ONVIF®
Profile A Specification

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REVISION HISTORY

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1 Introduction

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.

The profile will use the standard ONVIF framework for discovery, device management, general purpose I/O and events subscription.

1.1 Scope

This document defines the mandatory and conditional features required by either an ONVIF Device or an ONVIF Client that supports Profile A.

1.2 Normative references

- **ONVIF Profile Policy**

  ONVIF Profile Policy version 2.0
  https://www.onvif.org/profiles/

- **ONVIF Network Interface Specification Set**

  ONVIF Network Interface Specification Set version 2.6 or later.
  https://www.onvif.org/profiles/specifications/

- **Core Specification**

  Part of [ONVIF Network Interface Specification Set]

- **Access Rules Service Specification**

  Part of [ONVIF Network Interface Specification Set]

- **Credential Service Specification**

  Part of [ONVIF Network Interface Specification Set]

- **Schedule Service Specification**

  Part of [ONVIF Network Interface Specification Set]

2 Terms and Definitions

2.1 Conversions

The key words “shall”, “shall not”, “should”, “should not”, “may”, “need not”, “can”, “cannot” in this specification are to be interpreted as described in [ISO IEC Directives].

2.2 Definitions

Profile	See [ONVIF Profile Policy]
ONVIF Device	Networked appliance or software program that exposes one or multiple ONVIF Web Services
ONVIF Client	Networked appliance or software program that uses ONVIF Web Services
Function	Web Service call implemented to trigger some specific task or process on a product
Feature	Specified distinguishing characteristic or functionality of a product

3 Technical Specification Version Requirement

Implementation of [ONVIF Network Interface Specification Set] is required for conformance to Profile A.

4 Overview

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. ONVIF devices and clients may support any combination of profiles and other optional services and functionalities.

An ONVIF device compliant to Profile A is an ONVIF device that is a part of a Physical Access Control System (PACS). This device shall provide functionality to retrieve information, status and events and to configure the PACS related entities such as access rules, credentials and schedules.

An ONVIF client compliant to PACS Profile A can provide configurations of access rules, credentials and schedules. The client can also retrieve and receive standardized PACS related events.

5 Requirement Levels

Each feature in this document has a requirement level for Device and Client that claim conformance to Profile A 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 the 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

O = Optional

C = Conditional

All functions shall be implemented as described in corresponding ONVIF service specification document.

6 Profile Mandatory Features (normative)

The Profile Mandatory Features section lists the features that are guaranteed to be supported between a device and client that are both conformant to the profile.

6.1 Security

6.1.1 Authentication

- The device and client shall implement the HTTP digest authentication according to [RFC 2617] as described in [ONVIF Network Interface Specification Set].

6.2 Capabilities

- GetService is mandatory for both clients and devices.

6.2.1 Device Requirements

- Devices shall support Services and Capabilities and WSDL URL operations as detailed in the [Core Specification].
- Devices shall support providing pull points from the Events services.
- Devices shall support at least two pull points subscriptions from the Events services with GetServiceCapabilities operation by returning MaxPullPoints set to at least two.

6.2.2 Client Requirements

- Client shall determine the available Services using the GetServices operation.
- Client may determine specific Capabilities of different Services using GetServiceCapablity operation.
- Client may retrieve the WSDL using the GetWsdlUrl operation.

6.2.3 Capabilities Function List for Devices

Capabilities		**Device MANDATORY**
Function	**Service**	**Requirement**
GetServices	Device	M
GetServiceCapabilities	Device	M
GetWsdlUrl	Device	M
GetServiceCapabilities	Event	M
GetServiceCapabilities	Access Rules	M
GetServiceCapabilities	Credential	M
GetServiceCapabilities	Schedule	M

6.2.4 Capabilities Function List for Clients

Capabilities		**Client MANDATORY**
Function	**Service**	**Requirement**
GetServices	Device	M
GetServiceCapabilities	Device	O
GetWsdlUrl	Device	O
GetServiceCapabilities	Event	O
GetServiceCapabilities	Access Rules	O
GetServiceCapabilities	Credential	O
GetServiceCapabilities	Schedule	O

6.3 Access Profiles

- Listing of Access Profiles configured on the device.
- Functionality to configure access profiles.

6.3.1 Device Requirements

- Device shall be able to provide a list of access profiles configured in the system.
- Device shall provide the ablity to configure access profiles.
- Device shall be able to notify about configuration events.

6.3.2 Client Requirements

- Client shall be able to request a list of configured access profiles from a device.
- Client offering functionality for configuring access profiles shall be able to configure access profiles in the device.
- Client shall be able to subscribe and receive configuration events.

6.3.3 Access Profile Function List for Devices

Access Profiles		Device MANDATORY
Function	Service	Requirement
GetAccessProfiles	Access Rules	M
GetAccessProfileList	Access Rules	M
GetAccessProfileInfo	Access Rules	M
GetAccessProfileInfoList	Access Rules	M
CreateAccessProfile	Access Rules	M
ModifyAccessProfile	Access Rules	M
DeleteAccessProfile	Access Rules	M

6.3.4 Access Profile Function List for Clients

Access Profiles		Client MANDATORY
Function	**Service**	**Requirement**
GetAccessProfiles	Access Rules	C
GetAccessProfileList	Access Rules	M*
GetAccessProfileInfo	Access Rules	O
GetAccessProfileInfoList	Access Rules	M*
CreateAccessProfile	Access Rules	C
ModifyAccessProfile	Access Rules	C
DeleteAccessProfile	Access Rules	C

*Client shall implement either GetAccessProfileList or GetAccessProfileInfoList to get access profiles from the device.

6.3.5 Access Profile Event Topic List for Devices

Access Profile Events		Device MANDATORY
Function	**Service**	**Requirement**
tns1:Configuration/AccessProfile/Changed	Event	M
tns1:Configuration/AccessProfile/Removed	Event	M

6.3.6 Access Profile Event Topic List for Clients

Access Profile Events		Client MANDATORY
Function	**Service**	**Requirement**
tns1:Configuration/AccessProfile/Changed	Event	M
tns1:Configuration/AccessProfile/Removed	Event	M

6.4 Credentials

- Listing of credentials configured on the device
- Functionality to configure credentials

6.4.1 Device Requirements

- Device shall provide the ability to list the credentials configured in the system
- Device shall provide the ability to configure the credentials in the system
- Device shall provide the state of a credential configured in the system
- Device shall provide the ability to enable / disable the credential in the system
- Device shall be able to notify about configuration and state events

6.4.2 Client Requirements

- Client shall be able to request a list of configured credentials from a device
- Client shall be able to configure credentials in the device
- Clients offering functionality for requesting credential state shall be able to request the state of a credential configured in the device
- Clients offering functionality to enable / disable a credential shall be able to enable / disable the credential in the device
- Client shall be able to subscribe and receive configuration and state events

6.4.3 Credential Function List for Devices

Credentials		**Device MANDATORY**
Function	**Service**	**Requirement**
GetCredentials	Credential	M
GetCredentialList	Credential	M
GetCredentialInfo	Credential	M
GetCredentialInfoList	Credential	M
CreateCredential	Credential	M
ModifyCredential	Credential	M
DeleteCredential	Credential	M
GetCredentialAccessProfiles	Credential	M
SetCredentialAccessProfiles	Credential	M
DeleteCredentialAccessProfiles	Credential	M
GetCredentialIdentifiers	Credential	M
SetCredentialIdentifier	Credential	M
DeleteCredentialIdentifier	Credential	M
EnableCredential	Credential	M
DisableCredential	Credential	M
GetCredentialState	Credential	M
GetSupportedFormatTypes	Credential	M

6.4.4 Credential Function List for Clients

Credentials		Client MANDATORY
Function	**Service**	**Requirement**
GetCredentials	Credential	M
GetCredentialList	Credential	M*
GetCredentialInfo	Credential	O
GetCredentialInfoList	Credential	M*
CreateCredential	Credential	M
ModifyCredential	Credential	M
DeleteCredential	Credential	M
GetCredentialAccessProfiles	Credential	O
SetCredentialAccessProfiles	Credential	O
DeleteCredentialAccessProfiles	Credential	O
GetCredentialIdentifiers	Credential	O
SetCredentialIdentifier	Credential	O
DeleteCredentialIdentifier	Credential	O
EnableCredential	Credential	C
DisableCredential	Credential	C
GetCredentialState	Credential	C
GetSupportedFormatTypes	Credential	M

*Client shall implement either GetCredentialList or GetCredentialInfoList to get credentials from the device.

6.4.5 Credential Event Topic List for Devices

Credential Events		Device MANDATORY
Function	**Service**	**Requirement**
tns1:Configuration/Credential/Changed	Event	M
tns1:Configuration/Credential/Removed	Event	M
tns1:Credential/State/Enabled	Event	M

6.4.6 Credential Event Topic List for Clients

Credential Events		Client MANDATORY
Function	**Service**	**Requirement**
tns1:Configuration/Credential/Changed	Event	M
tns1:Configuration/Credential/Removed	Event	M
tns1:Credential/State/Enabled	Event	M

6.5 Schedules

- Listing of schedules configured on the device
- Functionality to configure the schedules

6.5.1 Device Requirements

- Device shall provide the ability to list the schedules configured
- Device shall provide the ability to configure the schedules
- Device with StateReportingSupported capability set to true shall be able to provide the state and notify events of a schedule

6.5.2 Client Requirements

- Client shall be able to request a list of configured schedules
- Client offering functionality to configure schedules shall be able to configure the schedules in the device
- Client with StateReportingSupported capability set to true shall be able to get the state of a schedule in the device

6.5.3 Schedule Function List for Devices

Schedules		**Device MANDATORY**
Function	**Service**	**Requirement**
GetSchedules	Schedule	M
GetScheduleList	Schedule	M
GetScheduleInfo	Schedule	M
GetScheduleInfoList	Schedule	M
CreateSchedule	Schedule	M
ModifySchedule	Schedule	M
DeleteSchedule	Schedule	M
GetScheduleState	Schedule	C

6.5.4 Schedule Function List for Clients

Schedules		**Client MANDATORY**
Function	**Service**	**Requirement**
GetSchedules	Schedule	C
GetScheduleList	Schedule	M*
GetScheduleInfo	Schedule	O
GetScheduleInfoList	Schedule	M*
CreateSchedule	Schedule	C
ModifySchedule	Schedule	C
DeleteSchedule	Schedule	C
GetScheduleState	Schedule	C

*Client shall implement either GetScheduleList or GetScheduleInfoList to get schedules from the device.

6.5.5 Schedule Event Topic List for Devices

Schedule Events		Device MANDATORY
Function	**Service**	**Requirement**
tns1:Configuration/Schedule/Changed	Event	M
tns1:Configuration/ Schedule /Removed	Event	M
tns1:Schedule/State/Active	Event	C

6.5.6 Schedule Event Topic List for Clients

Schedule Events		Client MANDATORY
Function	**Service**	**Requirement**
tns1:Configuration/Schedule/Changed	Event	M
tns1:Configuration/ Schedule /Removed	Event	M
tns1:Schedule/State/Active	Event	C

6.6 Event handling

- Retrieving and filtering of events from a device

6.6.1 General Requirements

- The Real-time Pull-Point Notification Interface described in [ONVIF Network Interface Specification Set] is Mandatory for Profile A conformance. The Base Notification Interface of the WS-BaseNotification as described in [ONVIF Network Interface Specification Set] is not Mandatory for Profile A conformance.

6.6.2 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
- Device shall be able to provide information about what filter dialects and what topics are supported by the device using the GetEventProperties operation
- Device shall provide support for topic filters so that a client can select which events to retrieve using TopicFilter

6.6.3 Client Requirements

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.

6.6.4 Event Handling Function List for Devices

Event Handling		**Device MANDATORY**
Function	**Service**	**Requirement**
SetSynchronizationPoint	Event	M
CreatePullPointSubscription	Event	M
PullMessage	Event	M
Renew	Event	M
Unsubscribe	Event	M
GetEventProperties	Event	M
TopicFilter parameter of CreatePullPointSubscriptionRequest	Event	M

6.6.5 Event Handling Function List for Clients

Event Handling		**Client MANDATORY**
Function	**Service**	**Requirement**
SetSynchronizationPoint	Event	O
CreatePullPointSubscription	Event	M
PullMessage	Event	M
Renew	Event	O
Unsubscribe	Event	O
GetEventProperties	Event	O
TopicFilter parameter of CreatePullPointSubscriptionRequest	Event	O

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6.7 Discovery

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

6.7.1 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 is listed in section 6.7.5

6.7.2 Client requirements

- Client shall be able to discover a device using WS-Discovery as specified in the [Core Specification]

6.7.3 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

6.7.4 Discovery Function List for Clients

Discovery		**Client MANDATORY**
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

6.7.5 Scope Parameters

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

6.8 Network Configuration

- Configuration of network settings on the device

6.8.1 Device requirements

- Hostname, DNS, network interface, network protocol and network default gateway operations as covered by the device service

6.8.2 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.

6.8.3 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

6.8.4 Network Configuration Function List for Clients

Network Configuration		**Client CONDITIONAL**
Function	**Service**	**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

6.9 System

- Configuration of system settings
- Device information
- Synchronization of time using manual methods or NTP servers

6.9.1 Device requirements

- Device shall support get information, date and time, NTP, factory defaults and reboot

operations as covered by the device service

6.9.2 Client requirements (if supported)

- Client shall be able to get device information such as manufacturer, model and firmware version using the GetDeviceInformation operation
- Client shall be able to get the time of the device using the GetSystemDateAndTime operation
- Client shall be able to configure time of the device using either SetNTP or SetSystemDateAndTime operations
- A Client that supports SetNTP shall also support GetNTP

6.9.3 System Function List for Devices

System		**Device MANDATORY**
Function	**Service**	**Requirement**
GetDeviceInformation	Device	M
GetSystemDateAndTime	Device	M
SetSystemDateAndTime	Device	M
GetNTP	Device	M
SetNTP	Device	M
SetSystemFactoryDefault	Device	M
Reboot	Device	M

6.9.4 System Function List for Clients

System		**Client CONDITIONAL**
Function	**Service**	**Requirement**
GetDeviceInformation	Device	M
GetSystemDateAndTime	Device	M
SetSystemDateAndTime	Device	C
GetNTP	Device	C
SetNTP	Device	C
SetSystemFactoryDefault	Device	O
Reboot	Device	O

6.10 User handling

- Manage users on the device

6.10.1 Device requirements

- Device shall support user handling operations as covered by the device service
- Device shall signal the maximum number of users supported via its capabilities

6.10.2 Client requirements

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

6.10.3 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

6.10.4 User Handling Function List for Clients

User Handling		**Client MANDATORY**
Function	**Service**	**Requirement**
GetUsers	Device	M
CreateUsers	Device	M
DeleteUsers	Device	M
SetUser	Device	M

7 Profile Conditional Features (normative)

The Profile Conditional Features section list the features that shall be implemented if the device or client supports the feature. The requirements represent the minimum required to be implemented for conformance.

7.1 Reset Antipassback Violations (if supported)

- To reset the antipassback violation of a credential

7.1.1 Device requirements (if supported)

- Device shall provide the ability to reset the antipassback violation of a credential
- Device shall be able to notify about antipassback violation

7.1.2 Client requirements (if supported)

- Client shall be able to reset the antipassback violation of a credential
- Client shall be able to subscribe and receive antipassback violation

7.1.3 Reset Antipassback Violation Function List for Devices

Reset Antipassback Violation		**Device CONDITIONAL**
Function	**Service**	**Requirement**
ResetAntipassbackViolation	Credential	M

7.1.4 Reset Antipassback Violation Function List for Clients

Reset Antipassback Violation		**Client CONDITIONAL**
Function	**Service**	**Requirement**
ResetAntipassbackViolation	Credential	M

7.1.5 Reset Antipassback Violation Event Topic List for Devices

Reset Antipassback Violation Events		**Device CONDITIONAL**
Function	**Service**	**Requirement**
tns1:Credential/State/ApbViolation	Event	M

7.1.6 Reset Antipassback Violation Event Topic List for Clients

Reset Antipassback Violation Events		Client CONDITIONAL
Function	**Service**	**Requirement**
tns1:Credential/State/ApbViolation	Event	M

7.2 Special Days Schedule (if supported)

- Listing of special day schedules configured on the device
- Functionality to configure special day schedules

7.2.1 Device requirements (if supported)

- Device shall provide the ability to list the special day schedules
- Device shall provide the ability to configure the special day schedules
- Device shall be able to notify about configuration events

7.2.2 Client requirements (if supported)

- Client shall be able to request a list of special day schedules from a device
- Client shall be able to configure the special day schedules to the device
- Client shall be able to subscribe and receive configuration events

7.2.3 Special Days Schedule Function List for Devices

Special Day Schedules		Device CONDITIONAL
Function	**Service**	**Requirement**
GetSpecialDayGroups	Schedule	M
GetSpecialDayGroupList	Schedule	M
GetSpecialDayGroupInfo	Schedule	M
GetSpecialDayGroupInfoList	Schedule	M
CreateSpecialDayGroup	Schedule	M
ModifySpecialDayGroup	Schedule	M
DeleteSpecialDayGroup	Schedule	M

7.2.4 Special Days Schedule Function List for Clients

Special Day Schedules		Client CONDITIONAL
Function	**Service**	**Requirement**
GetSpecialDayGroups	Schedule	M
GetSpecialDayGroupList	Schedule	M*
GetSpecialDayGroupInfo	Schedule	O
GetSpecialDayGroupInfoList	Schedule	M*
CreateSpecialDayGroup	Schedule	M
ModifySpecialDayGroup	Schedule	M
DeleteSpecialDayGroup	Schedule	M

*Client shall implement either GetSpecialDayGroupList or GetSpecialDayGroupInfoList to get special days from the device.

7.2.5 Special Days Schedule Event Topic List for Devices

Special Day Schedule Events		Device CONDITIONAL
Function	**Service**	**Requirement**
tns1:Configuration/SpecialDays/Changed	Event	M
tns1:Configuration/SpecialDays/Removed	Event	M

7.2.6 Special Days Schedule Event Topic List for Clients

Special Day Schedule Events		Client CONDITIONAL
Function	**Service**	**Requirement**
tns1:Configuration/SpecialDays/Changed	Event	M
tns1:Configuration/SpecialDays/Removed	Event	M

7.3 Persistent notification storage (if supported)

- Storing events on device.

7.3.1 Device requirements (if supported)

- Device that supports persistent notification storage shall provide the possibility to send stored events to the client.

7.3.2 Client requirements (if supported)

- Client that supports persistent notification storage shall provide the possibility to seek stored events in a device.

7.3.3 Stored Events Function List for Devices

Stored Events		Device CONDITIONAL
Function	**Service**	**Requirement**
Seek	Event	M

7.3.4 Stored Events Function List for Clients

Stored Events		Client CONDITIONAL
Function	**Service**	**Requirement**
Seek	Event	M

7.4 IP Address Filtering (if supported)

- Configuration of IP Address Filters.

7.4.1 Device requirements (if supported)

- Device shall return Device->Network->IPFilter capability set to “true” in GetCapabilities response.
- IP Address Filter operations as covered by the device service.

7.4.2 Client requirements (if supported)

- Client shall be able to configure, add and remove IP Address Filters on device using GetIPAddressFilter, SetIPAddressFilter, AddIPAddressFilter and RemoveIPAddressFilter operations.

7.4.3 IP Address Filtering Function List for Devices

IP Address Filtering		Device CONDITIONAL
Function	**Service**	**Requirement**
GetIPAddressFilter	Device	M
SetIPAddressFilter	Device	M
AddIPAddressFilter	Device	M
RemoveIPAddressFilter	Device	M

7.4.4 IP Address Filtering Function List for Clients

IP Address Filtering		Client CONDITIONAL
Function	**Service**	**Requirement**
GetIPAddressFilter	Device	M
SetIPAddressFilter	Device	M
AddIPAddressFilter	Device	M
RemoveIPAddressFilter	Device	M