

# ONVIF™

## Feature discovery specification

Version 17.06

June 2017

© 2017 by ONVIF, Inc. All rights reserved.

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

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

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

### Revision History

Ver.	Date	Description
11.12	22 <sup>nd</sup> /Dec, 2011	First issue
12.06	22 <sup>nd</sup> /Jun, 2012	Update for a new version of the ONVIF Device Test Tool. No changes made for Feature Discovery.
12.12	20 <sup>th</sup> /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 5.5.9 Recording Control Service support and 5.6.11 Recording Control Service support items.
14.06	Jun, 2014	'Metadata Recording support' item was removed. Recording Control features support (GetServices) was added in 5.5.9 Recording Control Service support Item, Table 24
14.12	Dec, 2014	IrCutoffConfiguration function support was added into 5.5.8 Imaging Service support Item and into 5.6.10 Imaging Service support Item. Scope was updated. Passphrase Management feature support was added into 5.5.16 Advanced Security Service Support Item, Table 41. Feature definition for Profile Q was added: 5.5.3 Monitoring Events support Item was added, 5.6.5 Monitoring Events support Item was added, 5.5.1 Device Management Service Capabilities and 5.6.1 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 5.5.17 Advanced Security Service support, Table 41. Credential Service features support was added into 5.5.18 Credential Service support and 5.6.20 Credential Service support. Access Rules Service features support was added into 5.5.19 Access Rules Service support and 5.6.21 Access Rules Service support. Schedule Service features support was added into 5.5.20 Schedule Service support and 5.6.22 Schedule Service support.
16.06	Jan 27, 2016	The item 8 has been added to the section 1.1. The section 5.5.5 Media2 Service – general has been added.
16.06	Mar 15, 2016	The tables 60 and 12 have been updated. The conditions in table #18 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 into 5.5.1 and 5.6.1 items
16.10	Oct, 2016	Media2 Service features support item was added
17.01	Jan, 2017	Minor changes: typos were fixed in 5.5.4, 5.5.5, and 5.6.6 sections
17.01	Jan, 2017	TLS1.0, TLS1.1, TLS1.2 features removed from 5.5.1 and 5.6.1 items
17.06	Feb, 2017	The following items were updated: 5.5.5 Media2 Service – general 5.5.8 PTZ Service support 5.6.10 PTZ Service support The following item was added: 5.6.7 Media2 Service support Scope list updated.
17.06	Mar 06, 2017	Tampering Events support in Imaging Service Item was added into 5.5.9 Imaging Service support and into 5.6.11 Imaging Service support. Scope list updated.
17.06	Mar 07, 2017	Analytics feature added into 5.5.5 Media2 Service – general
17.06	Apr 18, 2017	Table 17 Media2 Service features support was updated. 5.5.10 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 5.6.12 Analytics Service support section.
17.06	Apr 27, 2017	Table 51 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 into 5.5.1 and 5.6.1 items
17.06	May 22, 2017	Motion Alarm support in Imaging Service Item was added into 5.5.9 Imaging Service support and into 5.6.11 Imaging Service support. Scope list updated.
17.06	Jun 2, 2017	Table 17 Media2 Service features support was updated according to #1382: acceptance of 'All' value in ConfigurationsSupported removed.

## Table of Contents

1	Introduction .....	7
1.1	Scope .....	7
2	Normative references .....	16
3	Informative references .....	17
4	Terms and Definitions .....	18
4.1	Definitions .....	18
4.2	Abbreviations .....	18
5	Discovery procedure .....	19
5.1	General policy .....	19
5.2	Feature Support Criteria .....	19
5.3	Discovery Types Support .....	20
5.4	Capabilities .....	20
5.5	Discovery Procedure (GetServices and GetServiceCapabilities) .....	22
5.5.1	Device Management Service Capabilities .....	22
5.5.2	I/O functionality in Device Management Service .....	25
5.5.3	Monitoring Events support .....	27
5.5.4	Media Service – general .....	29
5.5.5	Media2 Service – general .....	35
5.5.6	Event Service .....	39
5.5.7	Device IO Service .....	40
5.5.8	PTZ Service support .....	42
5.5.9	Imaging Service support .....	46
5.5.10	Analytics Service support .....	50
5.5.11	Recording Control Service support .....	51
5.5.12	Recording Search Service support .....	53
5.5.13	Replay Service support .....	55
5.5.14	Receiver Service support .....	56
5.5.15	Door Control Service support .....	57
5.5.16	Access Control Service support .....	61
5.5.17	Advanced Security Service support .....	67
5.5.18	Credential Service support .....	70
5.5.19	Access Rules Service support .....	72

5.5.20	Schedule Service support.....	73
5.6	Discovery Procedure (GetCapabilities).....	75
5.6.1	Device Service Capabilities configuration functionality in Device Management Service 75	
5.6.2	Security (HTTP digest authentication) support.....	77
5.6.3	NTP support.....	78
5.6.4	I/O functionality in Device Management Service .....	79
5.6.5	Monitoring Events support.....	80
5.6.6	Media Service – general.....	82
5.6.7	Media2 Service support.....	87
5.6.8	Event Service.....	87
5.6.9	Device IO Service .....	88
5.6.10	PTZ Service support.....	89
5.6.11	Imaging Service support.....	93
5.6.12	Analytics Service support .....	96
5.6.13	Recording Control Service support .....	97
5.6.14	Recording Search Service support .....	98
5.6.15	Replay Service support .....	100
5.6.16	Receiver Service support .....	101
5.6.17	Door Control Service support .....	101
5.6.18	Access Control Service support.....	101
5.6.19	Advanced Security Service support .....	102
5.6.20	Credential Service support .....	102
5.6.21	Access Rules Service support .....	102
5.6.22	Schedule Service support.....	102
5.7	Devices scopes retrieval via GetDeviceScopes .....	102
5.8	Devices information retrieval via GetDeviceInformation.....	102
Annex A	.....	104
A.1	Selection / Creation of Media Profile that contains PTZConfiguration .....	104
A.2	Media2 Service - Media Profile Configuration for PTZ Control .....	104
A.3	Get Complete Door Info List.....	105
A.4	Get Complete Access Point Info List .....	106
A.5	Get Complete Area Info List .....	106

## 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.

1. Security
  - 1.1. WS-UsernameToken
  - 1.2. HTTP digest authentication
2. Discovery
  - 2.1. Bye Message support
  - 2.2. Types
    - dn:NetworkVideoTransmitter
    - tds:Device
3. Device Service
  - 3.1. Capabilities
    - GetCapabilities
    - GetServices
  - 3.2. Network
    - Zero Configuration
    - NTP support
    - IPv6
    - DHCPv6
    - Dynamic DNS
    - IP Filter

### 3.3. System

- System logging
- Http System Logging
- Http Firmware Upgrade
- Http Support Information
- Http System Backup

### 3.4. Security

- Maximum Users
- Default Access Policy
- Remote User Handling
- Maximum Username Length
- Maximum Password Length
- TLS1.0
- TLS1.1
- TLS1.2

### 3.5. I/O functionality

- Relay Outputs
  - Bistable
    - Open
    - Closed
  - Monostable
    - Open
    - Closed

## 4. Monitoring Events

- 4.1. Monitoring/ProcessorUsage
- 4.2. Monitoring/OperatingTime/LastReset
- 4.3. Monitoring/OperatingTime/LastReboot
- 4.4. Monitoring/OperatingTime/LastClockSynchronization
- 4.5. Monitoring/Backup/Last
- 4.6. Monitoring/Mechanical/FanFailed
- 4.7. Monitoring/Mechanical/PowerSupplyFailed



- 4.8. Monitoring/Mechanical/StorageFailed
- 4.9. Monitoring/EnvironmentalConditions/CriticalTemperature
- 5. Device scopes retrieval via GetDeviceScopes
- 6. Event Service
  - 6.1. Persistent notification storage support
  - 6.2. WS Basic Notification
  - 6.3. GetServiceCapabilities
    - MaxPullPoints capability
- 7. Media Service
  - 7.1. Video
    - JPEG
    - H.264
    - MPEG4
  - 7.2. Audio
    - G.711
    - G.726
    - AAC
  - 7.3. Audio outputs
    - G.711
    - G.726
    - AAC
  - 7.4. Real-time streaming
    - RTP/UDP
    - RTP/RTSP/HTTP
    - RTP/RTSP/TCP
    - RTP-Multicast/UDP
  - 7.5. GetSnapshotUri support
- 8. Media2 Service
  - 8.1. Video
    - H.265

- H.264
- 8.2. Audio
- G.711
  - AAC
- 8.3. Audio outputs
- G.711
  - AAC
- 8.4. Real-time streaming
- RTP/UDP
  - RTP/RTSP/HTTP
  - RTP/RTSP/TCP
  - RTP-Multicast/UDP
- 8.5. RTSP WebSocket
- 8.6. Snapshot Uri
- 8.7. Video Source Mode
- 8.8. OSD
- 8.9. Analytics
9. PTZ Service
- 9.1. Absolut Move
- Pan/Tilt Movement
  - Zoom Movement
- 9.2. Relative Move
- Pan/Tilt Movement
  - Zoom Movement
- 9.3. Continuous Move
- Pan/Tilt Movement
  - Zoom Movement
- 9.4. Preset
- 9.5. Home Position
- Configurable

- Fixed
- 9.6. Auxiliary operations
  - 9.7. Speed
    - Speed for Pan/Tilt
    - Speed for Zoom
  - 9.8. Get Compatible Configurations
  - 9.9. Move Status
  - 9.10. Status Position
10. Device IO Service
    - 10.1. Relay outputs
    - 10.2. Digital inputs
  11. Imaging Service
    - 11.1. IrCutfilterConfiguration
    - 11.2. Tampering Events
      - Image Too Blurry
      - Image Too Dark
      - Image Too Bright
      - Global Scene Change
    - 11.3. Motion Alarm
  12. Analytics Service
    - 12.1. Rule Engine
    - 12.2. Rule Options
  13. Recording Control Service
    - 13.1. Dynamic Recordings
    - 13.2. Dynamic Tracks
    - 13.3. Audio Recording
    - 13.4. Recording Options
    - 13.5. tns1:RecordingConfig/DeleteTrackData
    - 13.6. Metadata Recording
  14. Recording Search Service
    - 14.1. Metadata Search
    - 14.2. PTZ Position Search

## 15. Replay Service

### 15.1. Reverse Replay

### 15.2. RTP/RTSP/TCP

## 16. Receiver Service

## 17. Door Control Service

### 17.1. 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

### 17.2. 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

## 18. Access Control Service

### 18.1.Area Entity

### 18.2.Access Point Entity

- Enable/Disable Access Point
- Duress
- Access Taken
- External Authorization
- Anonymous Access

### 18.3.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

## 19. Advanced Security Service

### 19.1.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

#### 19.2. TLS features support

- TLS Server
- TLS client authentication

### 20. Credential Service

#### 20.1. Supported Identifier Types

- pt:Card
- pt:PIN
- pt:Fingerprint
- pt:Face
- pt:Iris
- pt:Vein

#### 20.2. Credential Validity

#### 20.3. Credential Access Profile Validity

#### 20.4. Validity Supports Time Value

#### 20.5. Reset Antipassback Violation

#### 20.6. SupportedExemptionType

- pt:ExemptFromAuthentication

### 21. Access Rules Service

#### 21.1. Multiple Schedules per Access Point

### 22. Schedule Service support

#### 22.1. Extended Recurrence

#### 22.2. Special Days

#### 22.3. State Reporting

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 <a href="https://www.onvif.org/profiles/specifications/">https://www.onvif.org/profiles/specifications/</a>
[ONVIF Conformance]	ONVIF Conformance Process Specification <a href="https://www.onvif.org/profiles/conformance/">https://www.onvif.org/profiles/conformance/</a>
[ONVIF Test]	ONVIF Device Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Base Test]	ONVIF Base Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Media Test]	ONVIF Media Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF PTZ Test]	ONVIF PTZ Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Imaging Test]	ONVIF Imaging Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Recording Control Test]	ONVIF Recording Control Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Receiver Test]	ONVIF Receiver Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Replay Control Test]	ONVIF Replay Control Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Recording Search Test]	ONVIF Recording Search Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Access Test]	ONVIF Access Control Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Door Test]	ONVIF Door Control Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Advanced Security Test]	ONVIF Advanced Security Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Credential Test]	ONVIF Credential Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Access Rules Test]	ONVIF Access Rules Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>
[ONVIF Schedule Test]	ONVIF Schedule Test Specification <a href="https://www.onvif.org/profiles/conformance/device-test/">https://www.onvif.org/profiles/conformance/device-test/</a>



### 3 Informative references

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

## 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 1.

**Table 1 Feature support criteria description outline used in this specification**

Criterion Item	Criteria_item_description	
Feature	Supported	Not Supported
Feature_name1	<b>Supported_criteria_feature1</b>	<b>NotSupported_criteria_feature1</b>
Feature_name2	<b>Supported_criteria_feature2</b>	<b>NotSupported_criteria_feature2</b>
...	...	...
Feature_nameN	<b>Supported_criteria_featureN</b>	<b>NotSupported_criteria_featureN</b>

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

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 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 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>
dn:NetworkVideoTransmitter	<b>Contains “dn:NetworkVideoTransmitter”</b>	<b>Does not contain “dn:NetworkVideoTransmitter”</b>

### 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 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 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 received or DUT does not return any response)</b>

## 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 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 4 Device Capabilities configuration functionality in Device Management Service  
(GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		<b>Capabilities.Network. IPFilter = false</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 Capabilities.Security. TLS1.1 = false</b>



Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
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>

### 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.

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 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 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 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

- 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 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 7 Monitoring Events support (GetServices)**

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Monitoring/ProcessorUsage	<b>Contains tns1:Monitoring/ProcessorUsage Event topic</b>	<b>Does not contain tns1:Monitoring/ProcessorUsage Event topic</b>
Monitoring/OperatingTime/LastReset	<b>Contains tns1:Monitoring/OperatingTime/LastReset Event topic</b>	<b>Does not contain tns1:Monitoring/OperatingTime/LastReset Event topic</b>
Monitoring/OperatingTime/LastReboot	<b>Contains tns1:Monitoring/OperatingTime/LastReboot Event topic</b>	<b>Does not contain tns1:Monitoring/OperatingTime/LastReboot Event topic</b>
Monitoring/OperatingTime/LastClockSynchronization	<b>Contains tns1:Monitoring/OperatingTime/LastClockSynchronization Event topic</b>	<b>Does not contain tns1:Monitoring/OperatingTime/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>

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

#### 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 8.

**Note:** If GetServicesResponse contains several services with “http://www.onvif.org/ver10/media/wsd1” 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 8 Media Service – general (GetServices)**

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

#### 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 9.

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

**Table 9 Media Service – Video encoding support (GetServices)**

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

**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 10.

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

**Table 10 Media Service – Audio encoding support (GetServices)**

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
Audio encoding	<b>DUT returns GetAudioEncoderConfigurat ion OptionsResponse</b>	<b>DUT returns any SOAP fault</b>
G.711	<b>DUT returns GetAudioEncoderConfigurat ion OptionsResponse</b>	<b>DUT returns any SOAP fault</b>
G.726	<b>Includes Options.Options.Encoding = “G726”</b>	<b>Does not include Options.Options.Encoding = “G726”</b>
AAC	<b>Includes Options.Options.Encoding = “AAC”</b>	<b>Does not include Options.Options.Encoding = “AAC”</b>

### 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 11.

**Note:** If the DUT does not return GetServiceCapabilitiesResponse, then Real-time streaming feature and features from Media Service – Supported Real-time streaming Setup will be marked as undefined. Procedure described in Media Service – Supported Real-time streaming Setup will be skipped.

**Note:** If the DUT does not support Real-time streaming feature, all features from Media Service – Supported Real-time streaming Setup will be marked as unsupported. Procedure described in Media Service – Supported Real-time streaming Setup will be skipped.

**Table 11 Media Service – Supported Real-time streaming Setup (GetServices)**

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

**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 Media Service – Real-time streaming.

**Discovery Procedure:**

1. ONVIF Client checks features support as defined in Table 12.

**Table 12 Media Service – Supported Real-time streaming Setup (GetServices)**

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



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

### 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 13.

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

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

**Table 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>

### 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 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 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 14 Media Service – Audio outputs support (GetServices)**

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

**Table 15 Media Service – Audio outputs decoding support (GetServices)**

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

### 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 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 16 Media2 Service – general (GetServices)**

Criterion Item	GetServicesResponse	
	Supported	Not Supported
Media2 Service	<b>Includes service with “http://www.onvif.org/ver20/media/wsd1” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver20/media/wsd1” namespace</b>

#### 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 17.

**Note:** If the DUT returns no response for GetServiceCapabilitiesRequest, then all features defined in Table 17 Media2 Service features support (GetServices) will be marked as undefined.

**Table 17 Media2 Service features support (GetServices)**

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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		<b>Capabilities.StreamingCapabilities.RTPMulticast = false</b>
RTSP WebSocket	<b>Capabilities.StreamingCapabilities contains RTSPWebSocketUri</b>	<b>Skipped Capabilities.StreamingCapabilities.RTPWebSocketUri</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 Media2 Service – general

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 18.

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

**Table 18 Media2 Service – Video encoding support (GetServices)**

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

### Media2 Service – Audio encoding support

#### Pre-requisite

- DUT supports **Audio** feature according to Media2 Service – general

Audio encoding function support in Media2 Service is determined according to the following discovery 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. ONVIF Client checks features support as defined in Table 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 19 Media2 Service – Audio encoding support (GetServices)**

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

### Media2 Service – Audio decoding support

- DUT supports **Audio Output** feature according to Media2 Service – general

Audio decoding support is determined according to the following procedure.

**Discovery Procedure:**

1. ONVIF Client invokes GetAudioDecoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported Audio codec's for decoding by DUT.
2. The DUT returns GetAudioDecoderConfigurationOptionsResponse. ONVIF Client checks features support as defined in Table 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 20 Media2 Service – Audio outputs decoder support (GetServices)**

Criterion Item	GetAudioDecoderConfigurationOptionsResponse	
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"

**5.5.6 Event Service**

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 to retrieve all supported events.

**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. ONVIF Client checks features support as defined in
3. Table 21.

**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 21 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>

### 5.5.7 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 22.

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

**Note:** If Device IO service is not supported, the following feature discovery (Relay Outputs and Digital Inputs features support) will be skipped.



**Table 22 Device IO Service (GetServices)**

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

**Relay outputs and digital inputs support**

Relay Outputs and Digital Inputs support under Device IO Service is determined according to the following procedure in conjunction with the above procedure.

**Discovery Procedure:**

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Relay Output capability support by DUT.
2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 23.

**Note:** If the DUT does not return GetServiceCapabilitiesResponse then Relay Outputs and Digital Inputs feature will be marked as undefined.

**Table 23 Relay outputs and digital inputs support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Relay Outputs	<b>Capabilities.RelayOutputs &gt; 0</b>	<b>Skipped Capabilities.RelayOutputs or Capabilities.RelayOutputs = 0</b>
Digital Inputs	<b>Capabilities.DigitalInputs &gt; 0</b>	<b>Skipped Capabilities.DigitalInputs or Capabilities.DigitalInputs = 0</b>

### 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 56.

**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 PTZ service is not supported, the following feature discovery (Various functions support and Fixed / Configurable Home Position support) will be skipped.

**Table 24 PTZ Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
PTZ Service	<b>Includes service with “http://www.onvif.org/ver20/ ptz/wsd1” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver20/pt z/wsd1” namespace</b>

#### Various functions support in PTZ Service

The number of function support in PTZ Service is determined according to the following procedure.

### Pre-requisite

- A PTZNode which is used in the function discovery procedure should be provided prior to the execution of the procedure. Otherwise, ONVIF Client will invoke GetNodesRequest message to get the PTZNodes that can be used for the procedure and the first PTZNode present in GetNodesResponse will be used in the procedure. In case PTZNode token is provided, ONVIF Client will use the provided PTZNode token to derive PTZNode via GetNodeRequest.
- Continuous move function is considered as supported if DUT supports PTZ Service feature.

### Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 56.

**Note:** If neither GetPTZNodesResponse nor GetPTZNodeResponse is returned correctly by the DUT, all functions support under PTZ Service is marked as undefined.

**Table 25 Various functions support in PTZ Service (GetServices)**

Criterion Item	First PTZNode from GetNodesResponse or PTZNode from GetNodeResponse	
Feature	Supported	Not Supported
Continuous Pan/Tilt movement	<b>SupportedPTZSpaces. ContinuousPanTiltVelocitySpace element is present</b>	<b>SupportedPTZSpaces. ContinuousPanTiltVelocitySpace element is not present</b>
Continuous Zoom movement	<b>SupportedPTZSpaces. ContinuousZoomVelocitySpace element is present</b>	<b>SupportedPTZSpaces. ContinuousZoomVelocitySpace 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. RelativePanTiltTranslationSpace element is present</b>	<b>SupportedPTZSpaces. RelativePanTiltTranslationSpace element is not present</b>

Criterion Item	First PTZNode from GetNodesResponse or PTZNode from GetNodeResponse	
Feature	Supported	Not Supported
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 for Pan/Tilt movement	<b>SupportedPTZSpaces. PanTiltSpeedSpace element is present</b>	<b>SupportedPTZSpaces. PanTiltSpeedSpace element is not present</b>
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>

### Fixed / Configurable Home Position support

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

#### Pre-requisite

- This procedure assumes that Media Service has already been retrieved via preceding procedure described in Section 5.2.
- A PTZNode which is used in the function discovery procedure should be provided prior to the execution of the procedure. Otherwise, ONVIF Client will invoke GetNodesRequest message to get the PTZNodes that can be used for the procedure and the first PTZNode present in GetNodesResponse will be used in the procedure. In case PTZNode token is provided, ONVIF Client will use the provided PTZNode token to derive PTZNode via GetNodeRequest.

#### Discovery Procedure:

1. ONVIF Client invokes GetConfigurationsRequest message to retrieve a PTZNodes list.
2. The DUT returns GetConfigurationsResponse with the list of PTZConfiguration that contains PTZNode. ONVIF Client identifies first PTZConfiguration which has the corresponding PTZNode with the provided PTZNode.
3. ONVIF Client either selects or creates Media Profile anew along with the identified PTZConfiguration. Refer to Annex A.1 for the details.
4. ONVIF Client invokes SetHomePositionRequest (ProfileToken = selected or newly created profile token) message to check Configurable Home Position is supported by DUT.
5. ONVIF Client checks features support as defined in Table 26.
6. ONVIF Client restores Media Profiles setting in case it changes some of the Media Profiles configuration.

**Note:** If Media Service is not supported by the DUT, Fixed and Configurable Home Position features will be marked as undefined.

**Table 26 Fixed / Configurable Home Position support (GetServices)**

Criterion Item	SetHomePositionResponse	
Feature	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>

**PTZ Service features support**

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

**Discovery Procedure:**

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to retrieve PTZ Service capabilities.
2. The DUT returns GetServiceCapabilitiesResponse with PTZ Service capabilities. ONVIF Client checks features support as defined in Table 27.

**Note:** If the DUT returns no response for GetServiceCapabilitiesRequest, then all features defined in Table 27 PTZ Service features support (GetServices) will be marked as undefined.

**Table 27 PTZ Service features support (GetServices)**

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

3. ONVIF Client checks features support as defined in Table 28.

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

**Table 28 Imaging Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Imaging Service	<b>Includes service with “http://www.onvif.org/ver20/imaging/wsd1” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver20/imaging/wsd1” namespace</b>

**IrCutfilterConfiguration function support in Imaging Service**

IrCutfilterConfiguration 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 IrCutfilterConfiguration feature support as defined in Table 29.
6. If IrCutfilterConfiguration is supported by the VideoSourceToken1, ONVIF Client skips other steps and assumes that IrCutfilterConfiguration feature is supported by the DUT.
7. If IrCutfilterConfiguration 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 IrCutfilterConfiguration feature is not supported by the DUT.

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

**Table 29 IrCutfilter Configuration function support in Imaging Service (GetServices)**

Criterion Item	At least one VideoSourceToken from GetVideoSources	
Feature	Supported	Not Supported
IrCutfilter Configuration	<b>At least two IrCutFilterModes elements are present in GetOptionsResponse.Imagi</b>	<b>GetOptionsResponse. ImagingOptions does not contain at least two IrCutFilterModes elements or GetOptionsResponse.</b>

Criterion Item	At least one VideoSourceToken from GetVideoSources	
Feature	Supported	Not Supported
	<b>ngOptions and one of them equal to OFF</b>	<b>ImagingOptions does not contain IrCutFilterModes equal to OFF</b>

### 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 30.

**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 30 Imaging Events support (GetServices)**

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Image Too Blurry	<p><b>Contains</b></p> <p><b>tns1:VideoSource/ImageTooBlurry/ImagingService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageTooBlurry/AnalyticsService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageTooBlurry/RecordingService</b></p>	<p><b>Does not contain</b></p> <p><b>tns1:VideoSource/ImageTooBlurry/ImagingService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/ImageTooBlurry/AnalyticsService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/ImageTooBlurry/RecordingService</b></p>



Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
	<b>Event topic</b>	<b>Event topic</b>
Image Too Dark	<p><b>Contains</b></p> <p><b>tns1:VideoSource/ImageTooDark/ImagingService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageTooDark/AnalyticsService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageTooDark/RecordingService</b></p> <p><b>Event topic</b></p>	<p><b>Does not contain</b></p> <p><b>tns1:VideoSource/ImageTooDark/ImagingService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/ImageTooDark/AnalyticsService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/ImageTooDark/RecordingService</b></p> <p><b>Event topic</b></p>
Image Too Bright	<p><b>Contains</b></p> <p><b>tns1:VideoSource/ImageTooBright/ImagingService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageTooBright/AnalyticsService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageTooBright/RecordingService</b></p> <p><b>Event topic</b></p>	<p><b>Does not contain</b></p> <p><b>tns1:VideoSource/ImageTooBright/ImagingService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/ImageTooBright/AnalyticsService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/ImageTooBright/RecordingService</b></p> <p><b>Event topic</b></p>
Global Scene Change	<p><b>Contains</b></p> <p><b>tns1:VideoSource/GlobalSceneChange/ImagingService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/GlobalSceneChange/AnalyticsService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/GlobalSceneChange/RecordingService</b></p> <p><b>Event topic</b></p>	<p><b>Does not contain</b></p> <p><b>tns1:VideoSource/GlobalSceneChange/ImagingService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/GlobalSceneChange/AnalyticsService</b></p> <p><b>and</b></p> <p><b>tns1:VideoSource/GlobalSceneChange/RecordingService</b></p> <p><b>Event topic</b></p>

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

### 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 31.

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

**Table 31 Analytics Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Analytics Service	<b>Includes service with</b> <b>“http://www.onvif.org/ver20/analytics/wsdl” namespace</b>	<b>Does not include service with</b> <b>“http://www.onvif.org/ver20/analytics/wsdl” namespace</b>

#### 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.

- The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 32.

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

**Table 32 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>

### 5.5.11 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:

- ONVIF Client checks features support as defined in Table 33.

**Note:** If GetServicesResponse contains several services with "http://www.onvif.org/ver10/recording/wsd" 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 33 Recording Control Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Recording Control Service	<b>Includes service with “http://www.onvif.org/ver10/recording/wsd1” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver10/recording/wsd1” namespace</b>

### 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 34.

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

**Table 34 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>

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
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 or Capabilities.MetadataRecording = false</b>

### 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 35.

**Note:** If GetServicesResponse contains several services with "http://www.onvif.org/ver10/search/wsd1" 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 35 Recording Search Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Recording Search Service	<b>Includes service with "http://www.onvif.org/ver10/search/wsd1" namespace</b>	<b>Does not include service with "http://www.onvif.org/ver10/search/wsd1" namespace</b>

#### 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 36.

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

**Table 36 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 37 PTZ Position search support (GetServices)**

Criterion Item	FindPTZPositionResponse	
Feature	Supported	Not Supported
PTZ Position Search	<b>DUT returns FindPTZPositionResponse</b>	<b>DUT returns SOAP fault</b>

### 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:

- ONVIF Client checks features support as defined in Table 38.

**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 38 Replay Service (GetServices)**

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

#### 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 39.

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

**Table 39 Replay Control features support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Reverse Replay	<b>Capabilities.ReversePlayback = true</b>	<b>Skipped Capabilities.ReversePlayback or Capabilities.ReversePlayback = false</b>
RTP/RTSP/TCP	<b>Capabilities.RTP_RTSP_TCP = true</b>	<b>Skipped Capabilities.RTP_RTSP_TCP or 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 38.

**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 40 Receiver Service (GetServices)**



Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Receiver Service	<b>Includes service with “http://www.onvif.org/ver10/receiver/wsd” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver10/receiver/wsd” namespace</b>

### 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 41.

**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 41 Door Control Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Door Control Service	<b>Includes service with “http://www.onvif.org/ver10/doorcontrol/wsd” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver10/doorcontrol/wsd” namespace</b>

#### 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.3 to check Door Entity sub-feature support by the DUT.
3. ONVIF Client checks features support as defined in Table 42.

**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 42 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	
Feature	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

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

### 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 43.

**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 43 Door Control Events support (GetServices)**

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

### 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 44.

**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 44 Access Control Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Access Control Service	<b>Includes service with “http://www.onvif.org/ver10/accesscontrol/wsd1” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver10/accesscontrol/wsd1” namespace</b>

### 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.5 to check Area Entity feature support by DUT.
2. ONVIF Client checks features support as defined in Table 45.

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

**Table 45 Area Entity support (GetServices)**

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

### 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.4 to check Access Point Entity sub-feature support by DUT.
3. ONVIF Client checks features support as defined in Table 46.

**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 46 Access Control Entity support (GetServices)**

Criterion Item	All AccessPointInfos	
Feature	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 33.

**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 47 Access Control Events support (GetServices)**

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

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

### 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 48.

**Note:** If `GetServicesResponse` contains several services with “`http://www.onvif.org/ver10/advancedsecurity/wsd1`” 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 48 Advanced Security Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Advanced Security Service	<b>Includes service with “<code>http://www.onvif.org/ver10/advancedsecurity/wsd1</code>” namespace</b>	<b>Does not include service with “<code>http://www.onvif.org/ver10/advancedsecurity/wsd1</code>” namespace</b>

### 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 49.

**Note:** If the DUT does not return `GetServiceCapabilitiesResponse`, then all features defined in Table 49 will be marked as undefined.

**Table 49 Advanced Security features support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
RSA Key Pair Generation	<b>Capabilities. KeystoreCapabilities. RSAKeyPairGeneration = true</b>	<b>Skipped Capabilities. KeystoreCapabilities. RSAKeyPairGeneration or Capabilities.KeystoreCapabilities. RSAKeyPairGeneration = false</b>
PKCS10 External Certification with RSA	<b>Capabilities. KeystoreCapabilities.</b>	<b>Skipped Capabilities. KeystoreCapabilities. PKCS10ExternalCertification</b>

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
	<b>PKCS10ExternalCertificateWithRSA = true</b>	<b>WithRSA or Capabilities. KeystoreCapabilities. PKCS10ExternalCertificateWithRSA = false</b>
Self-Signed Certificate Creation with RSA	<b>Capabilities. KeystoreCapabilities. SelfSignedCertificateCreationWithRSA = true</b>	<b>Skipped Capabilities. KeystoreCapabilities. SelfSignedCertificateCreationWithRSA or Capabilities. KeystoreCapabilities. SelfSignedCertificateCreationWithRSA = false</b>
Passphrase Management	<b>Capabilities. KeystoreCapabilities. MaximumNumberOfPassphrases &gt; 0</b>	<b>Skipped Capabilities. KeystoreCapabilities. MaximumNumberOfPassphrases or Capabilities. KeystoreCapabilities. MaximumNumberOfPassphrases = 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. PKCS12CertificateWithRSAPrivateKeyUpload = true</b>	<b>Skipped Capabilities. KeystoreCapabilities. PKCS12CertificateWithRSAPrivateKeyUpload or Capabilities. KeystoreCapabilities. PKCS12CertificateWithRSAPrivateKeyUpload = false</b>
CRLs	<b>Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs &gt; 0</b>	<b>Skipped Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs or Capabilities. KeystoreCapabilities. MaximumNumberOfCRLs = 0</b>
Certification path validation policies	<b>Capabilities. KeystoreCapabilities. MaximumNumberOfCertificationPathValidationPolicies &gt; 0</b>	<b>Skipped Capabilities. KeystoreCapabilities. MaximumNumberOfCertificationPathValidationPolicies or Capabilities. KeystoreCapabilities.</b>

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		<b>MaximumNumberOfCertificatio nPathValidationPolicies = 0</b>
TLS WWW client auth extended key usage extension	<b>Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuthE xtKeyUsage = true</b>	<b>Skipped Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuthExt KeyUsage or Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuthExt KeyUsage = false</b>
TLS Server Support	<b>Capabilities. TLSServerCapabilities. TLSServerSupported list is not empty</b>	<b>Skipped Capabilities. TLSServerCapabilities. TLSServerSupported or empty Capabilities. TLSServerCapabilities. TLSServerSupported list</b>
TLS client authentication	<b>Capabilities. TLSServerCapabilities. TLSClientAuthSupported = true</b>	<b>Skipped Capabilities. TLSServerCapabilities. TLSClientAuthSupported or Capabilities. TLSServerCapabilities. 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 48.

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

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

**Table 50 Credential Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Credential Service	Includes service with “http://www.onvif.org/ver10/credential/wsd1” namespace	Does not include service with “http://www.onvif.org/ver10/credential/wsd1” 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 51.

**Note:** If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in Table 51 will be marked as undefined.

**Table 51 Credential features support (GetServices)**

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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
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. CredentialAccessProfileValidit ySupported = true</b>	<b>Capabilities. CredentialAccessProfileValidit ySupported = false</b>
Validity Supports Time Value	<b>Capabilities. ValiditySupportsTimeValue = true</b>	<b>Capabilities. ValiditySupportsTimeValue = false</b>
Reset Antipassback Violation	<b>Capabilities. ResetAntipassbackSupporte d = true</b>	<b>Capabilities. ResetAntipassbackSupported = false</b>
pt:ExemptFromAuthentication	<b>Capabilities.Extension. SupportedExemptionType = pt:ExemptFromAuthenticati on</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 52.

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

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



**Table 52 Access Rules Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Access Rules Service	<b>Includes service with “http://www.onvif.org/ver10/accessrules/wsd1” namespace</b>	<b>Does not include service with “http://www.onvif.org/ver10/accessrules/wsd1” namespace</b>

### 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 53.

**Note:** If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in Table 53 will be marked as undefined.

**Table 53 Access Rules features support (GetServices)**

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Multiple Schedules per Access Point	<b>Capabilities. MultipleSchedulesPerAccessPointSupported = true</b>	<b>Capabilities. MultipleSchedulesPerAccessPointSupported = false</b>

### 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 54.

**Note:** If GetServicesResponse contains several services with “http://www.onvif.org/ver10/schedule/wsd1” 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 54 Schedule Service (GetServices)**

Criterion Item	GetServicesResponse	
Feature	Supported	Not Supported
Schedule Service	Includes service with “http://www.onvif.org/ver10/schedule/wsd1” namespace	Does not include service with “http://www.onvif.org/ver10/schedule/wsd1” 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 55.

**Note:** If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in Table 55 will be marked as undefined.

**Table 55 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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
State Reporting	<b>Capabilities. StateReportingSupported = true</b>	<b>Capabilities. StateReportingSupported = false</b>

## 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 56.

**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, Maximum Users, Maximum Username Length, Maximum Password Length and DefaultAccessPolicy are defined as not supported

**Table 56 Device Service Capabilities configuration functionality in Device Management  
Service (GetCapabilities)**

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
IPv6	<b>Capabilities.Device.Network . IPv6 = true</b>	<b>Skipped Capabilities.Device.Network. IPv6 or Capabilities.Device.Network. IPv6 = false</b>
Zero Configuration	<b>Capabilities.Device.Network . ZeroConfiguration = true</b>	<b>Skipped Capabilities.Device.Network. ZeroConfiguration or Capabilities.Device.Network. ZeroConfiguration = false</b>
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</b>

Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
		<b>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 Capabilities.Device.System.DiscoveryBye = false</b>
System logging	<b>Capabilities.Device.System.SystemLogging = true</b>	<b>Skipped Capabilities.Device.System.SystemLogging or Capabilities.Device.System.SystemLogging = 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 57.

**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 57 HTTP digest authentication (GetCapabilities)**

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

**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 58.

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

**Table 58 NTP functionality (GetCapabilities)**

Criterion Item	GetNTPResponse	
Feature	Supported	Not Supported
NTP	<b>DUT returns GetNTP Response</b>	<b>DUT returns any SOAP fault</b>

#### 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 59.
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 60.

**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 59 Relay Outputs in Device Management Service (GetCapabilities)**

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

**Table 60 Relay Outputs Mode and Idle State in Device Management Service (GetCapabilities)**

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

### 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 61.

**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 61 Monitoring Events support (GetCapabilities)**

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Monitoring/ProcessorUsage	<b>Contains tns1:Monitoring/ProcessorUsage Event topic</b>	<b>Does not contain tns1:Monitoring/ProcessorUsage Event topic</b>
Monitoring/OperatingTime/Last Reset	<b>Contains tns1:Monitoring/OperatingTime/LastReset Event topic</b>	<b>Does not contain tns1:Monitoring/OperatingTime/LastReset Event topic</b>
Monitoring/OperatingTime/Last Reboot	<b>Contains tns1:Monitoring/OperatingTime/LastReboot Event topic</b>	<b>Does not contain tns1:Monitoring/OperatingTime/LastReboot Event topic</b>
Monitoring/OperatingTime/Last ClockSynchronization	<b>Contains tns1:Monitoring/OperatingTime/LastClockSynchronization Event topic</b>	<b>Does not contain tns1:Monitoring/OperatingTime/LastClockSynchronization Event topic</b>

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Monitoring/Backup/Last	<b>Contains</b> <b>tns:Monitoring/Backup/Last</b> <b>Event topic</b>	<b>Does not contain</b> <b>tns:Monitoring/Backup/Last</b> <b>Event topic</b>
Device/HardwareFailure/TemperatureCritical	<b>Contains</b> <b>tns1:Device/HardwareFailure/</b> <b>TemperatureCritical Event</b> <b>topic</b>	<b>Does not contain</b> <b>tns1:Device/HardwareFailure/T</b> <b>emperatureCritical Event topic</b>
Device/HardwareFailure/FanFailure	<b>Contains</b> <b>tns1:Device/HardwareFailure/</b> <b>FanFailure Event topic</b>	<b>Does not contain</b> <b>tns1:Device/HardwareFailure/F</b> <b>anFailure Event topic</b>
Device/HardwareFailure/PowerSupplyFailure	<b>Contains</b> <b>tns1:Device/HardwareFailure/</b> <b>PowerSupplyFailure Event</b> <b>topic</b>	<b>Does not contain</b> <b>tns1:Device/HardwareFailure/P</b> <b>owerSupplyFailure Event topic</b>
Device/HardwareFailure/StorageFailure	<b>Contains</b> <b>tns1:Device/HardwareFailure/</b> <b>StorageFailure Event topic</b>	<b>Does not contain</b> <b>tns1:Device/HardwareFailure/S</b> <b>torageFailure Event topic</b>

### 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:

ONVIF Client checks features support as defined in Table 62.

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

**Table 62 Media Service – general (GetCapabilities)**

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

### 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 63.

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

**Table 63 Media Service – Video encoding support (GetCapabilities)**

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

### 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 64.

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

**Table 64 Media Service – Audio encoding support (GetCapabilities)**

Criterion Item	GetAudioEncoderConfigurationOptionsResponse	
Feature	Supported	Not Supported
Audio encoding	<b>DUT returns GetAudioEncoder ConfigurationOptions Response</b>	<b>DUT returns any SOAP fault</b>
G.711	<b>DUT returns GetAudioEncoder ConfigurationOptions Response</b>	<b>DUT returns any SOAP fault</b>
G.726	<b>Includes Options.Options.Encoding = “G726”</b>	<b>Does not include Options.Options.Encoding = “G726”</b>
AAC	<b>Includes Options.Options.Encoding = “AAC”</b>	<b>Does not include Options.Options.Encoding = “AAC”</b>

#### Media Service – Real-time streaming

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

#### Media Service – Supported Real-time streaming Setup

Which Real-time streaming Setup 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 65.

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

**Table 65 Media Service – Supported Real-time streaming Setup (GetCapabilities)**

Criterion Item	GetCapabilitiesResponse message	
Feature	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.Streaming Capabilities. RTPMulticast = true</b>	<b>Skipped Capabilities.Media.StreamingC apabilities. RTPMulticast or Capabilities. Media.StreamingCapabilities. RTPMulticast = false</b>

### Media Service - GetSnapshotUri

GetSnapshotUri function support is determined according to the following procedure.

#### Discovery Procedure:

1. ONVIF Client invokes GetProfilesRequest message to retrieve an 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 the 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 66.

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

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

**Table 66 Media Service – GetSnapshotUri (GetCapabilities)**

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

### 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 an Audio outputs list.
2. The DUT returns GetAudioOutputsResponse or SOAP fault. ONVIF Client checks features support as defined in Table 67. Go to the next feature definition.
3. ONVIF Client invokes GetAudioDecoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported Audio codecs for decoding by the DUT.
4. The DUT returns GetAudioDecoderConfigurationOptionsResponse. ONVIF Client checks features support as defined in Table 68.

**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 67 Media Service – Audio outputs support (GetCapabilities)**

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

**Table 68 Media Service – Audio outputs decoding support (GetCapabilities)**

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

### 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

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 to retrieve all supported events.

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.

### 5.6.9 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 69.

**Note:** If the Device IO Service feature is not supported by the DUT, the following feature discovery (Relay outputs support) will be skipped.

**Table 69 Device IO Service (GetCapabilities)**

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

#### 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.

#### Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 70.

**Table 70 Relay outputs support (GetCapabilities)**



Criterion Item	GetCapabilitiesResponse message	
Feature	Supported	Not Supported
Relay Outputs	<b>Capabilities.Extension.DeviceIO.RelayOutputs &gt; 0</b>	<b>Capabilities.Extension.DeviceIO.RelayOutputs = 0</b>

### 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:

- ONVIF Client checks features support as defined in Table 71.

**Note:** If PTZ service is not supported, the following feature discovery (Various functions support and Fixed / Configurable Home Position support) will be skipped.

**Table 71 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>

#### Various functions support in PTZ Service

The number of function support in PTZ Service is determined according to the following procedure.

#### Pre-requisite

- A PTZNode which is used in the function discovery procedure should be provided prior to the execution of the procedure. Otherwise, ONVIF Client will invoke GetNodesRequest message to get the PTZNodes that can be used for the procedure and the first PTZNode present in GetNodesResponse will be used in the procedure. In case PTZNode token is provided, ONVIF Client will use the provided PTZNode token to derive PTZNode via GetNodeRequest.

- Continuous move function is considered as supported if the DUT supports PTZ Service feature.

**Discovery Procedure:**

1. ONVIF Client checks features support as defined in Table 72.

**Note:** If neither GetPTZNodesResponse nor GetPTZNodeResponse is returned correctly by the DUT, all functions support under PTZ Service is marked as undefined.

**Table 72 Various functions support in PTZ Service (GetCapabilities)**

Criterion Item	First PTZNode from GetNodesResponse or PTZNode from GetNodeResponse	
Feature	Supported	Not Supported
Continuous Pan/Tilt movement	<b>SupportedPTZSpaces. ContinuousPanTiltVelocitySpace element is present</b>	<b>SupportedPTZSpaces. ContinuousPanTiltVelocitySpace element is not present</b>
Continuous Zoom movement	<b>SupportedPTZSpaces. ContinuousZoomVelocitySpace element is present</b>	<b>SupportedPTZSpaces. ContinuousZoomVelocitySpace 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. RelativePanTiltTranlationSpace 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 for Pan/Tilt movement	<b>SupportedPTZSpaces. PanTiltSpeedSpace element is present</b>	<b>SupportedPTZSpaces. PanTiltSpeedSpace element is not present</b>
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>

Criterion Item	First PTZNode from GetNodesResponse or PTZNode from GetNodeResponse	
Feature	Supported	Not Supported
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>

### Fixed / Configurable Home Position support

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

#### Pre-requisite

- This procedure assumes that Media Service has already been retrieved via preceding procedure described in Section 5.2.
- A PTZNode which is used in the function discovery procedure should be provided prior to the execution of the procedure. Otherwise, ONVIF Client will invoke GetNodesRequest message to get the PTZNodes that can be used for the procedure and the first PTZNode present in GetNodesResponse will be used in the procedure. In case PTZNode token is provided, ONVIF Client will use the provided PTZNode token to derive PTZNode via GetNodeRequest.

#### Discovery Procedure:

1. ONVIF Client invokes GetConfigurationsRequest message to retrieve PTZNodes list.
2. The DUT returns GetConfigurationsResponse with the list of PTZConfiguration that contains PTZNode. ONVIF Client identifies the first PTZConfiguration which has the corresponding PTZNode with the provided PTZNode.
3. ONVIF Client either selects or creates Media Profile anew along with the identified PTZConfiguration. Refer to Annex A.1 for the details.
4. ONVIF Client invokes SetHomePositionRequest (ProfileToken = selected or newly created profile token) message to check Configurable Home Position is supported by the DUT.
5. ONVIF Client checks features support as defined in Table 73.
6. ONVIF Client restores Media Profiles setting in case it changes some of the Media Profiles configuration.

**Note:** If Media Service is not supported by the DUT Fixed and Configurable Home Position features will be marked as undefined.

**Table 73 Fixed / Configurable Home Position support (GetCapabilities)**

Criterion Item	SetHomePositionResponse	
Feature	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>

#### 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, and Status Position.

#### 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 74.

**Table 74 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 IrCutfilterConfiguration feature support as defined in Table 75.
6. If IrCutfilterConfiguration is supported by the VideoSourceToken1, ONVIF Client skips other steps and assumes that IrCutfilterConfiguration feature is supported by the DUT.
7. If IrCutfilterConfiguration 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 IrCutfilterConfiguration feature is not supported by the DUT.

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

**Table 75 IrCutfilterConfiguration function support in Imaging Service (GetCapabilities)**

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

### 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 76.

**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 76 Imaging Events support (GetCapabilities)**

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Feature
Image Too Blurry	<p><b>Contains</b></p> <p><b>tns1:VideoSource/ImageToo Blurry/ImagingService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageToo Blurry/AnalyticsService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageToo Blurry/RecordingService</b></p> <p><b>Event topic</b></p>	<b>Image Too Blurry</b>
Image Too Dark	<p><b>Contains</b></p> <p><b>tns1:VideoSource/ImageToo Dark/ImagingService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageToo Dark/AnalyticsService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageToo Dark/RecordingService</b></p> <p><b>Event topic</b></p>	<b>Image Too Dark</b>
Image Too Bright	<p><b>Contains</b></p> <p><b>tns1:VideoSource/ImageToo Bright/ImagingService</b></p> <p><b>or</b></p> <p><b>tns1:VideoSource/ImageToo Bright/AnalyticsService</b></p>	<b>Image Too Bright</b>

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Feature
	<p style="text-align: center;">or</p> <p style="text-align: center;"><b>tns1:VideoSource/ImageTooBright/RecordingService</b></p> <p style="text-align: center;">Event topic</p>	
Global Scene Change	<p style="text-align: center;">Contains</p> <p style="text-align: center;"><b>tns1:VideoSource/GlobalSceneChange/ImagingService</b></p> <p style="text-align: center;">or</p> <p style="text-align: center;"><b>tns1:VideoSource/GlobalSceneChange/AnalyticsService</b></p> <p style="text-align: center;">or</p> <p style="text-align: center;"><b>tns1:VideoSource/GlobalSceneChange/RecordingService</b></p> <p style="text-align: center;">Event topic</p>	<b>Global Scene Change</b>
Motion Alarm	<p style="text-align: center;">Contains</p> <p style="text-align: center;"><b>tns1:VideoSource/MotionAlarm</b> event topic</p>	<b>Does not contain</b> <b>tns1:VideoSource/MotionAlarm</b> event topic

### 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 77.

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

**Table 77 Analytics Service (GetCapabilities)**



Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
Analytics Service	<b>Includes Capabilities.Analytics element</b>	<b>Does not include Capabilities.Analytics element</b>
Rule Engine	<b>Analytics.RuleSupport = true</b>	<b>Analytics.RuleSupport = false</b>
Rule Options	-	<b>Not supported</b>

### 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 78.

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

**Table 78 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>

Criterion Item	GetCapabilitiesResponse	
Feature	Supported	Not Supported
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>

#### 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
2. Table 79.

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

**Table 79 Recording Search Service (GetCapabilities)**

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

**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 80 Metadata Recording support (GetCapabilities)**

Criterion Item	GetRecordingInformationResponse	
Feature	Supported	Not Supported
Metadata Search	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 81 PTZ Position search support (GetCapabilities)**

Criterion Item	FindPTZPositionResponse	
Feature	Supported	Not Supported
Metadata Search	<b>DUT returns FindPTZPositionResponse</b>	<b>DUT returns SOAP fault</b>

**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 82.

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

**Table 82 Replay Service (GetCapabilities)**

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

### 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 83.

**Table 83 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.

### 5.7 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

This chapter details out some specific topic which is related to feature discovery procedure described above.

### A.1 Selection / Creation of Media Profile that contains PTZConfiguration

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.

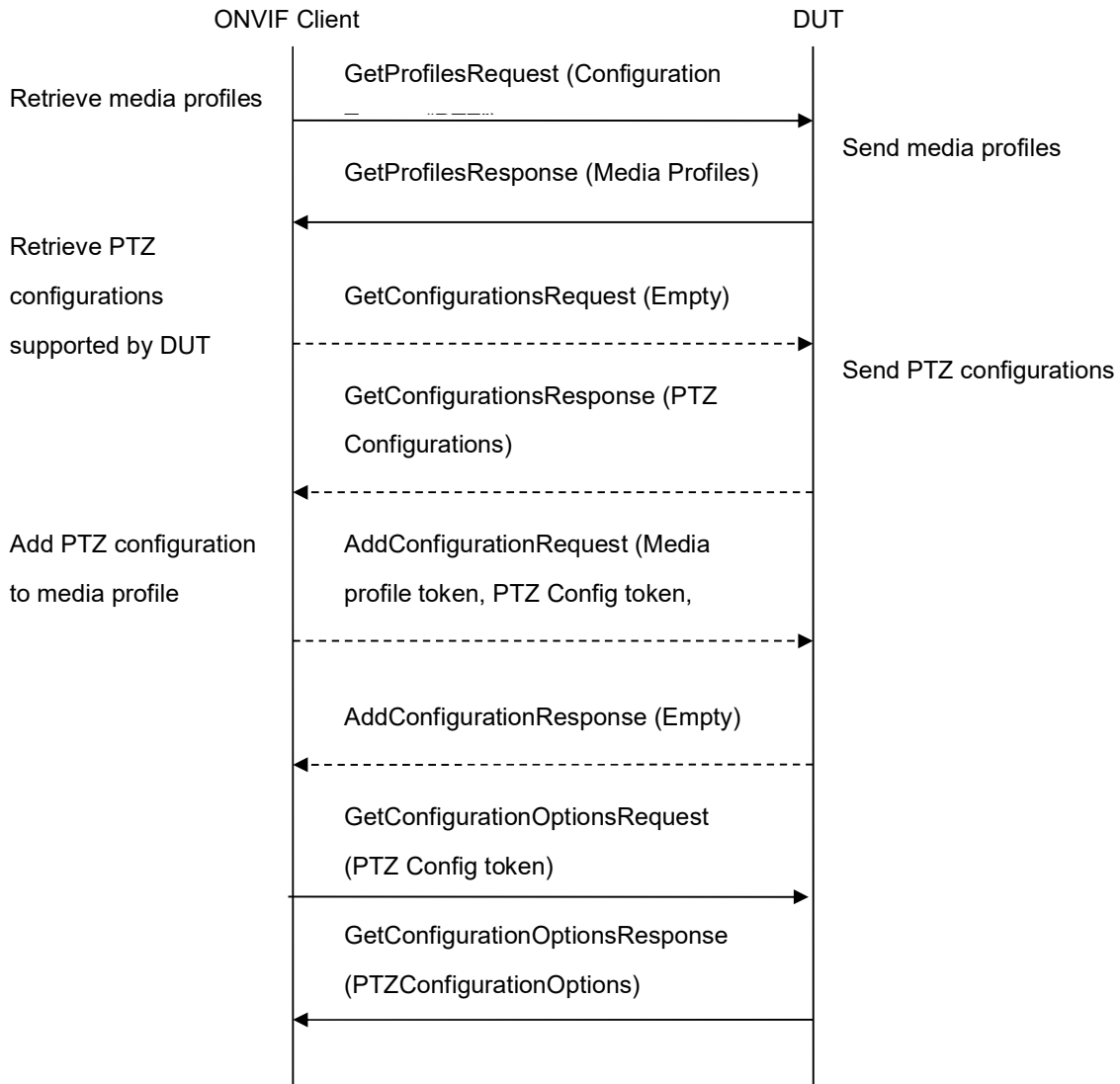
### A.2 Media2 Service - Media Profile Configuration for PTZ Control

For the execution of PTZ control test cases, ONVIF Client has to select and configure the media profile as follows.

1. ONVIF Client invokes GetProfilesRequest with Type="PTZ" as input parameter in Media2 Service address.
2. The DUT sends GetProfilesResponse with list of profiles.
3. ONVIF Client selects a profile with PTZ Configuration is not empty in GetProfilesResponse and returns this profile to the test.
4. If there is no profile with PTZ Configuration in GetProfilesResponse then ONVIF Client selects first profile in GetProfilesResponse, saves this profile in **Profile1** variable and runs the following steps:
  - a. ONVIF Client invokes GetConfigurationsRequest in PTZ Service address.
  - b. The DUT sends GetConfigurationsResponse with the list of PTZ Configurations.
  - c. ONVIF Client selects first PTZ Configuration in the GetConfigurationsResponse, saves this configuration in **PTZConfiguration1** variable and runs the following steps:
  - d. ONVIF Client invokes AddConfigurationRequest with ProfileToken = **Profile1** token, Configuration Type = "PTZ" and Configuration Token = **PTZConfiguration1** token in Media2 Service address.
  - e. The DUT sends AddConfigurationResponse.



- f. ONVIF Client invokes GetConfigurationOptions with ConfigurationToken = **PTZConfiguration1** token.
- g. The DUT sends GetConfigurationOptionsResponse.
- h. ONVIF Client stops the annex and return **Profile1** variable to the test.



### A.3 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.4 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.5 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.