

ONVIF™

Profile G Specification

Version 1.0 Rev1

June 2015

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REVISION HISTORY

| Vers. | Date | Description |
|----------|-----------|---|
| 1.0 | Jun, 2014 | First release version 1.0 |
| 1.0 Rev1 | Jun, 2015 | Clarifications following ONVIF Client Test Specification introduction Updated document style based on recent templates |
| | | |

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1 Scope

This document defines the mandatory and conditional features required by an ONVIF Device and ONVIF Client that support the Profile G.

2 Normative references

This section defines the normative references applicable to this specification.

2.1 Normative References

- **ONVIF Profile Policy**

< <http://www.onvif.org/imwp/download.asp?ContentID=20983> >

- **ONVIF Network Interface Specification Set**

< <http://www.onvif.org/Documents/Specifications.aspx> >

3 Terms and Definitions

This section provides common terms and definitions used in this specification.

3.1 Definitions

| | |
|------------------------|---|
| Profile | See [ONVIF Profile Policy]. |
| ONVIF Device | Networked hardware appliance or software program that exposes one or multiple ONVIF Web Services. |
| ONVIF Client | Networked hardware appliance or software program that uses ONVIF Web Services. |
| Metadata | Streaming data except video and audio, including video analytics results, PTZ position data and other metadata (such as textual data from POS applications). |
| Recording | Represents the currently stored media (if any) and metadata on the NVS from a single data source. A recording comprises one or more tracks. A recording can have more than one track of the same type e.g. two different video tracks recorded in parallel with different settings. |
| Recording Event | Event associated with a Recording, represented by a notification message. |
| Recording Job | Job associated with the transfer of data from a data source to a particular media using a particular configuration. |
| Track | Individual data channel consisting of video, audio, or metadata (This definition is consistent with the definition of track in [RFC 2326]). |

4 Technical Specification Version Requirement

Implementation of ONVIF Network Interface Specification Set, version 2.4 or later is required for conformance to Profile G.

5 Requirement Levels

Each feature in this document has a requirement level for Device and Client that claim conformance to Profile G and contains a Function List that states the functions requirement level for Device and Client that implement that feature.

The requirement levels for features are:

- **Mandatory** = Feature that shall be implemented by an ONVIF device or ONVIF client.
- **Conditional** = Feature that shall be implemented by an ONVIF device or ONVIF client if it supports that functionality in any way, including any proprietary way. Features that are conditional are marked with “if supported” in a profile specification.

The requirement levels for functions are:

- **Mandatory** = Function that shall be implemented by an ONVIF device or ONVIF client.
- **Conditional** = Function that shall be implemented by an ONVIF device or ONVIF client if it supports that functionality.
- **Optional** = Function that may be implemented by an ONVIF device or ONVIF client.

Function Lists use the following abbreviations:

- **M** = Mandatory
- **C** = Conditional
- **O** = Optional

All functions shall be implemented as described in the corresponding [ONVIF Network Interface Specification Set].

6 Overview

An ONVIF device compliant to the Profile G is an ONVIF device that records video data over an IP network or on the device itself. For example, a device compliant to the Profile G may be an IP network camera or an encoder device.

An ONVIF client compliant to the Profile G is an ONVIF client that can configure, request, and control recording of video data over an IP network from an ONVIF device compliant to the Profile G. The Profile G also includes support for receiving audio and metadata stream if the client supports those features.

An ONVIF profile is described by a fixed set of functionalities through a number of services that are provided by the ONVIF standard. A number of services and functionalities are mandatory for each type of ONVIF profile. An ONVIF device and client may support any combination of profiles and other optional services and functionalities.

7 Profile Mandatory Features (normative)

Devices conformant to Profile G shall support the following features.

7.1 Security

- **HTTP Digest**

7.1.1 Device requirements

- **Device shall support HTTP Digest as covered by the Core Specification.**

7.1.2 Client requirements

- **Client shall implement HTTP Digest as covered by the core specification.**

7.1.3 Security Function List for Devices

| Security | | Device MANDATORY | |
|-------------|---------|------------------|--|
| Function | Service | Requirement | |
| HTTP Digest | Core | M | |

7.1.4 Security Function List for Clients

| Security | | Client MANDATORY | |
|-------------|---------|------------------|--|
| Function | Service | Requirement | |
| HTTP Digest | Core | M | |

7.2 Capabilities

- **GetServices** and **GetServiceCapabilities** are used to query a device for its capabilities.

7.2.1 Device requirements

- Device shall support **GetServices** and **GetServiceCapabilities** as detailed in the Core Specification.
- Device shall support providing the WSDL using the **GetWsdUrl** operation.
- Device shall indicate support for at least two pull point subscriptions by returning **MaxPullPoints** set to no less than two in the response to **GetServiceCapabilities** in the event service.

7.2.2 Client requirements

- Client shall determine the available Services using the **GetServices** operation.

7.2.3 Capabilities Function List for Devices

| Capabilities | | Device MANDATORY | |
|------------------------|-------------------|------------------|--|
| Function | Service | Requirement | |
| GetServices | Device | M | |
| GetServiceCapabilities | Device | M | |
| GetWsdUrl | Device | M | |
| GetServiceCapabilities | Recording Control | M | |
| GetServiceCapabilities | Replay | M | |
| GetServiceCapabilities | Search | M | |
| GetServiceCapabilities | Receiver | C | |
| GetServiceCapabilities | Event | M | |
| GetServiceCapabilities | Media | C | |

7.2.4 Capabilities Function List for Clients

| Capabilities | | Client MANDATORY | |
|------------------------|-------------------|------------------|--|
| Function | Service | Requirement | |
| GetServices | Device | M | |
| GetServiceCapabilities | Device | O | |
| GetWsdUrl | Device | O | |
| GetServiceCapabilities | Recording Control | O | |
| GetServiceCapabilities | Replay | O | |
| GetServiceCapabilities | Search | O | |
| GetServiceCapabilities | Receiver | O | |
| GetServiceCapabilities | Event | O | |
| GetServiceCapabilities | Media | O | |

7.3 Discovery

- **Discovery of a device on the network.**
- **Setting of discovery mode.**
- **Listing, adding, modifying and removing of discovery scopes.**

7.3.1 Device requirements

- **WS-Discovery as covered by the core specification.**
- **Discovery configuration and scope operations as covered by the device service.**
- **The specific scope parameter presented in 7.3.5 Scope Parameters**

7.3.2 Client requirements (if supported)

- **Client shall be able to discover a device using WS-Discovery as specified in the core specification.**

7.3.3 Discovery Function List for Devices

| Discovery | | Device MANDATORY | |
|------------------|---------|------------------|--|
| Function | Service | Requirement | |
| WS-Discovery | Core | M | |
| GetDiscoveryMode | Device | M | |
| SetDiscoveryMode | Device | M | |
| GetScopes | Device | M | |
| SetScopes | Device | M | |

| | | |
|--------------|--------|---|
| AddScopes | Device | M |
| RemoveScopes | Device | M |

7.3.4 Discovery Function List for Clients

| Discovery | | Client CONDITIONAL | |
|------------------|---------|---------------------------|--|
| Function | Service | Requirement | |
| WS-Discovery | Core | M* | |
| GetDiscoveryMode | Device | O | |
| SetDiscoveryMode | Device | O | |
| GetScopes | Device | O | |
| SetScopes | Device | O | |
| AddScopes | Device | O | |
| RemoveScopes | Device | O | |

*If device discovery on a network is supported in any way by the client.

7.3.5 Scope Parameters

| Category | Defined values | Description |
|----------|----------------|---|
| Profile | G | The scope indicates if the device is compliant to the Profile G. A device compliant to the Profile G shall include a scope entry with this value in its scope list. |

7.4 Network Configuration

- **Configuration of network settings on the device**

7.4.1 Device requirements

- **Device shall support hostname, DNS, network interface, network protocol and network default gateway operations as covered by the device service.**

7.4.2 Client requirements (if supported)

- **Client shall be able to list and configure the device network interface using the `GetNetworkInterfaces` and `SetNetworkInterfaces` operations.**
- **Client shall be able to list and set the default gateway of the device using the `GetNetworkDefaultGateway` and `SetNetworkDefaultGateway` operations.**

7.4.3 Network Configuration Function List for Devices

| Network Configuration | Device MANDATORY |
|-----------------------|-------------------------|
|-----------------------|-------------------------|

| Function | Service | Requirement |
|--------------------------|---------|-------------|
| GetHostname | Device | M |
| SetHostname | Device | M |
| GetDNS | Device | M |
| SetDNS | Device | M |
| GetNetworkInterfaces | Device | M |
| SetNetworkInterfaces | Device | M |
| GetNetworkProtocols | Device | M |
| SetNetworkProtocols | Device | M |
| GetNetworkDefaultGateway | Device | M |
| SetNetworkDefaultGateway | Device | M |

7.4.4 Network Configuration Function List for Clients

| Network Configuration | | Client CONDITIONAL | |
|--------------------------|--------|--------------------|--|
| Function | Device | Requirement | |
| GetHostname | Device | O | |
| SetHostname | Device | O | |
| GetDNS | Device | O | |
| SetDNS | Device | O | |
| GetNetworkInterfaces | Device | M* | |
| SetNetworkInterfaces | Device | M* | |
| GetNetworkProtocols | Device | O | |
| SetNetworkProtocols | Device | O | |
| GetNetworkDefaultGateway | Device | M* | |
| SetNetworkDefaultGateway | Device | M* | |

* If configuring a device's network configuration is supported in any way by the client only.

7.5 System

- Configuration of system settings.
- Device information.

7.5.1 Device requirements

- Device shall support get information, date and time, factory defaults and reboot operations as covered by the device service.

7.5.2 Client requirements (if supported)

- Client shall be able to get device information such as manufacturer, model and firmware version using the GetDeviceInformation operation.

7.5.3 System Function List for Devices

| System | | Device MANDATORY | |
|----------------------|---------|------------------|--|
| Function | Service | Requirement | |
| GetDeviceInformation | Device | M | |

| | | |
|-------------------------|--------|---|
| GetSystemDateAndTime | Device | M |
| SetSystemDateAndTime | Device | M |
| SetSystemFactoryDefault | Device | M |
| Reboot | Device | M |

7.5.4 System Function List for Clients

| System | | Client CONDITIONAL | |
|-------------------------|---------|--------------------|--|
| Function | Service | Requirement | |
| GetDeviceInformation | Device | M* | |
| GetSystemDateAndTime | Device | O | |
| SetSystemDateAndTime | Device | O | |
| SetSystemFactoryDefault | Device | O | |
| Reboot | Device | O | |

* If device information retrieval is supported in any way by the client.

7.6 User Handling

- Manage users on the device.

7.6.1 Device requirements

- Device shall support user handling operations as covered by the device service.

7.6.2 Client requirements (if supported)

- Client shall be able to create, list, modify and delete users from the device using the CreateUsers, GetUsers, SetUser and DeleteUsers operations.

7.6.3 User Handling Function List for Devices

| User Handling | | Device MANDATORY | |
|---------------|---------|------------------|--|
| Function | Service | Requirement | |
| GetUsers | Device | M | |
| CreateUsers | Device | M | |
| DeleteUsers | Device | M | |
| SetUser | Device | M | |

7.6.4 User Handling Function List for Clients

| User Handling | | Client CONDITIONAL | |
|---------------|---------|--------------------|--|
| Function | Service | Requirement | |
| GetUsers | Device | M* | |
| CreateUsers | Device | M* | |
| DeleteUsers | Device | M* | |

| | | | |
|--|---------|--------|----|
| | SetUser | Device | M* |
|--|---------|--------|----|

* If managing users on the device is supported in any way by the client.

7.7 Event handling

- Retrieving and filtering of events from a device

7.7.1 Profile requirements

- Event and pull point operations as covered by the event service are mandatory for devices and conditional for clients supporting any of the events described in the ONVIF Recording Control Service Specification and the ONVIF Recording Search Service Specification.
- The Base Notification Interface of the WS-BaseNotification as described in the ONVIF Core Specification is not mandatory for Profile G conformance. The Real-time Pull-Point Notification Interface is Mandatory for Profile G conformance.

7.7.2 Device Requirements

- Device shall support pull point operations as described by the Event Service.
- A device shall support at least two concurrent pull point subscriptions.

7.7.3 Client Requirements (if supported)

- Client shall implement event handling with a pull point using the CreatePullPointSubscription and PullMessage operations if any of the specific events described in this specification are supported.

7.7.4 Event Handling Function List for Devices

| Event Handling | | Device MANDATORY | |
|--|---------|------------------|--|
| Function | Service | Requirement | |
| SetSynchronizationPoint | Event | M | |
| CreatePullPointSubscription | Event | M | |
| PullMessages | Event | M | |
| GetEventProperties | Event | M | |
| Renew | Event | M | |
| Unsubscribe | Event | M | |
| TopicFilter parameter of CreatePullPointSubscriptionRequest | Event | M | |
| MessageContentFilter parameter of GetEventPropertiesResponse | Event | M | |

7.7.5 Event Handling Function List for Clients

| Event Handling | | Client CONDITIONAL | |
|----------------|---------|--------------------|--|
| Function | Service | Requirement | |

| | | |
|--|-------|----|
| SetSynchronizationPoint | Event | O |
| CreatePullPointSubscription | Event | M* |
| PullMessages | Event | M* |
| GetEventProperties | Event | O |
| Renew | Event | O |
| Unsubscribe | Event | O |
| TopicFilter parameter of CreatePullPointSubscriptionRequest | Event | O |
| MessageContentFilter parameter of GetEventPropertiesResponse | Event | O |

* If Event Handling is supported in any way by the client.

7.8 Recording Search – Media Search

- **Start a search session, looking for recordings in the scope that matches the search filter defined in the request.**
- **Get the results from a recording search session previously initiated by a recording search. Response shall not include results already returned in previous requests for the same session.**
- **Start a search session, looking for events in the scope that matches the search filter defined in the request.**
- **Get the results from an event previously initiated search session. Response shall not include results already returned in previous requests for the same session.**
- **Terminate a search previously initiated by a recording or event search operation.**
- **The GetRecordingSummary operation returns a summary for all recordings, and can be used to provide the scale of a timeline.**
- **The GetRecordingInformation operation returns information about a single recording (i.e. start time, current status, etc.).**
- **The GetMediaAttributes operation returns the media attributes of a recording at a specific point in time.**

7.8.1 Device Requirements

- **Devices shall support recording search with the FindRecordings, GetRecordingSearchResults and EndSearch operations.**
- **Devices shall support event search with the FindEvents, GetEventSearchResults and EndSearch operations.**
- **Devices shall support retrieval of information related to recordings with the GetRecordingSummary, GetRecordingInformation and GetMediaAttributes operations.**
- **Devices shall deliver notifications for Recording and Track state changes.**
- **Devices shall support XPath dialect expressions as search filters.**

7.8.2 Client Requirements

- Clients shall implement recording search using the FindRecordings, GetRecordingSearchResults and EndSearch operations.
- Clients shall implement event search using the FindEvents, GetEventSearchResults and EndSearch operations.
- Clients shall implement retrieval of information relates to recordings using the GetMediaAttributes operation if any information provided by those operations is provided by the client in any other way.
- Clients shall receive notifications of Recording state changes if recording control is supported
- Clients shall receive notifications of Track state changes if displaying the state of tracks in real time is supported.
- Clients shall implement XPath dialect expressions to be used as search filters if search filtering is supported.

7.8.3 Recording Search – Media Search Function List for Devices

| Recording Search – Media Search | | Device MANDATORY | |
|---------------------------------------|---------|------------------|--|
| Function | Service | Requirement | |
| GetRecordingSummary | Search | M | |
| GetRecordingInformation | Search | M | |
| GetMediaAttributes | Search | M | |
| FindRecordings | Search | M | |
| GetRecordingSearchResults | Search | M | |
| FindEvents | Search | M | |
| GetEventSearchResults | Search | M | |
| EndSearch | Search | M | |
| tns1:RecordingHistory/Recording/State | Event | M | |
| tns1:RecordingHistory/Track/State | Event | M | |
| XPath dialect | Search | M | |

7.8.4 Recording Search – Media Search Function List for Clients

| Recording Search – Media Search | | Client MANDATORY | |
|---------------------------------|---------|------------------|--|
| Function | Service | Requirement | |
| GetRecordingSummary | Search | O | |
| GetRecordingInformation | Search | O | |
| GetMediaAttributes | Search | C | |
| FindRecordings | Search | M | |
| GetRecordingSearchResults | Search | M | |
| FindEvents | Search | M | |
| GetEventSearchResults | Search | M | |

| | | |
|---------------------------------------|--------|---|
| EndSearch | Search | M |
| tns1:RecordingHistory/Recording/State | Event | C |
| tns1:RecordingHistory/Track/State | Event | C |
| XPath dialect | Search | C |

7.9 Replay Control

- **Capability to control replay of stored video, audio and metadata.**

7.9.1 Device requirements

- **Device shall support media replay using the GetReplayUri operation according to the ONVIF Streaming Specification v.2.2.1 or later.**
- **Device shall include RTP header extension as described in 6.2 RTP header extension of ONVIF Streaming Specification.**
- **Device shall support the “onvif-replay” feature tag as described in 6.3 RTSP Feature Tag of the ONVIF Streaming Specification.**
- **Device shall support the RTSP session timeout with the SetReplayConfiguration and GetReplayConfiguration operations.**

7.9.2 Client requirements

- **Client shall implement media replay using the GetReplayUri operation according to the ONVIF Streaming Specification v.2.2.1 or later.**
- **Client shall be able to understand the RTP header extension as described in 6.2 RTP header extension of ONVIF Streaming Specification.**
- **Client shall include the “onvif-replay” feature tag in RTSP requests as described in 6.3 RTSP Feature Tag of the ONVIF Streaming Specification.**
- **Clients shall implement decoding of all ONVIF supported formats (H.264, MPEG-4, M-JPEG).**

7.9.3 Replay Control Function List for Devices

| Replay Control | | Device MANDATORY | |
|------------------------|---------|------------------|--|
| Function | Service | Requirement | |
| GetReplayUri | Replay | M | |
| SetReplayConfiguration | Replay | M | |
| GetReplayConfiguration | Replay | M | |

7.9.4 Replay Control Function List for Clients

| Replay Control | | Client MANDATORY | |
|------------------------|---------|------------------|--|
| Function | Service | Requirement | |
| GetReplayUri | Replay | M | |
| SetReplayConfiguration | Replay | O | |

| | | | |
|--|------------------------|--------|---|
| | GetReplayConfiguration | Replay | O |
|--|------------------------|--------|---|

7.10 Recording Control

- Starting and stopping recording on a device.
- Managing recording jobs on a device.
- **A device shall support at least one of 0 * If provisioning of Recording Jobs is supported in any way by the client.**
- Recording Control – Using an on-board media source (if supported) **or 0 * If configuring video recording configuration for on-board media is supported in any way by the client.**
- Recording Control – Using a Receiver as Source (if supported).

7.10.1 Device Requirements

- Device shall support retrieving a list of recordings with the GetRecordings operation.
- Device shall support retrieving information about a recording with the GetRecordingOptions operation.
- Device shall support managing recording jobs with the GetRecordingJobs, CreateRecordingJobs and DeleteRecordingJob operations.
- Device shall support managing the state of a recording job with the GetRecordingJobState and SetRecordingJobMode operations.
- Device shall support notification of the change in a recording job's state with the RecordingJobStateChange event.
- Device shall support notification of a change in a recording's content with the DataDeletion event if notification of recording removal is a feature of the device.

7.10.2 Client Requirements (if supported)

- Client shall implement retrieving a list of recordings using the GetRecordings operation if provisioning recording jobs is supported.
- Client shall implement managing recording jobs using the GetRecordingJobs, CreateRecordingJobs and DeleteRecordingJob operations if provisioning recording jobs is supported.
- Client shall implement managing the state of a recording job using the GetRecordingJobState and SetRecordingJobMode operations if provisioning recording jobs is supported.
- Client shall receive notification of the change in a recording job's state with the RecordingJobStateChange event if provisioning recording jobs is supported.
- Client shall receive notification of a change in a recording's content with the DataDeletion event if dynamic update of track/recording content is supported (i.e. Timeline display).

7.10.3 Recording Control Function List for Devices

| Recording Control | | Device MANDATORY | |
|--------------------------------------|-----------|------------------|--|
| Function | Service | Requirement | |
| GetRecordings | Recording | M | |
| CreateRecordingJob | Recording | M | |
| DeleteRecordingJob | Recording | M | |
| GetRecordingJobs | Recording | M | |
| GetRecordingJobState | Recording | M | |
| SetRecordingJobMode | Recording | M | |
| GetRecordingOptions | Recording | M | |
| tns1:RecordingConfig/JobState | Event | M | |
| tns1:RecordingConfig/DeleteTrackData | Event | C | |

7.10.4 Recording Control Function List for Clients

| Recording Control | | Client CONDITIONAL | |
|--------------------------------------|-----------|--------------------|--|
| Function | Service | Requirement | |
| GetRecordings | Recording | M* | |
| CreateRecordingJob | Recording | M* | |
| DeleteRecordingJob | Recording | M* | |
| GetRecordingJobs | Recording | M* | |
| GetRecordingJobState | Recording | M* | |
| SetRecordingJobMode | Recording | M* | |
| GetRecordingOptions | Recording | O | |
| tns1:RecordingConfig/JobState | Event | M* | |
| tns1:RecordingConfig/DeleteTrackData | Event | C | |

* If provisioning of Recording Jobs is supported in any way by the client.

7.10.5 Recording Control – Using an on-board media source (if supported)

- A device which supports both the Recording Control Service and VideoSources (Media Configuration) capabilities shall support configuring the video sources.
- A device which supports both the Recording Control Service and AudioSources (Media Configuration) capabilities shall support configuring the audio sources.
- A device which supports both the Recording Control Service and ProfileCapabilities (Media) shall support configuring video sources, video encoders, media profiles and metadata.
- A device which supports both the Recording Control Service and ProfileCapabilities (Media) shall support configuring audio sources and audio encoders if supported.

7.10.5.1 Device Requirements (if supported)

- A device shall support media profile configuration with the **GetProfiles**, **GetProfile CreateProfile** and **DeleteProfile** operations.
- A device shall support video source configuration with **GetVideoSources**, **GetVideoSourceConfigurations**, **GetVideoSourceConfiguration**, **AddVideoSourceConfiguration**, **RemoveVideoSourceConfiguration**, **SetVideoSourceConfiguration**, **GetCompatibleVideoSourceConfigurations** and **GetVideoSourceConfiguration** operations
- A device shall support video encoder configuration with the **GetVideoEncoderConfiguration**, **GetVideoEncoderConfigurations**, **AddVideoEncoderConfiguration**, **RemoveVideoEncoderConfiguration**, **SetVideoEncoderConfiguration**, **GetCompatibleVideoEncoderConfigurations**, **GetVideoEncoderConfigurationOptions** and **GetGuaranteedNumberOfVideoEncoderInstances** operations.

7.10.5.2 Client Requirements (if supported)

- A client shall implement video encoder configuration using the **GetVideoEncoderConfigurations**, **SetVideoEncoderConfiguration** and **GetVideoEncoderConfigurationOptions** operations.

7.10.5.3 Recording Control – Using an on-board media source Function

List for Devices

| Recording Control – Using an on-board media source | | Device CONDITIONAL | |
|--|---------|--------------------|--|
| Function | Service | Requirement | |
| CreateProfile | Media | M* | |
| DeleteProfile | Media | M* | |
| GetProfiles | Media | M* | |
| GetProfile | Media | M* | |
| GetVideoSources | Media | M* | |
| GetVideoSourceConfiguration | Media | M* | |
| GetVideoSourceConfigurations | Media | M* | |
| AddVideoSourceConfiguration | Media | M* | |
| RemoveVideoSourceConfiguration | Media | M* | |
| SetVideoSourceConfiguration | Media | M* | |
| GetCompatibleVideoSourceConfigurations | Media | M* | |
| GetVideoSourceConfigurationOptions | Media | M* | |
| GetVideoEncoderConfiguration | Media | M* | |
| GetVideoEncoderConfigurations | Media | M* | |
| AddVideoEncoderConfiguration | Media | M* | |
| RemoveVideoEncoderConfiguration | Media | M* | |
| SetVideoEncoderConfiguration | Media | M* | |
| GetCompatibleVideoEncoderConfigurations | Media | M* | |
| GetVideoEncoderConfigurationOptions | Media | M* | |

| | | |
|--|-------|-----|
| GetGuaranteedNumberOfVideoEncoderInstances | Media | M* |
| GetMetadataConfiguration | Media | M* |
| GetMetadataConfigurations | Media | M* |
| AddMetadataConfiguration | Media | M* |
| RemoveMetadataConfiguration | Media | M* |
| SetMetadataConfiguration | Media | M* |
| GetCompatibleMetadataConfigurations | Media | M* |
| GetMetadataConfigurationOptions | Media | M* |
| GetAudioSources | Media | M** |
| GetAudioSourceConfiguration | Media | M** |
| GetAudioSourceConfigurations | Media | M** |
| AddAudioSourceConfiguration | Media | M** |
| RemoveAudioSourceConfiguration | Media | M** |
| SetAudioSourceConfiguration | Media | M** |
| GetCompatibleAudioSourceConfigurations | Media | M** |
| GetAudioSourceConfigurationOptions | Media | M** |
| GetAudioEncoderConfiguration | Media | M** |
| GetAudioEncoderConfigurations | Media | M** |
| AddAudioEncoderConfiguration | Media | M** |
| RemoveAudioEncoderConfiguration | Media | M** |
| SetAudioEncoderConfiguration | Media | M** |
| GetCompatibleAudioEncoderConfigurations | Media | M** |
| GetAudioEncoderConfigurationOptions | Media | M** |

*If the device has any on-board media sources

**If the device has any on-board audio sources

7.10.5.4 Recording Control – Using an on-board media source Function

List for Clients

| Recording Control – Using an on-board media source | | Client CONDITIONAL | |
|--|---------|--------------------|--|
| Function | Service | Requirement | |
| CreateProfile | Media | O | |
| DeleteProfile | Media | O | |
| GetProfiles | Media | O | |
| GetProfile | Media | O | |
| GetVideoSources | Media | O | |
| GetVideoSourceConfiguration | Media | O | |
| GetVideoSourceConfigurations | Media | O | |
| AddVideoSourceConfiguration | Media | O | |
| RemoveVideoSourceConfiguration | Media | O | |
| SetVideoSourceConfiguration | Media | O | |
| GetCompatibleVideoSourceConfigurations | Media | O | |

| | | |
|--|-------|----|
| GetVideoSourceConfigurationOptions | Media | O |
| GetVideoEncoderConfiguration | Media | O |
| GetVideoEncoderConfigurations | Media | M* |
| AddVideoEncoderConfiguration | Media | O |
| RemoveVideoEncoderConfiguration | Media | O |
| SetVideoEncoderConfiguration | Media | M* |
| GetCompatibleVideoEncoderConfigurations | Media | O |
| GetVideoEncoderConfigurationOptions | Media | M* |
| GetGuaranteedNumberOfVideoEncoderInstances | Media | O |
| GetMetadataConfiguration | Media | O |
| GetMetadataConfigurations | Media | O |
| AddMetadataConfiguration | Media | O |
| RemoveMetadataConfiguration | Media | O |
| SetMetadataConfiguration | Media | O |
| GetCompatibleMetadataConfigurations | Media | O |
| GetMetadataConfigurationOptions | Media | O |
| GetAudioSources | Media | O |
| GetAudioSourceConfiguration | Media | O |
| GetAudioSourceConfigurations | Media | O |
| AddAudioSourceConfiguration | Media | O |
| RemoveAudioSourceConfiguration | Media | O |
| SetAudioSourceConfiguration | Media | O |
| GetCompatibleAudioSourceConfigurations | Media | O |
| GetAudioSourceConfigurationOptions | Media | O |
| GetAudioEncoderConfiguration | Media | O |
| GetAudioEncoderConfigurations | Media | O |
| AddAudioEncoderConfiguration | Media | O |
| RemoveAudioEncoderConfiguration | Media | O |
| SetAudioEncoderConfiguration | Media | O |
| GetCompatibleAudioEncoderConfigurations | Media | O |
| GetAudioEncoderConfigurationOptions | Media | O |

* If configuring video recording configuration for on-board media is supported in any way by the client.

7.10.6 Recording Control – Using a Receiver as Source (if supported)

- A device which supports both the Recording Control Service and the Receiver Service such as a Networked Video Recorder (NVR) or a hybrid recorder, shall support configuring receivers as the source for recordings.

7.10.6.1 Device Requirements (if supported)

- Device shall support configuring receivers with the GetReceivers, GetReceiver, CreateReceiver, DeleteReceiver, ConfigureReceiver and SetReceiverMode operations.

- Device shall support providing a receiver's state with the **GetReceiverState** operation.
- Device shall support notification of a change to a receiver's state.
- Device shall support notification of a failure of the connection between a receiver and its source.
- Device shall provide receiver(s) as an RTSP client endpoint.

7.10.6.2 Client Requirements (if supported)

- Client shall implement configuring receivers using the **GetReceivers**, **GetReceiver**, **CreateReceiver**, **DeleteReceiver**, **ConfigureReceiver** and **SetReceiverMode** operations if configuring receivers for recording is a feature of the client.
- Client shall implement retrieving a receiver's state using the **GetReceiverState** operation if configuring receivers for recording is a feature of the client.
- Client shall receive notification of a change in a receiver's state if configuring receivers for recording is a feature of the client.
- Client shall receive notification of a failure of the connection between a receiver and its source if configuring receivers for recording is a feature of the client.

7.10.6.3 Recording Control – Using a Receiver as Source Function List for Devices

| Recording Control – Using a Receiver as Source | | Device CONDITIONAL | |
|--|----------|---------------------------|--|
| Function | Service | Requirement | |
| GetReceivers | Receiver | M* | |
| GetReceiver | Receiver | M* | |
| CreateReceiver | Receiver | M* | |
| DeleteReceiver | Receiver | M* | |
| ConfigureReceiver | Receiver | M* | |
| SetReceiverMode | Receiver | M* | |
| GetReceiverState | Receiver | M* | |
| tns1:Receiver/ChangeState | Event | M* | |
| tns1:Receiver/ConnectionFailed | Event | M* | |

***If the device supports the Receiver Service**

7.10.6.4 Recording Control – Using a Receiver as Source Function List for Clients

| Recording Control – Using a Receiver as Source | Client CONDITIONAL |
|--|---------------------------|
|--|---------------------------|

| Function | Service | Requirement |
|--------------------------------|----------|-------------|
| GetReceivers | Receiver | M* |
| GetReceiver | Receiver | M* |
| CreateReceiver | Receiver | M* |
| DeleteReceiver | Receiver | M* |
| ConfigureReceiver | Receiver | M* |
| SetReceiverMode | Receiver | M* |
| GetReceiverState | Receiver | M* |
| tns1:Receiver/ChangeState | Event | M* |
| tns1:Receiver/ConnectionFailed | Event | M* |

* If configuring Recording Control – Using a Receiver as Source is supported in any way by the Client.

7.11 Configuration of Recordings and Recording Source

- **Manage recording configuration on a device (encoder stream, media profile or video channel for the video source).**
- **Manage track configurations in a recording.**
- **Manage recording job configuration.**

7.11.1 Device Requirements

- **Device shall support managing a recording's configuration with the SetRecordingConfiguration and GetRecordingConfiguration operations.**
- **Device shall support getting a track's configuration with the GetTrackConfiguration operation.**
- **Device shall support updating a track's description with the SetTrackConfiguration operation if the device supports dynamic tracks.**
- **Device shall support managing a recording job's configuration with the GetRecordingJobConfiguration and SetRecordingJobConfiguration operations.**
- **Device shall support notification of a change in a recording's configuration, a track's configuration or a recording job's configuration with the ConfigurationChange event if notification of changes to a recording's configuration is a device feature.**

7.11.2 Client Requirements (if supported)

- **Client shall implement managing a recording's configuration with the SetRecordingConfiguration and GetRecordingConfiguration operations if provisioning recordings is supported.**
- **Client shall implement managing a track's configuration with the SetTrackConfiguration and GetTrackConfiguration operations if provisioning recordings and tracks is supported.**

- **Client shall implement managing a recording job's configuration with the GetRecordingJobConfiguration and SetRecordingJobConfiguration operations if provisioning recordings is supported.**

7.11.3 Configuration of Recordings and Recording Source Function List for Devices

| Configuration of Recordings and Recording Source | | Device CONDITIONAL | |
|--|-----------|---------------------------|--|
| Function | Service | Requirement | |
| SetRecordingConfiguration | Recording | M | |
| GetRecordingConfiguration | Recording | M | |
| GetTrackConfiguration | Recording | M | |
| SetTrackConfiguration | Recording | M | |
| SetRecordingJobConfiguration | Recording | M | |
| GetRecordingJobConfiguration | Recording | M | |
| tns1:RecordingConfig/RecordingConfiguration | Event | C | |
| tns1:RecordingConfig/TrackConfiguration | Event | C | |

7.11.4 Configuration of Recordings and Recording Source Function List for Clients

| Configuration of Recordings and Recording Source | | Client CONDITIONAL | |
|--|-----------|---------------------------|--|
| Function | Service | Requirement | |
| SetRecordingConfiguration | Recording | C | |
| GetRecordingConfiguration | Recording | C | |
| GetTrackConfiguration | Recording | C | |
| SetTrackConfiguration | Recording | C | |
| SetRecordingJobConfiguration | Recording | C | |
| GetRecordingJobConfiguration | Recording | C | |
| tns1:RecordingConfig/RecordingConfiguration | Event | O | |
| tns1:RecordingConfig/TrackConfiguration | Event | O | |

8 Profile Conditional Features (normative)

The Profile Conditional Features section list the features that shall be implemented if the device or client supports the feature. For instance a device implementing Recording Control in the native API shall also implement the ONVIF Recording Control interface as specified in the [ONVIF Network Interface Specification Set]. The requirements represent the minimum functionality that must be implemented for conformance.

8.1 Recording Control – Dynamic Recording (if supported)

- **Dynamic configuration of Recordings and Tracks**

8.1.1 Device Requirements (if supported)

- **Device shall support dynamic recordings with the CreateRecording and DeleteRecording operations if dynamic creation and deletion of recordings is a feature of the device.**
- **Device shall support notification of created and deleted recordings if dynamic creation and deletion of recordings is a feature of the device.**
- **Device shall support dynamic tracks with the CreateTrack and DeleteTrack operations if dynamic creation and deletion of tracks is a feature of the device.**
- **Device shall support notification of created and deleted tracks if dynamic creation and deletion of tracks is a feature of the device.**

8.1.2 Client Requirements (if supported)

- **Client shall implement dynamic recordings using the CreateRecording and DeleteRecording operations if provisioning recordings is supported.**
- **Client shall receive notification of created and deleted recordings if provisioning recordings is supported.**
- **Client shall implement dynamic tracks using the CreateTrack and DeleteTrack operations if provisioning tracks is supported.**
- **Client shall receive notification of created and deleted tracks if provisioning tracks is supported.**

8.1.3 Recording Control – Dynamic Recording Function List for Devices

| Recording Control – Dynamic Recording | | Device CONDITIONAL | |
|---------------------------------------|-----------|---------------------------|--|
| Function | Service | Requirement | |
| CreateRecording | Recording | C | |
| DeleteRecording | Recording | C | |
| tns1:RecordingConfig/CreateRecording | Event | C | |
| tns1:RecordingConfig/DeleteRecording | Event | C | |

8.1.4 Recording Control – Dynamic Recording Function List for Clients

| Recording Control – Dynamic Recording | | Client CONDITIONAL | |
|---------------------------------------|-----------|---------------------------|--|
| Function | Service | Requirement | |
| CreateRecording | Recording | C | |
| DeleteRecording | Recording | C | |
| tns1:RecordingConfig/CreateRecording | Event | C | |
| tns1:RecordingConfig/DeleteRecording | Event | C | |

8.1.5 Recording Control – Dynamic Tracks Function List for Devices

| Recording Control – Dynamic Tracks | | Device CONDITIONAL | |
|------------------------------------|-----------|---------------------------|--|
| Function | Service | Requirement | |
| CreateTrack | Recording | C | |
| DeleteTrack | Recording | C | |
| tns1:RecordingConfig/CreateTrack | Event | C | |
| tns1:RecordingConfig/DeleteTrack | Event | C | |

8.1.6 Recording Control – Dynamic Tracks Function List for Clients

| Recording Control – Dynamic Tracks | | Client CONDITIONAL | |
|------------------------------------|-----------|---------------------------|--|
| Function | Service | Requirement | |
| CreateTrack | Recording | C | |
| DeleteTrack | Recording | C | |
| tns1:RecordingConfig/CreateTrack | Event | C | |
| tns1:RecordingConfig/DeleteTrack | Event | C | |