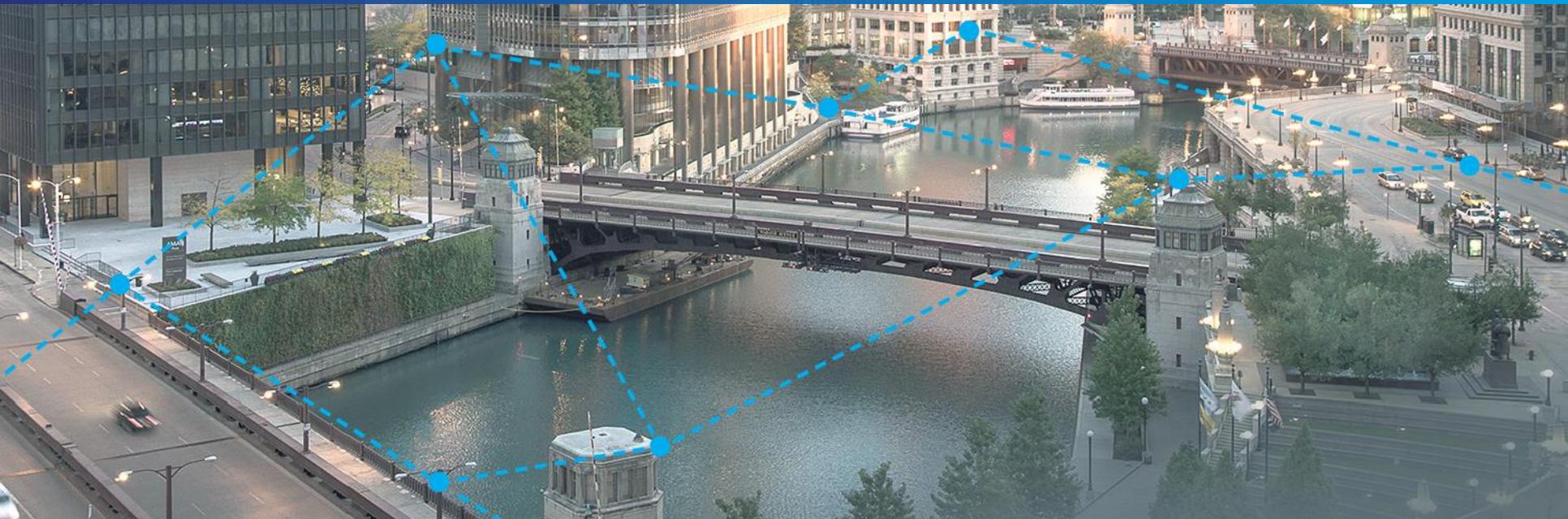


# ONVIF Overview

Driving the Future of Interoperability

November 2024



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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

Through working groups, ONVIF strives for an effective transfer of customer needs into solutions.



# 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
<b>Annual Membership Fee</b>	<b>\$20,000 USD</b>	<b>\$10,000 USD</b>	<b>\$5,000 USD</b>	<b>\$4,000 USD</b>	<b>\$500 USD</b>

# ONVIF Members

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

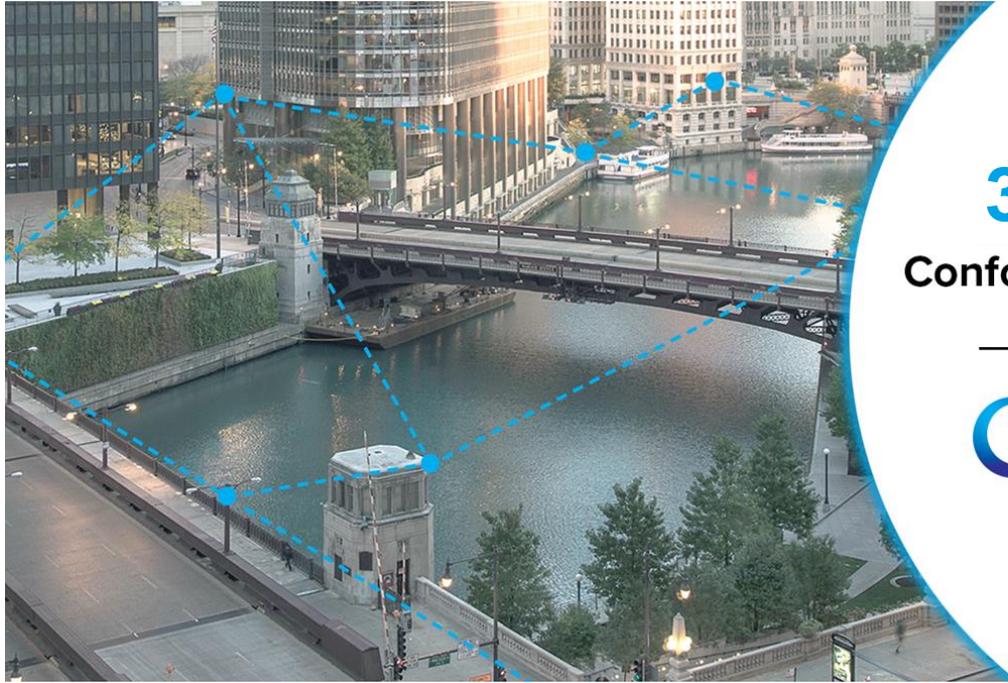
ONVIF membership comprises leading companies in the global IP-based physical security products market, including frontrunners in camera, video management system and access control development.

## ONVIF Full Members



# ONVIF Profile Conformant Products

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



**30,000+**  
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

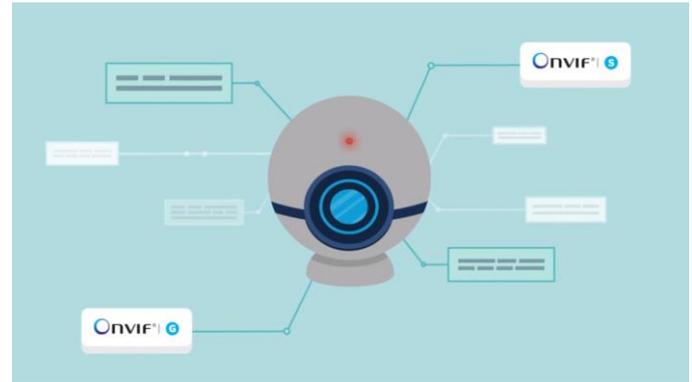
# ONVIF Profile

- 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)

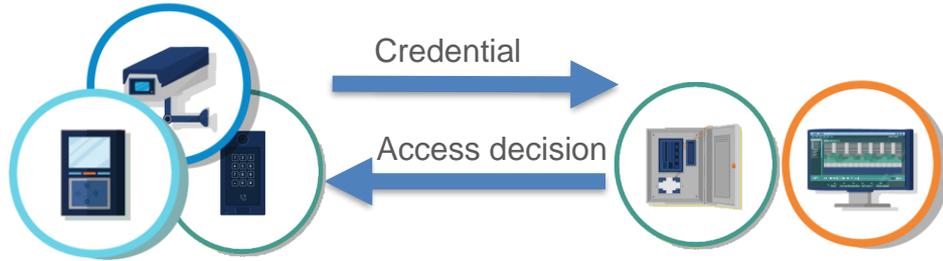
Client (e.g., management software)



# 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)

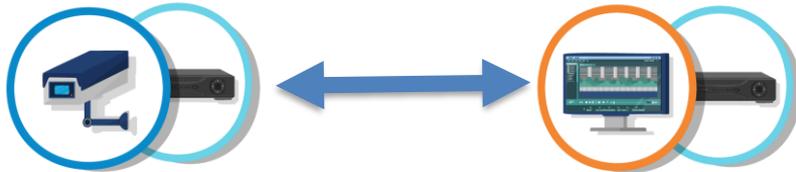
**Client** (e.g., access control unit, management system)



# 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)

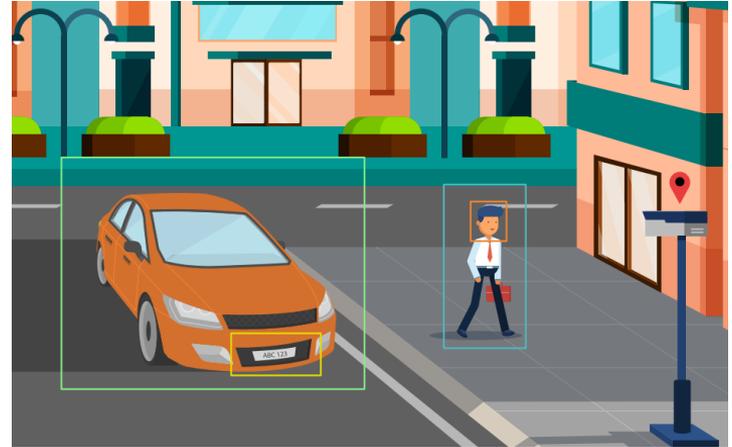
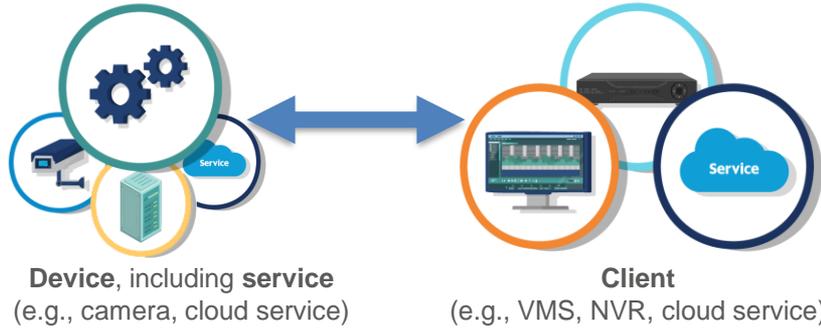


# ONVIF Profile M

Metadata and events for analytics applications

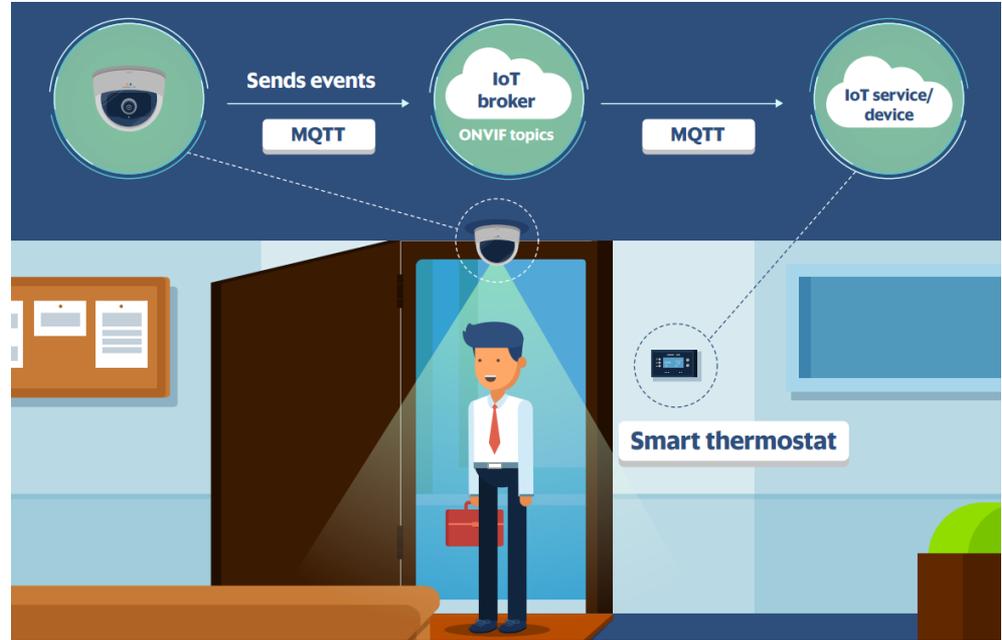


- Supported metadata
- Supported events
- Streaming metadata and sending events



# 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



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

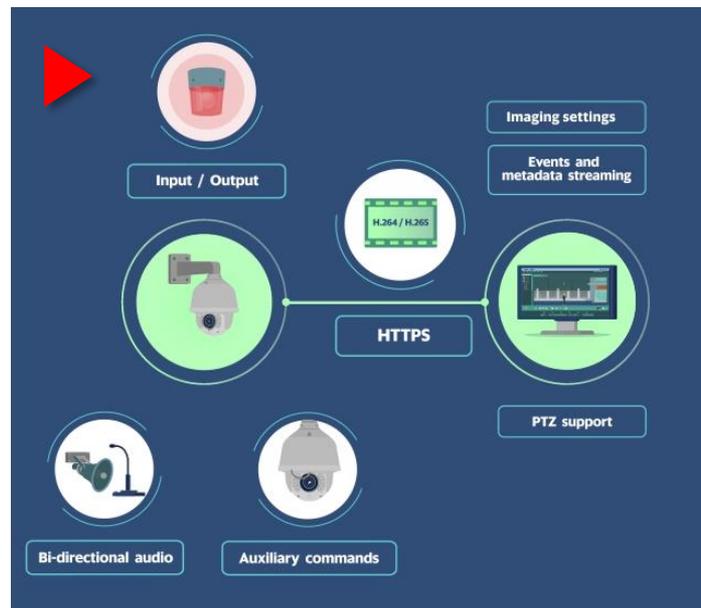
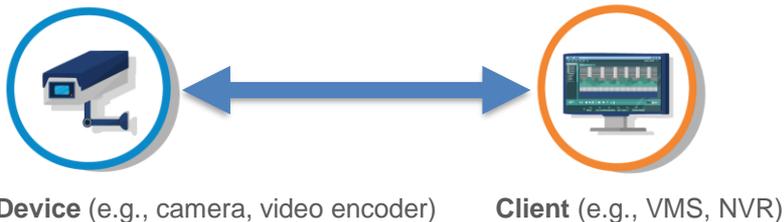
Client (e.g., VMS, NVR)



# ONVIF Profile T

For advanced video streaming

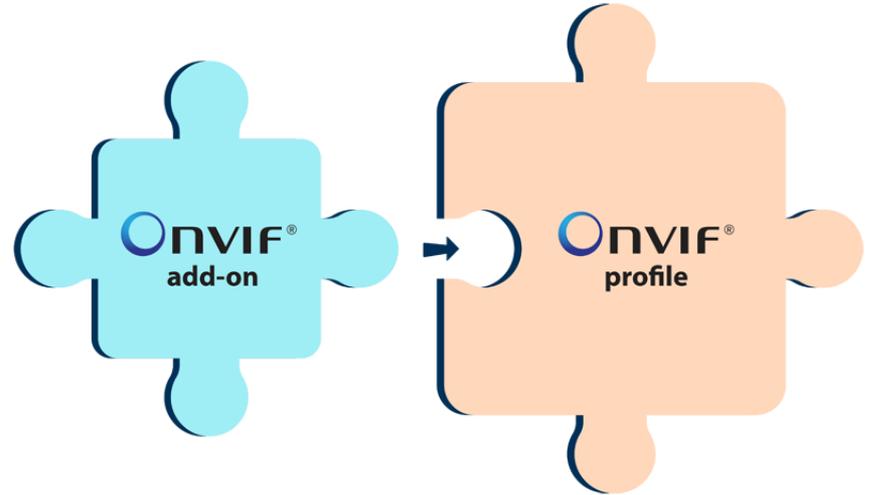
- H.264/H.265 video compression
- Imaging settings
- Motion alarm and tampering events
- Metadata streaming
- Bi-directional audio



# ONVIF Add-on

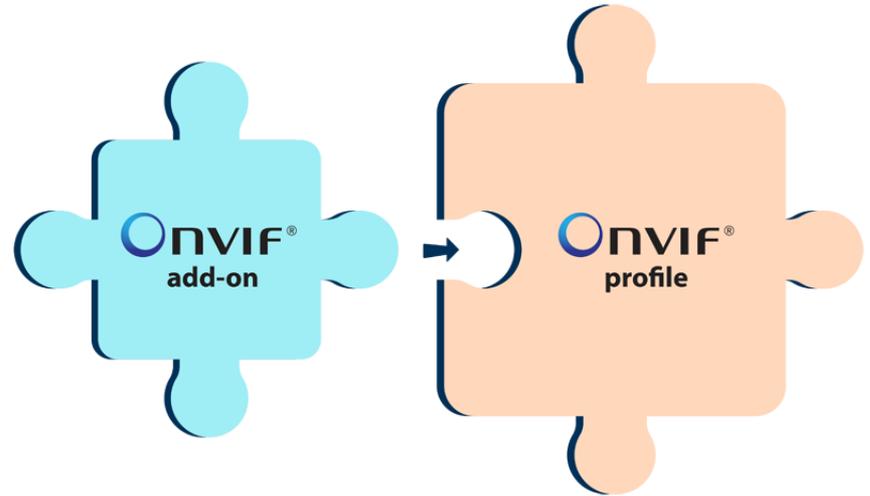
# ONVIF Add-on

- 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

- Enables initial configuration and update of TLS settings

# 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
- 30,000+ 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	<a href="http://www.onvif.org">www.onvif.org</a>
Profiles	<a href="http://www.onvif.org/profiles/">www.onvif.org/profiles/</a>
List of conformant products	<a href="http://www.onvif.org/conformant-products/">www.onvif.org/conformant-products/</a>
Intro videos	<a href="http://www.onvif.org/video-category/about-onvif/">www.onvif.org/video-category/about-onvif/</a>



# Thank you

For more information visit [www.onvif.org](http://www.onvif.org)

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