

ONVIF[®]

Device Feature Discovery Specification

Version 21.12

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REVISION HISTORY

Vers.	Date	Description
11.12	Dec 22, 2011	First issue
12.06	Jun 22, 2012	Update for a new version of the ONVIF Device Test Tool. No changes made for Feature Discovery.
12.12	Dec 20, 2012	Update for a new version of the ONVIF Device Test Tool. Recording Control Service, Recording Search Service, Replay Control Service, Receiver Service specific features were added.
13.06	Jun, 2013	Update for a new version of the ONVIF Device Test Tool. Access Control Service, Door Control Service specific features were added.
13.12	Dec, 2013	Advanced Security features were added. tns1:RecordingConfig/DeleteTrackData feature was added into section Recording Control Service support and section Recording Control Service support items.
14.06	Jun, 2014	'Metadata Recording support' item was removed. Recording Control features support (GetServices) was added in section Recording Control Service support Item
14.12	Dec, 2014	IrCutoffConfiguration function support was added into section Imaging Service support Item and into section Imaging Service support Item. Scope was updated. Passphrase Management feature support was added into section Advanced Security Service Support Item. Feature definition for Profile Q was added: section Monitoring Events support Item was added, section Monitoring Events support Item was added, section Device Management Service Capabilities and section Device Service Capabilities configuration functionality in Device Management Service items were updated.
15.06	Jun, 2015	CRLs Management, Certification path validation policies Management, TLS WWW client auth extended key usage extension, TLS client authentication features support was added into section Advanced Security Service support. Credential Service features support was added into section Credential Service support and section Credential Service support. Access Rules Service features support was added into section Access Rules Service support and section Access Rules Service support. Schedule Service features support was added into section Schedule Service support and section Schedule Service support.
16.06	Jan 27, 2016	The section Media2 Service – general has been added.
16.06	Mar 15, 2016	The conditions in tables have been updated.

16.07	July 7, 2016	Changed version number, added Media2 Profile Configuration for PTZ Control
16.09	Sep, 2016	TLS1.0, TLS1.1, TLS1.2 features added
16.10	Oct, 2016	Media2 Service features support item was added
17.01	Jan, 2017	Minor changes: typos were fixed
17.01	Jan, 2017	TLS1.0, TLS1.1, TLS1.2 features removed
17.06	Feb, 2017	The following items were updated: Section Media2 Service – general Section PTZ Service support Section PTZ Service support The following item was added: Section Media2 Service support Scope list updated.
17.06	Mar 06, 2017	Tampering Events support in Imaging Service Item was added into section Imaging Service support and into section Imaging Service support. Scope list updated.
17.06	Mar 07, 2017	Analytics feature added into section Media2 Service – general
17.06	Apr 18, 2017	Table Media2 Service features support was updated. Section Analytics Service support was updated. Rule Engine and Rule Options features for Analytics Service were added into 5.5.10 Analytics Service support section and into section Analytics Service support section.
17.06	Apr 27, 2017	Table Credential features support (GetServices) updated with adding pt:ExemptFromAuthentication feature according to #1385 ticket.
17.06	May 03, 2017	TLS1.0, TLS1.1, TLS1.2 features added
17.06	May 22, 2017	Motion Alarm support in Imaging Service Item was added into section Imaging Service support and into section Imaging Service support. Scope list updated.
17.06	Jun 2, 2017	Table Media2 Service features support was updated according to #1382: acceptance of 'All' value in ConfigurationsSupported removed.
17.12	Jul 12, 2017	Serial Ports support in Device IO Service Item was added into section Device IO Service. Scope list updated.
17.12	Jul 13, 2017	Digital Input Options support in Device IO Service Item was added into section Device IO Service. Scope list updated.
17.12	Jul 20, 2017	Section Provisioning Service support was added.

		<p>Section Provisioning Service support was added.</p> <p>Scope list updated.</p>
17.12	Jul 24, 2017	<p>JPEG, H.264, and MPEG4 features were added into Recording Control features support (GetServices) and Recording Control features support (GetCapabilities) according to #1377.</p> <p>Scope list updated.</p>
17.12	Aug 29, 2017	<p>The document formating were updated.</p>
17.12	Aug 29, 2017	<p>Section Thermal Service support was added.</p> <p>Section Thermal Service support was added.</p> <p>Scope list updated.</p>
17.12	Oct 03, 2017	<p>Section Auxiliary Commands features support was added.</p> <p>Section Auxiliary Commands support was added.</p> <p>Scope list updated.</p> <p>Section Device Management Service Capabilities was updated.</p>
17.12	Oct 12, 2017	<p>RTP/RTSP/HTTPS feature support was added in Media2 Service – general.</p> <p>Scope list updated.</p>
17.12	Oct 16, 2017	<p>Motion Region Detector Rule feature support was added in section Analytics Service support and in 5.6.12 Analytics Service support according to #1185.</p> <p>Scope list updated.</p>
17.12	Oct 26, 2017	<p>Focus Control function support was added in section Imaging Service support and in section Imaging Service support according to #1450.</p> <p>OSD Types function support was added in section Media2 Service – general according to #1450.</p> <p>Scope list updated.</p>
17.12	Nov 22, 2017	<p>Auxiliary Commands Features Support section was removed. The features discovery from this section was moved to section Device Management Service Capabilities.</p>
18.06	Jan 23, 2018	<p>The following were updated in the scope of #1567:</p> <p>Scope (new feature added)</p> <p>Discovery Procedure (GetServices)\Device IO Features Support (updated with Note)</p> <p>Discovery Procedure (GetServices)\Device IO Relay Output Options Support (added)</p> <p>Discovery Procedure (GetCapabilities)\Device IO Service (updated with note)</p> <p>Discovery Procedure (GetCapabilities)\Relay Outputs Support (updated with note)</p>

		Discovery Procedure (GetCapabilities)\Device IO Relay Output Options Support (added)
18.06	Feb 13, 2018	<p>The following were updated in the scope of #1535:</p> <p>Scope (the description of which features will be defined per each node was added)</p> <p>Feature Support Criteria (updated with entity for features)</p> <p>PTZ Service Features Support (GetService) (reordered)</p> <p>PTZ Service Support (GetServices) (links updated)</p> <p>Various Functions Support in PTZ Service (GetServices) (removed)</p> <p>PTZ Nodes Features Support (GetServices) (added)</p> <p>Fixed/Configurable Home Position Support (GetServices) (removed)</p> <p>Fixed/Configurable Home Position Support for PTZ Node (GetServices) (added)</p> <p>PTZ Service Support (GetServices) (links updated)</p> <p>PTZ Service Features Support (GetCapabilities) (reordered)</p> <p>Various Functions Support in PTZ Service (GetCapabilities) (removed)</p> <p>PTZ Nodes Features Support (GetCapabilities) (added)</p> <p>Fixed/Configurable Home Position Support (GetCapabilities) (removed)</p> <p>Fixed/Configurable Home Position Support for PTZ Node (GetCapabilities) (added)</p> <p>Annex A.2 Media2 Service - Media Profile Configuration for PTZ Control (removed)</p> <p>Annex A.8 Media Profile Configuration for PTZ Control (added)</p> <p>Annex A.9 Media Profile Configuration with Video Source Configuration (added)</p>
18.06	Feb 13, 2018	<p>The following were updated in the scope of #1581:</p> <p>Media2 Service – OSD Types Support (GetServices) table updated.</p>
18.06	Apr 17, 2018	<p>Section 'Event Service - Message Content Filter support' was added into 'Discovery Procedure (GetServices)' section according to #1340.</p> <p>Section 'Event Service - Message Content Filter support' was added into 'Discovery Procedure (GetCapabilities)' section section according to #1340.</p> <p>Scope list updated.</p>
18.06	May 24, 2018	<p>Section 'Event Service - ONVIF Message Content Filter Dialect Support' was added into 'Discovery Procedure (GetServices)' section according to #1618.</p>

		<p>Section 'Event Service - ONVIF Message Content Filter Dialect Support' was added into 'Discovery Procedure (GetCapabilities)' section according to #1618.</p> <p>Scope list updated.</p>
18.06	Jun 21, 2018	Reformatting document using new template
18.12	Aug 16, 2018	<p>The following was done according to #1690:</p> <p>HTTPS Support was added into Discovery Procedure (GetServices) section.</p> <p>HTTPS Support was added into Discovery Procedure (GetCapabilities) section.</p> <p>RTP/RTSP/HTTPS feature support was updated.</p> <p>Scope list updated.</p>
18.06 SR1	Aug 27, 2018	<p>The following were updated in the scope of #1711:</p> <p>Scope (Device IO Service\Relay Outputs\Bistable and Device IO Service\Relay Outputs\Monostable was added)</p> <p>Discovery Procedure (GetServices): Device IO Service (updated with format and links to new section)</p> <p>Discovery Procedure (GetServices): Device IO Features Support (updated with format and links to new section)</p> <p>Discovery Procedure (GetServices): Device IO Relay Output Options Support (updated with format and links to new section)</p> <p>Discovery Procedure (GetServices): Device IO Relay Outputs Features Support (added)</p> <p>Discovery Procedure (GetCapabilities): Device IO Service (updated with format and links to new section)</p> <p>Discovery Procedure (GetCapabilities): Device IO Relay Output Support (updated with format and links to new section)</p> <p>Discovery Procedure (GetCapabilities): Device IO Relay Output Options Support (updated with format and links to new section)</p> <p>Discovery Procedure (GetCapabilities): Device IO Relay Outputs Features Support (added)</p>
18.12	Aug 31, 2018	<p>The following were updated in the scope of #1716:</p> <p>Discovery Procedure (GetServices): Imaging Service Support (format updated)</p> <p>Discovery Procedure (GetServices): IrCutfilterConfiguration Feature Support (replaced with new)</p> <p>Discovery Procedure (GetCapabilities): Imaging Service Support (format updated)</p> <p>Discovery Procedure (GetCapabilities): IrCutfilterConfiguration Feature Support (replaced with new)</p>
18.12	Aug 31, 2018	The following were updated in the scope of #1726:

		<p>Discovery Procedure (GetServices): Recording Search Service Support (updated to correspond to implementation)</p> <p>Discovery Procedure (GetCapabilities): Recording Search Service Support (updated to correspond to implementation)</p>
18.12	Oct 1, 2018	<p>The following were updated in the scope of #1599:</p> <p>Scope (Advanced Security Service\Keystore features support\No Private Key Sharing was added)</p> <p>Discovery Procedure (GetServices): Advanced Security Service Support (updated with format)</p> <p>Discovery Procedure (GetServices): Advanced Security Features Support (updated with format, definition of new feature No Private Key Sharing was added)</p>
18.12	Oct 2, 2018	<p>The following were updated in the scope of #1663:</p> <p>Annex A.1 Selection/Creation of Media Profile That Contains PTZ Configuration (reformatted, step 5 added)</p> <p>Annex A.11 Configure Empty Media Profile (added)</p>
18.12	Oct 8, 2018	<p>The following were updated in the scope of #1677:</p> <p>Scope (AccessControl/Denied/CredentialNotFound feature added)</p> <p>Discovery Procedure (GetServices): Access Control Service Support (description format updated)</p> <p>Discovery Procedure (GetServices): Access Control Service Support \Access Control Events Support (tns1:AccessControl/Denied/CredentialNotFound added)</p> <p>Annex A.3 Get Complete Access Point Info List (description format updated)</p> <p>Annex A.4 Get Complete Area Info List (description format updated)</p>
18.12	Oct 8, 2018	<p>The following were updated in the scope of #1639 (for pre-configuration procedure):</p> <p>Introduction (updated with pre-configuration description)</p> <p>Scope (updated with pre-configuration description)</p> <p>Pre-Configuration Procedure (added)</p>
18.12	Oct 8, 2018	<p>The following were updated in the scope of #1670:</p> <p>Feature Discovery Procedure (Client Supplied Token feature was added)</p> <p>Discovery Procedure (GetServices): Schedule Service Support (description format updated)</p> <p>Discovery Procedure (GetServices): Schedule Service Support \Schedule Features Support (Client Supplied Token feature was added)</p>
18.12	Oct 12, 2018	<p>The following were updated in the scope of #1746:</p>

		<p>Discovery Procedure (GetServices): Device IO Relay Outputs Features Support (DelayTime value in SetRelayOutputSettings request for Monostable mode updated, Note added)</p> <p>Discovery Procedure (GetCapabilities): Device IO Relay Outputs Features Support (DelayTime value in SetRelayOutputSettings request for Monostable mode updated, Note added)</p>
18.12	Oct 12, 2018	<p>The following were updated in the scope of #1672:</p> <p>Feature Discovery Procedure (Client Supplied Token feature was added)</p> <p>Discovery Procedure (GetServices): Credential Service Support (description format updated)</p> <p>Discovery Procedure (GetServices): Credential Service Support \Credential Features Support (Client Supplied Token feature was added)</p>
18.12	Oct 16, 2018	<p>The following were updated in the scope of #1671:</p> <p>Feature Discovery Procedure (Client Supplied Token feature was added)</p> <p>Discovery Procedure (GetServices): Access Rules Service Support (description format updated)</p> <p>Discovery Procedure (GetServices): Access Rules Service Support \Access Rules Features Support (Client Supplied Token feature was added)</p>
18.12	Nov 14, 2018	<p>The following were updated in the scope of #1653:</p> <p>Scope (Advanced Security Service was renamed to Security Configuration Service)</p> <p>Normative references ("[ONVIF Advanced Security Test] ONVIF Advanced Security Test Specification:" replaced with "[ONVIF Security Configuration Test] ONVIF Security Configuration Device Test Specification:")</p> <p>Discovery Procedure (GetServices): HTTPS Support ("Advanced Security Service" was replaced with "Security Configuration Service" in several places)</p> <p>Discovery Procedure (GetServices): Advanced Security Service Support section was renamed to Security Configuration Service Support</p> <p>Discovery Procedure (GetServices): Security Configuration Service Support ("Advanced Security Service" was replaced with "Security Configuration Service" in many places)</p> <p>Discovery Procedure (GetCapabilities): Security Configuration Service Support section was renamed to Security Configuration Service Support</p> <p>Discovery Procedure (GetCapabilities): Security Configuration Service Support ("Advanced Security Service" was replaced with "Security Configuration Service" in many places)</p>
19.06	Apr 10, 2019	<p>The following were updated in the scope of #1764:</p> <p>Discovery Procedure (GetServices): Media2 Service – Audio Encoding Support ("MPEG4-GENERIC" value added for AAC)</p>

		Discovery Procedure (GetServices): Media2 Service – Audio Decoding Support ("MPEG4-GENERIC" value added for AAC)
19.06	May 06, 2019	The following were updated in the scope of #1799: Scope (updated with Enabled TLS Versions feature) Discovery Procedure (GetServices): Security Configuration Features Support (updated with Enabled TLS Versions feature)
19.12	Apr 25, 2019	The following were updated in the scope of #1833: Feature Discovery Procedure (Analytics Modules and Analytics Module Options features were added) Discovery Procedure (GetServices): Analytics Features Support (Analytics Modules and Analytics Module Options features were added) Discovery Procedure (GetCapabilities): Analytics Service Support (Analytics Modules and Analytics Module Options features were added)
19.12	Jul 31, 2019	The following were updated in the scope of #1675: Scope (Door Management feature was added) Discovery Procedure (GetServices): Door Control Service (Door Control Features Support new section was added)
19.12	Aug 05, 2019	The following were updated in the scope of #1668: Scope (Client Supplied Token feature was added) Discovery Procedure (GetServices): Door Control Service (Client Supplied Token feature was added)
19.12	Sep 11, 2019	The following were updated in the scope of #1669 and #1676: Scope (Client Supplied Token (Area, Access Point) feature was added) Scope (Access Point Management feature was added) Scope (Area Management feature was added) Discovery Procedure (GetServices): 5.5.17.4 Access Control Service Features Support section was added into 5.5.17 Access Control Service Support
19.12	Sep 25, 2019	The following were updated in the scope of #1675: Door Control Features Support section (Door Entity was added section) Door Entity support was renamed to Door Entity Features Support Door Entity Features Support section (Door Entity was removed from section, pre-requisite was added) Door Control Events Support section (pre-requisite was added)
19.12	Sep 25, 2019	The following were updated in the scope of #1894: Scope (Metadata feature was added into Media2 service)

		Discovery Procedure (GetServices): Media2 Service – General updated (Metadata feature added into Table 5.18 Media2 Service Features Support (GetServices))
19.12	Oct 17, 2019	The following were updated in the scope of #1831: Scope (Supported Metadata feature was added under Analytics Modules) Discovery Procedure (GetServices): 5.5.11.1 Analytics Features Support (Supported Metadata feature added into Table 5.42 Analytics Features Support (GetServices)) Discovery Procedure (GetCapabilities): 5.6.13 Analytics Service Support (Supported Metadata feature added into Table 5.101 Analytics Service (GetCapabilities))
19.12	Oct 21, 2019	The following were updated in the scope of #1837: Scope (Object Classification feature was added under Analytics Modules/Metadata Types) Discovery Procedure (GetServices): 5.5.11.3 Analytics Service - Metadata Types section with Object Classification feature added Discovery Procedure (GetCapabilities): 5.6.13 Analytics Service - Metadata Types (added)
20.06	Jan 10, 2019	The following were updated in the scope of #1880 and #1882: Scope (Whitelist and Blacklist features were added) Discovery Procedure (GetServices): Credential Features Support (Whitelist and Blacklist features were added)
20.06	Jan 13, 2020	The following were updated in the scope of #1923: Scope (AccessControl/AccessGranted/Identifier and AccessControl/Denied/Identifier features were added) Discovery Procedure (GetServices): Access Control Events Support (AccessControl/AccessGranted/Identifier and AccessControl/Denied/Identifier features were added)
20.06	Jan 15, 2020	The following were updated in the scope of #1841: Scope (Analytics Service/Analytics Modules/Supported Metadata/Object Classification/Vehicle Info feature was added) Discovery Procedure (GetServices): Analytics Service - Supported Metadata (Vehicle Info feature was added)
20.06	Jan 15, 2020	The following were updated in the scope of #1878: Scope (Access Control Service\Access Point Entity\Identifier Access feature was added) Discovery Procedure (GetServices): Access Point Entity Support and Access Point Features Support (Identifier Access feature was added)
20.06	Jan 16, 2020	The following were updated in the scope of #1845: Scope (Analytics Service/Analytics Modules/Supported Metadata/Geo Location feature was added)

		Discovery Procedure (GetServices): Analytics Service - Supported Metadata (Geo Location feature was added)
20.06	Feb 10, 2020	<p>The following were updated in the scope of #1820:</p> <p>Scope (Analytics Service/Analytics Modules/Supported Metadata/ Human Face feature was added)</p> <p>Discovery Procedure (GetServices): Analytics Service - Supported Metadata (Human Face feature was added)</p> <p>The following were updated in the scope of #1843:</p> <p>Scope (Analytics Service/Analytics Modules/Supported Metadata/ License Plate feature was added)</p> <p>Discovery Procedure (GetServices): Analytics Service - Supported Metadata (License Plate feature was added)</p>
20.06	Feb 12, 2020	<p>The following were updated in the scope of #1995:</p> <p>Scope (Event Service /Event Broker feature with subfeatures was added)</p> <p>5.5.7.1 Event service features (Event Broker, mqtt, mqts, ws, and wss features were added)</p> <p>5.6.9.1 Event service features (Event Broker, mqtt, mqts, ws, and wss features were added)</p>
20.06	Mar 11, 2020	<p>The following were updated in the scope of #1901:</p> <p>Scope (Media2 /Media2 Events was added)</p> <p>5.5.6.6 Media2 Events Support section (added)</p>
20.06	Mar 17, 2020	<p>The following were updated in the scope of #1835:</p> <p>Discovery Procedure (GetServices): Analytics Features Support (Image Sending, Embedded Image Sending Type, Local Storage Image Sending Type, Remote Storage Image Sending Type features were added)</p> <p>Discovery Procedure (GetCapabilities): Analytics Service Support (Image Sending, Embedded Image Sending Type, Local Storage Image Sending Type, Remote Storage Image Sending Type features were added)</p> <p>Scope (Image Sending, Embedded Image Sending Type, Local Storage Image Sending Type, Remote Storage Image Sending Type features were added)</p>
20.06	Mar 17, 2020	<p>The following were updated in the scope of #1847 and #1849:</p> <p>Discovery Procedure (GetServices): Motion Region Detector Rule section was rename to Supported Rules section.</p> <p>Discovery Procedure (GetCapabilities): Motion Region Detector Rule section was rename to Supported Rules section.</p> <p>Discovery Procedure (GetServices): Supported Rules (Face Recognition Rule, License Plate Recognition Rule features were added).</p> <p>Scope (Face Recognition Rule, License Plate Recognition Rule features were added)</p>

20.06	Apr 16, 2020	<p>The following were updated in the scope of #2037:</p> <p>Discovery Procedure (GetServices): Analytics Service - Supported Metadata (Human Face feature was updated)</p> <p>Discovery Procedure (GetServices): Analytics Service - Supported Metadata (Human feature was replaced with Human Body feature)</p> <p>Discovery Procedure (GetServices): Analytics Service - Supported Metadata (License Plate feature was replaced with License Plate Info feature)</p> <p>Discovery Procedure (GetServices): Analytics Service - Supported Metadata (Vehicle feature was replaced with Vehicle Info feature)</p>
20.06	May 12, 2020	<p>The following were updated in the scope of #1999:</p> <p>Feature Discovery Procedure (Pull-Point Notification added)</p> <p>Discovery Procedure (GetServices): Event Service section updated (reformatted, Event Service definition changed, Event Service - Pull-Point Notification Support section added)</p> <p>Discovery Procedure (GetCapabilities): Event Service section updated (reformatted, Event Service definition changed, Event Service - Pull-Point Notification Support section added)</p>
20.12	Sep 25, 2020	<p>The following were updated in the scope of #2093 and #2094:</p> <p>Feature Discovery Procedure (User Configuration and Network Configuration added)</p> <p>Discovery Procedure (GetServices): Device Management Service Capabilities section updated (User Configuration and Network Configuration features added)</p> <p>Discovery Procedure (GetCapabilities): Device Service Capabilities Configuration Functionality in Device Management Service section updated (User Configuration and Network Configuration features added)</p>
20.12	Oct 26, 2020	<p>The following were updated in the scope of #1866:</p> <p>Discovery Procedure (GetServices): Credential Features Support (Credential Entity added)</p> <p>Discovery Procedure (GetServices): Access Point Entity Support and Access Point Features Support (Access Point Entity feature removed)</p> <p>Discovery Procedure (GetServices): Access Control Service Features Support (Access Point Entity feature added, MaxAccessPoints Capability feature added)</p> <p>Discovery Procedure (GetServices): Access Point Entity Support and Access Point Features Support renamed to Access Point Features Support</p> <p>Discovery Procedure (GetServices): Door Control Features Support (MaxDoors Capability feature added)</p>
20.12	Nov 06, 2020	<p>The following were updated in the scope of #2094:</p> <p>5.5.2 HTTPS Support section (Pre-requisite to support Network Configuration added).</p>

		IPv6 feature definition in Device Capabilities Configuration Functionality in Device Management Service (GetServices) section.
21.06	Dec 21, 2020	The following were updated in the scope of #2107: Scope (Access Control Service\Access Point Entity\Feedback feature was added) Discovery Procedure (GetServices): Access Point Entity Support and Access Point Features Support (Feedback feature was added)
21.06	Dec 26, 2020	The following were updated in the scope of #1879: Scope (Access Control Service\Access Point Events\AccessControl/AccessTaken/Identifier feature was added) Scope (Access Control Service\Access Point Events\AccessControl/AccessNotTaken/Identifier feature was added) Discovery Procedure (GetServices): 5.5.17.4 Access Control Events Support (AccessControl/AccessTaken/Identifier and AccessControl/AccessNotTaken/Identifier features were added)
21.06	Feb 01, 2021	The following were updated in the scope of #2124: Discovery Types Support section was updated and moved from general section to Discovery Procedure (GetServices) and Discovery Procedure (GetCapabilities). Discovery Procedure (GetServices): 5.4.1 Device Management Service Capabilities (Discovery features was added)
21.06	Apr 09, 2021	The following were updated in the scope of #2124: Pre-Configuration Procedure (IPv6 Enabling Pre-Configuration Procedure).
21.06	Apr 22, 2021	The following were updated in the scope of #1853: Discovery Procedure (GetServices): Supported Rules (Line Crossing Counting Rule feature was added). Scope (Line Crossing Counting Rule feature was added)
21.12	Oct 13, 2021	The following were updated in the scope of #2222: Mask feature support was added in Media2 Service – general. Scope list updated.
21.12	Dec 15, 2021	Profile Q was removed from Informative References according to #2204

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1 Introduction

ONVIF Test Specification ([ONVIF Test]) defines/describes test cases need to verify according to [ONVIF Network Interface Specs], [ONVIF Conformance] in conjunction with a certain Profile Specification requirements. However, requirement on which test cases need to be executed and passed is out of the scope of [ONVIF Test]. Such requirements have to be described in a separate document.

This document focuses on detailing out feature discovery procedure and pre-configuration procedure for ONVIF Device Test Tool (hereafter, it is referred to as ONVIF Client) to identify which functionality is supported / not supported by DUT and to prepare DUT for further testing.

Based on these results of the feature discovery, which test cases shall be executed and passed will be determined for the purpose of claiming conformance to Profile specification. Some feature detection will be based on capability query, and some other feature detection will be based on error code response retrieval toward a specific request.

Pre-configuration procedure provide possibility automatically pre-configure the DUT before test execution to prevent additional time expenses for Test Operator or conformance time.

1.1 Scope

The scope of this document is to define:

- Feature discovery procedure of the functionality listed in [Section 1.1.1](#).
- Pre-configuration procedure for the items listed in [Section 1.1.2](#).

1.1.1 Feature Discovery Procedure

Feature discovery procedure includes logic description for the following features:

- Security
 - WS-UsernameToken
 - HTTP digest authentication
- Discovery
 - Bye Message support
- Types
 - dn:NetworkVideoTransmitter

- tds:Device
- Device Service
 - Capabilities
 - GetCapabilities
 - GetServices
 - Network
 - Zero Configuration
 - NTP support
 - IPv6
 - DHCPv6
 - Dynamic DNS
 - IP Filter
 - HTTPS
 - System
 - System logging
 - Http System Logging
 - Http Firmware Upgrade
 - Http Support Information
 - Http System Backup
 - User Configuration
 - Network Configuration
 - Security
 - Maximum Users
 - Default Access Policy

- Remote User Handling
- Maximum Username Length
- Maximum Password Length
- TLS1.0
- TLS1.1
- TLS1.2
- I/O functionality
 - Relay Outputs
 - Bistable
 - Open
 - Closed
 - Monostable
 - Open
 - Closed
- Monitoring Events
 - Monitoring/ProcessorUsage
 - Monitoring/OperatingTime/LastReset
 - Monitoring/OperatingTime/LastReboot
 - Monitoring/OperatingTime/LastClockSynchronization
 - Monitoring/Backup/Last
 - Monitoring/Mechanical/FanFailed
 - Monitoring/Mechanical/PowerSupplyFailed
 - Monitoring/Mechanical/StorageFailed
 - Monitoring/EnvironmentalConditions/CriticalTemperature

- Device scopes retrieval via GetDeviceScopes
- Event Service
 - Persistent notification storage support
 - WS Basic Notification
 - Message Content Filter
 - ONVIF Message Content Filter Dialect
 - GetServiceCapabilities
 - MaxPullPoints capability
 - Pull-Point Notification
- Event Broker
 - Protocols
 - mqtt
 - mqttts
 - ws
 - wss
- Media Service
 - Video
 - JPEG
 - H.264
 - MPEG4
 - Audio
 - G.711
 - G.726
 - AAC
 - Audio outputs

- G.711
- G.726
- AAC
- Real-time streaming
 - RTP/UDP
 - RTP/RTSP/HTTP
 - RTP/RTSP/TCP
 - RTP-Multicast/UDP
- GetSnapshotUri support
- Media2 Service
 - Video
 - H.265
 - H.264
 - Audio
 - G.711
 - AAC
 - Audio outputs
 - G.711
 - AAC
 - Real-time streaming
 - RTP/UDP
 - RTP/RTSP/HTTP
 - RTP/RTSP/HTTPS
 - RTP/RTSP/TCP

- RTP-Multicast/UDP
- RTSP WebSocket
- Snapshot Uri
- Video Source Mode
- OSD
 - Types
 - Text
 - Image
- Analytics
- Metadata
- Media2 Events
 - Media/ProfileChanged
 - Media/ConfigurationChanged
- Mask
- PTZ Service
 - Get Compatible Configurations
 - Move Status
 - Status Position
 - For each PTZ node:
 - Absolut Move
 - Pan/Tilt Movement
 - Zoom Movement
 - Relative Move
 - Pan/Tilt Movement

- Zoom Movement
- Continuous Move
 - Pan/Tilt Movement
 - Zoom Movement
- Preset
- Home Position
 - Configurable
 - Fixed
- Auxiliary operations
- Speed
 - Speed for Pan/Tilt
 - Speed for Zoom
- Device IO Service
- Relay Outputs
 - Relay Output Options
 - For each Relay Output node:
 - Bistable Mode
 - Open Idle Sate
 - Closed Idle Sate
 - Monostable Mode
 - Open Idle Sate
 - Closed Idle Sate
- Digital Inputs
 - Digital Input Options

- Serial Ports
- Imaging Service
 - IrCutfilterConfiguration
 - Tampering Events
 - Image Too Blurry
 - Image Too Dark
 - Image Too Bright
 - Global Scene Change
 - Motion Alarm
 - Focus Control
- Analytics Service
 - Rule Engine
 - Rule Options
 - Supported Rules
 - Motion Region Detector Rule
 - Face Recognition Rule
 - License Plate Recognition Rule
 - Analytics Modules
 - Analytics Module Options
 - Supported Metadata
 - Geo Location
 - Object Classification
 - Vehicle Info
 - Human Face

- Human Body
- License Plate Info
- Image Sending
 - Embedded Image Sending Type
 - Local Storage Image Sending Type
 - Remote Storage Image Sending Type
- Recording Control Service
 - Dynamic Recordings
 - Dynamic Tracks
 - Audio Recording
 - Recording Options
 - tns1:RecordingConfig/DeleteTrackData
 - Metadata Recording
 - Encoding
 - JPEG
 - H.264
 - MPEG4
- Recording Search Service
 - Metadata Search
 - PTZ Position Search
- Replay Service
 - Reverse Replay
 - RTP/RTSP/TCP
- Receiver Service
- Door Control Service

- MaxDoors Capability
- Door Entity
 - Access Door
 - Lock Door
 - Unlock Door
 - Double Lock Door
 - Block Door
 - Lock Down Door
 - Lock Open Door
 - Door Monitor
 - Lock Monitor
 - Double Lock Monitor
 - Alarm
 - Tamper
 - Fault
- Door Events support
 - Door/State/DoorMode
 - Door/State/DoorPhysicalState
 - Door/State/LockPhysicalState
 - Door/State/DoubleLockPhysicalState
 - Door/State/DoorAlarm
 - Door/State/DoorTamper
 - Door/State/DoorFault
 - Configuration/Door/Changed

- Configuration/Door/Removed
- Door Management
- Client Supplied Token (Door)
- Access Control Service
 - Area Entity
 - MaxAccessPoints Capability
 - Access Point Entity
 - Enable/Disable Access Point
 - Duress
 - Access Taken
 - External Authorization
 - Anonymous Access
 - Identifier Access
 - Feedback
 - Access Point Events
 - AccessControl/AccessGranted/Anonymous
 - AccessControl/AccessGranted/Credential
 - AccessControl/AccessTaken/Anonymous
 - AccessControl/AccessTaken/Credential
 - AccessControl/AccessTaken/Identifier
 - AccessControl/AccessNotTaken/Anonymous
 - AccessControl/AccessNotTaken/Credential
 - AccessControl/AccessNotTaken/Identifier
 - AccessControl/Denied/Anonymous

- AccessControl/Denied/Credential
- AccessControl/Denied/CredentialNotFound/Card
- AccessControl/Denied/CredentialNotFound
- AccessControl/Duress
- AccessControl/Request/Anonymous
- AccessControl/Request/Credential
- AccessControl/Request/Timeout
- AccessPoint/State/Enabled
- Configuration/AccessPoint/Changed
- Configuration/AccessPoint/Removed
- Configuration/Area/Changed
- Configuration/Area/Removed
- AccessControl/AccessGranted/Identifier
- AccessControl/Denied/Identifier
- Access Point Management
- Area Management
- Client Supplied Token (Area, Access Point)
- Security Configuration Service
 - Keystore features support
 - RSA Key Pair Generation
 - PKCS10 External Certification with RSA
 - Self-Signed Certificate Creation with RSA
 - Passphrase Management
 - PKCS8 Container Upload

- PKCS12 Container Upload
- CRLs
- Certification path validation policies
- TLS WWW client auth extended key usage extension
- No Private Key Sharing
- TLS features support
 - TLS Server
 - TLS client authentication
 - Enabled TLS Versions
- Credential Service
 - Credential Entity
 - Supported Identifier Types
 - pt:Card
 - pt:PIN
 - pt:Fingerprint
 - pt:Face
 - pt:Iris
 - pt:Vein
 - Credential Validity
 - Credential Access Profile Validity
 - Validity Supports Time Value
 - Reset Antipassback Violation
 - Client Supplied Token
 - Whitelist

- Blacklist
- SupportedExemptionType
 - pt:ExemptFromAuthentication
- Access Rules Service
 - Multiple Schedules per Access Point
 - Client Supplied Token
- Schedule Service
 - Extended Recurrence
 - Special Days
 - State Reporting
 - Client Supplied Token
- Provisioning Service
- Thermal Service
- Auxiliary Commands
 - tt:Wiper|On
 - tt:Wiper|Off
 - tt:Washer|On
 - tt:Washer|Off
 - tt:WashingProcedure|On
 - tt:WashingProcedure|Off
 - tt:IRLamp|On
 - tt:IRLamp|Off
 - tt:IRLamp|Auto

The coverage of the discovery procedure will be evolving in accordance with [ONVIF Test] version evolution and addition of Profile Specification.

1.1.2 Pre-Configuration Procedure

Pre-configuration procedure includes logic description for the following items:

- Enabling of IPv6 network configuration

Pre-configuration procedure shall have no impact on conformance results even in the case of failures.

2 Normative References

- [ONVIF Network Interface Specs] ONVIF Network Interface Specification documents:
<https://www.onvif.org/profiles/specifications/>
- [ONVIF Conformance] ONVIF Conformance Process Specification:
<https://www.onvif.org/profiles/conformance/>
- [ONVIF Test] ONVIF Device Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Base Test] ONVIF Base Device Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Media Test] ONVIF Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF PTZ Test] ONVIF PTZ Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Imaging Test] ONVIF Imaging Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Recording Control Test] ONVIF Recording Control Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Receiver Test] ONVIF Receiver Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Replay Control Test] ONVIF Replay Control Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Recording Search Test] ONVIF Recording Search Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Access Test] ONVIF Access Control Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>

- [ONVIF Door Test] ONVIF Door Control Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Security Configuration Test] ONVIF Security Configuration Device Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Credential Test] ONVIF Credential Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Access Rules Test] ONVIF Access Rules Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Schedule Test] ONVIF Schedule Test Specification:
<https://www.onvif.org/profiles/conformance/device-test/>

3 Informative References

- [ONVIF Test Case Summary] ONVIF Test Case Summary for Profile Conformance
<https://www.onvif.org/profiles/conformance/device-test/>
- [ONVIF Profile S] ONVIF Profile S Specification
<https://www.onvif.org/profiles/profile-s/>
- [ONVIF Profile G] ONVIF Profile G Specification
<https://www.onvif.org/profiles/profile-g/>
- [ONVIF Profile C] ONVIF Profile C Specification
<https://www.onvif.org/profiles/profile-c/>
- [ONVIF Profile A] ONVIF Profile A Specification
<https://www.onvif.org/profiles/profile-a/>
- [ONVIF Profile T] ONVIF Profile T Specification
<https://www.onvif.org/profiles/profile-t/>

4 Terms and Definitions

4.1 Definitions

This section defines terms that are specific to the ONVIF Feature Discovery.

Capability	The capability commands allow a client to ask for the services provided by an ONVIF device.
Network	A network is an interconnected group of devices communicating using the Internet protocol.
ONVIF Client	ONVIF Device Test Tool in the context of this document
Key	A key is an input to a cryptographic algorithm. Sufficient randomness of the key is usually a necessary condition for the security of the algorithm. This specification supports RSA key pairs as keys.
Key Pair	A key that consists of a public key and (optionally) a private key.
RSA key pair	A key pair that is accepted as input by the RSA algorithm.
Certificate	A certificate as used in this specification binds a public key to a subject entity. The certificate is digitally signed by the certificate issuer (the certification authority) to allow for verifying its authenticity

4.2 Abbreviations

This section describes abbreviations used in this document.

DUT	Device Under Test
DNS	Domain Name System
DHCP	Dynamic Host Configuration Protocol
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
NTP	Network Time Protocol
RTCP	RTP Control Protocol
RTSP	Real Time Streaming Protocol
RTP	Real-time Transport Protocol
URI	Uniform Resource Identifier
TLS	Transport Layer Security

5 Discovery Procedure

This section describes policy on how ONVIF Client assumes that a certain feature is supported or not, followed by respective feature discovery procedures.

5.1 General Policy

ONVIF Client will issue capability query command (GetCapabilities or GetServices/GetServiceCapabilities depending on DUT possibilities) to get to know whether a certain feature is supported by DUT. If the DUT returns correct response, ONVIF Client determines whether a feature in question is supported or not, based on the content of the response. If the DUT returns unexpected response or it does not return any response, ONVIF Client assumes that the capability query command which is being used is not supported by DUT.

There are a number of functions which are defined as conditionally required. And there are some of functions which are not present in any capability response fields. As for these commands, ONVIF Client will issue the very function command to determine whether the function is supported or not. In the case that the DUT returns a correct response to indicate no function support such as SOAP fault `env:Receiver/ter:ActionNotSupported/ter:NoSuchService`, ONVIF Client assumes that the function is not supported by DUT. In case the DUT returns an unexpected response or it does not return any response, ONVIF Client will mark the function support in question as undefined.

After going through all the feature discovery steps based on the above general policy, what are marked as supported and undefined will be processed as supported features during conformance testing.

5.2 Feature Support Criteria

Feature support criteria in the specification are defined using the following table format outlined in [Table 5.1](#)

Table 5.1. Feature Support Criteria Description Outline Used in This Specification

Criterion Item	Criteria_item_description	
	Supported	Not Supported
Feature <(for each Entity_type)>		
Feature_name1	Supported_criteria_feature1	NotSupported_criteria_feature1
Feature_name2	Supported_criteria_feature2	NotSupported_criteria_feature2
...

Criterion Item	Criteria_item_description	
	Supported	Not Supported
Feature <(for each Entity_type)>		
Feature_nameN	Supported_criteria_featureN	NotSupported_criteria_featureN

The **Feature** column includes a list of features that is defined in current table.

The **Feature** cell could have optional brackets with definition of entity type for which the features will be defined (for example, for each PTZ Node). If there are no brackets the features are general for the DUT.

The **Criterion item** field contains item description which value will be used as criteria to check feature support.

The **Supported** column includes conditions when feature in the same row will be assumed as supported depending on criteria item value.

The **Not Supported** column includes conditions when feature in the same row will be assumed as not supported depending on criteria item value.

5.3 Capabilities

From the first version of ONVIF Core Specification document, GetCapabilities command defined in Device Management Service was the only command to get to know the various feature capabilities by DUT. This capability query scheme was modified in the later version of [ONVIF Network Interface Specs] in order to enhance its scalability. In the case when only GetCapabilities command is supported by DUT, the following procedure focuses on GetCapabilities commands as supported capability query method by DUT. In the case when GetServices/GetServiceCapabilities commands are supported by DUT the following procedure focuses on GetServices commands as supported capability query method, which provides more possibilities for feature discovery.

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest message without any authentication to retrieve the capabilities and check GetCapabilities command support by DUT.
 - a. If DUT returns correct GetCapabilitiesResponse message. Go to step 4
 - b. If DUT returns fault message (any SOAP fault except Sender/NotAuthorized) or it does not return any response. Go to step 4.
 - c. If DUT returns fault message (SOAP fault Sender/NotAuthorized), go to step 2.
 - d. If DUT returns HTTP 401 Unauthorized error, go to step 3.

2. ONVIF Client invokes GetCapabilitiesRequest message with WS-UsernameToken authentication to retrieve the capabilities and check GetCapabilities command support of DUT.
 - a. If DUT returns correct GetCapabilitiesResponse message. Go to step 4.
 - b. If DUT does not return correct GetCapabilitiesResponse message. Go to step 4.
3. ONVIF Client invokes GetCapabilitiesRequest message with HTTP Digest authentication to retrieve the capabilities and check GetCapabilities command support of DUT.
 - a. If DUT returns correct GetCapabilitiesResponse message. Go to step 4.
 - b. If DUT does not return correct GetCapabilitiesResponse message. Go to step 4.
4. ONVIF Client invokes GetServicesRequest message without any authentication to retrieve the capabilities and check GetServices command support by DUT.
 - a. If DUT returns GetServicesResponse message. Go to step 7.
 - b. If DUT returns fault message (any SOAP fault except Sender/NotAuthorized) or it does not return any response. Go to step 7.
 - c. If DUT returns fault message (Sender/NotAuthorized), go to step 5.
 - d. If DUT returns HTTP 401 Unauthorized error, go to step 6.
5. ONVIF Client invokes GetServicesRequest message with WS-UsernameToken authentication to retrieve the capabilities and check GetServices command support of DUT.
 - a. If DUT returns GetServicesResponse message. Go to step 7.
 - b. If DUT does not return GetServicesResponse message. Go to step 7.
6. ONVIF Client invokes GetServicesRequest message with HTTP Digest authentication to retrieve the capabilities and check GetServices command support by DUT.
 - a. If DUT returns GetServicesResponse message.
 - b. If DUT does not return GetServicesResponse message.
7. ONVIF Client checks features support as defined in [Table 5.2](#).

Note: If both GetCapabilities and GetServices functions are defined as unsupported, other features will be marked as undefined.

Note: Next steps will depend on GetServices support. If GetServices is supported by DUT, then 5.5 Discovery Procedure (GetServices and GetServiceCapabilities) will be used. If only GetCapabilities is supported by DUT then 5.6 Discovery Procedure (GetCapabilities) will be used.

Table 5.2. Capabilities

Criterion Item	GetServicesResponse message and GetCapabilitiesResponse message	
	Supported	Not Supported
GetCapabilities	GetCapabilitiesResponse was received	No GetCapabilitiesResponse was received (fault was received or DUT does not return any response)
GetServices	GetServicesResponse was received	No GetServicesResponse was received (fault was received or DUT does not return any response)

5.4 Discovery Procedure (GetServices and GetServiceCapabilities)

If GetServices is supported by the DUT, then GetServices and GetServiceCapabilities commands will be used for feature discovery procedure. The following provides with the functionality discovery procedure for this case.

5.4.1 Device Management Service Capabilities

There are various device management functions defined in [ONVIF Core] as a part of ONVIF Device Management Service.

In the first version of [ONVIF Core], WS-UsernameToken support was the only method defined as a mandatory feature for user authentication. This has been changed in the later version of [ONVIF Core] where it also defines the HTTP digest authentication support as a mandatory feature.

The following discovery procedure will be performed for ONVIF Client to determine which user authentication function will be used in conformance testing. Also network configuration, security support, WS-Discovery features, and system logging will be done during this discovery procedure.

Discovery Procedure:

1. ONVIF Client invokes `GetServiceCapabilitiesRequest` message for Device Management without any authentication to retrieve the Device Management Service capabilities of the DUT.
 - a. If the DUT returns correct `GetServiceCapabilitiesResponse` message, go to step 4.
 - b. If the DUT returns fault message (SOAP fault `Sender/NotAuthorized`), go to step 2.
 - c. If the DUT returns HTTP 401 Unauthorized error, go to step 3.
2. ONVIF Client invokes `GetServiceCapabilitiesRequest` message with `WS-UsernameToken` authentication to retrieve the Device Management Service capabilities of the DUT. Go to the step 4.
3. ONVIF Client invokes `GetServiceCapabilitiesRequest` message with HTTP Digest authentication to retrieve the Device Management Service capabilities of the DUT. Go to the step 4.
4. ONVIF Client checks features support as defined in [Table 5.3](#).

Note: If the DUT returns no response for step 1 or response differs from the provided in a, b, and c items at step 1, then all Device Management features will be marked as undefined.

Note: If the DUT does not return `GetServiceCapabilitiesResponse` message for steps 2 or 3, then all Device Management features will be marked as undefined.

Note: If both of `WS-UsernameToken` and `Digest` are defined as unsupported, `WS-UsernameToken` will be used for test performance and discovering of following features.

Note: If HTTP digest authentication is assumed as supported, the HTTP digest authentication scheme will be used in the following feature discovery procedure whenever necessary as well as in conformance testing.

Table 5.3. Device Capabilities Configuration Functionality in Device Management Service (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
NTP	<code>Capabilities.Network.NTP > 0</code>	Skipped <code>Capabilities.Network.NTP</code> or <code>Capabilities.Network.NTP = 0</code>
IPv6	<code>Capabilities.Network.IPVersion6 = true</code> and <code>Network Configuration</code> feature is supported	Skipped <code>Capabilities.Device.Network.IPVersion6</code> or <code>Capabilities.Device.Network.</code>

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		IPVersion6 = false or Network Configuration feature is not supported
Zero Configuration	Capabilities.Network.ZeroConfiguration = true	Skipped Capabilities.Network.ZeroConfiguration or Capabilities.Network.ZeroConfiguration = false
Dynamic DNS	Capabilities.Network.DynDNS = true	Skipped Capabilities.Network.DynDNS or Capabilities.Network.DynDNS = false
IP Filter	Capabilities.Network.IPFilter = true	Skipped Capabilities.Network.IPFilter or Capabilities.Network.IPFilter = false
Stateful IPv6 DHCP	Capabilities.Network.DHCPv6 = true	Skipped Capabilities.Network.DHCPv6 or Capabilities.Network.DHCPv6 = false
WS-UsernameToken	Capabilities.Security.UsernameToken = true	Skipped Capabilities.Security.UsernameToken or Capabilities.Security.UsernameToken = false
HTTP Digest	Capabilities.Security.HttpDigest = true	Skipped Capabilities.Security.HttpDigest or Capabilities.Security.HttpDigest = false
Maximum Users	Capabilities.Security.MaxUsers element is present	Capabilities.Security.MaxUsers element is not present
Default Access Policy	Capabilities.Security.DefaultAccessPolicy = true	Skipped Capabilities.Security.HttpDigest or Capabilities.Security.DefaultAccessPolicy = false
Remote User Handling	Capabilities.Security.RemoteUserHandling = true	Skipped Capabilities.Security.RemoteUserHandling

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		or Capabilities.Security.RemoteUserHandling = false
Maximum Username Length	Capabilities.Security.MaxUsernameLength element is present	Capabilities.Security.MaxUsernameLength element is not present
Maximum Password Length	Capabilities.Security.MaxPasswordLength element is present	Capabilities.Security.MaxPasswordLength element is not present
TLS1.0	Capabilities.Security.TLS1.0 = true	Skipped Capabilities.Security.TLS1.0 or Capabilities.Security.TLS1.0 = false
TLS1.1	Capabilities.Security.TLS1.1 = true	Skipped Capabilities.Security.TLS1.1 or Capabilities.Security.TLS1.1 = false
TLS1.2	Capabilities.Security.TLS1.2 = true	Skipped Capabilities.Security.TLS1.2 or Capabilities.Security.TLS1.2 = false
Discovery	Skipped Capabilities.System.DiscoveryNotSupported or Capabilities.System.DiscoveryNotSupported = false	Capabilities.System.DiscoveryNotSupported = true
Bye Message	Discovery feature is supported AND Capabilities.System.DiscoveryBye = true	Skipped Capabilities.System.DiscoveryBye OR Capabilities.System.DiscoveryBye = false OR Discovery feature is not supported
System logging	Capabilities.System.SystemLogging = true	Skipped Capabilities.System.SystemLogging or Capabilities.System.SystemLogging = false

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Http Firmware Upgrade	Capabilities.System. HttpFirmwareUpgrade = true	Skipped Capabilities.System. HttpFirmwareUpgrade or Capabilities. System. HttpFirmwareUpgrade = false
Http System Backup	Capabilities.System. HttpSystemBackup = true	Skipped Capabilities.System. HttpSystemBackup or Capabilities. System. HttpSystemBackup = false
Http System Logging	Capabilities.System. HttpSystemLogging = true	Skipped Capabilities.System. HttpSystemLogging or Capabilities. System. HttpSystemLogging = false
Http Support Information	Capabilities.System. HttpSupportInformation = true	Skipped Capabilities.System. HttpSupportInformation or Capabilities. System. HttpSupportInformation = false
User Configuration	Skipped Capabilities.System. UserConfigNotSupported or Capabilities.System. UserConfigNotSupported = false	Capabilities.System. UserConfigNotSupported = true
Network Configuration	Skipped Capabilities.System. UserConfigNotSupported or Capabilities.System. NetworkConfigNotSupported = false	Capabilities.System. NetworkConfigNotSupported = true
Auxiliary Commands	Capabilities.Misc. AuxiliaryCommands is not empty	Capabilities.Misc. AuxiliaryCommands is empty or Capabilities.Misc. AuxiliaryCommands is not present
tt:Wiper On	Capabilities.Misc. AuxiliaryCommands contains tt:Wiper On	Capabilities.Misc. AuxiliaryCommands does not contain tt:Wiper On

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
tt:Wiper Off	Capabilities.Misc.AuxiliaryCommands contains tt:Wiper Off	Capabilities.Misc.AuxiliaryCommands does not contain tt:Wiper Off
tt:Washer On	Capabilities.Misc.AuxiliaryCommands contains tt:Washer On	Capabilities.Misc.AuxiliaryCommands does not contain tt:Washer On
tt:Washer Off	Capabilities.Misc.AuxiliaryCommands contains tt:Washer Off	Capabilities.Misc.AuxiliaryCommands does not contain tt:Washer Off
tt:WashingProcedure On	Capabilities.Misc.AuxiliaryCommands contains tt:WashingProcedure On	Capabilities.Misc.AuxiliaryCommands does not contain tt:WashingProcedure On
tt:WashingProcedure Off	Capabilities.Misc.AuxiliaryCommands contains tt:WashingProcedure Off	Capabilities.Misc.AuxiliaryCommands does not contain tt:WashingProcedure Off
tt:IRLamp On	Capabilities.Misc.AuxiliaryCommands contains tt:IRLamp On	Capabilities.Misc.AuxiliaryCommands does not contain tt:IRLamp On
tt:IRLamp Off	Capabilities.Misc.AuxiliaryCommands contains tt:IRLamp Off	Capabilities.Misc.AuxiliaryCommands does not contain tt:IRLamp Off
tt:IRLamp Auto	Capabilities.Misc.AuxiliaryCommands contains tt:IRLamp Auto	Capabilities.Misc.AuxiliaryCommands does not contain tt:IRLamp Auto

5.4.2 Discovery Types Support

From the first version of ONVIF Core Specification document, Device Type that is required for Discovery functionality was "dn:NetworkVideoTransmitter". Device Type was modified in the later version of [ONVIF Network Interface Specs] to "tds:Device". Which Device Type shall be used by DUT is defined in the scope of [ONVIF Profile S], [ONVIF Profile G] and [ONVIF Profile C].The following procedure discovers which Types are supported by DUT.

Pre-requisite:

- This procedure assumes that Discovery feature is supported by the DUT as defined in [Table 5.3](#), otherwise all features defined in [Table 5.4](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes Unicast Probe request (empty Types, empty Scopes) to get ProbeMatches response.
2. ONVIF Client receives ProbeMatch and checks features support as defined in [Table 5.4](#).

Note: If DUT does not return ProbeMatch or ProbeMatch <d:Types> does not contain neither "dn:NetworkVideoTransmitter" nor "tds:Device", the following features will be marked as undefined:

- WS-Discovery\Types\tds:Device
- WS-Discovery\Types\dn:NetworkVideoTransmitter

Table 5.4. Discovery Types

Criterion Item	<d:Types> in ProbeMatch response	
Feature	Supported	Not Supported
tds:Device	Contains "tds:Device"	Does not contain "tds:Device"
dn:NetworkVideoTransmitter	Contains "dn:NetworkVideoTransmitter"	Does not contain "dn:NetworkVideoTransmitter"

5.4.3 HTTPS Support

The following is the procedure to determine the function support.

Pre-requisite: ONVIF Client and DUT

- Network Configuration feature is supported by the DUT as defined in [Section 5.5.1](#), otherwise this procedure will be skipped.
- If DUT supports HTTPS, then HTTPS is configured on the DUT in case TLS Server is not supported by DUT. Security Configuration Service is received from the DUT, if TLS Server is supported by DUT.

Discovery Procedure:

- If DUT supports **Security Configuration Service\TLS features support\TLS Server** feature as defined in [Table 5.65](#), then HTTPS feature is assumed as supported.
- Otherwise, ONVIF Client invokes GetNetworkProtocols request message to retrieve network protocols supported by DUT.

- The DUT returns GetNetworkProtocolsResponse. ONVIF Client checks features support as defined in [Table 5.5](#).

Note: If the DUT does not return GetNetworkProtocolsResponse, ONVIF Client assumes that RTP/RTSP/HTTPS function support is marked as undefined.

Table 5.5. HTTPS Support (GetServices)

Criterion Item	GetNetworkProtocolsResponse	
	Supported	Not Supported
HTTPS	Includes NetworkProtocols element with Name = HTTPS and with Enabled=true or DUT supports TLS Server feature	Does not include NetworkProtocols element with Name = HTTPS or includes NetworkProtocols element with Name = HTTPS and with Enabled=false when DUT does not support TLS Server feature

5.4.4 I/O Functionality in Device Management Service

I/O related functionality support can be retrieved by checking correspondent element of GetCapabilitiesResponse. The following is the procedure to determine the function support.

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest to check I/O functionality support.
2. ONVIF Client receives GetCapabilitiesResponse and checks features support as defined in [Table 5.6](#).
3. ONVIF Client invokes GetRelayOutputsRequest message to retrieve a relay output list.
4. The DUT returns GetRelayOutputsResponse with a list of relay outputs.
5. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").
6. ONVIF Client receives SetRelayOutputSettingsResponse.
7. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").

8. ONVIF Client receives SetRelayOutputSettingsResponse.
9. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").
10. ONVIF Client receives SetRelayOutputSettingsResponse.
11. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").
12. ONVIF Client receives SetRelayOutputSettingsResponse.
13. ONVIF Client checks features support as defined in [Table 5.7](#).

Note: Absence of Capabilities.Device.IO element in the GetCapabilitiesResponse will be defined as absence of Capabilities.Device.IO.RelayOutputs.

Note: If Capabilities.Device element is not included in the GetCapabilitiesResponse, Relay Outputs feature will be marked as unsupported.

Note: If the DUT does not return GetRelayOutputsResponse or list of relay outputs in the GetRelayOutputsResponse is empty, Relay Outputs features will be marked as undefined.

Note: If GetCapabilities command is not supported by the DUT I/O feature for Device Management Service will be defined as unsupported.

Table 5.6. Relay Outputs in Device Management Service (GetServices)

Criterion Item	GetCapabilitiesResponse message	
	Supported	Not Supported
RelayOutputs	Capabilities.Device.IO.RelayOutputs > 0	Skipped Capabilities.Device.IO.RelayOutputs or Capabilities.Device.IO.RelayOutputs = 0

Table 5.7. Relay Outputs Mode and Idle State in Device Management Service (GetServices)

Criterion Item	SetRelayOutputSettingsResponse	
	Supported	Not Supported
Bistable Mode/Open Idle State	DUT returns SetRelayOutputSettingsResponse for step 6.	DUT returns any SOAP fault for step 6.

Criterion Item	SetRelayOutputSettingsResponse	
Feature	Supported	Not Supported
Bistable Mode/Closed Idle State	DUT returns SetRelayOutputSettings Response for step 8	DUT returns any SOAP fault for step 8.
Bistable Mode	DUT returns SetRelayOutputSettings Response for step 6 or 8.	DUT returns any SOAP fault for step 6 and 8.
Monostable Mode/ Open Idle State	DUT returns SetRelayOutputSettings Response for step 9.	DUT returns any SOAP fault for step 9.
Monostable Mode/ Closed Idle State	DUT returns SetRelayOutputSettings Response for step 11.	DUT returns any SOAP fault for step 11.
Monostable Mode	DUT returns SetRelayOutputSettings Response for step 9 or 11.	DUT returns any SOAP fault for step 9 and 11.

5.4.5 Monitoring Events Support

Monitoring Events support under Device Control Service is determined according to the following procedure.

Pre-requisite: ONVIF Client and DUT

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.1](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.8](#).

Note: If the DUT does not return Event Service or GetEventPropertiesResponse message, then the following features will be marked as undefined:

- Monitoring/ProcessorUsage
- Monitoring/OperatingTime/LastReset
- Monitoring/OperatingTime/LastReboot
- Monitoring/OperatingTime/LastClockSynchronization

- Monitoring/Backup/Last
- Device/HardwareFailure/TemperatureCritical
- Device/HardwareFailure/FanFailure
- Device/HardwareFailure/PowerSupplyFailure
- Device/HardwareFailure/StorageFailure

Table 5.8. Monitoring Events Support (GetServices)

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Monitoring/ProcessorUsage	Contains tns1:Monitoring/ProcessorUsage Event topic	Does not contain tns1:Monitoring/ProcessorUsage Event topic
Monitoring/OperatingTime/LastReset	Contains tns1:Monitoring/OperatingTime/LastReset Event topic	Does not contain tns1:Monitoring/OperatingTime/LastReset Event topic
Monitoring/OperatingTime/LastReboot	Contains tns1:Monitoring/OperatingTime/LastReboot Event topic	Does not contain tns1:Monitoring/OperatingTime/LastReboot Event topic
Monitoring/OperatingTime/LastClockSynchronization	Contains tns1:Monitoring/OperatingTime/LastClockSynchronization Event topic	Does not contain tns1:Monitoring/OperatingTime/LastClockSynchronization Event topic
Monitoring/Backup/Last	Contains tns1:Monitoring/Backup/Last Event topic	Does not contain tns1:Monitoring/Backup/Last Event topic
Device/HardwareFailure/TemperatureCritical	Contains tns1:Device/HardwareFailure/TemperatureCritical Event topic	Does not contain tns1:Device/HardwareFailure/TemperatureCritical Event topic
Device/HardwareFailure/FanFailure	Contains tns1:Device/HardwareFailure/FanFailure Event topic	Does not contain tns1:Device/HardwareFailure/FanFailure Event topic

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Device/HardwareFailure/ PowerSupplyFailure	Contains tns1:Device/ HardwareFailure/ PowerSupplyFailure Event topic	Does not contain tns1:Device/ HardwareFailure/ PowerSupplyFailure Event topic
Device/HardwareFailure/ StorageFailure	Contains tns1:Device/ HardwareFailure/ StorageFailure Event topic	Does not contain tns1:Device/ HardwareFailure/ StorageFailure Event topic

5.4.6 Media Service – General

Media Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.9](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/media/wsd" namespace ONVIF Client will use service with the latest version.

Note: If Media service is not supported, the following feature discovery (Media Service features support) will be skipped.

Table 5.9. Media Service – General (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Media Service	Includes service with "http://www.onvif.org/ver10/media/wsd" namespace	Does not include service with "http://www.onvif.org/ver10/media/wsd" namespace

5.4.6.1 Media Service – Video Encoding Support

Video encoding function support in Media Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes `GetVideoEncoderConfigurationOptionsRequest` (no `ConfigurationToken`, no `ProfileToken`) message to retrieve all supported codecs.
2. The DUT returns `GetVideoEncoderConfigurationOptionsResponse` with a list of supported codecs. ONVIF Client checks features support as defined in [Table 5.10](#).

Note: If the DUT does not return `GetVideoEncoderConfigurationOptionsResponse`, MPEG4 and H.264 feature will be marked as undefined.

Table 5.10. Media Service – Video Encoding Support (GetServices)

Criterion Item	GetVideoEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
JPEG	Mandatory functionality	-
MPEG-4	Includes Options.MPEG4	Does not include Options.MPEG4
H.264	Includes Options.H264	Does not include Options.H264

5.4.6.2 Media Service – Audio Encoding Support

Audio encoding function support in Media Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes `GetAudioEncoderConfigurationOptionsRequest` (no `ConfigurationToken`, no `ProfileToken`) message to retrieve all supported audio codecs.
2. The DUT returns `GetAudioEncoderConfigurationOptionsResponse` with a list of supported codecs or SOAP fault. ONVIF Client checks features support as defined in [Table 5.11](#).

Note: If the DUT returns no response for `GetAudioEncoderConfigurationOptionsRequest`, Audio encoding feature will be marked as undefined.

Table 5.11. Media Service – Audio Encoding Support (GetServices)

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
Audio encoding	DUT returns GetAudioEncoderConfigurationOptionsResponse	DUT returns any SOAP fault

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
G.711	DUT returns GetAudioEncoderConfigurationOptionsResponse	DUT returns any SOAP fault
G.726	Includes Options.Options.Encoding = "G726"	Does not include Options.Options.Encoding = "G726"
AAC	Includes Options.Options.Encoding = "AAC"	Does not include Options.Options.Encoding = "AAC"

5.4.6.3 Media Service – Real-Time Streaming

Real-time streaming support in Media Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Multicast streaming capability support by the DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.12](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse, then Real-time streaming feature and features from [Section 5.5.5.4](#) will be marked as undefined. Procedure described in [Section 5.5.5.4](#) will be skipped.

Note: If the DUT does not support Real-time streaming feature, all features from [Section 5.5.5.4](#) will be marked as unsupported. Procedure described in [Section 5.5.5.4](#) will be skipped.

Table 5.12. Media Service – Supported Real-Time Streaming Setup (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Real-time streaming	Skipped Capabilities. StreamingCapabilities.NoRTSPStreaming or Capabilities.StreamingCapabilities.NoRTSPStreaming = false	Capabilities.StreamingCapabilities.NoRTSPStreaming = true

5.4.6.4 Media Service – Supported Real-Time Streaming Setup

Which Real-time streaming Setup features is supported under Real-time Streaming is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServiceCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.5.5.3](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.13](#).

Table 5.13. Media Service – Supported Real-Time Streaming Setup (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
RTP/UDP	Mandatory functionality, if Real-time Streaming supported	-
RTP/RTSP/HTTP	Mandatory functionality, if Real-time Streaming supported	-
RTP/RTSP/TCP	Capabilities. StreamingCapabilities. RTP_RTSP_TCP = true	Skipped Capabilities. StreamingCapabilities. RTP_RTSP_TCP or Capabilities. StreamingCapabilities. RTP_RTSP_TCP = false
RTP-Multicast/UDP	Capabilities. StreamingCapabilities. RTPMulticast = true	Skipped Capabilities. StreamingCapabilities. RTPMulticast or Capabilities. StreamingCapabilities. RTPMulticast = false

5.4.6.5 Media Service - GetSnapshotUri

GetSnapshotUri function support is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetProfilesRequest message to retrieve existing Media Profiles list.
2. The DUT returns GetProfilesResponse with the list of existing Media Profiles.
3. ONVIF Client looks for ready-to-use profile (a profile with VideoSourceConfiguration and VideoEncoderConfiguration in the GetProfilesResponse. If there are no ready-to-use profiles found in the GetProfilesResponse, ONVIF Client marks GetSnapshotUri support by DUT as undefined.
4. ONVIF Client invokes GetSnapshotUriRequest (ProfileToken = found ready-to-use profile token) message to get Snapshot URI.
5. The DUT returns GetSnapshotUriResponse or SOAP fault. ONVIF Client checks features support as defined in [Table 5.14](#).

Note: If no GetProfilesResponse is returned by the DUT, GetSnapshotUri function support by the DUT is marked as undefined.

Note: If no GetSnapshotUriResponse is returned by the DUT, GetSnapshotUri function support by the DUT is marked as undefined.

Table 5.14. Media Service – GetSnapshotUri (GetServices)

Criterion Item	GetSnapshotUriResponse	
Feature	Supported	Not Supported
GetSnapshotUri	DUT returns GetSnapshotUriResponse	DUT returns any SOAP fault

5.4.6.6 Media Service – Audio Outputs Support

Audio outputs support in conjunction with its Audio decoding function is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetAudioOutputsRequest message to retrieve Audio outputs list.
2. The DUT returns GetAudioOutputsResponse or SOAP fault. ONVIF Client checks features support as defined in [Table 5.15](#). Go to the next feature definition.
3. ONVIF Client invokes GetAudioDecoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported Audio codec’s for decoding by DUT.
4. The DUT returns GetAudioDecoderConfigurationOptionsResponse. ONVIF Client checks features support as defined in [Table 5.16](#).

Note: If the DUT does not return `GetAudioDecoderConfigurationOptionsResponse`, ONVIF Client assumes that G.711, G.726 and AAC Audio decoding function support is marked as undefined.

Table 5.15. Media Service – Audio Outputs Support (GetServices)

Criterion Item	GetAudioOutputsResponse	
Feature	Supported	Not Supported
Audio output	DUT returns <code>GetAudioOutputsResponse</code> and there are at least one <code>AudioOutput</code> on the list	DUT returns any SOAP fault or <code>GetAudioOutputsResponse</code> and there are no <code>AudioOutput</code> on the list

Table 5.16. Media Service – Audio Outputs Decoding Support (GetServices)

Criterion Item	GetAudioDecoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
G.711	Includes <code>Options.G711DecOptions</code>	Does not include <code>Options.G711DecOptions</code>
G.726	Includes <code>Options.G726DecOptions</code>	Does not include <code>Options.G726DecOptions</code>
AAC	Includes <code>Options.AACDecOptions</code>	Does not include <code>Options.AACDecOptions</code>

5.4.7 Media2 Service – General

Media2 Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that `GetServicesResponse` has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.17](#).

Note: If `GetServicesResponse` contains several services with "http://www.onvif.org/ver20/media/wsdll" namespace ONVIF Client will use service with the latest version.

Note: If Media2 service is not supported, the following feature discovery (Media2 Service features support) will be skipped.

Table 5.17. Media2 Service – General (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Media2 Service	Includes service with "http://www.onvif.org/ver20/media/wsdI" namespace	Does not include service with "http://www.onvif.org/ver20/media/wsdI" namespace

Media2 features support

Media2 capabilities support under Media2 Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to retrieve Media2 Service capabilities.
2. The DUT returns GetServiceCapabilitiesResponse with Media2 Service capabilities. ONVIF Client checks features support as defined in [Table 5.18](#).

Note: If the DUT returns no response for GetServiceCapabilitiesRequest, then all features defined in [Table 5.18](#) will be marked as undefined.

Table 5.18. Media2 Service Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Video	Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "VideoEncoder"	Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "VideoEncoder"
Audio	Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "AudioEncoder"	Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "AudioEncoder"
Audio Output	Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "AudioOutput"	Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "AudioOutput"

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Real-time Streaming	Capabilities. StreamingCapabilities. RTSPStreaming = true	Skipped Capabilities. StreamingCapabilities. RTSPStreaming or Capabilities. StreamingCapabilities. RTSPStreaming = false
RTP/UDP	Mandatory functionality, if Real-time Streaming supported	-
RTP/RTSP/HTTP	Mandatory functionality, if Real-time Streaming supported	-
RTP/RTSP/TCP	Capabilities. StreamingCapabilities. RTP_RTSP_TCP = true	Skipped Capabilities. StreamingCapabilities. RTP_RTSP_TCP or Capabilities. StreamingCapabilities. RTP_RTSP_TCP = false
RTP-Multicast/UDP	Capabilities. StreamingCapabilities. RTPMulticast = true	Skipped Capabilities. StreamingCapabilities. RTPMulticast or Capabilities. StreamingCapabilities. RTPMulticast = false
RTSP WebSocket	Capabilities. StreamingCapabilities contains RTSPWebSocketUri	Skipped Capabilities. StreamingCapabilities. RTSPWebSocketUri
Snapshot Uri	Capabilities.SnapshotUri = true	Skipped Capabilities.SnapshotUri or Capabilities.SnapshotUri = false
OSD	Capabilities.OSD = true	Skipped Capabilities.OSD or Capabilities.OSD = false
Video Source Mode	Capabilities. VideoSourceMode = true	Skipped Capabilities. VideoSourceMode or Capabilities. VideoSourceMode = false

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Analytics	Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "Analytics"	Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "Analytics"
Metadata	Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "Metadata"	Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "Metadata"
Mask	Capabilities.Mask = true	Skipped Capabilities.Mask or Capabilities.Mask = false

5.4.7.1 Media2 Service – Video Encoding Support

Pre-requisite:

- DUT supports **Video** feature according to [Section 5.5.6](#).

Video encoding function support in Media2 Service is determined according to the following discovery procedure.

Discovery Procedure:

1. ONVIF Client invokes GetVideoEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported codecs.
2. The DUT returns GetVideoEncoderConfigurationOptionsResponse with a list of supported codecs. ONVIF Client checks features support as defined in [Table 5.19](#).

Note: If the DUT does not return GetVideoEncoderConfigurationOptionsResponse, H.264 and H.265 feature will be marked as undefined.

Table 5.19. Media2 Service – Video Encoding Support (GetServices)

Criterion Item	GetVideoEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
H.265	Includes Options.Encoding= "H265"	Does not include Options.Encoding="H265"
H.264	Options.Encoding= "H264"	Does not include Options.Encoding= "H264"

5.4.7.2 Media2 Service – Audio Encoding Support

Pre-requisite:

- DUT supports **Audio** feature according to [Section 5.5.6](#).

Audio encoding function support in Media2 Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes `GetAudioEncoderConfigurationOptionsRequest` (no `ConfigurationToken`, no `ProfileToken`) message to retrieve all supported audio codecs.
2. The DUT returns `GetAudioEncoderConfigurationOptionsResponse` with a list of supported codecs or SOAP fault. ONVIF Client checks features support as defined in [Table 5.20](#).

Note: If the DUT does not return response for `GetAudioEncoderConfigurationOptionsRequest`, Media2 Audio encoding features (G.711 and AAC) will be marked as undefined.

Table 5.20. Media2 Service – Audio Encoding Support (GetServices)

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
	Supported	Not Supported
G.711	Includes <code>Options.Encoding= "PCMU"</code>	Does not include <code>Options.Encoding= "PCMU"</code>
AAC	Includes <code>Options.Encoding= "MP4A-LATM"</code> or <code>"MPEG4-GENERIC"</code>	Does not include <code>Options.Encoding= "MP4A-LATM"</code> and does not include <code>Options.Encoding = "MPEG4-GENERIC"</code>

5.4.7.3 Media2 Service – Audio Decoding Support

Pre-requisite:

- DUT supports **Audio Output** feature according to [Section 5.5.6](#).

Audio decoding support is determined according to the following procedure.

Discovery Procedure:

- ONVIF Client invokes `GetAudioDecoderConfigurationOptionsRequest` (no `ConfigurationToken`, no `ProfileToken`) message to retrieve all supported Audio codec's for decoding by DUT.

- The DUT returns `GetAudioDecoderConfigurationOptionsResponse`. ONVIF Client checks features support as defined in [Table 5.21](#).

Note: If the DUT does not return `GetAudioDecoderConfigurationOptionsResponse`, ONVIF Client assumes that G.711, and AAC Audio decoding function support is marked as undefined.

Table 5.21. Media2 Service – Audio Outputs Decoder Support (GetServices)

Criterion Item	GetAudioDecoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
G.711	Includes <code>Options.Encoding= "PCMU"</code>	Does not include <code>Options.Encoding= "PCMU"</code>
AAC	Includes <code>Options.Encoding= "MP4A-LATM" or "MPEG4-GENERIC"</code>	Does not include <code>Options.Encoding= "MP4A-LATM"</code> and does not include <code>Options.Encoding= "MPEG4-GENERIC"</code>

5.4.7.4 Media2 Service – RTP/RTSP/HTTPS support

Pre-requisite:

- DUT supports **Real-time Streaming** feature as defined in [Media2 Service Features Support Table, Real-time Streaming](#).

RTP/RTSP/HTTPS support is determined according to the following procedure.

Discovery Procedure:

- If DUT supports **HTTPS** feature as defined in [Section 5.5.2](#), then RTP/RTSP/HTTPS feature is assumed as supported.

5.4.7.5 Media2 Service – OSD Types support

Pre-requisite:

- DUT supports **OSD** according to [Table 5.18](#)

OSD Types features supporting is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Source Configuration by following the procedure mentioned in [Annex A.7](#) with the following input and output parameters
 - out `videoSourceConfList` - Video Source Configurations list

2. For each Video Source Configuration *videoSourceConfig* in *videoSourceConfList*
 - 2.1. ONVIF Client invokes **GetOSDOptions** with parameters
 - ConfigurationToken =: *videoSourceConfig.token*
 - 2.2. The DUT responds with **GetOSDOptionsResponse** with parameters
 - OSDOptions =: *osdOptions*
3. ONVIF Client checks OSD Types features support as defined in [Table 5.22](#).

Note: If the DUT does not return GetOSDOptionsResponse, ONVIF Client assumes the following features as undefined:

- Media2\OSD\Types\Text
- Media2\OSD\Types\Image

Table 5.22. Media2 Service – OSD Types Support (GetServices)

Criterion Item	GetOSDOptionsResponse	
Feature	Supported	Not Supported
Text	Includes OSDOptions \Type = "Text" and MaximumNumberOfOSDs. @Total > 0	Does not include OSDOptions\Type = "Text" or MaximumNumberOfOSDs. @Total = 0
Image	Includes OSDOptions \Type = "Image" and MaximumNumberOfOSDs. @Total > 0	Does not include OSDOptions\Type = "Image" or MaximumNumberOfOSDs. @Total = 0

5.4.7.6 Media2 Events Support

Media2 Events support under Media2 Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.1](#), otherwise all features defined in [Table 5.23](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.23](#).

Table 5.23. Media2 Events Support (GetServices)

Criterion Item	GetEventPropertiesResponse message	
	Supported	Not Supported
Media/ProfileChanged	Contains tns1:Media/ProfileChanged Event topic	Does not contain tns1:Media/ProfileChanged Event topic
Media/ConfigurationChanged	Contains tns1:Media/ConfigurationChanged Event topic	Does not contain tns1:Media/ConfigurationChanged Event topic

5.4.8 Event Service

Event Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.24](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/events/wsdI" namespace ONVIF Client will use service with the latest version.

Note: If Event service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.7.1](#).
- [Section 5.5.7.2](#).
- [Section 5.5.7.3](#).
- [Section 5.5.7.4](#).

Table 5.24. Event Service (GetServices)

Criterion Item	GetServicesResponse message	
	Supported	Not Supported
Event Service	Includes service with "http://www.onvif.org/ver10/events/wsdI" namespace	Does not include service with "http://www.onvif.org/ver10/events/wsdI" namespace

5.4.8.1 Get Event Properties

The following discovery procedure will be performed for ONVIF Client to receive topic set and message content filter dialect list from the DUT. Received topic set will be used in event topics discovery procedures for different services. Received message content filter dialect list will be used in [Section 5.5.7.3](#) and in [Section 5.5.7.4](#).

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.5.7](#), otherwise this procedure will be skipped.

Discovery Procedure:

1. ONVIF Client invokes **GetEventProperties** message.
2. The DUT responds with a **GetEventPropertiesResponse** message with parameters
 - TopicNamespaceLocation list
 - FixedTopicSet
 - TopicSet =: *topicSet*
 - TopicExpressionDialect list
 - MessageContentFilterDialect list := *msgContentFilterDialectList*
 - MessageContentSchemaLocation list

5.4.8.2 Event service features

Event capabilities support under Event Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.5.7](#), otherwise all features defined in [Table 5.25](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message for Event Service.
2. The DUT returns GetServiceCapabilitiesResponse
3. ONVIF Client checks features support as defined in [Table 5.25](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse then all features defined in Table 5.25 will be marked as UNDEFINED.

Note: Value of Capabilities.MaxPullPoints shall be saved to be used during Profiles support check.

Table 5.25. Event Service Features (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Persistent Notification Storage	Capabilities. PersistentNotificationStorage = true	Skipped Capabilities. PersistentNotificationStorage or Capabilities. PersistentNotificationStorage = false
WS Basic Notification	Capabilities. MaxNotificationProducers > 0 or skipped Capabilities. MaxNotificationProducers	Capabilities. MaxNotificationProducers = 0
GetServiceCapabilities MaxPullPoints capability	Includes Capabilities.MaxPullPoints	Does not include Capabilities.MaxPullPoints
Event Broker	Includes Capabilities.MaxEventBrokers with value > 0	Does not include Capabilities.MaxEventBrokers OR MaxEventBrokers <= 0
Protocols / mqtt	Capabilities. EventBrokerProtocols list contains "mqtt" value	Capabilities. EventBrokerProtocols list does not contain "mqtt" value
Protocols / mqttts	Capabilities. EventBrokerProtocols list contains "mqttts" value	Capabilities. EventBrokerProtocols list does not contain "mqttts" value
Protocols / ws	Capabilities. EventBrokerProtocols list contains "ws" value	Capabilities. EventBrokerProtocols list does not contain "ws" value
Protocols / wss	Capabilities. EventBrokerProtocols list contains "wss" value	Capabilities. EventBrokerProtocols list does not contain "wss" value

5.4.8.3 Event Service - Message Content Filter Support

Message Content Filter function support in Event Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.5.7](#), otherwise all features defined in [Table 5.26](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.1](#), otherwise all features defined in [Table 5.26](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks Message Content Filter feature support as defined in [Table 5.26](#).

Note: If Message Content Filter feature is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.7.4](#).

Table 5.26. Message Content Filter Feature (GetServices)

Criterion Item	GetEventPropertiesResponse message	
	Supported	Not Supported
Message Content Filter	<i>msgContentFilterDialectList</i> contains at least one item with non empty value	<i>msgContentFilterDialectList</i> does not contain at least one item with non empty value

5.4.8.4 Event Service - ONVIF Message Content Filter Dialect Support

ONVIF Message Content Filter Dialect function support in Event Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.5.7](#), otherwise all features defined in [Table 5.26](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.1](#), otherwise all features defined in [Table 5.26](#) will be marked as UNDEFINED.
- This procedure assumes that DUT supports Message Content Filter feature according to [Section 5.5.7.3](#), otherwise all features defined in [Table 5.27](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client checks ONVIF Message Content Filter Dialect feature support as defined in [Table 5.27](#).

Table 5.27. ONVIF Message Content Filter Dialect (GetServices)

Criterion Item	GetEventPropertiesResponse message	
Feature	Supported	Not Supported
ONVIF Message Content Filter Dialect	<i>msgContentFilterDialectList</i> contains item with value is equal to "http://www.onvif.org/ver10/tev/messageContentFilter/ItemFilter"	<i>msgContentFilterDialectList</i> does not contain item with value is equal to "http://www.onvif.org/ver10/tev/messageContentFilter/ItemFilter"

5.4.8.5 Event Service - Pull-Point Notification Support

Pull-Point Notification function support in Event Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.5.7](#), otherwise all features defined in [Table 5.26](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetServiceCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.2](#), otherwise all features defined in [Table 5.28](#) will be marked as UNDEFINED.
- This procedure assumes that GetScopesResponse has already been retrieved via preceding procedure described in [Section 5.7](#), otherwise all features defined in [Table 5.28](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks Pull-Point Notification feature support as defined in [Table 5.28](#).

Table 5.28. Pull-Point Notification (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message and GetScopesResponse message	
Feature	Supported	Not Supported
Pull-Point Notification	(Capabilities.MaxPullPoints skipped AND scopesList	Capabilities.MaxPullPoints = 0 OR (scopesList

Criterion Item	GetServiceCapabilitiesResponse message and GetScopesResponse message	
Feature	Supported	Not Supported
	contains item with value is equal to "onvif://www.onvif.org/Profile/Streaming") OR Capabilities.MaxPullPoints > 0	does not contain item with value is equal to "onvif://www.onvif.org/Profile/Streaming" AND Capabilities.MaxPullPoints skipped)

5.4.9 Device IO Service

Device IO Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.29](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/deviceIO/wsdI" namespace ONVIF Client will use service with the latest version.

Note: If Device IO service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.8.1](#).
- [Section 5.5.8.2](#).
- [Section 5.5.8.3](#).

Table 5.29. Device IO Service (GetServices)

Criterion Item	GetServicesResponse message	
Feature	Supported	Not Supported
Device IO Service	Includes service with "http://www.onvif.org/ver10/deviceIO/wsdI" namespace	Does not include service with "http://www.onvif.org/ver10/deviceIO/wsdI" namespace

5.4.9.1 Device IO Features Support

Device IO capabilities support under Device IO Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.5.8](#), otherwise all features defined in [Table 5.30](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Device IO Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.30](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse then all features defined in [Table 5.30](#) will be marked as UNDEFINED, the following feature discovery procedures will be skipped and related features will be marked as UNDEFINED:

- [Section 5.5.8.2](#).
- [Section 5.5.8.3](#).

Note: If Relay Outputs feature is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.8.2](#).
- [Section 5.5.8.3](#).

Table 5.30. Device IO Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Relay Outputs	<i>cap.RelayOutputs</i> > 0	Skipped <i>cap.RelayOutputs</i> or <i>cap.RelayOutputs</i> = 0
Digital Inputs	<i>cap.DigitalInputs</i> > 0	Skipped <i>cap.DigitalInputs</i> or <i>cap.DigitalInputs</i> = 0

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Serial Ports	<code>cap.SerialPorts > 0</code>	Skipped <code>cap.SerialPorts</code> or <code>cap.SerialPorts = 0</code>
Digital Input Options	<code>cap.DigitalInputOptions = true</code>	Skipped <code>cap.DigitalInputOptions</code> or <code>cap.DigitalInputOptions = false</code>

5.4.9.2 Device IO Relay Output Options Support

Device IO Relay Output Options support in Device IO Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.5.8](#), otherwise all features defined in [Table 5.31](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Relay Outputs is supported by the DUT as defined in [Section 5.5.8.1](#), otherwise all features defined in [Table 5.31](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetRelayOutputOptions** request with parameters
 - RelayOutputToken skipped
2. The DUT responds with **GetRelayOutputOptionsResponse** message or SOAP 1.2 fault.
3. ONVIF Client checks features support as defined in [Table 5.31](#).

Note: If the DUT returns no response for GetRelayOutputOptions request, then all features defined in [Table 5.31](#) will be marked as UNDEFUNED, the following feature discovery procedures will be skipped and related features will be marked as UNDEFUNED:

- [Section 5.5.8.3](#)

Note: If Relay Outputs Options feature is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.8.3](#)

Table 5.31. Device IO Service – Relay Output Options Support (GetServices)

Criterion Item	GetRelayOutputOptionsResponse message	
Feature	Supported	Not Supported
Relay Output Options	DUT returns GetRelayOutputOptionsResponse for step 2.	DUT returns any SOAP fault for step 2.

5.4.9.3 Device IO Relay Outputs Features Support

Device IO Relay Output features support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.5.8](#), otherwise all features defined in [Table 5.32](#), [Table 5.33](#), and [Table 5.34](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Relay Outputs is supported by the DUT as defined in [Section 5.5.8.1](#), otherwise all features defined in [Table 5.32](#), [Table 5.33](#), and [Table 5.34](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Relay Output Options is supported by the DUT as defined in [Section 5.5.8.2](#), otherwise all features defined in [Table 5.32](#), [Table 5.33](#), and [Table 5.34](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetRelayOutputOptionsResponse has already been retrieved via preceding procedure described in [Section 5.5.8.2](#), otherwise all features defined in [Table 5.32](#), [Table 5.33](#), and [Table 5.34](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client invokes **GetRelayOutputs** request to retrieve a list of all available relay outputs and their settings.
2. The DUT sends the **GetRelayOutputsResponse** message with parameters
 - RelayOutputs list =: *relayOutputsList*
3. For each Relay Output (*relayOutput*) from *relayOutputsList* do the following:
 - 3.1. ONVIF Client checks features support as defined in [Table 5.32](#).
 - 3.2. If Relay Output supports Monostable Mode:
 - 3.2.1. ONVIF Client invokes **SetRelayOutputSettings** request with parameters

- RelayOutput.@token := *relayOutput.@token*
- RelayOutput.Properties.Mode := Monostable
- RelayOutput.Properties.DelayTime := RelayOutputOptions[0].DelayTimes[0] from GetRelayOutputOptionsResponse, where RelayOutputOptions[0] is RelayOutputOptions with token = *relayOutput.@token*
- RelayOutput.Properties.IdleState := closed

3.2.2. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.

3.2.3. ONVIF Client invokes **SetRelayOutputSettings** request with parameters

- RelayOutput.@token := *relayOutput.@token*
- RelayOutput.Properties.Mode := Monostable
- RelayOutput.Properties.DelayTime := RelayOutputOptions[0].DelayTimes[0] from GetRelayOutputOptionsResponse, where RelayOutputOptions[0] is RelayOutputOptions with token = *relayOutput.@token*
- RelayOutput.Properties.IdleState := open

3.2.4. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.

3.2.5. If for both steps and SOAP 1.2 fault was returned features listed in [Table 5.34](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.33](#).

3.3. If Relay Output supports Bistable Mode:

3.3.1. ONVIF Client invokes **SetRelayOutputSettings** request with parameters

- RelayOutput.@token := *relayOutput.@token*
- RelayOutput.Properties.Mode := Bistable
- RelayOutput.Properties.DelayTime := *relayOutput.Properties.DelayTime*
- RelayOutput.Properties.IdleState := closed

- 3.3.2. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.
- 3.3.3. ONVIF Client invokes **SetRelayOutputSettings** request with parameters
 - RelayOutput.@token := *relayOutput.@token*
 - RelayOutput.Properties.Mode := Bistable
 - RelayOutput.Properties.DelayTime := *relayOutput.Properties.DelayTime*
 - RelayOutput.Properties.IdleState := open
- 3.3.4. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.
- 3.3.5. If for both steps and SOAP 1.2 fault was returned features listed in [Table 5.34](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.34](#).

Note: If the DUT returns no RelayOutputOptions in GetRelayOutputOptionsResponse message, then all features defined in [Table 5.32](#), [Table 5.33](#), and [Table 5.34](#) will be marked as UNDEFUNED.

Note: If the DUT returns no DelayTimes element in RelayOutputOptions with supporting of Monostable mode in GetRelayOutputOptionsResponse message, then all features defined in [Table 5.33](#) will be marked as UNDEFUNED.

Note: If the DUT returns no response for SetRelayOutputSettings request, then all features defined in [Table 5.33](#) and [Table 5.34](#) will be marked as UNDEFUNED.

Table 5.32. Relay Outputs Features - Modes (GetServices)

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
	Supported	Not Supported
Monostable Mode	RelayOutputOptions.Mode contains Monostable	RelayOutputOptions.Mode does not contain Monostable
Bistable Mode	RelayOutputOptions.Mode contains Bistable	RelayOutputOptions.Mode does not contain Bistable

Table 5.33. Relay Outputs Features - Idle States - Monostable (GetServices)

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
	Supported	Not Supported
Monostable Mode \Closed Idle State	DUT returns SetRelayOutputSettings Response at step 3.2.2	DUT returns SOAP fault at step 3.2.2
Monostable Mode \Open Idle State	DUT returns SetRelayOutputSettings Response at step 3.2.4	DUT returns SOAP fault at step 3.2.4

Table 5.34. Relay Outputs Features - Idle States - Bistable (GetServices)

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
	Supported	Not Supported
Bistable Mode\Closed Idle State	DUT returns SetRelayOutputSettings Response at step 3.3.2	DUT returns SOAP fault at step 3.3.2
Bistable Mode\Open Idle State	DUT returns SetRelayOutputSettings Response at step 3.3.4	DUT returns SOAP fault at step 3.3.4

5.4.10 PTZ Service Support

PTZ Service support is defined according to the following procedure.

Pre-requisite: This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure: ONVIF Client checks features support as defined in [Table 5.35](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver20/ptz/wsd" namespace, ONVIF Client will use service with the latest version.

Note: If the DUT does not support PTZ Service, all features from [Section 5.5.8.1](#), [Section 5.5.8.2](#), and [Section 5.5.8.3](#) will be marked as unsupported. Procedure described in [Section 5.5.8.1](#), [Section 5.5.8.2](#), and [Section 5.5.8.3](#) will be skipped.

Table 5.35. PTZ Service (GetServices)

Criterion Item	GetServicesResponse message	
Feature	Supported	Not Supported
PTZ Service	Includes service with "http://www.onvif.org/ver20/ptz/wsd1" namespace	Does not include service with "http://www.onvif.org/ver20/ptz/wsd1" namespace

5.4.10.1 PTZ Service Features Support

PTZ capabilities support under PTZ Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilities request to retrieve PTZ Service capabilities.
2. The DUT returns GetServiceCapabilitiesResponse message with PTZ Service capabilities.
3. ONVIF Client checks features support as defined in [Table 5.36](#).

Note: If the DUT returns no response for GetServiceCapabilities request, then all features defined in [Table 5.36](#) will be marked as undefined.

Table 5.36. PTZ Service Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Get Compatible Configurations	Capabilities. GetCompatibleConfigurations = true	Skipped Capabilities. GetCompatibleConfigurations or Capabilities. GetCompatibleConfigurations = false
Move Status	Capabilities.MoveStatus = true	Skipped Capabilities.MoveStatus or Capabilities.MoveStatus = false
Status Position	Capabilities.StatusPosition = true	Skipped Capabilities.StatusPosition or Capabilities.StatusPosition = false

5.4.10.2 PTZ Nodes Features Support

PTZ Nodes features support is defined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetNodes request to retrieve PTZ Nodes capabilities.
2. The DUT returns GetNodesResponse message with PTZ Nodes capabilities.
3. For each PTZ Node ONVIF Client checks features support as defined in [Table 5.37](#).
4. For each PTZ Node with Home Position support ONVIF Client checks features support as defined in [Section 5.5.8.3](#). For all others PTZ Nodes procedure described in [Section 5.5.8.3](#) will be skipped and all features defined in [Section 5.5.8.3](#) will be marked as unsupported.

Note: If the DUT returns no response for GetNodes request or the DUT returns GetNodesResponse message with empty PTZNode list, then all features defined in [Table 5.37](#) and [Section 5.5.8.3](#) will be marked as undefined.

Table 5.37. PTZ Nodes Features (GetServices)

Criterion Item	Current PTZNode from GetNodesResponse message	
Feature (for each PTZ Node)	Supported	Not Supported
Continuous Pan/Tilt movement	SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is present	SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is not present
Continuous Zoom movement	SupportedPTZSpaces. ContinuousZoomVelocity Space element is present	SupportedPTZSpaces. ContinuousZoomVelocity Space element is not present
Continuous movement	Mandatory	-
Absolute Pan/Tilt movement	SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is present	SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is not present
Absolute Zoom movement	SupportedPTZSpaces. AbsoluteZoomPositionSpace element is present	SupportedPTZSpaces. AbsoluteZoomPositionSpace element is not present
Absolute movement	Absolute Pan/Tilt movement or Absolute Zoom movement is supported	Absolute Pan/Tilt movement and Absolute Zoom movement is not supported
Relative Pan/Tilt movement	SupportedPTZSpaces. RelativePanTiltTranlation Space element is present	SupportedPTZSpaces. RelativePanTiltTranlationSpace element is not present

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Feature (for each PTZ Node)		
Relative Zoom movement	SupportedPTZSpaces. RelativeZoomTranlationSpace element is present	SupportedPTZSpaces. RelativeZoomTranlationSpace element is not present
Relative movement	Relative Pan/Tilt movement or Relative Zoom movement is supported	Relative Pan/Tilt movement and Relative Zoom movement is not supported
Speed configuration function	Speed configuration function for Pan/Tilt movement or Speed configuration function for Zoom movement is supported	Speed configuration function for Pan/Tilt movement and Speed configuration function for Zoom movement is not supported
Speed configuration function for Pan/Tilt movement	SupportedPTZSpaces. PanTiltSpeedSpace element is present	SupportedPTZSpaces. PanTiltSpeedSpace element is not present
Speed configuration function for Zoom movement	SupportedPTZSpaces. ZoomSpeedSpace element is present	SupportedPTZSpaces. ZoomSpeedSpace element is not present
Preset position	MaximumNumberOfPresets > 0	MaximumNumberOfPresets = 0
Auxiliary operation	AuxiliaryCommands element is present	AuxiliaryCommands element is not present
Home Position	HomeSupported = true	HomeSupported = false

5.4.10.3 Fixed/Configurable Home Position Support for PTZ Node

In case the PTZ Node supports Home Position function, the PTZ Node shall support either Fixed or Configurable Home Position. The following defines the discovery procedure to determine which Home Position function is supported by the PTZ Node.

Pre-requisite:

- This procedure assumes that PTZ Node was recieved in GetNodesResponse message via preceding procedure described in [Section 5.5.8.2](#).

Discovery Procedure:

1. If FixedHomePosition attribute is defined in GetNodesResponse message for this PTZ Node, ONVIF Client checks features support as defined in [Table 5.38](#) and skips other steps of this procedure.

2. ONVIF Client invokes GetConfigurations request to retrieve a PTZ Configurations list.
3. The DUT returns GetConfigurationsResponse message with the list of PTZConfiguration that contains PTZNode. ONVIF Client identifies first PTZConfiguration which has the corresponding current PTZ Node.
4. If DUT supports Media2 Service according to [Section 5.5.6](#), ONVIF Client either selects or creates Media Profile anew along with the identified PTZConfiguration (refer to [Annex A.8](#) for the details) and goes to the step 7.
5. If DUT supports Media Service according to [Section 5.5.5](#), ONVIF Client either selects or creates Media Profile anew along with the identified PTZConfiguration (refer to [Annex A.1](#) for the details) and goes to the step 7.
6. Otherwise Configurable Home Position and Fixed Home Position features will be marked as undefined.
7. ONVIF Client invokes SetHomePosition request (ProfileToken = selected or newly created profile token) message to check Configurable Home Position is supported by DUT.
8. ONVIF Client checks features support as defined in [Table 5.39](#).
9. ONVIF Client restores Media Profiles setting in case it changes some of the Media Profiles configuration.

Table 5.38. Fixed/Configurable Home Position Support with FixedHomePosition Attribute (GetServices)

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Configurable Home Position	FixedHomePosition = false	FixedHomePosition = true
Fixed Home Position	FixedHomePosition = true	FixedHomePosition = false

Table 5.39. Fixed/Configurable Home Position Support without FixedHomePosition Attribute (GetServices)

Criterion Item	SetHomePositionResponse	
	Supported	Not Supported
Configurable Home Position	DUT returns SetHomePositionResponse	DUT returns SOAP fault

Criterion Item	SetHomePositionResponse	
Feature (for each PTZ Node with Home Position support)	Supported	Not Supported
Fixed Home Position	DUT returns SOAP fault	DUT returns SetHomePositionResponse

5.4.11 Imaging Service Support

Imaging Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.40](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver20/imaging/wsdI" namespace ONVIF Client will use service with the latest version.

Note: If Imaging service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.10.1](#).
- [Section 5.5.10.3](#).

Table 5.40. Imaging Service (GetServices)

Criterion Item	GetServicesResponse message	
Feature	Supported	Not Supported
Imaging Service	Includes service with "http://www.onvif.org/ver20/imaging/wsdI" namespace	Does not include service with "http://www.onvif.org/ver20/imaging/wsdI" namespace

5.4.11.1 IrCutfilterConfiguration Feature Support

IrCutfilterConfiguration function support in Imaging Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Imaging Service is supported by the DUT as defined in [Section 5.5.10](#), otherwise all features defined in [Table 5.41](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.5.8](#) or Media Service is supported by the DUT as defined in [Section 5.5.5](#), otherwise all features defined in [Table 5.41](#) will be marked as UNDEFUNED.

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Sources by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
 - out *videoSourceTokenList* - a list of Video Source tokens
2. For each Video Source token *videoSourceToken* in *videoSourceTokenList*
 - 2.1. ONVIF Client invokes **GetOptions** with parameters
 - VideoSourceToken =: *videoSourceToken*
 - 2.2. The DUT responds with **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or with **GetOptionsResponse** with parameters
 - ImagingOptions =: *imagingOptions*
 - 2.3. If *imagingOptions.IrCutFilterModes* list contains at least two items and one of them is equal to OFF, skip other steps.
3. ONVIF Client checks features support as defined in [Table 5.41](#).

Note: If the DUT does not return **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or **GetMoveOptionsResponse**, then all features defined in [Table 5.41](#) will be marked as UNDEFUNED.

Note: If the DUT does not return *videoSourceTokenList* list or *videoSourceTokenList* list is empty, then all features defined in [Table 5.41](#) will be marked as UNDEFUNED.

Table 5.41. IrCutfilter Configuration Function Support in Imaging Service (GetServices)

Criterion Item	GetOptionsResponse message	
Feature	Supported	Not Supported
IrCutfilter Configuration	For at least one GetOptionsResponse message at least	There are no GetOptionsResponse messages with at least two

Criterion Item	GetOptionsResponse message	
Feature	Supported	Not Supported
	two IrCutFilterModes elements are present in GetOptionsResponse. ImagingOptions and one of them equal to OFF	IrCutFilterModes elements in GetOptionsResponse. ImagingOptions with one of them equal to OFF

5.4.11.2 Imaging Events Support

Imaging Events support under Imaging Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.1](#), otherwise all features defined in [Table 5.42](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.42](#).

Table 5.42. Imaging Events Support (GetServices)

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Image Too Blurry	Contains tns1:VideoSource/ ImageTooBlurry/ ImagingService or tns1:VideoSource/ ImageTooBlurry/ AnalyticsService or tns1:VideoSource/ ImageTooBlurry/ RecordingService Event topic	Does not contain tns1:VideoSource/ ImageTooBlurry/ ImagingService and tns1:VideoSource/ ImageTooBlurry/ AnalyticsService and tns1:VideoSource/ ImageTooBlurry/ RecordingService Event topic
Image Too Dark	Contains tns1:VideoSource/ ImageTooDark/ ImagingService or tns1:VideoSource/ ImageTooDark/ AnalyticsService or tns1:VideoSource/	Does not contain tns1:VideoSource/ ImageTooDark/ ImagingService and tns1:VideoSource/ ImageTooDark/ AnalyticsService and

Criterion Item	GetEventPropertiesResponse	
	Supported	Not Supported
	ImageTooDark/ RecordingService Event topic	tns1:VideoSource/ ImageTooDark/ RecordingService Event topic
Image Too Bright	Contains tns1:VideoSource/ ImageTooBright/ ImagingService or tns1:VideoSource/ ImageTooBright/ AnalyticsService or tns1:VideoSource/ ImageTooBright/ RecordingService Event topic	Does not contain tns1:VideoSource/ ImageTooBright/ ImagingService and tns1:VideoSource/ ImageTooBright/ AnalyticsService and tns1:VideoSource/ ImageTooBright/ RecordingService Event topic
Global Scene Change	Contains tns1:VideoSource/ GlobalSceneChange/ ImagingService or tns1:VideoSource/ GlobalSceneChange/ AnalyticsService or tns1:VideoSource/ GlobalSceneChange/ RecordingService Event topic	Does not contain tns1:VideoSource/ GlobalSceneChange/ ImagingService and tns1:VideoSource/ GlobalSceneChange/ AnalyticsService and tns1:VideoSource/ GlobalSceneChange/ RecordingService Event topic
Motion Alarm	Contains tns1:VideoSource/ MotionAlarm event topic	Does not contain tns1:VideoSource/ MotionAlarm event topic

5.4.11.3 Focus Control Function Support

Focus Control function support in Imaging Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Imaging Service is supported by the DUT as defined in [Section 5.5.10](#), otherwise all features defined in [Table 5.43](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.5.8](#) or Media Service is supported by the DUT as defined in [Section 5.5.5](#), otherwise all features defined in [Table 5.43](#) will be marked as UNDEFUNED.

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Sources by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
 - out *videoSourceTokenList* - a list of Video Source tokens
2. For each Video Source token *videoSourceToken* in *videoSourceTokenList*
 - 2.1. ONVIF Client invokes **GetMoveOptions** with parameters
 - VideoSourceToken =: *videoSourceToken*
 - 2.2. The DUT responds with **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or with **GetMoveOptionsResponse** with parameters
 - MoveOptions =: *moveOptions*
 - 2.3. If *moveOptions* contains **MoveOptions/Absolute** or **MoveOptions/Relative** or **MoveOptions/Continuous**, skip other steps.
3. ONVIF Client checks features support as defined in [Table 5.43](#).

Note: If the DUT does not return **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or **GetMoveOptionsResponse**, then all features defined in [Table 5.43](#) will be marked as UNDEFUNED.

Note: If the DUT does not return *videoSourceTokenList* list or *videoSourceTokenList* list is empty, then all features defined in [Table 5.43](#) will be marked as UNDEFUNED.

Table 5.43. Focus Control (GetServices)

Criterion Item	GetMoveOptionsResponse	
	Supported	Not Supported
Focus Control	Contains MoveOptions Absolute or MoveOptions\Relative or MoveOptions\Continuous	Does not contain MoveOptions\Absolute and MoveOptions\Relative and MoveOptions\Continuous

5.4.12 Analytics Service Support

Analytics Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.44](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver20/analytics/wsd" namespace ONVIF Client will use service with the latest version.

Note: If Analytics Service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.11.1](#).
- [Section 5.5.11.2](#).
- [Section 5.5.11.3](#).
- [Section 5.5.11.3](#).

Table 5.44. Analytics Service (GetServices)

Criterion Item	GetServicesResponse	
	Supported	Not Supported
Analytics Service	Includes service with "http://www.onvif.org/ver20/analytics/wsd" namespace	Does not include service with "http://www.onvif.org/ver20/analytics/wsd" namespace

5.4.12.1 Analytics Features Support

Rule Engine support under Analytics Service is determined according to the following procedure in conjunction with the above procedure.

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message for Analytics Service capabilities support by the DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.45](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse then Rule Engine feature will be marked as undefined.

Table 5.45. Analytics Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Rule Engine	Capabilities.RuleSupport = true	Skipped Capabilities. RuleSupport or Capabilities.RuleSupport = false
Rule Options	RuleOptionsSupported = true	Skipped Capabilities. RuleOptionsSupported or Capabilities. RuleOptionsSupported = false
Analytics Modules	Capabilities. AnalyticsModuleSupport = true	Skipped Capabilities. AnalyticsModuleSupport or Capabilities. AnalyticsModuleSupport = false
Analytics Module Options	Capabilities. AnalyticsModuleOptionsSupported = true	Skipped Capabilities. AnalyticsModuleOptionsSupported or Capabilities. AnalyticsModuleOptionsSupported = false
Supported Metadata	Capabilities.SupportedMetadata = true	Skipped Capabilities.SupportedMetadata or Capabilities.SupportedMetadata = false
Image Sending	Capabilities contains non-empty @ImageSendingType	Skipped Capabilities.@ImageSendingType or @ImageSendingType has empty list value
Embedded Image Sending Type	Capabilities contains @ImageSendingType with "Embedded" value in the list	Skipped Capabilities.@ImageSendingType or @ImageSendingType does not contain "Embedded" value
Local Storage Image Sending Type	Capabilities contains @ImageSendingType	Skipped Capabilities.ImageSendingType or @ImageSendingType

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Feature	with "LocalStorage" value in the list	does not contain "LocalStorage" value
Remote Storage Image Sending Type	Capabilities contains @ImageSendingType with "RemoteStorage" value in the list	Skipped Capabilities.ImageSendingType or @ImageSendingType does not contain "RemoteStorage" value

5.4.12.2 Supported Rules

Supported Rules support under Analytics Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- DUT supports **Rule Engine** feature according to [Table 5.45](#), otherwise all features defined in [Table 5.46](#) will be marked as NOT SUPPORTED.
- DUT supports **Media2 Service** feature according to [Section 5.5.6](#), otherwise all features defined in [Table 5.46](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client retrieves a list of Analytics Configurations by following the procedure mentioned in [Annex A.5](#) with the following input and output parameters
 - out *analyticsConfList* - a list of Analytics configurations
2. For each Analytics Configuration *analyticsConf* in *analyticsConfList* repeat the following steps:
 - 2.1. ONVIF Client invokes **GetSupportedRules** request with parameters
 - ConfigurationToken := *analyticsConf.token*
 - 2.2. DUT responds with **GetSupportedRulesResponse** message with parameters
 - SupportedRules =: *supportedRules1*
 - 2.3. *supportedRules* := *supportedRules* + *supportedRules1*
3. ONVIF Client checks features support as defined in [Table 5.46](#).

Note: If the DUT does not return `GetSupportedRulesResponse` then all features defined in [Table 5.46](#) will be marked as UNDEFINED.

Table 5.46. Supported Rules (GetServices)

Criterion Item	GetSupportedRulesResponse	
Feature	Supported	Not Supported
Motion Region Detector Rule	Contains <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:MotionRegionDetector</code>	Does not contain <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:MotionRegionDetector</code>
Face Recognition Rule	Contains <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:FaceRecognition</code>	Does not contain <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:FaceRecognition</code>
License Plate Recognition Rule	Contains <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:LicensePlateRecognition</code>	Does not contain <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:LicensePlateRecognition</code>
Line Crossing Counting Rule	Contains <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:LineCounting</code>	Does not contain <code>RuleDescription</code> element with <code>Name</code> value is equal to <code>tt:LineCounting</code>

5.4.12.3 Analytics Service - Supported Metadata

Supported Metadata supporting under Analytics Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Analytics Service is supported by the DUT as defined in [Section 5.5.11](#), otherwise all features defined in [Table 5.47](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Metadata Supported is supported by the DUT as defined in [Table 5.45](#), otherwise all features defined in [Table 5.47](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes `GetSupportedMetadata` request with parameters
 - Type skipped

2. DUT responds with **GetSupportedMetadataResponse** message with parameters
 - AnalyticsModule list =: *analyticsModuleList*

Note: If the DUT does not return GetSupportedMetadataResponse then the following features will be marked as undefined:

- Object Classification
- Vehicle Info
- Geo Location
- Human Face
- Human Body
- License Plate Info

Table 5.47. Supported Metadata (GetServices)

Criterion Item	GetSupportedMetadataResponse	
	Supported	Not Supported
Object Classification	Contains at least one AnalyticsModule element with SampleFrame.Object.Appearance.Class.Type	Does not contain AnalyticsModule element with SampleFrame.Object.Appearance.Class.Type
Vehicle Info	Contains at least one AnalyticsModule.SampleFrame.Object.Appearance element with VehicleInfo element	Does not contain AnalyticsModule.SampleFrame.Object.Appearance element with VehicleInfo element
Human Face	Contains at least one AnalyticsModule.SampleFrame.Object.Appearance element with HumanFace element	Does not contain AnalyticsModule.SampleFrame.Object.Appearance element with HumanFace element
Human Body	Contains at least one AnalyticsModule.SampleFrame.Object.Appearance element with HumanBody element	Does not contain AnalyticsModule.SampleFrame.Object.Appearance element with HumanBody element
License Plate Info	Contains at least one AnalyticsModule.SampleFrame.Object.Appearance element with LicensePlateInfo element	Does not contain AnalyticsModule.SampleFrame.Object.Appearance element with LicensePlateInfo element
Geo Location	Contains at least one AnalyticsModule element with SampleFrame.Object .	Does not contain AnalyticsModule element with SampleFrame.Object .

Criterion Item	GetSupportedMetadataResponse	
Feature	Supported	Not Supported
	Appearance.GeoLocation element	Appearance with GeoLocation element

5.4.13 Recording Control Service Support

Recording Control Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.48](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/recording/wsdl" namespace ONVIF Client will use service with the latest version.

Note: If Recording Control service is not supported, the following feature discovery (Dynamic Recordings, Dynamic Tracks and Audio Recording features support) will be skipped.

Table 5.48. Recording Control Service (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Recording Control Service	Includes service with "http://www.onvif.org/ver10/recording/wsdl" namespace	Does not include service with "http://www.onvif.org/ver10/recording/wsdl" namespace

Recording Control features support

Dynamic Recordings, Dynamic Tracks, Audio Recording, and Recording Options support under Recording Control Service is determined according to the following procedure in conjunction with the above procedure.

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Dynamic Recording capability support by the DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.49](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse then Dynamic Recordings feature, Dynamic Tracks feature, Audio Recording feature, Recording Options, Metadata Recording feature, JPEG, H.264, and MPEG4 will be marked as undefined.

Table 5.49. Recording Control Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Dynamic Recordings	Capabilities. DynamicRecordings = true	Skipped Capabilities. DynamicRecordings or Capabilities. DynamicRecordings = false
Dynamic Tracks	Capabilities.DynamicTracks = true	Skipped Capabilities. DynamicTracks or Capabilities. DynamicTracks = false
Audio Recording	Includes Capabilities.Encoding with at least one audio codec (AAC, G711, or G726)	Does not include Capabilities.Encoding with at least one audio codec (AAC, G711, or G726)
Recording Options	Capabilities.Options = true	Skipped Capabilities.Options or Capabilities.Options = false
tns1:RecordingConfig/ DeleteTrackData	GetEventProperties contains tns1:RecordingConfig/ DeleteTrackData topic	GetEventProperties doesn't contain tns1:RecordingConfig/ DeleteTrackData topic
Metadata Recording	Capabilities. MetadataRecording = true	Skipped Capabilities. MetadataRecording or Capabilities. MetadataRecording = false
JPEG	Includes Capabilities.Encoding with JPEG	Does not include Capabilities.Encoding with JPEG
H.264	Includes Capabilities.Encoding with H264	Does not include Capabilities.Encoding with H264
MPEG4	Includes Capabilities.Encoding with MPEG4	Does not include Capabilities.Encoding with MPEG4

5.4.14 Recording Search Service Support

Recording Search Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.50](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/search/wsd/" namespace ONVIF Client will use service with the latest version.

Note: If Recording Search service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.13.1](#).
- [Section 5.5.13.2](#).

Table 5.50. Recording Search Service (GetServices)

Criterion Item	GetServicesResponse message	
Feature	Supported	Not Supported
Recording Search Service	Includes service with "http://www.onvif.org/ver10/search/wsd/" namespace	Does not include service with "http://www.onvif.org/ver10/search/wsd/" namespace

5.4.14.1 Metadata Search Support

Metadata Search support under Recording Search Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Recording Search Service Service is supported by the DUT as defined in [Section 5.5.13](#), otherwise all features defined in [Table 5.51](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Recording Search Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.51](#).

Note: If the DUT does not return **GetServiceCapabilitiesResponse** then all features defined in [Table 5.51](#) will be marked as UNDEFINED.

Table 5.51. Metadata Search Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Metadata Search	<i>cap.MetadataSearch = true</i>	Skipped <i>cap.MetadataSearch</i> or <i>cap.MetadataSearch = false</i>

5.4.14.2 PTZ Position Search Support

PTZ Position Search support under Recording Search Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Recording Search Service Service is supported by the DUT as defined in [Section 5.5.13](#), otherwise all features defined in [Table 5.52](#) will be marked as NOT SUPPORTED.
- This procedure assumes that all pre-requisite defined in [Annex A.10](#) are fulfilled, otherwise states of the features listed in [Table 5.52](#) could not be defined correctly.

Discovery Procedure:

1. ONVIF Client invokes **GetRecordingInformation** request with parameters
 - RecordingToken := *recordingToken*
2. The DUT responds with **GetRecordingInformationResponse** message with parameters
 - RecordingInformation =: *recordingInformation*
3. ONVIF Client invokes **FindPTZPosition** request with parameters
 - If *recordingInformation.EarliestRecording* is specified:

- StartPoint := *recordingInformation*.EarliestRecording
 - otherwise:
 - StartPoint := minimal value of DataFrom element in *recordingInformation*.Track list
 - If *recordingInformation*.EarliestRecording is specified:
 - EndPoint := *recordingInformation*.LatestRecording
 - otherwise:
 - EndPoint is skipped
 - Scope is empty element
 - SearchFilter.MinPosition.PanTilt.x := -1
 - SearchFilter.MinPosition.PanTilt.y := -1
 - SearchFilter.MinPosition.Zoom is skipped
 - SearchFilter.MaxPosition.PanTilt.x := 1
 - SearchFilter.MaxPosition.PanTilt.y := 1
 - SearchFilter.MaxPosition.Zoom is skipped
 - SearchFilter.EnterOrExit := false
 - MaxMatches is skipped
 - KeepAliveTime := "PT3S"
4. The DUT responds with SOAP 1.2 fault or **FindPTZPositionResponse** message with parameters
 - SearchToken =: *searchToken*
 5. ONVIF Client checks features support as defined in [Table 5.52](#).
 6. If the DUT returns **FindPTZPositionResponse** message:
 - ONVIF Client invokes **EndSearch** request with parameters
 - SearchToken := *searchToken*
 - The DUT responds with **EndSearchResponse** message with parameters

- Endpoint

Note: *recordingToken* will be taken from 'Recording from tests' field of ONVIF Device Test Tool.

Note: If the DUT does not return *GetRecordingInformationResponse* then all features defined in [Table 5.52](#) will be marked as UNDEFINED.

Note: If the DUT does not return *recordingInformation.EarliestRecording* and there are no *recordingInformation.Track* items then all features defined in [Table 5.52](#) will be marked as UNDEFINED.

Table 5.52. PTZ Position Search Support (GetServices)

Criterion Item	FindPTZPositionResponse message	
Feature	Supported	Not Supported
PTZ Position Search	DUT returns FindPTZPositionResponse	DUT returns SOAP 1.2 fault

5.4.15 Replay Service Support

Replay Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that *GetServicesResponse* has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.53](#).

Note: If *GetServicesResponse* contains several services with "http://www.onvif.org/ver10/replay/wsd" namespace, ONVIF Client will use service with the latest version.

Note: If Replay service is not supported, the following feature discovery (Reverse Replay features support) will be skipped.

Table 5.53. Replay Service (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Replay Service	Includes service with "http://www.onvif.org/ver10/replay/wsd" namespace	Does not include service with "http://www.onvif.org/ver10/replay/wsd" namespace

Replay features support

Reverse Replay and RTP/RTSP/TCP support under Replay Service is determined according to the following procedure in conjunction with the above procedure.

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Reverse Replay capability support by DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.54](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse then Reverse Replay feature and RTP/RTSP/TCP feature will be marked as undefined.

Table 5.54. Replay Control Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Reverse Replay	Capabilities.ReversePlayback = true	Skipped Capabilities.ReversePlayback or Capabilities.ReversePlayback = false
RTP/RTSP/TCP	Capabilities.RTP_RTSP_TCP = true	Skipped Capabilities.RTP_RTSP_TCP or Capabilities.RTP_RTSP_TCP = false

5.4.16 Receiver Service Support

Receiver Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.55](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/receiver/wsdl" namespace, ONVIF Client will use service with the latest version.

Table 5.55. Receiver Service (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Receiver Service	Includes service with "http://www.onvif.org/ver10/receiver/wsdl" namespace	Does not include service with "http://www.onvif.org/ver10/receiver/wsdl" namespace

5.4.17 Door Control Service Support

Door Control Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.56](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/doorcontrol/wsdl" namespace, ONVIF Client will use service with the latest version.

Note: If Door Control service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.16.1](#)
- [Section 5.5.16.2](#)
- [Section 5.5.16.3](#)

Table 5.56. Door Control Service (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Door Control Service	Includes service with "http://www.onvif.org/ver10/doorcontrol/wsdl" namespace	Does not include service with "http://www.onvif.org/ver10/doorcontrol/wsdl" namespace

5.4.17.1 Door Control Features Support

Door Control capabilities support under Door Control Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Door Control Service is supported by the DUT as defined in [Section 5.5.16](#), otherwise all features defined in [Table 5.57](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Door Control Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.57](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in [Table 5.57](#) will be marked as UNDEFINED.

Table 5.57. Door Control Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Door Entity	<i>cap. MaxDoors > 0</i> or <i>cap. MaxDoors</i> is skipped	<i>cap. MaxDoors = 0</i>
MaxDoors Capability	<i>cap</i> contains @MaxDoors	<i>cap</i> does not contain @MaxDoors
Door Management	<i>cap. DoorManagementSupported = true</i>	Skipped <i>cap. DoorManagementSupported</i> or <i>cap. DoorManagementSupported = false</i>
Client Supplied Token	<i>cap. ClientSuppliedTokenSupported = true</i>	Skipped <i>cap. ClientSuppliedTokenSupported</i> or <i>cap. ClientSuppliedTokenSupported = false</i>

5.4.17.2 Door Entity Features Support

Door Entity Features support under Door Control Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Door Control Service is supported by the DUT as defined in [Section 5.5.16](#), otherwise all features defined in [Table 5.58](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Door Entity is supported by the DUT as defined in [Section 5.5.16.1](#), otherwise all features defined in [Table 5.58](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client retrieves a list of Doors with Door Info by following the procedure mentioned in [Annex A.2](#) with the following input and output parameters
 - out *doorInfoList* - Door Info list
2. ONVIF Client checks features support as defined in [Table 5.58](#).

Note: If the DUT does not return GetDoorInfoListResponse message, then all features defined in [Table 5.58](#) will be marked as UNDEFINED.

Note: Lock Down Door feature support means that both LockDownDoor and LockDownReleaseDoor command are expected to be supported by the DUT.

Note: Lock Open Door feature support means that both LockOpenDoor and LockOpenReleaseDoor command are expected to be supported by the DUT.

Table 5.58. Door Entity Support (GetServices)

Criterion Item	All DoorInfos	
	Supported	Not Supported
Access Door	Contains at least one Door with Capabilities.Access = true	Contains no Doors with Capabilities.Access = true
Lock Door	Contains at least one Door with Capabilities.Lock = true	Contains no Doors with Capabilities.Lock = true
Unlock Door	Contains at least one Door with Capabilities.Unlock = true	Contains no Doors with Capabilities.Unlock = true

Criterion Item	All DoorInfos	
	Supported	Not Supported
Double Lock Door	Contains at least one Door with Capabilities.DoubleLock = true	Contains no Doors with Capabilities.DoubleLock = true
Block Door	Contains at least one Door with Capabilities.Block = true	Contains no Doors with Capabilities.Block = true
Lock Down Door	Contains at least one Door with Capabilities.LockDown = true	Contains no Doors with Capabilities.LockDown = true
Lock Open Door	Contains at least one Door with Capabilities.LockOpen = true	Contains no Doors with Capabilities.LockOpen = true
Door Monitor	Contains at least one Door with Capabilities.DoorMonitor = true	Contains no Doors with Capabilities.DoorMonitor = true
Lock Monitor	Contains at least one Door with Capabilities.LockMonitor = true	Contains no Doors with Capabilities.LockMonitor = true
Double Lock Monitor	Contains at least one Door with Capabilities.DoubleLockMonitor = true	Contains no Doors with Capabilities.DoubleLockMonitor = true
Alarm	Contains at least one Door with Capabilities.Alarm = true	Contains no Doors with Capabilities.Alarm = true
Tamper	Contains at least one Door with Capabilities.Tamper = true	Contains no Doors with Capabilities.Tamper = true
Fault	Contains at least one Door with Capabilities.Fault = true	Contains no Doors with Capabilities.Fault = true

5.4.17.3 Door Control Events Support

Door Control Events support under Door Control Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Door Control Service is supported by the DUT as defined in [Section 5.5.16](#), otherwise all features defined in [Table 5.59](#) will be marked as NOT SUPPORTED.

- This procedure assumes that Door Entity is supported by the DUT as defined in [Section 5.5.16.1](#), otherwise all features defined in [Table 5.59](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.1](#), otherwise all features defined in [Table 5.59](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.59](#).

Table 5.59. Door Control Events Support (GetServices)

Criterion Item	GetEventPropertiesResponse	
	Supported	Not Supported
Door/State/DoorMode	Contains tns1:Door/State/DoorMode Event topic	Does not contain tns1:Door/State/DoorMode Event topic
Door/State/DoorPhysicalState	Contains tns1:Door/State/DoorPhysicalState Event topic	Does not contain tns1:Door/State/DoorPhysicalState Event topic
Door/State/LockPhysicalState	Contains tns1:Door/State/LockPhysicalState Event topic	Does not contain tns1:Door/State/LockPhysicalState Event topic
Door/State/DoubleLockPhysicalState	Contains tns1:Door/State/DoubleLockPhysicalState Event topic	Does not contain tns1:Door/State/DoubleLockPhysicalState Event topic
Door/State/DoorAlarm	Contains tns1:Door/State/DoorAlarm Event topic	Does not contain tns1:Door/State/DoorAlarm Event topic
Door/State/DoorTamper	Contains tns1:Door/State/DoorTamper Event topic	Does not contain tns1:Door/State/DoorTamper Event topic
Door/State/DoorFault	Contains tns1:Door/State/DoorFault Event topic	Does not contain tns1:Door/State/DoorFault Event topic
Configuration/Door/Changed	Contains tns1:Configuration/Door/Changed Event topic	Does not contain tns1:Configuration/Door/Changed Event topic
Configuration/Door/Removed	Contains tns1:Configuration/Door/Removed Event topic	Does not contain tns1:Configuration/Door/Removed Event topic

5.4.18 Access Control Service Support

Access Control Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.60](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/accesscontrol/wsd" namespace, ONVIF Client will use service with the latest version.

Note: If Access Control service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.17.2](#).
- [Section 5.5.17.3](#).

Table 5.60. Access Control Service Support (GetServices)

Criterion Item	GetServicesResponse message	
	Supported	Not Supported
Access Control Service	Includes service with "http://www.onvif.org/ver10/accesscontrol/wsd" namespace	Does not include service with "http://www.onvif.org/ver10/accesscontrol/wsd" namespace

5.4.18.1 Access Control Service Features Support

Access Control capabilities support under Access Control Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Access Control Service is supported by the DUT as defined in [Section 5.5.16](#), otherwise all features defined in [Table 5.61](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Access Control Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.61](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in [Table 5.61](#) will be marked as UNDEFINED.

Table 5.61. Access Control Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Access Point Entity	cap. MaxAccessPoints > 0 or cap. MaxAccessPoints is skipped	cap. MaxAccessPoints = 0
MaxAccessPoints Capability	cap contains @MaxAccessPoints	cap does not contain @MaxAccessPoints
Access Point Management	cap. AccessPointManagementSupported = true	Skipped cap. AccessPointManagementSupported or cap. AccessPointManagementSupported = false
Area Management	cap. AreaManagementSupported = true	Skipped cap. AreaManagementSupported or cap. AreaManagementSupported = false
Client Supplied Token (Area, Access Point)	cap. ClientSuppliedTokenSupported = true	Skipped cap. ClientSuppliedTokenSupported or cap. ClientSuppliedTokenSupported = false

5.4.18.2 Area Entity Support

Area Entity support under Access Control Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Access Control Service is supported by the DUT as defined in [Section 5.5.17](#), otherwise all features defined in [Table 5.62](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client retrieves a complete list of area info items by following the procedure mentioned in [Annex A.4](#) with the following input and output parameters
 - out *areaInfoCompleteList* - complete areas info list
 - out *areasNumber* - areas number
2. ONVIF Client checks features support as defined in [Table 5.62](#).

Note: If DUT fails procedure described in [Annex A.4](#), all features from [Table 5.62](#) will be marked as UNDEFINED.

Table 5.62. Area Entity Support (GetServices)

Criterion Item	GetAreaInfoListResponse messages	
	Supported	Not Supported
Area Entity	<i>areasNumber</i> > 0	<i>areasNumber</i> = 0

5.4.18.3 Access Point Features Support

Access Point Entity features support under Access Control Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Access Point Entity is supported by the DUT as defined in [Section 5.5.17.1](#), otherwise all features defined in [Table 5.63](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client retrieves a complete list of access point info items by following the procedure mentioned in [Annex A.3](#) with the following input and output parameters
 - out *accessPointInfoCompleteList* - complete access points info list
 - out *accessPointsNumber* - access points number
2. ONVIF Client checks features support as defined in [Table 5.63](#).

Note: If DUT fails procedure described in [Annex A.3](#), all features from [Table 5.63](#) except Access Point Entity will be marked as UNDEFINED.

Table 5.63. Access Control Entity Support (GetServices)

Criterion Item	All <code>AccessPointInfos</code> from <code>accessPointInfoCompleteList</code>	
Feature	Supported	Not Supported
Enable/Disable Access Point	Contains at least one <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>DisableAccessPoint = true</code>	Contains no <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>DisableAccessPoint = true</code>
Duress	Contains at least one <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>Duress = true</code>	Contains no <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>Duress = true</code>
Access Taken	Contains at least one <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>AccessTaken = true</code>	Contains no <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>AccessTaken = true</code>
External Authorization	Contains at least one <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>ExternalAuthorization = true</code>	Contains no <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>ExternalAuthorization = true</code>
Anonymous Access	Contains at least one <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>AnonymousAccess = true</code>	Contains no <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>AnonymousAccess = true</code>
Identifier Access	Contains at least one <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>IdentifierAccess = true</code>	Contains no <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>IdentifierAccess = true</code>
Feedback	Contains at least one <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>SupportedFeedbackTypes</code> with non-empty list of values	Contains no <code>AccessPointInfo</code> with <code>Capabilities</code> . <code>SupportedFeedbackTypes</code> or each <code>SupportedFeedbackTypes</code> list is empty

5.4.18.4 Access Control Events Support

Access Control Events support under Access Control Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.7.1](#), otherwise all features defined in [Table 5.64](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.64](#).

Table 5.64. Access Control Events Support (GetServices)

Criterion Item	GetEventPropertiesResponse message	
Feature	Supported	Not Supported
AccessControl/ AccessGranted/Anonymous	Contains tns1:AccessControl/ AccessGranted/ Anonymous Event topic	Does not contain tns1:AccessControl/ AccessGranted/ Anonymous Event topic
AccessControl/ AccessGranted/Credential	Contains tns1:AccessControl/ AccessGranted/ Credential Event topic	Does not contain tns1:AccessControl/ AccessGranted/ Credential Event topic
AccessControl/ AccessTaken/Anonymous	Contains tns1:AccessControl/ AccessTaken/ Anonymous Event topic	Does not contain tns1:AccessControl/ AccessTaken/ Anonymous Event topic
AccessControl/ AccessTaken/Credential	Contains tns1:AccessControl/ AccessTaken/ Credential Event topic	Does not contain tns1:AccessControl/ AccessTaken/ Credential Event topic
AccessControl/ AccessTaken/Identifier	Contains tns1:AccessControl/ AccessTaken/ Identifier Event topic	Does not contain tns1:AccessControl/ AccessTaken/ Credential Event topic
AccessControl/ AccessNotTaken/Anonymous	Contains tns1:AccessControl/	Does not contain tns1:AccessControl/

Criterion Item	GetEventPropertiesResponse message	
	Supported	Not Supported
	AccessNotTaken/ Anonymous Event topic	AccessNotTaken/ Anonymous Event topic
AccessControl/ AccessNotTaken/Credential	Contains tns1:AccessControl/ AccessNotTaken/ Credential Event topic	Does not contain tns1:AccessControl/ AccessNotTaken/ Credential Event topic
AccessControl/ AccessNotTaken/Identifier	Contains tns1:AccessControl/ AccessNotTaken/ Identifier Event topic	Does not contain tns1:AccessControl/ AccessNotTaken/ Credential Event topic
AccessControl/ Denied/Anonymous	Contains tns1:AccessControl/Denied/ Anonymous Event topic	Does not contain tns1:AccessControl/Denied/ Anonymous Event topic
AccessControl/ Denied/Credential	Contains tns1:AccessControl/Denied/ Credential Event topic	Does not contain tns1:AccessControl/Denied/ Credential Event topic
AccessControl/Denied/ CredentialNotFound/Card	Contains tns1:AccessControl/Denied/ CredentialNotFound/ Card Event topic	Does not contain tns1:AccessControl/Denied/ CredentialNotFound/ Card Event topic
AccessControl/Duress	Contains tns1:AccessControl/ Duress Event topic	Does not contain tns1:AccessControl/ Duress Event topic
AccessControl/ Request/Anonymous	Contains tns1:AccessControl/ Request/Anonymous Event topic	Does not contain tns1:AccessControl/Request/ Anonymous Event topic
AccessControl/ Request/Credential	Contains tns1:AccessControl/ Request/Credential Event topic	Does not contain tns1:AccessControl/Request/ Credential Event topic
AccessControl/ Request/Timeout	Contains tns1:AccessControl/ Request/ Timeout Event topic	Does not contain tns1:AccessControl/ Request/ Timeout Event topic
AccessPoint/State/Enabled	Contains tns1:AccessPoint/ State/ Enabled Event topic	Does not contain tns1:AccessPoint/State/ Enabled Event topic

Criterion Item	GetEventPropertiesResponse message	
Feature	Supported	Not Supported
Configuration/ AccessPoint/Changed	Contains tns1:Configuration/ AccessPoint/ Changed Event topic	Does not contain tns1:Configuration/ AccessPoint/ Changed Event topic
Configuration/ AccessPoint/Removed	Contains tns1:Configuration/ AccessPoint/ Removed Event topic	Does not contain tns1:Configuration/ AccessPoint/ Removed Event topic
Configuration/Area/Changed	Contains tns1:Configuration/ Area/ Changed Event topic	Does not contain tns1:Configuration/Area/ Changed Event topic
Configuration/Area/Removed	Contains tns1:Configuration/ Area/ Removed Event topic	Does not contain tns1:Configuration/Area/ Removed Event topic
AccessControl/Denied/ CredentialNotFound	Contains tns1:AccessControl/ Denied/ CredentialNotFound Event topic	Does not contain tns1:AccessControl/ Denied/ CredentialNotFound Event topic
AccessControl/ AccessGranted/Identifier	Contains tns1:AccessControl/ AccessGranted/ Identifier Event topic	Does not contain tns1:AccessControl/ AccessGranted/ Identifier Event topic
AccessControl/Denied/Identifier	Contains tns1:AccessControl/ Denied/ Identifier Event topic	Does not contain tns1:AccessControl/ Denied/ Identifier Event topic

5.4.19 Security Configuration Service Support

Security Configuration Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.65](#).

Note: If `GetServicesResponse` contains several services with "http://www.onvif.org/ver10/advancedsecurity/wsd" namespace ONVIF Client will use service with the latest version.

Note: If Security Configuration Service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.18.1](#).

Table 5.65. Security Configuration Service (GetServices)

Criterion Item	GetServicesResponse message	
Feature	Supported	Not Supported
Security Configuration Service	Includes service with "http://www.onvif.org/ver10/advancedsecurity/wsd" namespace	Does not include service with "http://www.onvif.org/ver10/advancedsecurity/wsd" namespace

5.4.19.1 Security Configuration Features Support

Keystore, TLS Server, and 802.1X configuration capabilities support under Security Configuration Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Security Configuration Service is supported by the DUT as defined in [Section 5.5.18](#), otherwise all features defined in [Table 5.66](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Security Configuration Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.66](#).

Note: If the DUT does not return `GetServiceCapabilitiesResponse` then all features defined in [Table 5.66](#) will be marked as UNDEFINED.

Table 5.66. Security Configuration Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
RSA Key Pair Generation	Capabilities. KeystoreCapabilities. RSAKeyPairGeneration = true	Skipped Capabilities. KeystoreCapabilities. RSAKeyPairGeneration or Capabilities. KeystoreCapabilities. RSAKeyPairGeneration = false
PKCS10 External Certification with RSA	Capabilities. KeystoreCapabilities. PKCS10ExternalCertification WithRSA = true	Skipped Capabilities. KeystoreCapabilities. PKCS10ExternalCertification WithRSA or Capabilities. KeystoreCapabilities. PKCS10ExternalCertification WithRSA = false
Self-Signed Certificate Creation with RSA	Capabilities. KeystoreCapabilities. SelfSignedCertificate CreationWithRSA = true	Skipped Capabilities. KeystoreCapabilities. SelfSignedCertificateCreation WithRSA or Capabilities. KeystoreCapabilities. SelfSignedCertificateCreation WithRSA = false
Passphrase Management	Capabilities. KeystoreCapabilities. MaximumNumberOf Passphrases > 0	Skipped Capabilities. KeystoreCapabilities. MaximumNumberOf Passphrases or Capabilities. KeystoreCapabilities. MaximumNumberOf Passphrases = 0
PKCS8 Container Upload	Capabilities. KeystoreCapabilities. PKCS8RSAKeyPairUpload = true	Skipped Capabilities. KeystoreCapabilities. PKCS8RSAKeyPairUpload or Capabilities. KeystoreCapabilities. PKCS8RSAKeyPairUpload = false
PKCS12 Container Upload	Capabilities. KeystoreCapabilities.	Skipped Capabilities. KeystoreCapabilities.

Criterion Item	GetServiceCapabilitiesResponse message	
	Feature	Supported
	PKCS12CertificateWithRSA PrivateKeyUpload = true	PKCS12CertificateWithRSA PrivateKeyUpload or Capabilities. KeystoreCapabilities. PKCS12CertificateWithRSA PrivateKeyUpload = false
CRLs	Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs > 0	Skipped Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs or Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs = 0
Certification path validation policies	Capabilities. KeystoreCapabilities. MaximumNumber OfCertificationPath ValidationPolicies > 0	Skipped Capabilities. KeystoreCapabilities. MaximumNumber OfCertificationPath ValidationPolicies or Capabilities. KeystoreCapabilities. MaximumNumber OfCertificationPath ValidationPolicies = 0
TLS WWW client auth extended key usage extension	Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuth ExtKeyUsage = true	Skipped Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuth ExtKeyUsage or Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuth ExtKeyUsage = false
No Private Key Sharing	Capabilities. KeystoreCapabilities. NoPrivateKeySharing = true	Skipped Capabilities. KeystoreCapabilities. NoPrivateKeySharing or Capabilities. KeystoreCapabilities. NoPrivateKeySharing = false
TLS Server Support	Capabilities. TLSServerCapabilities.	Skipped Capabilities. TLSServerCapabilities. TLSServerSupported

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
	TLSServerSupported list is not empty	or empty Capabilities. TLSServerCapabilities. TLSServerSupported list
TLS client authentication	Capabilities. TLSServerCapabilities. TLSClientAuthSupported = true	Skipped Capabilities. TLSServerCapabilities. TLSClientAuthSupported or Capabilities. TLSServerCapabilities. TLSClientAuthSupported = false
Enabled TLS Versions	Capabilities. TLSServerCapabilities. EnabledVersionsSupported = true	Skipped Capabilities. TLSServerCapabilities. EnabledVersionsSupported or Capabilities. TLSServerCapabilities. EnabledVersionsSupported = false

5.4.20 Credential Service Support

Credential Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.67](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/credential/wsd1" namespace, ONVIF Client will use service with the latest version.

Note: If Credential service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.19.1](#).

Table 5.67. Credential Service (GetServices)

Criterion Item	GetServicesResponse message	
	Supported	Not Supported
Credential Service	Includes service with "http://www.onvif.org/ver10/credential/wsdli" namespace	Does not include service with "http://www.onvif.org/ver10/credential/wsdli" namespace

5.4.20.1 Credential Features Support

Credential capabilities support under Credential Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Credential Service is supported by the DUT as defined in [Section 5.5.19](#), otherwise all features defined in [Table 5.68](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Credential Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.68](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in [Table 5.68](#) will be marked as UNDEFINED.

Table 5.68. Credential Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Credential Entity	<i>cap. MaxCredentials > 0</i>	<i>cap. MaxCredentials = 0</i>
pt:Card	<i>cap.SupportedIdentifierType</i> contains pt:Card	<i>cap.SupportedIdentifierType</i> does not contain pt:Card
pt:PIN	<i>cap.SupportedIdentifierType</i> contains pt:PIN	<i>cap.SupportedIdentifierType</i> does not contain pt:PIN
pt:Fingerprint	<i>cap.SupportedIdentifierType</i> contains pt:Fingerprint	<i>cap.SupportedIdentifierType</i> does not contain pt:Fingerprint

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
pt:Face	cap.SupportedIdentifierType contains pt:Face	cap.SupportedIdentifierType does not contain pt:Face
pt:Iris	cap.SupportedIdentifierType contains pt:Iris	cap.SupportedIdentifierType does not contain pt:Iris
pt:Vein	cap.SupportedIdentifierType contains pt:Vein	cap.SupportedIdentifierType does not contain pt:Vein
Credential Validity	cap.CredentialValiditySupported = true	cap.CredentialValiditySupported = false
Credential Access Profile Validity	cap.CredentialAccessProfileValiditySupported = true	cap.CredentialAccessProfileValiditySupported = false
Validity Supports Time Value	cap.ValiditySupportsTimeValue = true	cap.ValiditySupportsTimeValue = false
Reset Antipassback Violation	cap.ResetAntipassbackSupported = true	cap.ResetAntipassbackSupported = false
pt:ExemptFromAuthentication	cap.Extension.SupportedExemptionType = pt:ExemptFromAuthentication	cap.Extension does not contain SupportedExemptionType with value = pt:ExemptFromAuthentication
Client Supplied Token (Credential)	cap.ClientSuppliedTokenSupported = true	Skipped cap.ClientSuppliedTokenSupported or cap.ClientSuppliedTokenSupported = false
Whitelist	cap.MaxWhitelistedItems > 0	Skipped cap.MaxWhitelistedItems or cap.MaxWhitelistedItems = 0
Blacklist	cap.MaxBlacklistedItems > 0	Skipped cap.MaxBlacklistedItems or cap.MaxBlacklistedItems = 0

5.4.21 Access Rules Service Support

Access Rules Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.69](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/accessrules/wsd1" namespace, ONVIF Client will use service with the latest version.

Note: If Credential service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.20.1](#).

Table 5.69. Access Rules Service (GetServices)

Criterion Item	GetServicesResponse message	
	Supported	Not Supported
Access Rules Service	Includes service with "http://www.onvif.org/ver10/accessrules/wsd1" namespace	Does not include service with "http://www.onvif.org/ver10/accessrules/wsd1" namespace

5.4.21.1 Access Rules Features Support

Access Rules capabilities support under Access Rules Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Access Rules Service is supported by the DUT as defined in [Section 5.5.20](#), otherwise all features defined in [Table 5.70](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Access Rules Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.70](#).

Note: If the DUT does not return `GetServiceCapabilitiesResponse`, then all features defined in [Table 5.70](#) will be marked as UNDEFINED.

Table 5.70. Access Rules Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Multiple Schedules per Access Point	cap. MultipleSchedulesPerAccessPointSupported = true	cap. MultipleSchedulesPerAccessPointSupported = false
Access Rules Service \Client Supplied Token	cap. ClientSuppliedTokenSupported = true	Skipped cap. ClientSuppliedTokenSupported or cap. ClientSuppliedTokenSupported = false

5.4.22 Schedule Service Support

Schedule Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that `GetServicesResponse` has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.71](#).

Note: If `GetServicesResponse` contains several services with "http://www.onvif.org/ver10/schedule/wsdI" namespace, ONVIF Client will use service with the latest version.

Note: If Schedule service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.5.21.1](#).

Table 5.71. Schedule Service (GetServices)

Criterion Item	GetServicesResponse message	
Feature	Supported	Not Supported
Schedule Service	Includes service with "http://www.onvif.org/ver10/schedule/wsdI" namespace	Does not include service with "http://www.onvif.org/ver10/schedule/wsdI" namespace

5.4.22.1 Schedule Features Support

Schedule capabilities support under Schedule Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Schedule Service is supported by the DUT as defined in [Section 5.5.21](#), otherwise all features defined in [Table 5.72](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetServiceCapabilities** request for Schedule Service.
2. The DUT responds with **GetServiceCapabilitiesResponse** message with parameters
 - Capabilities =: *cap*
3. ONVIF Client checks features support as defined in [Table 5.72](#).

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in [Table 5.72](#) will be marked as UNDEFINED.

Table 5.72. Schedule Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Extended Recurrence	<i>cap.ExtendedRecurrenceSupported</i> = true	<i>cap.ExtendedRecurrenceSupported</i> = false
Special Days	<i>cap.SpecialDaysSupported</i> = true	<i>cap.SpecialDaysSupported</i> = false
State Reporting	<i>cap.StateReportingSupported</i> = true	<i>cap.StateReportingSupported</i> = false
Schedule Service \Client Supplied Token	<i>cap.ClientSuppliedTokenSupported</i> = true	Skipped <i>cap.ClientSuppliedTokenSupported</i> or <i>cap.ClientSuppliedTokenSupported</i> = false

5.4.23 Provisioning Service Support

Provisioning Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.73](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/provisioning/wsdl" namespace ONVIF Client will use service with the latest version.

Table 5.73. Provisioning Service (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Provisioning Service	Includes service with "http://www.onvif.org/ver10/provisioning/wsdl" namespace	Does not include service with "http://www.onvif.org/ver10/provisioning/wsdl" namespace

5.4.24 Thermal Service Support

Thermal Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.74](#).

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver10/thermal/wsdl" namespace ONVIF Client will use service with the latest version.

Table 5.74. Thermal Service (GetServices)

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Thermal Service	Includes service with "http://www.onvif.org/ver10/thermal/wsdl" namespace	Does not include service with "http://www.onvif.org/ver10/thermal/wsdl" namespace

5.5 Discovery Procedure (GetCapabilities)

If only GetCapabilities is supported by the DUT, then GetCapabilities command will be used for feature discovery procedure. The following provides with the functionality discovery procedure for this case.

5.5.1 Device Service Capabilities Configuration Functionality in Device Management Service

There are various network configuration functions defined in [ONVIF Core] as a part of ONVIF Device Management Service. The following provides with the functionality discovery procedure which is related to network configuration.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.75](#).

Note: Absence of Capabilities.Device or Capabilities.Device.Network element in GetCapabilitiesResponse will be regarded as no support for the following functionalities:

- ZeroConfiguration
- IPv6
- IP Filter
- Dynamic DNS
- DHCPv6

Note: Absence of Capabilities.Device or Capabilities.Device.System or Capabilities.Device.Security element in GetCapabilitiesResponse will be regarded as no support for the following functionalities:

- BYE Message
- System logging
- HttpFirmwareUpgrade
- TLS1.0
- TLS1.1
- TLS1.2

Note: Absence of Capabilities.Device or Capabilities.Device.System element in GetCapabilitiesResponse will be regarded as no support for the following functionalities:

- User Configuration
- Network Configuration

Note: Since the DUT does not support GetServices feature, the following functionalities are defined as not supported:

- Maximum Users
- Maximum Username Length
- Maximum Password Length
- DefaultAccessPolicy
- Auxiliary Commands support

Table 5.75. Device Service Capabilities Configuration Functionality in Device Management Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
	Supported	Not Supported
IPv6	Capabilities.Device.Network. IPVersion6 = true	Skipped Capabilities.Device.Network. IPVersion6 or Capabilities.Device.Network. IPVersion6 = false
Zero Configuration	Capabilities.Device.Network. ZeroConfiguration = true	Skipped Capabilities.Device.Network. ZeroConfiguration or Capabilities.Device.Network. ZeroConfiguration = false
Dynamic DNS	Capabilities.Device.Network. DynDNS = true	Skipped Capabilities.Device.Network. DynDNS or Capabilities.Device.Network. DynDNS = false
IP Filter	Capabilities.Device.Network. IPFilter = true	Skipped Capabilities.Device. Network.IPFilter or Capabilities.Device.Network. IPFilter = false
Stateful IPv6 DHCP	Capabilities.Device.Network. DHCPv6 = true	Skipped Capabilities.Device. Network.DHCPv6 or

Criterion Item	GetCapabilitiesResponse message		
	Feature	Supported	Not Supported
			Capabilities.Device.Network. DHCPv6 = false
Remote User Handling	Capabilities.Device.Security. Extension.Extension. RemoteUserHandling = true		Skipped Capabilities.Device. Security. Extension.Extension. RemoteUserHandling or Capabilities.Security. Extension.Extension. RemoteUserHandling = false
TLS1.0	Capabilities.Device.Security. Extension.TLS1.0 = true		Skipped Capabilities.Device.Security. Extension or Capabilities.Device.Security. Extension.TLS1.0 = false
TLS1.1	Capabilities.Device. Security.TLS1.1 = true		Skipped Capabilities.Device.Security or Capabilities.Device.Security. TLS1.1 = false
TLS1.2	Capabilities.Device. Security.TLS1.2 = true		Skipped Capabilities.Device.Security or Capabilities.Device.Security. TLS1.2 = false
Discovery	Mandatory functionality		-
Bye Message	Capabilities.Device.System. DiscoveryBye = true		Skipped Capabilities.Device. System.DiscoveryBye or Capabilities.Device.System. DiscoveryBye = false
System logging	Capabilities.Device.System. SystemLogging = true		Skipped Capabilities.Device. System.SystemLogging or Capabilities.Device.System. SystemLogging = false
Http Firmware Upgrade	Capabilities.System. Extension. HttpFirmwareUpgrade = true		Skipped Capabilities.System. Extension. HttpFirmwareUpgrade or Capabilities.

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
		System.Extension.HttpFirmwareUpgrade = false
Http System Backup	Capabilities.System.Extension.HttpSystemBackup = true	Skipped Capabilities.System.Extension.HttpSystemBackup or Capabilities.System.Extension.HttpSystemBackup = false
Http System Logging	Capabilities.System.Extension.HttpSystemLogging = true	Skipped Capabilities.System.Extension.HttpSystemLogging or Capabilities.System.Extension.HttpSystemLogging = false
Http Support Information	Capabilities.System.Extension.HttpSupportInformation = true	Skipped Capabilities.System.Extension.HttpSupportInformation or Capabilities.System.Extension.HttpSupportInformation = false
User Configuration	Mandatory functionality	-
Network Configuration	Mandatory functionality	-

5.5.2 Discovery Types Support

From the first version of ONVIF Core Specification document, Device Type that is required for Discovery functionality was "dn:NetworkVideoTransmitter". Device Type was modified in the later version of [ONVIF Network Interface Specs] to "tds:Device". Which Device Type shall be used by DUT is defined in the scope of [ONVIF Profile S], [ONVIF Profile G] and [ONVIF Profile C].The following procedure discovers which Types are supported by DUT.

Discovery Procedure:

1. ONVIF Client invokes Unicast Probe request (empty Types, empty Scopes) to get ProbeMatches response.
2. ONVIF Client receives ProbeMatch and checks features support as defined in [Table 5.76](#).

Note: If DUT does not return ProbeMatch or ProbeMatch <d:Types> does not contain neither "dn:NetworkVideoTransmitter" nor "tds:Device", the following features will be marked as undefined:

- WS-Discovery\Types\tds:Device

- WS-Discovery\Types\dn:NetworkVideoTransmitter

Table 5.76. Discovery Types

Criterion Item	<d:Types> in ProbeMatch response	
Feature	Supported	Not Supported
tds:Device	Contains "tds:Device"	Does not contain "tds:Device"
dn:NetworkVideoTransmitter	Contains "dn:NetworkVideoTransmitter"	Does not contain "dn:NetworkVideoTransmitter"

5.5.3 HTTPS Support

The following is the procedure to determine the function support.

Pre-requisite: ONVIF Client and DUT

- If DUT supports HTTPS, then HTTPS is configured on the DUT.

Discovery Procedure:

- ONVIF Client invokes GetNetworkProtocols request message to retrieve network protocols supported by DUT.
- The DUT returns GetNetworkProtocolsResponse. ONVIF Client checks features support as defined in [Table 5.77](#).

Note: If the DUT does not return GetNetworkProtocolsResponse, ONVIF Client assumes that RTP/RTSP/HTTPS function support is marked as undefined.

Table 5.77. HTTPS Support (GetCapabilities)

Criterion Item	GetNetworkProtocolsResponse	
Feature	Supported	Not Supported
HTTPS	Includes NetworkProtocols element with Name = HTTPS and with Enabled=true or DUT supports TLS Server feature	Does not include NetworkProtocols element with Name = HTTPS or includes NetworkProtocols element with Name = HTTPS and with Enabled=false

5.5.4 Security (HTTP Digest Authentication) Support

In the first version of [ONVIF Core], WS-UsernameToken support was the only method defined as a mandatory feature for user authentication. This has been changed in the later version of [ONVIF Core] where it also defines the HTTP digest authentication support as a mandatory feature.

The following discovery procedure will be performed for ONVIF Client to determine which user authentication function will be used in conformance testing.

Discovery Procedure:

1. ONVIF Client invokes request message for command with security support without any user authentication (no WS-Security and no HTTP digest authentication) to check HTTP digest authentication support.
2. ONVIF Client checks features support as defined in [Table 5.78](#).

Note: The command which is being used for this discovery procedure should be provided before performing the steps.

Note: If HTTP digest authentication is assumed as supported, the HTTP digest authentication scheme will be used in the following feature discovery procedure whenever necessary as well as in conformance testing.

Table 5.78. HTTP Digest Authentication (GetCapabilities)

Criterion Item	Command with security support response message	
Feature	Supported	Not Supported
HTTP digest	HTTP 401 Unauthorized error	Not HTTP 401 Unauthorized error

5.5.5 NTP Support

Whether the DUT supports NTP functionality is determined by the following discovery procedure.

Discovery Procedure:

1. ONVIF Client invokes GetNTPRequest.
2. ONVIF Client checks features support as defined in [Table 5.79](#).

Note: In any other case than the above, NTP function support will be marked as undefined.

Table 5.79. NTP Functionality (GetCapabilities)

Criterion Item	GetNTPResponse	
Feature	Supported	Not Supported
NTP	DUT returns GetNTP Response	DUT returns any SOAP fault

5.5.6 I/O Functionality in Device Management Service

I/O related functionality support can be retrieved by checking correspondent element of GetCapabilitiesResponse. The following is the procedure to determine the function support.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest to check I/O functionality support.
2. ONVIF Client receives GetCapabilitiesResponse and checks features support as defined in [Table 5.80](#).
3. ONVIF Client invokes GetRelayOutputsRequest message to retrieve a relay output list.
4. The DUT returns GetRelayOutputsResponse with a list of relay outputs.
5. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").
6. ONVIF Client receives SetRelayOutputSettingsResponse.
7. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").
8. ONVIF Client receives SetRelayOutputSettingsResponse.
9. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").
10. ONVIF Client receives SetRelayOutputSettingsResponse.

11. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").
12. ONVIF Client receives SetRelayOutputSettingsResponse.
13. ONVIF Client checks features support as defined in [Table 5.81](#).

Note: Absence of Capabilities.Device.IO element in the GetCapabilitiesResponse will be defined as absence of Capabilities.Device.IO.RelayOutputs.

Note: If Capabilities.Device element is not included in the GetCapabilitiesResponse, Relay Outputs feature will be marked as unsupported.

Note: If DUT does not return GetRelayOutputsResponse or a list of relay outputs in the GetRelayOutputsResponse is empty, Relay Outputs features will be marked as undefined.

Note: If GetCapabilities command is not supported by the DUT, I/O feature for Device Management Service will be defined as unsupported.

Table 5.80. Relay Outputs in Device Management Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
RelayOutputs	Capabilities.Device.IO.RelayOutputs > 0	Skipped Capabilities.Device.IO.RelayOutputs or Capabilities.Device.IO.RelayOutputs = 0

Table 5.81. Relay Outputs Mode and Idle State in Device Management Service (GetCapabilities)

Criterion Item	SetRelayOutputSettingsResponse	
Feature	Supported	Not Supported
Bistable Mode/Open Idle State	DUT returns SetRelayOutputSettings Response for step 6.	DUT returns any SOAP fault for step 6.
Bistable Mode/Closed Idle State	DUT returns SetRelayOutputSettings Response for step 8.	DUT returns any SOAP fault for step 8.
Bistable Mode	DUT returns SetRelayOutputSettings Response for step 6 or 8.	DUT returns any SOAP fault for step 6 and 8.

Criterion Item	SetRelayOutputSettingsResponse	
	Supported	Not Supported
Monostable Mode/ Open Idle State	DUT returns SetRelayOutputSettings Response for step 9.	DUT returns any SOAP fault for step 9.
Monostable Mode/ Closed Idle State	DUT returns SetRelayOutputSettings Response for step 11.	DUT returns any SOAP fault for step 11.
Monostable Mode	DUT returns SetRelayOutputSettings Response for step 9 or 11.	DUT returns any SOAP fault for step 9 and 11.

5.5.7 Monitoring Events Support

Monitoring Events support under Device Control Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.6.9](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.82](#).

Note: If the DUT does not return Event Service or GetEventPropertiesResponse message, then the following features will be marked as undefined:

- Monitoring/ProcessorUsage
- Monitoring/OperatingTime/LastReset
- Monitoring/OperatingTime/LastReboot
- Monitoring/OperatingTime/LastClockSynchronization
- Monitoring/Backup/Last
- Device/HardwareFailure/TemperatureCritical
- Device/HardwareFailure/FanFailure
- Device/HardwareFailure/PowerSupplyFailure
- Device/HardwareFailure/StorageFailure

Table 5.82. Monitoring Events Support (GetCapabilities)

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Monitoring/ProcessorUsage	Contains tns1:Monitoring/ProcessorUsage Event topic	Does not contain tns1:Monitoring/ProcessorUsage Event topic
Monitoring/OperatingTime/LastReset	Contains tns1:Monitoring/OperatingTime/LastReset Event topic	Does not contain tns1:Monitoring/OperatingTime/LastReset Event topic
Monitoring/OperatingTime/LastReboot	Contains tns1:Monitoring/OperatingTime/LastReboot Event topic	Does not contain tns1:Monitoring/OperatingTime/LastReboot Event topic
Monitoring/OperatingTime/LastClockSynchronization	Contains tns1:Monitoring/OperatingTime/LastClockSynchronization Event topic	Does not contain tns1:Monitoring/OperatingTime/LastClockSynchronization Event topic
Monitoring/Backup/Last	Contains tns:Monitoring/Backup/Last Event topic	Does not contain tns:Monitoring/Backup/Last Event topic
Device/HardwareFailure/TemperatureCritical	Contains tns1:Device/HardwareFailure/TemperatureCritical Event topic	Does not contain tns1:Device/HardwareFailure/TemperatureCritical Event topic
Device/HardwareFailure/FanFailure	Contains tns1:Device/HardwareFailure/FanFailure Event topic	Does not contain tns1:Device/HardwareFailure/FanFailure Event topic
Device/HardwareFailure/PowerSupplyFailure	Contains tns1:Device/HardwareFailure/PowerSupplyFailure Event topic	Does not contain tns1:Device/HardwareFailure/PowerSupplyFailure Event topic
Device/HardwareFailure/StorageFailure	Contains tns1:Device/HardwareFailure/StorageFailure Event topic	Does not contain tns1:Device/

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
		HardwareFailure/ StorageFailure Event topic

5.5.8 Media Service – General

Media Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.83](#).

Note: If Media service is not supported, the following feature discovery (Media Service features support) will be skipped.

Table 5.83. Media Service – General (GetCapabilities)

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
Media Service	Includes Capabilities.Media element	Does not include Capabilities.Media element

5.5.8.1 Media Service – Video Encoding Support

Video encoding function support in Media Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetVideoEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported codecs.
2. The DUT returns GetVideoEncoderConfigurationOptionsResponse with a list of supported codecs. ONVIF Client checks features support as defined in [Table 5.84](#).

Note: If the DUT does not return GetVideoEncoderConfigurationOptionsResponse, MPEG4 and H.264 feature will be marked as undefined.

Table 5.84. Media Service – Video Encoding Support (GetCapabilities)

Criterion Item	GetVideoEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
JPEG	Mandatory functionality	-
MPEG-4	Includes Options.MPEG4	Does not include Options.MPEG4
H.264	Includes Options.H264	Does not include Options.H264

5.5.8.2 Media Service – Audio Encoding Support

Audio encoding function support in Media Service is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetAudioEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported audio codecs.
2. The DUT returns GetAudioEncoderConfigurationOptionsResponse with a list of supported codecs or SOAP fault. ONVIF Client checks features support as defined in [Table 5.85](#).

Note: If the DUT returns no response for GetAudioEncoderConfigurationOptionsRequest, Audio encoding feature will be marked as undefined.

Table 5.85. Media Service – Audio Encoding Support (GetCapabilities)

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
Audio encoding	DUT returns GetAudioEncoderConfigurationOptionsResponse	DUT returns any SOAP fault
G.711	DUT returns GetAudioEncoderConfigurationOptionsResponse	DUT returns any SOAP fault
G.726	Includes Options.Options.Encoding = "G726"	Does not include Options.Options.Encoding = "G726"
AAC	Includes Options.Options.Encoding = "AAC"	Does not include Options.Options.Encoding = "AAC"

5.5.8.3 Media Service – Real-Time Streaming

Since the DUT does not support GetServices feature Real-time streaming feature will be defined as supported.

5.5.8.4 Media Service – Supported Real-Time Streaming Setup

Which Real-time streaming Setup features is supported under Real-time Streaming is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest message to check Multicast streaming capability support by the DUT.
2. The DUT returns GetCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.86](#).

Note: If DUT does not return GetCapabilitiesResponse then RTP Multicast streaming (UDP) and RTP/RTSP/TCP Setup features will be marked as undefined.

Table 5.86. Media Service – Supported Real-time Streaming Setup (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
	Supported	Not Supported
RTP/UDP	Mandatory functionality	-
RTP/RTSP/HTTP	Mandatory functionality	-
RTP/RTSP/TCP	Capabilities. Media.StreamingCapabilities. RTP_RTSP_TCP = true	Skipped Capabilities. Media.StreamingCapabilities. RTP_RTSP_TCP or Capabilities. StreamingCapabilities. RTP_RTSP_TCP = false
RTP-Multicast/UDP	Capabilities. Media.StreamingCapabilities. RTPMulticast = true	Skipped Capabilities. Media.StreamingCapabilities. RTPMulticast or Capabilities. Media.StreamingCapabilities. RTPMulticast = false

5.5.8.5 Media Service - GetSnapshotUri

GetSnapshotUri function support is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetProfilesRequest message to retrieve existing Media Profiles list.
2. The DUT returns GetProfilesResponse with the list of existing Media Profiles.
3. ONVIF Client looks for ready-to-use profile (a profile with VideoSourceConfiguration and VideoEncoderConfiguration in the GetProfilesResponse. If there are no ready-to-use profiles found in the GetProfilesResponse, ONVIF Client marks GetSnapshotUri support by DUT as undefined.
4. ONVIF Client invokes GetSnapshotUriRequest (ProfileToken = found ready-to-use profile token) message to get Snapshot URI.
5. The DUT returns GetSnapshotUriResponse or SOAP fault. ONVIF Client checks features support as defined in [Table 5.87](#).

Note: If no GetProfilesResponse is returned by the DUT, GetSnapshotUri function support by the DUT is marked as undefined.

Note: If no GetSnapshotUriResponse is returned by the DUT, GetSnapshotUri function support by the DUT is marked as undefined.

Table 5.87. Media Service – GetSnapshotUri (GetCapabilities)

Criterion Item	GetSnapshotUriResponse	
Feature	Supported	Not Supported
GetSnapshotUri	DUT returns GetSnapshotUriResponse	DUT returns any SOAP fault

5.5.8.6 Media Service – Audio Outputs Support

Audio outputs support in conjunction with its Audio decoding function is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetAudioOutputsRequest message to retrieve Audio outputs list.
2. The DUT returns GetAudioOutputsResponse or SOAP fault. ONVIF Client checks features support as defined in [Table 5.88](#). Go to the next feature definition.
3. ONVIF Client invokes GetAudioDecoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported Audio codec's for decoding by DUT.

- The DUT returns `GetAudioDecoderConfigurationOptionsResponse`. ONVIF Client checks features support as defined in [Table 5.89](#).

Note: If the DUT does not return `GetAudioDecoderConfigurationOptionsResponse`, ONVIF Client assumes that G.711, G.726 and AAC Audio decoding function support is marked as undefined.

Table 5.88. Media Service – Audio Outputs Support (GetCapabilities)

Criterion Item	GetAudioOutputsResponse	
Feature	Supported	Not Supported
Audio output	DUT returns <code>GetAudioOutputsResponse</code> and there are at least one <code>AudioOutput</code> on the list	DUT returns any SOAP fault or <code>GetAudioOutputsResponse</code> and there are no <code>AudioOutput</code> on the list

Table 5.89. Media Service – Audio Outputs Decoding Support (GetCapabilities)

Criterion Item	GetAudioDecoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
G.711	Includes <code>Options.G711DecOptions</code>	Does not include <code>Options.G711DecOptions</code>
G.726	Includes <code>Options.G726DecOptions</code>	Does not include <code>Options.G726DecOptions</code>
AAC	Includes <code>Options.AACDecOptions</code>	Does not include <code>Options.AACDecOptions</code>

5.5.9 Media2 Service Support

Since the DUT does not support `GetServices` feature Media2 Service feature will be defined as not supported.

5.5.10 Event Service

Event Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that `GetCapabilitiesResponse` has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.90](#).

Note: If Event service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.6.9.1](#).
- [Section 5.6.9.2](#).
- [Section 5.6.9.3](#).
- [Section 5.6.9.4](#).

Table 5.90. Event Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
	Supported	Not Supported
Event Service	Includes Capabilities.Events element	Does not include Capabilities.Events element

5.5.10.1 Get Event Properties

The following discovery procedure will be performed for ONVIF Client to receive topic set and message content filter dialect list from the DUT. Received topic set will be used in event topics discovery procedures for different services. Received message content filter dialect list will be used in [Section 5.6.9.3](#) and in [Section 5.6.9.4](#).

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.6.9](#), otherwise this procedure will be skipped.

Discovery Procedure:

1. ONVIF Client invokes **GetEventProperties** message.
2. The DUT responds with a **GetEventPropertiesResponse** message with parameters
 - TopicNamespaceLocation list
 - FixedTopicSet
 - TopicSet =: *topicSet*
 - TopicExpressionDialect list
 - MessageContentFilterDialect list := *msgContentFilterDialectList*

- MessageContentSchemaLocation list

5.5.10.2 Event service features

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.6.9](#), otherwise this procedure will be skipped.

Since the DUT does not support GetServices feature, Event Service sub-features will be defined as described below:

- Persistent Notification Storage under Event Service is not supported by the DUT.
- WS Basic Notification under Event Service is supported by the DUT.
- GetServiceCapabilities\MaxPullPoints capability is not supported by the DUT.
- Event Broker is not supported by the DUT.
- Protocols / mqtt is not supported by the DUT.
- Protocols / mqttts is not supported by the DUT.
- Protocols / ws is not supported by the DUT.
- Protocols / wss is not supported by the DUT.

5.5.10.3 Event Service - Message Content Filter Support

Message Content Filter function support in Event Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.6.9](#), otherwise all features defined in [Table 5.91](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.6.9.1](#), otherwise all features defined in [Table 5.91](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks Message Content Filter feature support as defined in [Table 5.91](#).

Note: If Message Content Filter feature is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.6.9.4](#).

Table 5.91. Message Content Filter Feature (GetCapabilities)

Criterion Item	GetEventPropertiesResponse message	
Feature	Supported	Not Supported
Message Content Filter	<i>msgContentFilterDialectList</i> contains at least one item with non empty value	<i>msgContentFilterDialectList</i> does not contain at least one item with non empty value

5.5.10.4 Event Service - ONVIF Message Content Filter Dialect Support

ONVIF Message Content Filter Dialect function support in Event Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.6.9](#), otherwise all features defined in [Table 5.91](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.6.9.1](#), otherwise all features defined in [Table 5.91](#) will be marked as UNDEFINED.
- This procedure assumes that DUT supports Message Content Filter feature according to [Section 5.6.9.3](#), otherwise all features defined in [Table 5.92](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client checks ONVIF Message Content Filter Dialect feature support as defined in [Table 5.92](#).

Table 5.92. ONVIF Message Content Filter Dialect (GetCapabilities)

Criterion Item	GetEventPropertiesResponse message	
Feature	Supported	Not Supported
ONVIF Message Content Filter Dialect	<i>msgContentFilterDialectList</i> contains item with value is equal to "http://www.onvif.org/ver10/tev/messageContentFilter/ItemFilter"	<i>msgContentFilterDialectList</i> does not contain item with value is equal to "http://www.onvif.org/ver10/tev/messageContentFilter/ItemFilter"

5.5.10.5 Event Service - Pull-Point Notification Support

Pull-Point Notification function support in Event Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Event Service is supported by the DUT as defined in [Section 5.6.9](#), otherwise all features defined in [Table 5.93](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client checks Pull-Point Notification feature support as defined in [Table 5.93](#).

Table 5.93. Pull-Point Notification (GetCapabilities)

Criterion Item	-	
Feature	Supported	Not Supported
Pull-Point Notification	Mandatory	-

5.5.11 Device IO Service

Device IO Service feature support is determined according to the following procedure.

Since the DUT does not support GetServices feature, the following Device IO Service sub-features will be defined as described below:

- Digital Inputs under Device IO Service is NOT SUPPORTED by the DUT.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.94](#).

Note: If Device IO service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.6.10.1](#).
- [Section 5.6.10.2](#).
- [Section 5.6.10.3](#).

Table 5.94. Device IO Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
Device IO Service	Includes Extension.DeviceIO element	Does not include Extension.DeviceIO element

5.5.11.1 Relay Outputs Support

Relay outputs support under Device IO Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).
- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.6.10](#), otherwise all features defined in [Table 5.95](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.95](#).

Note: If the DUT does not support Relay Outputs feature, all features from [Section 5.6.10.2](#) will be marked as unsupported. Procedure described in [Section 5.6.10.2](#) will be skipped.

Table 5.95. Relay Outputs Support (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
Relay Outputs	Capabilities. Extension. DeviceIO. RelayOutputs > 0	Capabilities. Extension. DeviceIO. RelayOutputs = 0

5.5.11.2 Device IO Relay Output Options Support

Device IO Relay Output Options support in Device IO Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.6.10](#), otherwise all features defined in [Table 5.96](#) will be marked as NOT SUPPORTED.

- This procedure assumes that Relay Outputs is supported by the DUT as defined in [Section 5.6.10.1](#), otherwise all features defined in [Table 5.96](#) will be marked as NOT SUPPORTED.

Discovery Procedure:

1. ONVIF Client invokes **GetRelayOutputOptions** request with parameters
 - RelayOutputToken skipped
2. The DUT responds with **GetRelayOutputOptionsResponse** message or SOAP 1.2 fault.
3. ONVIF Client checks features support as defined in [Table 5.96](#).

Note: If the DUT returns no response for GetRelayOutputOptions request, then all features defined in [Table 5.96](#) will be marked as UNDEFUNED, the following feature discovery procedures will be skipped and related features will be marked as UNDEFUNED:

- [Section 5.6.10.3](#)

Note: If Relay Outputs Options feature is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.6.10.3](#)

Table 5.96. Device IO Service – Relay Output Options Support (GetCapabilities)

Criterion Item	GetRelayOutputOptionsResponse message	
Feature	Supported	Not Supported
Relay Output Options	DUT returns GetRelayOutputOptions Response for step 2.	DUT returns any SOAP fault for step 2.

5.5.11.3 Device IO Relay Outputs Features Support

Device IO Relay Output features support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.6.10](#), otherwise all features defined in [Table 5.97](#), [Table 5.98](#), and [Table 5.99](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Relay Outputs is supported by the DUT as defined in [Section 5.6.10.1](#), otherwise all features defined in [Table 5.97](#), [Table 5.98](#), and [Table 5.99](#) will be marked as NOT SUPPORTED.

- This procedure assumes that Relay Output Options is supported by the DUT as defined in [Section 5.6.10.2](#), otherwise all features defined in [Table 5.97](#), [Table 5.98](#), and [Table 5.99](#) will be marked as NOT SUPPORTED.
- This procedure assumes that GetRelayOutputOptionsResponse has already been retrieved via preceding procedure described in [Section 5.6.10.2](#), otherwise all features defined in [Table 5.97](#), [Table 5.98](#), and [Table 5.99](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client invokes **GetRelayOutputs** request to retrieve a list of all available relay outputs and their settings.
2. The DUT sends the **GetRelayOutputsResponse** message with parameters
 - RelayOutputs list := *relayOutputsList*
3. For each Relay Output (*relayOutput*) from *relayOutputsList* do the following:
 - 3.1. ONVIF Client checks features support as defined in [Table 5.97](#).
 - 3.2. If Relay Output supports Monostable Mode:
 - 3.2.1. ONVIF Client invokes **SetRelayOutputSettings** request with parameters
 - RelayOutput.@token := *relayOutput.@token*
 - RelayOutput.Properties.Mode := Monostable
 - RelayOutput.Properties.DelayTime := RelayOutputOptions[0].DelayTimes[0] from GetRelayOutputOptionsResponse, where RelayOutputOptions[0] is RelayOutputOptions with token = *relayOutput.@token*
 - RelayOutput.Properties.IdleState := closed
 - 3.2.2. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.
 - 3.2.3. ONVIF Client invokes **SetRelayOutputSettings** request with parameters
 - RelayOutput.@token := *relayOutput.@token*
 - RelayOutput.Properties.Mode := Monostable
 - RelayOutput.Properties.DelayTime := RelayOutputOptions[0].DelayTimes[0] from

GetRelayOutputOptionsResponse, where RelayOutputOptions[0] is RelayOutputOptions with token = *relayOutput.@token*

- RelayOutput.Properties.IdleState := open

3.2.4. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.

3.2.5. If for both steps and SOAP 1.2 fault was returned features listed in [Table 5.99](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.98](#).

3.3. If Relay Output supports Bistable Mode:

3.3.1. ONVIF Client invokes **SetRelayOutputSettings** request with parameters

- RelayOutput.@token := *relayOutput.@token*
- RelayOutput.Properties.Mode := Bistable
- RelayOutput.Properties.DelayTime := *relayOutput.Properties.DelayTime*
- RelayOutput.Properties.IdleState := closed

3.3.2. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.

3.3.3. ONVIF Client invokes **SetRelayOutputSettings** request with parameters

- RelayOutput.@token := *relayOutput.@token*
- RelayOutput.Properties.Mode := Bistable
- RelayOutput.Properties.DelayTime := *relayOutput.Properties.DelayTime*
- RelayOutput.Properties.IdleState := open

3.3.4. The DUT responds with **SetRelayOutputSettingsResponse** message or SOAP 1.2 fault.

3.3.5. If for both steps and SOAP 1.2 fault was returned features listed in [Table 5.99](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.99](#).

Note: If the DUT returns no RelayOutputOptions in GetRelayOutputOptionsResponse message, then all features defined in [Table 5.97](#), [Table 5.98](#), and [Table 5.99](#) will be marked as UNDEFUNED.

Note: If the DUT returns no DelayTimes element in RelayOutputOptions with supporting of Monostable mode in GetRelayOutputOptionsResponse message, then all features defined in Table 5.33 will be marked as UNDEFUNED.

Note: If the DUT returns no response for SetRelayOutputSettings request, then all features defined in Table 5.98 and Table 5.99 will be marked as UNDEFUNED.

Table 5.97. Relay Outputs Features - Modes (GetCapabilities)

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
	Supported	Not Supported
Feature (for each Relay Output)		
Monostable Mode	RelayOutputOptions.Mode contains Monostable	RelayOutputOptions.Mode does not contain Monostable
Bistable Mode	RelayOutputOptions.Mode contains Bistable	RelayOutputOptions.Mode does not contain Bistable

Table 5.98. Relay Outputs Features - Idle States - Monostable (GetCapabilities)

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
	Supported	Not Supported
Feature (for each Relay Output)		
Monostable Mode \Closed Idle Sate	DUT returns SetRelayOutputSettings Response at step 3.2.2	DUT returns SOAP fault at step 3.2.2
Monostable Mode \Open Idle Sate	DUT returns SetRelayOutputSettings Response at step 3.2.4	DUT returns SOAP fault at step 3.2.4

Table 5.99. Relay Outputs Features - Idle States - Bistable (GetCapabilities)

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
	Supported	Not Supported
Feature (for each Relay Output)		
Bistable Mode\Closed Idle Sate	DUT returns SetRelayOutputSettings Response at step 3.3.2	DUT returns SOAP fault at step 3.3.2

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
Feature (for each Relay Output)	Supported	Not Supported
Bistable Mode\Open Idle Sate	DUT returns SetRelayOutputSettings Response at step 3.3.4	DUT returns SOAP fault at step 3.3.4

5.5.12 PTZ Service Support

PTZ Service support is defined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.100](#).

Note: If the DUT does not support PTZ Service, all features from [Section 5.6.10.1](#), [Section 5.6.10.2](#), and [Section 5.6.10.3](#) will be marked as unsupported. Procedure described in [Section 5.6.10.1](#), [Section 5.6.10.2](#), and [Section 5.6.10.3](#) will be skipped.

Table 5.100. PTZ Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
PTZ Service	Includes Capabilities.PTZ element	Does not include Capabilities.PTZ element

5.5.12.1 PTZ Service Features Support

Since the DUT does not support GetServices feature the following PTZ features will be defined as not supported:

- Get Compatible Configurations
- Move Status
- Status Position

5.5.12.2 PTZ Nodes Features Support

PTZ Nodes features support is defined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetNodes request to retrieve PTZ Nodes capabilities.
2. The DUT returns GetNodesResponse message with PTZ Nodes capabilities.
3. For each PTZ Node ONVIF Client checks features support as defined in [Table 5.101](#).
4. For each PTZ Node with Home Position support ONVIF Client checks features support as defined in [Section 5.6.10.3](#). For all others PTZ Nodes procedure described in [Section 5.6.10.3](#) will be skipped and all features defined in [Section 5.6.10.3](#) will be marked as unsupported.

Note: If the DUT returns no response for GetNodes request or the DUT returns GetNodesResponse message with empty PTZNode list, then all features defined in [Table 5.101](#) and [Section 5.6.10.3](#) will be marked as undefined.

Table 5.101. PTZ Nodes Features (GetCapabilities)

Criterion Item	Current PTZNode from GetNodesResponse message	
Feature (for each PTZ Node)	Supported	Not Supported
Continuous Pan/Tilt movement	SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is present	SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is not present
Continuous Zoom movement	SupportedPTZSpaces. ContinuousZoomVelocity Space element is present	SupportedPTZSpaces. ContinuousZoomVelocity Space element is not present
Continuous movement	Mandatory	-
Absolute Pan/Tilt movement	SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is present	SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is not present
Absolute Zoom movement	SupportedPTZSpaces. AbsoluteZoomPositionSpace element is present	SupportedPTZSpaces. AbsoluteZoomPositionSpace element is not present
Absolute movement	Absolute Pan/Tilt movement or Absolute Zoom movement is supported	Absolute Pan/Tilt movement and Absolute Zoom movement is not supported

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Relative Pan/Tilt movement	SupportedPTZSpaces. RelativePanTiltTranlationSpace element is present	SupportedPTZSpaces. RelativePanTiltTranlationSpace element is not present
Relative Zoom movement	SupportedPTZSpaces. RelativeZoomTranlationSpace element is present	SupportedPTZSpaces. RelativeZoomTranlationSpace element is not present
Relative movement	Relative Pan/Tilt movement or Relative Zoom movement is supported	Relative Pan/Tilt movement and Relative Zoom movement is not supported
Speed configuration	Speed configuration function for Pan/Tilt movement or Speed configuration function for Zoom movement is supported	>Speed configuration function for Pan/Tilt movement and Speed configuration function for Zoom movement is not supported
Speed configuration function for Pan/Tilt movement	SupportedPTZSpaces. PanTiltSpeedSpace element is present	SupportedPTZSpaces. PanTiltSpeedSpace element is not present
Speed configuration function for Zoom movement	SupportedPTZSpaces. ZoomSpeedSpace element is present	SupportedPTZSpaces. ZoomSpeedSpace element is not present
Preset position	MaximumNumberOfPresets > 0	MaximumNumberOfPresets = 0
Auxiliary operation	AuxiliaryCommands element is present	AuxiliaryCommands element is not present
Home Position	HomeSupported = true	HomeSupported = false

5.5.12.3 Fixed/Configurable Home Position Support for PTZ Node

In case the PTZ Node supports Home Position function, the PTZ Node shall support either Fixed or Configurable Home Position. The following defines the discovery procedure to determine which Home Position function is supported by the PTZ Node.

Pre-requisite:

- This procedure assumes that PTZ Node was recieved in GetNodesResponse message via preceding procedure described in [Section 5.6.10.2](#).

Discovery Procedure:

1. If FixedHomePosition attribute is defined in GetNodesResponse message for this PTZ Node, ONVIF Client checks features support as defined in [Table 5.102](#) and skips other steps of this procedure.
2. ONVIF Client invokes GetConfigurations request to retrieve a PTZ Configurations list.
3. The DUT returns GetConfigurationsResponse message with the list of PTZConfiguration that contains PTZNode. ONVIF Client identifies first PTZConfiguration which has the corresponding current PTZ Node.
4. If DUT supports Media Service according to [Section 5.6.6](#), ONVIF Client either selects or creates Media Profile anew along with the identified PTZConfiguration (refer to [Annex A.1](#) for the details) and goes to the step 6.
5. Otherwise Configurable Home Position and Fixed Home Position features will be marked as undefined.
6. ONVIF Client invokes SetHomePosition request (ProfileToken = selected or newly created profile token) message to check Configurable Home Position is supported by DUT.
7. ONVIF Client checks features support as defined in [Table 5.103](#).
8. ONVIF Client restores Media Profiles setting in case it changes some of the Media Profiles configuration.

Table 5.102. Fixed/Configurable Home Position Support with FixedHomePosition Attribute (GetServices)

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Feature (for each PTZ Node with Home Position support)		
Configurable Home Position	FixedHomePosition = false	FixedHomePosition = true
Fixed Home Position	FixedHomePosition = true	FixedHomePosition = false

Table 5.103. Fixed/Configurable Home Position Support without FixedHomePosition Attribute (GetServices)

Criterion Item	SetHomePositionResponse	
	Supported	Not Supported
Feature (for each PTZ Node with Home Position support)		
Configurable Home Position	DUT returns SetHomePositionResponse	DUT returns SOAP fault

Criterion Item	SetHomePositionResponse	
Feature (for each PTZ Node with Home Position support)	Supported	Not Supported
Fixed Home Position	DUT returns SOAP fault	DUT returns SetHomePositionResponse

5.5.13 Imaging Service Support

Imaging Service feature support is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.104](#).

Note: If Imaging service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.6.12.1](#).
- [Section 5.6.12.3](#).

Table 5.104. Imaging Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
Imaging Service	Includes Capabilities.Imaging element	Does not include Capabilities.Imaging element

5.5.13.1 IrCutfilterConfiguration Feature Support

IrCutfilterConfiguration function support in Imaging Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Imaging Service is supported by the DUT as defined in [Section 5.6.12](#), otherwise all features defined in [Table 5.105](#) will be marked as NOT SUPPORTED.

- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.6.10](#) or Media Service is supported by the DUT as defined in [Section 5.6.6](#), otherwise all features defined in [Table 5.105](#) will be marked as UNDEFUNED.

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Sources by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
 - out *videoSorcesTokenList* - a list of Video Source tokens
2. For each Video Source token *videoSourceToken* in *videoSorcesTokenList*
 - 2.1. ONVIF Client invokes **GetOptions** with parameters
 - VideoSourceToken =: *videoSourceToken*
 - 2.2. The DUT responds with **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or with **GetOptionsResponse** with parameters
 - ImagingOptions =: *imagingOptions*
 - 2.3. If *imagingOptions.IrCutFilterModes* list contains at least two items and one of them is equal to OFF, skip other steps.
3. ONVIF Client checks features support as defined in [Table 5.105](#).

Note:If the DUT does not return **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or **GetMoveOptionsResponse**, then all features defined in [Table 5.105](#) will be marked as UNDEFUNED.

Note:If the DUT does not return *videoSorcesTokenList* list or *videoSourceTokenList* list is empty, then all features defined in [Table 5.105](#) will be marked as UNDEFUNED.

Table 5.105. IrCutfilter Configuration Function Support in Imaging Service (GetCapabilities)

Criterion Item	GetOptionsResponse message	
	Supported	Not Supported
IrCutfilter Configuration	For at least one GetOptionsResponse message at least two IrCutFilterModes elements are present in	There are no GetOptionsResponse messages with at least two IrCutFilterModes elements in GetOptionsResponse.

Criterion Item	GetOptionsResponse message	
Feature	Supported	Not Supported
	GetOptionsResponse. ImagingOptions and one of them equal to OFF	ImagingOptions with one of them equal to OFF

5.5.13.2 Imaging Events Support

Imaging Events support under Imaging Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.6.9](#), otherwise all features defined in [Table 5.106](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.106](#).

Table 5.106. Imaging Events Support (GetCapabilities)

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Image Too Blurry	Contains tns1:VideoSource/ ImageTooBlurry/ ImagingService or tns1:VideoSource/ ImageTooBlurry/ AnalyticsService or tns1:VideoSource/ ImageTooBlurry/ RecordingService Event topic	Does not contain tns1:VideoSource/ ImageTooBlurry/ ImagingService and tns1:VideoSource/ ImageTooBlurry/ AnalyticsService and tns1:VideoSource/ ImageTooBlurry/ RecordingService Event topic
Image Too Dark	Contains tns1:VideoSource/ ImageTooDark/ ImagingService or tns1:VideoSource/ ImageTooDark/ AnalyticsService or tns1:VideoSource/	Does not contain tns1:VideoSource/ ImageTooDark/ ImagingService and tns1:VideoSource/ ImageTooDark/ AnalyticsService and tns1:VideoSource/

Criterion Item	GetEventPropertiesResponse	
	Supported	Not Supported
	ImageTooDark/ RecordingService Event topic	ImageTooDark/ RecordingService Event topic
Image Too Bright	Contains tns1:VideoSource/ ImageTooBright/ ImagingService or tns1:VideoSource/ ImageTooBright/ AnalyticsService or tns1:VideoSource/ ImageTooBright/ RecordingService Event topic	Does not contain tns1:VideoSource/ ImageTooBright/ ImagingService and tns1:VideoSource/ ImageTooBright/ AnalyticsService and tns1:VideoSource/ ImageTooBright/ RecordingService Event topic
Global Scene Change	Contains tns1:VideoSource/ GlobalSceneChange/ ImagingService or tns1:VideoSource/ GlobalSceneChange/ AnalyticsService or tns1:VideoSource/ GlobalSceneChange/ RecordingService Event topic	Does not contain tns1:VideoSource/ GlobalSceneChange/ ImagingService and tns1:VideoSource/ GlobalSceneChange/ AnalyticsService and tns1:VideoSource/ GlobalSceneChange/ RecordingService Event topic
Motion Alarm	Contains tns1:VideoSource/ MotionAlarm event topic	Does not contain tns1:VideoSource/ MotionAlarm event topic

5.5.13.3 Focus Control Function Support

Focus Control function support in Imaging Service is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that Imaging Service is supported by the DUT as defined in [Section 5.6.12](#), otherwise all features defined in [Table 5.107](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Device IO Service is supported by the DUT as defined in [Section 5.6.10](#) or Media Service is supported by the DUT as defined in [Section 5.6.6](#), otherwise all features defined in [Table 5.107](#) will be marked as UNDEFUNED.

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Sources by following the procedure mentioned in [Annex A.6](#) with the following input and output parameters
 - out *videoSourceTokenList* - a list of Video Source tokens
2. For each Video Source token *videoSourceToken* in *videoSourceTokenList*
 - 2.1. ONVIF Client invokes **GetMoveOptions** with parameters
 - VideoSourceToken =: *videoSourceToken*
 - 2.2. The DUT responds with **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or with **GetMoveOptionsResponse** with parameters
 - MoveOptions =: *moveOptions*
 - 2.3. If *moveOptions* contains **MoveOptions/Absolute** or **MoveOptions/Relative** or **MoveOptions/Continuous**, skip other steps.
3. ONVIF Client checks features support as defined in [Table 5.107](#).

Note: If the DUT does not return **env:Receiver/ter:ActionNotSupported/ter:NoImagingForSource** SOAP 1.2 fault or **GetMoveOptionsResponse**, then all features defined in [Table 5.107](#) will be marked as UNDEFUNED.

Note: If the DUT does not return *videoSourceTokenList* list or *videoSourceTokenList* list is empty, then all features defined in [Table 5.107](#) will be marked as UNDEFUNED.

Table 5.107. Focus Control (GetCapabilities)

Criterion Item	GetMoveOptionsResponse	
	Supported	Not Supported
Focus Control	Contains MoveOptions Absolute or MoveOptions\Relative or MoveOptions\Continuous	Does not contain MoveOptions\Absolute and MoveOptions\Relative and MoveOptions\Continuous

5.5.14 Analytics Service Support

Analytics Service feature support is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.108](#).

Note: If Analytics service is not supported, the following feature discovery (Rule Engine features support) will be skipped.

Table 5.108. Analytics Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse	
	Supported	Not Supported
Analytics Service	Includes Capabilities.Analytics element	Does not include Capabilities.Analytics element
Rule Engine	Analytics.RuleSupport = true	Analytics.RuleSupport = false
Rule Options	-	Not supported
Analytics Modules	-	Not supported
Analytics Module Options	-	Not supported
Supported Metadata	-	Not supported
Image Sending	-	Not supported
Embedded Image Sending Type	-	Not supported
Local Storage Image Sending Type	-	Not supported
Remote Storage Image Sending Type	-	Not supported

5.5.14.1 Supported Rules

Since the DUT does not support Media2 Service feature the following rules will be defined as NOT SUPPORTED:

- Motion Region Detector Rule
- Face Recognition Rule
- License Plate Recognition Rule
- Line Crossing Counting Rule

5.5.14.2 Analytics Service - Supported Metadata

Since GetCapabilitiesResponse does not have SupportedMetadata element, the following Supported Metadata features will be defined as NOT SUPPORTED:

- Object Classification
- Vehicle Info
- Human Face
- License Plate Info
- Geo Location

5.5.15 Recording Control Service Support

Recording Control Service feature support is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.109](#).

Note: If Recording Control service is not supported, the following feature discovery (Dynamic Recordings, Dynamic Tracks, Recording Options, Audio Recording, JPEG, H.264, and MPEG4 features support) will be skipped.

Table 5.109. Recording Control Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse	
	Supported	Not Supported
Recording Control Service	Includes Capabilities.Extension.Recording	Does not include Capabilities.Extension.Recording
Dynamic Recordings	Extension.Recording.DynamicRecordings = true	Extension.Recording.DynamicRecordings = false
Dynamic Tracks	Extension.Recording.DynamicTracks = true	Extension.Recording.DynamicTracks = false
Audio Recording	-	Not supported
Recording Options	-	Not supported

Criterion Item	GetCapabilitiesResponse	
	Supported	Not Supported
tns1:RecordingConfig/ DeleteTrackData	GetEventProperties contains tns1:RecordingConfig/ DeleteTrackData topic	GetEventProperties doesn't contain tns1:RecordingConfig/ DeleteTrackData topic
JPEG	-	Not supported
H.264	-	Not supported
MPEG4	-	Not supported

5.5.16 Recording Search Service Support

Recording Search Service feature support is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.110](#).
2. If Recording Search service is supported by the DUT:
 - 2.1. ONVIF Client invokes **GetRecordingInformation** request with parameters
 - RecordingToken := *recordingToken*
 - 2.2. The DUT responds with **GetRecordingInformationResponse** message with parameters
 - RecordingInformation =: *recordingInformation*

Note: If Recording Search service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as UNDEFINED (if Recording Control service is supported by the DUT) or NOT SUPPORTED (if Recording Control service is not supported by the DUT):

- [Section 5.6.15.1](#).

Note: If Recording Search service is not supported by the DUT, the following feature discovery procedures will be skipped and related features will be marked as NOT SUPPORTED:

- [Section 5.6.15.2](#).

Table 5.110. Recording Search Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
Recording Search Service	Includes Capabilities.Extension.Search	Does not include Capabilities.Extension.Search
Metadata Search	Capabilities.Extension.Search.MetadataSearch = true	Capabilities.Extension.Search.MetadataSearch = false

5.5.16.1 Metadata Recording Support

Metadata Recording support is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Recording Control Service Service is supported by the DUT as defined in [Section 5.6.15](#), otherwise all features defined in [Table 5.111](#) will be marked as NOT SUPPORTED.
- This procedure assumes that Recording Search Service Service is supported by the DUT as defined in [Section 5.6.15](#), otherwise all features defined in [Table 5.111](#) will be marked as UNDEFINED.
- This procedure assumes that all pre-requisite defined in [Annex A.10](#) are fulfilled, otherwise states of the features listed in [Table 5.111](#) could not be defined correctly.
- This procedure assumes that GetRecordingInformationResponse has already been retrieved via preceding procedure described in [Section 5.6.15](#), otherwise all features defined in [Table 5.111](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.111](#).

Table 5.111. Metadata Recording Support (GetCapabilities)

Criterion Item	GetRecordingInformationResponse message	
Feature	Supported	Not Supported
Metadata Recording	Contains at least one Track with TrackType = "Metadata" and DataFrom is less than DataTo for this Track	Does not contain at any Track with TrackType = "Metadata" or for all Tracks with TrackType = "Metadata"

Criterion Item	GetRecordingInformationResponse message		
	Feature	Supported	Not Supported
			DataFrom is not less than DataTo for this Track

5.5.16.2 PTZ Position Search Support

PTZ Position Search support under Recording Search Service is determined according to the following procedure in conjunction with the above procedure.

Pre-requisite:

- This procedure assumes that Recording Search Service Service is supported by the DUT as defined in [Section 5.6.15](#), otherwise all features defined in [Table 5.112](#) will be marked as NOT SUPPORTED.
- This procedure assumes that all pre-requisite defined in [Annex A.10](#) are fulfilled, otherwise states of the features listed in [Table 5.112](#) could not be defined correctly.
- This procedure assumes that GetRecordingInformationResponse has already been retrieved via preceding procedure described in [Section 5.6.15](#), otherwise all features defined in [Table 5.112](#) will be marked as UNDEFINED.

Discovery Procedure:

1. ONVIF Client invokes **FindPTZPosition** request with parameters
 - If *recordingInformation.EarliestRecording* is specified:
 - StartPoint := *recordingInformation.EarliestRecording*
 - otherwise:
 - StartPoint := minimal value of DataFrom element in *recordingInformation.Track* list
 - If *recordingInformation.LatestRecording* is specified:
 - EndPoint := *recordingInformation.LatestRecording*
 - otherwise:
 - EndPoint is skipped
 - Scope is empty element
 - SearchFilter.MinPosition.PanTilt.x := -1

- SearchFilter.MinPosition.PanTilt.y := -1
 - SearchFilter.MinPosition.Zoom is skipped
 - SearchFilter.MaxPosition.PanTilt.x := 1
 - SearchFilter.MaxPosition.PanTilt.y := 1
 - SearchFilter.MaxPosition.Zoom is skipped
 - SearchFilter.EnterOrExit := false
 - MaxMatches is skipped
 - KeepAliveTime := "PT3S"
2. The DUT responds with SOAP 1.2 fault or **FindPTZPositionResponse** message with parameters
 - SearchToken =: *searchToken*
 3. ONVIF Client checks features support as defined in [Table 5.112](#).
 4. If the DUT returns **FindPTZPositionResponse** message:
 - ONVIF Client invokes **EndSearch** request with parameters
 - SearchToken := *searchToken*
 - The DUT responds with **EndSearchResponse** message with parameters
 - Endpoint

Note: *recordingToken* will be taken from 'Recording from tests' field of ONVIF Device Test Tool.

Note: If the DUT does not return *recordingInformation.EarliestRecording* and there are no *recordingInformation.Track* items then all features defined in [Table 5.112](#) will be marked as UNDEFINED.

Table 5.112. PTZ Position Search Support (GetCapabilities)

Criterion Item	FindPTZPositionResponse message	
Feature	Supported	Not Supported
PTZ Position Search	DUT returns FindPTZPositionResponse	DUT returns SOAP 1.2 fault

5.5.17 Replay Service Support

Replay Service feature support is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that `GetCapabilitiesResponse` has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.113](#).

Note: If Replay service is not supported, the following feature discovery (Reverse Replay features support) will be skipped.

Table 5.113. Replay Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse	
	Supported	Not Supported
Replay Service	Includes <code>Capabilities.Extension.Replay</code> element	Does not include <code>Capabilities.Extension.Replay</code> element
Reverse Replay	-	Not Supported
RTP/RTSP/TCP	-	Not Supported

5.5.18 Receiver Service Support

Receiver Service feature support is determined according to the following procedure.

Pre-requisite:

- This procedure assumes that `GetCapabilitiesResponse` has already been retrieved via preceding procedure described in [Section 5.2](#).

Discovery Procedure:

1. ONVIF Client checks features support as defined in [Table 5.114](#).

Table 5.114. Receiver Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
Receiver Service	Includes Capabilities.Extension. Receiver element	Does not include Capabilities.Extension.Receiver element

5.5.19 Door Control Service Support

Since the DUT does not support GetServices feature Door Control Service feature will be defined as not supported.

5.5.20 Access Control Service Support

Since the DUT does not support GetServices feature Access Control Service feature will be defined as not supported.

5.5.21 Security Configuration Service Support

Since the DUT does not support GetServices feature Security Configuration Service feature will be defined as not supported.

5.5.22 Credential Service Support

Since the DUT does not support GetServices feature Credential Service feature will be defined as not supported.

5.5.23 Access Rules Service Support

Since the DUT does not support GetServices feature Access Rules Service feature will be defined as not supported.

5.5.24 Schedule Service Support

Since the DUT does not support GetServices feature Schedule Service feature will be defined as not supported.

5.5.25 Provisioning Service Support

Since the DUT does not support GetServices feature Provisioning Service feature will be defined as not supported.

5.5.26 Thermal Service Support

Since the DUT does not support GetServices feature Thermal Service feature will be defined as not supported.

5.6 Devices Scopes Retrieval via GetDeviceScopes

Device scopes provided via GetDeviceScopes may indicate referenced Profiles by the DUT in case the DUT supports a certain profile. The following is the procedure to identify referenced Profile(s) by the DUT. For the details on how the retrieved scope will be used for Profile checking, refer to the specific document.

Discovery Procedure:

1. ONVIF Client invokes GetScopesRequest message to retrieve a device scope list.
2. The DUT responds with GetScopesResponse message with parameters
 - Scopes list =: *scopesList*
3. ONVIF Client preserves the device scope list to determine the referenced Profiles.

Note: If the DUT does not return GetScopesResponse, ONVIF Client regards that the device scope is defined as empty.

5.7 Devices Information Retrieval via GetDeviceInformation

General device information provided via GetDeviceScopes is required for report generation. The following is the procedure to identify DUT information.

Discovery Procedure:

1. ONVIF Client invokes GetDeviceInformationRequest message to retrieve device information.
2. ONVIF Client preserves the device information.

Note: If the DUT does not return GetDeviceInformationResponse, ONVIF Client regards the device information as undefined.

6 Pre-Configuration Procedure

This section describes procedure that is allowed to prepare the DUT for conformance test execution.

6.1 General Policy

The results of pre-configuration procedure shall have no impact on conformance results, but in the case of the failure some test case execution will require more time or manual pre-configuration, before conformance will be started.

ONVIF Client goes through each preconfiguration procedure described in this document and runs it depending on DUT features according to pre-requisites.

6.2 IPv6 Enabling Pre-Configuration Procedure

ONVIF Client configures IPv6 address according to the following procedure.

Pre-requisite:

- IPv6 is supported by DUT.

Pre-Configuration Procedure:

1. ONVIF Client invokes **GetNetworkInterfaces** request.
2. The DUT responds with **GetNetworkInterfacesResponse** message with parameters
 - NetworkInterfaces list := *networkInterfacesList*
3. Set *currentNetworkInterface* := network interface from *networkInterfacesList*, which is used for the DUT conformance.
4. If *currentNetworkInterface*.IPv6.Enabled = true, skip other steps of procedure.
5. ONVIF Client invokes **SetNetworkInterfaces** request with parameters
 - InterfaceToken := *currentNetworkInterface*.
 - NetworkInterface.Enabled := true
 - NetworkInterface.Link is skipped
 - NetworkInterface.MTU is skipped
 - NetworkInterface.IPv4 is skipped

- NetworkInterface.IPv6.Enabled := true
 - NetworkInterface.Extension is skipped
6. The DUT responds with **SetNetworkInterfacesResponse** message with parameters
 - RebootNeeded =: *rebootNeededFlag*
 7. If *rebootNeededFlag* = true:
 - 7.1. ONVIF Client invokes **SystemReboot** request.
 - 7.2. The DUT responds with **SystemRebootResponse** message with parameters
 - Message
 8. If DUT supports Discovery:
 - 8.1. ONVIF Client waits for HELLO message from the default network interface.
 9. If DUT does not support Discovery:
 - 9.1. ONVIF Client waits during *rebootTimeout*.

Note: In the case of failure on any step the procedure will skip other steps.

Annex A Helper Procedures and Additional Notes

A.1 Selection/Creation of Media Profile That Contains PTZ Configuration

Name: HelperSelectionCreationOfMediaProfileThatContainsPTZConfiguration

Procedure Purpose: Helper procedure to select or create Media Profile with PTZConfiguration.

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

Input: Token of the PTZ Node, with which Media Profile should be configured (*ptzNodeToken*).

Returns: Media Profile (*profile*) with PTZ Configuration.

Procedure:

1. Retrieve media profiles by invoking **GetProfiles** request.
2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profile list =: *profileList*
3. If *profileList* contains profile (*ptzProfile*) with PTZ configuration with NodeToken = *ptzNodeToken* and with Video Source Configuration and with Video Encoder Configuration:
 - Set *profile* := *ptzProfile*
 - Skip other steps.
4. If DUT does not support Get Compatible Configurations feature:
 - If no media profile contains identified PTZConfiguration, select one media profile whose fixed attribute is set to false and which already adds VideoSourceConfiguration and VideoEncoderConfiguration. Add PTZConfiguration to the media profile by invoking AddPTZConfiguration command.
 - If no media profile is present to meet the above condition, create new media profile with VideoSourceConfiguration and VideoEncoderConfiguration by invoking CreateProfile, AddVideoSourceConfiguration and AddVideoEncoderConfiguration command. After that, add PTZConfiguration to the media profile by invoking AddPTZConfiguration command.
5. If DUT supports Get Compatible Configurations feature:
 - ONVIF Client configures an empty Media Profile by following the procedure mentioned in [Annex A.11](#) with the following input and output parameters

- in *profileList* - Media Profile List
- out *profile* - Media Profile
- ONVIF Client invokes **GetCompatibleVideoSourceConfigurations** request with parameters
 - ProfileToken := *profile.@token*
- DUT responds with **GetCompatibleVideoSourceConfigurationsResponse** message with parameters
 - Configurations list := *vscList*
- If *vscList* is empty, FAIL the test and skip other steps.
- For each Video Source Configuration *vsc* in *vscList* repeat the following steps:
 - 5.1. ONVIF Client invokes **AddVideoSourceConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - ConfigurationToken := *vsc.@token*
 - 5.2. DUT responds with **AddVideoSourceConfigurationResponse** message.
 - 5.3. ONVIF Client invokes **GetCompatibleVideoEncoderConfigurations** request with parameters
 - ProfileToken := *profile.@token*
 - 5.4. DUT responds with **GetCompatibleVideoEncoderConfigurationsResponse** message with parameters
 - Configurations list := *vecList*
 - 5.5. If *vecList* is empty, FAIL the test and skip other steps.
 - 5.6. ONVIF Client invokes **AddVideoEncoderConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - ConfigurationToken := *vecList[0].@token*
 - 5.7. DUT responds with **AddVideoEncoderConfigurationResponse** message.
 - 5.8. ONVIF Client invokes **GetCompatibleConfigurations** request with parameters

- ProfileToken := *profile.@token*
- 5.9. DUT responds with **GetCompatibleConfigurationsResponse** message with parameters
- PTZ Configurations list := *ptzConfigList*
- 5.10. If *ptzConfigList* contains PTZConfiguration item (*ptzConfig*) with NodeToken = *ptzNodeToken*:
- ONVIF Client invokes **AddPTZConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - ConfigurationToken := *ptzConfig.@token*
 - DUT responds with **AddPTZConfigurationResponse** message.
 - Skip other steps.
- 5.11. ONVIF Client invokes **RemoveVideoEncoderConfiguration** request with parameters
- ProfileToken := *profile.@token*
- 5.12. DUT responds with **RemoveVideoEncoderConfigurationResponse** message.
- 5.13. If *ptzConfigList* does not contain PTZConfiguration item with NodeToken = *ptzNodeToken* for all Video Source Configurations from *videoSourceConfigurationList1*, FAIL the test and skip other steps.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

- DUT did not send **GetProfilesResponse** message.
- DUT did not send **GetCompatibleConfigurationsResponse** message.
- DUT did not send **GetCompatibleVideoSourceConfigurationsResponse** message.
- DUT did not send **GetCompatibleVideoEncoderConfigurationsResponse** message.
- DUT did not send **AddVideoSourceConfigurationResponse** message.

- DUT did not send **AddVideoEncoderConfigurationResponse** message.
- DUT did not send **RemoveVideoEncoderConfigurationResponse** message.
- DUT did not send **AddPTZConfigurationResponse** message.

A.2 Get Complete Door Info List

The following algorithm will be used to get a complete list of Doors:

1. ONVIF Client will invoke `GetDoorInfoListRequest` message (no `Limit`, no `StartReference`) to retrieve the first part of Door Information list from the DUT.
2. Verify the `GetDoorInfoListResponse` message from the DUT.
3. If `GetDoorInfoListResponse` message contains `NextStartReference`, repeat steps 1-2 with `StartReference = [current NextStartReference]`. Otherwise, skip other steps and finalize getting complete door list.

The complete ordered list of doors with information will be made by the means of uniting all `GetDoorInfoListResponse` messages. Also, the total number of doors will be calculated.

A.3 Get Complete Access Point Info List

Name: `HelperGetCompleteAccessPointInfoList`

Procedure Purpose: Helper procedure to retrieve complete access points info list.

Pre-requisite: Access Control Service was received from the DUT.

Input: None

Returns: Complete access points info list (*`accessPointInfoCompleteList`*). Number of access points (*`accessPointsNumber`*).

Procedure:

1. ONVIF client invokes **`GetAccessPointInfoList`** with parameters
 - `Limit` is skipped
 - `StartReference` is skipped
2. The DUT responds with **`GetAccessPointInfoListResponse`** message with parameters
 - `NextStartReference =: nextStartReference`

- *AccessPointInfo* list =: *accessPointInfoCompleteList*
3. Until *nextStartReference* is not null, repeat the following steps:
 - 3.1. ONVIF client invokes **GetAccessPointInfoList** with parameters
 - Limit is skipped
 - StartReference := *nextStartReference*
 - 3.2. The DUT responds with **GetAccessPointInfoListResponse** message with parameters
 - NextStartReference =: *nextStartReference*
 - *AccessPointInfo* list =: *accessPointInfoListPart*
 - 3.3. Set *accessPointInfoCompleteList* := *accessPointInfoCompleteList* + *accessPointInfoListPart*.
 4. Set *accessPointsNumber* := number of *AccessPointInfo* items in *accessPointInfoCompleteList*.

Procedure Result:**PASS –**

- The DUT passed all assertions.

FAIL –

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

A.4 Get Complete Area Info List

Name: HelperGetCompleteAreaInfoList

Procedure Purpose: Helper procedure to retrieve complete areas info list.

Pre-requisite: Access Control Service was received from the DUT.

Input: None

Returns: Complete areas info list (*areaInfoCompleteList*). Number of areas (*areaNumber*).

Procedure:

1. ONVIF client invokes **GetAreaInfoList** with parameters
 - Limit is skipped
 - StartReference is skipped
2. The DUT responds with **GetAreaInfoListResponse** message with parameters
 - NextStartReference =: *nextStartReference*
 - AreaInfo list =: *areaInfoCompleteList*
3. Until *nextStartReference* is not null, repeat the following steps:
 - 3.1. ONVIF client invokes **GetAreaInfoList** with parameters
 - Limit is skipped
 - StartReference := *nextStartReference*
 - 3.2. The DUT responds with **GetAreaInfoListResponse** message with parameters
 - NextStartReference =: *nextStartReference*
 - AreaInfo list =: *areaInfoListPart*
 - 3.3. Set *areaInfoCompleteList* := *areaInfoCompleteList* + *areaInfoListPart*.
4. Set *areasNumber* := number of AreaInfo items in *areaInfoCompleteList*.

Procedure Result:**PASS –**

- The DUT passed all assertions.

FAIL –

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

A.5 Get Analytics Configurations List

Name: HelperGetAnalyticsConfigurationsList

Procedure Purpose: Helper procedure to retrieve Analytics Configurations List.

Pre-requisite: Media2 Service is received from 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.6 Get Token List of Video Sources

Name: HelperGetVideoSourceTokensList

Procedure Purpose: Helper procedure to retrieve Video Sources List.

Pre-requisite: DeviceIO Service or Media2 Service is received from the DUT.

Input: None.

Returns: Video Source Token list (*videoSorceTokenList*).

1. If DUT supports DeviceIO Service:
 - 1.1. ONVIF Client invokes **GetVideoSources** request for DeviceIO service.
 - 1.2. The DUT responds with **GetVideoSourcesResponse** with parameters
 - Token list =: *videoSorceTokenList*
 - 1.3. If *videoSorceTokenList* is empty, FAIL the test.
 - 1.4. Skip other steps and return *videoSorceTokenList* in test procedure.

2. If DUT supports Media Service:
 - 2.1. ONVIF Client invokes **GetVideoSources** request for Media service.
 - 2.2. The DUT responds with **GetVideoSourcesResponse** with parameters
 - VideoSources list =: *videoSorceList*
 - 2.3. If *videoSorceList* is empty, FAIL the test.
 - 2.4. For each Video Source *videoSorce* in *videoSorceList*
 - 2.4.1. Set *videoSorceTokenList* := *videoSorceTokenList* + *videoSorce.token*
 - 2.5. Skip other steps and return *videoSorceTokenList* in test procedure.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.7 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.8 Media Profile Configuration for PTZ Control

Name: HelperMediaProfileConfiguration

Procedure Purpose: Helper procedure to find, create or configure Media Profile with Video Source Configuration and PTZ Configuration.

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

Input: Token of the PTZ Node, with which Media Profile should be configured (*ptzNodeToken*).

Returns: Media Profile (*profile*) with Video Source Configuration and PTZ Configuration.

Procedure:

1. ONVIF Client invokes **GetProfiles** request with parameters
 - Token skipped
 - Type[0] := PTZ
 - Type[1] := VideoSource
2. The DUT responds with **GetProfilesResponse** message with parameters
 - Profiles list =: *profileList*
3. If *profileList* is empty, FAIL the test and skip other steps.
4. If *profileList* contains Media Profile, which includes Configurations.PTZ.NodeToken = *ptzNodeToken*:

- 4.1. Set *profile* := item from *profileList* list, which includes Configurations.PTZ.NodeToken = *ptzNodeToken*
- 4.2. If *profile* does not contain Configurations.VideoSource:
 - 4.2.1. ONVIF Client adds Video Source to Media Profile by following the procedure mentioned in [Annex A.9](#) with the following input and output parameters
 - in *profile* - Media Profile
 - out *profile* - Media Profile with Video Source Configuration
 - 4.3. Skip other steps in the procedure.
5. For each profile (*profile*) with Video Source Configuration from *profileList*:
 - 5.1. ONVIF Client invokes **GetCompatibleConfigurations** request with parameters:
 - ProfileToken := *profile.@token*
 - 5.2. The DUT responds with **GetCompatibleConfigurationsResponse** message with parameters
 - PTZConfiguration list =: *ptzConfigurationList*
 - 5.3. If *ptzConfigurationList* contains item with NodeToken = *ptzNodeToken*:
 - 5.3.1. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - Name skipped
 - Configuration[0].Type := PTZ
 - Configuration[0].Token := *ptzConfiguration.@token*
 - 5.3.2. The DUT responds with **AddConfigurationResponse** message.
 - 5.3.3. Return *profile* and skip other steps.
6. FAIL the test and skip other steps.

Procedure Result:**PASS –**

- DUT passes all assertions.

FAIL –

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

A.9 Media Profile Configuration with Video Source Configuration

Name: HelperMediaProfileConfigurationVS

Procedure Purpose: Helper procedure to add Video Source Configuration to Media Profile.

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

Input: Media Profile (*profile*).

Returns: Media Profile (*profile*) with Video Source Configuration.

Procedure:

1. ONVIF Client invokes **GetVideoSourceConfigurations** request with parameters
 - ConfigurationToken skipped
 - ProfileToken = *profile.@token*
2. The DUT responds with **GetVideoSourceConfigurationsResponse** with parameters
 - Configurations list =: *videoSourceConfigurationList*
3. If *videoSourceConfigurationList* is empty, FAIL the test and skip other steps.
4. ONVIF Client invokes **AddConfiguration** request with parameters
 - ProfileToken := *profile.@token*
 - Name skipped
 - Configuration[0].Type := VideoSource
 - Configuration[0].Token := *videoSourceConfigurationList[0]*
5. The DUT responds with **AddConfigurationResponse** message.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.10 Recording Environment Pre-Requisite

The following pre-perquisite shall be filled before executing feature discovery for Replay Service, Recording Search Service, and Recording Control Service:

Procedure:

1. At least one recording shall be present at the DUT and specified for test execution on Management tab\Recording tab of ONVIF Device Test Tool.
2. The recording shall be stopped.
3. The recording shall contain at least one track each for video, audio (if Audio Recording is supported) and metadata (if Metadata Recording is supported).
4. The recording shall contain data at least in the video track, audio track (if Audio Recording is supported), and metadata track (if Metadata Recording is supported) and configuration of each track shall be consistent for the duration of the recording.
5. The recording contains at least one gap
6. The recording span (including gap) should be not more than 3 minutes
7. Each recording event shall be at least one minute for the recording
8. GOPs of recording should be renewed every 2 seconds.

A.11 Configure Empty Media Profile

Name: HelperConfigureEmptyMediaProfile

Procedure Purpose: Helper procedure to create of configure an empty Media Profile (Media Service).

Pre-requisite: Media Service is received from the DUT.

Input: Media Profile List (*profileList*).

Returns: Empty Media Profile (*profile*).

Procedure:

1. ONVIF Client invokes **CreateProfile** request with parameters
 - Name := TestName
2. DUT responds with **env:Receiver/ter:Action/ter:MaxNVTPProfiles** SOAP 1.2 fault or with **CreateProfileResponse** message with parameters
 - Profile =: *profile*
3. If DUT returns **env:Receiver/ter:Action/ter:MaxNVTPProfiles** SOAP 1.2 fault at step 2:
 - 3.1. Set *profile* := *profileList*[0]
 - 3.2. ONVIF Client removes all configurations from *profile*.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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