

ONVIF Overview

Driving the Future of Interoperability

June 2025

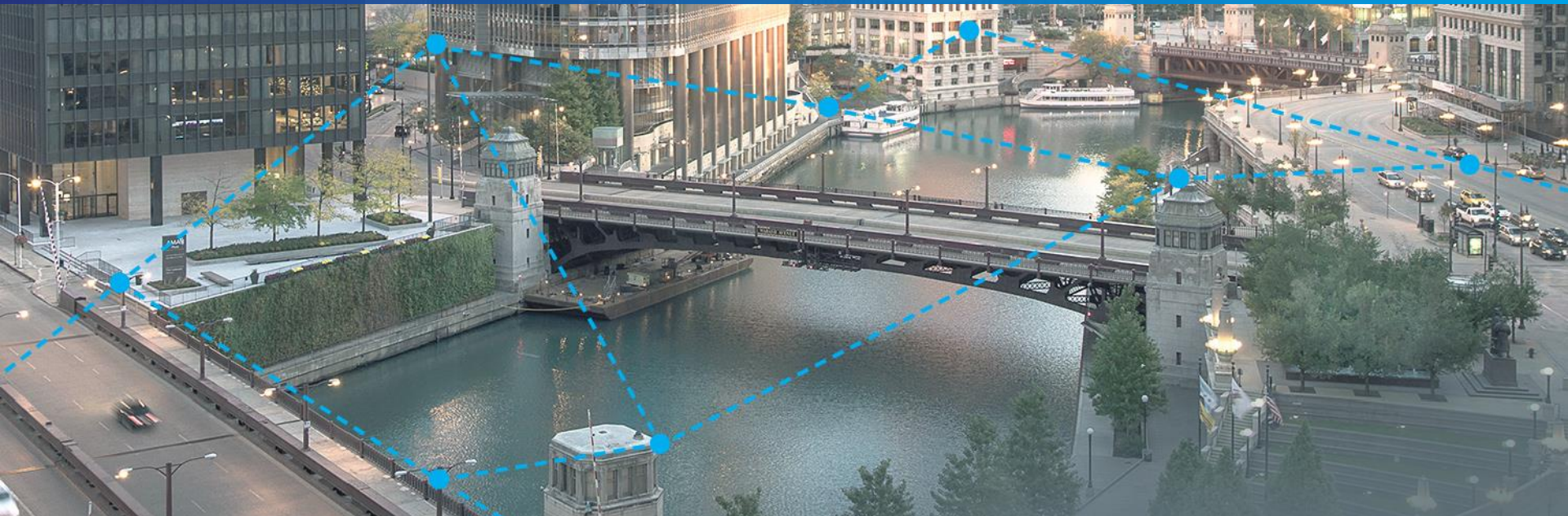


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About ONVIF

Mission & Vision

MISSION

To provide and promote standardized interfaces for effective interoperability of IP-based physical security products and services.

VISION

All security systems share one interface.

Cornerstones of ONVIF

- Standardization of communication between IP-based physical security products and services
- Interoperability regardless of brand and deployment (on-premise, cloud, hybrid solutions)
- Openness to all companies and organizations



ONVIF Work

Development of network interface specifications

Work with international standards organizations, such as IEC

Develop, package, and market functionalities in the form of ONVIF profiles and add-ons

Develop test tools for validating product conformance

ONVIF Development: 2008 to Present

2008

- Founded by Axis, Bosch & Sony
- Core Specification 1.0

2009

- First conformant product
- 100 members
- 200 profile conformant products

2010

- Scope extended to access control
- Core Specification 2.0

2011

- EN 50132-5-2 web services-based IP video protocols
- [Profile S](#) released

2013

- IEC 62676-2-3, web services-based IP video transmission protocols
- [Profile C](#) released

2014/2015

- 2014: [Profile G](#) released
- 2015: Client test tool released

2016

- IEC 60839-11-31 web services-based IP protocols for electronic access control systems

2017

- [Profile A](#) released

2018

- 10,000 profile conformant products
- [Profile T](#) released

2019

- [Profile T](#) related IEC 62676-2-31 and IEC 62676-2-32 published
- Export File Format recommended by NIST IR 8161r1

2020

- Specification development on GitHub

2021

- 20,000 profile conformant products
- [Profile D](#) released
- [Profile M](#) released

2022

- IEC 62676-2-33 video transmission protocols for cloud uplink and remote management system access

2023

- 25,000 profile conformant products

2024

- [TLS Configuration Add-on](#) released
- 30,000 profile conformant products

Committee Structure: Roles & Responsibilities

Steering Committee

- ONVIF strategy, goals, rules and organization
- Finance and budget
- Membership authorization

Technical Committee

- Creation and maintenance of specifications
- Technical roadmap
- Approval of technical projects

Technical Services Committee

- Creation and maintenance of profiles and add-ons
- Test specification and test tool development
- Developers' Plugfest organization

Communication Committee

- ONVIF promotion
- Internal & external communication
- Communication tools

Committee Working Groups

ONVIF strives to effectively transfer customer needs into solutions through working groups.



Member Privileges

* Parent member and its Registered Affiliates share participation and voting privilege.

Privileges	Membership Level				
	Full	Contributing	Registered Affiliate	User	Observer
Vote for ONVIF Steering Committee member*	X		Full only		
Participate as an ONVIF Steering Committee member*	X		Full only		
Add Registered Affiliates to membership	X	X			
Vote for committee member (except Steering Committee)*	X	X	X		
Chair a committee*	X	X	X		
Participate in Technical, Technical Services and Communication Committees*	X	X	X		
Vote in Committees & Working Groups*	X	X	X		
Participate in ONVIF working groups	X	X	X		
Early access to specifications and related material	X	X	X		
Meeting participation (annual meeting and others)	X	X	X		
Access to specification drafts	X	X	X	X	
Ability to self-declare conformant products	X	X	X	X	
Use of ONVIF and profile logos for conformant products	X	X	X	X	
Use of conformance tools	X	X	X	X	X
Use of ONVIF Member Tools	X	X	X	X	X
Use of ONVIF Member Portal	X	X	X	X	X
Use of ONVIF Member logo	X	X	X	X	X
Annual Membership Fee	\$20,000 USD	\$10,000 USD	\$5,000 USD	\$4,000 USD	\$500 USD

ONVIF Members

- Membership levels:
 - Full members
 - Contributing members
 - Registered affiliates
 - User members
 - Observer members

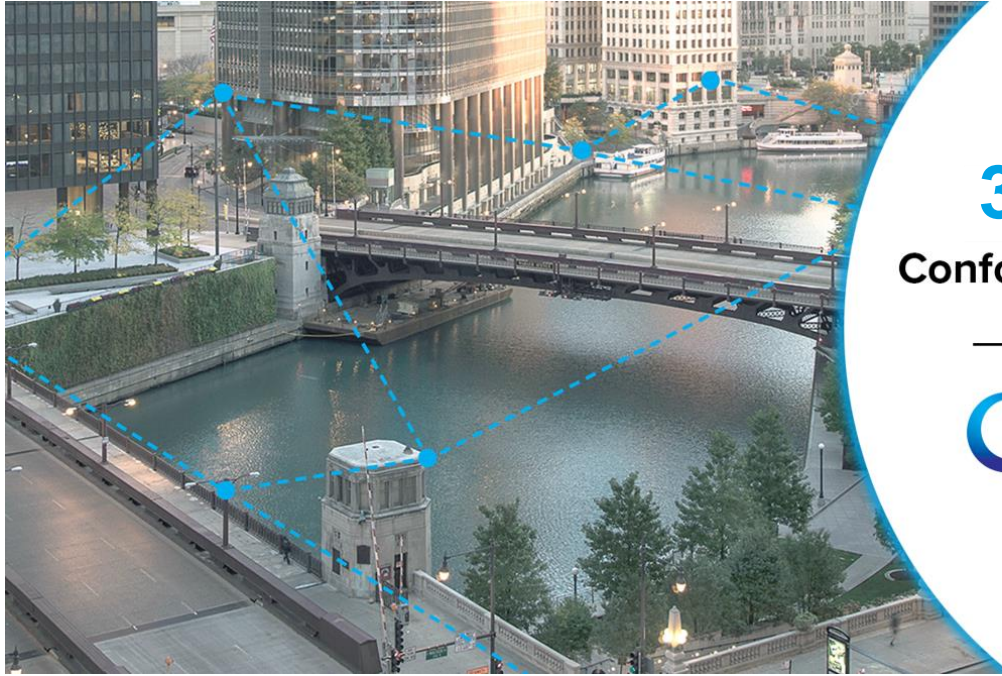
ONVIF membership comprises leading companies in the global IP-based physical security products market, including frontrunners in camera, video management system and access control development.

ONVIF Full Members



ONVIF Profile Conformant Products

ONVIF Profile A, C, G, M, S and T conformant products.



32,000+
Conformant Products



Interoperability

Why is there a need for interoperability?

- Technological acceleration drives system complexity
- Multi-vendor environment = Interface variety
- Surveillance systems are often long-term investments that require future proofing



Benefits of Interoperability

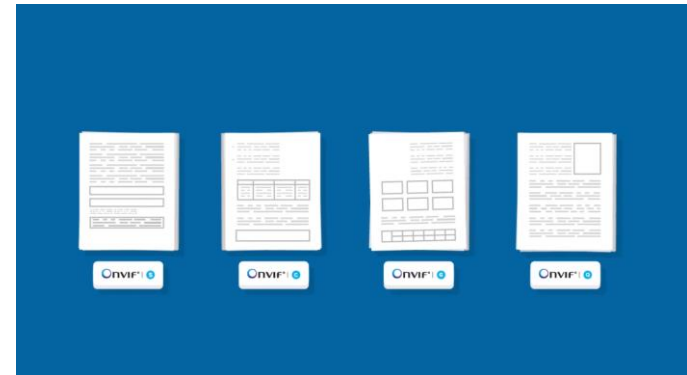
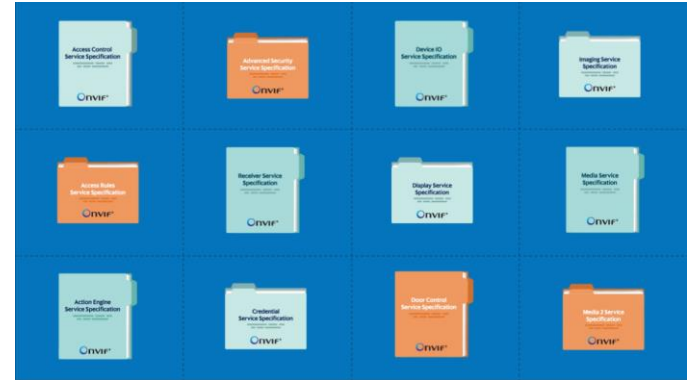
- Cost-efficient system setup
- Integrated system allows for more efficient workflows
- Flexibility in component selection; freedom of choice in design
- Secure future system development



ONVIF Profile

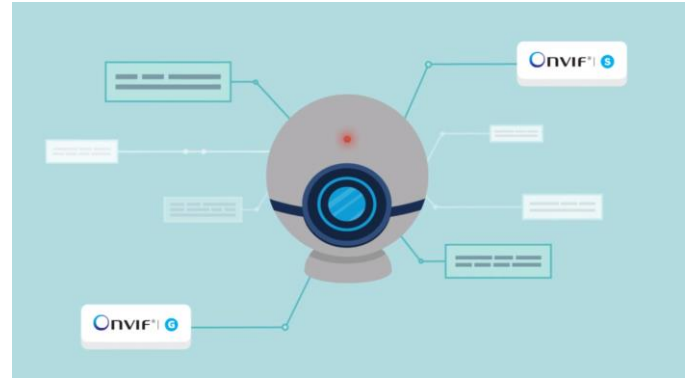
ONVIF Profile

- ONVIF has a wealth of specifications
- These specifications are grouped into profiles
- A profile has a fixed set of features
- Profiles make it easier to identify compatible products



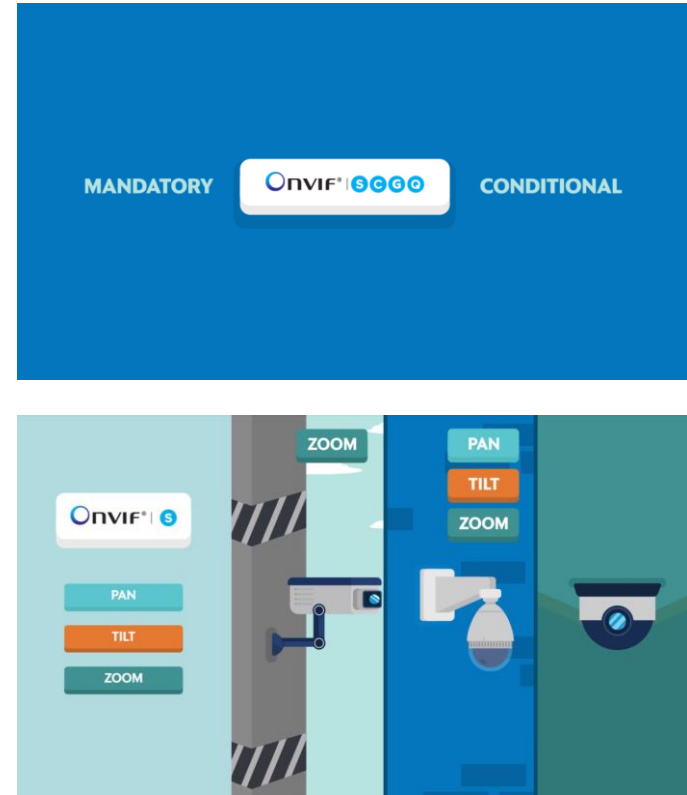
ONVIF Profile

- A profile specifies a set of features that must be supported by both client and device
- Conformant products must support at least one profile...
- ...and can support more than one...



ONVIF Profile

- Features in a profile are either mandatory or conditional
- Mandatory features must be supported
- Conditional features only supported if relevant
 - i.e., PTZ functions can only be supported in PTZ cameras



ONVIF Profiles at a Glance



For broader access
control configuration



For door control and
event management



For access control
peripherals



For edge storage
and retrieval



Metadata and events for
analytics applications



For basic video
streaming



For advanced
video streaming

ONVIF Profile A

For access control configuration

- Granting/revoking credentials
- Creating schedules
- Assigning access rules



Device (e.g., door/access controller) **Client** (e.g., management software)



ONVIF Profile C

For door control and event management

- Site information and configuration
- Event and alarm management
- Door access control



Device (e.g., access controller)

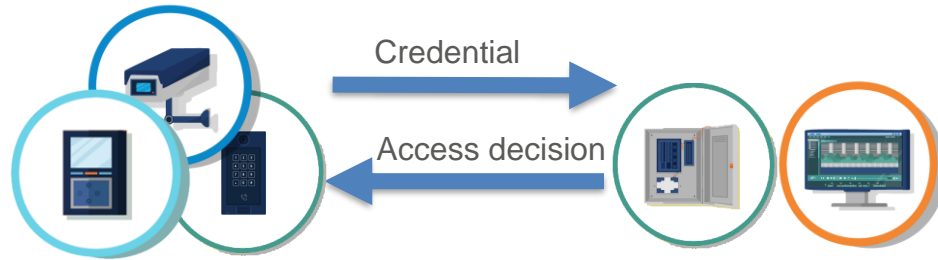
Client (e.g., management software)



ONVIF Profile D

For access control peripherals

- Transfers input credential identifiers and requests for access
- Performs actions such as locking/unlocking



Input device (e.g., token readers, biometric readers, cameras, keypads, sensors) and **output device** (e.g., locks, displays, LEDS)

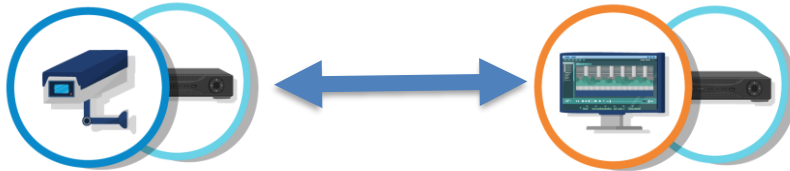
Client (e.g., access control unit, management system)



ONVIF Profile G

For edge storage and retrieval

- Configure, request and control recording
- Receive audio and metadata stream



Device (e.g., camera,
video encoder, NVR)

Client (e.g., VMS, NVR)

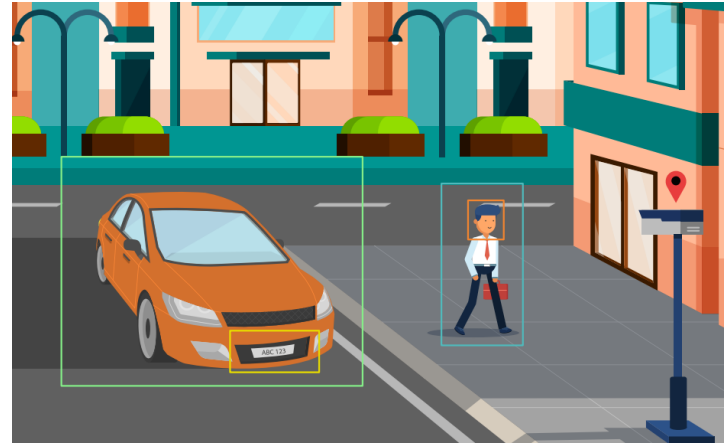
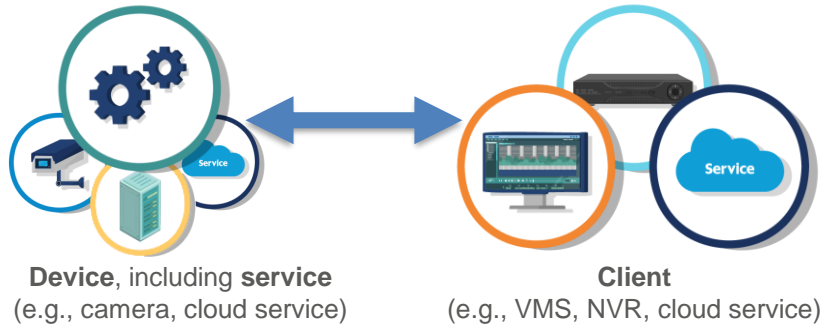


ONVIF Profile M

Metadata and events for analytics applications

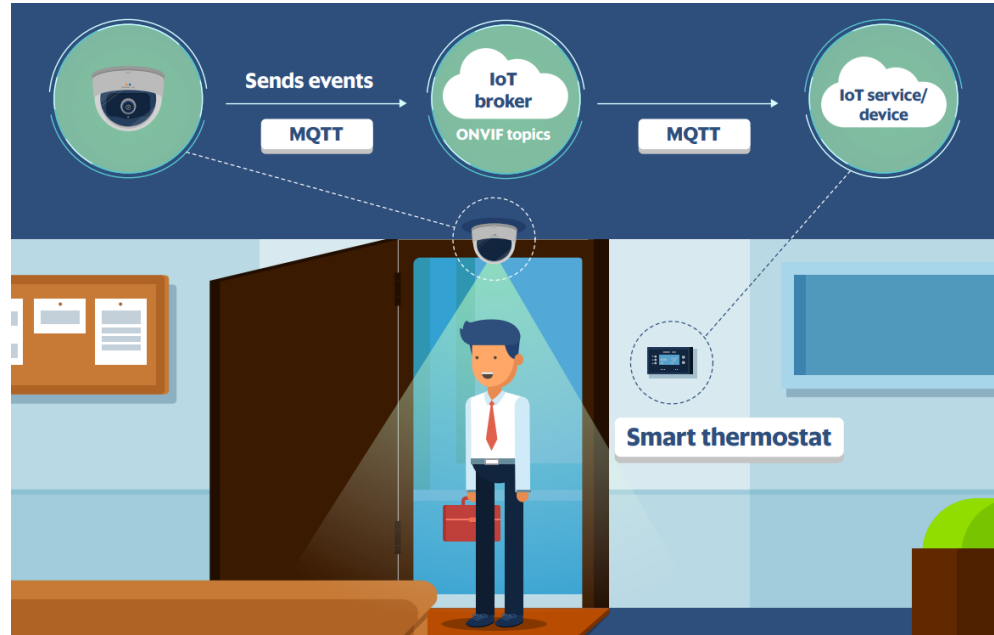


- Supported metadata
- Supported events
- Streaming metadata and sending events



ONVIF Profile M – For IoT Systems

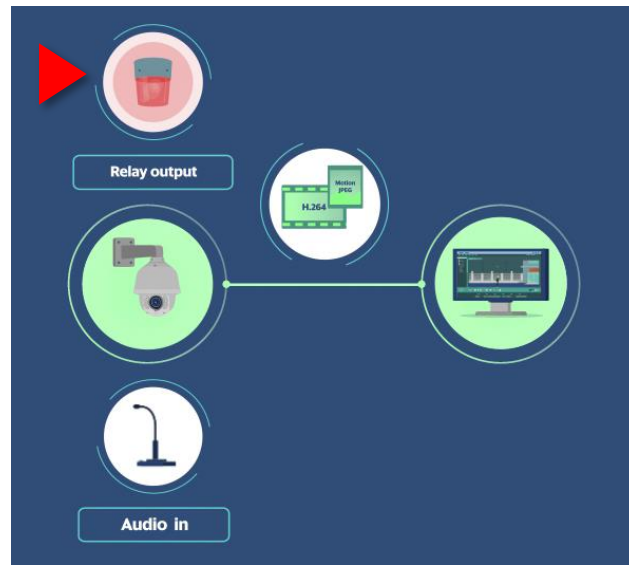
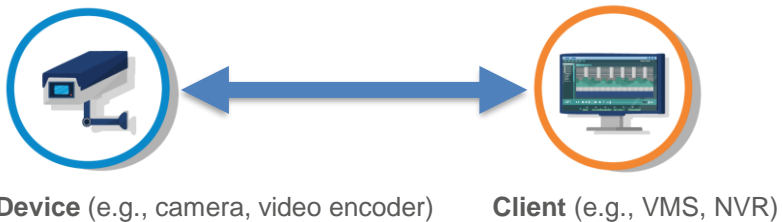
- Publishes message about event over MQTT – transport method used often by IoT applications
- Use case
 - Room temperature control



ONVIF Profile S

For basic video streaming

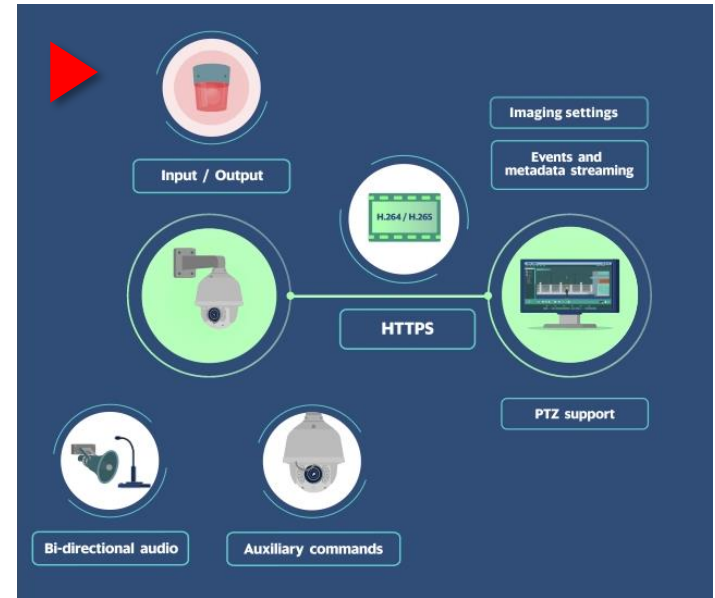
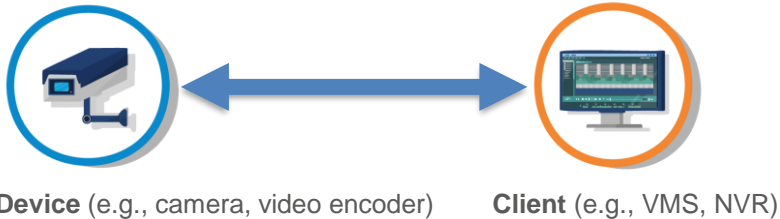
- Video streaming and configuration



ONVIF Profile T

For advanced video streaming

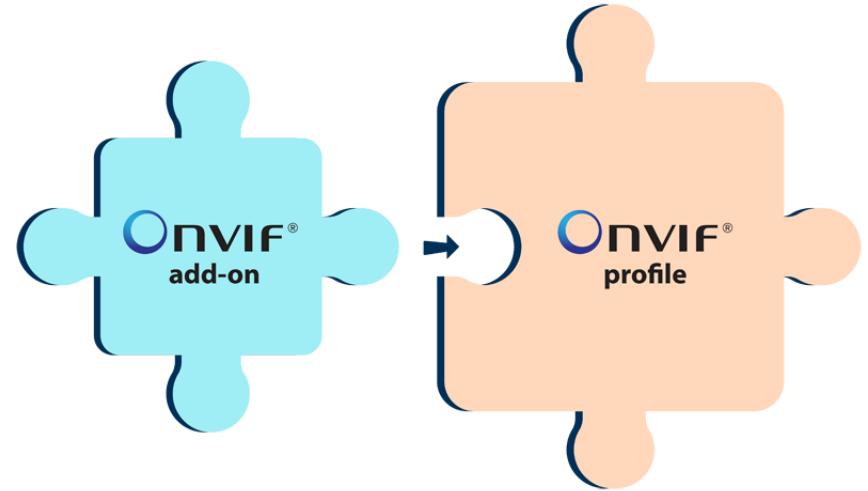
- H.264/H.265 video compression
- Imaging settings
- Motion alarm and tampering events
- Metadata streaming
- Bi-directional audio



ONVIF Add-on

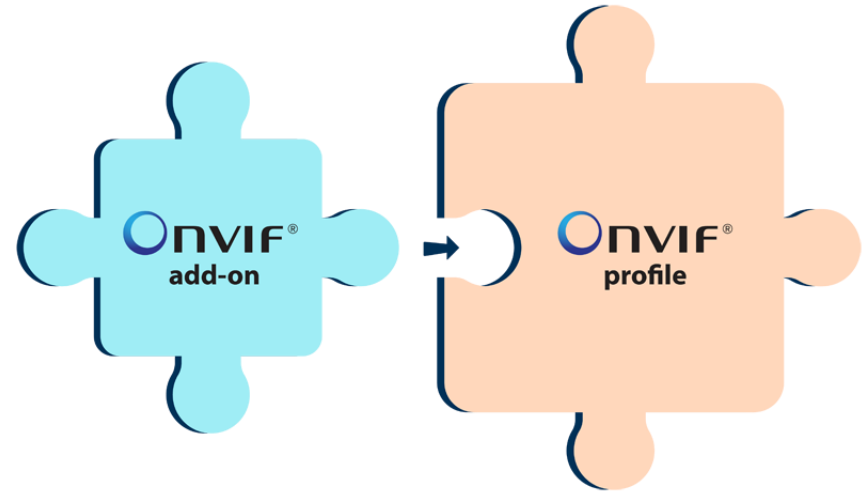
ONVIF Add-on

- One or more features that solve one use case
 - Not enough to qualify as a profile by itself
- Allows for version handling
 - Features can be added/removed if there is market justification
- Devices/clients claiming add-on conformance must:
 - Pass add-on conformance tests
 - Conform to an ONVIF profile



Benefits of an Add-on

- Allows ONVIF profile conformant device/client to claim conformance to additional capabilities outside of profiles
- Easier and quicker to develop and release due to its limited features as compared with a profile



Profile vs. Add-on

Key Differences and Similarities	Applicable for ONVIF profile	Applicable for ONVIF add-on
Comprehensive enough to allow functional product development on its own	Yes	No
Adaptable through version handling	No	Yes
Covers specifications for both client and device	Yes	Yes
Both client and device must pass conformance tests to claim conformance	Yes	Yes
Can be proposed by any ONVIF member, but can only be developed by ONVIF full and contributing members	Yes	Yes

TLS Configuration Add-on

For encrypted communication using TLS

- Provides a baseline for encrypted communications between a client and device that conform with the ONVIF add-on
- Regardless of brand, a client with this add-on will be able to configure and update the TLS settings on a device with the same add-on



ONVIF Conformance

What ONVIF Conformance Means

- ONVIF conformance is tied to a particular product and firmware/software version
- Product conforms to a profile and optionally, an add-on
- Product has passed ONVIF device/client test tool

Authoritative source of ONVIF conformant products:
<https://www.onvif.org/conformant-products/>



ONVIF Benefits

Why Use ONVIF?

- In a multi-vendor environment, ONVIF conformant products from different brands can work together
- 32,000+ conformant products to match your needs and preferences, regardless of vendor
- Makes integration easier and future-proofs your installation



ONVIF for System Integrators

- Interoperability
 - Easier integration for flexible, cost-effective solutions
- Greater freedom
 - Flexibility to choose products from different vendors and meet specific needs of your customers



ONVIF for End Users

- Increased flexibility and greater freedom of choice
- Future-proof system for a more secure investment
 - No vendor lock-in



ONVIF for Manufacturers

- Easier market acceptance
- Access to projects
- Build partnerships



Where to Get More Information

General information on ONVIF	www.onvif.org
Profiles	www.onvif.org/profiles/
List of conformant products	www.onvif.org/conformant-products/
Intro videos	www.onvif.org/video-category/about-onvif/



Thank you

For more information visit www.onvif.org

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