Analytics Service for Milestone XProtect VMS Bosch Video IP

BOSCH

en Quick Installation Guide

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1 Installation

1.1 Overview

The Bosch Analytics Service for Milestone XProtect acts as a software bridge between the Bosch Analytics Events, generated on a Bosch camera and Milestone XProtect. Generally, the Bosch events are transformed into Milestone Analytics Events that are available in the Milestone rule or alarm engine.

The software creates Milestone Analytics Events as described in the Milestone MIP SDK Documentation, based on a configuration that is managed through the Milestone Management Client.

More detailed information on the data layout and the software architecture is given in the course of the document.

1.2 Prerequisites

- Operating system: Windows 7, Windows 8, Windows 8.1, or Windows 10
- Milestone VMS: XProtect 2017R1 or above with metadata support
- A Bosch analytics camera (with firmware version 6.32 or above) connected to the Milestone XProtect VMS Product

1.3 Installation procedure

The current version of the installer can be downloaded from the website **https://ipp.boschsecurity.com/**.

A Milestone installer that provides the necessary framework libraries, is placed in the download package, along with the Bosch installer exe.

- After extracting the download package double-click on the Bosch_AnalyticService_x64_1.0.exe file to start the installation.
- 2. Follow the instructions of the setup wizard.

🔏 Bosch Analytics Service x64 Setup − 🗆 🗙	🔏 Bosch Analytics Service x64 Setup - 🗆 🗙
Welcome to Bosch Analytics Service x64 Setup	Imprtant information Please review the following important information.
Setup will guide you through the installation of Bosch Analytics Service x64. It is recommended that you close all other applications before starting Setup. This without having to reboot your computer. Click Next to continue.	About Bosch Analytics Service x64: This Plug-in package depends on third party libraries that are provided by Milestone in the Milestone MIP SDK installer. The installer will be executed automatically and the libs will then be copied to the plug-in directory. To be able to execute the installer properly the following steps need to be taken. • Stop the Milestone Event Server during the installation • Start the Milestone Event Server after the installation • Milestone MIPSDK redistributable installer needs to be placed in the Click on scrollbar arrows or press Page Down to review the entire text.
Next > Cancel	Nullsoft Install System v3.0a2 Kenter Strength

During the installation, the Milestone installer will be executed.

U -+			Milesters MID SDK 2017	Padiataiku takla (164) Satur
÷	Bosch Analytics Service x64 Setup — 🗌	<u>×</u>	The Milestone MIP SDK 2017 -	Redistributable (xo4) Setup — X
	🔏 Open File - Security Warning	×		
	Do you want to run this file?			Completed the Milestone MIP SDK 2017 - Redistributable (x64) Setup Wizard
	Name:ice_x64.1.0.28\MIPSDK_Redist_Installer_x64_2017R1.msi			
	Publisher: Milestone Systems A/S			Click the Finish button to exit the Setup Wizard.
	Type: Windows Installer Package			
	From: E:\Downloads\Bosch_AnalyticsService_x64.1.0.28\MIPS			
N	Run Cancel Always ask before opening this file While files from the Internet can be useful, this file type can potentially harm your computer. Only run software from publishers you trust. What's the risk?	, ,	milestone The Open Platform Company	
	r goox gratan conto	_		Back Finish Cancel

After installing the Milestone components, the Bosch installer is finishing the installation.

📲 Bosch Analytics Service x64 Setup - 🗆 🗙	😹 Bosch Analytics Service x64 Setup - 🗆 🛛
Choose Components Choose which features of Bosch Analytics Service x64 you want to install.	Completing Bosch Analytics Service x64 Setup
Check the components you want to install and uncheck the components you don't want to install. Click Install to start the installation.	Bosch Analytics Service x64 has been installed on your computer.
Select components to install:	
Nullsoft Install System v3.0a2	< <u>Back</u> Enich Cancel

When the installation is complete, the plug-in files are installed in the default plug-in directory

- for the 64-bit XProtect Smart Client:

C:\Program Files\VideoOS\MIPPlugins\BoschAnalyticsService(x64)

The plug-in will now be available in the Milestone XProtect Administration Client. The **User Guide** and the **EULA** can be accessed via the start menu, in case this option was selected during the installation process.

2 Software components

Several software components act together to form the Bosch Analytics Service plug-in. The involved software components are:

- Bosch plug-in for the Milestone XProtect Administration client
- Bosch plug-in for the Milestone XProtect Event server
- BoschVideoAnalyticsService
 (background process that is controlled by the Event server plug-in)

A detailed description of the software context is given in the next chapter.

2.1 Administration client

The service is configured via the administrator plug-in, which is located in the **MIP Plug-ins** node in the Administration client, however a basic Milestone XProtect setup needs to be done a priori, and the metadata channel that is offered by the Milestone driver needs to be activated for the cameras that are supposed to be monitored by the plug-in.

Note: The ca

The camera needs to run in either **Essential Video Analytics** mode or in **Intelligent Video Analytics** mode.



		1	2
Milestone XProtect Management Client	2016 R3		×
File Edit View Action Tools Help	IVA_MAD_Plugins 🗸 👎	IVA_MAD_Plugin Informa	~ *
SPC5NU3-GREEN-I - (10.2a)	Analytics Service Plugins Analytic Monitoring 1	Group: Analytic Monitorin 1 Available Bosch C. veras DINION IP stadight 6000 HD (160.10.12 DINION IP stadight 6000 HD (160.10.12 DINION IP stadight 6000 HP (192.16.12 DINION IP stadight 8000 MP (192.16.12 Methods and the stade of the	Selected Cameras
Site Navigation Federated Site Hierarchy		Flease make sure to restart the Event Server art	er coninguration changes for a proper population.

After the general metadata availability, the plug-in needs to be configured.

It is possible to create more than one Analytic Service plug-in instance to be able to group cameras that are processed functionality-wise.

The available Bosch cameras are accessible via the left tree-view (1) and the monitored cameras are displayed in the tree-view on the right side (2).



Note:

After a configuration change the settings need to be saved in Milestone and the Milestone Event server needs to be restarted manually.

2.2 Analytics Service

The Bosch Analytics Service is executed as a background application that consumes the Bosch metadata stream and creates the actual Milestone analytic events. It is started and stopped with the Milestone Event server process. Its status can be monitored in the Milestone XProtect Administration client as shown below.



The monitoring page shows cameras with an error in the **Faulty** section and cameras that are working properly in the **OK** section. The camera name is preceded by the number of generated events, as depicted above.

The status entry gives feedback on the availability of the Analytics Service background process.



Note:

The service uses the current windows user and its credentials to log in to the Milestone XProtect Management server, which means that the windows user needs to be allowed to do so.

2.3 Event generation

The plug-in exposes a couple of events that can be consumed and utilized in the Milestone infrastructure. Milestone Analytics events are used in the core functionality of the plug-in.

2.3.1 Analytics event

A detailed description of the generated analytics events can be found in the next chapter. This information can be used for further 3rd party integrations. The event names are:

- Bosch Analytics Alarm

generated in case a Bosch analytic event is detected in the metadata stream, if configured in the XProtect Management Client as previously described.

2.3.2 General events

The general Milestone events are:

No metadata available

generated in case a camera did not receive metadata.

- Camera malfunction

generated in case a camera is not reachable.

2.4 Event handling in Milestone XProtect

The plug-in events are available in the Milestone Event system and hence are usable in the Rule engine as well as in the Alarm engine. The following sections will briefly show the mode of operation.

2.4.1 Rule engine

Milestone rules can be created based on the Bosch Analytic Service messages. A typical rule setup is shown below.

	_						
×	Rules						
	🖃 🧮 Rules	10.0.0	Name				
	Bosch Ana	alytic Service Event ato Preset when PTZ is	is don Reach Applutic Servi	ee Event			
	Default Re	cord on Bookmark Ru	ule	Ce Event			-
	Default R	Manage Rule			_		
	Default R						
	Default S	Name:	Bosch Analytic Service Even	t			
	Default S	Description:					
	🔚 📔 Recordin	Active					
							-
		Calentartians to a		tep 3: Actions			
		Start recording	a on (devices)			•	
		Start feed on <	devices>				
		Set <smart th="" wa<=""><th>all> to <preset></preset></th><th></th><th></th><th></th><th>terName\$</th></smart>	all> to <preset></preset>				terName\$
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		Remove <came< th=""><th>eras> from <smart wall=""> monitor</smart></th><th><monitor></monitor></th><th></th><th></th><th></th></came<>	eras> from <smart wall=""> monitor</smart>	<monitor></monitor>			
		Set live frame r	rate on <devices></devices>				
		Set recording fr	frame rate on <devices></devices>	481.00481.005			
		Set recording fi	trame rate to all trames for MPEG ton cdevices using corofiles with	-4/H.264/H.265 on <devi PTZ <priority></priority></devi 	ices>		
			,				
		Edit the rule descri	ription (click an underlined item)				
		from All camera	on <u>Bosch Analytics Alarm (Bosch A</u> as	nalytics Service)			
		Create log entry: 'S	TriggerTime\$ \$DeviceName\$'				
		Help	<u>C</u> ancel	< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish	
_							

The exposed events can be accessed through the trigger **Event** wizard and are to be found under **Bosch MIP Plugins** / **Bosch Analytics Service**.

Select an Event	<
Svents Image: Second	
OK Cancel],

2.4.2 Alarm definition

It is also possible to define specific alarms based on Bosch Video Analytic events, that are generated by the plug-in.

A new alarm definition needs to be created as shown below.

Alarm Definitions 👻 👎	Properties		
Aarm Definitions Bosch Analytics Service Error Bosch Analytics Service Error Bosch Recording Error Manual Analytics Event	Aarm definition Enable: Name: Instructions:	Eosch Analytics Alarm	×
	Trigger Triggering event:	Bosch Analytics Service Bosch Analytics Alarm	v v
	Sources:	All Cameras	Select
	Activation period		
	Time profile:	Always	~
	O Event based:	Start:	Select
		Stop:	Select
	Operator action required		
	Time limit:	1 minute	~

Milectone XProtect Management Client	2016 R3					×
File Edit View Action Tools Help	2010113					~
Site Navigation + # X	Alarm Definitions 🚽 👎	Properties				→ ₽
	Alarm Definitions Bosch Analytics Service Error Bosch Analytics Service Error Bosch Recording Error Manual Analytics Event	Alam definition Enable: Name: Instructions:	Bosch Analytics Alarm			^
⊞-ख् Security ⊛ System Dashboard		Trigger				
Gerver Logs Gerver Control		Triggering event:	Bosch Analytics Service		~	
🕀 🗓 Transact 🖃 🥩 Alarms		Courses.	Bosch Analytics Alam Bosch Analytics Alam		~	
- 🧏 Alarm Definitions - 👧 Alarm Data Settings		Activation period	Camera malfunction No metadata available			
Sound Settings MIP Plug-ins		Time profile:	Always		\sim	
		O Event based:	Start:	Select		
			Stop:	Select		
		Operator action required				
		Time limit:	1 minute		\sim	
		Events triggered:		Select.		
		Other				
		Related cameras:		Select.		
		Related map:	Floorplan		\sim	
		Initial alarm owner:			\sim	
		Initial alarm priority:	High		\sim	
		Initial alarm category:			~	
Site Navigation Federated Site Hierarchy		Events triggered by alam:		Select.		~

The triggering events are found in the **Bosch Analytics Service** / **Triggering event** entry.

2.4.3 Alarm Manager

Milestone XProtect alarms are visualized in the Smart Client's Alarm Manager tab.



The Bosch Analytics Service generates Milestone Analytics events which provides the possibility to add additional metadata associated with the triggering event. Double clicking on the alarm entry opens the detailed alarm view as shown below.

The Bosch rule name and the rule type are encoded in the event data, as well as the triggered rule number on the Bosch camera.

😰 2309 Bosch Analytics Alarm - DINION IP starlight 8000 MP (192.168.1.117)	- Camera 1	– 🗆 ×
DINION IP starlight 8000 MP (192.168.1.117) - Camera 1 Frames per second: 29.97 Video codec: H.264 Video codec: H.264 Video codec: H.264 Video codec: H.264 Video codec: H.2 Video codec:	tarlight 8000 MP (192 nd: 64 2704x2032 ration: On	168.1.117) - Camera 1 - 5/30/2017
	 5/30/2017 	6:18:26.966 PM 🕨
Camera: DINION IP starlight 8000 MP (192.168.1.117) - Ci 💌		Go to Alarm Time
Instructions:	Assigned to:	
Camera Rule #2: Train is crossing the line - ALARM_EVENT_TYPE_CrossingLine	State:	1: New 💌
	Priority:	1: High 🔹
	Category:	
	ID:	2309
	Source:	DINION IP starlight 8000 MP (1
	Alarm:	Bosch Analytics Alarm
	Message:	Bosch Analytics Alarm
Activities:	Туре:	ALARM_EVENT_TYPE_Crossi
Time Activity Owner	Rule:	ALARM_EVENT_TYPE_Crossi
6:18 PM Initial state: 1: New 6:18 PM Initial prioritic 1: High	Location:	
o. to F M Initial priority. 1. Fright	Tag:	BoschAnalyticsService
	Vendor:	Bosch Security Systems B.V.
	Object:	
< (Common the second se		
Add		
Help Print		ОК



The alarm recording contains the overlayed object shape (solid red) and trajectory (solid green) as shown below.

2.5 Troubleshooting

2.5.1 Background application

Basic parameters of the background application can be monitored via Windows standard tools like the task manager or the performance monitor.

IST Task Ma File Option	□ Task Manager − − ile Options View − ×									
Processes	Performance	App history	Startup	Users	Details	Services				
	^				20%	28	8%	0%	0%	
Name					CPU	Mem	nory	Disk	Network	
					0%	13.9	MB	0 MB/s	0 Mbps	^
					0.1%	13.8	MB	0 MB/s	0 Mbps	
					0%	1.5	MB	0 MB/s	0 Mbps	
					0%	82.4	MB	0 MB/s	0 Mbps	
Backgrou	und process	ses (98)								
					0%	14.1	MB	0 MB/s	0 Mbps	
					0%	8.1	MB	0 MB/s	0 Mbps	
>					0%	2.6	MB	0 MB/s	0 Mbps	
					0%	2.3	MB	0 MB/s	0 Mbps	
>					0%	0.3	MB	0 MB/s	0 Mbps	
					0%	2.9	MB	0 MB/s	0 Mbps	
					0%	3.9	MB	0 MB/s	0 Mbps	
					0%	0.9	MB	0 MB/s	0 Mbps	
					0%	6.4	MB	0 MB/s	0 Mbps	
>					0%	0.9	ΜВ	0 MB/s	0 Mbps	
🔏 Bose	chVideoAnalyt	icsService			0.2%	47.7	мв	0 MB/s	0 Mbps	
					0%	2.5	MB	0 MB/s	0 Mbps	
-					0%	0.1	ΜВ	0 MB/s	0 Mbps	~
Fewer g	Fewer details									

2.5.2 Logging

In addition to the Milestone MIP logging, which is available through the Milestone Event Server Management Application, further logs for troubleshooting can be enabled by creating the following Windows folder:

C:\DebugBoschAnalyticService

Logging is automatically activated if this folder exists, and turned off in case the folder is no longer available.

It is not recommended to use this folder for regular operation.

3 Integration Architecture

3.1 Software context

The Bosch Analytic Service consist 3 software components:

- XProtect Administration Client plug-in

User control to setup the monitoring service, which allows to select the cameras that are supposed to generate the Analytics Events and it also allows to setup the service's behavior when detecting a Bosch event.

- XProtect Event Server plug-in

Provides a list of available messages from the service into the Milestone rule-and alarmengine in the Administrator client.

- Bosch Analytics Service

Controls the metadata stream reception and parses the Bosch metadata stream to finally create the Milestone Analytic Event, which is then sent to the Event Server.

The image below depicts the above mentioned context.



3.2 Integration data structure

The generated Analytics Events implement the properties as defined below. A definition of the data structure can be found in the MIP documentation.

3.2.1 Data.AnalyticsEvent

Туре	Property	Bosch Analytics Service
string	Description	"Camera Rule #" + ruleNumber + ": " + ruleName + " - " + ruleType *
AnalyticsObjectList	ObjectList	Used if a triggering object is available; see <i>AnalyticsObject</i> properties below
RuleList	RuleList	List of the configured Rule; see <i>Rule</i> class
Vendor	Vendor	Name is "Bosch Security Systems B.V."

* as configured on the camera

3.2.2 Data.EventHeader

Туре	Property	Bosch Analytics Service	
string	Class	"Analytics"	
string	CustomTag	"BoschAnalyticsService"	
System.DateTime	ExpireTimestamp	DateTime.MinValue	
System.Guid	ID	Generated during runtime.	
string	Message	"Bosch Analytics Alarm"	
System.Guid	Messageld	Unique GUID generated during plug-in creation	
string	Name	Rule name, as configured on the camera	
EventSource	Source	FQID of the triggering camera and	
		Name of the triggering camera	
System.DateTime	Timestamp	Alarm event generation Timestamp	
string	Туре	"Line crossing", "Object in field",	
		"Loitering"	
		see definition in the following section	
string	Version	"1.0"	

3.2.3 Data.Rule

Туре	Property	Bosch Analytics Service
System.Guid	ID	Generated at runtime
string	Name	Rule name, as configured on the camera
string	Туре	Same as the type in Data.Event.Header

3.2.4 Data.AnalyticsObject

Туре	Property	Bosch Analytics Service
bool	AlarmTrigger	"Yes"
		as currently only triggering objects are transmitted
Data.ObjectMotion	Motion	Speed and SpeedUnit is used in case the camera is calibrated and provides 'speed' information. Path is used for the object's trajectory
Data.TPolygon	Polygon	Object shape

3.3 Available strings

3.3.1	Data.AnalyticsEvent.Descrip	tion

"Camera Rule #" + ruleNumber + ": " + ruleName + " - " + ruleType

3.3.2 Data.EventHeader.Message

"Bosch Analytics Alarm"

"Camera malfunction"

"No metadata available"

3.3.3 Data.EventHeader.Type || Date.Rule.Type

"unknown";

- "ALARM_EVENT_TYPE_VCA";
- "ALARM_EVENT_TYPE_GlobalChange";
- "ALARM_EVENT_TYPE_SignalTooBright";
- "ALARM_EVENT_TYPE_SignalTooDark";
- "ALARM_EVENT_TYPE_SignalTooNoisy";
- "ALARM_EVENT_TYPE_SignalTooBlurry";
- "ALARM_EVENT_TYPE_SignalLoss";
- "ALARM_EVENT_TYPE_ReferenceImageCheckFailed";
- "ALARM_EVENT_TYPE_InvalidConfiguration";
- "ALARM_EVENT_TYPE_ObjectInField";
- "ALARM_EVENT_TYPE_CrossingLine";
- "ALARM_EVENT_TYPE_Loitering";
- "ALARM_EVENT_TYPE_ConditionChange";
- "ALARM_EVENT_TYPE_FollowingRoute";
- "ALARM_EVENT_TYPE_Tampering";
- "ALARM_EVENT_TYPE_RemovedObject";

"ALARM_EVENT_TYPE_IdleObject";

"ALARM_EVENT_TYPE_EnteringField";

"ALARM_EVENT_TYPE_LeavingField";

"ALARM_EVENT_TYPE_SimilaritySearch";

"ALARM_EVENT_TYPE_CrowdDetection";

"ALARM_EVENT_TYPE_FlowInField";

"ALARM_EVENT_TYPE_CounterFlowInField";

"ALARM_EVENT_TYPE_MotionInField";

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