

# ONVIF Profile C Specification

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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 C.

## 2 Normative references

ONVIF Conformance Process Specification

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

ONVIF Profile Policy

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

ONVIF Specifications

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

ONVIF Access Control Specification

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

ONVIF Door Control Specification

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

## 3 Terms and Definitions

<b>Profile</b>	See ONVIF Profile Policy.
<b>ONVIF Device</b>	Computer appliance or software program that exposes one or multiple ONVIF Web Services
<b>ONVIF Client</b>	Computer appliance or software program that uses ONVIF Webservices.
<b>PACS</b>	Physical Access Control System
<b>Function</b>	The web service call implemented to trigger some specific task or process on a device.
<b>Feature</b>	A specified distinguishing characteristic or functionality of a device.
<b>tns1:</b>	A prefix for the ONVIF topic namespace “ <a href="http://www.onvif.org/ver10/topics">http://www.onvif.org/ver10/topics</a> ”. This prefix is not part of the standard and an implementation can use any prefix. See Core Specification description of Namespaces for details.

## 4 Overview

An ONVIF device compliant to the Profile C is an ONVIF device that is a part of a Physical Access Control System (PACS). This device can provide information regarding the PACS related entities included in the system as well as the status of these entities, including standardized PACS related events. This device also provides basic door control.

An ONVIF client compliant to the PACS Profile C is an ONVIF client that can get information regarding the PACS related entities and do basic door control. It can also retrieve and receive standardized PACS related events.

We also acknowledge the possibility of “hybrid” devices/applications that can implement both client and device functionality – the device functionality can expose an aggregated view and control of other ONVIF or proprietary devices as well as the events from them.

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.

## 5 Technical Specification Version Requirement

Implementation of ONVIF Core Specification v2.3 or later is required for conformance to Profile C.

## 6 Requirement Levels

Each feature in this document has a requirement level for Device and Client that claim conformance to the Profile C 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 a device or client. All features listed in this specification are mandatory unless they are marked with “if supported”
- Conditional = Feature that shall be implemented by devices and clients if they support that functionality in any way, including any proprietary way. Features that are conditional are marked with “if supported” in this specification.

The requirement levels for functions are:

- Mandatory = Function that shall be implemented by a device or client.
- Optional = Function that may be implemented by a device or client
- Conditional = Function that shall be implemented by devices and clients if they support that functionality.

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.

## 7 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:

### 7.1 Security

- HTTP Digest is mandatory for user authentication of both devices and clients.

### 7.2 Capabilities

- GetServices is mandatory for both clients and devices.

#### 7.2.1 Device Requirements

- Devices shall support Services and Capabilities and WSDL URL operations as detailed in the Core Specification.
- Device shall support pull points from the Event Service.
- Device shall support providing the WSDL using the GetWsdUrl operation.
- Device shall support at least two pull point subscriptions from the Event Service with the GetServiceCapabilities operation by returning MaxPullPoints set to at least two.

#### 7.2.2 Client Requirements

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

#### 7.2.3 Function list for Capabilities

Function	Service	Device	Client
GetServices	Device	M	M
GetServiceCapabilities	Device	M	O
GetWsdUrl	Device	M	O
GetServiceCapabilities	Event	M	O
GetServiceCapabilities	Access control	M	O
GetServiceCapabilities	Door Control	M	O

## 7.3 System component information – Access points

- Listing of access points configured on the device.

### 7.3.1 Device requirements

- Device shall be able to provide a list of access points in the system.

### 7.3.2 Client requirements

- Client shall be able to request a list of access points from a device.

### 7.3.3 Function List for System component information – Access points

Function	Service	Device	Client
GetAccessPointInfoList	AccessControl	M	M
GetAccessPointInfo	AccessControl	M	O

## 7.4 System component information – Doors

- Listing of doors configured on the device.

### 7.4.1 Device requirements

- Device shall be able to provide a list of doors in the system.

### 7.4.2 Client requirements

- Client shall be able to request a list of doors from a device.

### 7.4.3 Function List for System component information – Doors

Function	Service	Device	Client
GetDoorInfoList	Door Control	M	M
GetDoorInfo	Door Control	M	O

## 7.5 System component information – Areas

- Listing of areas configured on the device.

### 7.5.1 Device requirements

- Device shall be able to provide a list of areas in the system.

### 7.5.2 Client requirements

- Clients shall be able to request a list of areas in the system.

### 7.5.3 Function List for System component information – Areas

Function	Service	Device	Client
GetAreaInfoList	AccessControl	M	M
GetAreaInfo	AccessControl	M	O

## 7.6 Access point state

- Information about the state of access points (enabled/disabled).

### 7.6.1 Device requirements

- Device shall be able to provide the state of each access point in the system.
- Device shall be able to send notifications about the state of each access point in the system.

### 7.6.2 Client requirements

- Client shall be able to request the state of each access point in the system
- Client shall be able to retrieve and receive the state of access points through the use of events.

### 7.6.3 Function List for Access point state

Function	Service	Device	Client
GetAccessPointState	AccessControl	M	M

### 7.6.4 Event Topic List for Access point state

Event topic	Service	Device	Client
tns1:AccessPoint/State/Enabled	Access Control	M	M

## 7.7 Door state

- Information about door state (locked, unlocked, etc.)

### 7.7.1 Device requirements

- Device shall be able to provide information about door state of each door in the system.
- Device shall be able to send notifications about state changes for each door in the system.

### 7.7.2 Client requirements

- Client shall be able to request the state of each door in the system.
- Client shall be able to retrieve and receive the state of doors through the use of events.

### 7.7.3 Function List for Door state

Function	Service	Device	Client
GetDoorState	Door Control	M	M

### 7.7.4 Event Topic List for Door state

Event topic	Service	Device	Client
tns1:Door/State/DoorMode	Door Control	M	M
tns1:Door/State/DoorPhysicalState	Door Control	C	M
tns1:Door/State/LockPhysicalState	Door Control	C	M
tns1:Door/State/DoubleLockPhysicalState	Door Control	C	M
tns1:Door/State/DoorAlarm	Door Control	C	M
tns1:Door/State/DoorTamper	Door Control	C	M
tns1:Door/State/DoorFault	Door Control	C	M



## 7.8 Door control

- Door control (access door, lock door, unlock door, etc.).

### 7.8.1 Device requirements

- Device shall provide the ability to control doors.

### 7.8.2 Client requirements

- Client shall be able to control doors.

### 7.8.3 Function List for Door control

Function	Service	Device	Client
AccessDoor	Door Control	M	M
LockDoor	Door Control	M	M
UnlockDoor	Door Control	M	M
DoubleLockDoor	Door Control	C	C
BlockDoor	Door Control	C	C
LockDownDoor	Door Control	C	C
LockDownReleaseDoor	Door Control	C	C
LockOpenDoor	Door Control	C	C
LockOpenReleaseDoor	Door Control	C	C

## 7.9 Access control decisions

- Information about access decisions (access granted, access denied, etc.).

### 7.9.1 Device requirements

- Device shall provide information about access decisions.

### 7.9.2 Client requirements

- Client shall be able to retrieve and receive events about access decisions and subsequent actions.

### 7.9.3 Event Topic List for Access control decisions

Event topic	Service	Device	Client
tns1:AccessControl/AccessGranted/Credential	Access Control	M	M
tns1:AccessControl/AccessGranted/Anonymous	Access Control	C	M
tns1:AccessControl/Denied/Credential	Access Control	M	M
tns1:AccessControl/Denied/Anonymous	Access Control	C	M
tns1:AccessControl/Denied/CredentialNotFound/Card	Access Control	C	M
tns1:AccessControl/AccessTaken/Credential	Access Control	C	M
tns1:AccessControl/AccessTaken/Anonymous	Access Control	C	M

tns1:AccessControl/AccessNotTaken/Credential	Access Control	C	M
tns1:AccessControl/AccessNotTaken/Anonymous	Access Control	C	M

## 7.10 Event handling

- Retrieving and filtering of events from a device.

### 7.10.1 Device Requirements

- Device shall support pull point operations as described by the Event Service.
- A device shall support at least 2 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.

### 7.10.2 Client Requirements

- Client shall implement event handling with a pull point using the SetSynchronizationPoint, CreatePullPointSubscription and PullMessage operations.

### 7.10.3 Function List for Event Handling

Function	Service	Device	Client
SetSynchronizationPoint	Event	M	M
CreatePullPointSubscription	Event	M	M
PullMessage	Event	M	M
Renew	Event	M	M
Unsubscribe	Event	M	M
GetEventProperties	Event	M	O
TopicFilter	Event	M	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. The requirements represents the minimum required to be implemented for conformance.

### 8.1 Configuration change notification – Access points (if supported)

- Information about configuration changes for access points.

#### 8.1.1 Device requirements (if supported)

- Device shall provide event notifications when configuration data for an access point is changed or an access point has been added.
- Device shall provide event notifications when an access point is removed.

#### 8.1.2 Client requirements

- Client shall be able to receive event notifications when configuration data for an access point is changed or an access point has been added.
- Client shall be able to retrieve and receive events when an access point has been removed.

#### 8.1.3 Event Topic List for Configuration change notification – Access points

Event topic	Service	Device	Client
tns1:Configuration/AccessPoint/Changed	Access Control	M*	M
tns1:Configuration/AccessPoint/Removed	Access Control	M*	M

\*If the device supports access point configuration change in any way.

### 8.2 Configuration change notification – Doors (if supported)

- Information about configuration changes for doors.

#### 8.2.1 Device requirements (if supported)

- Device shall provide event notifications when configuration data for a door is changed or a door has been added.
- Device shall provide event notifications when a door is removed.

#### 8.2.2 Client requirements

- Client shall be able to retrieve and receive event notifications when configuration data for a door is changed or a door has been added.
- Client shall be able to retrieve and receive event notifications when a door has been removed.

### 8.2.3 Event Topic List for Configuration change notification – Doors

Event topic	Service	Device	Client
tns1:Configuration/Door/Changed	Door Control	M*	M
tns1:Configuration/Door/Removed	Door Control	M*	M

\*If the device supports door configuration change in any way.

## 8.3 Configuration change notification – Areas (if supported)

- Information about configuration changes for areas.

### 8.3.1 Device requirements (if supported)

- Device shall provide event notifications when configuration data for an area is changed or an area has been added.
- Device shall provide event notifications when an area is removed.

### 8.3.2 Client requirements

- Client shall be able to retrieve and receive event notifications when configuration data for an area is changed or an area has been added.
- Client shall be able to retrieve and receive event notifications when an area has been removed.

### 8.3.3 Event Topic List for Configuration change notification – Areas

Event topic	Service	Device	Client
tns1:Configuration/Area/Changed	Access Control	M*	M
tns1:Configuration/Area/Removed	Access Control	M*	M

\*If the device supports area configuration change in any way.

## 8.4 Access point control (if supported)

- Enabling and disabling of access points.

### 8.4.1 Device requirements (if supported)

- Device shall provide the ability to enable/disable access points.

### 8.4.2 Client requirements (if supported)

- Client shall be able to enable/disable access points.

### 8.4.3 Function List for Access point control

Function	Service	Device	Client
EnableAccessPoint	AccessControl	M*	M*
DisableAccessPoint	AccessControl	M*	M*

\*If access point control is supported in any way.

## 8.5 External authorization (if supported)

- Authorization decision made in client instead of device.

### 8.5.1 Device requirements (if supported)

- Device shall provide the ability to request authorization decisions from a client.
- Device shall provide the ability to receive authorization decisions from a client.
- Device shall provide notification about access decisions related to external authorization.

### 8.5.2 Client requirements (if supported)

- Client shall be able to receive authorization request from a device
- Client shall be able to send authorization decisions to a device
- Client shall be able to retrieve and receive notification about access decisions related to external authorization.

### 8.5.3 Function List for External authorization

Function	Service	Device	Client
ExternalAuthorization	AccessControl	M*	M*

### 8.5.4 Event Topic List for External authorization

Event topic	Service	Device	Client
tns1:AccessControl/Request/Credential	AccessControl	M*	M
tns1:AccessControl/Request/Anonymous	AccessControl	C**	M
tns1:AccessControl/Request/Timeout	AccessControl	M*	M

\* If external authorization is supported in any way.

\*\* If external authorization and anonymous access is supported.

## 8.6 Duress (if supported)

- Information about a duress situation detected at an access point.

### 8.6.1 Device requirements (if supported)

- Device shall provide event notifications when a duress situation is detected.

### 8.6.2 Client requirements

- Client shall be able to retrieve and receive event notifications when a duress situation is detected.

### 8.6.3 Event Topic List for Duress

Event topic	Service	Device	Client
tns1:AccessControl/Duress	AccessControl	M*	M

\*If duress is supported in any way.

## 8.7 Persistent notification storage (if supported)

- Storing events on device.

### 8.7.1 Device requirements (if supported)

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

### 8.7.2 Client requirements (if supported)

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

### 8.7.3 Function List for stored events

Function	Service	Device	Client
Seek	Event	M*	M*

\*If stored events are supported in any way.

## 8.8 IP Address Filtering (if supported)

- Configuration of IP Address Filters.

### 8.8.1 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.

### 8.8.2 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.

### 8.8.3 Function List for IP Address Filtering (if supported)

Function	Service	Device	Client
GetIPAddressFilter	Device	M*	M*
SetIPAddressFilter	Device	M*	M*
AddIPAddressFilter	Device	M*	M*
RemoveIPAddressFilter	Device	M*	M*

\*If IP filtering is supported in any way.

## 9 Device Mandatory Features (normative)

The Device Mandatory Features section list the features that are mandatory for the device and conditional for Client in order to be conformant.

### 9.1 Discovery

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

#### 9.1.1 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 9.1.4 Scope Parameters

#### 9.1.2 Client requirements (if supported)

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

#### 9.1.3 Function List for Discovery

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

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

#### 9.1.4 Scope Parameters

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

## 9.2 Network Configuration

- Configuration of network settings on the device

### 9.2.1 Device requirements

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

### 9.2.2 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.

### 9.2.3 Function List for Network Configuration

Function	Service	Device	Client
GetHostname	Device	M	O
SetHostname	Device	M	O
GetDNS	Device	M	O
SetDNS	Device	M	O
GetNetworkInterfaces	Device	M	M*
SetNetworkInterfaces	Device	M	M*
GetNetworkProtocols	Device	M	O
SetNetworkProtocols	Device	M	O
GetNetworkDefaultGateway	Device	M	M*
SetNetworkDefaultGateway	Device	M	M*

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

## 9.3 System

- Configuration of system settings.
- Device information.

### 9.3.1 Device requirements

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

### 9.3.2 Client requirements (if supported)

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

### 9.3.3 Function List for System

Function	Service	Device	Client
GetDeviceInformation	Device	M	M*
GetSystemDateAndTime	Device	M	O
SetSystemDateAndTime	Device	M	O



SetSystemFactoryDefault	Device	M	O
Reboot	Device	M	O

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

## 9.4 User handling

- Manage users on the device.

### 9.4.1 Device requirements

- User handling operations as covered by the device service.

### 9.4.2 Client requirements (if supported)

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

### 9.4.3 Function List for User handling

Function	Service	Device	Client
GetUsers	Device	M	M*
CreateUsers	Device	M	M*
DeleteUsers	Device	M	M*
SetUser	Device	M	M*

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