

# Technical Note

## VCA Clients & Integration FW 6.30

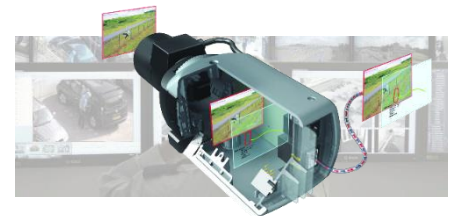


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May 9th, 2016  
VCA Clients & Integration

### Summary

There are several Video Content Analysis (VCA) algorithms available in Bosch IP cameras: Tamper Detection, MOTION+, Essential Video Analytics, Intelligent Video Analytics and Intelligent Tracking. To receive alarm events from them and visualize the results, a client is needed. Each client can choose to present only a part of information and in a different way. This technical note summarized the different integration possibilities available today and the clients supplied by Bosch.



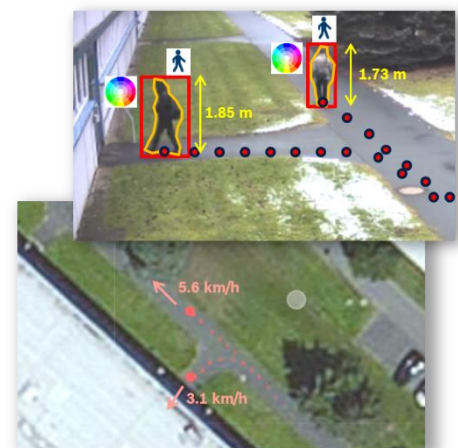
### VCA information levels: Alarm, Metadata, Forensic Search

The first level of VCA information is the announcement that an alarm event has just happened. Additionally, the information which kind of alarm event it was can be provided. The alarm can also be visualized in the video to give the user more context information. For alarms based on moving objects, this can e.g. be by drawing the bounding box of the alarm object or its outline, and the alarm elements that have triggered, like a line, field or route.

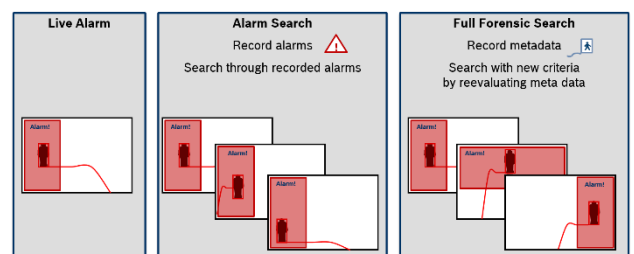


The information provided in the metadata includes, besides the alarm and counting events, details about all detected and tracked objects:

- Object position & trajectory
  - In the image (2D)
  - Geolocation / ground plane coordinates (3D)
- Object shape
  - Bounding box
  - Outline
- Object properties:
  - Object class (upright person, car, bike, truck)
  - Object size (image and real world)
  - Object speed and orientation
  - Object color histogram



The complete metadata can be recorded along with the camera video. Looking at the recording afterwards, it is possible to use the predefined alarms. But even beyond that, new alarm events with new conditions can be defined even long after the events have taken place, and the recording can be searched for these new alarm criteria. This full flexibility in defining searches on the recorded video is called Forensic



Search. Sometimes only a subset of the Forensic Search is provided, allowing to search for any motion, single line crossings or an object in a field, without any other configuration options. This subset is called Simple Search.

**VCA integration paths: RCP+, Metadata, VideoSDK, RTSP, ONVIF**

Remote Control Protocol plus (RCP+) is a remote control protocol including the ability to send read and write commands to a device, and to subscribe for messages. Using RCP+, it is possible to set basic camera configurations, and to subscribe to VCA alarm events. These alarm event messages are sent whenever an VCA alarm occurs and contain name and type of the event. Furthermore, RCP+ can be used to retrieve and reset the values of counters configured in Intelligent Video Analytics and Essential Video Analytics. Last but not least, forensic search can be conducted via RCP+ by uploading a VCA task script.

The VCA metadata is provided along with the camera video within a separate RCP+ stream. Therefore it can be used to visualize event and object details. The VideoSDK is a software library provided by Bosch which already provides this functionality including

- Video rendering
- Full, graphical configuration of MOTION+, Essential Video Analytics and Intelligent Video Analytics
- Metadata display
- Rule display
- Alarming
- Forensic search



	Alarm
Object in field	<input checked="" type="checkbox"/>
Line crossing	<input checked="" type="checkbox"/>
Following route	<input checked="" type="checkbox"/>
Loitering	<input checked="" type="checkbox"/>
Idle object	<input checked="" type="checkbox"/>
Removed object	<input checked="" type="checkbox"/>
Crowd detection	<input checked="" type="checkbox"/>
Counter	<input type="checkbox"/>

Real time streaming protocol (RTSP) is an open standard that can also be used to setup a multimedia connection to the Bosch IP cameras. In addition, it can also be used to request the Bosch metadata stream along with the video and audio data. An RTSP request for metadata needs to contain the vcd=1 parameter (e.g. "rtsp://192.168.1.2/?vcd=1").

Tools for understanding the proprietary metadata stream are available upon request through the Integration Partner Program (<http://ipp.boschsecurity.com>).

ONVIF (Open Network Video Interface Forum) is a global and open industry forum with the goal of standardizing network interfaces for IP-based security to guarantee the interoperability of specific features between conformant devices. The ONVIF standard uses the real time streaming protocol for session setup. It includes an alarm event message format as well as an own description format for metadata. Since FW 6.10, Bosch IP cameras not only provide a general motion alarm via ONVIF, but most of the VCA alarm events with event type and name. These are available directly as events as well as via the ONVIF metadata. Furthermore, the bounding boxes of all tracked objects are provided in the ONVIF metadata format. Thus VCA alarms can be understood by ONVIF conformant clients.

**VCA clients by Bosch**

Client	Configuration	Life alarming	Forensic Search
Building Integration System (BIS)		x	
Bosch Video Client (BVC)	CM included	x	x
Bosch Video Management System (BVMS)	CM included	x	x
Bosch Cloud Based Security and Services (CBS)		x	
Configuration Manager (CM)	x		
Device Webpage	x	x	Simple Search
Video Security App iOS/Android			Simple Search
Video Security Client (VSC)			Simple Search

### 3rd party VCA clients

For details on the integration status of Bosch's VCA algorithms in 3rd party software, please have a look at the Integration Partner Program (IPP) website: <https://ipp.boschsecurity.com/integration-partner-program/integrated-solutions/partner-integration-status/partner-integration-status>