST** to *imagePath2* with parameters
- HTTP Header [Content-Type] := "image/png"
 - HTTP Body := PNG picture (see [Annex A.29](#) for details)
- 4.7.5.3. The DUT responds with **HTTP 200 OK** message.
- 4.7.5.4. ONVIF Client waits *timeout1*.
- 4.8. ONVIF Client invokes **CreateOSD** with token = "testOSD", *VideoSourceConfigurationToken* = *VideoSourceConfigurationToken1*, Type="Image", Position. Type should be set to the first item from *OSDOptions1.PositionOption* list and *Image.ImgPath* should be set to the first item from *OSDOptions1.ImageOption.ImagePath* list.

- 4.9. DUT creates OSD Configuration and sends **CreateOSDResponse** message. ONVIF Client receives **CreateOSDResponse** with token of newly created OSD Configuration and saves this token to *OSDConfigurationToken1* variable.
- 4.10. ONVIF Client verifies that *OSDConfigurationsList1* does not contain configuration with token = *OSDConfigurationToken1*.
- 4.11. ONVIF Client invokes **GetOSDs** message with OSD Token = *OSDConfigurationToken1* as input parameter to retrieve newly created OSD Configuration.
- 4.12. DUT sends OSD Configuration for the given token. ONVIF Client verifies that response contains OSD Configuration with token = *OSDConfigurationToken1* and configuration fields equal to the fields set at step in 4.6.
- 4.13. ONVIF Client invokes **DeleteOSD** with OSD Token = *OSDConfigurationToken1* as input parameter.
- 4.14. DUT sends **DeleteOSDResponse**, which indicates that DUT has deleted OSD Configuration. ONVIF Client verifies the response.
- 4.15. ONVIF Client invokes **CreateOSD** with token = "testOSD", VideoSourceConfigurationToken = *VideoSourceConfigurationToken1*, Type="Image", Position. Type should be set to the last item from *OSDOptions1.PositionOption* list and Image.ImgPath should be set to the last item from *OSDOptions1.ImageOption.ImagePath* list.
- 4.16. DUT created OSD Configuration and sends **CreateOSDResponse** message. ONVIF Client receives **CreateOSDResponse** with token of newly created OSD Configuration and saves this token to *OSDConfigurationToken2* variable.
- 4.17. ONVIF Client verifies that *OSDConfigurationsList1* does not contain configuration with token = *OSDConfigurationToken2*.
- 4.18. ONVIF Client invokes **GetOSDs** message with configuration token = *OSDConfigurationToken2* as input parameter to retrieve the list of OSD Configurations, which includes newly created OSD Configuration.
- 4.19. DUT sends **GetOSDsResponse** with a list of OSD Configurations. ONVIF Client verifies that response contains OSD Configuration with token = *OSDConfigurationToken2* and configuration fields equal to the fields set at step in 4.16.
- 4.20. ONVIF Client invokes **DeleteOSD** with OSD Token = *OSDConfigurationToken2* as input parameter.

- 4.21. DUT sends **DeleteOSDResponse**, which indicates that DUT has deleted OSD Configuration. ONVIF Client verifies the response.
- 4.22. ONVIF Client invokes **GetOSDs** message with configuration token = *VideoSourceConfigurationToken1* as input parameter to retrieve the list of OSD Configurations, which includes newly created OSD Configuration.
- 4.23. DUT sends **GetOSDsResponse** with a list of OSD Configurations. ONVIF Client verifies that response does not contain OSD Configuration with token = *OSDConfigurationToken2*.
- 4.24. If OSD Configuration was deleted at 4.6 [167] step, ONVIF Client restores OSD Configuration.

Test Result:**PASS –**

- DUT passes all assertions.
- DUT did not send at least one image overlay (Image Option is skipped) in **GetOSDOptionsResponse**

FAIL –

- The DUT did not send **GetVideoSourceConfigurationsResponse** message.
- The **GetVideoSourceConfigurationsResponse** does not contain at least one Video Source configuration.
- The DUT did not send **GetOSDsResponse** message.
- The DUT did not send **GetOSDOptionsResponse** message.
- The DUT did not send **CreateOSDResponse** message.
- The DUT did not send **GetOSDResponse** message.
- The DUT did not send **DeleteOSDResponse** message.
- The **GetOSDsResponse** contains deleted OSD Configuration.

5.6.3 SET OSD CONFIGURATION IMAGE OVERLAY

Test Case ID: MEDIA2-6-1-3

Specification Coverage: None

Feature Under Test: GetVideoSourceConfigurations, GetOSDs, GetOSDOptions, CreateOSD, DeleteOSD, SetOSD

WSDL Reference: media2.wsdl

Test Purpose: To verify that DUT changes OSD Configuration for Image Overlay.

Pre-Requisite: Media2 Service feature is supported by DUT. OSD feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoSourceConfigurations** message to retrieve a list of existing Video Source Configurations on the DUT.
4. Verify that the DUT returns at least one Video Source Configuration in the **GetVideoSourceConfigurationsResponse** message. For each Video Source Configuration from **GetVideoSourceConfigurationsResponse**, ONVIF Client saves this configuration in VideoSourceConfigurationToken1 variable and runs the following steps:
 - 4.1. ONVIF Client invokes **GetOSDOptions** request with parameters
 - ConfigurationToken := *VideoSourceConfigurationToken1*
 - 4.2. DUT responds with **GetOSDOptionsResponse** message with parameters
 - OSDOptions =: *osdOptions1*
 - 4.3. If **GetOSDOptionsResponse** contains at least one item in Image Option (image overlay), then ONVIF Client saves the options from **GetOSDOptionsResponse** in *OSDOptions1* variable and goes to step 4.5.
 - 4.4. If *OSDOptions1* Image Option list is empty, then PASS the test.
 - 4.5. ONVIF Client invokes **GetOSDs** request with parameters
 - OSDToken - skipped
 - ConfigurationToken := *VideoSourceConfigurationToken1*
 - 4.6. The DUT responds with **GetOSDsResponse** with parameters
 - OSDs list =: *OSDConfigurationsList1*

- 4.7. ONVIF Client configures Device to have free space to create OSD with Image type and with required TextString Type by following the procedure mentioned in [Annex A.25](#) with the following input and output parameters
- in *OSDConfigurationsList1* - OSD Configurations List
 - in *osdOptions* - OSD Options
 - in "Image" - OSD Type
 - out *OSDConfigurationsList1* - updated OSD Configurations List
- 4.8. If *osdOptions*.ImageOption contains FormatsSupported attribute:
- 4.8.1. Set *imagePath1* := *osdOptions*.ImageOption.ImagePath[0]
- 4.8.2. ONVIF client invokes **HTTP POST** to *imagePath1* with parameters
- HTTP Header [Content-Type] := "image/png"
 - HTTP Body := PNG picture (see [Annex A.29](#) for details)
- 4.8.3. The DUT responds with **HTTP 200 OK** message.
- 4.8.4. ONVIF Client waits *timeout1*.
- 4.9. ONVIF Client invokes **CreateOSD** with token = "testOSD", VideoSourceConfigurationToken = *VideoSourceConfigurationToken1*, Type="Image", Position.Type should be set to the first item from *OSDOptions1*.PositionOption list and Image.ImgPath should be set to the first item from *OSDOptions1*.ImageOption.ImagePath list.
- 4.10. DUT creates OSD Configuration and sends **CreateOSDResponse** message. ONVIF Client receives **CreateOSDResponse** with token of newly created OSD Configuration and saves this token to *OSDConfigurationToken1* variable.
- 4.11. ONVIF Client invokes **GetOSDs** message with OSD Token = *OSDConfigurationToken1* as input parameter to retrieve newly created OSD Configuration.
- 4.12. DUT sends OSD Configuration for the given token. ONVIF Client verifies that response contains OSD Configuration with token = *OSDConfigurationToken1* and saves this configuration in *OSDConfigurations1* variable.

- 4.13. ONVIF Client changes position parameter in `OSDConfigurations1` variable. The `Position.Type` should be changed to the last item from `OSDOptions1.PositionOption` list.
- 4.14. ONVIF Client invokes **SetOSD** with `OSD = OSDConfigurations1` as input parameter. DUT applies the changes and sends **SetOSDResponse**.
- 4.15. ONVIF Client invokes **GetOSDs** message with `OSD Token = OSDConfigurations1` token as input parameter.
- 4.16. DUT sends OSD Configuration for the given token. ONVIF Client verifies that response contains OSD Configuration with token = `OSDConfigurations1` token and `Position.Type` is set to the value, which has been set at step 4.11.
- 4.17. If new OSD Configuration has been created at step 4.5, then ONVIF Client invokes **DeleteOSD** with `OSD Token = OSDConfigurations1` token as input parameter.
- 4.18. DUT sends **DeleteOSDResponse**, which indicates that DUT has deleted OSD Configuration. ONVIF Client verifies the response.
- 4.19. If OSD Configuration was deleted at [4.7 \[171\]](#) step, ONVIF Client restores OSD Configuration.

Test Result:**PASS –**

- DUT passes all assertions.
- DUT did not send at least one image overlay (Image Option list is empty) in **GetOSDOptionsResponse**

FAIL –

- The DUT did not send **GetVideoSourceConfigurationsResponse** message.
- The **GetVideoSourceConfigurationsResponse** does not contain at least one Video Source configuration.
- The DUT did not send **GetOSDsResponse** message.
- The DUT did not send **GetOSDOptionsResponse** message.
- The DUT did not send **CreateOSDResponse** message.
- The DUT rejected create OSD Request.
- The DUT did not send **GetOSDResponse** message.

- The DUT did not send **DeleteOSDResponse** message.
- The DUT did not send **DeleteOSDResponse** message.

5.6.4 SET OSD CONFIGURATION TEXT OVERLAY

Test Case ID: MEDIA2-6-1-4

Specification Coverage: None

Feature Under Test: GetVideoSourceConfigurations, GetOSDs, GetOSDOptions, CreateOSD, DeleteOSD, SetOSD

WSDL Reference: media2.wsdl

Test Purpose: To verify that DUT changes OSD Configuration for Test Overlay.

Pre-Requisite: Media2 Service feature is supported by DUT. OSD feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetVideoSourceConfigurations** message to retrieve a list of existing Video Source Configurations on the DUT.
4. Verify that the DUT returns at least one Video Source Configuration in the **GetVideoSourceConfigurationsResponse** message. For each Video Source Configuration from **GetVideoSourceConfigurationsResponse**, ONVIF Client saves this configuration in VideoSourceConfigurationToken1 variable and runs steps 4.1 - 4.18:
 - 4.1. ONVIF Client invokes **GetOSDOptions** request with parameters
 - ConfigurationToken := *VideoSourceConfigurationToken1*
 - 4.2. DUT responds with **GetOSDOptionsResponse** message with parameters
 - OSDOptions =: *OSDOptions1*
 - 4.3. ONVIF Client invokes **GetOSDs** request with parameters
 - OSDToken - skipped
 - ConfigurationToken := *VideoSourceConfigurationToken1*

- 4.4. The DUT responds with **GetOSDsResponse** with parameters
- OSDs list =: *OSDConfigurationsList1*
- 4.5. Onvif client checks if DUT supports OSD configurations of the type=text. Otherwise, skip all steps and pass the test.
- 4.6. Set *osdTextStringType* := *OSDOptions1*.TextOption.Type[0], where Type[0] is the 1st in Type list from {Plain, Date, Time, DateAndTime} values
- 4.7. ONVIF Client configures Device to have free space to create OSD with Text type and with required TextString Type by following the procedure mentioned in [Annex A.25](#) with the following input and output parameters
- in *OSDConfigurationsList1* - OSD Configurations List
 - in *osdOptions* - OSD Options
 - in "Text" - OSD Type
 - out *OSDConfigurationsList1* - updated OSD Configurations List
- 4.8. ONVIF Client invokes **CreateOSD** with token = "testOSD", VideoSourceConfigurationToken = *VideoSourceConfigurationToken1*, Type="Text" and the rest of parameters are populated using values from *OSDOptions1*. For this step, if the value has a range of available values, then minimum value (or the first value from list if list of available values is provided by DUT) from *OSDOptions1* should be used. See details of fields mapping in [Annex A.28](#).
- 4.9. DUT creates OSD Configuration and sends **CreateOSDResponse** message. ONVIF Client receives **CreateOSDResponse** with token of newly created OSD Configuration and saves this token to *OSDConfigurationToken1* variable.
- 4.10. ONVIF Client invokes **GetOSDs** message with OSD Token = *OSDConfigurationToken1* as input parameter to retrieve newly created OSD Configuration.
- 4.11. DUT sends OSD Configuration for the given token. ONVIF Client verifies that response contains OSD Configuration with token = *OSDConfigurationToken1* and saves this configuration in *OSDConfigurations1* variable.
- 4.12. ONVIF Client changes the fields value of *OSDConfigurations1* variable to the maximum available values. If the value has a range of available values, then maximum value (or the last value from list if list of available values is provided by DUT) from

OSDOptions1 should be used. *OSD.TextString.Type* shall not be changed. See details of fields mapping in [Annex A.28](#).

- 4.13. ONVIF Client invokes **SetOSD** with *OSD = OSDConfigurations1* as input parameter. DUT applies the changes and sends **SetOSDResponse**.
- 4.14. ONVIF Client invokes **GetOSDs** message with *OSD Token = OSDConfigurations1* token as input parameter.
- 4.15. DUT sends OSD Configuration for the given token. ONVIF Client verifies that response contains OSD Configuration with token = *OSDConfigurations1* token and configuration fields equal to the fields set at step 4.9.
- 4.16. If new OSD Configuration has been created at step 4.5, then ONVIF Client invokes **DeleteOSD** with *OSD Token = OSDConfigurations1* token as input parameter.
- 4.17. DUT sends **DeleteOSDResponse**, which indicates that DUT has deleted OSD Configuration. ONVIF Client verifies the response.
- 4.18. If OSD Configuration was deleted at [4.7 \[174\]](#) step, ONVIF Client restores OSD Configuration.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetVideoSourceConfigurationsResponse** message.
- The **GetVideoSourceConfigurationsResponse** does not contain at least one Video Source configuration.
- The DUT did not send **GetOSDsResponse** message.
- The DUT did not send **GetOSDOptionsResponse** message.
- The DUT did not send **CreateOSDResponse** message.
- The DUT rejected create OSD Request.
- The DUT did not send **GetOSDResponse** message.
- The DUT did not send **SetOSDResponse** message.

- The DUT did not send **DeleteOSDResponse** message.

5.6.5 GET OSDS

Test Case ID: MEDIA2-6-1-5

Specification coverage: GetOSDs (Media 2 Service Specification), Get configurations (Media 2 Service Specification)

Feature under test: GetOSDs

WSDL Reference: media2.wsdl

Test Purpose: To verify DUT sends complete OSDs list and list of OSDs, which are compatible with specific Video Source Configuration.

Pre-Requisite: Media2 Service is received from the DUT. OSD feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetOSDs** request with parameters
 - OSDToken - skipped
 - ConfigurationToken - skipped
4. The DUT responds with **GetOSDsResponse** with parameters
 - OSDs list =: *osdConfCompleteList1*
5. If *osdConfCompleteList1* contains at least two items with the same @token, FAIL the test and skip other steps.
6. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList1* - Video Source Configurations list
7. For each Video Source Configuration *videoSourceConf1* in *videoSourceConfList1* list repeat the following steps:

7.1. ONVIF Client invokes **GetOSDs** request with parameters

- OSDToken - skipped
- ConfigurationToken := *videoSourceConf1.@token*

7.2. The DUT responds with **GetOSDsResponse** with parameters

- OSDs list =: *osdConfList1*

7.3. If *osdConfList1* contains at least two items with the same @token, FAIL the test and skip other steps.

7.4. If *osdConfCompleteList1* does not contain at least one item from *osdConfList1* list, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetOSDsResponse** message(s).

5.6.6 GET OSD OPTIONS

Test Case ID: MEDIA2-6-1-6

Specification Coverage: GetOSDOptions

Feature Under Test: GetOSDOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify consistency in OSD Options.

Pre-Requisite: Media2 Service feature is supported by DUT. OSD feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
4. For each Video Source Configuration *videoSourceConfiguration* in *videoSourceConfList* repeat the following steps:
 - 4.1. ONVIF Client invokes **GetOSDOptions** request with parameters
 - ConfigurationToken := *videoSourceConfiguration.@token*
 - 4.2. DUT responds with **GetOSDOptionsResponse** message with parameters
 - OSDOptions =: *osdOptions*
 - 4.3. If *osdOptions.MaximumNumberOfOSDs.Total* > 0:
 - 4.3.1. If *osdOptions* has Type = "Text" and does not have TextOption element, FAIL the test and skip other steps.
 - 4.3.2. If *osdOptions* has TextOption element and does not have Type = "Text" , FAIL the test and skip other steps.
 - 4.3.3. If *osdOptions* has Type = "Image" and does not have ImageOption element, FAIL the test and skip other steps.
 - 4.3.4. If *osdOptions* has ImageOption element and does not have Type = "Image" , FAIL the test and skip other steps.
 - 4.3.5. If *osdOptions.MaximumNumberOfOSDs* has @PlainText with value > 0 and *osdOptions* does not have Type = "Text", FAIL the test and skip other steps.
 - 4.3.6. If *osdOptions.MaximumNumberOfOSDs* has @Image with value > 0 and *osdOptions* does not have Type = "Image", FAIL the test and skip other steps.
 - 4.3.7. If *osdOptions.ImageOption* contains FormatsSupported attribute:
 - 4.3.7.1. If *osdOptions.ImageOption.FormatsSupported* does not contain "image/png" item, FAIL the test and skip other steps.
 - 4.3.7.2. If *osdOptions.ImageOption* does not contain MaxSize attribute or it does not contain both MaxWidth attribute and MaxHeight attribute, FAIL the test and skip other steps.

4.3.7.3. If *osdOptions*.ImageOption contains MaxSize attribute with value less than 1024, FAIL the test and skip other steps.

4.3.7.4. If *osdOptions*.ImageOption contains MaxWidth attribute with value less than 16, FAIL the test and skip other steps.

4.3.7.5. If *osdOptions*.ImageOption contains MaxHeight attribute with value less than 16, FAIL the test and skip other steps.

4.3.8. If *osdOptions*.TextOption has Type = "Date" and does not have at least one DateFormat element, FAIL the test and skip other steps.

4.3.9. If *osdOptions*.TextOption has Type = "Time" and does not have at least one TimeFormat element, FAIL the test and skip other steps.

4.3.10. If *osdOptions*.TextOption has Type = "DateAndTime" and does not have at least one DateFormat element and at least one TimeFormat element, FAIL the test and skip other steps.

5. If there was no at least one *osdOptions* with MaximumNumberOfOSDs.Total > 0 at step [4.3 \[178\]](#), FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetOSDOptionsResponse** message(s).

5.6.7 OSD CONFIGURATIONS AND OSD OPTIONS CONSISTENCY

Test Case ID: MEDIA2-6-1-7

Specification Coverage: GetOSDOptions, GetOSDs

Feature Under Test: GetOSDOptions, GetOSDs

WSDL Reference: media2.wsdl

Test Purpose: To verify all OSD configurations are consistent with OSD Options.

Pre-Requisite: Media2 Service feature is supported by DUT. OSD feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList* - Video Source Configurations list
4. For each Video Source Configuration *videoSourceConfiguration* in *videoSourceConfList* repeat the following steps:
 - 4.1. ONVIF Client invokes **GetOSDs** request with parameters
 - OSDToken skipped
 - ConfigurationToken := *videoSourceConfiguration.@token*
 - 4.2. DUT responds with **GetOSDsResponse** message with parameters
 - OSDs =: *osdList*
 - 4.3. If *osdList* is empty, skip other steps.
 - 4.4. ONVIF Client invokes **GetOSDOptions** request with parameters
 - ConfigurationToken := *videoSourceConfiguration.@token*
 - 4.5. DUT responds with **GetOSDOptionsResponse** message with parameters
 - OSDOptions =: *osdOptions*
 - 4.6. For each OSD *osd* in *osdList* repeat the following steps:
 - 4.6.1. If *osd.VideoSourceConfigurationToken* is not equal to *videoSourceConfiguration.@token*, FAIL the test and skip other steps.
 - 4.6.2. If *osdOptions.MaximumNumberOfOSDs.Total* is not greater than 0, FAIL the test and skip other steps.
 - 4.6.3. If *osdOptions* does not contain Type element with value is equal to *osd.Type*, FAIL the test and skip other steps.

- 4.6.4. If *osdOptions* does not contain PositionOption element with value is equal to *osd.Position.Type*, FAIL the test and skip other steps.
- 4.6.5. If *osd.TextString* specified:
 - 4.6.5.1. If *osdOptions* does not contain TextOption element with Type element with value is equal to *osd.TextString.Type*, FAIL the test and skip other steps.
 - 4.6.5.2. Set *osdOptions.TextOption* =: *textOption1*.
- 4.6.6. If *osd.TextString.DateFormat* specified:
 - 4.6.6.1. If *textOption1* does not contain at least one DateFormat element with value is equal to *osd.TextString.DateFormat*, FAIL the test and skip other steps.
- 4.6.7. If *osd.TextString.TimeFormat* specified:
 - 4.6.7.1. If *textOption1* does not contain at least one TimeFormat element with value is equal to *osd.TextString.TimeFormat*, FAIL the test and skip other steps.
- 4.6.8. If *osd.TextString.FontSize* specified:
 - 4.6.8.1. If *textOption1.FontSizeRange.Min* > *osd.TextString.FontSize*, FAIL the test and skip other steps.
 - 4.6.8.2. If *textOption1.FontSizeRange.Max* < *osd.TextString.FontSize*, FAIL the test and skip other steps.
- 4.6.9. If *osd.TextString.FontColor* specified:
 - 4.6.9.1. If *textOption1* does not contain FontColor.Color element, FAIL the test and skip other steps.
 - 4.6.9.2. If *textOption1.FontColor.Color* has at least one ColorList element:
 - 4.6.9.2.1. If *textOption1.FontColor* does not contain ColorList element with @X = *osd.TextString.FontColor.Color.@X*, and with @Y = *osd.TextString.FontColor.Color.@Y*, and with @Z = *osd.TextString.FontColor.Color.@Z*, and with @Colorspace =

osd.TextString.FontColor.Color.@Colorspace, FAIL the test and skip other steps.

4.6.9.3. If *textOption1.FontColor.Color* has at least one *ColorspaceRange* element:

4.6.9.3.1. If *osd.TextString.FontColor.Color* does not have *@Colorspace* element, FAIL the test and skip other steps.

4.6.9.3.2. Set *textOption1.FontColor.Color.ColorspaceRange* =: *colorspaceRange1*, where *textOption1.FontColor.Color.ColorspaceRange* is the first *ColorspaceRange* element that corresponds the following requirements:

- *colorspaceRange1.@Colorspace* = *osd.TextString.FontColor.Color.@Colorspace*.
- *colorspaceRange1.X.Min* <= *osd.TextString.FontColor.Color.@X*
- *colorspaceRange1.X.Max* >= *osd.TextString.FontColor.Color.@X*
- *colorspaceRange1.Y.Min* <= *osd.TextString.FontColor.Color.@Y*
- *colorspaceRange1.Y.Max* >= *osd.TextString.FontColor.Color.@Y*
- *colorspaceRange1.Z.Min* <= *osd.TextString.FontColor.Color.@Z*
- *colorspaceRange1.Z.Max* >= *osd.TextString.FontColor.Color.@Z*

4.6.9.3.3. If *colorspaceRange1* is empty, FAIL the test and skip other steps.

4.6.10. If *osd.TextString.FontColor.@Transparent* specified:

4.6.10.1. If *textOption1* does not contain *FontColor.Transparent* element, FAIL the test and skip other steps.

4.6.10.2. If $\text{textOption1.FontColor.Transparent.Min} > \text{osd.TextString.FontColor.@Transparent}$, FAIL the test and skip other steps.

4.6.10.3. If $\text{textOption1.FontColor.Transparent.Max} < \text{osd.TextString.FontColor.@Transparent}$, FAIL the test and skip other steps.

4.6.11. If $\text{osd.TextString.BackgroundColor}$ specified:

4.6.11.1. If textOption1 does not contain $\text{BackgroundColor.Color}$ element, FAIL the test and skip other steps.

4.6.12. If $\text{textOption1.BackgroundColor.Color}$ has at least one ColorList element:

4.6.12.1. If $\text{textOption1.BackgroundColor}$ does not contain ColorList element with $\text{@X} = \text{osd.TextString.BackgroundColor.Color.@X}$, and with $\text{@Y} = \text{osd.TextString.BackgroundColor.Color.@Y}$, and with $\text{@Z} = \text{osd.TextString.BackgroundColor.Color.@Z}$, and with $\text{@Colorspace} = \text{osd.TextString.BackgroundColor.Color.@Colorspace}$, FAIL the test and skip other steps.

4.6.13. If $\text{textOption1.BackgroundColor.Color}$ has at least one ColorspaceRange element:

4.6.13.1. If $\text{osd.TextString.BackgroundColor.Color}$ does not have @Colorspace element, FAIL the test and skip other steps.

4.6.13.2. Set $\text{textOption1.BackgroundColor.Color.ColorspaceRange} =: \text{colorspaceRange1}$, where $\text{textOption1.BackgroundColor.Color.ColorspaceRange}$ is the first ColorspaceRange element that corresponds the following requirements:

- $\text{colorspaceRange1.@Colorspace} = \text{osd.TextString.BackgroundColor.Color.@Colorspace}$.
- $\text{colorspaceRange1.X.Min} \leq \text{osd.TextString.BackgroundColor.Color.@X}$
- $\text{colorspaceRange1.X.Max} \geq \text{osd.TextString.BackgroundColor.Color.@X}$

- *colorspaceRange1.Y.Min* <=
osd.TextString.BackgroundColor.Color.@Y
- *colorspaceRange1.Y.Max* >=
osd.TextString.BackgroundColor.Color.@Y
- *colorspaceRange1.Z.Min* <=
osd.TextString.BackgroundColor.Color.@Z
- *colorspaceRange1.Z.Max* >=
osd.TextString.BackgroundColor.Color.@Z

4.6.13.3. If *colorspaceRange1* is empty, FAIL the test and skip other steps.

4.6.14. If *osd.TextString.BackgroundColor.@Transparent* specified:

4.6.14.1. If *textOption1* does not contain *BackgroundColor.Transparent* element, FAIL the test and skip other steps.

4.6.14.2. If *textOption1.BackgroundColor.Transparent.Min* >
osd.TextString.BackgroundColor.@Transparent, FAIL the test and skip other steps.

4.6.14.3. If *textOption1.BackgroundColor.Transparent.Max* <
osd.TextString.BackgroundColor.@Transparent, FAIL the test and skip other steps.

4.6.15. If *osd.Image* specified:

4.6.15.1. If *osdOptions* does not contain *ImageOption* element, FAIL the test and skip other steps.

4.6.15.2. If *osdOptions.ImageOption* does not contain *ImagePath* element with value is equal to *osd.Image.ImgPath*, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetOSDsResponse** message(s).

- The DUT did not send **GetOSDOptionsResponse** message(s).

5.7 Capabilities

5.7.1 MEDIA2 SERVICE CAPABILITIES

Test Case ID: MEDIA2-7-1-1

Specification Coverage: Capabilities (ONVIF Media2 Service Specification),
GetServiceCapabilities command (ONVIF Media2 Service Specification)

Feature Under Test: GetServiceCapabilities (for Media2 Service)

WSDL Reference: media2.wsdl

Test Purpose: To verify DUT Media2 Service Capabilities.

Pre-Requirement: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetServiceCapabilities**.
4. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
5. If *cap.ProfileCapabilities* does not contain *MaximumNumberOfProfiles* attribute, FAIL the test.
6. If *cap.ProfileCapabilities* does not contain *ConfigurationsSupported* attribute, FAIL the test.
7. If *cap.ProfileCapabilities.ConfigurationsSupported* contains no items, FAIL the test.
8. If *cap.ProfileCapabilities.ConfigurationsSupported* contains 'All' item, FAIL the test.
9. If DUT supports Analytics Service and *cap.ProfileCapabilities.ConfigurationsSupported* does not contain 'Analytics' item, FAIL the test.
10. If DUT *cap.ProfileCapabilities.ConfigurationsSupported* contains 'Analytics' item and DUT does not support Analytics Service, FAIL the test.

11. If DUT supports PTZ Service and *cap.ProfileCapabilities.ConfigurationsSupported* does not contain 'PTZ' item, FAIL the test.
12. If DUT *cap.ProfileCapabilities.ConfigurationsSupported* contains 'PTZ' item and DUT does not support PTZ Service, FAIL the test.
13. If DUT supports Media2/Video feature and *cap.ProfileCapabilities.ConfigurationsSupported* does not contain 'VideoSource' item, FAIL the test.
14. If DUT supports Media2/Audio feature and *cap.ProfileCapabilities.ConfigurationsSupported* does not contain 'AudioSource' item, FAIL the test.
15. If DUT supports Media2/Audio outputs feature and *cap.ProfileCapabilities.ConfigurationsSupported* does not contain 'AudioDecoder' item, FAIL the test.
16. If *cap.StreamingCapabilities* contains RTSPWebSocketUri
 - 16.1. Set *rtspWebSocketUri* := *cap.StreamingCapabilities.RTSPWebSocketUri*
 - 16.2. If scheme component of *rtspWebSocketUri* is not equal to **ws** or **wss**, FAIL the test and skip other steps.
 - 16.3. If hierarchical component (hier_part in [rfc2396]) of *rtspWebSocketUri* is not absolute path construction (abs_path in [rfc2396]), FAIL the test and skip other steps.
17. If *cap.ProfileCapabilities.ConfigurationsSupported* contains 'PTZ' item
 - 17.1. ONVIF Client invokes **GetConfigurations** request.
 - 17.2. The DUT responds with **GetConfigurationsResponse** message with parameters
 - PTZConfiguration list =: *ptzConfigurationList*
 - 17.3. If *ptzConfigurationList* is empty, FAIL the test and skip other steps.
18. If *cap.ProfileCapabilities.ConfigurationsSupported* contains 'Analytics' item
 - 18.1. ONVIF Client invokes **GetAnalyticsConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
 - 18.2. The DUT responds with **GetAnalyticsConfigurationsResponse** message with parameters
 - Configurations list =: *analyticsConfigurationList*

18.3. If *analyticsConfigurationList* is empty, FAIL the test and skip other steps.

19. If DUT supports Media2/AudioClip feature

19.1. If *cap.AudioClipCapabilities* is not specified, FAIL the test and skip other steps.

19.2. If *cap.AudioClipCapabilities.SupportedAudioClipFormat* is empty, FAIL the test and skip other steps.

19.3. If *cap.AudioClipCapabilities.MaxAudioClipLimit* is not specified, FAIL the test and skip other steps.

19.4. If *cap.AudioClipCapabilities.MaxAudioClipLimit* is not greater than 0, FAIL the test and skip other steps.

19.5. If *cap.AudioClipCapabilities.MaxAudioClipSize* is not specified, FAIL the test and skip other steps.

19.6. If *cap.AudioClipCapabilities.MaxAudioClipSize* is not greater than 0, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetServiceCapabilitiesResponse** message.
- The DUT did not send **GetConfigurationsResponse** message.
- The DUT did not send **GetAnalyticsConfigurationsResponse** message.

5.7.2 GET SERVICES AND GET MEDIA2 SERVICE CAPABILITIES CONSISTENCY

Test Case ID: MEDIA2-7-1-2

Specification Coverage: Capability exchange (ONVIF Core Specification), Capabilities (ONVIF Media2 Service Specification), GetServiceCapabilities command (ONVIF Media2 Service Specification)

Feature Under Test: GetServices, GetServiceCapabilities (for Media2 Service)

WSDL Reference: devicemgmt.wsdl, media2.wsdl

Test Purpose: To verify Get Services and Media2 Service Capabilities consistency.

Pre-Requisite: Media2 Service is received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetServices** with parameters
 - IncludeCapability := true
4. The DUT responds with a **GetServicesResponse** message with parameters
 - Services list =: *servicesList*
5. ONVIF Client selects Service with Service.Namespace = "http://www.onvif.org/ver20/media/wsdl":
 - Services list [Namespace = "http://www.onvif.org/ver20/media/wsdl"] =: *media2Service*
6. ONVIF Client invokes **GetServiceCapabilities** message to retrieve media2 service capabilities of the DUT.
7. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
8. If *cap* differs from *media2Service.Capabilities.Capabilities*, FAIL the test.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

Note: The following fields are compared at step 6:

- SnapshotUri
- Rotation

- VideoSourceMode
- OSD
- Mask
- ProfileCapabilities.MaximumNumberOfProfiles
- ProfileCapabilities.ConfigurationsSupported
- StreamingCapabilities.RTSPStreaming
- StreamingCapabilities.RTPMulticast
- StreamingCapabilities.RTP_RTSP_TCP
- StreamingCapabilities.NonAggregateControl
- StreamingCapabilities.RTSPWebSocketUri
- AudioClipCapabilities.MaxAudioClipLimit
- AudioClipCapabilities.MaxAudioClipSize
- AudioClipCapabilities.SupportedAudioClipFormat

5.8 Metadata Configuration

5.8.1 Metadata Configuration

5.8.1.1 MODIFY ALL SUPPORTED METADATA CONFIGURATIONS

Test Case ID: MEDIA2-8-1-1

Specification Coverage: Get configurations, Get configuration options, Metadata Configuration, Modify a configuration, Configuration Change

Feature Under Test: GetMetadataConfigurationOptions, GetMetadataConfigurations, SetMetadataConfiguration, Media Configuration Changed Event.

WSDL Reference: media2.wsdl

Test Purpose: To verify whether all supported Metadata Configuration Options can be set. To verify tns1:Media/ConfigurationChanged event generation when Metadata Configuration changes.

Pre-Requisite: Media2 Service is received from the DUT. Metadata feature under Media2 Service is supported by the DUT. Event Service was received from the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Metadata Configurations list by following the procedure mentioned in [Annex A.30](#) with the following input and output parameters
 - out *metadataConfList* - Metadata Configurations list
4. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/ConfigurationChanged"** - Notification Topic
 - out *s* - Subscription reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription termination time
5. For each Metadata Configuration *metadataConfiguration* in *metadataConfList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetMetadataConfigurationOptions** request with parameters
 - ConfigurationToken := *metadataConfiguration.@token*
 - ProfileToken skipped
 - 5.2. DUT responds with **GetMetadataConfigurationOptionsResponse** message with parameters
 - Options =: *options*
 - 5.3. ONVIF Client invokes **SetMetadataConfiguration** request with parameters
 - Configuration.@token := *metadataConfiguration.@token*
 - Configuration.Name := "TestName1"
 - Configuration.UseCount := *metadataConfiguration.UseCount*
 - If *options* does not contain at least one Extension.CompressionType element:

- Configuration.CompressionType skipped
- Otherwise:
 - Configuration.CompressionType := *options.Extension.CompressionType*[0]
- If DUT does not support PTZ service:
 - Configuration.PTZStatus skipped
- If DUT supports PTZ service:
 - Configuration.PTZStatus.Status :=
(*options.PTZStatusFilterOptions.PanTiltStatusSupported* or
options.PTZStatusFilterOptions.ZoomStatusSupported)
 - If *options.PTZStatusFilterOptions.PanTiltPositionSupported* and
options.PTZStatusFilterOptions.ZoomPositionSupported are skipped:
 - Configuration.PTZStatus.Position := false
 - Otherwise:
 - Configuration.PTZStatus.Position :=
(*options.PTZStatusFilterOptions.ZoomPositionSupported* or
options.PTZStatusFilterOptions.PanTiltPositionSupported)
- Configuration.Events.Filter.TopicExpression := "tns1:Media/ConfigurationChanged"
- Configuration.Events.Filter.TopicExpression.Dialect := "http://www.onvif.org/ver10/tev/topicExpression/ConcreteSet"
- If DUT does not support Analytics service:
 - Configuration.Analytics skipped
- If DUT supports Analytics service:
 - Configuration.Analytics := true
- Configuration.Multicast := *metadataConfiguration.Multicast*
- Configuration.SessionTimeout := *metadataConfiguration.SessionTimeout*
- Configuration.AnalyticsEngineConfiguration skipped

5.4. DUT responds with **SetMetadataConfigurationResponse** message.

- 5.5. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *metadataConfiguration.@token* - Configuration token
 - in Metadata - Configuration Type
- 5.6. ONVIF Client invokes **GetMetadataConfigurations** request with parameters
- ConfigurationToken := *metadataConfiguration.@token*
 - ProfileToken skipped
- 5.7. The DUT responds with **GetMetadataConfigurationsResponse** with parameters
- Configurations list := *metadataConfList*
- 5.8. If *metadataConfList*[0] is not equal to Configuration from step [5.3](#), FAIL the test and skip other steps.
- 5.9. ONVIF Client invokes **SetMetadataConfiguration** request with parameters
- Configuration.@token := *metadataConfiguration.@token*
 - Configuration.Name := "TestName2"
 - Configuration.UseCount := *metadataConfiguration.UseCount*
 - If *options* does not contain at least one Extension.CompressionType element:
 - Configuration.CompressionType skipped
 - Otherwise:
 - Configuration.CompressionType := if *options.Extension.CompressionType* contains at least two items *options.Extension.CompressionType*[1], otherwise *options.Extension.CompressionType*[0]
 - If DUT does not support PTZ service:

- Configuration.PTZStatus skipped
- If DUT supports PTZ service:
 - Configuration.PTZStatus.Status := false
 - Configuration.PTZStatus.Position := false
- Configuration.Events skipped
- If DUT does not support Analytics service:
 - Configuration.Analytics skipped
- If DUT supports Analytics service:
 - Configuration.Analytics := false
- Configuration.Multicast := *metadataConfiguration*.Multicast
- Configuration.SessionTimeout := *metadataConfiguration*.SessionTimeout
- Configuration.AnalyticsEngineConfiguration skipped

5.10. DUT responds with **SetMetadataConfigurationResponse** message.

5.11. If DUT supports Pull-Point Notification feature and Configuration Changed Notification feature, ONVIF Client retrieves and checks **tns1:Media/ConfigurationChanged** event for the specified Configuration by following the procedure mentioned in [Annex A.14](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *audioSourceConfiguration.@token* - Configuration token
- in Metadata - Configuration Type

5.12. ONVIF Client invokes **GetMetadataConfigurations** request with parameters

- ConfigurationToken := *metadataConfiguration.@token*
- ProfileToken skipped

5.13. The DUT responds with **GetMetadataConfigurationsResponse** with parameters

- Configurations list =: *metadataConfList*

5.14. If *metadataConfList*[0] is not equal to Configuration from step 5.9, FAIL the test and skip other steps.

6. If subscription was created at step 4, ONVIF Client deletes PullPoint subscription by following the procedure mentioned in Annex A.6 with the following input and output parameters

- in *s* - Subscription reference

7. ONVIF Client restores Metadata Configurations.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetMetadataConfigurationsResponse** message.
- DUT did not send **SetMetadataConfigurationResponse** message.
- DUT did not send **GetMetadataConfigurationOptionsResponse** message.

Note: The following fields are compared at step 5.8 and 5.14:

- token
- Name
- CompressionType
- PTZStatus
- Events
- Analytics
- Multicast

5.8.1.2 GET METADATA CONFIGURATIONS

Test Case ID: MEDIA2-8-1-2

Specification Coverage: Get configurations, Metadata configuration.

Feature Under Test: GetMetadataConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving complete Metadata Configuration List, Metadata Configuration by Configuration token and compatible Metadata Configuration by Profile token.

Pre-Requisite: Media2 Service is received from the DUT. Metadata feature under Media2 Service is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Metadata Configurations list by following the procedure mentioned in [Annex A.30](#) with the following input and output parameters
 - out *metadataConfCompleteList* - Metadata Configurations list
4. If *metadataConfCompleteList* contains at least two items with the same @token, FAIL the test and skip other steps.
5. For each *metadataConfiguration* in *metadataConfCompleteList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetMetadataConfigurations** request with parameters
 - ConfigurationToken := *metadataConfiguration.@token*
 - ProfileToken skipped
 - 5.2. The DUT responds with **GetMetadataConfigurationsResponse** with parameters
 - Configurations list =: *metadataConfList*
 - 5.3. If *metadataConfList* is empty, FAIL the test and skip other steps.
 - 5.4. If *metadataConfList* contains more than one item, FAIL the test and skip other steps.
 - 5.5. If *metadataConfList* does not contain item with @token = *metadataConfiguration.@token*, FAIL the test and skip other steps.
6. ONVIF Client invokes **GetProfiles** request with parameters

- Token skipped
 - Type[0] := Metadata
7. The DUT responds with **GetProfilesResponse** message with parameters
- Profiles list =: *profileList*
8. For each Media Profile *profile* in *profileList* repeat the following steps:
- 8.1. ONVIF Client invokes **GetMetadataConfigurations** request with parameters
- ConfigurationToken skipped
 - ProfileToken := *profile.@token*
- 8.2. The DUT responds with **GetMetadataConfigurationsResponse** with parameters
- Configurations list =: *metadataConfList*
- 8.3. If *metadataConfList* contains at least two items with the same @token, FAIL the test and skip other steps.
- 8.4. If *metadataConfCompleteList* does not contain at least one item with @token from *metadataConfList*, FAIL the test and skip other steps.
- 8.5. If *profile.Configurations* contains Metadata:
- 8.5.1. If *metadataConfList* does not contain item with @token = *profile.Configurations.Metadata.@token*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetMetadataConfigurationsResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.8.1.3 PROFILES AND METADATA CONFIGURATIONS CONSISTENCY

Test Case ID: MEDIA2-8-1-3

Specification Coverage: Get configurations, Get media profiles, Metadata configuration.

Feature Under Test: GetMetadataConfigurations, GetProfiles

WSDL Reference: media2.wsdl

Test Purpose: To verify all Media Profiles are consistent with Metadata Configurations.

Pre-Requisite: Media2 Service is received from the DUT. Metadata feature under Media2 Service is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := Metadata
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList*, which contains Configurations.Metadata repeat the following steps:
 - 5.1. ONVIF Client invokes **GetMetadataConfigurations** request with parameters
 - ConfigurationToken := *profile.Configurations.Metadata.@token*
 - ProfileToken skipped
 - 5.2. The DUT responds with **GetMetadataConfigurationsResponse** with parameters
 - Configurations list =: *metadataConfList*
 - 5.3. If *metadataConfList*[0] is not equal to *profile.Configurations.Metadata*, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetMetadataConfigurationsResponse** message.

Note: The following fields are compared at step 5.3:

- Name
- CompressionType
- GeoLocation
- PTZStatus.Status
- PTZStatus.Position
- Events.Filter (only field presence will be compared)
- Events.SubscriptionPolicy (only field presence will be compared)
- Analytics
- AnalyticsEngineConfiguration.AnalyticsModule list (Type and Name will be used as key. Parameters item will not be compared).

5.8.1.4 GET METADATA CONFIGURATIONS – INVALID TOKEN

Test Case ID: MEDIA2-8-1-4

Specification Coverage: Get configurations, Metadata configuration.

Feature Under Test: GetMetadataConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify SOAP 1.2 Fault receiving in case of GetMetadataConfigurations with invalid token.

Pre-Requisite: Media2 Service is received from the DUT. Metadata feature under Media2 Service is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

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

3. ONVIF Client retrieves Metadata Configurations list by following the procedure mentioned in [Annex A.30](#) with the following input and output parameters
 - out *metadataConfList* - Metadata Configurations list
4. ONVIF Client invokes **GetMetadataConfigurations** request with parameters
 - ConfigurationToken := other than listed in *metadataConfList*
 - ProfileToken skipped
5. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send the **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault message

5.9 Analytics Configuration

5.9.1 GET ANALYTICS CONFIGURATIONS

Test Case ID: MEDIA2-9-1-1

Specification Coverage: Get configurations, Analytics configuration.

Feature Under Test: GetAnalyticsConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving complete Analytics Configuration List, Analytics Configuration by Configuration token and compatible Analytics Configuration by Profile token.

Pre-Requisite: Media2 Service is received from the DUT. Analytics feature under Media2 Service is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.
3. ONVIF Client retrieves Analytics Configurations list by following the procedure mentioned in [Annex A.31](#) with the following input and output parameters
 - out *analyticsConfCompleteList* - Analytics Configurations list
4. If *analyticsConfCompleteList* contains at least two items with the same @token, FAIL the test and skip other steps.
5. For each *analyticsConfiguration* in *analyticsConfCompleteList* repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAnalyticsConfigurations** request with parameters
 - ConfigurationToken := *analyticsConfiguration.@token*
 - ProfileToken skipped
 - 5.2. The DUT responds with **GetAnalyticsConfigurationsResponse** with parameters
 - Configurations list =: *analyticsConfList*
 - 5.3. If *analyticsConfList* is empty, FAIL the test and skip other steps.
 - 5.4. If *analyticsConfList* contains more than one item, FAIL the test and skip other steps.
 - 5.5. If *analyticsConfList* does not contain item with @token = *analyticsConfiguration.@token*, FAIL the test and skip other steps.
6. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := Analytics
7. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
8. For each Media Profile *profile* in *profileList* repeat the following steps:
 - 8.1. ONVIF Client invokes **GetAnalyticsConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile.@token*
 - 8.2. The DUT responds with **GetAnalyticsConfigurationsResponse** with parameters

- Configurations list =: *analyticsConfList*
- 8.3. If *analyticsConfList* contains at least two items with the same @token, FAIL the test and skip other steps.
- 8.4. If *analyticsConfCompleteList* does not contain at least one item with @token from *analyticsConfList*, FAIL the test and skip other steps.
- 8.5. If *profile.Configurations* contains Analytics:
- 8.5.1. If *analyticsConfList* does not contain item with @token = *profile.Configurations.Analytics.@token*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAnalyticsConfigurationsResponse** message.
- DUT did not send **GetProfilesResponse** message.

5.9.2 PROFILES AND ANALYTICS CONFIGURATIONS CONSISTENCY

Test Case ID: MEDIA2-9-1-2

Specification Coverage: Get configurations, Get media profiles, Analytics configuration.

Feature Under Test: GetAnalyticsConfigurations, GetProfiles

WSDL Reference: media2.wsdl

Test Purpose: To verify all Media Profiles are consistent with Analytics Configurations.

Pre-Requisite: Media2 Service is received from the DUT. Analytics feature under Media2 Service is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.
3. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := Analytics
4. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
5. For each Media Profile *profile* in *profileList*, which contains Configurations.Analytics repeat the following steps:
 - 5.1. ONVIF Client invokes **GetAnalyticsConfigurations** request with parameters
 - ConfigurationToken := *profile.Configurations.Analytics.@token*
 - ProfileToken skipped
 - 5.2. The DUT responds with **GetAnalyticsConfigurationsResponse** with parameters
 - Configurations list =: *analyticsConfList*
 - 5.3. If *analyticsConfList*[0] is not equal to *profile.Configurations.Analytics*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetAnalyticsConfigurationsResponse** message.

Note: The following fields are compared at step 5.3:

- Name
- AnalyticsEngineConfiguration.AnalyticsModule list (Type and Name will be used as key. Parameters item will not be compared).
- AnalyticsEngineConfiguration.RuleEngineConfiguration list (Type and Name will be used as key. Parameters item will not be compared).

5.9.3 GET ANALYTICS CONFIGURATIONS – INVALID TOKEN

Test Case ID: MEDIA2-9-1-3

Specification Coverage: Get configurations, Analytics configuration.

Feature Under Test: GetAnalyticsConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify SOAP 1.2 Fault receiving in case of GetAnalyticsConfigurations with invalid token.

Pre-Requisite: Media2 Service is received from the DUT. Analytics feature under Media2 Service is supported by the DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Analytics Configurations list by following the procedure mentioned in [Annex A.31](#) with the following input and output parameters
 - out *analyticsConfList* - Analytics Configurations list
4. ONVIF Client invokes **GetAnalyticsConfigurations** request with parameters
 - ConfigurationToken := other than listed in *analyticsConfList*
 - ProfileToken skipped
5. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send the **env:Sender/ter:InvalidArgVal/ter:NoConfig** SOAP 1.2 fault message

5.10 Masks Configuration

5.10.1 CREATE MASKS

Test Case ID: MEDIA2-10-1-1

Specification Coverage: CreateMask, DeleteMask (ONVIF Media2 Service Specification)

Feature Under Test: CreateMask, DeleteMask

WSDL Reference: media2.wsdl

Test Purpose: To verify the DUT creates and removes Mask.

Pre-Requisite: Media2 Service feature is supported by DUT. Mask feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures device for adding of new mask by following the procedure mentioned in [Annex A.32](#) with the following input and output parameters
 - out *maskOptions* - Options to create mask with
 - out *vscToken* - Token of Video Source Configuration to be used
 - out *maskToRestore* - Mask to restore (if a Mask was removed)
4. ONVIF Client invokes **CreateMask** request with parameters
 - token := "TestMask" (note: this token can be ignored by DUT)
 - ConfigurationToken := *vscToken*
 - If *maskOptions.RectangleOnly* is false or skipped:
 - Polygon := Point[0].@x="-0.4", Point[0].@y="-0.2", Point[1].@x="-0.2", Point[1].@y="0.3", Point[2].@x="0.1", Point[2].@y="0.4", Point[3].@x="0.3", Point[3].@y="-0.3"
 - If *maskOptions.RectangleOnly* = true:

- Polygon := Point[0].@x="-0.5", Point[0].@y="-0.5", Point[1].@x="-0.5", Point[1].@y="0.5", Point[2].@x="0.5", Point[2].@y="0.5", Point[3].@x="0.5", Point[3].@y="-0.5"
 - Type := first value from *maskOptions.Types* list
 - If Type = "Color":
 - If *maskOptions.Color.ColorList* is specified:
 - Color := first value that are listed in *maskOptions.Color.ColorList*
 - If *maskOptions.Color.ColorspaceRange* is specified:
 - Color.@Colorspace := Colorspace value of the first item that is listed in *maskOptions.Color.ColorspaceRange*
 - Color.@X := value from the range [X.Min,X.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Y := value from the range [Y.Min,Y.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Z := value from the range [Z.Min,Z.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Enabled := false
5. DUT responds with **CreateMaskResponse** message with parameters
 - Token of the created mask =: *maskToken*
 6. ONVIF Client invokes **GetMasks** request with parameters
 - Token := *maskToken*
 - ConfigurationToken skipped
 7. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskList*
 8. If *maskList*[0] is not equal to Mask from step 4, FAIL the test and skip other steps.
 9. ONVIF Client invokes **DeleteMask** request with parameters
 - Token := *maskToken*

10. DUT responds with **DeleteMaskResponse** message
11. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken := *videoSourceConf1*[0].@Token
12. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskList2*
13. If *maskList2* contains Mask with @Token = *maskToken*, FAIL the test and skip other steps.
14. ONVIF Client restores the DUT state.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetMasksResponse** message(s).
- The DUT did not send **CreateMaskResponse** message.
- The DUT did not send **DeleteMaskResponse** message.

Note: The following fields are compared at step 8:

- ConfigurationToken
- Polygon, only the following will be checked:
 - the field is specified
 - list contains at least 3 points
- Type
- Color (if Type = "Color")
- Enabled

5.10.2 GET MASKS

Test Case ID: MEDIA2-10-1-2

Specification Coverage: GetMasks (ONVIF Media2 Service Specification)**Feature Under Test:** GetMasks**WSDL Reference:** media2.wsdl

Test Purpose: To verify DUT sends complete Masks list and list of Masks, which are compatible with specific Video Source Configuration.

Pre-Requisite: Media2 Service feature is supported by DUT. Mask feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures device to add mask if no masks exists by following the procedure mentioned in [Annex A.34](#) with the following input and output parameters:
 - out *maskToRemove* - Mask to remove (if a Mask was created)
4. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken skipped
5. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskConfCompleteList1*
6. If *maskConfCompleteList1* is empty, FAIL the test and skip other steps.
7. If *maskConfCompleteList1* contains at least two items with the same @token, FAIL the test and skip other steps.
8. For each Mask *mask* in *maskConfCompleteList1* repeat the following steps:
 - 8.1. ONVIF Client invokes **GetMasks** request with parameters
 - Token := *mask.@token*
 - ConfigurationToken skipped
 - 8.2. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskList1*

- 8.3. If *maskList1* is empty, FAIL the test and skip other steps.
- 8.4. If *maskList1* contains more than one item, FAIL the test and skip other steps.
- 8.5. If *maskList1*[0].@token != *mask*.@token, FAIL the test and skip other steps.
- 8.6. If *maskList1*[0] is not equal to *mask*, FAIL the test and skip other steps.
9. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList1* - Video Source Configurations list
10. For each Video Source Configuration *videoSourceConf1* in *videoSourceConfList1* list repeat the following steps:
 - 10.1. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken := *videoSourceConf1*.@Token
 - 10.2. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskConfList1*
 - 10.3. If *maskConfList1* contains at least two items with the same @token, FAIL the test and skip other steps.
 - 10.4. If *maskConfCompleteList1* does not contain at least one item with @token from *maskConfList1* list, FAIL the test and skip other steps.
11. ONVIF Client restores the DUT state if required.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetMasksResponse** message(s).

Note: The following fields are compared at step [8.6](#):

- token

- ConfigurationToken
- Polygon
- Type
- Color
- Enabled

5.10.3 SET MASKS

Test Case ID: MEDIA2-10-1-3

Specification Coverage: SetMask, DeleteMask (ONVIF Media2 Service Specification)

Feature Under Test: SetMask

WSDL Reference: media2.wsdl

Test Purpose: To verify the DUT changes and removes Mask.

Pre-Requisite: Media2 Service feature is supported by DUT. Mask feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client configures device for adding of new mask by following the procedure mentioned in [Annex A.32](#) with the following input and output parameters
 - out *maskOptions* - Options to create mask with
 - out *vscToken* - Token of Video Source Configuration to be used
 - out *maskToRestore* - Mask to restore (if a Mask was removed)
4. Set *maskType* := first value from *maskOptions.Types* list
5. ONVIF Client creates mask by following the procedure mentioned in [Annex A.35](#) with the following input and output parameters
 - in *vscToken* - Video Source configuration token
 - in *maskOptions* - Options of the mask

- in *maskType* - Mask type
 - out *maskToken* - Token of the created mask
6. ONVIF Client invokes **SetMask** request with parameters
- token := *maskToken*
 - ConfigurationToken := *vscToken*
 - If *maskOptions.RectangleOnly* is false or skipped:
 - Polygon := Point[0].@x="-0.5", Point[0].@y="-0.3", Point[1].@x="-0.3", Point[1].@y="0.4", Point[2].@x="0.2", Point[2].@y="0.5", Point[3].@x="0.4", Point[3].@y="-0.4"
 - If *maskOptions.RectangleOnly* = true:
 - Polygon := Point[0].@x="-0.6", Point[0].@y="-0.6", Point[1].@x="-0.6", Point[1].@y="0.6", Point[2].@x="0.6", Point[2].@y="0.6", Point[3].@x="0.6", Point[3].@y="-0.6"
 - Type := last value from *maskOptions.Types* list
 - If Type = "Color":
 - If *maskOptions.Color.ColorList* is specified:
 - Color := last value that are listed in *maskOptions.Color.ColorList*
 - If *maskOptions.Color.ColorspaceRange* is specified:
 - Color.@Colorspace := Colorspace value of the last item that is listed in *maskOptions.Color.ColorspaceRange*
 - Color.@X := value from the range [X.Min,X.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Y := value from the range [Y.Min,Y.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Z := value from the range [Z.Min,Z.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Enabled := true
7. DUT responds with **SetMaskResponse** message

8. ONVIF Client invokes **GetMasks** request with parameters
 - Token := *maskToken*
 - ConfigurationToken skipped
9. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskList*
10. If *maskList*[0] is not equal to Mask from step 6, FAIL the test and skip other steps.
11. ONVIF Client invokes **DeleteMask** request with parameters
 - Token := *maskToken*
12. DUT responds with **DeleteMaskResponse** message
13. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken := *videoSourceConf1*[0].@Token
14. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskList2*
15. If *maskList2* contains Mask with @Token = *maskToken*, FAIL the test and skip other steps.
16. ONVIF Client restores the DUT state.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send **SetMaskResponse** message.
- The DUT did not send **GetMasksResponse** message(s).
- The DUT did not send **DeleteMaskResponse** message.

Note: The following fields are compared at step 10:

- ConfigurationToken

- Polygon, only the following will be checked:
 - the field is specified
 - list contains at least 3 points
- Type
- Color (if Type = "Color")
- Enabled

5.10.4 GET MASK OPTIONS

Test Case ID: MEDIA2-10-1-4

Specification Coverage: GetMaskOptions (ONVIF Media2 Service Specification)

Feature Under Test: GetMaskOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify consistency in Mask Options.

Pre-Requisite: Media2 Service feature is supported by DUT. Mask feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList1* - Video Source Configurations list
4. For each Video Source Configuration *videoSourceConf1* in *videoSourceConfList1* list repeat the following steps:
 - 4.1. ONVIF Client invokes **GetMaskOptions** request with parameters
 - ConfigurationToken := *videoSourceConf1.@token*
 - 4.2. DUT responds with **GetMaskOptionsResponse** message with parameters

- MaskOptions =: *maskOptions*
- 4.3. If *maskOptions*.MaxMasks < 0, FAIL the test and skip other steps.
 - 4.4. If *maskOptions*.MaxPoints < 3, FAIL the test and skip other steps.
 - 4.5. If *maskOptions* does not have Types element, FAIL the test and skip other steps.
 - 4.6. If *maskOptions* has Color.ColorspaceRange element:
 - 4.6.1. If *maskOptions*.Color.ColorspaceRange.X.Min > *maskOptions*.Color.ColorspaceRange.X.Max, FAIL the test and skip other steps.
 - 4.6.2. If *maskOptions*.Color.ColorspaceRange.Y.Min > *maskOptions*.Color.ColorspaceRange.Y.Max, FAIL the test and skip other steps.
 - 4.6.3. If *maskOptions*.Color.ColorspaceRange.Z.Min > *maskOptions*.Color.ColorspaceRange.Z.Max, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetMaskOptionsResponse** message(s).

5.10.5 MASK CONFIGURATIONS AND MASK OPTIONS CONSISTENCY

Test Case ID: MEDIA2-10-1-5**Specification Coverage:** GetMasks, GetMaskOptions (ONVIF Media2 Service Specification)**Feature Under Test:** GetMasks, GetMaskOptions**WSDL Reference:** media2.wsdl**Test Purpose:** To verify all Mask configurations are consistent with Mask Options.

Pre-Requisite: Media2 Service feature is supported by DUT. Mask feature is supported by DUT.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList1* - Video Source Configurations list
4. For each Video Source Configuration *videoSourceConf1* in *videoSourceConfList1* repeat the following steps:
 - 4.1. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken := *videoSourceConf1.@token*
 - 4.2. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskConfList1*
 - 4.3. ONVIF Client invokes **GetMaskOptions** request with parameters
 - ConfigurationToken := *videoSourceConf1.@token*
 - 4.4. DUT responds with **GetMaskOptionsResponse** message with parameters
 - MaskOptions := *maskOptions*
 - 4.5. Set *colorMask* := empty
 - 4.6. For each Mask *mask* in *maskConfList1* repeat the following steps:
 - 4.6.1. If *mask.ConfigurationToken* is not equal to *videoSourceConf1.@token*, FAIL the test and skip other steps.
 - 4.6.2. If *maskOptions* does not contain Types element with value is equal to *mask.Type*, FAIL the test and skip other steps.
 - 4.6.3. If *maskOptions.RectangleOnly* = true and *mask.Polygon* does not have four points, FAIL the test and skip other steps.

- 4.6.4. If number of points of *mask.Polygon* > *maskOptions.MaxPoints*, FAIL the test and skip other steps.
- 4.6.5. If *mask.Color* is specified:
 - 4.6.5.1. If *mask.Color@Colorspace* is skipped:
 - 4.6.5.1.1. Set *mask.Color@Colorspace* = <http://www.onvif.org/ver10/colorspace/YCbCr>
 - 4.6.5.2. If *maskOptions.Color* has at least one ColorList element:
 - 4.6.5.2.1. For each ColorList element *colorList* in *maskOptions.Color* repeat the following steps:
 - 4.6.5.2.1.1. If *colorList@Colorspace* is skipped:
 - 4.6.5.2.1.1.1. Set *colorList@Colorspace* = <http://www.onvif.org/ver10/colorspace/YCbCr>
 - 4.6.5.2.1.2. If *maskOptions.Color* does not contain ColorList element with @X = *mask.Color.@X*, and with @Y = *mask.Color.@Y*, and with @Z = *mask.Color.@Z*, and with @Colorspace = *mask.Color@Colorspace*, FAIL the test and skip other steps.
 - 4.6.5.3. If *maskOptions.Color* has at least one ColorspaceRange element:
 - 4.6.5.3.1. Set *maskOptions.Color.ColorspaceRange* =: *colorspaceRange1*, where *maskOptions.Color.ColorspaceRange* is the first ColorspaceRange element that corresponds the following requirements:
 - 4.6.5.3.1.1. *colorspaceRange1.@Colorspace* = *mask.Color.@Colorspace*.
 - 4.6.5.3.1.2. *colorspaceRange1.X.Min* <= *mask.Color.@X*

- | | | |
|--------------|---|----|
| 4.6.5.3.1.3. | <i>colorspaceRange1.X.Max</i>
<i>mask.Color.@X</i> | >= |
| 4.6.5.3.1.4. | <i>colorspaceRange1.Y.Min</i>
<i>mask.Color.@Y</i> | <= |
| 4.6.5.3.1.5. | <i>colorspaceRange1.Y.Max</i>
<i>mask.Color.@Y</i> | >= |
| 4.6.5.3.1.6. | <i>colorspaceRange1.Z.Min</i>
<i>mask.Color.@Z</i> | <= |
| 4.6.5.3.1.7. | <i>colorspaceRange1.Z.Max</i>
<i>mask.Color.@Z</i> | >= |
- 4.6.5.3.2. If *colorspaceRange1* is empty, FAIL the test and skip other steps.
- 4.6.5.4. If *MaskOptions.SingleColorOnly* = true
- 4.6.5.4.1. If *colorMask* is empty:
- | | |
|--------------|---------------------------------------|
| 4.6.5.4.1.1. | <i>colorMask</i> := <i>mask.Color</i> |
| 4.6.5.4.1.2. | GoTo step 4.6 |
- 4.6.5.4.2. If *colorMask* is not equal to *mask.Color*, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send **GetMasksResponse** message(s).
- The DUT did not send **GetMaskOptionsResponse** message(s).

5.10.6 SINGLE COLOR ONLY PARAMETER

Test Case ID: MEDIA2-10-1-6

Specification Coverage: GetMaskOptions (ONVIF Media2 Service Specification)

Feature Under Test: GetMaskOptions**WSDL Reference:** media2.wsdl**Test Purpose:** To verify Masks Color consistency if SingleColorOnly is present and true in Mask Options.**Pre-Requisite:** Media2 Service feature is supported by DUT. Mask feature is supported by DUT.**Test Configuration:** ONVIF Client and DUT**Test Procedure:**

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *videoSourceConfList1* - Video Source Configurations list
4. For each Video Source Configuration *videoSourceConf1* in *videoSourceConfList1* list repeat the following steps:
 - 4.1. ONVIF Client invokes **GetMaskOptions** request with parameters
 - ConfigurationToken := *videoSourceConf1*.@Token
 - 4.2. DUT responds with **GetMaskOptionsResponse** message with parameters
 - MaskOptions =: *maskOptions*
 - 4.3. If *maskOptions*.SingleColorOnly != true or *maskOptions*.Types list does not contain "Color" or *maskOptions*.MaxMasks < 2 go to step 4.
 - 4.4. ONVIF Client removes all Masks from Video Source Configuration by following the procedure mentioned in [Annex A.36](#) with the following input and output parameters
 - in *videoSourceConf1*.@token - Video Source Configuration token
 - 4.5. Set *maskType* := "Color"
 - 4.6. ONVIF Client creates mask by following the procedure mentioned in [Annex A.35](#) with the following input and output parameters
 - in *vscToken* - Video Source configuration token
 - in *maskOptions* - Options of the mask

- in *maskType* - Mask type
- out *maskToken1* - Token of the created mask

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

- token := "TestMask" (note: this token can be ignored by DUT)
- ConfigurationToken := *videoSourceConf1.@token*
- Polygon := Point[0].@x="-0.4", Point[0].@y="-0.2", Point[1].@x="-0.2", Point[1].@y="0.3", Point[2].@x="0.1", Point[2].@y="0.4", Point[3].@x="0.3", Point[3].@y="-0.3" if *maskOptions.RectangleOnly* is false or skipped. Else Polygon := Point[0].@x="-0.5", Point[0].@y="-0.5", Point[1].@x="-0.5", Point[1].@y="0.5", Point[2].@x="0.5", Point[2].@y="0.5", Point[3].@x="0.5", Point[3].@y="-0.5"
- Type := "Color"
- Enabled := false

4.8. DUT responds with **CreateMaskResponse** message with parameters

- Token of the created mask =: *maskToken2*

4.9. ONVIF Client invokes **GetMasks** request with parameters

- Token := *maskToken1*
- ConfigurationToken skipped

4.10. DUT responds with **GetMasksResponse** message with parameters

- Masks =: *maskList1*

4.11. ONVIF Client invokes **GetMasks** request with parameters

- Token := *maskToken2*
- ConfigurationToken skipped

4.12. DUT responds with **GetMasksResponse** message with parameters

- Masks =: *maskList2*

4.13. If *maskList2[0].Color* is not equal to *maskList1[0].Color*, FAIL the test and skip other steps.

4.14. ONVIF Client invokes **SetMask** request with parameters

- token := *maskToken2*
- ConfigurationToken := *vscToken*
- Polygon := Point[0].@x="-0.5", Point[0].@y="-0.3", Point[1].@x="-0.3", Point[1].@y="0.4", Point[2].@x="0.2", Point[2].@y="0.5", Point[3].@x="0.4", Point[3].@y="-0.4" if *maskOptions.RectangleOnly* is false or skipped. Else Polygon := Point[0].@x="-0.6", Point[0].@y="-0.6", Point[1].@x="-0.6", Point[1].@y="0.6", Point[2].@x="0.6", Point[2].@y="0.6", Point[3].@x="0.6", Point[3].@y="-0.6"
- Type := "Color"
- If *maskOptions.Color.ColorList* is specified:
 - Color := last value that are listed in *maskOptions.Color.ColorList*
- If *maskOptions.Color.ColorspaceRange* is specified:
 - Color.@Colorspace := Colorspace value of the last item that is listed in *maskOptions.Color.ColorspaceRange*
 - Color.@X := value from the range [X.Min,X.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Y := value from the range [Y.Min,Y.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Z := value from the range [Z.Min,Z.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
- Enabled := true

4.15. DUT responds with **SetMaskResponse** message

4.16. ONVIF Client invokes **GetMasks** request with parameters

- Token := *maskToken1*
- ConfigurationToken skipped

4.17. DUT responds with **GetMasksResponse** message with parameters

- Masks =: *maskList3*

4.18. If *maskList3[0].Color* is not equal to Color value from step 4.14, FAIL the test and skip other steps.

4.19. ONVIF Client restores the DUT state.

5. PASS the test.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send **CreateMaskResponse** message(s).
- The DUT did not send **SetMaskResponse** message(s).
- The DUT did not send **GetMasksResponse** message(s).
- The DUT did not send **GetMaskOptionsResponse** message(s).

5.11 Audio Clip

5.11.1 Audio Clip Configuration

5.11.1.1 GET AUDIO CLIPS

Test Case ID: MEDIA2-11-1-1

Specification Coverage: Audio Clip Configuration, GetAudioClips.

Feature Under Test: GetAudioClips

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving of complete Audio Clips list, and retrieving of specific Audio Clip by token. To verify compatibility between Audio Clip Configuration and Media2 Capabilities. To verify compatibility between Audio Clip Configuration and Audio Output list. To verify compatibility between Audio Clip Configuration and Schedule list.

Pre-Requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT. Audio Clip is supported by Device.

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

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetAudioClips** request with parameters
 - Token skipped
4. DUT responds with **GetAudioClipsResponse** message with parameters
 - GetAudioClipsResponseItem =: *audioClipsCompleteList*
5. If *audioClipsCompleteList* contains at least two items with the same Token, FAIL the test and skip other steps.
6. If *audioClipsCompleteList* is not empty
 - 6.1. ONVIF Client retrieves Audio Output list by following the procedure mentioned in [Annex A.37](#) with the following input and output parameters
 - out *audioOutputsList* - Audio Outputs list
 - 6.2. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters
 - out *cap* - Media2 Service Capabilities
 - 6.3. If DUT supports Schedule Service
 - 6.3.1. ONVIF Client retrieves a complete list of schedules info by following the procedure mentioned in [Annex A.38](#) with the following input and output parameters
 - out *scheduleInfoCompleteList* - complete list of schedules info
7. For each Audio Clip item *audioClip* in *audioClipsCompleteList* repeat the following steps:
 - 7.1. ONVIF Client invokes **GetAudioClips** request with parameters
 - Token: *audioClip.Token*
 - 7.2. DUT responds with **GetAudioClipsResponse** message with parameters
 - GetAudioClipsResponseItem =: *audioClipsList*

- 7.3. If *audioClipsList* is empty, FAIL the test and skip other steps.
- 7.4. If *audioClipsList* contains more than one item, FAIL the test and skip other steps.
- 7.5. If *audioClipsList* does not contain item with Token = *audioClip.Token*, FAIL the test and skip other steps.
- 7.6. If *audioClipsList*[0] item is not equal to *audioClip*, FAIL the test and skip other steps.
- 7.7. For each AudioOutputToken item (*audioOutputToken*) in *audioClipsList*[0].Configuration repeat the following steps:
 - 7.7.1. If *audioOutputsList* does not contain *audioOutputToken*, FAIL the test and skip other steps.
- 7.8. If *cap.AudioClipCapabilities.SupportedAudioClipFormat* list does not contain *audioClipsList*[0].Configuration.Type value, FAIL the test and skip other steps.
- 7.9. If *audioClipsList*[0].Configuration contains ScheduleToken and Schedule Service is not supported, FAIL the test and skip other steps.
- 7.10. If *audioClipsList*[0].Configuration contains ScheduleToken
 - 7.10.1. If *scheduleInfoCompleteList* list does not contain ScheduleInfo item with @token equals to *audioClipsList*[0].Configuration.ScheduleToken value, FAIL the test and skip other steps.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

Note: The following fields are compared at step 7.6:

- Configuration.Enabled
- Configuration.Name
- Configuration.AudioOutputToken list
- Configuration.Type

- Configuration.RepeatCycles
- Configuration.RepeatInterval
- Configuration.AudioOutputLevel
- Configuration.ScheduleToken

5.11.1.2 ADD AUDIO CLIP

Test Case ID: MEDIA2-11-1-2

Specification Coverage: AddAudioClip.

Feature Under Test: AddAudioClip

WSDL Reference: media2.wsdl

Test Purpose: To verify adding of Audio Clips without token specified in the request.

Pre-Requisite: Media2 Service is received from the DUT. Audio Clip is supported by Device. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client prepare a free space for adding of a new Audio Clip by following the procedure mentioned in [Annex A.39](#).
4. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
5. Set *audioClipFormat* := "audio/vnd.wave;codec=1".
6. Set *currentTime* := current time.

7. ONVIF Client invokes **AddAudioClip** request with parameters
 - Token skipped
 - Configuration.Enabled := true
 - Configuration.Name := "ONVIF Test Name"
 - Configuration.AudioOutputToken[0] := *outputToken*
 - Configuration.Type := *audioClipFormat*
 - Configuration.RepeatCycles := 1
 - Configuration.RepeatInterval := 60
 - Configuration.AudioOutputLevel := *outputLevelRange*.Min
 - Configuration.ScheduleToken skipped
8. DUT responds with **AddAudioClipResponse** message with parameters
 - Token =: *audioClipToken*
 - UploadUri =: *uploadUri*
 - ExpiryTime =: *expiryTime*
9. If *expiryTime* is less than *currentTime* or equal to *currentTime*, FAIL the test and skip other steps.
10. ONVIF Client invokes **HTTP POST** to *uploadUri* with parameters
 - HTTP Header [Content-Type] := MIME type for audio that corresponds to *audioClipFormat*
 - HTTP Body := audio file with format that corresponds to *audioClipFormat*
11. The DUT responds with **HTTP 200 OK** message.
12. ONVIF Client retrieves Audio Clips list by following the procedure mentioned in [Annex A.42](#) with the following input and output parameters
 - out *audioClipsList* - Audio Clips list
13. If *audioClipsList* does not contain item with Token equals to *audioClipToken*, FAIL the test and skip other steps.
14. ONVIF Client invokes **GetAudioClips** request with parameters

- Token := *audioClipToken*
15. DUT responds with **GetAudioClipsResponse** message with parameters
- GetAudioClipsResponseItem =: *audioClipsList*
16. If *audioClipsList* is empty, FAIL the test and skip other steps.
17. If *audioClipsList* contains more than one item, FAIL the test and skip other steps.
18. If *audioClipsList* does not contain item with Token = *audioClipToken*, FAIL the test and skip other steps.
19. If *audioClipsList*[0].Configuration.Enabled is not equal to "true", FAIL the test and skip other steps.
20. If *audioClipsList*[0].Configuration.Name is not equal to "ONVIF Test Name", FAIL the test and skip other steps.
21. If *audioClipsList*[0].Configuration.AudioOutputToken[0] is not equal to *outputToken*, FAIL the test and skip other steps.
22. If *audioClipsList*[0].Configuration.AudioOutputToken list contains more than one item, FAIL the test and skip other steps.
23. If *audioClipsList*[0].Configuration.Type is not equal to *audioClipFormat*, FAIL the test and skip other steps.
24. If *audioClipsList*[0].Configuration.RepeatCycles is not equal 1, FAIL the test and skip other steps.
25. If *audioClipsList*[0].Configuration.RepeatInterval is not equal 60, FAIL the test and skip other steps.
26. If *audioClipsList*[0].Configuration.AudioOutputLevel is not equal to *outputLevelRange*.Min, FAIL the test and skip other steps.
27. If *audioClipsList*[0].ScheduleToken is present, FAIL the test and skip other steps.
28. ONVIF Client invokes **DeleteAudioClip** request with parameters
- Token := *audioClipToken*
29. DUT responds with **DeleteAudioClipResponse** message.
30. ONVIF Client retrieves Audio Clips list by following the procedure mentioned in [Annex A.42](#) with the following input and output parameters

- out *audioClipsList* - Audio Clips list

31. If *audioClipsList* contains item with Token equals to *audioClipToken*, FAIL the test and skip other steps.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **AddAudioClipResponse** message.
- DUT did not send **GetAudioClipsResponse** message.
- DUT did not send **DeleteAudioClipResponse** message.

5.11.1.3 ADD AUDIO CLIP - WITH TOKEN IN REQUEST

Test Case ID: MEDIA2-11-1-3

Specification Coverage: AddAudioClip.

Feature Under Test: AddAudioClip

WSDL Reference: media2.wsdl

Test Purpose: To verify adding of Audio Clips with a token specified in the request.

Pre-Requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT. Audio Clip is supported by Device. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters

- out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
4. Set *audioClipFormat* := "audio/vnd.wave;codec=1".
 5. ONVIF Client prepare a free space for adding of a new Audio Clip by following the procedure mentioned in [Annex A.39](#).
 6. ONVIF Client generates a string *token* within 36 characters.
 7. ONVIF Client invokes **AddAudioClip** request with parameters
 - Token := *token*
 - Configuration.Enabled := true
 - Configuration.Name := "ONVIF Test Name"
 - Configuration.AudioOutputToken skipped
 - Configuration.Type := *audioClipFormat*
 - Configuration.RepeatCycles := 0
 - Configuration.RepeatInterval skipped
 - Configuration.AudioOutputLevel skipped
 - Configuration.ScheduleToken skipped
 8. DUT responds with **AddAudioClipResponse** message with parameters
 - Token =: *audioClipToken*
 - UploadUri =: *uploadUri*
 - ExpiryTime
 9. If *audioClipToken* is not equal to *token*, FAIL the test and skip other steps.
 10. ONVIF Client invokes **HTTP POST** to *uploadUri* with parameters
 - HTTP Header [Content-Type] := MIME type for audio that corresponds to *audioClipFormat*
 - HTTP Body := audio file with format that corresponds to *audioClipFormat*
 11. The DUT responds with **HTTP 200 OK** message.

12. ONVIF Client invokes **GetAudioClips** request with parameters

- Token := *audioClipToken*

13. DUT responds with **GetAudioClipsResponse** message with parameters

- GetAudioClipsResponseItem =: *audioClipsList*

14. If *audioClipsList* is empty, FAIL the test and skip other steps.

15. If *audioClipsList* contains more than one item, FAIL the test and skip other steps.

16. If *audioClipsList* does not contain item with Token = *audioClipToken*, FAIL the test and skip other steps.

17. If *audioClipsList*[0].Configuration.RepeatCycles is not equal 0, FAIL the test and skip other steps.

18. If *audioClipsList*[0].Configuration.RepeatInterval is present, FAIL the test and skip other steps.

19. ONVIF Client invokes **DeleteAudioClip** request with parameters

- Token := *audioClipToken*

20. DUT responds with **DeleteAudioClipResponse** message.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **AddAudioClipResponse** message.
- DUT did not send **GetAudioClipsResponse** message.

5.11.1.4 SET AUDIO CLIP

Test Case ID: MEDIA2-11-1-4

Specification Coverage: SetAudioClip.

Feature Under Test: SetAudioClip

WSDL Reference: media2.wsdl

Test Purpose: To verify updating of Audio Clips.

Pre-Requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT. Audio Clip is supported by Device. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
4. Set *audioClipFormat* := "audio/vnd.wave;codec=1".
5. Set Audio Clip Configuration *audioClipConfig* with the following fields values
 - Enabled := false
 - Name := "ONVIF Test Name1"
 - AudioOutputToken[0] := *outputToken*
 - Type := *audioClipFormat*
 - RepeatCycles skipped
 - RepeatInterval skipped
 - AudioOutputLevel := *outputLevelRange*.Min
 - ScheduleToken skipped
6. ONVIF Client adds an Audio Clip by following the procedure mentioned in [Annex A.43](#) with the following input and output parameters
 - in *audioClipConfig* - Audio Clip Configuration to add

- out *audioClipToken* - token of added Audio Clip
7. If *audioOutputsList* contains more than one item, set **audioOutputToken** := *audioOutputsList*[1]. Otherwise set **audioOutputToken** := *audioOutputsList*[0].
 8. ONVIF Client invokes **SetAudioClip** request with parameters
 - Token := *audioClipToken*
 - Configuration.Enabled := true
 - Configuration.Name := "ONVIF Test Name2"
 - Configuration.AudioOutputToken := **audioOutputToken**
 - Configuration.Type := *audioClipFormat*
 - Configuration.RepeatCycles := -1
 - Configuration.RepeatInterval := 60
 - Configuration.AudioOutputLevel := *outputLevelRange*.Max
 - Configuration.ScheduleToken skipped
 9. DUT responds with **SetAudioClipResponse** message.
 10. ONVIF Client invokes **GetAudioClips** request with parameters
 - Token := *audioClipToken*
 11. DUT responds with **GetAudioClipsResponse** message with parameters
 - GetAudioClipsResponseItem =: *audioClipsList*
 12. If *audioClipsList* is empty, FAIL the test and skip other steps.
 13. If *audioClipsList* contains more than one item, FAIL the test and skip other steps.
 14. If *audioClipsList* does not contain item with Token = *audioClipToken*, FAIL the test and skip other steps.
 15. If *audioClipsList*[0].Configuration.Enabled is not equal to "true", FAIL the test and skip other steps.
 16. If *audioClipsList*[0].Configuration.Name is not equal to "ONVIF Test Name2", FAIL the test and skip other steps.

17. If *audioClipsList*[0].Configuration.AudioOutputToken[0] is not equal to **audioOutputToken**, FAIL the test and skip other steps.
18. If *audioClipsList*[0].Configuration.Type is not equal to *audioClipFormat*, FAIL the test and skip other steps.
19. If *audioClipsList*[0].Configuration.RepeatCycles is not equal to "-1", FAIL the test and skip other steps.
20. If *audioClipsList*[0].Configuration.RepeatInterval is not equal to 60, FAIL the test and skip other steps.
21. If *audioClipsList*[0].Configuration.AudioOutputLevel *outputLevelRange*.Max, FAIL the test and skip other steps.
22. If *audioClipsList*[0].ScheduleToken is present, FAIL the test and skip other steps.
23. ONVIF Client invokes **DeleteAudioClip** request with parameters
 - Token := *audioClipToken*
24. DUT responds with **DeleteAudioClipResponse** message.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **AddAudioClipResponse** message.
- DUT did not send **SetAudioClipResponse** message.
- DUT did not send **GetAudioClipsResponse** message.
- DUT did not send **DeleteAudioClipResponse** message.

5.11.2 Audio Clip Playing

5.11.2.1 PLAY AUDIO CLIP - WAV with LPCM

Test Case ID: MEDIA2-11-2-1

Specification Coverage: PlayAudioClip, GetPlayingAudioClips, Audio Clip State

Feature Under Test: PlayAudioClip, GetPlayingAudioClips, tns1:Media/AudioClip/State

WSDL Reference: media2.wsdl, event.wsdl

Test Purpose: To verify playing of WAV with LPCM format Audio Clip. To verify stopping of Audio Clip playing by ending of Audio Clip. To verify tns1:Media/AudioClip/State event generation on starting and stopping of playing. To verify getting of Audio Clips playing list.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Pull-Point Notification feature is supported by the DUT. Audio Clip event topic is supported by the DUT. Audio Clip is supported by the DUT. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
4. Set Audio Clip Configuration *audioClipConfig* with the following fields values
 - Enabled := true
 - Name := "MEDIA2-11-2-1 Test Case"
 - AudioOutputToken[0] := *outputToken*
 - Type := "audio/vnd.wave;codec=1"
 - RepeatCycles := 0
 - RepeatInterval skipped
 - AudioOutputLevel := *outputLevelRange*.Min
 - ScheduleToken skipped

5. ONVIF Client adds an Audio Clip by following the procedure mentioned in [Annex A.43](#) with the following input and output parameters
 - in *audioClipConfig* - Audio Clip Configuration to add
 - out *audioClipToken* - token of added Audio Clip
6. ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/AudioClip/State"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
7. ONVIF Client invokes **PlayAudioClip** request with parameters
 - Token := *audioClipToken*
 - AudioOutputToken skipped
 - Play := true
 - RepeatCycles skipped
8. DUT responds with **PlayAudioClipResponse** message.
9. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output Token and Audio Clip Token by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipToken* - Audio Clip token
 - in *outputToken* - Audio Output Token
 - out *message1* - Changed event for requested Audio Output Token and Audio Clip
10. If *message1.Message* does not contain Data.SimpleItem with Name = "Playing" and with Value = "true", FAIL the test, restore the DUT and skip other steps.

11. If *message1.Message* does not contain *Data.SimpleItem* with *Name* = "ClipName" and with *Value* = "MEDIA2-11-2-1 Test Case", FAIL the test, restore the DUT and skip other steps.
12. ONVIF Client invokes **GetPlayingAudioClips** request.
13. DUT responds with **GetPlayingAudioClipsResponse** message with parameters
 - *PlayingAudioClips* list := *playingAudioClipsList*
14. If *playingAudioClipsList* does not contain item with *Token* = *audioClipToken*, FAIL the test, restore the DUT and skip other steps.
15. Set *playingAudioClip* := item with *Token* = *audioClipToken* from *playingAudioClipsList*.
16. If *playingAudioClip.Name* is not equal to "MEDIA2-11-2-1 Test Case", FAIL the test, restore the DUT and skip other steps.
17. If *playingAudioClip.AudioOutputToken* list contains more than one item, FAIL the test, restore the DUT and skip other steps.
18. If *playingAudioClip.AudioOutputToken*[0] is not equal to *outputToken*, FAIL the test, restore the DUT and skip other steps.
19. If *playingAudioClip.AudioOutputLevel* is not equal to *outputLevelRange.Min*, FAIL the test, restore the DUT and skip other steps.
20. If *playingAudioClip.RepeatsLeft* is not equal to 0, FAIL the test, restore the DUT and skip other steps.
21. Set *audioClipPlayingDuration* := duration of uploaded Audio Clip playing.
22. Wait for *audioClipPlayingDuration*.
23. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipToken* - Audio Clip token
 - in *outputToken* - Audio Output Token

- out *message2* - Changed event for requested Audio Output Token and Audio Clip
24. If *message2*.Message does not contain Data.SimpleItem with Name = "Playing" and with Value = "false", FAIL the test, restore the DUT and skip other steps.
25. ONVIF Client invokes **GetPlayingAudioClips** request.
26. DUT responds with **GetPlayingAudioClipsResponse** message with parameters
- PlayingAudioClips list := *playingAudioClipsList*
27. If *playingAudioClipsList* contains item with Token = *audioClipToken*, FAIL the test, restore the DUT and skip other steps.
28. ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
- in *s* - Subscription reference
29. ONVIF Client deletes created Audio Clip to restore the DUT by following the procedure mentioned in [Annex A.40](#) with the following input and output parameters
- in *audioClipToken* - Audio Clip Token

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **PlayAudioClipResponse** message.
- DUT did not send **GetPlayingAudioClipsResponse** message.

5.11.2.2 PLAY AUDIO CLIP - OGG-Opus

Test Case ID: MEDIA2-11-2-2

Specification Coverage: PlayAudioClip, GetPlayingAudioClips, Audio Clip State

Feature Under Test: PlayAudioClip, GetPlayingAudioClips, tns1:Media/AudioClip/State

WSDL Reference: media2.wsdl, event.wsdl

Test Purpose: To verify playing of OGG-Opus format Audio Clip. To verify stopping of Audio Clip playing by ending of Audio Clip. To verify tns1:Media/AudioClip/State event generation on starting and stopping of playing. To verify getting of Audio Clips playing list.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Pull-Point Notification feature is supported by the DUT. Audio Clip event topic is supported by the DUT. Audio Clip is supported by the DUT. OGG-Opus audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
4. Set Audio Clip Configuration *audioClipConfig* with the following fields values
 - Enabled := true
 - Name := "MEDIA2-11-2-2 Test Case"
 - AudioOutputToken[0] := *outputToken*
 - Type := "audio/ogg;codecs=opus"
 - RepeatCycles := 0
 - RepeatInterval skipped
 - AudioOutputLevel := *outputLevelRange*.Min
 - ScheduleToken skipped
5. ONVIF Client adds an Audio Clip by following the procedure mentioned in [Annex A.43](#) with the following input and output parameters
 - in *audioClipConfig* - Audio Clip Configuration to add
 - out *audioClipToken* - token of added Audio Clip

6. ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/AudioClip/State"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
7. ONVIF Client invokes **PlayAudioClip** request with parameters
 - Token := *audioClipToken*
 - AudioOutputToken skipped
 - Play := true
 - RepeatCycles skipped
8. DUT responds with **PlayAudioClipResponse** message.
9. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output Token and Audio Clip Token by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipToken* - Audio Clip token
 - in *outputToken* - Audio Output Token
 - out *message1* - Changed event for requested Audio Output Token and Audio Clip
10. If *message1*.Message does not contain Data.SimpleItem with Name = "Playing" and with Value = "true", FAIL the test, restore the DUT and skip other steps.
11. If *message1*.Message does not contain Data.SimpleItem with Name = "ClipName" and with Value = "MEDIA2-11-2-2 Test Case", FAIL the test, restore the DUT and skip other steps.
12. ONVIF Client invokes **GetPlayingAudioClips** request.
13. DUT responds with **GetPlayingAudioClipsResponse** message with parameters

- *playingAudioClips* list := *playingAudioClipsList*
14. If *playingAudioClipsList* does not contain item with Token = *audioClipToken*, FAIL the test, restore the DUT and skip other steps.
 15. Set *playingAudioClip* := item with Token = *audioClipToken* from *playingAudioClipsList*.
 16. If *playingAudioClip*.Name is not equal to "MEDIA2-11-2-2 Test Case", FAIL the test, restore the DUT and skip other steps.
 17. If *playingAudioClip*.AudioOutputToken list contains more than one item, FAIL the test, restore the DUT and skip other steps.
 18. If *playingAudioClip*.AudioOutputToken[0] is not equal to *outputToken*, FAIL the test, restore the DUT and skip other steps.
 19. If *playingAudioClip*.AudioOutputLevel is not equal to *outputLevelRange*.Min, FAIL the test, restore the DUT and skip other steps.
 20. If *playingAudioClip*.RepeatsLeft is not equal to 0, FAIL the test, restore the DUT and skip other steps.
 21. Set *audioClipPlayingDuration* := duration of uploaded Audio Clip playing.
 22. Wait for *audioClipPlayingDuration*.
 23. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipToken* - Audio Clip token
 - in *outputToken* - Audio Output Token
 - out *message2* - Changed event for requested Audio Output Token and Audio Clip
 24. If *message2*.Message does not contain Data.SimpleItem with Name = "Playing" and with Value = "false", FAIL the test, restore the DUT and skip other steps.
 25. ONVIF Client invokes **GetPlayingAudioClips** request.

26. DUT responds with **GetPlayingAudioClipsResponse** message with parameters

- PlayingAudioClips list := *playingAudioClipsList*

27. If *playingAudioClipsList* contains item with Token = *audioClipToken*, FAIL the test, restore the DUT and skip other steps.

28. ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in s - Subscription reference

29. ONVIF Client deletes created Audio Clip to restore the DUT by following the procedure mentioned in [Annex A.40](#) with the following input and output parameters

- in *audioClipToken* - Audio Clip Token

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **PlayAudioClipResponse** message.
- DUT did not send **GetPlayingAudioClipsResponse** message.

5.11.2.3 PLAY AUDIO CLIP - STOP PLAYING

Test Case ID: MEDIA2-11-2-3

Specification Coverage: PlayAudioClip, GetPlayingAudioClips, Audio Clip State

Feature Under Test: PlayAudioClip, GetPlayingAudioClips, tns1:Media/AudioClip/State

WSDL Reference: media2.wsdl, event.wsdl

Test Purpose: To verify stopping of Audio Clip playing by PlayAudioClip command. To verify tns1:Media/AudioClip/State event generation on starting and stopping of playing. To verify getting of Audio Clips playing list.

Pre-Requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT. Event Service was received from the DUT. Pull-Point Notification feature is supported by the

DUT. Audio Clip event topic is supported by the DUT. Audio Clip is supported by the DUT. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
4. Set Audio Clip Configuration *audioClipConfig* with the following fields values
 - Enabled := true
 - Name := "MEDIA2-11-2-3 Test Case"
 - AudioOutputToken[0] := *outputToken*
 - Type := "audio/vnd.wave;codec=1"
 - RepeatCycles := -1
 - RepeatInterval := 0
 - AudioOutputLevel := *outputLevelRange*.Min
 - ScheduleToken skipped
5. ONVIF Client adds an Audio Clip by following the procedure mentioned in [Annex A.43](#) with the following input and output parameters
 - in *audioClipConfig* - Audio Clip Configuration to add
 - out *audioClipToken* - token of added Audio Clip
6. ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/AudioClip/State"** - Notification Topic

- out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
7. ONVIF Client invokes **PlayAudioClip** request with parameters
- Token := *audioClipToken*
 - AudioOutputToken skipped
 - Play := true
 - RepeatCycles skipped
8. DUT responds with **PlayAudioClipResponse** message.
9. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipConfig.Name* - Audio Clip Name
 - in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
 - out *message1* - Changed event for requested Audio Output Token and Audio Clip
10. If *message1.Message* does not contain *Data.SimpleItem* with Name = "Playing" and with Value = "true", FAIL the test, restore the DUT and skip other steps.
11. ONVIF Client invokes **PlayAudioClip** request with parameters
- Token := *audioClipToken*
 - AudioOutputToken skipped
 - Play := false
 - RepeatCycles skipped
12. DUT responds with **PlayAudioClipResponse** message.

13. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipConfig.Name* - Audio Clip Name
 - in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
 - out *message2* - Changed event for requested Audio Output Token and Audio Clip
14. If *message2.Message* does not contain *Data.SimpleItem* with *Name* = "Playing" and with *Value* = "false", FAIL the test, restore the DUT and skip other steps.
15. ONVIF Client invokes **GetPlayingAudioClips** request.
16. DUT responds with **GetPlayingAudioClipsResponse** message with parameters
- *PlayingAudioClips* list := *playingAudioClipsList*
17. If *playingAudioClipsList* contains item with *Token* = *audioClipToken*, FAIL the test, restore the DUT and skip other steps.
18. ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
- in *s* - Subscription reference
19. ONVIF Client deletes created Audio Clip to restore the DUT by following the procedure mentioned in [Annex A.40](#) with the following input and output parameters
- in *audioClipToken* - Audio Clip Token

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **PlayAudioClipResponse** message.
- DUT did not send **GetPlayingAudioClipsResponse** message.

5.11.2.4 PLAY AUDIO CLIP - NEW PARAMETERS IN PLAY REQUEST

Test Case ID: MEDIA2-11-2-4

Specification Coverage: PlayAudioClip, GetPlayingAudioClips, Audio Clip State

Feature Under Test: PlayAudioClip, GetPlayingAudioClips, tns1:Media/AudioClip/State

WSDL Reference: media2.wsdl, event.wsdl

Test Purpose: To verify playing of Audio Clip with parameters in Play command different from parameters that were set in Audio Clip Configuration. To verify tns1:Media/AudioClip/State event generation on starting and stopping of playing. To verify getting of Audio Clips playing list.

Pre-Requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT. Event Service was received from the DUT. Pull-Point Notification feature is supported by the DUT. Audio Clip event topic is supported by the DUT. Audio Clip is supported by the DUT. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
4. Set Audio Clip Configuration *audioClipConfig* with the following fields values
 - Enabled := true
 - Name := "MEDIA2-11-2-4 Test Case"
 - AudioOutputToken[0] := *outputToken*
 - Type := "audio/vnd.wave;codec=1"
 - RepeatCycles := 0

- RepeatInterval : = 1
 - AudioOutputLevel := *outputLevelRange*.Min
 - ScheduleToken skipped
5. ONVIF Client adds an Audio Clip by following the procedure mentioned in [Annex A.43](#) with the following input and output parameters
- in *audioClipConfig* - Audio Clip Configuration to add
 - out *audioClipToken* - token of added Audio Clip
6. ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
- in **"tns1:Media/AudioClip/State"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
7. ONVIF Client invokes **PlayAudioClip** request with parameters
- Token := *audioClipToken*
 - AudioOutputToken skipped
 - Play := true
 - RepeatCycles := 1
8. DUT responds with **PlayAudioClipResponse** message.
9. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipConfig*.Name - Audio Clip Name

- in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
 - out *message1* - Changed event for requested Audio Output Token and Audio Clip
10. If *message1.Message* does not contain *Data.SimpleItem* with Name = "Playing" and with Value = "true", FAIL the test, restore the DUT and skip other steps.
11. Set *audioClipPlayingDuration* := duration of uploaded Audio Clip playing.
12. Wait for *audioClipPlayingDuration*.
13. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipConfig.Name* - Audio Clip Name
 - in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
 - out *message2* - Changed event for requested Audio Output Token and Audio Clip
14. If *message2.Message* does not contain *Data.SimpleItem* with Name = "Playing" and with Value = "false", FAIL the test, restore the DUT and skip other steps.
15. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
- in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipConfig.Name* - Audio Clip Name
 - in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
 - out *message3* - Changed event for requested Audio Output Token and Audio Clip
16. If *message3.Message* does not contain *Data.SimpleItem* with Name = "Playing" and with Value = "true", FAIL the test, restore the DUT and skip other steps.

17. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters

- in *s* - Subscription reference
- in *currentTime* - current time for the DUT
- in *terminationTime* - subscription termination time
- in *audioClipConfig.Name* - Audio Clip Name
- in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
- out *message4* - Changed event for requested Audio Output Token and Audio Clip

18. If *message4.Message* does not contain *Data.SimpleItem* with Name = "Playing" and with Value = "false", FAIL the test, restore the DUT and skip other steps.

19. ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in *s* - Subscription reference

20. ONVIF Client deletes created Audio Clip to restore the DUT by following the procedure mentioned in [Annex A.40](#) with the following input and output parameters

- in *audioClipToken* - Audio Clip Token

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **PlayAudioClipResponse** message.
- DUT did not send **GetPlayingAudioClipsResponse** message.

5.11.2.5 PLAY SCHEDULED AUDIO CLIP

Test Case ID: MEDIA2-11-2-5

Specification Coverage: GetPlayingAudioClips, Audio Clip State

Feature Under Test: GetPlayingAudioClips, tns1:Media/AudioClip/State

WSDL Reference: media2.wsdl, schedule.wsdl, event.wsdl

Test Purpose: To verify playing of Audio Clip that has Schedule Token parameter in settings. To verify stopping of Audio Clip playing by ending of Audio Clip. To verify tns1:Media/AudioClip/State event generation on starting and stopping of playing. To verify getting of Audio Clips playing list.

Pre-Requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT. Event Service was received from the DUT. Schedule Service is received from the DUT. Pull-Point Notification feature is supported by the DUT. Audio Clip event topic is supported by the DUT. Audio Clip is supported by the DUT. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip. The DUT shall have enough free storage capacity for one additional Schedule.

Test Configuration: ONVIF Client and DUT.

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range
4. ONVIF Client creates Schedule with appropriate iCalendar value by following the procedure mentioned in [Annex A.45](#) with the following input and output parameters
 - out *scheduleToken* - Schedule token
5. Set Audio Clip Configuration *audioClipConfig* with the following fields values
 - Enabled := true
 - Name := "MEDIA2-11-2-5 Test Case"
 - AudioOutputToken[0] := *outputToken*
 - Type := "audio/vnd.wave;codec=1"
 - RepeatCycles := 0
 - RepeatInterval skipped
 - AudioOutputLevel := *outputLevelRange*.Min

- `ScheduleToken` := *scheduleToken*
6. ONVIF Client adds an Audio Clip by following the procedure mentioned in [Annex A.43](#) with the following input and output parameters
 - in *audioClipConfig* - Audio Clip Configuration to add
 - out *audioClipToken* - token of added Audio Clip
 7. ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - in **"tns1:Media/AudioClip/State"** - Notification Topic
 - out *s* - Subscription Reference
 - out *currentTime* - current time for the DUT
 - out *terminationTime* - Subscription Termination time
 8. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipConfig.Name* - Audio Clip Name
 - in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
 - out *message1* - Changed event for requested Audio Output Token and Audio Clip
 9. If *message1.Message* does not contain *Data.SimpleItem* with *Name* = "Playing" and with *Value* = "true", FAIL the test, restore the DUT and skip other steps.
 10. ONVIF Client invokes **GetPlayingAudioClips** request.
 11. DUT responds with **GetPlayingAudioClipsResponse** message with parameters
 - *PlayingAudioClips* list := *playingAudioClipsList*
 12. If *playingAudioClipsList* does not contain item with *Token* = *audioClipToken*, FAIL the test, restore the DUT and skip other steps.

13. Set *audioClipPlayingDuration* := duration of uploaded Audio Clip playing.
14. Wait for *audioClipPlayingDuration*.
15. ONVIF Client retrieves Changed **tns1:Media/AudioClip/State** event for the specified Audio Output and Audio Clip by following the procedure mentioned in [Annex A.44](#) with the following input and output parameters
 - in *s* - Subscription reference
 - in *currentTime* - current time for the DUT
 - in *terminationTime* - subscription termination time
 - in *audioClipConfig.Name* - Audio Clip Name
 - in *audioClipConfig.AudioOutputToken[0]* - Audio Output Token
 - out *message2* - Changed event for requested Audio Output Token and Audio Clip
16. If *message2.Message* does not contain *Data.SimpleItem* with Name = "Playing" and with Value = "false", FAIL the test, restore the DUT and skip other steps.
17. If *message2.Message.UtcTime* - *message1.Message.UtcTime* > *audioClipPlayingDuration*, FAIL the test, restore the DUT and skip other steps.
18. ONVIF Client invokes **GetPlayingAudioClips** request.
19. DUT responds with **GetPlayingAudioClipsResponse** message with parameters
 - *PlayingAudioClips* list := *playingAudioClipsList*
20. If *playingAudioClipsList* contains item with Token = *audioClipToken*, FAIL the test, restore the DUT and skip other steps.
21. ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
 - in *s* - Subscription reference
22. ONVIF Client deletes created Audio Clip to restore the DUT by following the procedure mentioned in [Annex A.40](#) with the following input and output parameters
 - in *audioClipToken* - Audio Clip Token
23. ONVIF Client restore DUT settings changed in the step 5.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

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

5.12 Events

5.12.1 REALTIME PULLPOINT SUBSCRIPTION – AUDIO CLIP STATE EVENT

Test Case ID: MEDIA2-12-1-1

Specification Coverage: Audio Clip State

Feature under test: GetEventProperties, CreatePullPointSubscription, PullMessages, tns1:Media/AudioClip/State

WSDL Reference: media2.wsdl, event.wsdl

Test Purpose: To verify tns1:Media/AudioClip/State topic format. To verify tns1:Media/AudioClip/State event format. To verify Initialized event generation for an Audio Clip item.

Pre-Requisite: Media2 Service is received from the DUT. Event Service was received from the DUT. Pull-Point Notification feature is supported by the DUT. Audio Clip event topic is supported by the DUT. Audio Clip is supported by the DUT. WAV with LPCM audio clip format is supported by the DUT. Either there is a free space for a new Audio Clip adding or it is possible to delete any Audio Clip.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client invokes **GetEventProperties** request.
4. The DUT responds with a **GetEventPropertiesResponse** message with parameters
 - TopicNamespaceLocation list
 - FixedTopicSet

- TopicSet =: *topicSet*
 - TopicExpressionDialect list
 - MessageContentFilterDialect list
 - MessageContentSchemaLocation list
5. If *topicSet* does not contain the following topic, FAIL the test and skip other steps:
 - tns1:Media/AudioClip/State
 6. If *topic*.MessageDescription.IsProperty is not equal to true, FAIL the test and skip other steps.
 7. If *topic* does not contain MessageDescription.Source.SimpleItemDescription item with Name = "AudioOutputToken", FAIL the test and skip other steps.
 8. If *topic*.MessageDescription.Source.SimpleItemDescription with Name = "AudioOutputToken" does not have Type = "tt:ReferenceToken", FAIL the test and skip other steps.
 9. If *topic* does not contain MessageDescription.Data.SimpleItemDescription item with Name = "Token", FAIL the test and skip other steps.
 10. If *topic*.MessageDescription.Data.SimpleItemDescription with Name = "Token" does not have Type = "tt:ReferenceToken", FAIL the test and skip other steps.
 11. If *topic* does not contain MessageDescription.Data.SimpleItemDescription item with Name = "ClipName", FAIL the test and skip other steps.
 12. If *topic*.MessageDescription.Data.SimpleItemDescription with Name = "ClipName" does not have Type = "xs:string", FAIL the test and skip other steps.
 13. If *topic* does not contain MessageDescription.Data.SimpleItemDescription item with Name = "Playing", FAIL the test and skip other steps.
 14. If *topic*.MessageDescription.Data.SimpleItemDescription with Name = "Playing" does not have Type = "xs:boolean", FAIL the test and skip other steps.
 15. ONVIF Client retrieves audio output token and audio output level range by following the procedure mentioned in [Annex A.41](#) with the following input and output parameters
 - out *outputToken* - Output Token
 - out *outputLevelRange* - Output Level Range

16. Set Audio Clip Configuration *audioClipConfig* with the following fields values

- Enabled := true
- Name := "MEDIA2-12-1-1 Test Case"
- AudioOutputToken[0] := *outputToken*
- Type := "audio/vnd.wave;codec=1"
- RepeatCycles := 0
- RepeatInterval skipped
- AudioOutputLevel := *outputLevelRange*.Min
- ScheduleToken skipped

17. ONVIF Client adds an Audio Clip by following the procedure mentioned in [Annex A.43](#) with the following input and output parameters

- in *audioClipConfig* - Audio Clip Configuration to add
- out *audioClipToken* - token of added Audio Clip

18. ONVIF Client creates PullPoint subscription for the specified topic by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters

- in **"tns1:Media/AudioClip/State"** - Notification Topic
- out *s* - Subscription Reference
- out *currentTime* - current time for the DUT
- out *terminationTime* - Subscription Termination time

19. Until *timeout1* timeout expires, repeat the following steps:

19.1. ONVIF Client waits for time $t := \min\{(tt-ct)/2, 1 \text{ second}\}$.

19.2. ONVIF Client invokes **PullMessages** to the subscription endpoint *s* with parameters

- Timeout := PT60S
- MessageLimit := 1

19.3. The DUT responds with **PullMessagesResponse** message with parameters

- CurrentTime =: *ct*

- TerminationTime =: *tt*
- NotificationMessage list =: *notificationMessageList*

19.4. For each notification message (*notification*) in *notificationMessageList*

19.4.1. If *notification*.Topic value is not equal to tns1:Media/AudioClip/State, FAIL the test and skip other steps.

19.4.2. If *notification*.Message.Message has PropertyOperation attribute with value is equal to "Initialized" and Data.SimpleItem.Token = *audioClipToken* ONVIF Client checks notification

19.4.2.1. If *notification*.Message.Message does not have Source.SimpleItem with Name = "AudioOutputToken" and with Value = *outputToken*, FAIL the test and skip other steps.

19.4.2.2. If *notification*.Message.Message does not have Data.SimpleItem with Name = "ClipName" and with Value = "MEDIA2-12-1-1 Test Case", FAIL the test and skip other steps.

19.4.2.3. If *notification*.Message.Message does not have Data.SimpleItem with Name = "Playing" and with Value = "false", FAIL the test and skip other steps.

19.5. If *timeout1* expires for step 19 without NotificationMessage with PropertyOperation = "Initialized" and with Data.SimpleItem.Token = *audioClipToken*, FAIL the test and skip other steps.

20. ONVIF Client deletes PullPoint subscription by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters

- in *s* - Subscription reference

21. ONVIF Client deletes created Audio Clip to restore the DUT by following the procedure mentioned in [Annex A.40](#) with the following input and output parameters

- in *audioClipToken* - Audio Clip Token

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send a **GetEventPropertiesResponse**
- The DUT did not send a **PullMessagesResponse**.

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

5.13 EQ Presets

5.13.1 SET EQ PRESETS

Test Case ID: MEDIA2-13-1-1

Specification Coverage: SetEQPreset.

Feature Under Test: SetEQPreset, GetAudioOutputConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify changing of default EQPreset via SetEQPreset operation.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability. EQ Presets is supported by Device.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client chooses Audio Output Configuration that supports EQ Presets by following the procedure mentioned in [Annex A.49](#) with the following input and output parameters
 - out *aocToken* - Token of Audio Output Configuration that supports EQ Presets
 - out *aocOptionsItem* - AudioOutputConfigurationOptions item with EQ Presets parameters that corresponds to selected Audio Output Configuration
4. Set *eqPreset* := item from *aocOptionsItem.EQPresets* list with *isDefault*=false if any, otherwise first item from EQPresets list.
5. ONVIF Client invokes **SetEQPreset** request with parameters
 - Configuration.Token := *eqPreset.Token*

- Configuration.Name := *eqPreset*.Name
 - Configuration.isDefault := true
 - Configuration.ScheduleToken skipped
 - Configuration.isFrequencyDecibelEditable := *eqPreset*.isFrequencyDecibelEditable
 - Configuration.FrequencyDecibelPair list := *eqPreset*.FrequencyDecibelPair list
6. The DUT responds with **SetEQPresetResponse**.
7. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
- ConfigurationToken := *aocToken*
 - ProfileToken skipped
8. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
- Options =: *options*
9. If *options* does not contain EQPreset with Token = *eqPreset*.Token, FAIL the test, restore DUT settings and skip other steps.
10. Set *eqPresetFromOptions* := EQPreset item from *options* that has Token = *eqPreset*.Token
11. If *eqPresetFromOptions*.isDefault is not equal to "true", FAIL the test, restore DUT settings and skip other steps.
12. If EQPreset list from *options* contains more than one item with isDefault="true", FAIL the test, restore DUT settings and skip other steps.
13. ONVIF Client restore DUT settings changed in step 3.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **SetEQPresetResponse** message.
- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.

5.13.2 SET EQ PRESETS - SCHEDULE

Test Case ID: MEDIA2-13-1-2

Specification Coverage: SetEQPreset.

Feature Under Test: SetEQPreset, GetAudioOutputConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify scheduling of EQPreset via SetEQPreset operation.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability. EQ Presets is supported by Device. EQ Preset Schedule is supported.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client chooses Audio Output Configuration that supports EQ Presets with scheduling by following the procedure mentioned in [Annex A.50](#) with the following input and output parameters
 - out *aocToken* - Token of Audio Output Configuration that supports EQ Presets
 - out *aocOptionsItem* - AudioOutputConfigurationOptions item with EQ Presets parameters that corresponds to selected Audio Output Configuration
4. ONVIF Client creates Schedule with appropriate iCalendar value by following the procedure mentioned in [Annex A.45](#) with the following input and output parameters
 - out *scheduleToken* - Schedule token
5. Set *eqPreset* := *aocOptionsItem*.EQPresets[0].
6. ONVIF Client invokes **SetEQPreset** request with parameters
 - Configuration.Token := *eqPreset*.Token
 - Configuration.Name := *eqPreset*.Name
 - Configuration.isDefault := true

- Configuration.ScheduleToken := *scheduleToken*
 - Configuration.isFrequencyDecibelEditable := *eqPreset.isFrequencyDecibelEditable*
 - Configuration.FrequencyDecibelPair list := *eqPreset.FrequencyDecibelPair* list
7. The DUT responds with **SetEQPresetResponse**.
8. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
- ConfigurationToken := *aocToken*
 - ProfileToken skipped
9. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
- Options =: *options*
10. If *options* does not contain EQPreset with Token = *eqPreset.Token*, FAIL the test, restore DUT settings and skip other steps.
11. Set *eqPresetFromOptions* := EQPreset item from *options* that has Token = *eqPreset.Token*
12. If *eqPresetFromOptions.ScheduleToken* is not equal to *scheduleToken*, FAIL the test, restore DUT settings and skip other steps.
13. ONVIF Client invokes **SetEQPreset** request with parameters
- Configuration.Token := *eqPreset.Token*
 - Configuration.Name := *eqPreset.Name*
 - Configuration.isDefault := true
 - Configuration.ScheduleToken skipped
 - Configuration.isFrequencyDecibelEditable := *eqPreset.isFrequencyDecibelEditable*
 - Configuration.FrequencyDecibelPair list := *eqPreset.FrequencyDecibelPair* list
14. The DUT responds with **SetEQPresetResponse**.
15. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
- ConfigurationToken := *aocToken*
 - ProfileToken skipped

16. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters

- Options =: *options*

17. If *options* does not contain EQPreset with Token = *eqPreset.Token*, FAIL the test, restore DUT settings and skip other steps.

18. Set *eqPresetFromOptions* := EQPreset item from *options* that has Token = *eqPreset.Token*

19. If *eqPresetFromOptions* contains ScheduleToken element, FAIL the test, restore DUT settings and skip other steps.

20. ONVIF Client restore DUT settings changed in step 3 and in the step 4.

Test Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **SetEQPresetResponse** message.
- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.

5.13.3 SET EQ PRESETS - FREQUENCY DECIBEL

Test Case ID: MEDIA2-13-1-3

Specification Coverage: SetEQPreset.

Feature Under Test: SetEQPreset, GetAudioOutputConfigurationOptions

WSDL Reference: media2.wsdl

Test Purpose: To verify changing of FrequencyDecibelPair via SetEQPreset operation.

Pre-Requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability. EQ Presets is supported by Device. Frequency Decibel Management is supported by Device.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.

2. Start the DUT.
3. ONVIF Client chooses Audio Output Configuration that has EQ Preset with Frequency Decibel Management supporting by following the procedure mentioned in [Annex A.51](#) with the following input and output parameters
 - out *aocToken* - Token of Audio Output Configuration that supports EQ Presets and contains at least one EQ Prset that supports Frequency Decibel update.
 - out *aocOptionsItem* - AudioOutputConfigurationOptions item with EQ Presets parameters that corresponds to selected Audio Output Configuration.
4. Set *eqPreset* := the first item from *aocOptionsItem.EQPresets* list with *isFrequencyDecibelEditable* = true.
5. ONVIF Client invokes **SetEQPreset** request with parameters
 - Configuration.Token := *eqPreset.Token*
 - Configuration.Name := *eqPreset.Name*
 - Configuration.isDefault := true
 - Configuration.ScheduleToken skipped
 - Configuration.isFrequencyDecibelEditable := *eqPreset.isFrequencyDecibelEditable*
 - Configuration.FrequencyDecibelPair[0].CenterFrequency = 125
 - Configuration.FrequencyDecibelPair[0].Decibel = -2.0
 - Configuration.FrequencyDecibelPair[1].CenterFrequency = 500
 - Configuration.FrequencyDecibelPair[1].Decibel = 1.5
 - Configuration.FrequencyDecibelPair[2].CenterFrequency = 1000
 - Configuration.FrequencyDecibelPair[2].Decibel = 2.0
 - Configuration.FrequencyDecibelPair[3].CenterFrequency = 3000
 - Configuration.FrequencyDecibelPair[3].Decibel = 3.5
 - Configuration.FrequencyDecibelPair[3].CenterFrequency = 6000
 - Configuration.FrequencyDecibelPair[3].Decibel = -1.5
6. The DUT responds with **SetEQPresetResponse**.

7. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *aocToken*
 - ProfileToken skipped
8. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
 - Options =: *options*
9. If *options* does not contain EQPreset with Token = *eqPreset.Token*, FAIL the test, restore DUT settings and skip other steps.
10. Set *eqPresetFromOptions* := EQPreset item from *options* that has Token = *eqPreset.Token*
11. If *eqPresetFromOptions.isDefault* is not equal to "true", FAIL the test, restore DUT settings and skip other steps.
12. If *eqPresetFromOptions.isFrequencyDecibelEditable* is not equal to "true", FAIL the test, restore DUT settings and skip other steps.
13. If *eqPresetFromOptions* does not contain at least one FrequencyDecibelPair item, FAIL the test, restore DUT settings and skip other steps.
14. ONVIF Client restore DUT settings changed in step 3.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **SetEQPresetResponse** message.
- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.

5.14 WebRTC Configuration

5.14.1 WebRTC Configuration

5.14.1.1 GET AND SET WEBRTC CONFIGURATIONS

Test Case ID: MEDIA2-14-1-1

Specification Coverage: GetWebRTCCConfigurations (ONVIF Media2 Service Specification), SetWebRTCCConfigurations (ONVIF Media2 Service Specification)

Feature under test: GetWebRTCCConfigurations, SetWebRTCCConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify retrieving of WebRTC Configurations using GetWebRTCCConfigurations request. To verify update WebRTC Configurations using SetWebRTCCConfigurations request, including addition of new configuration, update and deletion of existing configuration.

Pre-Requirement: Security Configuration Service is received from the DUT Media2 Service is received from the DUT. WebRTC streaming is supported by DUT as indicated by WebRTC capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Security Configuration Service Capabilities by following the procedure mentioned in [Annex A.52](#) with the following input and output parameters:
 - out *cap* - Security Configuration Service Capabilities
4. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters:
 - out *media2cap* - Media2 Service Capabilities
5. ONVIF Client invokes **GetWebRTCCConfigurations** request.
6. The DUT responds with a **GetWebRTCCConfigurationsResponse** message with parameters:
 - Configurations list =: *configurations1*
7. Set *numberOfWebRTCConfigs* := number of items at *configurations1* list.
8. If *numberOfWebRTCConfigs* > *media2cap*.Media2ServiceCapabilities.WebRTC, FAIL the test and skip other steps.
9. Configure certification path validation policy:
 - 9.1. Set:

- *keyAlgorithm* := "ECC" if *cap*.KeystoreCapabilities.ECCKeyPairGeneration = true; "RSA" otherwise.
- 9.2. ONVIF Client creates certification path validation policy by following the procedure mentioned in [Annex A.53](#) with the following input and output parameters:
- in *cap* - DUT capabilities
 - in *keyAlgorithm* - DUT capabilities
 - in "CN=ONVIF TT1,C=US" - CA certificate subject
 - in "Test CertPathValidationPolicy1 Alias" - certification path validation policy alias
 - out *certPathValidationPolicyID* - certification path validation policy identifier
 - out *certID* - certificate identifier
 - out *keyID* - RSA key pair identifier
 - out *CAcert* - CA certificate
 - out *privateKey* - CA certificate private key
10. ONVIF Client configures an authorization server on Device by following the procedure mentioned in [Annex A.59](#) with the following input and output parameters:
- in *cap* - Security Configuration Service Capabilities
 - out *authServerToken1* - authorization server token
 - out *scope1* - authorization scope
 - out *authServerUri1* - authorization server uri
11. ONVIF Client gets media profile token applicable for streaming by following the procedure mentioned in [Annex A.68](#) with the following input and output parameters:
- out *profileToken1* - media profile token
12. Set *numToCreate* := 2 if *media2cap*.Media2ServiceCapabilities.WebRTC >= 2, otherwise 1.
13. ONVIF Client invokes **SetWebRTCConfigurations** request, providing a list containing *numToCreate* configurations. For each configuration from *i* = 0 to *numToCreate* - 1:
- WebRTCConfiguration[*i*].SignalingServer := *anyValidUniqueUri*
 - WebRTCConfiguration[*i*].CertPathValidationPolicyID := *certPathValidationPolicyID*

- WebRTCCConfiguration[i].AuthorizationServer := *authServerToken1*
- WebRTCCConfiguration[i].DefaultProfile := *profileToken1*
- WebRTCCConfiguration[i].Enabled := true
- WebRTCCConfiguration[i].Connected is skipped
- WebRTCCConfiguration[i].Error is skipped

14. The DUT responds with a **SetWebRTCCConfigurationsResponse** message.

15. ONVIF Client invokes **GetWebRTCCConfigurations** request.

16. The DUT responds with a **GetWebRTCCConfigurationsResponse** message with parameters:

- Configurations list =: *configurations2*

17. If *configurations2* is empty, FAIL the test, restore the DUT state, and skip other steps.

18. If *configurations2* contains a number of items != numToCreate, FAIL the test, restore the DUT state, and skip other steps.

19. If *configurations2* does not contain the same parameters as were used at 13, FAIL the test, restore the DUT state, and skip other steps.

20. If at least one configuration from *configurations2* has other values then Connected == false, FAIL the test, restore the DUT state, and skip other steps.

21. ONVIF Client updates existing configuration by invoking **SetWebRTCCConfigurations** request request with parameters:

- WebRTCCConfiguration.SignalingServer := *anyValidUri*
- WebRTCCConfiguration.CertPathValidationPolicyID := *certPathValidationPolicyID*
- WebRTCCConfiguration.AuthorizationServer := *authServerToken1*
- WebRTCCConfiguration.DefaultProfile := *profileToken1*
- WebRTCCConfiguration.Enabled := true
- WebRTCCConfiguration.Connected is skipped
- WebRTCCConfiguration.Error is skipped

22. The DUT responds with a **SetWebRTCCConfigurationsResponse** message.

23. ONVIF Client invokes **GetWebRTCCConfigurations** request.
24. The DUT responds with a **GetWebRTCCConfigurationsResponse** message with parameters:
 - Configurations list =: *configurations3*
25. If *configurations3* is empty, FAIL the test, restore the DUT state, and skip other steps.
26. If *configurations3* contains more than one item, FAIL the test, restore the DUT state, and skip other steps.
27. If *configurations3* does not contain the same parameters as were used at 21, FAIL the test, restore the DUT state, and skip other steps.
28. ONVIF Client invokes empty **SetWebRTCCConfigurations** request.
29. The DUT responds with **SetWebRTCCConfigurationsResponse** message.
30. ONVIF Client invokes **GetWebRTCCConfigurations** request.
31. The DUT responds with a **GetWebRTCCConfigurationsResponse** message with parameters:
 - Configurations list =: *configurations4*
32. If *configurations4* is NOT empty, FAIL the test, restore the DUT state, and skip other steps.
33. Restore the DUT state.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send a **GetWebRTCCConfigurationsResponse** message(s).
- The DUT did not send a **SetWebRTCCConfigurationsResponse** message(s).

Note: The following fields are compared at steps 19, 27:

- SignalingServer
- CertPathValidationPolicyID

- AuthorizationServer
- DefaultProfile
- Enabled

5.14.1.2 SET WEBRTC CONFIGURATIONS FAULTS

Test Case ID: MEDIA2-14-1-2

Specification Coverage: SetWebRTCConfigurations (ONVIF Media2 Service Specification)

Feature under test: SetWebRTCConfigurations

WSDL Reference: media2.wsdl

Test Purpose: To verify the DUT returns correct faults for invalid SetWebRTCConfigurations requests.

Pre-Requisite: Security Configuration Service is received from the DUT. Media2 Service is received from the DUT. WebRTC streaming is supported by DUT as indicated by WebRTC capability.

Test Configuration: ONVIF Client and DUT

Test Procedure:

1. Start an ONVIF Client.
2. Start the DUT.
3. ONVIF Client retrieves Security Configuration Service Capabilities by following the procedure mentioned in [Annex A.52](#) with the following input and output parameters:
 - out *cap* - Security Configuration Service Capabilities
4. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters:
 - out *media2cap* - Media2 Service Capabilities
5. Configure certification path validation policy:
 - 5.1. Set:
 - *keyAlgorithm* := "ECC" if *cap*.KeystoreCapabilities.ECCKeypairGeneration = true; "RSA" otherwise.

- 5.2. ONVIF Client creates certification path validation policy by following the procedure mentioned in [Annex A.53](#) with the following input and output parameters:
- in *cap* - DUT capabilities
 - in *keyAlgorithm* - DUT capabilities
 - in "CN=ONVIF TT1,C=US" - CA certificate subject
 - in "Test CertPathValidationPolicy1 Alias" - certification path validation policy alias
 - out *certPathValidationPolicyID* - certification path validation policy identifier
 - out *certID* - certificate identifier
 - out *keyID* - RSA key pair identifier
 - out *CAcert* - CA certificate
 - out *privateKey* - CA certificate private key
6. ONVIF Client configures an authorization server on Device by following the procedure mentioned in [Annex A.59](#) with the following input and output parameters:
- in *cap* - Security Configuration Service Capabilities
 - out *authServerToken1* - authorization server token
 - out *scope1* - authorization scope
 - out *authServerUri1* - authorization server uri
7. ONVIF Client gets media profile token applicable for streaming by following the procedure mentioned in [Annex A.68](#) with the following input and output parameters:
- out *profileToken1* - media profile token
8. ONVIF Client invokes **SetWebRTCCConfigurations** request with following parameters:
- WebRTCCConfiguration[0].SignalingServer := *signalingServerUri1*
 - WebRTCCConfiguration[0].CertPathValidationPolicyID := *certPathValidationPolicyID*
 - WebRTCCConfiguration[0].AuthorizationServer := invalid token
 - WebRTCCConfiguration[0].DefaultProfile := *profileToken1*
 - WebRTCCConfiguration[0].Enabled := true

- WebRTCCConfiguration[0].Connected is skipped
 - WebRTCCConfiguration[0].Error is skipped
9. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoAuthorizationServer** SOAP 1.2 fault.
10. ONVIF Client invokes **SetWebRTCCConfigurations** request with following parameters:
- WebRTCCConfiguration[0].SignalingServer := *signalingServerUri1*
 - WebRTCCConfiguration[0].CertPathValidationPolicyID := *certPathValidationPolicyID*
 - WebRTCCConfiguration[0].AuthorizationServer := *authServerToken1*
 - WebRTCCConfiguration[0].DefaultProfile := invalid token
 - WebRTCCConfiguration[0].Enabled := true
 - WebRTCCConfiguration[0].Connected is skipped
 - WebRTCCConfiguration[0].Error is skipped
11. The DUT returns **env:Sender/ter:InvalidArgVal/ter:NoProfile** SOAP 1.2 fault.
12. Restore the DUT state.

Test Result:**PASS –**

- DUT passes all assertions.

FAIL –

- The DUT did not send a **env:Sender/ter:InvalidArgVal/ter:NoAuthorizationServer** SOAP 1.2 fault message at step 9.
- The DUT did not send a **env:Sender/ter:InvalidArgVal/ter:NoProfile** SOAP 1.2 fault message at step 11.

Annex A Helper Procedures and Additional Notes

A.1 Delete Media Profile if Max Reached

Name: HelperDeleteMediaProfileWhenMaxProfiles

Procedure Purpose: Helper procedure to delete Media Profile if maximum number of Media Profiles is reached.

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: None.

Procedure:

1. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters
 - out *cap* - Media2 Service Capabilities
2. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
3. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
4. If number of items in *profileList* = *cap.ProfileCapabilities.MaximumNumberOfProfiles*:
 - 4.1. If *profileList* does not contain items with @fixed = false, FAIL the test and skip other steps.
 - 4.2. ONVIF Client invokes **DeleteProfile** request with parameters
 - Token := @token of item with @fixed = false from *profileList*
 - 4.3. The DUT responds with **DeleteProfileResponse** message.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **DeleteProfileResponse** message.

A.2 Get Service Capabilities

Name: HelperGetServiceCapabilities

Procedure Purpose: Helper procedure to retrieve Media2 Service Capabilities.

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: Media2 Service Capabilities (*cap*).

Procedure:

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

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.3 Get Video Source Configurations List

Name: HelperGetVideoSourceConfigurationsList

Procedure Purpose: Helper procedure to retrieve Video Source Configurations List.

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: Video Source Configurations list (*videoSourceConfList*).

Procedure:

1. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
 - Configurations list =: *videoSourceConfList*
3. If *videoSourceConfList* is empty, FAIL the test.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.4 Create Pull Point Subscription

Name: HelperCreatePullPointSubscription

Procedure Purpose: Helper procedure to create PullPoint Subscription with specified Topic.

Pre-requisite: Event Service is received from the DUT.

Input: Notification Topic (*topic*).

Returns: Subscription reference (*s*), current time for the DUT (*ct*), subscription termination time (*tt*).

Procedure:

1. ONVIF Client invokes **CreatePullPointSubscription** request with parameters
 - Filter.TopicExpression := *topic*
 - Filter.TopicExpression.@Dialect := "http://www.onvif.org/ver10/tev/topicExpression/ConcreteSet"
2. The DUT responds with **CreatePullPointSubscriptionResponse** message with parameters

- SubscriptionReference =: *s*
- CurrentTime =: *ct*
- TerminationTime =: *tt*

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.5 Retrieve Profile Changed Event by PullPoint

Name: HelperPullProfileChanged

Procedure Purpose: Helper procedure to retrieve and check tns1:Media/ProfileChanged event with PullMessages.

Pre-requisite: Event Service is received from the DUT.

Input: Subscription reference (*s*), current time for the DUT (*ct*), Subscription termination time (*tt*) and Media Profile token (*profileToken*).

Returns: None

Procedure:

1. Until *timeout1* timeout expires, repeat the following steps:
 - 1.1. ONVIF Client waits for time $t := \min\{(tt-ct)/2, 1 \text{ second}\}$.
 - 1.2. ONVIF Client invokes **PullMessages** to the subscription endpoint *s* with parameters
 - Timeout := PT60S
 - MessageLimit := 1
 - 1.3. The DUT responds with **PullMessagesResponse** message with parameters
 - CurrentTime =: *ct*
 - TerminationTime =: *tt*

- NotificationMessage list =: *notificationMessageList*
- 1.4. If *notificationMessageList* is not empty and the Token source simple item in *notificationMessageList* is equal to *profileToken*, skip other steps and finish the procedure.
 - 1.5. If *timeout1* timeout expires for step 1 without Notification with Token source simple item equal to *profileToken*, FAIL the test and skip other steps.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

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

A.6 Delete Subscription

Name: HelperDeleteSubscription

Procedure Purpose: Helper procedure to delete subscription.

Pre-requisite: Event Service is received from the DUT.

Input: Subscription reference (s)

Returns: None

Procedure:

1. ONVIF Client sends an **Unsubscribe** to the subscription endpoint s.
2. The DUT responds with **UnsubscribeResponse** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.7 Name Parameters

There are the following limitations on maximum length of the Name parameters that shall be used during tests by ONVIF Device Test Tool to prevent faults from DUT:

- Name shall be less than or equal to 64 characters (only readable characters accepted).
- UTF-8 character set shall be used for Name.

Note: these limitations will not be used, if ONVIF Device Test Tool reuses values that were received from the DUT.

A.8 Create Empty Profile

Name: HelperCreateEmptyProfile

Procedure Purpose: Helper procedure to find, create or configure empty Media Profile (without Configurations).

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: Empty Media Profile token (*profileToken*). Flag that indicates that new Media Profile was created (*newProfileFlag*).

Procedure:

1. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters
 - out *cap* - Media2 Service Capabilities
2. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
3. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
4. If number of items in *profileList* >= *cap.ProfileCapabilities.MaximumNumberOfProfiles*:

- 4.1. If *profileList* does not contain items with @fixed = false, go to step 9.
- 4.2. ONVIF Client invokes **DeleteProfile** request with parameters
 - Token := @token of item with @fixed = false from *profileList*
- 4.3. The DUT responds with **DeleteProfileResponse** message.
5. ONVIF Client invokes **CreateProfile** request with parameters
 - Name := "testMedia2"
 - Configuration list - skipped
6. DUT responds with **CreateProfileResponse** message with parameters
 - Token =: *profileToken*
7. Set *newProfileFlag* := true
8. Skip other steps of procedure.
9. ONVIF Client invokes **RemoveConfiguration** request with parameters
 - ProfileToken := *profileList*[0].@token
 - Configuration[0].Type := All
 - Configuration[0].Token skipped
10. The DUT responds with **RemoveConfigurationResponse** message.
11. Set *profileToken* := *profileList*[0].@token
12. Set *newProfileFlag* := false

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **DeleteProfileResponse** message.
- DUT did not send **CreateProfileResponse** message.

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

Note: See [Annex A.7](#) for Name and Token Parameters Length limitations.

A.9 Get Audio Source Configurations List

Name: HelperGetAudioSourceConfigurationsList

Procedure Purpose: Helper procedure to retrieve Audio Source Configurations List.

Pre-requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Input: None.

Returns: Audio Source Configurations List (*audioSourceConfList*).

Procedure:

1. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with **GetAudioSourceConfigurationsResponse** with parameters
 - Configurations list =: *audioSourceConfList*
3. If *audioSourceConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.10 Get Audio Output Configurations List

Name: HelperGetAudioOutputConfigurationsList

Procedure Purpose: Helper procedure to retrieve Audio Output Configurations List.

Pre-requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Input: None.

Returns: Audio Output Configurations List (*audioOutputConfList*).

Procedure:

1. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters
 - Configurations list =: *audioOutputConfList*
3. If *audioOutputConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.11 Delete Media Profile

Name: HelperDeleteMediaProfile

Procedure Purpose: Helper procedure to delete Media Profile.

Pre-requisite: Media2 Service is received from the DUT.

Input: Media profile token (*profileToken*).

Returns: None.

Procedure:

1. ONVIF Client invokes **DeleteProfile** request with parameters
 - Token = *profileToken*

2. The DUT responds with **DeleteProfileResponse** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.12 Configure Media profile with Video Source Configuration

Name: HelperConfigureMediaProfileWithVideoSource

Procedure Purpose: Helper procedure to configure Media Profile to contain Video Source Configuration.

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: Media Profile (*profile*) containing Video Source Configuration.

Procedure:

1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := VideoSource
2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
3. If *profileList* is empty, FAIL the test and skip other steps.
4. If *profileList* contains Media Profile with Configurations.VideoSource:
 - 4.1. Set *profile* := the first profile with Configurations.VideoSource from the *profileList*.
 - 4.2. Skip other steps.
5. Set *profile* := *profileList*[0].
6. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters

- ConfigurationToken skipped
 - ProfileToken = *profile.@token*
7. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
- Configurations list =: *videoSourceConfigurationList*
8. If *videoSourceConfigurationList* is empty, FAIL the test and skip other steps.
9. ONVIF Client invokes **AddConfiguration** request with parameters
- ProfileToken := *profile.@token*
 - Name skipped
 - Configuration[0].Type := VideoSource
 - Configuration[0].Token := *videoSourceConfigurationList[0]*
10. The DUT responds with **AddConfigurationResponse** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetVideoSourceConfigurationsResponse** message.
- DUT did not send **AddConfigurationResponse** message.

A.13 View Modes List

Source view modes supported by device defined in tt:ViewModes

- tt:Fisheye
- tt:360Panorama
- tt:180Panorama
- tt:Quad

- tt:Original
- tt:LeftHalf
- tt:RightHalf
- tt:Dewarp

A.14 Retrieve Configuration Changed Event by PullPoint

Name: HelperPullConfigurationChanged

Procedure Purpose: Helper procedure to retrieve and check tns1:Media/ConfigurationChanged event with PullMessages.

Pre-requisite: Event Service is received from the DUT.

Input: Subscription reference (*s*), current time for the DUT (*ct*), Subscription termination time (*tt*), configuration token (*confToken*) and configuration type (*confType*).

Returns: None

Procedure:

1. Until *timeout1* timeout expires, repeat the following steps:
 - 1.1. ONVIF Client waits for time $t := \min\{(tt-ct)/2, 1 \text{ second}\}$.
 - 1.2. ONVIF Client invokes **PullMessages** to the subscription endpoint *s* with parameters
 - Timeout := PT60S
 - MessageLimit := 1
 - 1.3. The DUT responds with **PullMessagesResponse** message with parameters
 - CurrentTime =: *ct*
 - TerminationTime =: *tt*
 - NotificationMessage list =: *notificationMessageList*
 - 1.4. If *notificationMessageList* is not empty and source simple item Token = *confToken* and Type = *confType*, skip other steps and finish the procedure.
 - 1.5. If *timeout1* timeout expires for step 1 without Notification with source simple item Token = *confToken* and Type = *confType*, FAIL the test and skip other steps.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

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

A.15 Waiting for Reboot

Name: HelperWaitingReboot

Procedure Purpose: Helper procedure to wait until the Device becomes available after reboot.

Pre-requisite: None.

Input: None.

Returns: None.

Procedure:

1. If DUT supports Discovery:
 - 1.1. Until *timeout1* timeout expires, repeat the following steps:
 - 1.1.1. The DUT will send Multicast **Hello** message after it is successfully rebooted with parameters:
 - EndpointReference.Address equal to unique endpoint reference of the DUT
 - Types list
 - Scopes list
 - XAddrs list := *xAddrsList*
 - MetadataVersion
 - 1.1.2. If *xAddrsList* contains URI address with IPv4 address other than LinkLocal from ONVIF Client subnet, go to step 3.
 - 1.2. If *timeout1* timeout expires for the step 1.1 without **Hello** with URI address with not a LinkLocal IPv4 address from ONVIF Client subnet, FAIL the test and skip other steps.

- 1.3. ONVIF client waits for 5 seconds after **Hello** was received.
2. If DUT does not support Discovery:
 - 2.1. ONVIF Client waits during *rebootTimeout*.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

Note: *timeout1* will be taken from Reboot Timeout field of ONVIF Device Test Tool.

A.16 VideoEncoderConfigurationOptions and VideoEncoderConfiguration mapping

Table A.1. VideoEncoderConfigurationOptions and VideoEncoderConfiguration mapping

VideoEncoderConfigurationOptions field	VideoEncoderConfiguration field
Encoding	Encoding
QualityRange.Min-QualityRange.Max	Quality
Resolutions Available contains list of Height and Width pairs	Height and Width
GovLengthRange.Min-GovLengthRange.Max	GovLength
FrameRatesSupported contains list of available values	RateControl.FrameRateLimit
BitrateRange.Min-BitrateRange.Max	RateControl.BitrateLimit
ProfilesSupported the list of string values listed in tt:VideoEncodingProfiles	Profile

A.17 Get Video Encoder Configurations List

Name: HelperGetVideoEncoderConfigurationsList

Procedure Purpose: Helper procedure to retrieve Video Encoder Configurations List.

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: Video Encoder Configurations List (*videoEncoderConfList*).

Procedure:

1. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with all video encoder configurations in **GetVideoEncoderConfigurationsResponse** with parameters
 - Configurations list =: *videoEncoderConfList*
3. If *videoEncoderConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.18 Get Video Sources List

Name: HelperGetVideoSourcesList

Procedure Purpose: Helper procedure to retrieve Video Sources List.

Pre-requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT.

Input: None.

Returns: Video Sources List (*videoSourcesList*).

Procedure:

1. ONVIF Client invokes **GetVideoSources** request.
2. The DUT responds with **GetVideoSourcesResponse** with parameters

- Token list =: *videoSourcesList*
3. If *videoSourcesList* is empty, FAIL the test.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.19 Configure Media profile with Audio Source Configuration

Name: HelperConfigureMediaProfileWithAudioSource

Procedure Purpose: Helper procedure to configure Media Profile to contain Audio Source Configuration.

Pre-requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Input: None.

Returns: Media Profile (*profile*) containing Audio Source Configuration.

Procedure:

1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioSource
2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
3. If *profileList* is empty, FAIL the test and skip other steps.
4. If *profileList* contains Media Profile with Configurations.AudioSource:
 - 4.1. Set *profile* := the first profile with Configurations.AudioSource from the *profileList*.
 - 4.2. Skip other steps.

5. Set *profile* := *profileList*[0].
6. ONVIF Client invokes **GetAudioSourceConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken = *profile.@token*
7. The DUT responds with **GetAudioSourceConfigurationsResponse** with parameters
 - Configurations list := *audioSourceConfigurationList*
8. If *audioSourceConfigurationList* is empty, FAIL the test and skip other steps.
9. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - Name skipped
 - Configuration[0].Type := AudioSource
 - Configuration[0].Token := *audioSourceConfigurationList*[0]
10. The DUT responds with **AddConfigurationResponse** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetAudioSourceConfigurationsResponse** message.
- DUT did not send **AddConfigurationResponse** message.

A.20 Get Audio Encoder Configurations List

Name: HelperGetAudioEncoderConfigurationsList

Procedure Purpose: Helper procedure to retrieve Audio Encoder Configurations List.

Pre-requisite: Media2 Service is received from the DUT. Audio configuration is supported by the DUT as indicated by receiving the GetAudioEncoderConfigurationOptionsResponse.

Input: None.

Returns: Audio Encoder Configurations List (*audioEncoderConfList*).

Procedure:

1. ONVIF Client invokes **GetAudioEncoderConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with **GetAudioEncoderConfigurationsResponse** with parameters
 - Configurations list =: *audioEncoderConfList*
3. If *audioEncoderConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.21 Configure Media profile with Audio Output Configuration

Name: HelperConfigureMediaProfileWithAudioOutput

Procedure Purpose: Helper procedure to configure Media Profile to contain Audio Output Configuration.

Pre-requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability.

Input: None.

Returns: Media Profile (*profile*) containing Audio Output Configuration.

Procedure:

1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioOutput

2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
3. If *profileList* is empty, FAIL the test and skip other steps.
4. If *profileList* contains Media Profile with Configurations.AudioOutput:
 - 4.1. Set *profile* := the first profile with Configurations.AudioOutput from the *profileList*.
 - 4.2. Skip other steps.
5. Set *profile* := *profileList*[0].
6. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken = *profile*.@token
7. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters
 - Configurations list =: *audioOutputConfigurationList*
8. If *audioOutputConfigurationList* is empty, FAIL the test and skip other steps.
9. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profile*.@token
 - Name skipped
 - Configuration[0].Type := AudioOutput
 - Configuration[0].Token := *audioOutputConfigurationList*[0]
10. The DUT responds with **AddConfigurationResponse** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetAudioOutputConfigurationsResponse** message.

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

A.22 Get Audio Decoder Configurations List

Name: HelperGetAudioDecoderConfigurationsList

Procedure Purpose: Helper procedure to retrieve Audio Decoder Configurations List.

Pre-requisite: Media2 Service is received from the DUT. Audio Decoder is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioDecoder capability.

Input: None.

Returns: Audio Decoder Configurations List (*audioDecoderConfList*).

Procedure:

1. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters
 - Configurations list =: *audioDecoderConfList*
3. If *audioDecoderConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.23 Configure Media profile with Audio Output Configuration and Audio Decoder Configuration

Name: HelperConfigureMediaProfileWithAudioBackCh

Procedure Purpose: Helper procedure to configure Media Profile to contain Audio Output Configuration and Audio Decoder Configuration.

Pre-requisite: Media2 Service is received from the DUT. Audio Outputs is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioOutput capability. Audio Decoder is supported by Device as indicated by the ProfileCapabilities.ConfigurationsSupported = AudioDecoder capability.

Input: None.

Returns: Media Profile (*profile*) containing Audio Output Configuration and Audio Decoder Configuration.

Procedure:

1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := AudioOutput
 - Type[1] := AudioDecoder
2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
3. If *profileList* is empty, FAIL the test and skip other steps.
4. If *profileList* contains Media Profile with Configurations.AudioOutput and Configurations.AudioDecoder:
 - 4.1. Set *profile* := the first Media Profile with Configurations.AudioOutput and Configurations.AudioDecoder from the *profileList*.
 - 4.2. Skip other steps of procedure.
5. If *profileList* contains Media Profile with Configurations.AudioOutput:
 - 5.1. Set *profile* := the first Media Profile with Configurations.AudioOutput from the *profileList*.
 - 5.2. Go to step 13
6. Set *profile* := *profileList*[0].
7. ONVIF Client invokes **GetAudioOutputConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile*.@token

8. The DUT responds with **GetAudioOutputConfigurationsResponse** with parameters
 - Configurations list := *audioOutputConfigurationList*
9. If *audioOutputConfigurationList* is empty, FAIL the test and skip other steps.
10. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - Name skipped
 - Configuration[0].Type := AudioOutput
 - Configuration[0].Token := *audioOutputConfigurationList*[0]
11. The DUT responds with **AddConfigurationResponse** message.
12. ONVIF Client invokes **GetAudioDecoderConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken = *profile.@token*
13. The DUT responds with **GetAudioDecoderConfigurationsResponse** with parameters
 - Configurations list := *audioDecoderConfigurationList*
14. If *audioDecoderConfigurationList* is empty, FAIL the test and skip other steps.
15. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profileList.Profiles*[0].@token
 - Name skipped
 - Configuration[0].Type := AudioDecoder
 - Configuration[0].Token := *audioDecoderConfigurationList*[0]
16. The DUT responds with **AddConfigurationResponse** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetAudioOutputConfigurationsResponse** message.
- DUT did not send **AddConfigurationResponse** message.
- DUT did not send **GetAudioDecoderConfigurationsResponse** message.

A.24 Configure Media profile with Video Source Configuration and Video Encoder Configuration

Name: HelperConfigureMediaProfileWithVideo

Procedure Purpose: Helper procedure to configure Media Profile to contain Video Source Configuration and Video Encoder Configuration.

Pre-requisite: Media2 Service is received from the DUT.

Input: None.

Returns: Media Profile (*profile*) containing Video Source Configuration and Video Encoder Configuration.

Procedure:

1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := VideoSource
 - Type[1] := VideoEncoder
2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
3. If *profileList* is empty, FAIL the test and skip other steps.
4. If *profileList* contains Media Profile with Configurations.VideoSource and Configurations.VideoEncoder:
 - 4.1. Set *profile* := the first Media Profile with Configurations.VideoSource and Configurations.VideoEncoder from the *profileList*.
 - 4.2. Skip other steps of procedure.

5. If *profileList* contains Media Profile with Configurations.VideoSource:
 - 5.1. Set *profile* := the first Media Profile with Configurations.VideoSource from the *profileList*.
 - 5.2. Go to step 13
6. Set *profile* := *profileList*[0].
7. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken := *profile*.@token
8. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
 - Configurations list =: *videoSourceConfigurationList*
9. If *videoSourceConfigurationList* is empty, FAIL the test and skip other steps.
10. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profile*.@token
 - Name skipped
 - Configuration[0].Type := VideoSource
 - Configuration[0].Token := *videoSourceConfigurationList*[0]
11. The DUT responds with **AddConfigurationResponse** message.
12. ONVIF Client invokes **GetVideoEncoderConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken = *profile*.@token
13. The DUT responds with compatible video encoder configurations in **GetVideoEncoderConfigurationsResponse** with parameters
 - Configurations list =: *videoEncoderConfigurationList*
14. If *videoEncoderConfigurationList* is empty, FAIL the test and skip other steps.
15. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profileList*.Profiles[0].@token

- Name skipped
- Configuration[0].Type := VideoEncoder
- Configuration[0].Token := *videoEncoderConfigurationList*[0]

16. The DUT responds with **AddConfigurationResponse** message.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetVideoSourceConfigurationsResponse** message.
- DUT did not send **AddConfigurationResponse** message.
- DUT did not send **GetVideoEncoderConfigurationsResponse** message.

A.25 Device Configuration to Create OSD with Required Type

Name: HelperDeviceConfigurationToCreateOSD

Procedure Purpose: Helper procedure to configure Device to have free space to create OSD with required type.

Pre-requisite: Media2 Service is received from the DUT. OSD is supported by the DUT.

Input: OSD Configurations List (*osdConfList*), OSD Options (*osdOptions*), OSD Type that will be created (*osdType*).

Returns: Updated OSD Configurations List (*osdConfList*).

Procedure:

1. If *osdType* = "Image":
 - 1.1. Set *osdImageNumber* := number of OSD Configuration items with Type = "Image".
 - 1.2. If *osdOptions*.MaximumNumberOfOSDs contains "Image" attribute:
 - 1.2.1. If *osdImageNumber* = *osdOptions*.MaximumNumberOfOSDs.Image:

- 1.2.1.1. If *osdConfList* does not contain at least one OSD Configuration with Type = "Image", FAIL the test and skip other steps.
 - 1.2.1.2. Set *osdToken* := *osdConfList*.OSDs[0].token, where OSDs[0] is the first OSD Configuration with Type = "Image".
 - 1.2.1.3. ONVIF Client deletes OSD Configuration with image type by following the procedure mentioned in [Annex A.26](#) with the following input parameter
 - in *osdToken* - OSD Configuration token to delete
 - 1.2.1.4. Set *osdConfList* := *osdConfList* - *osdConfList*.OSDs[0].token, where OSDs[0] is the OSD Configuration with token = *osdToken*.
 - 1.2.1.5. Skip other steps.
2. If *osdType* = "Text":
 - 2.1. ONVIF Client deletes all OSD Configurations with Type="Text" by following the procedure mentioned in [Annex A.27](#) with the following input and output parameters
 - in *osdConfList* - current OSD Configuration list
 - out *osdConfList* - updated OSD Configuration list
3. Set *osdNumber* := number of OSD Configuration items in *osdConfList*.
 4. If *osdNumber* = *osdOptions*.MaximumNumberOfOSDs.Total:
 - 4.1. If *osdConfList* does not contain at least one OSD Configuration, FAIL the test and skip other steps.
 - 4.2. Set *osdToken* := *osdConfList*.OSDs[0].token
 - 4.3. ONVIF Client deletes OSD Configuration by following the procedure mentioned in [Annex A.26](#) with the following input parameter
 - in *osdToken* - OSD Configuration token to delete
 - 4.4. Set *osdConfList* := *osdConfList* - *osdConfList*.OSDs[0].token, where OSDs[0] is the OSD Configuration with token = *osdToken*.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- None.

A.26 Delete OSD

Name: HelperDeleteOSD

Procedure Purpose: Helper procedure to delete OSD Configuration.

Pre-requisite: Media2 Service is received from the DUT. OSD is supported by the DUT.

Input: OSD token (*osdToken*).

Returns: None.

Procedure:

1. ONVIF Client invokes **DeleteOSD** request with parameters
 - OSDToken := *osdToken*
2. DUT responds with **DeleteOSDResponse** message.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send **DeleteOSDResponse** message.

A.27 Delete All Text OSDs

Name: HelperDeleteAllTextOSDs

Procedure Purpose: Helper procedure to delete all OSD Configurations with Type="Text".

Pre-requisite: Media2 Service is received from the DUT. OSD is supported by the DUT.

Input: OSD Configuration list (*osdConfList*).

Returns: Updated OSD Configuration list (*updatedOSDConfList*).

Procedure:

1. For each OSD Configuration with Type="Text" *osdConfig* in *osdConfList* repeat the following steps:
 - 1.1. ONVIF Client invokes **DeleteOSD** request with parameters
 - OSDToken := *osdConfig.token*
 - 1.2. DUT responds with **DeleteOSDResponse** message.
 - 1.3. Set *updatedOSDConfList* := *osdConfList* - *osdConfig*.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- The DUT did not send **DeleteOSDResponse** message.

A.28 OSDConfigurationOptions and OSDConfiguration mapping

The following rules should be used for **CreateOSD** message if *osdOptions* is the OSD Options, which were received in **GetOSDOptionsResponse**:

- OSD.@token := token for new OSD
- OSD.VideoSourceConfigurationToken := Video Source Configuration token
- OSD.Type := one of the values that are listed in *osdOptions.Type*, for test propose only Text or Image shall be used.
- OSD.Position.Type := one of the values that are listed in *osdOptions.PositionOption*
- If OSD.Position.Type = Custom:
 - OSD.Position.Pos.@x := any value from the range [-1,1]
 - OSD.Position.Pos.@y := any value from the range [-1,1]

otherwise, OSD.Position.Pos skipped

- OSD.Position.Extension skipped
- If OSD.Type = Text:
 - OSD.TextString.Type := one of the values that are listed in *osdOptions.TextOption.Type*, for test propose only Plain, Date, Time, or DateAndTime shall be used.
 - If OSD.TextString.Type = Date or DateAndTime:
 - OSD.TextString.DateFormat := one of the values that are listed in *osdOptions.TextOption.DateFormat*

otherwise, OSD.TextString.DateFormat skipped

- If OSD.TextString.Type = Time or DateAndTime:
 - OSD.TextString.TimeFormat := one of the values that are listed in *osdOptions.TextOption.TimeFormat*

otherwise, OSD.TextString.TimeFormat skipped

- If *osdOptions.TextOption.FontSizeRange* is specified:
 - OSD.TextString.FontSize := any value from the range [*osdOptions.TextOption.FontSizeRange.Min*, *osdOptions.TextOption.FontSizeRange.Max*]

otherwise, OSD.TextString.FontSize skipped

- If *osdOptions.TextOption.FontColor* and *osdOptions.TextOption.FontColor.Color* is specified:
 - If *osdOptions.TextOption.FontColor.Color.ColorList* is specified:
 - OSD.TextString.FontColor.Color := one of the values that are listed in *osdOptions.TextOption.FontColor.Color.ColorList*
 - If *osdOptions.TextOption.FontColor.Color.ColorspaceRange* is specified:
 - OSD.TextString.FontColor.Color.@Colorspace := Colorspace value of one of the items that are listed in *osdOptions.TextOption.FontColor.Color.ColorList.ColorspaceRange*
 - OSD.TextString.FontColor.Color.@X := value from the range [X.Min,X.Max] of the same item in *osdOptions.TextOption.FontColor.Color.ColorList.ColorspaceRange* that was used for the OSD.TextString.FontColor.Color.@Colorspace

- OSD.TextString.FontColor.Color.@Y := value from the range [Y.Min,Y.Max] of the same item in *osdOptions.TextOption.FontColor.Color.ColorList.ColorspaceRange* that was used for the OSD.TextString.FontColor.Color.@Colorspace
- OSD.TextString.FontColor.Color.@Z := value from the range [Z.Min,Z.Max] of the same item in *osdOptions.TextOption.FontColor.Color.ColorList.ColorspaceRange* that was used for the OSD.TextString.FontColor.Color.@Colorspace
- If *osdOptions.TextOption.FontColor.Transparent* is specified:
 - OSD.TextString.FontColor.@Transparent := any value from the range [*osdOptions.TextOption.FontColor.Transparent.Min,osdOptions.TextOption.FontColor.Transparent.Max*]

otherwise, OSD.TextString.FontColor.@Transparent skipped

otherwise, OSD.TextString.FontColor skipped
- If *osdOptions.TextOption.BackgroundColor* and *osdOptions.TextOption.BackgroundColor.Color* is specified:
 - If *osdOptions.TextOption.BackgroundColor.Color.ColorList* is specified:
 - OSD.TextString.BackgroundColor.Color := one of the values that are listed in *osdOptions.TextOption.BackgroundColor.Color.ColorList*
 - If *osdOptions.TextOption.BackgroundColor.Color.ColorspaceRange* is specified:
 - OSD.TextString.BackgroundColor.Color.@Colorspace := Colorspace value of one of the items that are listed in *osdOptions.TextOption.BackgroundColor.Color.ColorList.ColorspaceRange*
 - OSD.TextString.BackgroundColor.Color.@X := value from the range [X.Min,X.Max] of the same item in *osdOptions.TextOption.BackgroundColor.Color.ColorList.ColorspaceRange* that was used for the OSD.TextString.BackgroundColor.Color.@Colorspace
 - OSD.TextString.BackgroundColor.Color.@Y := value from the range [Y.Min,Y.Max] of the same item in *osdOptions.TextOption.BackgroundColor.Color.ColorList.ColorspaceRange* that was used for the OSD.TextString.BackgroundColor.Color.@Colorspace
 - OSD.TextString.BackgroundColor.Color.@Z := value from the range [Z.Min,Z.Max] of the same item in

osdOptions.TextOption.BackgroundColor.Color.ColorList.ColorspaceRange that was used for the *OSD.TextString.BackgroundColor.Color.@Colorspace*

- If *osdOptions.TextOption.BackgroundColor.Transparent* is specified:
 - *OSD.TextString.BackgroundColor.@Transparent* := any value from the range [*osdOptions.TextOption.BackgroundColor.Transparent.Min*, *osdOptions.TextOption.BackgroundColor.Transparent.Max*]

otherwise, *SD.TextString.BackgroundColor.@Transparent* skipped

otherwise, *OSD.BackgroundColor.FontColor* skipped

- If *OSD.TextString.Type* = Plain:
 - *OSD.TextString.PlainText* := any string value

otherwise, *OSD.TextString.PlainText* skipped

- *OSD.TextString.Extension* skipped

otherwise, *OSD.TextString* skipped

- If *OSD.Type* = Image:

- *OSD.Image.ImgPath* := one of the values that are listed in *osdOptions.ImageOption.ImagePath*

- *OSD.Image.Extension* skipped

otherwise, *OSD.Image* skipped

- *OSD.Extension* skipped

Note: If *OSD.Type* = Text, but *osdOptions.TextOption* is skipped, the test will be FAILED.

Note: If *OSD.Type* = Image, but *osdOptions.ImageOption* is skipped, the test will be FAILED.

Note: If *OSD.TextString.Type* = Date or DateAndTime, but *osdOptions.TextOption.DateFormat* is skipped, the test will be FAILED.

Note: If *OSD.TextString.Type* = Time or DateAndTime, but *osdOptions.TextOption.TimeFormat* is skipped, the test will be FAILED.

A.29 OSD Picture File Parameters

ONVIF Device Test Tool uses the picture file to upload on the device with the following parameters:

- File format: PNG
- Size: no more than 1024 bytes
- Width: 16 pixels
- Height: 16 pixels

A.30 Get Metadata Configurations List

Name: HelperGetMetadataConfigurationsList

Procedure Purpose: Helper procedure to retrieve Metadata Configurations List.

Pre-requisite: Media2 Service is received from the DUT. Metadata feature under Media2 Service is supported by the DUT.

Input: None.

Returns: Metadata Configurations List (*metadataConfList*).

Procedure:

1. ONVIF Client invokes **GetMetadataConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with **GetMetadataConfigurationsResponse** with parameters
 - Configurations list =: *metadataConfList*
3. If *metadataConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.31 Get Analytics Configurations List

Name: HelperGetAnalyticsConfigurationsList

Procedure Purpose: Helper procedure to retrieve Analytics Configurations List.

Pre-requisite: Media2 Service is received from the DUT. Analytics feature under Media2 Service is supported by the DUT.

Input: None.

Returns: Analytics Configurations list (*analyticsConfList*).

Procedure:

1. ONVIF Client invokes **GetAnalyticsConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken skipped
2. The DUT responds with **GetAnalyticsConfigurationsResponse** with parameters
 - Configurations list =: *analyticsConfList*
3. If *analyticsConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.32 Device Configuration For Create Mask

Name: HelperDeviceConfigurationForCreateMask

Procedure Purpose: Helper procedure for configuring DUT in order to add a mask.

Pre-requisite: Media2 Service is received from the DUT. Mask feature is supported by the DUT.

Input: None.

Returns: Mask Options (*maskOptions*). Video Source configuration token (*vscToken*). Mask to restore (optional) (*maskToRestore*)

Procedure:

1. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters

- out *videoSourceConfList1* - Video Source Configurations list
2. For each Video Source Configuration *videoSourceConf1* in *videoSourceConfList1* list repeat the following steps:
 - 2.1. ONVIF Client invokes **GetMaskOptions** request with parameters
 - ConfigurationToken := *videoSourceConf1*.@Token
 - 2.2. DUT responds with **GetMaskOptionsResponse** message with parameters
 - MaskOptions =: *maskOptions*
 - 2.3. If *maskOptions* does not contain MaxMasks attribute, FAIL the test and skip other steps.
 - 2.4. If *maskOptions*.MaxMasks > 0:
 - 2.4.1. Set *vscToken* := *videoSourceConf1*.@Token
 - 2.4.2. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken := *vscToken*
 - 2.4.3. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskConfList1*
 - 2.4.4. Set *amountOfExistingMasks* := amount of Mask items in *maskConfList1*
 - 2.4.5. If *amountOfExistingMasks* = *maskOptions*.MaxMasks
 - 2.4.5.1. Set *maskToDelete* := *maskConfList1*.Masks[0].token
 - 2.4.5.2. ONVIF Client deletes Mask Configuration by following the procedure mentioned in [Annex A.33](#) with the following input parameter
 - in *maskToDelete* - Mask Configuration token to delete
 - 2.4.6. Skip other steps of procedure.
 3. FAIL the test and skip other steps.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetMaskOptionsResponse** message.
- DUT did not send **GetMasksResponse** message.

A.33 Delete Mask

Name: HelperDeleteMask

Procedure Purpose: Helper procedure to delete specified Mask.

Pre-requisite: Media2 Service is received from the DUT. Mask feature is supported by the DUT.

Input: Mask token (*maskToDelete*).

Returns: None.

Procedure:

1. ONVIF Client invokes **DeleteMask** request with parameters
 - Token := *maskToDelete*
2. DUT responds with **DeleteMaskResponse** message

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.34 Device Configuration For Get Masks Test Case

Name: HelperDeviceConfigurationForGetMasks

Procedure Purpose: Helper procedure to create mask if no mask exists at Device.

Pre-requisite: Media2 Service is received from the DUT. Mask feature is supported by the DUT.

Input: None.

Returns: Mask to remove (optional) (*maskToRemove*)

Procedure:

1. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken skipped
2. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskConfCompleteList1*
3. If *maskConfCompleteList1* contains at least one item, skip other steps and return to the test.
4. ONVIF Client retrieves Video Source Configurations list by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters:
 - out *videoSourceConfList1* - Video Source Configurations list
5. For each Video Source Configuration *videoSourceConf1* in *videoSourceConfList1* list repeat the following steps:
 - 5.1. ONVIF Client invokes **GetMaskOptions** request with parameters
 - ConfigurationToken := *videoSourceConf1.@Token*
 - 5.2. DUT responds with **GetMaskOptionsResponse** message with parameters
 - MaskOptions =: *maskOptions*
 - 5.3. If *maskOptions* does not contain MaxMasks attribute, FAIL the test and skip other steps.
 - 5.4. If *maskOptions.MaxMasks* > 0:
 - 5.4.1. Set *vscToken* := *videoSourceConf1.@Token*
 - 5.4.2. ONVIF Client invokes **CreateMask** request with parameters
 - token := "TestMask" (note: this token can be ignored by DUT)
 - ConfigurationToken := *vscToken*
 - Polygon :=
 - Point[0].@x := -0.5
 - Point[0].@y := -0.5

- Point[1].@x := -0.5
- Point[1].@y := 0.5
- Point[2].@x := 0.5
- Point[2].@y := 0.5
- Point[3].@x := 0.5
- Point[3].@y := -0.5
- Type := first value from *maskOptions.Types* list
- If Type = "Color":
 - If *maskOptions.Color.ColorList* is specified:
 - Color := first value that are listed in *maskOptions.Color.ColorList*
 - If *maskOptions.Color.ColorspaceRange* is specified:
 - Color.@Colorspace := Colorspace value of the first item that is listed in *maskOptions.Color.ColorspaceRange*
 - Color.@X := value from the range [X.Min,X.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Y := value from the range [Y.Min,Y.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Z := value from the range [Z.Min,Z.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
- Enabled := false

5.4.3. DUT responds with **CreateMaskResponse** message with parameters

- Token =: *maskToRemove*

5.4.4. Skip other steps of procedure.

6. FAIL the test and skip other steps.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetMaskOptionsResponse** message.
- DUT did not send **GetMasksResponse** message.
- DUT did not send **CreateMaskResponse** message.

A.35 Create Mask

Name: HelperCreateMask

Procedure Purpose: Helper procedure for mask creation for specified Video Source Configuration with valid options.

Pre-requisite: Media2 Service is received from the DUT. Mask feature is supported by the DUT.

Input: Video Source configuration token (*vscToken*). Mask Options (*maskOptions*). Type of Mask (*maskType*).

Returns: Token of the created mask (*maskToken*).

Procedure:

1. ONVIF Client invokes **CreateMask** request with parameters
 - token := "TestMask" (note: this token can be ignored by DUT)
 - ConfigurationToken := *vscToken*
 - Polygon := Point[0].@x="-0.4", Point[0].@y="-0.2", Point[1].@x="-0.2", Point[1].@y="0.3", Point[2].@x="0.1", Point[2].@y="0.4", Point[3].@x="0.3", Point[3].@y="-0.3" if *maskOptions.RectangleOnly* is false or skipped. Else Polygon := Point[0].@x="-0.5", Point[0].@y="-0.5", Point[1].@x="-0.5", Point[1].@y="0.5", Point[2].@x="0.5", Point[2].@y="0.5", Point[3].@x="0.5", Point[3].@y="-0.5"
 - Type := *maskType*
 - If Type = "Color":
 - If *maskOptions.Color.ColorList* is specified:

- Color := first value that are listed in *maskOptions.Color.ColorList*
 - If *maskOptions.Color.ColorspaceRange* is specified:
 - Color.@Colorspace := Colorspace value of the first item that is listed in *maskOptions.Color.ColorspaceRange*
 - Color.@X := value from the range [X.Min,X.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Y := value from the range [Y.Min,Y.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Color.@Z := value from the range [Z.Min,Z.Max] of the same item in *maskOptions.Color.ColorspaceRange* that was used for the Color.@Colorspace
 - Enabled := false
2. DUT responds with **CreateMaskResponse** message with parameters
- Token of the created mask =: *maskToken*

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.36 Remove all Masks from Video Source Configuration

Name: HelperMasksCleanUp

Procedure Purpose: Helper procedure, which removes all masks from Video Source Configuration.

Pre-requisite: Media2 Service is received from the DUT. Mask feature is supported by the DUT.

Input: Video Source configuration token (*vscToken*).

Returns: None.

Procedure:

1. ONVIF Client invokes **GetMasks** request with parameters
 - Token skipped
 - ConfigurationToken := *vscToken*
2. DUT responds with **GetMasksResponse** message with parameters
 - Masks =: *maskConfList1*
3. For each Mask *mask* in *maskConfList1* list repeat the following steps:
 - 3.1. ONVIF Client invokes **DeleteMask** request with parameters
 - Token := *mask.@Token*
 - 3.2. DUT responds with **DeleteMaskResponse** message

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **DeleteMaskResponse** message.
- DUT did not send **GetMasksResponse** message.

A.37 Get Audio Outputs List

Name: HelperGetAudioOutputsList

Procedure Purpose: Helper procedure to retrieve Audio Outputs List.

Pre-requisite: DeviceIO Service is received from the DUT.

Input: None.

Returns: Audio Outputs List (*audioOutputsList*).

Procedure:

1. ONVIF Client invokes **GetAudioOutputs** request.
2. The DUT responds with **GetAudioOutputsResponse** with parameters

- Token list =: *audioOutputsList*
3. If *audioOutputsList* is empty, FAIL the test.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.38 Get schedules information list

Name: HelperGetScheduleInfoList

Procedure Purpose: Helper procedure to get complete schedules information list.

Pre-requisite: Schedule Service is received from the DUT.

Input: None.

Returns: The complete list of schedules information (*scheduleInfoCompleteList*).

Procedure:

1. ONVIF client invokes **GetScheduleInfoList** request with parameters
 - Limit skipped
 - StartReference skipped
2. The DUT responds with **GetScheduleInfoListResponse** message with parameters
 - NextStartReference =: *nextStartReference*
 - ScheduleInfo list =: *scheduleInfoCompleteList*
3. Until *nextStartReference* is not null, repeat the following steps:
 - 3.1. ONVIF client invokes **GetScheduleInfoList** request with parameters
 - Limit skipped
 - StartReference := *nextStartReference*

3.2. The DUT responds with **GetScheduleInfoListResponse** message with parameters

- NextStartReference =: *nextStartReference*
- ScheduleInfo list =: *scheduleInfoListPart*

3.3. Set the following:

- *scheduleInfoCompleteList* := *scheduleInfoCompleteList* + *scheduleInfoListPart*

Procedure Result:

PASS –

- The DUT passed all assertions.

FAIL –

- The DUT did not send **GetScheduleInfoListResponse** message.

A.39 Prepare Free Space for Audio Clip adding

Name: HelperPrepareFreeSpaceForAudioClip

Procedure Purpose: Helper procedure to delete Audio Clip if maximum number of Audio Clips is reached.

Pre-requisite: Media2 Service is received from the DUT. Audio Clip is supported by the DUT.

Input: None.

Returns: None.

Procedure:

1. ONVIF Client retrieves Media2 Service Capabilities by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters
 - out *cap* - Media2 Service Capabilities
2. ONVIF Client invokes **GetAudioClips** request with parameters
 - Token skipped
3. The DUT responds with **GetAudioClipsResponse** message with parameters
 - GetAudioClipsResponseItem list =: *audioClipsList*

4. If number of items in *audioClipsList* = *cap.AudioClipCapabilities.MaxAudioClipLimit*:

4.1. ONVIF Client deletes the first Audio Clip by following the procedure mentioned in [Annex A.40](#) with the following input and output parameters

- in *audioClipsList*[0].Token - Audio Clip Token

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioClipsResponse** message.
- DUT did not send **DeleteAudioClipResponse** message.

A.40 Delete Audio Clip

Name: HelperDeleteAudioClip

Procedure Purpose: Helper procedure to delete Audio Clip.

Pre-requisite: Media2 Service is received from the DUT. Audio Clip is supported by the DUT.

Input: Audio Clip Token *audioClipToken* .

Returns: None.

Procedure:

1. ONVIF Client invokes **DeleteAudioClip** request with parameters
 - Token := *audioClipToken*
2. The DUT responds with **DeleteAudioClipResponse** message.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.41 Retrieve Output Token and Corresponding Output Level Range

Name: HelperRetrieveOutputTokenAndCorrespondingOutputLevelRange

Procedure Purpose: Helper procedure to retrieve Output Token and corresponding Output Level Range.

Pre-requisite: Media2 Service is received from the DUT.

Input: None

Returns: Output Token (*outputToken*). Output Level Range (*outputLevelRange*).

Procedure:

1. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters
 - out *audioOutputConfList* - Audio Output Configurations list
2. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken =: *audioOutputConfList*[0].token
3. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
 - Options =: *audioOutputConfigurationOptions*
4. Set *outputToken* := *audioOutputConfigurationOptions*.OutputTokensAvailable[0].
5. Set *outputLevelRange* := *audioOutputConfigurationOptions*.OutputLevelRange.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.42 Get Audio Clips List

Name: GetAudioClipsList

Procedure Purpose: Helper procedure to retrieve Audio Clips List.

Pre-requisite: Media2 Service is received from the DUT. Audio Clips feature is supported.

Input: None.

Returns: Audio Clips List (*audioClipsList*).

Procedure:

1. ONVIF Client invokes **GetAudioClips** request with parameters
 - Token skipped
2. DUT responds with **GetAudioClipsResponse** message with parameters
 - GetAudioClipsResponseItem =: *audioClipsCompleteList*

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.43 Add and Upload Audio Clip

Name: AddAudioClipWithUploading

Procedure Purpose: Helper procedure to add an Audio Clip with required format and to upload a corresponding audio file.

Pre-requisite: Media2 Service is received from the DUT. DeviceIO Service is received from the DUT. Audio Clips feature is supported.

Input: Audio Clip Configuration(*audioClipConfig*).

Returns: Audio Clip Token (*audioClipToken*).

Procedure:

1. ONVIF Client prepare a free space for adding of a new Audio Clip by following the procedure mentioned in [Annex A.39](#).
2. ONVIF Client invokes **AddAudioClip** request with parameters
 - Token skipped
 - Configuration.Enabled := *audioClipConfig.Enabled*
 - Configuration.Name := *audioClipConfig.Name*
 - Configuration.AudioOutputToken[0] := *audioClipConfig.AudioOutputToken[0]*
 - Configuration.Type := *audioClipConfig.Type*
 - Configuration.RepeatCycles := *audioClipConfig.RepeatCycles*
 - Configuration.RepeatInterval := *audioClipConfig.RepeatInterval*
 - Configuration.AudioOutputLevel := *audioClipConfig.AudioOutputLevel*
 - Configuration.ScheduleToken := *audioClipConfig.ScheduleToken*
3. DUT responds with **AddAudioClipResponse** message with parameters
 - Token =: *audioClipToken*
 - UploadUri =: *uploadUri*
 - ExpiryTime
4. ONVIF Client invokes **HTTP POST** to *uploadUri* with parameters
 - HTTP Header [Content-Type] := MIME type for audio that corresponds to *audioClipConfig.Type*
 - HTTP Body := audio file with format that corresponds to *audioClipConfig.Type*
5. The DUT responds with **HTTP 200 OK** message.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

- DUT did not send **HTTP 200 OK** message.

A.44 Retrieve Changed Audio Clip Event by PullPoint

Name: HelperPullAudioClipChangedEvent

Procedure Purpose: Helper procedure to retrieve Changed tns1:Media/AudioClip/State event with PullMessages for specific Audio Output and specific Audio Clip.

Pre-requisite: Event Service is received from the DUT.

Input: Subscription reference (*s*), Current time for the DUT (*ct*), Subscription termination time (*tt*), Audio Output Token (*audioOutputToken*), Audio Clip Token (*audioClipToken*).

Returns: Notification Message (*message*).

Procedure:

1. Until *timeout1* timeout expires, repeat the following steps:
 - 1.1. ONVIF Client waits for time $t := \min\{(tt-ct)/2, 1 \text{ second}\}$.
 - 1.2. ONVIF Client invokes **PullMessages** to the subscription endpoint *s* with parameters
 - Timeout := PT60S
 - MessageLimit := 1
 - 1.3. The DUT responds with **PullMessagesResponse** message with parameters
 - CurrentTime =: *ct*
 - TerminationTime =: *tt*
 - NotificationMessage list =: *notificationMessageList*
 - 1.4. For each NotificationMessage.Message item (*message*) in *notificationMessageList*
 - 1.4.1. If *message* fulfills all these conditions, skip other steps and return this item to a test procedure
 - *message*.Message.PropertyOperation = "Changed"
 - *message*.Message contains Source.SimpleItem with Name="AudioOutputToken" and with Value=*audioOutputToken*
 - *message*.Message contains Data.SimpleItem with Name="Token" and with Value=*audioClipToken*

- 1.5. If *timeout1* timeout expires for step 1 without Notification Message that fulfills conditions described at step 1.4.1, FAIL the test and skip other steps.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

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

A.45 Create Schedule

Name: HelperCreateSchedule

Procedure Purpose: Helper procedure to create a Schedule with appropriate iCalendar value.

Pre-requisite: Schedule Service is received from the DUT. The DUT shall have enough free storage capacity for one additional Schedule.

Input: None.

Returns: Schedule Token *scheduleToken*.

Procedure:

1. ONVIF Client gets the Schedule service capabilities by following the procedure mentioned in [Annex A.46](#) with the following input and output parameters
 - out *cap* - Schedule Service Capabilities
2. ONVIF Client generates appropriate iCalendar value for the Schedule.Standard field by following the procedure mentioned in [Annex A.47](#) with the following input and output parameters
 - in *cap* - Schedule Service Capabilities
 - out *scheduleiCalendarValue*
3. ONVIF client invokes **CreateSchedule** request with parameters
 - Schedule.token := ""

- Schedule.Description := "Test Description"
 - Schedule.Name := "Test Name"
 - Schedule.Standard := *scheduleCalendarValue*
 - Schedule.SpecialDays skipped
4. The DUT responds with **CreateScheduleResponse** message with parameters
- Token =: *scheduleToken*

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.46 Get service capabilities (Schedule)

Name: HelperGetServiceCapabilitiesSchedule

Procedure Purpose: Helper procedure to get service capabilities for Schedule Service.

Pre-requisite: Schedule Service is received from the DUT.

Input: None.

Returns: The service capabilities (*cap*).

Procedure:

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

Procedure Result:**PASS –**

- The DUT passed all assertions.

FAIL –

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

A.47 Generate iCalendar value for Schedule

Name: HelperScheduleiCalendarGeneration

Procedure Purpose: Helper procedure to generate iCalendar value for Schedule.Standard field.

Pre-requisite: Schedule Service is received from the DUT.

Input: The Schedule service capabilities (*cap*).

Returns: iCalendar value for Standard field (*scheduleiCalendarValue*) that is compliant to [RFC 2445].

Procedure:

1. ONVIF Client generates Unique Identifier value for UID field in iCalendar by following the procedure mentioned in [Annex A.48](#) with the following input and output parameters
 - out *uid* - UID field for iCalendar
2. If *cap.ExtendedRecurrenceSupported* is equal to true, set the following:
 - *scheduleiCalendarValue* := "BEGIN:VCALENDAR
BEGIN:VEVENT
SUMMARY:Audio Clip Test Case
DTSTART:<current year>< current month>< current day>T<current time + *delta*>
DTEND: DTSTART + 1 week
RRULE:FREQ=DAILY
UID:*uid*
END:VEVENT
END:VCALENDAR"
3. If *cap.ExtendedRecurrenceSupported* is equal to false, set the following:
 - *scheduleiCalendarValue* := "BEGIN:VCALENDAR
BEGIN:VEVENT
SUMMARY: Audio Clip Test Case

```
DTSTART:1970<current month><current day>T<current time + delta>
DTEND: DTSTART + 1 week
RRULE:FREQ=WEEKLY;BYDAY=<current week day>,<next week day>
UID:uid
END:VEVENT
END:VCALENDAR"
```

A.48 Generate UID value for iCalendar

Name: HelperUIDiCalendarGeneration

Procedure Purpose: Helper procedure to generate Unique Identifier value for UID field in iCalendar.

Pre-requisite: Schedule Service is received from the DUT.

Input: None.

Returns: Unique Identifier value for UID field in iCalendar (*uid*) that is compliant to [RFC 2445].

Procedure:

1. ONVIF Client generates Globally Unique Identifier value.

A.49 Choose Audio Output Configuration With EQ Presets Supporting

Name: HelperChooseAudioOutputConfigurationWithEQPresetsSupporting

Procedure Purpose: Helper procedure to choose or configure Audio Output Configuration with EQPresets supporting.

Pre-requisite: Media2 Service is received from the DUT. Audio Output is supported by DUT. EQ Presets is supported by DUT.

Input: None.

Returns: Token of Audio Output Configuration that supports EQ Presets (*aocToken*). AudioOutputConfigurationOptions item with EQ Presets parameters that corresponds to selected Audio Output Configuration (*aocOptionsItem*).

Procedure:

1. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters
 - out *audioOutputConfList* - Audio Output Configurations list
2. For each Audio Output Configuration *audioOutputConfiguration* in *audioOutputConfList* repeat the following steps:
 - 2.1. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
 - 2.2. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
 - Options =: *options*
 - 2.3. If *options* contains non empty EQPresets list, return token of *audioOutputConfiguration* and *options* and skip other steps.
 - 2.4. If *options.OutputTokensAvailable* list contains more than one item
 - 2.4.1. For each Audio Output token *audioOutputToken* in *options.OutputTokensAvailable* list repeat the following steps:
 - 2.4.1.1. ONVIF Client invokes **SetAudioOutputConfiguration** request with parameters
 - Configuration.@token := *audioOutputConfiguration.@token*
 - Configuration.Name := *audioOutputConfiguration.Name*
 - Configuration.OutputToken := *audioOutputToken*
 - Configuration.SendPrimacy := *audioOutputConfiguration.SendPrimacy*
 - Configuration.OutputLevel := *audioOutputConfiguration.OutputLevel*
 - 2.4.1.2. DUT responds with **SetAudioOutputConfigurationResponse** message.

- 2.4.1.3. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
- ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
- 2.4.1.4. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
- Options =: *options*
- 2.4.1.5. If *options* contains non empty EQPresets list, return token of *audioOutputConfiguration* and *options* and skip other steps.

3. FAIL test procedure.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.
- DUT did not send **SetAudioOutputConfigurationResponse** message.

A.50 Choose Audio Output Configuration With EQ Presets Scheduling Supporting

Name: HelperChooseAudioOutputConfigurationWithEQPresetsSchedulingSupporting

Procedure Purpose: Helper procedure to choose or configure Audio Output Configuration with EQPresets Scheduling supporting.

Pre-requisite: Media2 Service is received from the DUT. Audio Output is supported by DUT. EQ Presets is supported by DUT. EQPresets Scheduling is supported by DUT.

Input: None.

Returns: Token of Audio Output Configuration that supports EQ Presets Scheduling (*aocToken*). AudioOutputConfigurationOptions item with EQ Presets parameters that corresponds to selected Audio Output Configuration (*aocOptionsItem*).

Procedure:

1. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters
 - out *audioOutputConfList* - Audio Output Configurations list
2. For each Audio Output Configuration *audioOutputConfiguration* in *audioOutputConfList* repeat the following steps:
 - 2.1. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
 - 2.2. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
 - Options =: *options*
 - 2.3. If *options* contains non empty EQPresets list and EQPresetScheduleSupport = true, return token of *audioOutputConfiguration* and *options* and skip other steps.
 - 2.4. If *options.OutputTokensAvailable* list contains more than one item
 - 2.4.1. For each Audio Output token *audioOutputToken* in *options.OutputTokensAvailable* list repeat the following steps:
 - 2.4.1.1. ONVIF Client invokes **SetAudioOutputConfiguration** request with parameters
 - Configuration.@token := *audioOutputConfiguration.@token*
 - Configuration.Name := *audioOutputConfiguration.Name*
 - Configuration.OutputToken := *audioOutputToken*
 - Configuration.SendPrimacy := *audioOutputConfiguration.SendPrimacy*
 - Configuration.OutputLevel := *audioOutputConfiguration.OutputLevel*
 - 2.4.1.2. DUT responds with **SetAudioOutputConfigurationResponse** message.

- 2.4.1.3. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
- ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
- 2.4.1.4. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
- Options =: *options*
- 2.4.1.5. If *options* contains non empty EQPresets list and EQPresetScheduleSupport = true, return token of *audioOutputConfiguration* and *options* and skip other steps.

3. FAIL test procedure.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.
- DUT did not send **SetAudioOutputConfigurationResponse** message.

A.51 Choose Audio Output Configuration with EQ Preset with Frequency Decibel Management Supporting

Name:

HelperChooseAudioOutputConfigurationWithEQPresetsWithFrequencyDecibelManagementSupporting

Procedure Purpose: Helper procedure to choose or configure Audio Output Configuration with EQPresets supporting and with at least one EQ Prset that supports Frequency Decibel update.

Pre-requisite: Media2 Service is received from the DUT. Audio Output is supported by DUT. EQ Presets is supported by DUT. Frequency Decibel Management is supported by Device.

Input: None.

Returns: Token of Audio Output Configuration that supports EQ Presets and that contains at least one EQ Prset that supports Frequency Decibel update (*aocToken*). AudioOutputConfigurationOptions item with EQ Presets parameters that corresponds to selected Audio Output Configuration (*aocOptionsItem*).

Procedure:

1. ONVIF Client retrieves Audio Output Configurations list by following the procedure mentioned in [Annex A.10](#) with the following input and output parameters
 - out *audioOutputConfList* - Audio Output Configurations list
2. For each Audio Output Configuration *audioOutputConfiguration* in *audioOutputConfList* repeat the following steps:
 - 2.1. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
 - 2.2. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
 - Options =: *options*
 - 2.3. If *options* contains EQPresets list with at least one item with isFrequencyDecibelEditable = true, return token of *audioOutputConfiguration* and *options* and skip other steps.
 - 2.4. If *options.OutputTokensAvailable* list contains more than one item
 - 2.4.1. For each Audio Output token *audioOutputToken* in *options.OutputTokensAvailable* list repeat the following steps:
 - 2.4.1.1. ONVIF Client invokes **SetAudioOutputConfiguration** request with parameters
 - Configuration.@token := *audioOutputConfiguration.@token*
 - Configuration.Name := *audioOutputConfiguration.Name*
 - Configuration.OutputToken := *audioOutputToken*
 - Configuration.SendPrimacy := *audioOutputConfiguration.SendPrimacy*

- Configuration.OutputLevel := *audioOutputConfiguration.OutputLevel*
- 2.4.1.2. DUT responds with **SetAudioOutputConfigurationResponse** message.
- 2.4.1.3. ONVIF Client invokes **GetAudioOutputConfigurationOptions** request with parameters
 - ConfigurationToken := *audioOutputConfiguration.@token*
 - ProfileToken skipped
- 2.4.1.4. The DUT responds with **GetAudioOutputConfigurationOptionsResponse** with parameters
 - Options =: *options*
- 2.4.1.5. If *options* contains EQPresets list with at least one item with *isFrequencyDecibelEditable* = true, return token of *audioOutputConfiguration* and *options* and skip other steps.

3. FAIL test procedure.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- DUT did not send **GetAudioOutputConfigurationOptionsResponse** message.
- DUT did not send **SetAudioOutputConfigurationResponse** message.

A.52 Get service capabilities for Advanced Security service

Name: HelperGetServiceCapabilities_AdvancedSecurity

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Security Configuration Device Test Specification

- ONVIF Base Device Test Specification
- ONVIF Media2 Configuration Device Test Specification

Procedure Purpose: Helper procedure to get service capabilities.

Pre-requisite: Security Configuration Service is received from the DUT.

Input: None

Returns: The service capabilities (*cap*).

Procedure:

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

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.53 Create a certification path validation policy for authentication server configuration

Name: HelperCreateCertPathValidationPolicyForAuthServer

Notes: Annex is used at:

- ONVIF Security Configuration Device Test Specification
- ONVIF Uplink Test Specification
- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Media2 Configuration Device Test Specification

Procedure Purpose: Helper procedure to create a certification path validation policy for authentication server configuration.

Pre-requisite: Security Configuration Service is received from the DUT. Certification path validation policy supported by the DUT as indicated by the `MaximumNumberOfCertificationPathValidationPolicies` capability. `UploadCertificate` is supported by the DUT as indicated by the `PKCS10ExternalCertificationWithRSA` or `PKCS10` capability. The DUT shall have enough free storage capacity for one additional certification path validation policy. The DUT shall have enough free storage capacity for one additional certification path. The DUT shall have enough free storage capacity for one additional certificate. The DUT shall have enough free storage capacity for one additional key pair.

Input: The service capabilities (*cap*). The key pair algorithm (*keyAlgorithm*). The certification path validation policy alias (*certPathValidationPolicyAlias*). The subject (*subject*) of CA certificate (optional input parameter, could be skipped).

Returns: The certification path validation policy identifier (*certPathValidationPolicyID*), related certificate (*certID*), key pair (*keyID*), CA certificate (out *CAcert*) CA certificate private key (out *privateKey*).

Procedure:

1. ONVIF Client creates a CA certificate and a corresponding private key by following the procedure described in [Annex A.54](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - out *CAcert* - CA certificate
 - out *privateKey* - private key
2. ONVIF Client invokes **UploadCertificate** with parameters
 - Certificate := *CAcert*
 - Alias := "ONVIF Test"
 - PrivateKeyRequired := false
3. The DUT responds with a **UploadCertificateResponse** message with parameters
 - CertificateID =: *certID*
 - KeyID =: *keyID*
4. ONVIF Client creates certification path validation policy identifier with specified alias and the certificate identifier for trust anchor by following the procedure mentioned in [Annex A.58](#) with the following input and output parameters:
 - in *certID* - certificate identifier for trust anchor

- in *certPathValidationPolicyAlias* - certification path validation policy alias
- out *certPathValidationPolicyID* - certification path validation policy identifier

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.54 Provide CA certificate

Name: HelperCreateCACertificate

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Security Configuration Device Test Specification
- ONVIF Base Device Test Specification

Procedure Purpose: Helper procedure to create an X.509 CA certificate.

Pre-requisite: None.

Input: The subject (*subject*) of certificate (optional input parameter, could be skipped). The service capabilities (*cap*). The key pair algorithm (*keyAlgorithm*).

Returns: An X.509 CA certificate (*CACert*) that is compliant to [RFC 5280] and a corresponding key pair (*keyPair*) with private key and public key.

Procedure:

1. ONVIF Client selects signature algorithm by following the procedure mentioned in [Annex A.55](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - in *keyAlgorithm* - key pair algorithm
 - out *signatureAlgorithm* - signature algorithm
2. ONVIF Client generates a key pair by following the procedure mentioned in [Annex A.56](#) with the following input and output parameters:

- in *cap* - DUT capabilities
 - in *keyAlgorithm* - key pair algorithm
 - out *keyPair* - key pair
3. If *subject* is skipped set:
- *subject* := "CN=ONVIF TT,C=US"
4. ONVIF Client creates an X.509 self-signed CA certificate that is compliant to [RFC 5280] and has the following properties:
- version := v3
 - signature := *signatureAlgorithm*
 - validity := not before 19700101000000Z and not after 99991231235959Z
 - subject := *subject*
 - public key := *keyPair*.publicKey
 - private key to be used := *keyPair*.privateKey

Note: ONVIF Client may return the same CA certificate in subsequent invocations of this procedure for the same subject.

A.55 Signature Algorithm Selection

Name: HelperSignatureAlgorithmSelection

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Security Configuration Device Test Specification
- ONVIF Base Device Test Specification

Procedure Purpose: Helper procedure to select signature algorithm which will be used for tests based on Device capabilities.

Pre-requisite: Security Configuration Service is received from the DUT.

Input: The service capabilities (*cap*). The key pair algorithm (*keyAlgorithm*).

Returns: The signature algorithm (*signatureAlgorithm*).

Procedure:

1. If *keyAlgorithm* = RSA: ONVIF Client selects signature algorithm (*signatureAlgorithm*) that will be used for the test from the list provided by DUT at *cap.KeystoreCapabilities.SignatureAlgorithms*. Selection is done among the following list of signature algorithms supported by the Client by priority from first to last:
 - 1.2.840.113549.1.1.13 (OID of SHA-512 with RSA Encryption algorithm)
 - 1.2.840.113549.1.1.12 (OID of SHA-384 with RSA Encryption algorithm)
 - 1.2.840.113549.1.1.11 (OID of SHA-256 with RSA Encryption algorithm)
 - 1.2.840.113549.1.1.14 (OID of SHA-224 with RSA Encryption algorithm)
 - 1.2.840.113549.1.1.5 (OID of SHA-1 with RSA Encryption algorithm)
2. If *keyAlgorithm* = ECC: ONVIF Client selects signature algorithm (*signatureAlgorithm*) that will be used for the test from the list provided by DUT at *cap.KeystoreCapabilities.SignatureAlgorithms*. Selection is done among the following list of signature algorithms supported by the Client by priority from first to last:
 - 1.2.840.10045.4.3.4 (OID of SHA-512 with ECC Encryption algorithm)
 - 1.2.840.10045.4.3.3 (OID of SHA-384 with ECC Encryption algorithm)
 - 1.2.840.10045.4.3.2 (OID of SHA-256 with ECC Encryption algorithm)
 - 1.2.840.10045.4.3.1 (OID of SHA-224 with ECC Encryption algorithm)
 - 1.2.840.10045.4.1 (OID of SHA-1 with ECC Encryption algorithm)
3. If the previous steps is done with empty signature algorithm (*signatureAlgorithm*): FAIL the procedure.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not return any of signature algorithms listed at step 1 or 2.

A.56 Generate a key pair

Name: HelperGenerateKeyPair

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Security Configuration Device Test Specification
- ONVIF Base Device Test Specification

Procedure Purpose: Helper procedure to generate a key pair.

Pre-requisite: None.

Input: The service capabilities (*cap*). The key pair algorithm (*keyAlgorithm*).

Returns: A [RFC 3447] compliant RSA or [RFC 5480, RFC 5915] compliant ECC key pair (*keyPair*) with new public key and private key.

Procedure:

1. ONVIF Client determines the key pair generation params by following the procedure mentioned in [Annex A.57](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - in *keyAlgorithm* - key pair algorithm
 - out *keyGenParams* - key pair generation params
2. If *keyGenParams.algorithm* = RSA:
 - a. Create an [RFC 3447] compliant RSA key pair (out *keyPair*) with new public key and private key with the following properties:
 - *KeyLength* := *keyGenParams.keyLength*
3. If *keyGenParams.algorithm* = ECC:
 - a. Create an [RFC 5480, RFC 5915] compliant ECC key pair (out *keyPair*) with new public key and private key with the following properties:
 - *EllipticCurve* := *keyGenParams.ellipticCurve*

A.57 Determine key pair generation params

Name: HelperDetermineKeyPairGenerationParams

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification

- ONVIF Security Configuration Device Test Specification
- ONVIF Base Device Test Specification

Procedure Purpose: Helper procedure to determine the key pair generation params to use during testing.

Pre-requisite: Security Configuration Service is received from the DUT. On-board ECC or RSA key pair generation is supported by the DUT as indicated by the `ECCKeyPairGeneration` or `RSAKeyPairGeneration` capability.

Input: The service capabilities (*cap*). The key pair algorithm (*keyAlgorithm*).

Returns: The key pair generation params (*keyGenParams*).

Procedure:

1. If *keyAlgorithm* = RSA:
 - a. ONVIF Client loops through the supported Key length list (*cap.KeystoreCapabilities.RSAKeyLengths*) and selects the smallest supported key length (*keyLength*).
 - b. ONVIF Client creates the RSA key generation params (*keyGenParams*) with the key length (*keyLength*).
2. If *keyAlgorithm* = ECC:
 - a. ONVIF Client loops through the supported elliptic curves list (*cap.KeystoreCapabilities.EllipticCurves*) and selects the simplest elliptic curve (*ellipticCurve*).
 - b. ONVIF Client creates the ECC key generation params (*keyGenParams*) with the elliptic curve (*ellipticCurve*).
3. If previous steps is done with empty key pair generation params (*keyGenParams*): FAIL the procedure.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

- No supported RSA key length was found at step 1.1 or no supported ECC elliptic curves was found at step 2.1.

A.58 Create a certification path validation policy with provided certificate identifier

Name: HelperCreateCertPathValidationPolicyWithCertID

Notes: Annex is used at:

- ONVIF Security Configuration Device Test Specification
- ONVIF Uplink Test Specification
- ONVIF Real Time Streaming using Media2 Device Test Specification

Procedure Purpose: Helper procedure to create a certification path validation policy with provided certificate identifier.

Pre-requisite: Security Configuration Service is received from the DUT. Certification path validation policy supported by the DUT as indicated by the `MaximumNumberOfCertificationPathValidationPolicies` capability. The DUT shall have enough free storage capacity for one additional certification path validation policy.

Input: The certification path validation policy alias (*alias*) and the certificate identifier (*certID*) for trust anchor.

Returns: The certification path validation policy identifier (*certPathValidationPolicyID*).

Procedure:

1. ONVIF Client invokes **CreateCertPathValidationPolicy** with parameters
 - Alias := *alias*
 - Parameters.RequireTLSWWWClientAuthExtendedKeyUsage skipped
 - Parameters.UseDeltaCRLs = true
 - Parameters.anyParameters skipped
 - TrustAnchor[0].CertificateID := *certID*
 - anyParameters skipped
2. The DUT responds with **CreateCertPathValidationPolicyResponse** message with parameters
 - CertPathValidationPolicyID := *certPathValidationPolicyID*

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.59 Configure Authorization Server On Device and Start It

Name: HelperConfigureAndStartAuthServer

Procedure Purpose: Helper procedure configures connection Authorization Server on Device and starts Authorization Server.

Pre-requisite: Security Configuration Service is received from the DUT. Authorization Server Configuration is supported by the DUT as indicated by the AuthorizationServer.MaxConfigurations capability. OAuthClientCredentials authentication method is supported by the DUT as indicated by the AuthorizationServer.ConfigurationTypesSupported capability. client_secret_basic authentication is supported by the DUT as indicated by the AuthorizationServer.ClientAuthenticationMethodsSupported capability. Access token authentication is supported by the DUT as indicated by the AuthorizationModes = AccessToken capability.

Input: Security Configuration Service Capabilities (*cap*).

Returns: Authentication server configuration token (*authServerConfToken*). Authentication scope (*scope1*). Authentication server metadata endpoint (*authServerMetadataEndpoint1*).

Procedure:

1. ONVIF Client deletes one authorization server configuration if maximum is reached by following the procedure described in [Annex A.60](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - out *itemToRestore1* - deleted authorization server configuration if any
2. Set:
 - *keyAlgorithm* := "ECC" if *cap*.KeystoreCapabilities.ECCKeypairGeneration = true; "RSA" otherwise.
3. ONVIF Client selects authorization server type and authentication method by following the procedure mentioned in [Annex A.63](#) with the following input and output parameters:

- in *cap* - DUT capabilities
 - in *authServerType* - authorization server configuration type
 - out *authMethod* - authentication method
4. ONVIF Client configures authentication server connection using the following steps:
- 4.1. ONVIF Client creates certification path validation policy by following the procedure mentioned in [Annex A.53](#) with the following input and output parameters
- in *cap* - DUT capabilities
 - in *keyAlgorithm* - DUT capabilities
 - in "C=US,O=ONVIF,CN=ONVIF TT AuthServer 1" - CA certificate subject
 - in "Test CertPathValidationPolicy AuthServer Alias" - certification path validation policy alias
 - out *certPathValidationPolicyIDAuthServer* - certification path validation policy identifier
 - out *certIDAuthServer* - certificate identifier
 - out *keyIDAuthServer* - RSA key pair identifier
 - out *CACertAuthServer* - CA certificate
 - out *privateKeyCACertAuthServer* - CA certificate private key
- 4.2. ONVIF Client creates a certificate signed by private key of the CA-certificate with subject and a corresponding public key in the certificate along with the corresponding private key by following the procedure described in [Annex A.62](#) with the following input and output parameters:
- in *cap* - DUT capabilities
 - in "C=US,O=ONVIF,CN=Authorization Server IP Address" - certificate subject
 - in "Authorization Server IP Address" - certificate SAN
 - in *CACertAuthServer* - CA-certificate
 - in *privateKeyCACertAuthServer* - private key of CA-certificate for certificate signature

- out *certAuthServer* - certificate
 - out *publicKeyAuthServer* - public key of certificate
 - out *privateKeyAuthServer* - private key of certificate
- 4.3. ONVIF Client starts Authorization server with metadata endpoint *authServerMetadataEndpoint1* conforming to RFC8414 with following settings:
- It is configured to *certAuthServer* as a server certificate.
 - It is configured *authServerType* authorization server type.
 - It is configured to accept *authMethod* authentication method.
- 4.4. If *authMethod* is *private_key_jwt* ONVIF Client configures key pair using the following steps:
- 4.4.1. ONVIF Client creates a key pair and get public key from device by following the procedure described in [Annex A.64](#) with the following input and output parameters:
- in *cap* - DUT capabilities
 - in *keyAlgorithm* - CSR key pair algorithm
 - out *keyID1Auth1* - key pair
 - out *publicKeyAuth1* - public key
- 4.5. ONVIF Client configures Authorization Server with the following credentials to be authorized:
- client identifier *clientID1*
 - client secret *clientSecret1*
 - scope *scope1*
 - public key *publicKeyAuth1* assigned if *authMethod* is *private_key_jwt*
- 4.6. ONVIF Client invokes **CreateAuthorizationServerConfiguration** request with parameters
- Type := *authServerType*
 - ClientAuth := *authMethod*

- ServerUri := *authServerMetadataEndpoint1*
- ClientID := *clientID1*
- ClientSecret := *clientSecret1*
- Scope := *scope1*
- KeyID := *keyID1Auth1* if *authMethod* is *private_key_jwt*, otherwise is skipped
- CertificateID is skipped
- CertPathValidationPolicyID := *certPathValidationPolicyIDAuthServer*

4.7. The DUT responds with **CreateAuthorizationServerConfigurationResponse** message with parameters

- Token =: *authServerConfToken*

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.60 Make Sure That At Least One Authorization Server Configuration Could Be Created

Name: HelperEmptySpaceForOneAuthorizationServerConfiguration

Notes: Annex is used at:

- ONVIF Security Configuration Device Test Specification
- ONVIF Uplink Test Specification
- ONVIF Real Time Streaming using Media2 Device Test Specification

Procedure Purpose: Helper procedure to remove one authorization server configuration if maximum is reached.

Pre-requisite: Security Configuration Service is received from the DUT. Authorization Server Configuration is supported by the DUT as indicated by the `AuthorizationServer.MaxConfigurations` capability.

Input: The service capabilities (*cap*).

Returns: Removed authorization server configuration (*removedAuthServerConfiguration*), could be empty.

Procedure:

1. ONVIF Client gets current authorization server configurations by following the procedure mentioned in [Annex A.61](#) with the following input and output parameters:
 - out *authServerConfigurations1* list - authorization server configurations
2. If *authServerConfigurations1* items number is equal to *cap.AuthorizationServer.MaxConfigurations*:
 - 2.1. Set the following:
 - *removedAuthServerConfiguration* := *authServerConfigurations1*[0]
 - 2.2. ONVIF Client invokes **DeleteAuthorizationServerConfiguration** with parameter
 - Token := *removedAuthServerConfiguration.token*
 - 2.3. The DUT responds with **DeleteAuthorizationServerConfigurationResponse** message.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.61 Get Authorization Server Configurations List

Name: HelperGetAuthorizationServerConfigurations

Notes: Annex is used at:

- ONVIF Security Configuration Device Test Specification

- ONVIF Uplink Test Specification
- ONVIF Real Time Streaming using Media2 Device Test Specification

Procedure Purpose: Helper procedure to get authorization server configurations list.

Pre-requisite: Security Configuration Service is received from the DUT. Authorization Server Configuration is supported by the DUT as indicated by the `AuthorizationServer.MaxConfigurations` capability.

Input: None

Returns: Authorization server configurations list (*authServerConfigurations*).

Procedure:

1. ONVIF Client invokes **GetAuthorizationServerConfigurations** request with parameters
 - Token is skipped
2. The DUT responds with **GetAuthorizationServerConfigurationsResponse** message with parameters
 - Configuration list =: *authServerConfigurations*

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.62 Provide certificate signed by private key of other certificate

Name: HelperCreateSignedCertificate

Notes: Annex is used at:

- ONVIF Security Configuration Device Test Specification
- ONVIF Uplink Test Specification
- ONVIF Real Time Streaming using Media2 Device Test Specification

Procedure Purpose: Helper procedure to create an X.509 certificate signed by private key of other certificate.

Pre-requisite: None.

Input: The subject (*subject*) of certificate and private key (*inputPrivateKey*) of the CA-certificate (*cert*). The service capabilities (*cap*). The key pair algorithm (*keyAlgorithm*). Certificate SAN (*certSAN*, optional).

Returns: An X.509 certificate (*cert*) signed by input private key that is compliant to [RFC 5280] and a corresponding key pair (*keyPair*) with the corresponding private key and public key.

Procedure:

1. ONVIF Client generates a key pair by following the procedure mentioned in [Annex A.56](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - in *keyAlgorithm* - key pair algorithm
 - out *keyPair* - key pair
2. ONVIF Client selects signature algorithm by following the procedure mentioned in [Annex A.55](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - in *inputPrivateKey.algorithm* - key pair algorithm
 - out *signatureAlgorithm* - signature algorithm
3. ONVIF Client creates an X.509 certificate signed by *inputPrivateKey* that is compliant to [RFC 5280] and has the following properties:
 - version := v3
 - signature := *signatureAlgorithm*
 - publicKey := *keyPair.publicKey*
 - validity := validity from *cert*
 - subject := *subject*
 - SAN := *certSAN*
 - issuerDN := subjectDN from *cert*

Note: ONVIF Client may return the same certificate in subsequent invocations of this procedure for the same subject and private key.

A.63 Authorization Server Configuration Type And Authentication Method Selection

Name: HelperAuthServerTypeAndMethodSelection

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification

Procedure Purpose: Helper procedure to select type and authentication method for authorization server configuration which will be used for tests based on Security Configuration Service capabilities.

Pre-requisite: Security Configuration Service is received from the DUT.

Input: The service capabilities (*cap*).

Returns: The authorization server configuration type (*authServerType*). The authentication method (*authMethod*).

Procedure:

1. ONVIF Client selects authorization server configuration type (*authServerType*) that will be used for the test from the list provided by DUT at *cap.AuthorizationServer.ConfigurationTypesSupported*. Selection is done among the following list of server configuration type supported by the ONVIF Client by priority from first to last:
 - OAuthClientCredentials
2. ONVIF Client selects authentication method (*authMethod*) that will be used for the test from the list provided by DUT at *cap.AuthorizationServer.ClientAuthenticationMethodsSupported*. Selection is done among the following list of server configuration type supported by the ONVIF Client by priority from first to last:
 - client_secret_basic
 - private_key_jwt
3. If after the previous steps execution authorization server configuration type (*authServerType*) is empty, FAIL the procedure.

4. If after the previous steps execution authentication method (*authMethod*) is empty, FAIL the procedure.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not return any of signature algorithms listed at step 1 or 2.

A.64 Create Key Pair and Receive Public Key

Name: HelperCreateKeyPairAndReceivePublicKey

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Uplink Test Specification

Procedure Purpose: Helper procedure to create a key pair and get public key from the device.

Pre-requisite: Security Configuration Service is received from the DUT. Create PKCS#10 supported by the DUT as indicated by the PKCS10 or PKCS10ExternalCertificationWithRSA capability. On-board ECC or RSA key pair generation is supported by the DUT as indicated by the ECCKeyPairGeneration or RSAKeyPairGeneration capability. The DUT shall have enough free storage capacity for one additional key pair. Current time of the DUT shall be at least Jan 01, 1970.

Input: The service capabilities (*cap*). The CSR key pair algorithm (*csrKeyAlgorithm*).

Returns: The identifier of the new key pair (*keyID*), a public key (*publicKey*).

Procedure:

1. ONVIF Client creates a key pair by following the procedure mentioned in [Annex A.65](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - in *csrKeyAlgorithm* - key pair algorithm
 - out *csrKeyID* - key pair ID
2. ONVIF Client selects signature algorithm by following the procedure mentioned in [Annex A.55](#) with the following input and output parameters:

- in *cap* - DUT capabilities
 - in *csrKeyAlgorithm* - key pair algorithm
 - out *caSignatureAlgorithm* - signature algorithm
3. ONVIF Client invokes **CreatePKCS10CSR** with parameters
- Subject := *subject* (see [Annex A.67](#))
 - KeyID := *csrKeyID*
 - CSRAAttribute skipped
 - SignatureAlgorithm.algorithm := *signatureAlgorithm*
4. The DUT responds with **CreatePKCS10CSRResponse** message with parameters
- PKCS10CSR =: *PKCS10request*
5. ONVIF Client extracts public key *publicKey* from *PKCS10request*.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **CreatePKCS10CSRResponse** message.

A.65 Create a key pair

Name: HelperCreateKeyPair

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Security Configuration Device Test Specification
- ONVIF Base Device Test Specification

Procedure Purpose: Helper procedure to create ECC or RSA key pair

Pre-requisite: Security Configuration Service is received from the DUT. On-board ECC or RSA key pair generation is supported by the DUT as indicated by the *ECCKeyPairGeneration* or

RSAPublicKeyGeneration capability. The DUT shall have enough free storage capacity for one additional key pair.

Input: The service capabilities (*cap*). The key pair algorithm (*keyAlgorithm*).

Returns: The identifier of the new key pair (*keyID*).

Procedure:

1. ONVIF Client determines the key pair generation params by following the procedure mentioned in [Annex A.57](#) with the following input and output parameters:
 - in *cap* - DUT capabilities
 - in *keyAlgorithm* - key pair algorithm
 - out *keyGenParams* - key pair generation params
2. If *keyGenParams.algorithm* = RSA:
 - a. ONVIF Client invokes **CreateRSAKeyPair** with parameter
 - KeyLength := *keyGenParams.keyLength*
 - b. The DUT responds with **CreateRSAKeyPairResponse** message with parameters
 - KeyID =: *keyID*
 - EstimatedCreationTime =: *duration*
3. If *keyGenParams.algorithm* = ECC:
 - a. ONVIF Client invokes **CreateECKKeyPair** with parameter
 - EllipticCurve := *keyGenParams.ellipticCurve*
 - b. The DUT responds with **CreateECKKeyPairResponse** message with parameters
 - KeyID =: *keyID*
 - EstimatedCreationTime =: *duration*
4. Until *operationDelay* + *duration* expires repeat the following steps:
 - 4.1. ONVIF Client waits for 5 seconds.
 - 4.2. ONVIF Client invokes **GetKeyStatus** with parameters
 - KeyID := *keyID*

- 4.3. The DUT responds with **GetKeyStatusResponse** message with parameters
 - *KeyStatus* =: *keyStatus*
- 4.4. If *keyStatus* is equal to "ok", *keyID* will be return as a result of the procedure, other steps will be skipped.
- 4.5. If *keyStatus* is equal to "corrupt", FAIL the procedure and deletes the key pair (*keyID*) by following the procedure mentioned in [Annex A.66](#).
5. If *operationDelay* + *duration* expires for step 4 and the last *keyStatus* is other than "ok", FAIL the procedure and deletes the key pair (*keyID*) by following the procedure mentioned in [Annex A.66](#).

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **CreateRSAKeyPairResponse** or **CreateECCKeyPairResponse** message.
- DUT did not send **GetKeyStatusResponse** message(s).

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

A.66 Delete a key pair

Name: HelperDeleteKeyPair

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Security Configuration Device Test Specification
- ONVIF Base Device Test Specification

Procedure Purpose: Helper procedure to delete a key pair.

Pre-requisite: Security Configuration Service is received from the DUT. On-board RSA or ECC key pair generation is supported by the DUT as indicated by the *RSAPKeyPairGeneration* or *ECCKeyPairGeneration* capability.

Input: The identifier of the key pair (*keyID*) to delete.

Returns: None

Procedure:

1. ONVIF Client invokes **DeleteKey** with parameters
 - KeyID := *keyID*
2. DUT responds with a **DeleteKeyResponse** message.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.67 Subject for a server certificate

Name: HelperSubjectForServerCertificate

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification
- ONVIF Security Configuration Device Test Specification
- ONVIF Base Device Test Specification

Use the following subject for test cases:

- Subject.Country := "US"
- Subject.CommonName := <DUT IP-address>

A.68 Find Media Profile for Streaming

Name: HelperFindMediaProfileForStreaming

Notes: Annex is used at:

- ONVIF Real Time Streaming using Media2 Device Test Specification

Procedure Purpose: Helper procedure to find existing Media Profile to contain Video Source Configuration and Video Encoder Configuration or Audio Source Configuration and Audio Encoder Configuration.

Pre-requisite: Media2 Service is received from the DUT. Video Streaming or Audio Streaming is supported by the DUT.

Input: None.

Returns: Media Profile (*profile1*) containing Video Source Configuration and Video Encoder Configuration or Audio Source Configuration and Audio Encoder Configuration.

Procedure:

1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := All
2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
3. Set *profilesListWithVideo1* := all items from *profileList* which item with Configurations contains both Video Source Configuration and Video Encoder Configuration
4. If *profilesListWithVideo1* is not empty:
 - 4.1. Set *profile1* := *profilesListWithVideo1*[0]
 - 4.2. Skip other steps of the annex.
5. Set *profilesListWithAudio1* := all items from *profileList* which item with Configurations contains both Audio Source Configuration and Audio Encoder Configuration
6. If *profilesListWithAudio1* is not empty:
 - 6.1. Set *profile1* := *profilesListWithAudio1*[0]
 - 6.2. Skip other steps of the annex.
7. FAIL the test and skip other steps.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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