

# **ONVIF<sup>™</sup>**

# **Feature Discovery Specification**

Version 18.06 SR1

October 2018

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## REVISION HISTORY

Vers.	Date	Description
11.12	22nd/Dec, 2011	First issue
12.06	22nd/Jun, 2012	Update for a new version of the ONVIF Device Test Tool. No changes made for Feature Discovery.
12.12	20th/Dec, 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	Sept, 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	<p>Section Provisioning Service support was added.</p> <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 formatting 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> <p>Discovery Procedure (GetCapabilities)\Device IO Relay Output Options Support (added)</p>
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 section according to #1618.</p> <p>Scope list updated.</p>
18.06	Jun 21, 2018	Reformatting document using new template
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>

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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 for ONVIF Device Test Tool (hereafter, it is referred to as ONVIF Client) to identify which functionality is supported / not supported by DUT. 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.

## 1.1 Scope

The scope of this document is to define feature discovery procedure of the functionality listed below.

- 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
- System
  - System logging
  - Http System Logging
  - Http Firmware Upgrade
  - Http Support Information
  - Http System Backup
- 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
- 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
- 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
    - Motion Region Detector Rule
- 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
  - 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
- Access Control Service
  - Area Entity
  - Access Point Entity
    - Enable/Disable Access Point
    - Duress
    - Access Taken
    - External Authorization
    - Anonymous Access
  - Access Point Events
    - AccessControl/AccessGranted/Anonymous
    - AccessControl/AccessGranted/Credential
    - AccessControl/AccessTaken/Anonymous
    - AccessControl/AccessTaken/Credential
    - AccessControl/AccessNotTaken/Anonymous

- AccessControl/AccessNotTaken/Credential
- AccessControl/Denied/Anonymous
- AccessControl/Denied/Credential
- AccessControl/Denied/CredentialNotFound/Card
- 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
- Advanced Security 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

- TLS features support
  - TLS Server
  - TLS client authentication
- Credential Service
  - 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
  - SupportedExemptionType
    - pt:ExemptFromAuthentication
- Access Rules Service
  - Multiple Schedules per Access Point
- Schedule Service
  - Extended Recurrence
  - Special Days
  - State Reporting
- 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.

## 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 Advanced Security Test] ONVIF Advanced Security 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 Q] ONVIF Profile Q Specification  
<https://www.onvif.org/profiles/profile-q/>
- [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.

<b>Capability</b>	The capability commands allow a client to ask for the services provided by an ONVIF device.
<b>Network</b>	A network is an interconnected group of devices communicating using the Internet protocol.
<b>ONVIF Client</b>	ONVIF Device Test Tool in the context of this document
<b>Key</b>	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.
<b>Key Pair</b>	A key that consists of a public key and (optionally) a private key.
<b>RSA key pair</b>	A key pair that is accepted as input by the RSA algorithm.
<b>Certificate</b>	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.

<b>DUT</b>	Device Under Test
<b>DNS</b>	Domain Name System
<b>DHCP</b>	Dynamic Host Configuration Protocol
<b>IP</b>	Internet Protocol
<b>IPv4</b>	Internet Protocol version 4
<b>IPv6</b>	Internet Protocol version 6
<b>NTP</b>	Network Time Protocol
<b>RTCP</b>	RTP Control Protocol
<b>RTSP</b>	Real Time Streaming Protocol
<b>RTP</b>	Real-time Transport Protocol
<b>URI</b>	Uniform Resource Identifier
<b>TLS</b>	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
...	...	...
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 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 5.2](#).

**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 5.2. Discovery Types**

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

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

## 5.4 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 5.3](#).

**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 5.3. Capabilities**

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

Criterion Item	GetServicesResponse message and GetCapabilitiesResponse message	
Feature	Supported	Not Supported received or DUT does not return any response)

## 5.5 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.

### 5.5.1 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 5.4](#).

**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 5.4. Device Capabilities Configuration Functionality in Device Management Service (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
NTP	<code>Capabilities.Network.NTP &gt; 0</code>	Skipped <code>Capabilities.Network.NTP</code> or <code>Capabilities.Network.NTP = 0</code>
IPv6	<code>Capabilities.Network.IPVersion6 = true</code>	Skipped <code>Capabilities.Network.IPVersion6</code> or <code>Capabilities.Network.IPVersion6 = false</code>
Zero Configuration	<code>Capabilities.Network.ZeroConfiguration = true</code>	Skipped <code>Capabilities.Network.ZeroConfiguration</code> or <code>Capabilities.Network.ZeroConfiguration = false</code>
Dynamic DNS	<code>Capabilities.Network.DynDNS = true</code>	Skipped <code>Capabilities.Network.DynDNS</code> or <code>Capabilities.Network.DynDNS = false</code>
IP Filter	<code>Capabilities.Network.IPFilter = true</code>	Skipped <code>Capabilities.Network.IPFilter</code> or <code>Capabilities.Network.IPFilter = false</code>

<b>Criterion Item</b>	<b>GetServiceCapabilitiesResponse message</b>	
<b>Feature</b>	<b>Supported</b>	<b>Not Supported</b>
Stateful IPv6 DHCP	<b>Capabilities.Network.DHCPv6 = true</b>	<b>Skipped Capabilities.Network.DHCPv6 or Capabilities.Network.DHCPv6 = false</b>
WS-UsernameToken	<b>Capabilities.Security.UsernameToken = true</b>	<b>Skipped Capabilities.Security.UsernameToken or Capabilities.Security.UsernameToken = false</b>
HTTP Digest	<b>Capabilities.Security.HttpDigest = true</b>	<b>Skipped Capabilities.Security.HttpDigest or Capabilities.Security.HttpDigest = false</b>
Maximum Users	<b>Capabilities.Security.MaxUsers element is present</b>	<b>Capabilities.Security.MaxUsers element is not present</b>
Default Access Policy	<b>Capabilities.Security.DefaultAccessPolicy = true</b>	<b>Skipped Capabilities.Security.HttpDigest or Capabilities.Security.DefaultAccessPolicy = false</b>
Remote User Handling	<b>Capabilities.Security.RemoteUserHandling = true</b>	<b>Skipped Capabilities.Security.RemoteUserHandling or Capabilities.Security.RemoteUserHandling = false</b>
Maximum Username Length	<b>Capabilities.Security.MaxUsernameLength element is present</b>	<b>Capabilities.Security.MaxUsernameLength element is not present</b>
Maximum Password Length	<b>Capabilities.Security.MaxPasswordLength element is present</b>	<b>Capabilities.Security.MaxPasswordLength element is not present</b>
TLS1.0	<b>Capabilities.Security.TLS1.0 = true</b>	<b>Skipped Capabilities.Security.TLS1.0 or Capabilities.Security.TLS1.0 = false</b>
TLS1.1	<b>Capabilities.Security.TLS1.1 = true</b>	<b>Skipped Capabilities.Security.TLS1.1 or</b>

<b>Criterion Item</b>	<b>GetServiceCapabilitiesResponse message</b>	
<b>Feature</b>	<b>Supported</b>	<b>Not Supported</b>
		<b>Capabilities.Security. TLS1.1 = false</b>
TLS1.2	<b>Capabilities.Security. TLS1.2 = true</b>	<b>Skipped Capabilities.Security. TLS1.2 or Capabilities.Security. TLS1.2 = false</b>
Bye Message	<b>Capabilities.System. DiscoveryBye = true</b>	<b>Skipped Capabilities.System. DiscoveryBye or Capabilities. System.DiscoveryBye = false</b>
System logging	<b>Capabilities.System. SystemLogging = true</b>	<b>Skipped Capabilities.System. SystemLogging or Capabilities. System.SystemLogging = false</b>
Http Firmware Upgrade	<b>Capabilities.System. HttpFirmwareUpgrade = true</b>	<b>Skipped Capabilities.System. HttpFirmwareUpgrade or Capabilities. System. HttpFirmwareUpgrade = false</b>
Http System Backup	<b>Capabilities.System. HttpSystemBackup = true</b>	<b>Skipped Capabilities.System. HttpSystemBackup or Capabilities. System. HttpSystemBackup = false</b>
Http System Logging	<b>Capabilities.System. HttpSystemLogging = true</b>	<b>Skipped Capabilities.System. HttpSystemLogging or Capabilities. System. HttpSystemLogging = false</b>
Http Support Information	<b>Capabilities.System. HttpSupportInformation = true</b>	<b>Skipped Capabilities.System. HttpSupportInformation or Capabilities. System. HttpSupportInformation = false</b>
Auxiliary Commands	<b>Capabilities.Misc. AuxiliaryCommands is not empty</b>	<b>Capabilities.Misc. AuxiliaryCommands is empty or Capabilities.Misc. AuxiliaryCommands is not present</b>

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

### 5.5.2 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 5.5](#).
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 5.6](#).

**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 5.5. Relay Outputs in Device Management Service (GetServices)**

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

**Table 5.6. Relay Outputs Mode and Idle State in Device Management Service (GetServices)**

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.
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.

### 5.5.3 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 5.5.6](#).

**Discovery Procedure:**

1. ONVIF Client checks features support as defined in [Table 5.7](#).

**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 5.7. 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

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
		<b>LastClockSynchronization Event topic</b>
Monitoring/Backup/Last	<b>Contains tns1:Monitoring/ Backup/Last Event topic</b>	<b>Does not contain tns1:Monitoring/ Backup/Last Event topic</b>
Device/HardwareFailure/ TemperatureCritical	<b>Contains tns1:Device/ HardwareFailure/ TemperatureCritical Event topic</b>	<b>Does not contain tns1:Device/ HardwareFailure/ TemperatureCritical Event topic</b>
Device/HardwareFailure/ FanFailure	<b>Contains tns1:Device/ HardwareFailure/ FanFailure Event topic</b>	<b>Does not contain tns1:Device/ HardwareFailure/ FanFailure Event topic</b>
Device/HardwareFailure/ PowerSupplyFailure	<b>Contains tns1:Device/ HardwareFailure/ PowerSupplyFailure Event topic</b>	<b>Does not contain tns1:Device/ HardwareFailure/ PowerSupplyFailure Event topic</b>
Device/HardwareFailure/ StorageFailure	<b>Contains tns1:Device/ HardwareFailure/ StorageFailure Event topic</b>	<b>Does not contain tns1:Device/ HardwareFailure/ StorageFailure Event topic</b>

## 5.5.4 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 5.8](#).

**Note:** If GetServicesResponse contains several services with "http://www.onvif.org/ver10/media/wsdll" 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 5.8. Media Service – General (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Media Service	Includes service with "http://www.onvif.org/ver10/media/wsd1" namespace	Does not include service with "http://www.onvif.org/ver10/media/wsd1" namespace

### 5.5.4.1 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 5.9](#).

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

**Table 5.9. 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

### 5.5.4.2 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 5.10](#).

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

**Table 5.10. Media Service – Audio Encoding Support (GetServices)**

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

### 5.5.4.3 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 5.11](#).

**Note:** If the DUT does not return `GetServiceCapabilitiesResponse`, then Real-time streaming feature and features from [Section 5.5.4.4](#) will be marked as undefined. Procedure described in [Section 5.5.4.4](#) will be skipped.

**Note:** If the DUT does not support Real-time streaming feature, all features from [Section 5.5.4.4](#) will be marked as unsupported. Procedure described in [Section 5.5.4.4](#) will be skipped.

**Table 5.11. Media Service – Supported Real-Time Streaming Setup (GetServices)**

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

### 5.5.4.4 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 5.5.4.3](#).

**Discovery Procedure:**

1. ONVIF Client checks features support as defined in [Table 5.12](#).

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

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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		<b>StreamingCapabilities. RTP_RTSP_TCP = false</b>
RTP-Multicast/UDP	<b>Capabilities. StreamingCapabilities. RTPMulticast = true</b>	<b>Skipped Capabilities. StreamingCapabilities. RTPMulticast or Capabilities. StreamingCapabilities. RTPMulticast = false</b>

### 5.5.4.5 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 5.13](#).

**Note:** If no GetProfilesResonse 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 5.13. Media Service – GetSnapshotUri (GetServices)**

Criterion Item	GetSnapshotUriResponse	
Feature	Supported	Not Supported
GetSnapshotUri	<b>DUT returns GetSnapshotUriResponse</b>	<b>DUT returns any SOAP fault</b>

### 5.5.4.6 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 5.14](#). 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 5.15](#).

**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 5.14. Media Service – Audio Outputs Support (GetServices)**

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

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

Criterion Item	GetAudioDecoderConfigurationOptionsResponse	
	Supported	Not Supported
G.711	Includes Options.G711DecOptions	Does not include Options.G711DecOptions
G.726	Includes Options.G726DecOptions	Does not include Options.G726DecOptions
AAC	Includes Options.AACDecOptions	Does not include Options.AACDecOptions

## 5.5.5 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 5.16](#).

**Note:** If GetServicesResponse contains several services with "http://www.onvif.org/ver20/media/wsd1" 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 5.16. Media2 Service – General (GetServices)**

Criterion Item	GetServicesResponse	
	Supported	Not Supported
Media2 Service	Includes service with "http://www.onvif.org/ver20/media/wsd1" namespace	Does not include service with "http://www.onvif.org/ver20/media/wsd1" 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 5.17](#).

**Note:** If the DUT returns no response for GetServiceCapabilitiesRequest, then all features defined in [Table 5.17](#) will be marked as undefined.

**Table 5.17. Media2 Service Features Support (GetServices)**

<b>Criterion Item</b>	<b>GetServiceCapabilitiesResponse message</b>	
<b>Feature</b>	<b>Supported</b>	<b>Not Supported</b>
Video	<b>Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "VideoEncoder"</b>	<b>Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "VideoEncoder"</b>
Audio	<b>Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "AudioEncoder"</b>	<b>Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "AudioEncoder"</b>
Audio Output	<b>Capabilities. ProfileCapabilities. ConfigurationsSupported list contains "AudioOutput"</b>	<b>Capabilities. ProfileCapabilities. ConfigurationsSupported list does not contain "AudioOutput"</b>
Real-time Streaming	<b>Capabilities. StreamingCapabilities. RTSPStreaming = true</b>	<b>Skipped Capabilities. StreamingCapabilities. RTSPStreaming or Capabilities. StreamingCapabilities. RTSPStreaming = false</b>
RTP/UDP	<b>Mandatory functionality, if Real-time Streaming supported</b>	-
RTP/RTSP/HTTP	<b>Mandatory functionality, if Real-time Streaming supported</b>	-
RTP/RTSP/TCP	<b>Capabilities. StreamingCapabilities. RTP_RTSP_TCP = true</b>	<b>Skipped Capabilities. StreamingCapabilities. RTP_RTSP_TCP or Capabilities. StreamingCapabilities. RTP_RTSP_TCP = false</b>
RTP-Multicast/UDP	<b>Capabilities. StreamingCapabilities. RTPMulticast = true</b>	<b>Skipped Capabilities. StreamingCapabilities. RTPMulticast or Capabilities.</b>

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		<b>StreamingCapabilities.RTPMulticast = false</b>
RTSP WebSocket	<b>Capabilities.StreamingCapabilities contains RTSPWebSocketUri</b>	<b>Skipped Capabilities.StreamingCapabilities.RTPMulticastUri</b>
Snapshot Uri	<b>Capabilities.SnapshotUri = true</b>	<b>Skipped Capabilities.SnapshotUri or Capabilities.SnapshotUri = false</b>
OSD	<b>Capabilities.OSD = true</b>	<b>Skipped Capabilities.OSD or Capabilities.OSD = false</b>
Video Source Mode	<b>Capabilities.VideoSourceMode = true</b>	<b>Skipped Capabilities.VideoSourceMode or Capabilities.VideoSourceMode = false</b>
Analytics	<b>Capabilities.ProfileCapabilities.ConfigurationsSupported list contains "Analytics"</b>	<b>Capabilities.ProfileCapabilities.ConfigurationsSupported list does not contain "Analytics"</b>

### Media2 Service – Video encoding support

#### Pre-requisite

- DUT supports **Video** feature according to [Section 5.5.5](#).

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 5.18](#).

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



**Table 5.18. 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"

**Media2 Service – Audio encoding support**

**Pre-requisite**

- DUT supports **Audio** feature according to [Section 5.5.5](#).

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 5.19](#).

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

**Table 5.19. Media2 Service – Audio Encoding Support (GetServices)**

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
G.711	Includes Options.Encoding= "PCMU"	Does not include Options.Encoding= "PCMU"
AAC	Includes Options.Encoding= "MP4A-LATM"	Does not include Options.Encoding= "MP4A-LATM"

**Media2 Service – Audio decoding support**

**Pre-requisite**

- DUT supports **Audio Output** feature according to [Section 5.5.5](#).

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 5.20](#).

**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 5.20. Media2 Service – Audio Outputs Decoder Support (GetServices)**

Criterion Item	GetAudioDecoderConfigurationOptionsResponse	
	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>	Does not include <code>Options.Encoding= "MP4A-LATM"</code>

**Media2 Service – RTP/RTSP/HTTPS support**

**Pre-requisite**

- DUT supports **Media2 Service** according to [Section 5.5.5](#).

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

**Discovery Procedure:**

- If DUT supports **Advanced Security Service\TLS features support\TLS Server** feature as defined in [Table 5.60](#), then RTP/RTSP/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 5.21](#).

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

**Table 5.21. Media2 Service – RTP/RTSP/HTTPS Support (GetServices)**

Criterion Item	GetNetworkProtocolsResponse	
	Supported	Not Supported
RTP/RTSP/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

**Media2 Service – OSD Types support**

**Pre-requisite**

- DUT supports **OSD** according to [Table 5.17](#)

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	
	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

## 5.5.6 Event Service - general

Event Service shall be defined as supported as it is a mandatory feature to be supported by the DUT. The following procedure will be used as pre-requisite for other features support check.

### Pre-requisite

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

### 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 := *messageContentFilterDialectList*
  - MessageContentSchemaLocation list

### 5.5.6.1 Event service features

#### Event service features

Persistent Notification Storage and WS Basic Notification support under Event Service is determined according to the following procedure in conjunction with the above procedure.

**Discovery Procedure:**

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Persistent Notification Storage capability support by DUT.
2. The DUT returns GetServiceCapabilitiesResponse.
3. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.23](#).

**Note:** If the DUT does not return Event Service or GetServiceCapabilitiesResponse, then Persistent Notification Storage feature and WS Basic Notification feature will be marked as undefined.

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

**Table 5.23. Event Service Features (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Persistent Notification Storage	<b>Capabilities. PersistentNotificationStorage = true</b>	<b>Skipped Capabilities. PersistentNotificationStorage or Capabilities. PersistentNotificationStorage = false</b>
WS Basic Notification	<b>Capabilities. MaxNotificationProducers &gt; 0 or skipped Capabilities. MaxNotificationProducers</b>	<b>Capabilities. MaxNotificationProducers = 0</b>
GetServiceCapabilities \\MaxPullPoints capability	<b>Includes Capabilities.MaxPullPoints</b>	<b>Does not include Capabilities.MaxPullPoints</b>

### 5.5.6.2 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 GetServicesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.6](#).

**Discovery Procedure:**

1. ONVIF Client checks Message Content Filter feature support as defined in [Table 5.24](#).

**Note:** If the DUT does not return GetEventPropertiesResponse, ONVIF Client assumes Message Content Filter feature as undefined.

**Table 5.24. Message Content Filter Feature (GetServices)**

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

### 5.5.6.3 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**

- DUT supports Message Content Filter feature according to [Section 5.5.6.2](#).
- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.6](#).

**Discovery Procedure:**

1. ONVIF Client checks ONVIF Message Content Filter Dialect feature support as defined in [Table 5.25](#).

**Note:** If the DUT does not return GetEventPropertiesResponse, ONVIF Client assumes ONVIF Message Content Filter Dialect feature as undefined.

**Table 5.25. ONVIF Message Content Filter Dialect (GetServices)**

Criterion Item	GetEventPropertiesResponse message	
	Supported	Not Supported
ONVIF Message Content Filter Dialect	<i>messageContentFilterDialectList</i> contains item with value	<i>messageContentFilterDialectList</i> does not contain item with

Criterion Item	GetEventPropertiesResponse message	
Feature	Supported	Not Supported
	is equal to "http://www.onvif.org/ver10/tev/messageContentFilter/ItemFilter"	value is equal to "http://www.onvif.org/ver10/tev/messageContentFilter/ItemFilter"

### 5.5.7 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 5.26](#).

**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 5.26. 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

#### 5.5.7.1 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 5.27](#) 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 5.27](#).

**Note:** If the DUT does not return GetServiceCapabilitiesResponse then all features defined in [Table 5.27](#) 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 5.27. Device IO Features Support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Relay Outputs	<b><i>cap.RelayOutputs</i> &gt; 0</b>	<b>Skipped <i>cap.RelayOutputs</i> or <i>cap.RelayOutputs</i> = 0</b>
Digital Inputs	<b><i>cap.DigitalInputs</i> &gt; 0</b>	<b>Skipped <i>cap.DigitalInputs</i> or <i>cap.DigitalInputs</i> = 0</b>
Serial Ports	<b><i>cap.SerialPorts</i> &gt; 0</b>	<b>Skipped <i>cap.SerialPorts</i> or <i>cap.SerialPorts</i> = 0</b>
Digital Input Options	<b><i>cap.DigitalInputOptions</i> = true</b>	<b>Skipped <i>cap.DigitalInputOptions</i> or <i>cap.DigitalInputOptions</i> = false</b>



### 5.5.7.2 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 5.28](#) 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 5.28](#) 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 5.28](#).

**Note:** If the DUT returns no response for GetRelayOutputOptions request, then all features defined in [Table 5.28](#) 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 5.28. Device IO Service – Relay Output Options Support (GetServices)**

Criterion Item	GetRelayOutputOptionsResponse message	
Feature	Supported	Not Supported
Relay Output Options	DUT returns <b>GetRelayOutputOptionsResponse</b> Response for <a href="#">step 2</a> .	DUT returns any <b>SOAP fault</b> for <a href="#">step 2</a> .

### 5.5.7.3 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 5.29](#), [Table 5.30](#), and [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 5.29](#), [Table 5.30](#), and [Table 5.31](#) 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 5.29](#), [Table 5.30](#), and [Table 5.31](#) 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 5.29](#), [Table 5.30](#), and [Table 5.31](#) 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 5.29](#).
  - 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 := *relayOutput.Properties.DelayTime*
      - 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 := *relayOutput*.Properties.DelayTime
  - 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 5.31](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.30](#).
- 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 5.31](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.31](#).

**Note:** If the DUT returns no RelayOutputOptions in GetRelayOutputOptionsResponse message, then all features defined in [Table 5.29](#), [Table 5.30](#), and [Table 5.31](#) will be marked as UNDEFUNED.

**Note:** If the DUT returns no response for SetRelayOutputSettings request, then all features defined in [Table 5.30](#) and [Table 5.31](#) will be marked as UNDEFUNED.

**Table 5.29. Relay Outputs Features - Modes (GetServices)**

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
Feature (for each Relay Output)	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 5.30. Relay Outputs Features - Idle States - Monostable (GetServices)**

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
Feature (for each Relay Output)	Supported	Not Supported
Monostable Mode \Closed Idle State	DUT returns SetRelayOutputSettingsResponse at step <a href="#">3.2.2</a>	DUT returns SOAP fault at step <a href="#">3.2.2</a>
Monostable Mode \Open Idle State	DUT returns SetRelayOutputSettingsResponse at step <a href="#">3.2.4</a>	DUT returns SOAP fault at step <a href="#">3.2.4</a>

**Table 5.31. Relay Outputs Features - Idle States - Bistable (GetServices)**

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
Feature (for each Relay Output)	Supported	Not Supported
Bistable Mode\Closed Idle State	DUT returns SetRelayOutputSettingsResponse at step <a href="#">3.3.2</a>	DUT returns SOAP fault at step <a href="#">3.3.2</a>

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
Feature (for each Relay Output)	Supported	Not Supported
Bistable ModelOpen Idle State	DUT returns SetRelayOutputSettingsResponse at step 3.3.4	DUT returns SOAP fault at step 3.3.4

## 5.5.8 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 5.32](#).

**Note:** If GetServicesResponse contains several services with "http://www.onvif.org/ver20/ptz/wsd1" 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 5.32. 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

### 5.5.8.1 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.

- ONVIF Client checks features support as defined in [Table 5.33](#).

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

**Table 5.33. PTZ Service Features Support (GetServices)**

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

### 5.5.8.2 PTZ Nodes Features Support

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

**Discovery Procedure:**

- ONVIF Client invokes GetNodes request to retrieve PTZ Nodes capabilities.
- The DUT returns GetNodesResponse message with PTZ Nodes capabilities.
- For each PTZ Node ONVIF Client checks features support as defined in [Table 5.34](#).
- 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 5.34](#) and [Section 5.5.8.3](#) will be marked as undefined.

**Table 5.34. PTZ Nodes Features (GetServices)**

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Continuous Pan/Tilt movement	<b>SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is present</b>	<b>SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is not present</b>
Continuous Zoom movement	<b>SupportedPTZSpaces. ContinuousZoomVelocity Space element is present</b>	<b>SupportedPTZSpaces. ContinuousZoomVelocity Space element is not present</b>
Continuous movement	<b>Mandatory</b>	-
Absolute Pan/Tilt movement	<b>SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is present</b>	<b>SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is not present</b>
Absolute Zoom movement	<b>SupportedPTZSpaces. AbsoluteZoomPositionSpace element is present</b>	<b>SupportedPTZSpaces. AbsoluteZoomPositionSpace element is not present</b>
Absolute movement	<b>Absolute Pan/Tilt movement or Absolute Zoom movement is supported</b>	<b>Absolute Pan/Tilt movement and Absolute Zoom movement is not supported</b>
Relative Pan/Tilt movement	<b>SupportedPTZSpaces. RelativePanTiltTranlation Space element is present</b>	<b>SupportedPTZSpaces. RelativePanTiltTranlationSpace element is not present</b>
Relative Zoom movement	<b>SupportedPTZSpaces. RelativeZoomTranlationSpace element is present</b>	<b>SupportedPTZSpaces. RelativeZoomTranlationSpace element is not present</b>
Relative movement	<b>Relative Pan/Tilt movement or Relative Zoom movement is supported</b>	<b>Relative Pan/Tilt movement and Relative Zoom movement is not supported</b>
Speed configuration function	<b>Speed configuration function for Pan/Tilt movement or Speed configuration function for Zoom movement is supported</b>	<b>Speed configuration function for Pan/Tilt movement and Speed configuration function for Zoom movement is not supported</b>
Speed configuration function for Pan/Tilt movement	<b>SupportedPTZSpaces. PanTiltSpeedSpace element is present</b>	<b>SupportedPTZSpaces. PanTiltSpeedSpace element is not present</b>

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Speed configuration function for Zoom movement	<b>SupportedPTZSpaces.ZoomSpeedSpace element is present</b>	<b>SupportedPTZSpaces.ZoomSpeedSpace element is not present</b>
Preset position	<b>MaximumNumberOfPresets &gt; 0</b>	<b>MaximumNumberOfPresets = 0</b>
Auxiliary operation	<b>AuxiliaryCommands element is present</b>	<b>AuxiliaryCommands element is not present</b>
Home Position	<b>HomeSupported = true</b>	<b>HomeSupported = false</b>

### 5.5.8.3 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 received 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 5.35](#) 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 5.5.5](#), 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 5.5.4](#), 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 5.36](#).
9. ONVIF Client restores Media Profiles setting in case it changes some of the Media Profiles configuration.

**Table 5.35. Fixed/Configurable Home Position Support with FixedHomePosition Attribute (GetServices)**

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

**Table 5.36. Fixed/Configurable Home Position Support without FixedHomePosition Attribute (GetServices)**

Criterion Item	SetHomePositionResponse	
	Supported	Not Supported
Configurable Home Position	<b>DUT returns SetHomePositionResponse</b>	<b>DUT returns SOAP fault</b>
Fixed Home Position	<b>DUT returns SOAP fault</b>	<b>DUT returns SetHomePositionResponse</b>

### 5.5.9 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 5.37](#).

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

**Table 5.37. Imaging Service (GetServices)**

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

**IrCutoffConfiguration function support in Imaging Service**

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

**Pre-requisite**

- This procedure assumes that Media Service address or DeviceIO Service address were received from the DUT

**Discovery Procedure:**

1. ONVIF Client invokes GetVideoSourcesRequest message to retrieve all video sources from the DUT.
2. The DUT returns GetVideoSourcesResponse message with a list of existing Video Sources.
3. ONVIF Client invokes GetOptionsRequest message (VideoSourceToken = VideoSourceToken1, where VideoSourceToken1 is the first token of the Video Source in GetVideoSourcesResponse) to retrieve all supported parameters from the DUT.
4. The DUT returns GetOptionsResponse message.
5. ONVIF Client checks IrCutoffConfiguration feature support as defined in [Table 5.38](#).
6. If IrCutoffConfiguration is supported by the VideoSourceToken1, ONVIF Client skips other steps and assumes that IrCutoffConfiguration feature is supported by the DUT.
7. If IrCutoffConfiguration is not supported by the VideoSourceToken1, then ONVIF Client repeats steps 3-7 for the next not tested VideoSourceToken. If there is not untested VideoSourceToken, then ONVIF Client assumes that IrCutoffConfiguration feature is not supported by the DUT.

**Note:** If neither Media service, nor DeviceIO service are supported, the following feature discovery (IrCutoff Configuration) will be skipped and assumed as not supported.

**Table 5.38. IrCutfilter Configuration Function Support in Imaging Service (GetServices)**

Criterion Item	At least one VideoSourceToken from GetVideoSources	
Feature	Supported	Not Supported
IrCutfilter Configuration	At least two IrCutFilterModes elements are present in GetOptionsResponse. ImagingOptions and one of them equal to OFF	GetOptionsResponse. ImagingOptions does not contain at least two IrCutFilterModes elements or GetOptionsResponse. ImagingOptions does not contain IrCutFilterModes equal to OFF

**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 5.5.6](#).

**Discovery Procedure:**

- ONVIF Client checks features support as defined in [Table 5.39](#).

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

- Image Too Blurry
- Image Too Dark
- Image Too Bright
- Global Scene Change
- Motion Alarm

**Table 5.39. Imaging Events Support (GetServices)**

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Image Too Blurry	Contains tns1:VideoSource/ ImageTooBlurry/	Does not contain tns1:VideoSource/

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

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Motion Alarm	Contains <b>tns1:VideoSource/ MotionAlarm</b> event topic	Does not contain <b>tns1:VideoSource/ MotionAlarm</b> event topic

### Focus Control function support in Imaging Service

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

#### Pre-requisite

- This procedure assumes that Imaging Service address was received from the DUT.

#### 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/terNoImagingForSource** SOAP 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 Focus Control feature support as defined in [Table 5.40](#).

**Note:** If the DUT does not return **env:Receiver/ter:ActionNotSupported/terNoImagingForSource** SOAP fault or **GetMoveOptionsResponse**, then Focus Control feature will be marked as undefined.

**Note:** If the DUT does not support both DeviceIO Service and Media Service, then Focus Control feature will be marked as undefined.

**Table 5.40. Focus Control (GetServices)**

Criterion Item	GetMoveOptionsResponse	
Feature	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

### 5.5.10 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 5.41](#).

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

**Table 5.41. Analytics Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	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

#### 5.5.10.1 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 5.42](#).

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

**Table 5.42. Analytics Features Support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Rule Engine	<b>Capabilities.RuleSupport = true</b>	<b>Skipped Capabilities. RuleSupport or Capabilities.RuleSupport = false</b>
Rule Options	<b>RuleOptionsSupported = true</b>	<b>Skipped Capabilities. RuleOptionsSupported or Capabilities. RuleOptionsSupported = false</b>

### 5.5.10.2 Motion Region Detector Rule Support

Motion Region Detector Rule 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 5.42](#).
- DUT supports **Media2 Service** feature according to [Section 5.5.5](#).

**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 =: *supportedRules*

2.3. ONVIF Client checks features support as defined in [Table 5.43](#).

**Note:** If the DUT does not return GetSupportedRulesResponse then Motion Region Detector Rule feature will be marked as undefined.

**Table 5.43. Motion Region Detector Rule (GetServices)**

Criterion Item	GetSupportedRulesResponse	
Feature	Supported	Not Supported
Motion Region Detector Rule	Contains RuleDescription element with Name value is equal to tt:MotionRegionDetector	Does not contain RuleDescription element with Name value is equal to tt:MotionRegionDetector

### 5.5.11 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 5.44](#).

**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 5.44. 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 5.45](#).

**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 5.45. Recording Control Features Support (GetServices)**

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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		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

### 5.5.12 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 5.46](#).

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

**Note:** If Recording Search service is not supported, the following feature discovery (Metadata Search and PTZ search features support) will be skipped.

**Table 5.46. Recording Search Service (GetServices)**

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

**Metadata search support**

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

**Discovery Procedure:**

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Metadata Search capability support by DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.47](#).

**Note:** If the DUT does not return GetServiceCapabilitiesResponse then Metadata Search feature will be marked as undefined.

**Table 5.47. Metadata Search Support (GetServices)**

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

**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**

- A Recording which is used in the function discovery procedure should be provided via GetRecordingInformation command prior to the execution of the procedure (see Annex A.3 Recording Environment Pre-Requisite in the Replay Control Test Specification).

**Discovery Procedure:**

1. ONVIF Client invokes FindPTZPositionRequest message (StartPoint = [start point of recording], Scope.IncludedRecordings = [recording token], SearchFilter = [any], KeepAliveTime) to check PTZ Search support by DUT.
2. If the DUT returns any SOAP fault, ONVIF Client assumes that PTZ Search feature is not supported by DUT. Otherwise, ONVIF Client marks PTZ Search will be defined as supported.

**Note:** If the DUT does not return GetRecordingInformationResponse, then PTZ Position Search feature will be marked as undefined.

**Note:** If `RecordingInformation.EarliestRecording` is not included in `GetRecordingInformationResponse` message, then minimum value of `Track.DataFrom` will be used as `StartPoint`.

**Table 5.48. PTZ Position Search Support (GetServices)**

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

### 5.5.13 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 5.49](#).

**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 5.49. Replay Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Replay Service	Includes service with " <code>http://www.onvif.org/ver10/replay/wsd</code> " namespace	Does not include service with " <code>http://www.onvif.org/ver10/replay/wsd</code> " 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 5.50](#).

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

**Table 5.50. Replay Control Features Support (GetServices)**

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

## 5.5.14 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 5.51](#).

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

**Table 5.51. Receiver Service (GetServices)**

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

## 5.5.15 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 5.52](#).

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

**Note:** If Door Control service is not supported, the following feature discovery (Door Entity support, Door Control Events support) will be skipped.

**Table 5.52. Door Control Service (GetServices)**

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

### Door Entity support

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

### Discovery Procedure:

1. Door Entity shall be defined as supported as it is a mandatory feature to be supported by the DUT.

2. ONVIF Client gets all DoorInfos from the DUT using [Annex A.2](#) to check Door Entity sub-feature support by the DUT.
3. ONVIF Client checks features support as defined in [Table 5.53](#).

**Note:** If the DUT does not return GetDoorInfoListResponse message, then the following features will be marked as undefined:

- 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

**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 5.53. Door Entity Support (GetServices)**

Criterion Item	All DoorInfos	
Feature	Supported	Not Supported
Door Entity	<b>Mandatory</b>	-
Access Door	<b>Contains at least one Door with Capabilities.Access = true</b>	<b>Contains no Doors with Capabilities.Access = true</b>

Criterion Item	All DoorInfos	
	Supported	Not Supported
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
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

**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 GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.5.6](#).

**Discovery Procedure:**

1. ONVIF Client checks features support as defined in [Table 5.54](#).

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

- 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

**Table 5.54. 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

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
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

### 5.5.16 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 5.55](#).

**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, the following feature discovery (Area Entity support, Access Point Entity support and sub-features support, Access Control Events support) will be skipped.

**Table 5.55. Access Control Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Access Control Service	Includes service with "http://www.onvif.org/"	Does not include service with "http://www.onvif.org/"

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
	ver10/accesscontrol/wsdli" namespace	ver10/accesscontrol/wsdli" namespace

**Area Entity support**

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

**Discovery Procedure:**

1. ONVIF Client gets all AreaInfos from the DUT using [Annex A.4](#) to check Area Entity feature support by DUT.
2. ONVIF Client checks features support as defined in [Table 5.56](#).

**Note:** If DUT does not return at least one GetAreaInfoListResponse message, then Area entity feature will be marked as undefined.

**Table 5.56. Area Entity Support (GetServices)**

Criterion Item	GetAreaInfoListResponse messages	
Feature	Supported	Not Supported
Area Entity	Contains at least one AreaInfo	Contains no AreaInfos

**Access Point Entity support and sub-features support**

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

**Discovery Procedure:**

1. Access Point Entity shall be defined as supported as it is a mandatory feature to be supported by DUT.
2. ONVIF Client gets all AccessPointInfos from the DUT using [Annex A.3](#) to check Access Point Entity sub-feature support by DUT.
3. ONVIF Client checks features support as defined in [Table 5.57](#).

**Note:** If the DUT does not return at least one GetAccessPointInfoListResponse message, then the following features will be marked as undefined:

- Enable/Disable Access Point feature

- Duress feature
- Access Taken feature
- External Authorization feature
- Anonymous Access feature

**Table 5.57. Access Control Entity Support (GetServices)**

Criterion Item	All AccessPointInfos	
	Supported	Not Supported
Access Point Entity	<b>Mandatory</b>	-
Enable/Disable Access Point	<b>Contains at least one Access Point Info with Capabilities. DisableAccessPoint = true</b>	<b>Contains no Access Point Info with Capabilities. DisableAccessPoint = true</b>
Duress	<b>Contains at least one Access Point Info with Capabilities. Duress = true</b>	<b>Contains no Access Point Info with Capabilities. Duress = true</b>
Access Taken	<b>Contains at least one Access Point Info with Capabilities. AccessTaken = true</b>	<b>Contains no Access Point Info with Capabilities. AccessTaken = true</b>
External Authorization	<b>Contains at least one Access Point Info with Capabilities. ExternalAuthorization = true</b>	<b>Contains no Access Point Info with Capabilities. ExternalAuthorization = true</b>
Anonymous Access	<b>Contains at least one Access Point Info with Capabilities. AnonymousAccess = true</b>	<b>Contains no Access Point Info with Capabilities. AnonymousAccess = true</b>

**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 5.5.6](#).

**Discovery Procedure:**

1. ONVIF Client checks features support as defined in [Table 5.58](#).

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

- AccessControl/AccessGranted/Anonymous
- AccessControl/AccessGranted/Credential
- AccessControl/AccessTaken/Anonymous
- AccessControl/AccessTaken/Credential
- AccessControl/AccessNotTaken/Anonymous
- AccessControl/AccessNotTaken/Credential
- AccessControl/Denied/Anonymous
- AccessControl/Denied/Credential
- AccessControl/Denied/CredentialNotFound/Card
- 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

**Table 5.58. Access Control Events Support (GetServices)**

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
AccessControl/ AccessGranted/Anonymous	Contains <b>tns1:AccessControl/ AccessGranted/ Anonymous Event topic</b>	Does not contain <b>tns1:AccessControl/ AccessGranted/ Anonymous Event topic</b>
AccessControl/ AccessGranted/Credential	Contains <b>tns1:AccessControl/</b>	Does not contain <b>tns1:AccessControl/</b>

Criterion Item	GetEventPropertiesResponse	
	Supported	Not Supported
	<b>AccessGranted/ Credential Event topic</b>	<b>AccessGranted/ Credential Event topic</b>
AccessControl/ AccessTaken/Anonymous	<b>Contains tns1:AccessControl/ AccessTaken/ Anonymous Event topic</b>	<b>Does not contain tns1:AccessControl/ AccessTaken/ Anonymous Event topic</b>
AccessControl/ AccessTaken/Credential	<b>Contains tns1:AccessControl/ AccessTaken/ Credential Event topic</b>	<b>Does not contain tns1:AccessControl/ AccessTaken/ Credential Event topic</b>
AccessControl/ AccessNotTaken/Anonymous	<b>Contains tns1:AccessControl/ AccessNotTaken/ Anonymous Event topic</b>	<b>Does not contain tns1:AccessControl/ AccessNotTaken/ Anonymous Event topic</b>
AccessControl/ AccessNotTaken/Credential	<b>Contains tns1:AccessControl/ AccessNotTaken/ Credential Event topic</b>	<b>Does not contain tns1:AccessControl/ AccessNotTaken/ Credential Event topic</b>
AccessControl/ Denied/Anonymous	<b>Contains tns1:AccessControl/Denied/ Anonymous Event topic</b>	<b>Does not contain tns1:AccessControl/Denied/ Anonymous Event topic</b>
AccessControl/ Denied/Credential	<b>Contains tns1:AccessControl/Denied/ Credential Event topic</b>	<b>Does not contain tns1:AccessControl/Denied/ Credential Event topic</b>
AccessControl/Denied/ CredentialNotFound/Card	<b>Contains tns1:AccessControl/Denied/ CredentialNotFound/ Card Event topic</b>	<b>Does not contain tns1:AccessControl/Denied/ CredentialNotFound/ Card Event topic</b>
AccessControl/Duress	<b>Contains tns1:AccessControl/ Duress Event topic</b>	<b>Does not contain tns1:AccessControl/ Duress Event topic</b>
AccessControl/ Request/Anonymous	<b>Contains tns1:AccessControl/ Request/Anonymous Event topic</b>	<b>Does not contain tns1:AccessControl/Request/ Anonymous Event topic</b>

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
AccessControl/ Request/Credential	Contains <b>tns1:AccessControl/ Request/Credential Event topic</b>	Does not contain <b>tns1:AccessControl/Request/ Credential Event topic</b>
AccessControl/ Request/Timeout	Contains <b>tns1:AccessControl/ Request/ Timeout Event topic</b>	Does not contain <b>tns1:AccessControl/ Request/ Timeout Event topic</b>
AccessPoint/State/Enabled	Contains <b>tns1:AccessPoint/ State/ Enabled Event topic</b>	Does not contain <b>tns1:AccessPoint/State/ Enabled Event topic</b>
Configuration/ AccessPoint/Changed	Contains <b>tns1:Configuration/ AccessPoint/ Changed Event topic</b>	Does not contain <b>tns1:Configuration/ AccessPoint/ Changed Event topic</b>
Configuration/ AccessPoint/Removed	Contains <b>tns1:Configuration/ AccessPoint/ Removed Event topic</b>	Does not contain <b>tns1:Configuration/ AccessPoint/ Removed Event topic</b>
Configuration/Area/Changed	Contains <b>tns1:Configuration/ Area/ Changed Event topic</b>	Does not contain <b>tns1:Configuration/Area/ Changed Event topic</b>
Configuration/Area/Removed	Contains <b>tns1:Configuration/ Area/ Removed Event topic</b>	Does not contain <b>tns1:Configuration/Area/ Removed Event topic</b>

### 5.5.17 Advanced Security Service Support

Advanced Security 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 5.59](#).

**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 Advanced Security service is not supported, the following feature discovery (Advanced Security features support) will be skipped.

**Table 5.59. Advanced Security Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Advanced Security 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

**Advanced Security features support**

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

**Discovery Procedure:**

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Advanced Security capabilities support by the DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.60](#).

**Note:** If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in [Table 5.60](#) will be marked as undefined.

**Table 5.60. Advanced Security Features Support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	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.



<b>Criterion Item</b>	<b>GetServiceCapabilitiesResponse message</b>	
<b>Feature</b>	<b>Supported</b>	<b>Not Supported</b>
		<b>PKCS10ExternalCertification WithRSA = false</b>
Self-Signed Certificate Creation with RSA	<b>Capabilities. KeystoreCapabilities. SelfSignedCertificate CreationWithRSA = true</b>	<b>Skipped Capabilities. KeystoreCapabilities. SelfSignedCertificateCreation WithRSA or Capabilities. KeystoreCapabilities. SelfSignedCertificateCreation WithRSA = false</b>
Passphrase Management	<b>Capabilities. KeystoreCapabilities. MaximumNumberOf Passphrases &gt; 0</b>	<b>Skipped Capabilities. KeystoreCapabilities. MaximumNumberOf Passphrases or Capabilities. KeystoreCapabilities. MaximumNumberOf Passphrases = 0</b>
PKCS8 Container Upload	<b>Capabilities. KeystoreCapabilities. PKCS8RSAKeyPairUpload = true</b>	<b>Skipped Capabilities. KeystoreCapabilities. PKCS8RSAKeyPairUpload or Capabilities. KeystoreCapabilities. PKCS8RSAKeyPairUpload = false</b>
PKCS12 Container Upload	<b>Capabilities. KeystoreCapabilities. PKCS12CertificateWithRSA PrivateKeyUpload = true</b>	<b>Skipped Capabilities. KeystoreCapabilities. PKCS12CertificateWithRSA PrivateKeyUpload or Capabilities. KeystoreCapabilities. PKCS12CertificateWithRSA PrivateKeyUpload = false</b>
CRLs	<b>Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs &gt; 0</b>	<b>Skipped Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs or Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs = 0</b>

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
Certification path validation policies	<b>Capabilities.</b> <b>KeystoreCapabilities.</b> <b>MaximumNumberOfCertificationPathValidationPolicies &gt; 0</b>	<b>Skipped Capabilities.</b> <b>KeystoreCapabilities.</b> <b>MaximumNumberOfCertificationPathValidationPolicies or Capabilities.</b> <b>KeystoreCapabilities.</b> <b>MaximumNumberOfCertificationPathValidationPolicies = 0</b>
TLS WWW client auth extended key usage extension	<b>Capabilities.</b> <b>KeystoreCapabilities.</b> <b>EnforceTLSWebClientAuthExtKeyUsage = true</b>	<b>Skipped Capabilities.</b> <b>KeystoreCapabilities.</b> <b>EnforceTLSWebClientAuthExtKeyUsage or Capabilities.</b> <b>KeystoreCapabilities.</b> <b>EnforceTLSWebClientAuthExtKeyUsage = false</b>
TLS Server Support	<b>Capabilities.</b> <b>TLSServerCapabilities.</b> <b>TLSServerSupported list is not empty</b>	<b>Skipped Capabilities.</b> <b>TLSServerCapabilities.</b> <b>TLSServerSupported or empty Capabilities.</b> <b>TLSServerCapabilities.</b> <b>TLSServerSupported list</b>
TLS client authentication	<b>Capabilities.</b> <b>TLSServerCapabilities.</b> <b>TLSClientAuthSupported = true</b>	<b>Skipped Capabilities.</b> <b>TLSServerCapabilities.</b> <b>TLSClientAuthSupported or Capabilities.</b> <b>TLSServerCapabilities.</b> <b>TLSClientAuthSupported = false</b>

### 5.5.18 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 5.61](#).

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

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

**Table 5.61. Credential Service (GetServices)**

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

**Credential features support**

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

**Discovery Procedure:**

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Credential capabilities support by the DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.62](#).

**Note:** If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in [Table 5.62](#) will be marked as undefined.

**Table 5.62. Credential Features Support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
pt:Card	Capabilities. SupportedIdentifierType contains pt:Card	Capabilities. SupportedIdentifierType does not contain pt:Card
pt:PIN	Capabilities. SupportedIdentifierType contains pt:PIN	Capabilities. SupportedIdentifierType does not contain pt:PIN

Criterion Item	GetServiceCapabilitiesResponse message	
	Supported	Not Supported
pt:Fingerprint	<b>Capabilities. SupportedIdentifierType contains pt:Fingerprint</b>	<b>Capabilities. SupportedIdentifierType does not contain pt:Fingerprint</b>
pt:Face	<b>Capabilities. SupportedIdentifierType contains pt:Face</b>	<b>Capabilities. SupportedIdentifierType does not contain pt:Face</b>
pt:Iris	<b>Capabilities. SupportedIdentifierType contains pt:Iris</b>	<b>Capabilities. SupportedIdentifierType does not contain pt:Iris</b>
pt:Vein	<b>Capabilities. SupportedIdentifierType contains pt:Vein</b>	<b>Capabilities. SupportedIdentifierType does not contain pt:Vein</b>
Credential Validity	<b>Capabilities. CredentialValiditySupported = true</b>	<b>Capabilities. CredentialValiditySupported = false</b>
Credential Access Profile Validity	<b>Capabilities. CredentialAccessProfile ValiditySupported = true</b>	<b>Capabilities. CredentialAccessProfile ValiditySupported = false</b>
Validity Supports Time Value	<b>Capabilities. ValiditySupportsTimeValue = true</b>	<b>Capabilities. ValiditySupportsTimeValue = false</b>
Reset Antipassback Violation	<b>Capabilities. ResetAntipassbackSupported = true</b>	<b>Capabilities. ResetAntipassbackSupported = false</b>
pt:ExemptFromAuthentication	<b>Capabilities.Extension. SupportedExemptionType = pt:ExemptFromAuthentication</b>	<b>Capabilities.Extension does not contain SupportedExemptionType with value = pt:ExemptFromAuthentication</b>

### 5.5.19 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 5.63](#).

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

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

**Table 5.63. Access Rules Service (GetServices)**

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

**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.

**Discovery Procedure:**

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Access Rules capabilities support by the DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in [Table 5.64](#).

**Note:** If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in [Table 5.64](#) will be marked as undefined.

**Table 5.64. Access Rules Features Support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Multiple Schedules per Access Point	Capabilities. MultipleSchedulesPer AccessPointSupported = true	Capabilities. MultipleSchedulesPer AccessPointSupported = false

## 5.5.20 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 5.65](#).

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

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

**Table 5.65. Schedule Service (GetServices)**

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

### Schedule features support

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

### Discovery Procedure:

1. ONVIF Client invokes `GetServiceCapabilitiesRequest` message to check Schedule capabilities support by the DUT.
2. The DUT returns `GetServiceCapabilitiesResponse`. 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. Schedule Features Support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Extended Recurrence	Capabilities. ExtendedRecurrenceSupported = true	Capabilities. ExtendedRecurrenceSupported = false
Special Days	Capabilities. SpecialDaysSupported = true	Capabilities. SpecialDaysSupported = false
State Reporting	Capabilities. StateReportingSupported = true	Capabilities. StateReportingSupported = false

### 5.5.21 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 5.67](#).

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

**Table 5.67. Provisioning Service (GetServices)**

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

### 5.5.22 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 5.68](#).

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

**Table 5.68. Thermal Service (GetServices)**

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

## 5.6 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.

### 5.6.1 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 5.69](#).

**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:** 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 5.69. 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

Criterion Item	GetCapabilitiesResponse message	
	Supported	Not Supported
Dynamic DNS	<b>Capabilities.Device.Network. DynDNS = true</b>	<b>Skipped Capabilities.Device.Network. DynDNS or Capabilities.Device.Network. DynDNS = false</b>
IP Filter	<b>Capabilities.Device.Network. IPFilter = true</b>	<b>Skipped Capabilities.Device. Network.IPFilter or Capabilities.Device.Network. IPFilter = false</b>
Stateful IPv6 DHCP	<b>Capabilities.Device.Network. DHCPv6 = true</b>	<b>Skipped Capabilities.Device. Network.DHCPv6 or Capabilities.Device.Network. DHCPv6 = false</b>
Remote User Handling	<b>Capabilities.Device.Security. Extension.Extension. RemoteUserHandling = true</b>	<b>Skipped Capabilities.Device. Security. Extension.Extension. RemoteUserHandling or Capabilities.Security. Extension.Extension. RemoteUserHandling = false</b>
TLS1.0	<b>Capabilities.Device.Security. Extension.TLS1.0 = true</b>	<b>Skipped Capabilities.Device.Security. Extension or Capabilities.Device.Security. Extension.TLS1.0 = false</b>
TLS1.1	<b>Capabilities.Device. Security.TLS1.1 = true</b>	<b>Skipped Capabilities.Device.Security or Capabilities.Device.Security. TLS1.1 = false</b>
TLS1.2	<b>Capabilities.Device. Security.TLS1.2 = true</b>	<b>Skipped Capabilities.Device.Security or Capabilities.Device.Security. TLS1.2 = false</b>
Bye Message	<b>Capabilities.Device.System. DiscoveryBye = true</b>	<b>Skipped Capabilities.Device. System.DiscoveryBye or</b>

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
		<b>Capabilities.Device.System.DiscoveryBye = false</b>
System logging	<b>Capabilities.Device.System.SystemLogging = true</b>	<b>Skipped Capabilities.Device.System.System.Logging or Capabilities.Device.System.System.Logging = false</b>
Http Firmware Upgrade	<b>Capabilities.System.Extension.HttpFirmwareUpgrade = true</b>	<b>Skipped Capabilities.System.Extension.HttpFirmwareUpgrade or Capabilities.System.Extension.HttpFirmwareUpgrade = false</b>
Http System Backup	<b>Capabilities.System.Extension.HttpSystemBackup = true</b>	<b>Skipped Capabilities.System.Extension.HttpSystemBackup or Capabilities.System.Extension.HttpSystemBackup = false</b>
Http System Logging	<b>Capabilities.System.Extension.HttpSystemLogging = true</b>	<b>Skipped Capabilities.System.Extension.HttpSystemLogging or Capabilities.System.Extension.HttpSystemLogging = false</b>
Http Support Information	<b>Capabilities.System.Extension.HttpSupportInformation = true</b>	<b>Skipped Capabilities.System.Extension.HttpSupportInformation or Capabilities.System.Extension.HttpSupportInformation = false</b>

### 5.6.2 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 5.70](#).

**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 5.70. HTTP Digest Authentication (GetCapabilities)**

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

### 5.6.3 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 5.71](#).

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

**Table 5.71. NTP Functionality (GetCapabilities)**

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

### 5.6.4 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.

**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 5.72](#).
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 5.73](#).

**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 5.72. 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 5.73. 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.
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.

### 5.6.5 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 5.6.8](#).

**Discovery Procedure:**

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

**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 5.74. Monitoring Events Support (GetCapabilities)**

Criterion Item	GetEventPropertiesResponse	
	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

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

### 5.6.6 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 5.75](#).



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

**Table 5.75. Media Service – General (GetCapabilities)**

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

### 5.6.6.1 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 5.76](#).

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

**Table 5.76. 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

### 5.6.6.2 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 5.77](#).

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

**Table 5.77. Media Service – Audio Encoding Support (GetCapabilities)**

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
	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"

### 5.6.6.3 Media Service – Real-Time Streaming

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

### 5.6.6.4 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.

**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 5.78](#).

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

**Table 5.78. Media Service – Supported Real-time Streaming Setup (GetCapabilities)**

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

### 5.6.6.5 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 5.79](#).

**Note:** If no GetProfilesResonse 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 5.79. Media Service – GetSnapshotUri (GetCapabilities)**

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

### 5.6.6.6 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 5.80](#). 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 5.81](#).

**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 5.80. Media Service – Audio Outputs Support (GetCapabilities)**

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

**Table 5.81. Media Service – Audio Outputs Decoding Support (GetCapabilities)**

Criterion Item	GetAudioDecoderConfigurationOptionsResponse	
	Supported	Not Supported
G.711	Includes Options.G711DecOptions	Does not include Options.G711DecOptions
G.726	Includes Options.G726DecOptions	Does not include Options.G726DecOptions
AAC	Includes Options.AACDecOptions	Does not include Options.AACDecOptions

### 5.6.7 Media2 Service Support

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

### 5.6.8 Event Service - general

Event Service shall be defined as supported as it is a mandatory feature to be supported by the DUT. The following procedure will be used as pre-requisite for other features support check.

#### 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 := *messageContentFilterDialectList*
  - MessageContentSchemaLocation list

#### 5.6.8.1 Event service features

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.

### 5.6.8.2 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 GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).
- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in [Section 5.6.8](#).

**Discovery Procedure:**

1. ONVIF Client checks Message Content Filter feature support as defined in [Table 5.82](#).

**Note:** If the DUT does not return GetEventPropertiesResponse, ONVIF Client assumes Message Content Filter feature as undefined.

**Table 5.82. Message Content Filter Feature (GetCapabilities)**

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

### 5.6.8.3 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**

- DUT supports Message Content Filter feature according to [Section 5.6.8.2](#).

- This procedure assumes that `GetEventPropertiesResponse` has already been retrieved via preceding procedure described in [Section 5.6.8](#).

**Discovery Procedure:**

1. ONVIF Client checks ONVIF Message Content Filter Dialect feature support as defined in [Table 5.83](#).

**Note:** If the DUT does not return `GetEventPropertiesResponse`, ONVIF Client assumes ONVIF Message Content Filter Dialect feature as undefined.

**Table 5.83. ONVIF Message Content Filter Dialect (GetCapabilities)**

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

### 5.6.9 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 5.84](#).

**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 5.84. Device IO Service (GetCapabilities)**

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

### 5.6.9.1 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 5.85](#) will be marked as NOT SUPPORTED.

**Discovery Procedure:**

1. ONVIF Client checks features support as defined in [Table 5.85.](#)

**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 5.85. Relay Outputs Support (GetCapabilities)**

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

### 5.6.9.2 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 5.6.10](#), otherwise all features defined in [Table 5.86](#) 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 5.86](#) 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 5.86](#).

**Note:** If the DUT returns no response for GetRelayOutputOptions request, then all features defined in [Table 5.86](#) 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 5.86. Device IO Service – Relay Output Options Support (GetCapabilities)**

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

### 5.6.9.3 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 5.6.10](#), otherwise all features defined in [Table 5.87](#), [Table 5.88](#), and [Table 5.89](#) 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 5.87](#), [Table 5.88](#), and [Table 5.89](#) 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 5.87](#), [Table 5.88](#), and [Table 5.89](#) 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 5.87](#), [Table 5.88](#), and [Table 5.89](#) 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 5.87](#).
  - 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 := *relayOutput.Properties.DelayTime*
      - 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 := *relayOutput.Properties.DelayTime*

- 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 5.89](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.88](#).
- 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 5.89](#) will be marked as UNDEFINED for this Relay Output, otherwise ONVIF Client checks features support as defined in [Table 5.89](#).

**Note:** If the DUT returns no RelayOutputOptions in GetRelayOutputOptionsResponse message, then all features defined in [Table 5.87](#), [Table 5.88](#), and [Table 5.89](#) will be marked as UNDEFUNED.

**Note:** If the DUT returns no response for SetRelayOutputSettings request, then all features defined in [Table 5.88](#) and [Table 5.89](#) will be marked as UNDEFUNED.

**Table 5.87. Relay Outputs Features - Modes (GetCapabilities)**

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
Feature (for each Relay Output)	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 5.88. Relay Outputs Features - Idle States - Monostable (GetCapabilities)**

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

**Table 5.89. Relay Outputs Features - Idle States - Bistable (GetCapabilities)**

Criterion Item	Current Relay Output from GetRelayOutputOptionsResponse message	
Feature (for each Relay Output)	Supported	Not Supported
Bistable Mode\Closed Idle Sate	DUT returns SetRelayOutputSettingsResponse at step 3.3.2	DUT returns SOAP fault at step 3.3.2
Bistable Mode\Open Idle Sate	DUT returns SetRelayOutputSettingsResponse at step 3.3.4	DUT returns SOAP fault at step 3.3.4

### 5.6.10 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 5.90](#).

**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 5.90. PTZ Service (GetCapabilities)**

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
PTZ Service	<b>Includes Capabilities.PTZ element</b>	<b>Does not include Capabilities.PTZ element</b>

### 5.6.10.1 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

### 5.6.10.2 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 5.91](#).
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 5.91 and Section 5.6.10.3 will be marked as undefined.

**Table 5.91. PTZ Nodes Features (GetCapabilities)**

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Continuous Pan/Tilt movement	<b>SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is present</b>	<b>SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is not present</b>
Continuous Zoom movement	<b>SupportedPTZSpaces. ContinuousZoomVelocity Space element is present</b>	<b>SupportedPTZSpaces. ContinuousZoomVelocity Space element is not present</b>
Continuous movement	<b>Mandatory</b>	<b>-</b>
Absolute Pan/Tilt movement	<b>SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is present</b>	<b>SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is not present</b>
Absolute Zoom movement	<b>SupportedPTZSpaces. AbsoluteZoomPositionSpace element is present</b>	<b>SupportedPTZSpaces. AbsoluteZoomPositionSpace element is not present</b>
Absolute movement	<b>Absolute Pan/Tilt movement or Absolute Zoom movement is supported</b>	<b>Absolute Pan/Tilt movement and Absolute Zoom movement is not supported</b>
Relative Pan/Tilt movement	<b>SupportedPTZSpaces. RelativePanTiltTranlation Space element is present</b>	<b>SupportedPTZSpaces. RelativePanTiltTranlationSpace element is not present</b>
Relative Zoom movement	<b>SupportedPTZSpaces. RelativeZoomTranlationSpace element is present</b>	<b>SupportedPTZSpaces. RelativeZoomTranlationSpace element is not present</b>
Relative movement	<b>Relative Pan/Tilt movement or Relative Zoom movement is supported</b>	<b>Relative Pan/Tilt movement and Relative Zoom movement is not supported</b>
Speed configuration	<b>Speed configuration function for Pan/Tilt movement or Speed</b>	<b>&gt;Speed configuration function for Pan/Tilt movement and Speed configuration function</b>

Criterion Item	Current PTZNode from GetNodesResponse message	
	Supported	Not Supported
Feature (for each PTZ Node)	configuration function for Zoom movement is supported	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

### 5.6.10.3 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 received 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 5.92](#) 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 5.93](#).
8. ONVIF Client restores Media Profiles setting in case it changes some of the Media Profiles configuration.

**Table 5.92. 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	<b>FixedHomePosition = false</b>	<b>FixedHomePosition = true</b>
Fixed Home Position	<b>FixedHomePosition = true</b>	<b>FixedHomePosition = false</b>

**Table 5.93. 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	<b>DUT returns SetHomePositionResponse</b>	<b>DUT returns SOAP fault</b>
Fixed Home Position	<b>DUT returns SOAP fault</b>	<b>DUT returns SetHomePositionResponse</b>

## 5.6.11 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 5.94](#).

**Table 5.94. Imaging Service (GetCapabilities)**

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
Imaging Service	<b>Includes Capabilities.Imaging element</b>	<b>Does not include Capabilities.Imaging element</b>

**IrCutoffConfiguration function support in Imaging Service**

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

**Pre-requisite**

- This procedure assumes that Media Service address or DeviceIO Service address were received from the DUT

**Discovery Procedure:**

1. ONVIF Client invokes GetVideoSourcesRequest message to retrieve all video sources from the DUT.
2. The DUT returns GetVideoSourcesResponse message with a list of existing Video Sources.
3. ONVIF Client invokes GetOptionsRequest message (VideoSourceToken = VideoSourceToken1, where VideoSourceToken1 is the first token of the Video Source in GetVideoSourcesResponse) to retrieve all supported parameters from the DUT.
4. The DUT returns GetOptionsResponse message.
5. ONVIF Client checks IrCutoffConfiguration feature support as defined in [Table 5.95](#).
6. If IrCutoffConfiguration is supported by the VideoSourceToken1, ONVIF Client skips other steps and assumes that IrCutoffConfiguration feature is supported by the DUT.
7. If IrCutoffConfiguration is not supported by the VideoSourceToken1, then ONVIF Client repeats steps [3-7](#) for the next not tested VideoSourceToken. If there is no untested VideoSourceToken, then ONVIF Client assumes that IrCutoffConfiguration feature is not supported by the DUT.

**Note:** If neither Media service, nor DeviceIO service are supported, the following feature discovery (IrCutoff Configuration) will be skipped and assumed as not supported.

**Table 5.95. IrCutfilterConfiguration Function Support in Imaging Service (GetCapabilities)**

Criterion Item	At least one VideoSourceToken from GetVideoSources	
Feature	Supported	Not Supported
IrCutfilter	At least two IrCutFilterModes elements are present in GetOptionsResponse. ImagingOptions and one of them equal to OFF	GetOptionsResponse. ImagingOptions does not contain at least two IrCutFilterModes elements or GetOptionsResponse. ImagingOptions does not contain IrCutFilterModes equal to OFF

**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 5.6.8](#).

**Discovery Procedure:**

- ONVIF Client checks features support as defined in [Table 5.96](#).

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

- Image Too Blurry
- Image Too Dark
- Image Too Bright
- Global Scene Change
- Motion Alarm

**Table 5.96. Imaging Events Support (GetCapabilities)**

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Image Too Blurry	Contains tns1:VideoSource/ ImageTooBlurry/	Image Too Blurry

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

**Focus Control function support in Imaging Service**

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

**Pre-requisite**

- This procedure assumes that Imaging Service address was received from the DUT.

**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/terNoImagingForSource** SOAP 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 Focus Control feature support as defined in [Table 5.97](#).

**Note:** If the DUT does not return **env:Receiver/ter:ActionNotSupported/terNoImagingForSource** SOAP fault or **GetMoveOptionsResponse**, then Focus Control feature will be marked as undefined.

**Note:** If the DUT does not support both DeviceIO Service and Media Service, then Focus Control feature will be marked as undefined.

**Table 5.97. Focus Control (GetCapabilities)**

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

## 5.6.12 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 5.98](#).

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

**Table 5.98. 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

### Motion Region Detector Rule support

Since the DUT does not support Media2 Service feature Motion Region Detector Rule feature will be defined as not supported.

## 5.6.13 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 5.99](#).

**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 5.99. Recording Control Service (GetCapabilities)**

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
Recording Control Service	<b>Includes Capabilities.Extension.Recording</b>	<b>Does not include Capabilities.Extension.Recording</b>
Dynamic Recordings	<b>Extension.Recording.DynamicRecordings = true</b>	<b>Extension.Recording.DynamicRecordings = false</b>
Dynamic Tracks	<b>Extension.Recording.DynamicTracks = true</b>	<b>Extension.Recording.DynamicTracks = false</b>
Audio Recording	-	<b>Not supported</b>
Recording Options	-	<b>Not supported</b>
tns1:RecordingConfig/ DeleteTrackData	<b>GetEventProperties contains tns1:RecordingConfig/DeleteTrackData topic</b>	<b>GetEventProperties doesn't contain tns1:RecordingConfig/DeleteTrackData topic</b>
JPEG	-	<b>Not supported</b>
H.264	-	<b>Not supported</b>
MPEG4	-	<b>Not supported</b>

## 5.6.14 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 5.100](#).

**Note:** If Recording Search service is not supported, the following feature discovery (Metadata Search and PTZ search features support) will be skipped.

**Table 5.100. Recording Search Service (GetCapabilities)**

Criterion Item	GetCapabilitiesResponse	
	Supported	Not Supported
Recording Search Service	Includes <b>Capabilities.Extension.Search</b>	Does not include <b>Capabilities.Extension.Search</b>
Metadata Search	<b>Capabilities.Extension. Search.MetadataSearch = true</b>	<b>Capabilities.Extension.Search. MetadataSearch = false</b>

**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 GetCapabilitiesResponse has already been retrieved via preceding procedure described in [Section 5.2](#).
- A Recording which is used in the function discovery procedure should be provided prior to the execution of the procedure (see Annex A.3 Recording Environment Pre-Requirement in the Replay Control Test Specification).

**Discovery Procedure:**

1. ONVIF Client invokes GetRecordingInformationRequest message for recording to check that this recording contains metadata track with data.
2. The DUT returns GetRecordingInformationResponse. ONVIF Client checks features support as defined in [Table 5.101](#).

**Note:** If the DUT does not return GetRecordingInformationResponse, then Metadata Recording feature will be marked as undefined.

**Note:** If the DUT does not support Recording Search Service, then Metadata Recording feature will be marked as undefined.

**Note:** If the DUT does not support Recording Search Service and Recording Control Service, then Metadata Recording feature will be defined as not supported.

**Table 5.101. Metadata Recording Support (GetCapabilities)**

Criterion Item	GetRecordingInformationResponse	
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" DataFrom is not less than DataTo for this Track

**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**

- A Recording which is used in the function discovery procedure should be provided via GetRecordingInformation command prior to the execution of the procedure (see Annex A.3 Recording Environment Pre-Requisite in the Replay Control Test Specification).

**Discovery Procedure:**

1. ONVIF Client invokes FindPTZPositionRequest message (StartPoint = [start point of recording], Scope.IncludedRecordings = [recording token], SearchFilter = [any], KeepAliveTime) to check PTZ Search support by the DUT.
2. If the DUT returns any SOAP fault, ONVIF Client assumes that PTZ Search feature is not supported by the DUT. Otherwise, ONVIF Client marks PTZ Search will be defined as supported.

**Note:** If the DUT does not return GetRecordingInformationResponse, then PTZ Position Search feature will be marked as undefined.

**Note:** If RecordingInformation.EarliestRecording is not included in GetRecordingInformationResponse message, then minimum value of Track.DataFrom will be used as StartPoint.

**Table 5.102. PTZ Position Search Support (GetCapabilities)**

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



## 5.6.15 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 5.103](#).

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

**Table 5.103. Replay Service (GetCapabilities)**

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

## 5.6.16 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 5.104](#).

**Table 5.104. Receiver Service (GetCapabilities)**

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

### 5.6.17 Door Control Service Support

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

### 5.6.18 Access Control Service Support

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

### 5.6.19 Advanced Security Service Support

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

### 5.6.20 Credential Service Support

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

### 5.6.21 Access Rules Service Support

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

### 5.6.22 Schedule Service Support

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

## 5.6.23 Provisioning Service Support

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

## 5.6.24 Thermal Service Support

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

## 5.7 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. 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.

## 5.8 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.

## Annex A Helper Procedures and Additional Notes

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

The following procedure describes the way to either select or create Media Profile which adds PTZConfiguration.

**Procedure:**

1. Retrieve media profiles by invoking GetProfilesRequest message. Check whether a list of profiles in the GetProfilesResponse contains identified PTZConfiguration.
2. 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.
3. 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.

### 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

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

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

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

## A.4 Get Complete Area Info List

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

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

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

## 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 (*videoSorcerTokenList*).

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 =: *videoSorcerTokenList*
  - 1.3. If *videoSorcerTokenList* is empty, FAIL the test.
  - 1.4. Skip other steps and return *videoSorcerTokenList* 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 **GetConfigurationsResponse** 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.