

Mindtree ONVIF 2.0 technical specification.

Introduction

Open Network Video Interface Forum (www.onvif.org) is setting standards in interoperability of products from different network video vendors for video surveillance application. The ONVIF forum is supported by video network equipment industry leaders and is expected to become an important and mandatory feature for all products.

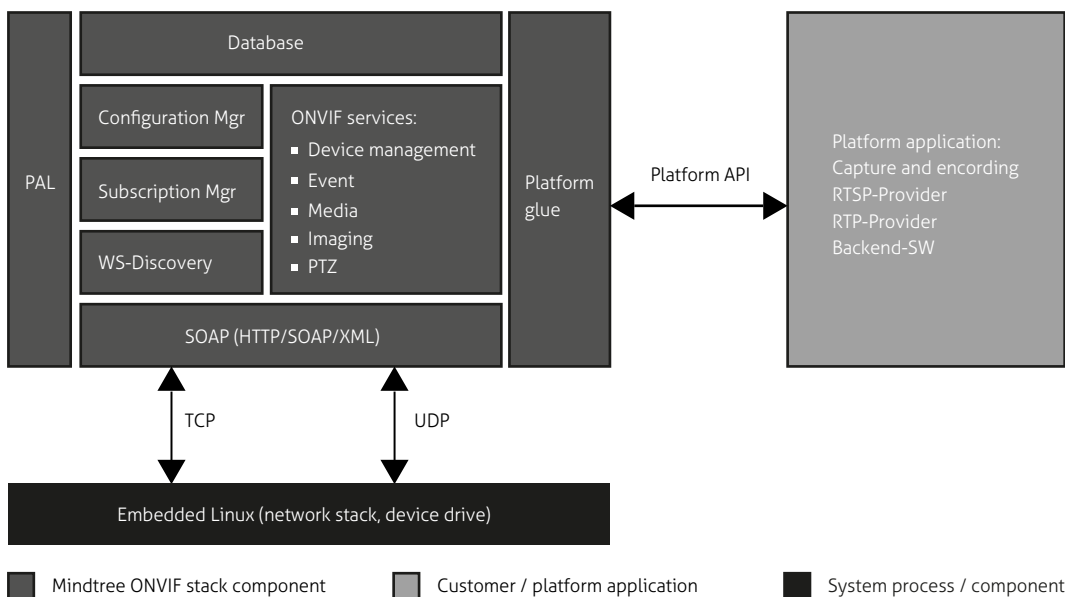
Mindtree has several IPs and technologies in the area of video surveillance. We recognize the importance of supporting ONVIF specifications in our own and customer's products. Mindtree offers a customizable ONVIF 2.0 NVT (Network Video Transmitter) stack which can be integrated and ported onto different IP camera environments.

This document provides a brief architecture of the Mindtree ONVIF 2.0 NVT stack, features, testing and certification.

ONVIF Network Video Transmitter (NVT) Stack

System overview

The overall system design is described in the figure below:



Soap library

The SOAP Library implements the HTTP, SOAP protocol and XML serialization and deserialization. It also provides stub routines to handle web service calls.

Platform Abstraction Layer (PAL)

This provides abstraction for platform dependent services and libraries:

- Thread / task creation, control, synchronization
- Timers
- Platform dependent services such as system calls, socket library

WS-Discovery

This module implements the mandatory requirements of WS-Discovery protocol, with extension and changes as mandated by ONVIF specification.

ONVIF Services

This module implements the core ONVIF services:

- Device Management
- Device IO
- Media – audio and video
- Event
- Imaging
- PTZ
- Analytics

These handle various web service commands for the services. The sub-modules interact with other modules (Subscription Manager for event service, Configuration Manager for media, Imaging and PTZ services etc.) using defined function call APIs. It also interfaces with Platform Glue layer to interact with system applications.

Subscription Manager

The Subscription Manager implements management of event subscription, as defined in the description of event service in ONVIF specification.

Configuration Manager

The Configuration Manager is responsible for the following tasks:

- Management of media profiles
- Management of video source configurations
- Management of video encoder configurations
- Management of imaging configurations
- Management of PTZ configurations
- Management of video analytics configurations
- Management of metadata configurations

Database

This is an in-memory storage of global variable, data structures and state information related to all applicable services, configurations and parameters used in various configurations. Also used for minimum & maximum limits and default values and settings.

The database is initialized with default values and persistent configurations during system initialization.

Platform Glue

This is a collection of subroutines for platform specific handling of ONVIF service commands. In addition, this provides functionalities required to interact with the system application using platform specific interface(s).

Supported Capabilities

All the mandatory commands specified by ONVIF v2.0 are supported. The optional capabilities supported are indicated in the following table:

Category	Capability	Support
Analytics	XAddr	Yes
	Rule support	
	Analytics module support	
Device	XAddr	Yes
Device - network	IPFilter	Yes*
	Zero configuration	Yes*
	IP version 6	No
	Dyn DNS	Yes*
Device - system	Discovery resolve	Yes
	Discovery bye	Yes
	Remoted discovery	No
	Supported versions	Yes
	System backup	Yes*
	Firmware upgrade	Yes*
	System logging	Yes*
	HTTP system backup	Yes*
	HTTP firmware upgrade	Yes*
	HTTP system logging	Yes*
	HTTP support information	Yes*

Device – IO	Input connectors	Yes*
	Relay outputs	
	Auxiliary	
Device – security	TLS 1.0	No
	TLS 1.1	
	TLS 1.2	
	On board key generation	
	Access policy config	
	X.509 token	
	SAML token	
	Kerberos token	
	REL token	
	Dot 1X	
	Supported EAP method	
Remote user handling		
Event	XAddr	Yes
	WS subscription policy support	No
	WS pull point support	No
	WS pausable subscription-manager interface support	No
Imaging	XAddr	Yes
Media	XAddr	Yes
Media – streaming	RTP multicast	Yes
	RTP_TCP	
	RTP_RTSP_TCP	
PTZ	XAddr	Yes
Device IO	XAddr	Yes
	Video sources	Yes
	Video outputs	No
	Audio sources	Yes
	Audio outputs	Yes
	Relay outputs	Yes

*Support for this capability depends on the feature support on the camera.

Depending on the capabilities implemented on the camera, additional commands will be supported.

Testing and Certification

The NVT stack is compliant to ONVIF 2.0 specifications and is tested with the Client Test Tool provided by the ONVIF forum. Mindtree also provides the report from ONVIF test tool. In addition, Mindtree also provides services to integrate the NVT with the customer's camera stack and perform end-to-end testing with Video Management Solution.

Specification

Available platforms	Embedded Linux
ONVIF specification version	ONVIF 2.0
Footprint	XCode : 3.0 MB (mandatory commands)

About Mindtree

Mindtree is a global information technology solutions company with revenues of over USD 400 million. Our team of 11,000 experts engineer meaningful technology solutions to help businesses and societies flourish. We enable our customers achieve competitive advantage through flexible and global delivery models, agile methodologies and expert frameworks.