ONVIF™

Feature Discovery Specification

Version 17.12

December 2017

REVISION HISTORY

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

16.06	Mar 15, 2016	The conditions in tables have been updated.
16.07	July 7, 2016	Changed version number, added Media2 Profile Configuration for PTZ Control
16.09	Sept, 2016	TLS1.0, TLS1.1, TLS1.2 features added
16.10	Oct, 2016	Media2 Service features support item was added
17.01	Jan, 2017	Minor changes: typos were fixed
17.01	Jan, 2017	TLS1.0, TLS1.1, TLS1.2 features removed
17.06	Feb, 2017	The following items were updated: Section Media2 Service – general Section PTZ Service support Section PTZ Service support The following item was added: Section Media2 Service support Scope list updated.
17.06	Mar 06, 2017	Tampering Events support in Imaging Service Item was added into section Imaging Service support and into section Imaging Service support. Scope list updated.
17.06	Mar 07, 2017	Analytics feature added into section Media2 Service – general
17.06	Apr 18, 2017	Table Media2 Service features support was updated. Section Analytics Service support was updated. Rule Engine and Rule Options features for Analytics Service were added into 5.5.10 Analytics Service support section and into section Analytics Service support section.
17.06	Apr 27, 2017	Table Credential features support (GetServices) updated with adding pt:ExemptFromAuthentication feature according to #1385 ticket.
17.06	May 03, 2017	TLS1.0, TLS1.1, TLS1.2 features added
17.06	May 22, 2017	Motion Alarm support in Imaging Service Item was added into section Imaging Service support and into section Imaging Service support. Scope list updated.
17.06	Jun 2, 2017	Table Media2 Service features support was updated according to #1382: acceptance of 'All' value in ConfigurationsSupported removed.
17.12	Jul 12, 2017	Serial Ports support in Device IO Service Item was added into section Device IO Service. Scope list updated.
17.12	Jul 13, 2017	Digital Input Options support in Device IO Service Item was added into section Device IO Service. Scope list updated.

17.12	Jul 20, 2017	Section Provisioning Service support was added.
		Section Provisioning Service support was added.
		Scope list updated.
17.12	Jul 24, 2017	JPEG, H.264, and MPEG4 features were added into Recording Control features support (GetServices) and Recording Control features support (GetCapabilities) according to #1377.
		Scope list updated.
17.12	Aug 29, 2017	The document formating were updated.
17.12	Aug 29, 2017	Section Thermal Service support was added.
		Section Thermal Service support was added.
		Scope list updated.
17.12	Oct 03, 2017	Section Auxiliary Commands features support was added.
		Section Auxiliary Commands support was added.
		Scope list updated.
		Section Device Management Service Capabilities was updated.
17.12	Oct 12, 2017	RTP/RTSP/HTTPS feature support was added in Media2 Service – general.
		Scope list updated.
17.12	Oct 16, 2017	Motion Region Detector Rule feature support was added in section Analytics Service support and in 5.6.12 Analytics Service support according to #1185.
		Scope list updated.
17.12	Oct 26, 2017	Focus Control function support was added in section Imaging Service support and in section Imaging Service support according to #1450.
		OSD Types function support was added in section Media2 Service – general according to #1450.
		Scope list updated.
17.12	Nov 22, 2017	Auxiliary Commands Features Support section was removed. The features discovery from this section was moved to section Device Management Service Capabilities.

Table of Contents

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

- 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

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

2 Normative References

- [ONVIF Network Interface Specs] ONVIF Network Interface Specification documents:

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

- [ONVIF Conformance] ONVIF Conformance Process Specification:

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

- [ONVIF Test] ONVIF Device Test Specification:

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

- [ONVIF Base Test] ONVIF Base Device Test Specification:

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

- [ONVIF Media Test] ONVIF Test Specification:

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

- [ONVIF PTZ Test] ONVIF PTZ Test Specification:

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

- [ONVIF Imaging Test] ONVIF Imaging Test Specification:

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

- [ONVIF Recording Control Test] ONVIF Recording Control Test Specification:

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

- [ONVIF Receiver Test] ONVIF Receiver Test Specification:

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

- [ONVIF Replay Control Test] ONVIF Replay Control Test Specification:

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

- [ONVIF Recording Search Test] ONVIF Recording Search Test Specification:

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

- [ONVIF Access Test] ONVIF Access Control Test Specification:

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

- [ONVIF Door Test] ONVIF Door Control Test Specification:

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

- [ONVIF Advanced Security Test] ONVIF Advanced Security Test Specification:

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

- [ONVIF Credential Test] ONVIF Credential Test Specification:

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

- [ONVIF Access Rules Test] ONVIF Access Rules Test Specification:

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

- [ONVIF Schedule Test] ONVIF Schedule Test Specification:

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

3 Informative References

- [ONVIF Test Case Summary] ONVIF Test Case Summary for Profile Conformance

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

- [ONVIF Profile S] ONVIF Profile S Specification

  https://www.onvif.org/profiles/profile-s/

- [ONVIF Profile G] ONVIF Profile G Specification

  https://www.onvif.org/profiles/profile-g/

- [ONVIF Profile C] ONVIF Profile C Specification

  https://www.onvif.org/profiles/profile-c/

- [ONVIF Profile Q] ONVIF Profile Q Specification

  https://www.onvif.org/profiles/profile-q/

- [ONVIF Profile A] ONVIF Profile A Specification

  https://www.onvif.org/profiles/profile-a/

- [ONVIF Profile T] ONVIF Profile T Specification Release Candidate

  https://www.onvif.org/profiles/profile-t/

4 Terms and Definitions

4.1 Definitions

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

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

4.2 Abbreviations

This section describes abbreviations used in this document.

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

5 Discovery Procedure

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

5.1 General Policy

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

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

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

5.2 Feature Support Criteria

Feature support criteria in the specification are defined using the following table format outlined in Table 5.1

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

Criterion Item	Criteria_item_description	
Feature	Supported	Not Supported
Feature_name1	Supported_criteria_feature1	NotSupported_criteria_feature1
Feature_name2	Supported_criteria_feature2	NotSupported_criteria_feature2
...	...	...

Criterion Item	Criteria_item_description	
Feature	**Supported**	**Not Supported**
Feature_nameN	**Supported_criteria_featureN**	**NotSupported_criteria_featureN**

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 5.2.

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

• WS-Discovery\Types\tds:Device

• WS-Discovery\Types\dn:NetworkVideoTransmitter

Table 5.2. Discovery Types

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

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

5.4 Capabilities

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

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest message without any authentication to retrieve the capabilities and check GetCapabilities command support by DUT.

    a.   If DUT returns correct GetCapabilitiesResponse message. Go to step 4

    b.   If DUT returns fault message (any SOAP fault except Sender/NotAuthorized) or it does not return any response. Go to step 4.

    c.   If DUT returns fault message (SOAP fault Sender/NotAuthorized), go to step 2.

    d.   If DUT returns HTTP 401 Unauthorized error, go to step 3.

2. ONVIF Client invokes GetCapabilitiesRequest message with WS-UsernameToken authentication to retrieve the capabilities and check GetCapabilities command support of DUT.

    a.   If DUT returns correct GetCapabilitiesResponse message. Go to step 4.

    b.   If DUT does not return correct GetCapabilitiesResponse message. Go to step 4.

3. ONVIF Client invokes GetCapabilitiesRequest message with HTTP Digest authentication to retrieve the capabilities and check GetCapabilities command support of DUT.

    a.   If DUT returns correct GetCapabilitiesResponse message. Go to step 4.

    b.   If DUT does not return correct GetCapabilitiesResponse message. Go to step 4.

4. ONVIF Client invokes GetServicesRequest message without any authentication to retrieve the capabilities and check GetServices command support by DUT.

   a. If DUT returns GetServicesResponse message. Go to step 7.

   b. If DUT returns fault message (any SOAP fault except Sender/NotAuthorized) or it does not return any response. Go to step 7.

   c. If DUT returns fault message (Sender/NotAuthorized), go to step 5.

   d. If DUT returns HTTP 401 Unauthorized error, go to step 6.

5. ONVIF Client invokes GetServicesRequest message with WS-UsernameToken authentication to retrieve the capabilities and check GetServices command support of DUT.

   a. If DUT returns GetServicesResponse message. Go to step 7.

   b. If DUT does not return GetServicesResponse message. Go to step 7.

6. ONVIF Client invokes GetServicesRequest message with HTTP Digest authentication to retrieve the capabilities and check GetServices command support by DUT.

   a. If DUT returns GetServicesResponse message.

   b. If DUT does not return GetServicesResponse message.

7. ONVIF Client checks features support as defined in Table 5.3.

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

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

Table 5.3. Capabilities

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

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

5.5 Discovery Procedure (GetServices and GetServiceCapabilities)

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

5.5.1 Device Management Service Capabilities

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

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

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message for Device Management without any authentication to retrieve the Device Management Service capabilities of the DUT.

    a.   If the DUT returns correct GetServiceCapabilitiesResponse message, go to step 4.

    b.   If the DUT returns fault message (SOAP fault Sender/NotAuthorized), go to step 2.

    c.   If the DUT returns HTTP 401 Unauthorized error, go to step 3.

2. ONVIF Client invokes GetServiceCapabilitiesRequest message with WS-UsernameToken authentication to retrieve the Device Management Service capabilities of the DUT. Go to the step 4.

3. ONVIF Client invokes GetServiceCapabilitiesRequest message with HTTP Digest authentication to retrieve the Device Management Service capabilities of the DUT. Go to the step 4.

4. ONVIF Client checks features support as defined in Table 5.4.

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

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

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

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

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

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

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

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

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

5.5.2 I/O Functionality in Device Management Service

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

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest to check I/O functionality support.

2. ONVIF Client receives GetCapabilitiesResponse and checks features support as defined in Table 5.5.

3. ONVIF Client invokes GetRelayOutputsRequest message to retrieve a relay output list.

4. The DUT returns GetRelayOutputsResponse with a list of relay outputs.

5. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").

6. ONVIF Client receives SetRelayOutputSettingsResponse.

7. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").

8. ONVIF Client receives SetRelayOutputSettingsResponse.

9. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").

10. ONVIF Client receives SetRelayOutputSettingsResponse.

11. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").

12. ONVIF Client receives SetRelayOutputSettingsResponse.

13. ONVIF Client checks features support as defined in Table 5.6.

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

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

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

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

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

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

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

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

5.5.3 Monitoring Events Support

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

Pre-requisite ONVIF Client and DUT

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in Section 5.5.6.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.7.

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

- Monitoring/ProcessorUsage

- Monitoring/OperatingTime/LastReset

- Monitoring/OperatingTime/LastReboot

- Monitoring/OperatingTime/LastClockSynchronization

- Monitoring/Backup/Last

- Device/HardwareFailure/TemperatureCritical

- Device/HardwareFailure/FanFailure

- Device/HardwareFailure/PowerSupplyFailure

- Device/HardwareFailure/StorageFailure

Table 5.7. Monitoring Events Support (GetServices)

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

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

5.5.4 Media Service – General

Media Service support is defined according to the following procedure.

Pre-requisite

• This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.8.

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

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

Table 5.8. Media Service – General (GetServices)

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

5.5.4.1 Media Service – Video Encoding Support

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

Discovery Procedure:

1. ONVIF Client invokes GetVideoEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported codecs.

2. The DUT returns GetVideoEncoderConfigurationOptionsResponse with a list of supported codecs. ONVIF Client checks features support as defined in Teble 5.9.

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

Table 5.9. Media Service – Video Encoding Support (GetServices)

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

5.5.4.2 Media Service – Audio Encoding Support

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

Discovery Procedure:

1. ONVIF Client invokes GetAudioEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported audio codecs.

2. The DUT returns GetAudioEncoderConfigurationOptionsResponse with a list of supported codecs or SOAP fault. ONVIF Client checks features support as defined in Table 5.10.

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

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

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

5.5.4.3 Media Service – Real-Time Streaming

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Multicast streaming capability support by the DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.11.

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

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

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

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

5.5.4.4 Media Service – Supported Real-Time Streaming Setup

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

Pre-requisite

- This procedure assumes that GetServiceCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.5.4.3.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.12.

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

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

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

5.5.4.5 Media Service - GetSnapshotUri

GetSnapshotUri function support is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetProfilesRequest message to retrieve existing Media Profiles list.

2. The DUT returns GetProfilesResponse with the list of existing Media Profiles.

3. ONVIF Client looks for ready-to-use profile (a profile with VideoSourceConfiguration and VideoEncoderConfiguration in the GetProfilesResponse. If there are no ready-to-use profiles found in the GetProfilesResponse, ONVIF Client marks GetSnapshotUri support by DUT as undefined.

4. ONVIF Client invokes GetSnapshotUriRequest (ProfileToken = found ready-to-use profile token) message to get Snapshot URI.

5. The DUT returns GetSnapshotUriResponse or SOAP fault. ONVIF Client checks features support as defined in Table 5.13.

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

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

Table 5.13. Media Service – GetSnapshotUri (GetServices)

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

5.5.4.6 Media Service – Audio Outputs Support

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

Discovery Procedure:

1. ONVIF Client invokes GetAudioOutputsRequest message to retrieve Audio outputs list.

2. The DUT returns GetAudioOutputsResponse or SOAP fault. ONVIF Client checks features support as defined in Table 5.14. Go to the next feature definition.

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

4. The DUT returns GetAudioDecoderConfigurationOptionsResponse. ONVIF Client checks features support as defined in Table 5.15.

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

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

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

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

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

5.5.5 Media2 Service – General

Media2 Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.16.

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

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

Table 5.16. Media2 Service – General (GetServices)

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

Media2 features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to retrieve Media2 Service capabilities.

2. The DUT returns GetServiceCapabilitiesResponse with Media2 Service capabilities. ONVIF Client checks features support as defined in Table 5.17.

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

Table 5.17. Media2 Service Features Support (GetServices)

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

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

Media2 Service – Video encoding support

Pre-requisite

- DUT supports **Video** feature according to Section 5.5.5.

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

Discovery Procedure:

1. ONVIF Client invokes GetVideoEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported codecs.

2. The DUT returns GetVideoEncoderConfigurationOptionsResponse with a list of supported codecs. ONVIF Client checks features support as defined in Table 5.18.

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

Table 5.18. Media2 Service – Video Encoding Support (GetServices)

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

Media2 Service – Audio encoding support

Pre-requisite

- DUT supports **Audio** feature according to Section 5.5.5.

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

Discovery Procedure:

1. ONVIF Client invokes GetAudioEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported audio codecs.

2. The DUT returns GetAudioEncoderConfigurationOptionsResponse with a list of supported codecs or SOAP fault. ONVIF Client checks features support as defined in Table 5.19.

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

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

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

Media2 Service – Audio decoding support

Pre-requisite

- DUT supports **Audio Output** feature according to Section 5.5.5.

Audio decoding support is determined according to the following procedure.

Discovery Procedure:

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

- The DUT returns GetAudioDecoderConfigurationOptionsResponse. ONVIF Client checks features support as defined in Table 5.20.

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

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

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

Media2 Service – RTP/RTSP/HTTPS support

Pre-requisite

- DUT supports **Media2 Service** according to Section 5.5.5.

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

Discovery Procedure:

- If DUT supports **Advanced Security Service\TLS features support\TLS Server** feature as defined in Table 5.53, then RTP/RTSP/HTTPS feature is assumed as supported.

- Otherwise, ONVIF Client invokes GetNetworkProtocols request message to retrieve network protocols supported by DUT.

- The DUT returns GetNetworkProtocolsResponse. ONVIF Client checks features support as defined in Table 5.21.

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

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

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

Media2 Service – OSD Types support

Pre-requisite

- DUT supports **OSD** according to Table 5.17

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

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Source Configuration by following the procedure mentioned in Annex A.8 with the following input and output parameters

   - out *videoSourceConfList* - Video Source Configurations list

2. For each Video Source Configuration *videoSorceConfig* in *videoSourceConfList*

   2.1.   ONVIF Client invokes **GetOSDOptions** with parameters

   - ConfigurationToken =: *videoSorceConfig*.token

   2.2.   The DUT responds with **GetOSDOptionsResponse** with parameters

   - OSDOptions =: *osdOptions*

3. ONVIF Client checks OSD Types features support as defined in Table 5.22.

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

- Media2\OSD\Types\Text

- Media2\OSD\Types\Image

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

Criterion Item	GetOSDOptionsResponse	
Feature	Supported	Not Supported
Text	OSDOptions\Type = "Text" value > 0	Does not include OSDOptions\Type = "Text" or OSDOptions \Type = "Text" value = 0
Image	OSDOptions\Type = "Image" value > 0	Does not include OSDOptions\Type = "Image"or OSDOptions \Type = "Image" value = 0

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 Table 5.23.

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

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

Table 5.23. Event Service Features (GetServices)

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

5.5.7 Device IO Service

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

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.24.

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

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

Table 5.24. 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**

Device IO features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Device IO capabilities support by DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.25.

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

Table 5.25. Device IO Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	**Supported**	**Not Supported**
Relay Outputs	**Capabilities.RelayOutputs > 0**	**Skipped Capabilities.RelayOutputs or Capabilities.RelayOutputs = 0**
Digital Inputs	**Capabilities.DigitalInputs > 0**	**Skipped Capabilities.DigitalInputs or Capabilities.DigitalInputs = 0**
Serial Ports	**Capabilities.SerialPorts > 0**	**Skipped Capabilities.SerialPorts or Capabilities.SerialPorts = 0**
Digital Input Options	**Capabilities. DigitalInputOptions = true**	**Skipped Capabilities. DigitalInputOptions or Capabilities. DigitalInputOptions = false**

5.5.8 PTZ Service Support

PTZ Service support is defined according to the following procedure.

Pre-requisite This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure: ONVIF Client checks features support as defined in Table 5.26.

Note: If GetServicesResponse contains several services with "http://www.onvif.org/ver20/ptz/wsdl" 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 5.26. PTZ Service (GetServices)

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

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 5.27.

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

Table 5.27. 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	**SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is present**	**SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is not present**
Continuous Zoom movement	**SupportedPTZSpaces. ContinuousZoomVelocity Space element is present**	**SupportedPTZSpaces. ContinuousZoomVelocity Space element is not present**
Continuous movement	**Mandatory**	**-**

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

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 5.28.

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 5.28. Fixed/Configurable Home Position Support (GetServices)

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

Criterion Item	SetHomePositionResponse	
Feature	Supported	Not Supported
Fixed Home Position	DUT returns SOAP fault	DUT returns SetHomePositionResponse

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 5.29.

Note: If the DUT returns no response for GetServiceCapabilitiesRequest, then all features defined in Table 5.29 PTZ Service features support (GetServices) will be marked as undefined.

Table 5.29. PTZ Service Features Support (GetServices)

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

5.5.9 Imaging Service Support

Imaging Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.30.

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 5.30. Imaging Service (GetServices)

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

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 5.31.

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 5.31. IrCutfilter Configuration Function Support in Imaging Service (GetServices)

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

Imaging Events support

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

Pre-requisite

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in Section 5.5.6.

Discovery Procedure:

- ONVIF Client checks features support as defined in Table 5.32.

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

- Image Too Blurry

- Image Too Dark

- Image Too Bright

- Global Scene Change

• Motion Alarm

Table 5.32. Imaging Events Support (GetServices)

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

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
	tns1:VideoSource/ GlobalSceneChange/ RecordingService Event topic	AnalyticsService and tns1:VideoSource/ GlobalSceneChange/ RecordingService Event topic
Motion Alarm	Contains tns1:VideoSource/ MotionAlarm event topic	Does not contain tns1:VideoSource/ MotionAlarm event topic

Focus Control function support in Imaging Service

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

Pre-requisite

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

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Sources by following the procedure mentioned in Annex A.7 with the following input and output parameters

    - out *videoSorceTokenList* - a list of Video Source tokens

2. For each Video Source token *videoSorceToken* in *videoSorceTokenList*

    2.1. ONVIF Client invokes **GetMoveOptions** with parameters

        - VideoSourceToken =: *videoSorceToken*

    2.2. The DUT responds with **env:Receiver/ter:ActionNotSupported/ terNoImagingForSource** SOAP fault or with **GetMoveOptionsResponse** with parameters

        - MoveOptions =: *moveOptions*

    2.3. If *moveOptions* contains **MoveOptions\Absolute** or **MoveOptions\Relative** or **MoveOptions\Continuous**, skip other steps.

3. ONVIF Client checks Focus Control feature support as defined in Table 5.33.

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

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

Table 5.33. Focus Control (GetServices)

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

5.5.10 Analytics Service Support

Analytics Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.34.

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 5.34. Analytics Service (GetServices)

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

5.5.10.1 Analytics Features Support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message for Analytics Service capabilities support by the DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.35.

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

Table 5.35. Analytics Features Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Rule Engine	Capabilities.RuleSupport = true	Skipped Capabilities. RuleSupport or Capabilities.RuleSupport = false
Rule Options	RuleOptionsSupported = true	Skipped Capabilities. RuleOptionsSupported or Capabilities. RuleOptionsSupported = false

5.5.10.2 Motion Region Detector Rule Support

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

Pre-requisite

• DUT supports **Rule Engine** feature according to Table 5.35.

• DUT supports **Media2 Service** feature according to Section 5.5.5.

Discovery Procedure:

1. ONVIF Client retrieves a list of Analytics Configurations by following the procedure mentioned in Annex A.6 with the following input and output parameters

   • out *analyticsConfList* - a list of Analytics configurations

2. For each Analytics Configuration *analyticsConf* in *analyticsConfList* repeat the following steps:

   2.1.   ONVIF Client invokes **GetSupportedRules** request with parameters

      • ConfigurationToken := *analyticsConf*.token

2.2. DUT responds with **GetSupportedRulesResponse** message with parameters

- SupportedRules =: *supportedRules*

2.3. ONVIF Client checks features support as defined in Table 5.36.

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

Table 5.36. Motion Region Detector Rule (GetServices)

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

5.5.11 Recording Control Service Support

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

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.37.

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

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

Table 5.37. Recording Control Service (GetServices)

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

Recording Control features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Dynamic Recording capability support by the DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.38.

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

Table 5.38. Recording Control Features Support (GetServices)

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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
		or Capabilities. MetadataRecording = false
JPEG	Includes Capabilities.Encoding with JPEG	Does not include Capabilities.Encoding with JPEG
H.264	Includes Capabilities.Encoding with H264	Does not include Capabilities.Encoding with H264
MPEG4	Includes Capabilities.Encoding with MPEG4	Does not include Capabilities.Encoding with MPEG4

5.5.12 Recording Search Service Support

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

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1.   ONVIF Client checks features support as defined in Table 5.39.

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

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

Table 5.39. Recording Search Service (GetServices)

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

Metadata search support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Metadata Search capability support by DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.40.

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

Table 5.40. Metadata Search Support (GetServices)

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	**Supported**	**Not Supported**
Metadata Search	**Capabilities.MetadataSearch = true**	**Skipped Capabilities. MetadataSearch or Capabilities. MetadataSearch = false**

PTZ Position search support

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

Pre-requisite

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

Discovery Procedure:

1. ONVIF Client invokes FindPTZPositionRequest message (StartPoint = [start point of recording], Scope.IncludedRecordings = [recording token], SearchFilter = [any], KeepAliveTime) to check PTZ Search support by DUT.

2. If the DUT returns any SOAP fault, ONVIF Client assumes that PTZ Search feature is not supported by DUT. Otherwise, ONVIF Client marks PTZ Search will be defined as supported.

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

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

Table 5.41. PTZ Position Search Support (GetServices)

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

5.5.13 Replay Service Support

Replay Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.42.

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

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

Table 5.42. Replay Service (GetServices)

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

Replay features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Reverse Replay capability support by DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.43.

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

Table 5.43. Replay Control Features Support (GetServices)

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

5.5.14 Receiver Service Support

Receiver Service support is defined according to the following procedure.

Pre-requisite

• This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.44.

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

Table 5.44. Receiver Service (GetServices)

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

5.5.15 Door Control Service Support

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

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.45.

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

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

Table 5.45. Door Control Service (GetServices)

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

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 5.46.

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

- Access Door

- Lock Door

- Unlock Door

- Double Lock Door

- Block Door

- Lock Down Door

- Lock Open Door

- Door Monitor

- Lock Monitor

- Double Lock Monitor

- Alarm

- Tamper

- Fault

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

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

Table 5.46. Door Entity Support (GetServices)

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

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
Fault	Contains at least one Door with Capabilities.Fault = true	Contains no Doors with Capabilities. Fault = true

Door Control Events support

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

Pre-requisite

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in Section 5.5.6.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.47.

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

- Door/State/DoorMode

- Door/State/DoorPhysicalState

- Door/State/LockPhysicalState

- Door/State/DoubleLockPhysicalState

- Door/State/DoorAlarm

- Door/State/DoorTamper

- Door/State/DoorFault

- Configuration/Door/Changed

- Configuration/Door/Removed

Table 5.47. Door Control Events Support (GetServices)

Criterion Item	GetEventPropertiesResponse	
Feature	Supported	Not Supported
Door/State/DoorMode	Contains tns1:Door/State/DoorMode Event topic	Does not contain tns1:Door/State/DoorMode Event topic
Door/State/DoorPhysicalState	Contains tns1:Door/State/ DoorPhysicalState Event topic	Does not contain tns1:Door/State/ DoorPhysicalState Event topic
Door/State/LockPhysicalState	Contains tns1:Door/State/ LockPhysicalState Event topic	Does not contain tns1:Door/State/ LockPhysicalState Event topic
Door/State/DoubleLockPhysicalState	Contains tns1:Door/State/DoubleLockPhysicalState Event topic	Does not contain tns1:Door/State/DoubleLockPhysicalState Event topic

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

5.5.16 Access Control Service Support

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

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.48.

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

Note: If Access Control service is not supported, the following feature discovery (Area Entity support, Access Point Entity support and sub-features support, Access Control Events support) will be skipped.

Table 5.48. Access Control Service (GetServices)

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

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

Area Entity support

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

Discovery Procedure:

1. ONVIF Client gets all AreaInfos from the DUT using Annex A.5 to check Area Entity feature support by DUT.

2. ONVIF Client checks features support as defined in Table 5.49.

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

Table 5.49. Area Entity Support (GetServices)

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

Access Point Entity support and sub-features support

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

Discovery Procedure:

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

2. ONVIF Client gets all AccessPointInfos from the DUT using Annex A.4 to check Access Point Entity sub-feature support by DUT.

3. ONVIF Client checks features support as defined in Table 5.50.

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

• Enable/Disable Access Point feature

- Duress feature

- Access Taken feature

- External Authorization feature

- Anonymous Access feature

Table 5.50. Access Control Entity Support (GetServices)

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

Access Control Events support

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

Pre-requisite

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in Section 5.5.6.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.51.

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

- AccessControl/AccessGranted/Anonymous

- AccessControl/AccessGranted/Credential

- AccessControl/AccessTaken/Anonymous

- AccessControl/AccessTaken/Credential

- AccessControl/AccessNotTaken/Anonymous

- AccessControl/AccessNotTaken/Credential

- AccessControl/Denied/Anonymous

- AccessControl/Denied/Credential

- AccessControl/Denied/CredentialNotFound/Card

- AccessControl/Duress

- AccessControl/Request/Anonymous

- AccessControl/Request/Credential

- AccessControl/Request/Timeout

- AccessPoint/State/Enabled

- Configuration/AccessPoint/Changed

- Configuration/AccessPoint/Removed

- Configuration/Area/Changed

- Configuration/Area/Removed

Table 5.51. Access Control Events Support (GetServices)

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

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

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

5.5.17 Advanced Security Service Support

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

Pre-requisite

• This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.52.

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

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

Table 5.52. Advanced Security Service (GetServices)

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

Advanced Security features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Advanced Security capabilities support by the DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.53.

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in Table 5.53 will be marked as undefined.

Table 5.53. Advanced Security Features Support (GetServices)

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

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

Criterion Item	GetServiceCapabilitiesResponse message	
Feature	Supported	Not Supported
Certification path validation policies	Capabilities. KeystoreCapabilities. MaximumNumberOfCertification PathValidationPolicies > 0	Skipped Capabilities. KeystoreCapabilities. MaximumNumberOfCertification PathValidationPolicies or Capabilities. KeystoreCapabilities. MaximumNumberOfCertification PathValidationPolicies = 0
TLS WWW client auth extended key usage extension	Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuth ExtKeyUsage = true	Skipped Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuth ExtKeyUsage or Capabilities. KeystoreCapabilities. EnforceTLSWebClientAuth ExtKeyUsage = false
TLS Server Support	Capabilities. TLSServerCapabilities. TLSServerSupported list is not empty	Skipped Capabilities. TLSServerCapabilities. TLSServerSupported or empty Capabilities. TLSServerCapabilities. TLSServerSupported list
TLS client authentication	Capabilities. TLSServerCapabilities. TLSClientAuthSupported = true	Skipped Capabilities. TLSServerCapabilities. TLSClientAuthSupported or Capabilities. TLSServerCapabilities. TLSClientAuthSupported = false

5.5.18 Credential Service Support

Credential Service support is defined according to the following procedure.

Pre-requisite

• This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.54.

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

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

Table 5.54. Credential Service (GetServices)

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

Credential features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Credential capabilities support by the DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.55.

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in Table 5.55 will be marked as undefined.

Table 5.55. Credential Features Support (GetServices)

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

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

5.5.19 Access Rules Service Support

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

Pre-requisite

• This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.56.

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

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

Table 5.56. Access Rules Service (GetServices)

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

Access Rules features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Access Rules capabilities support by the DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.57.

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in Table 5.57 will be marked as undefined.

Table 5.57. Access Rules Features Support (GetServices)

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

5.5.20 Schedule Service Support

Schedule Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.58.

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

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

Table 5.58. Schedule Service (GetServices)

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

Schedule features support

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

Discovery Procedure:

1. ONVIF Client invokes GetServiceCapabilitiesRequest message to check Schedule capabilities support by the DUT.

2. The DUT returns GetServiceCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.59.

Note: If the DUT does not return GetServiceCapabilitiesResponse, then all features defined in Table 5.59 will be marked as undefined.

Table 5.59. Schedule Features Support (GetServices)

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

5.5.21 Provisioning Service Support

Provisioning Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.60.

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

Table 5.60. Provisioning Service (GetServices)

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

5.5.22 Thermal Service Support

Thermal Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetServicesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.61.

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

Table 5.61. Thermal Service (GetServices)

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

5.6 Discovery Procedure (GetCapabilities)

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

5.6.1 Device Service Capabilities Configuration Functionality in Device Management Service

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

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.62.

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

- ZeroConfiguration

- IPv6

- IP Filter

- Dynamic DNS

- DHCPv6

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

- BYE Message

- System logging

- HttpFirmwareUpgrade

- TLS1.0

- TLS1.1

- TLS1.2

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

- Maximum Users

- Maximum Username Length

- Maximum Password Length

- DefaultAccessPolicy

- Auxiliary Commands support

Table 5.62. Device Service Capabilities Configuration Functionality in Device Management Service (GetCapabilities)

Criterion Item	GetCapabilitiesResponse message	
Feature	**Supported**	**Not Supported**
IPv6	**Capabilities.Device.Network. IPVersion6 = true**	**Skipped Capabilities.Device.Network. IPVersion6 or Capabilities.Device.Network. IPVersion6 = false**
Zero Configuration	**Capabilities.Device.Network. ZeroConfiguration = true**	**Skipped Capabilities.Device.Network. ZeroConfiguration or Capabilities.Device.Network. ZeroConfiguration = false**

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

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

5.6.2 Security (HTTP Digest Authentication) Support

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

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

Discovery Procedure:

1. ONVIF Client invokes request message for command with security support without any user authentication (no WS-Security and no HTTP digest authentication) to check HTTP digest authentication support.

2. ONVIF Client checks features support as defined in Table 5.63.

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

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

Table 5.63. HTTP Digest Authentication (GetCapabilities)

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

5.6.3 NTP Support

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

Discovery Procedure:

1. ONVIF Client invokes GetNTPRequest.

2. ONVIF Client checks features support as defined in Table 5.64.

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

Table 5.64. NTP Functionality (GetCapabilities)

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

5.6.4 I/O Functionality in Device Management Service

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

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest to check I/O functionality support.

2. ONVIF Client receives GetCapabilitiesResponse and checks features support as defined in Table 5.65.

3. ONVIF Client invokes GetRelayOutputsRequest message to retrieve a relay output list.

4. The DUT returns GetRelayOutputsResponse with a list of relay outputs.

5. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").

6. ONVIF Client receives SetRelayOutputSettingsResponse.

7. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Bistable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").

8. ONVIF Client receives SetRelayOutputSettingsResponse.

9. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "open").

10. ONVIF Client receives SetRelayOutputSettingsResponse.

11. ONVIF Client invokes SetRelayOutputSettingsRequest message (RelayOutputToken = "[first token from GetRelayOutputsResponse]", Properties.Mode = "Monostable", Properties.DelayTime = "PT30S", Properties.IdleState = "closed").

12. ONVIF Client receives SetRelayOutputSettingsResponse.

13. ONVIF Client checks features support as defined in Table 5.66.

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

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

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

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

Table 5.65. Relay Outputs in Device Management Service (GetCapabilities)

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

Table 5.66. Relay Outputs Mode and Idle State in Device Management Service (GetCapabilities)

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

5.6.5 Monitoring Events Support

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

Pre-requisite

- This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in Section 5.6.8.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.67.

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

- Monitoring/ProcessorUsage

- Monitoring/OperatingTime/LastReset

- Monitoring/OperatingTime/LastReboot

- Monitoring/OperatingTime/LastClockSynchronization

- Monitoring/Backup/Last

- Device/HardwareFailure/TemperatureCritical

- Device/HardwareFailure/FanFailure

- Device/HardwareFailure/PowerSupplyFailure

- Device/HardwareFailure/StorageFailure

Table 5.67. Monitoring Events Support (GetCapabilities)

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

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

5.6.6 Media Service – General

Media Service support is defined according to the following procedure.

Pre-requisite

• This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.68.

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

Table 5.68. Media Service – General (GetCapabilities)

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

5.6.6.1 Media Service – Video Encoding Support

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

Discovery Procedure:

1. ONVIF Client invokes GetVideoEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported codecs.

2. The DUT returns GetVideoEncoderConfigurationOptionsResponse with a list of supported codecs. ONVIF Client checks features support as defined in Table 5.69.

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

Table 5.69. Media Service – Video Encoding Support (GetCapabilities)

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

5.6.6.2 Media Service – Audio Encoding Support

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

Discovery Procedure:

1. ONVIF Client invokes GetAudioEncoderConfigurationOptionsRequest (no ConfigurationToken, no ProfileToken) message to retrieve all supported audio codecs.

2. The DUT returns GetAudioEncoderConfigurationOptionsResponse with a list of supported codecs or SOAP fault. ONVIF Client checks features support as defined in Table 5.70.

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

Table 5.70. Media Service – Audio Encoding Support (GetCapabilities)

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

5.6.6.3 Media Service – Real-Time Streaming

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

5.6.6.4 Media Service – Supported Real-Time Streaming Setup

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

Discovery Procedure:

1. ONVIF Client invokes GetCapabilitiesRequest message to check Multicast streaming capability support by the DUT.

2. The DUT returns GetCapabilitiesResponse. ONVIF Client checks features support as defined in Table 5.71.

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

Table 5.71. Media Service – Supported Real-time Streaming Setup (GetCapabilities)

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

5.6.6.5 Media Service - GetSnapshotUri

GetSnapshotUri function support is determined according to the following procedure.

Discovery Procedure:

1. ONVIF Client invokes GetProfilesRequest message to retrieve existing Media Profiles list.

2. The DUT returns GetProfilesResponse with the list of existing Media Profiles.

3. ONVIF Client looks for ready-to-use profile (a profile with VideoSourceConfiguration and VideoEncoderConfiguration in the GetProfilesResponse. If there are no ready-to-use profiles found in the GetProfilesResponse, ONVIF Client marks GetSnapshotUri support by DUT as undefined.

4. ONVIF Client invokes GetSnapshotUriRequest (ProfileToken = found ready-to-use profile token) message to get Snapshot URI.

5. The DUT returns GetSnapshotUriResponse or SOAP fault. ONVIF Client checks features support as defined in Table 5.72.

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

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

Table 5.72. Media Service – GetSnapshotUri (GetCapabilities)

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

5.6.6.6 Media Service – Audio Outputs Support

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

Discovery Procedure:

1. ONVIF Client invokes GetAudioOutputsRequest message to retrieve Audio outputs list.

2. The DUT returns GetAudioOutputsResponse or SOAP fault. ONVIF Client checks features support as defined in Table 5.73. Go to the next feature definition.

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

4. The DUT returns GetAudioDecoderConfigurationOptionsResponse. ONVIF Client checks features support as defined in Table 5.74.

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

Table 5.73. Media Service – Audio Outputs Support (GetCapabilities)

Criterion Item	GetAudioOutputsResponse	
Feature	**Supported**	**Not Supported**
Audio output	**DUT returns GetAudioOutputsResponse and there are at least one AudioOutput on the list**	**DUT returns any SOAP fault or GetAudioOutputsResponse**

Criterion Item	GetAudioOutputsResponse	
Feature	Supported	Not Supported
		and there are no AudioOutput on the list

Table 5.74. Media Service – Audio Outputs Decoding Support (GetCapabilities)

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

5.6.7 Media2 Service Support

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

5.6.8 Event Service

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 5.75.

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

Table 5.75. Device IO Service (GetCapabilities)

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

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 5.76.

Table 5.76. Relay Outputs Support (GetCapabilities)

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

5.6.10 PTZ Service Support

PTZ Service support is defined according to the following procedure.

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.77.

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

Table 5.77. PTZ Service (GetCapabilities)

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

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 5.78.

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

Table 5.78. 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	SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is present	SupportedPTZSpaces. ContinuousPanTiltVelocity Space element is not present
Continuous Zoom movement	SupportedPTZSpaces. ContinuousZoomVelocity Space element is present	SupportedPTZSpaces. ContinuousZoomVelocity Space element is not present
Continuous movement	Mandatory	-
Absolute Pan/Tilt movement	SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is present	SupportedPTZSpaces. AbsolutePanTiltPositionSpace element is not present
Absolute Zoom movement	SupportedPTZSpaces. AbsoluteZoomPositionSpace element is present	SupportedPTZSpaces. AbsoluteZoomPositionSpace element is not present
Absolute movement	Absolute Pan/Tilt movement or Absolute Zoom movement is supported	Absolute Pan/Tilt movement and Absolute Zoom movement is not supported
Relative Pan/Tilt movement	SupportedPTZSpaces. RelativePanTiltTranlation Space element is present	SupportedPTZSpaces. RelativePanTiltTranlationSpace element is not present
Relative Zoom movement	SupportedPTZSpaces. RelativeZoomTranlationSpace element is present	SupportedPTZSpaces. RelativeZoomTranlationSpace element is not present
Relative movement	Relative Pan/Tilt movement or Relative Zoom movement is supported	Relative Pan/Tilt movement and Relative Zoom movement is not supported
Speed configuration	Speed configuration function for Pan/Tilt movement or Speed configuration function for Zoom movement is supported	>Speed configuration function for Pan/Tilt movement and Speed configuration function for Zoom movement is not supported
Speed configuration function for Pan/Tilt movement	SupportedPTZSpaces. PanTiltSpeedSpace element is present	SupportedPTZSpaces. PanTiltSpeedSpace element is not present

Criterion Item	First PTZNode from GetNodesResponse or PTZNode from GetNodeResponse	
Feature	**Supported**	**Not Supported**
Speed configuration function for Zoom movement	**SupportedPTZSpaces. ZoomSpeedSpace element is present**	**SupportedPTZSpaces. ZoomSpeedSpace element is not present**
Preset position	**MaximumNumberOfPresets > 0**	**MaximumNumberOfPresets = 0**
Auxiliary operation	**AuxiliaryCommands element is present**	**AuxiliaryCommands element is not present**
Home Position	**HomeSupported = true**	**HomeSupported = false**

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 5.79.

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 5.79. Fixed/Configurable Home Position Support (GetCapabilities)

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

PTZ Service features support

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

- Get Compatible Configurations

- Move Status

- Status Position

5.6.11 Imaging Service Support

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

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.80.

Table 5.80. Imaging Service (GetCapabilities)

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

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 5.81.

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 5.81. IrCutfilterConfiguration Function Support in Imaging Service (GetCapabilities)

Criterion Item	At least one VideoSourceToken from GetVideoSources	
Feature	Supported	Not Supported
IrCutfilter	At least two IrCutFilterModes elements are present in GetOptionsResponse.	GetOptionsResponse. ImagingOptions does not contain at least two

Criterion Item	At least one VideoSourceToken from GetVideoSources	
Feature	**Supported**	**Not Supported**
	ImagingOptions and one of them equal to OFF	**IrCutFilterModes elements or GetOptionsResponse. ImagingOptions does not contain IrCutFilterModes equal to OFF**

Imaging Events support

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

Pre-requisite

• This procedure assumes that GetEventPropertiesResponse has already been retrieved via preceding procedure described in Section 5.6.8.

Discovery Procedure:

• ONVIF Client checks features support as defined in Table 5.82.

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

• Image Too Blurry

• Image Too Dark

• Image Too Bright

• Global Scene Change

• Motion Alarm

Table 5.82. Imaging Events Support (GetCapabilities)

Criterion Item	GetEventPropertiesResponse	
Feature	**Supported**	**Not Supported**
Image Too Blurry	**Contains tns1:VideoSource/ ImageTooBlurry/ ImagingService or tns1:VideoSource/ ImageTooBlurry/ AnalyticsService or**	**Image Too Blurry**

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

Focus Control function support in Imaging Service

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

Pre-requisite

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

Discovery Procedure:

1. ONVIF Client retrieves a list of Video Sources by following the procedure mentioned in Annex A.7 with the following input and output parameters

   - out *videoSorceTokenList* - a list of Video Source tokens

2. For each Video Source token *videoSorceToken* in *videoSorceTokenList*

   2.1. ONVIF Client invokes **GetMoveOptions** with parameters

   - VideoSourceToken =: *videoSorceToken*

   2.2. The DUT responds with **env:Receiver/ter:ActionNotSupported/ terNoImagingForSource** SOAP fault or with **GetMoveOptionsResponse** with parameters

   - MoveOptions =: *moveOptions*

   2.3. If *moveOptions* contains **MoveOptions\Absolute** or **MoveOptions\Relative** or **MoveOptions\Continuous**, skip other steps.

3. ONVIF Client checks Focus Control feature support as defined in Table 5.83.

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

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

Table 5.83. Focus Control (GetCapabilities)

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

5.6.12 Analytics Service Support

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

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.84.

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

Table 5.84. Analytics Service (GetCapabilities)

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

Motion Region Detector Rule support

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

5.6.13 Recording Control Service Support

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

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.85.

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

Table 5.85. Recording Control Service (GetCapabilities)

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

5.6.14 Recording Search Service Support

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

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.86.

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

Table 5.86. Recording Search Service (GetCapabilities)

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

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-Requisite in the Replay Control Test Specification).

Discovery Procedure:

1. ONVIF Client invokes GetRecordingInformationRequest message for recording to check that this recording contains metadata track with data.

2. The DUT returns GetRecordingInformationResponse. ONVIF Client checks features support as defined in Table 5.87.

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

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

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

Table 5.87. Metadata Recording Support (GetCapabilities)

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

PTZ Position search support

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

Pre-requisite

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

Discovery Procedure:

1. ONVIF Client invokes FindPTZPositionRequest message (StartPoint = [start point of recording], Scope.IncludedRecordings = [recording token], SearchFilter = [any], KeepAliveTime) to check PTZ Search support by the DUT.

2. If the DUT returns any SOAP fault, ONVIF Client assumes that PTZ Search feature is not supported by the DUT. Otherwise, ONVIF Client marks PTZ Search will be defined as supported.

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

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

Table 5.88. PTZ Position Search Support (GetCapabilities)

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

5.6.15 Replay Service Support

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

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.89.

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

Table 5.89. Replay Service (GetCapabilities)

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

5.6.16 Receiver Service Support

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

Pre-requisite

- This procedure assumes that GetCapabilitiesResponse has already been retrieved via preceding procedure described in Section 5.2.

Discovery Procedure:

1. ONVIF Client checks features support as defined in Table 5.90.

Table 5.90. Receiver Service (GetCapabilities)

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

5.6.17 Door Control Service Support

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

5.6.18 Access Control Service Support

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

5.6.19 Advanced Security Service Support

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

5.6.20 Credential Service Support

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

5.6.21 Access Rules Service Support

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

5.6.22 Schedule Service Support

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

5.6.23 Provisioning Service Support

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

5.6.24 Thermal Service Support

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

5.7 Devices Scopes Retrieval via GetDeviceScopes

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

Discovery Procedure:

1. ONVIF Client invokes GetScopesRequest message to retrieve a device scope list.

2. ONVIF Client preserves the device scope list to determine the referenced Profiles.

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

5.8 Devices Information Retrieval via GetDeviceInformation

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

Discovery Procedure:

1. ONVIF Client invokes GetDeviceInformationRequest message to retrieve device information.

2. ONVIF Client preserves the device information.

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

Annex A Helper Procedures and Additional Notes

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

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

Procedure:

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

2. If no media profile contains identified PTZConfiguration, select one media profile whose fixed attribute is set to false and which already adds VideoSourceConfiguration and VideoEncoderConfiguration. Add PTZConfiguration to the media profile by invoking AddPTZConfiguration command.

3. If no media profile is present to meet the above condition, create new media profile with VideoSourceConfiguration and VideoEncoderConfiguration by invoking CreateProfile, AddVideoSourceConfiguration and AddVideoEncoderConfiguration command. After that, add PTZConfiguration to the media profile by invoking AddPTZConfiguration command.

A.2 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.

A.6 Get Analytics Configurations List

Name: HelperGetAnalyticsConfigurationsList

Procedure Purpose: Helper procedure to retrieve Analytics Configurations List.

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

Input: None.

Returns: Analytics Configurations list (*analyticsConfList*).

Procedure:

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

   • ConfigurationToken skipped

   • ProfileToken skipped

2. The DUT responds with **GetAnalyticsConfigurationsResponse** with parameters

   • Configurations list =: *analyticsConfList*

3. If *analyticsConfList* is empty, FAIL the test.

Procedure Result:

PASS –

• DUT passes all assertions.

FAIL –

• DUT did not send **GetAnalyticsConfigurationsResponse** message.

A.7 Get Token List of Video Sources

Name: HelperGetVideoSourceTokensList

Procedure Purpose: Helper procedure to retrieve Video Sources List.

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

Input: None.

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

1. If DUT supports DeviceIO Service:

   1.1. ONVIF Client invokes **GetVideoSources** request for DeviceIO service.

   1.2. The DUT responds with **GetVideoSourcesResponse** with parameters

      • Token list =: *videoSorceTokenList*

   1.3. If *videoSorceTokenList* is empty, FAIL the test.

   1.4. Skip other steps and return *videoSorceTokenList* in test procedure.

2. If DUT supports Media Service:

   2.1. ONVIF Client invokes **GetVideoSources** request for Media service.

   2.2. The DUT responds with **GetVideoSourcesResponse** with parameters

      • VideoSources list =: *videoSorceList*

   2.3. If *videoSorceList* is empty, FAIL the test.

   2.4. For each Video Source *videoSorce* in *videoSorceList*

      2.4.1. Set *videoSorceTokenList* := *videoSorceTokenList* + *videoSorce*.token

   2.5. Skip other steps and return *videoSorceTokenList* in test procedure.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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

A.8 Get Video Source Configurations List

Name: HelperGetVideoSourceConfigurationsList

Procedure Purpose: Helper procedure to retrieve Video Source Configurations List.

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

Input: None.

Returns: Video Source Configurations list (*videoSourceConfList*).

Procedure:

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

   - ConfigurationToken skipped

   - ProfileToken skipped

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

   - Configurations list =: *videoSourceConfList*

3. If *videoSourceConfList* is empty, FAIL the test.

Procedure Result:

PASS –

- DUT passes all assertions.

FAIL –

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