Bosch Video Management System

Recording Settings

BOSCH

en Technical Note

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1 Overview

The basic settings (non-scheduled) have been separated from recording settings (scheduled).Basic settings are for the initial configuration of streams. Recording settings are for assigning these streams to different use-cases, such as continuous recording, pre-alarm recording, or alarm recording. The recording settings are arranged in a new dialog called **Scheduled Recording Settings** accessible via the **Cameras and Recording** page. For more details, see *Changing qualities in schedules, page 10*.

2 System overview

If you plan to install and configure Bosch VMS, participate in a system training on Bosch VMS. Refer to the Release Notes of the current Bosch VMS version for supported versions of firmware and hardware and other important information.
See data sheets on Bosch workstations and servers for information on computers where Bosch VMS can be installed.
The Bosch VMS software modules can optionally be installed on one PC.

Important components

- Management Server (selectable in Setup): Stream management, alarm management, priority management, Management logbook, user management, device state management. Additional Enterprise System license: Managing Enterprise User Groups and Enterprise Accounts.
- Config Wizard: Easy and fast setup of a recording system.
- Configuration Client (selectable in Setup): System configuration and administration for Operator Client.
- Operator Client (selectable in Setup): Live monitoring, storage retrieval and playback, alarm and accessing multiple Management Server computers simultaneously.
- Video Recording Manager (selectable in Setup): Distributing storage capacities on iSCSI devices to the encoders, while handling load balancing between multiple iSCSI devices. Streaming playback video and audio data from iSCSI to Operator Clients.
- Mobile Video Service (selectable in Setup): Provides a transcoding service that transcodes the live and recorded video stream from a camera configured in Bosch VMS to the available network bandwidth. This service enables video clients like an iPhone or a Web client to receive transcoded streams, for example for unreliable network connections with limited bandwidth.
- Web Client: You can access live and playback videos via Web browser.
- Mobile App: You can use the Mobile App on iPhone or iPad to access live and playback video.
- Bosch Video Streaming Gateway (selectable in Setup): Provides the integration of 3rd party cameras and NVR-like recording, e.g. in low-bandwidth networks.
- Cameo SDK (selectable in Setup): The Cameo SDK is used to embed Bosch VMS live and playback Image panes to your external third-party application. The Image panes follow the Bosch VMS based user permissions.
  The Cameo SDK provides a subset of the Bosch VMS Operator Client functionalities that enables you to create applications similar to the Operator Client.
- Client Multisite SDK: The Client Multisite SDK is meant to control and monitor the behaviour of Operator Client of an Enterprise System by external applications. The SDK allows to browse devices that are accessible by the running, connected Operator Client and to control some UI functionalities.

– Client SDK / Server SDK: The Server SDK is used to control and monitor the Management Server by scripts and external applications. You can use those interfaces with a valid administrator account.
The Client SDK is used to control and monitor the Operator Client by external applications and scripts (part of the related server configuration).

2.1 Hardware requirements

See the data sheet for Bosch VMS. Data sheets for platform PCs are also available.

2.2 Software requirements

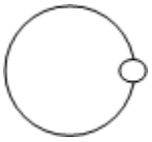
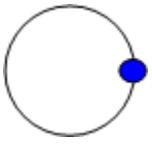
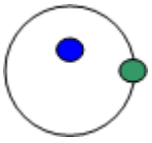
See the data sheet for Bosch VMS.
Bosch VMS must not be installed on a computer where you want to install Bosch VMS Archive Player.

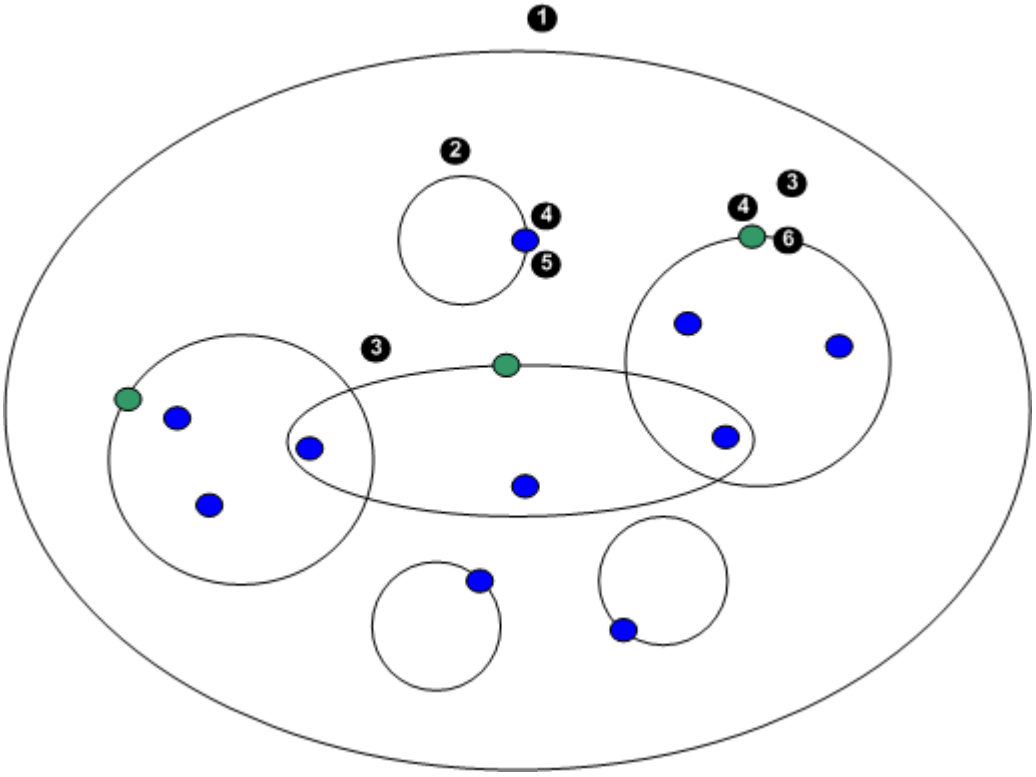
2.3 License requirements

See the data sheet for Bosch VMS for the available licenses.

2.4 Supported system structures

An operator or installer can be responsible for the following system structures:
– Single server system
– Multi server system (Enterprise System)
– Multi system environment

	System with access point for logon
	Single server system, System access point: Management Server
	Enterprise System, System access point: Enterprise Management Server



1	Multi system environment	**4**	System access point: Server on which logon request of an operator or installer is processed.
2	Single server system	**5**	Management Server
3	Multi server system	**6**	Enterprise Management Server

Use cases for multi system access

Two Bosch VMS features valid for multi system environments are available:

- Enterprise System
- Server Lookup

An operator might want to access a multi system environment for the following reasons:

- Configure multiple systems (Server Lookup)
- Maintenance and monitoring of multiple systems (Server Lookup)
- Alert (SMS, Email 3rd party) driven on-demand monitoring of multiple systems (Server Lookup)
- Simultaneous connection to multiple servers for seamless operation of one distributed system (Enterprise System)

3 Basic stream settings (schedule-independent)

You can configure different codec profiles in the **Camera and Recording** page of the Configuration Client.

Stream 1		Stream 2		Live Video		Recording	
Codec	Quality	Codec	Quality	Stream	Profile	Device Family	Setting
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
H.264 MP 1080p25/30 fixed	HD Quality (1080p)	Copy from Stream 1	Quality of Strea	Stream 2		Device Family 3	Continuous, Alar
H.264 MP 1080p25/30 fixed	HD Quality (1080p)	Copy from Stream 1	Quality of Strea	Stream 2		Device Family 3	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
H.264 MP (Low Latency, SD)	Good	H.264 MP (Low Latency	Good	Stream 2		Device Family 2	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar

3.1 Codecs and HD resolution

Codecs are part of the basic stream settings. The Bosch VMS gives you default settings for all codecs and qualities. You can change these settings to your own configuration.
It depends on the camera device family which codec you can select.
See the list below for detailed information per device family.

Device family	Description
VIP X 1600 XFM4	You can configure **H.264 BP+** (Baseline Profile+) and **H.264 MP** (Main Profile). By default, **H.264 MP** is configured for both streams 1 and 2. We recommend not changing these settings. **Note:** The **H.264 BP+** codec for XFM4 is limited to 2500 kbps. For VIP X 1600 XFM4 devices specific H.264 codec functions are available in the **Stream Quality Settings** dialog box. You can enable or disable **H.264 deblocking filter** and **CABAC** (Context-based Adaptive Binary Arithmetic Coding) individually for each stream quality. If many Image panes are required to display in Operator Client, resolve performance issues by disabling **CABAC** and **H.264** deblocking filter.
Device Family 1	The MPEG-4 SH++ codec profile is available. **H.264 Baseline Profile** (BP) is not supported in Bosch VMS for VIP X platform devices.

Device family	Description
Device Family 2	For an ARM SD device, select a pre-defined H.264 codec profile (**H.264 MP Low Latency**).You can configure **H.264 MP Low Latency** and **H.264 BP+**. By default, **H.264 MP Low Latency** is configured for both streams 1 and 2. We recommend using this setting. **Note:** The **H.264 BP+** codec for ARM SD devices is limited to 1200 kbps. **Note:** For displaying live video on a VIPX Decoder, select **H.264 BP+** due to hardware limitations of the decoder. It is only possible to use **H.264 BP+** on one stream. If **H.264 MP** is selected, live video on a decoder is not possible.
Device Family 3	As the codec for HD is always H.264, the HD resolutions 720p and 1080p are fixed with the codec configuration. Stream 1 is the main HD stream. You can copy stream 1 and generate a second HD stream with the same settings. Bosch HD devices are able to generate an independent second stream in SD resolution with different settings to stream 1. To generate an SD stream in SD resolution for an HD device, limit the performance of stream 1 (see device's data sheet). Configure the stream quality settings in the stream quality dialog.

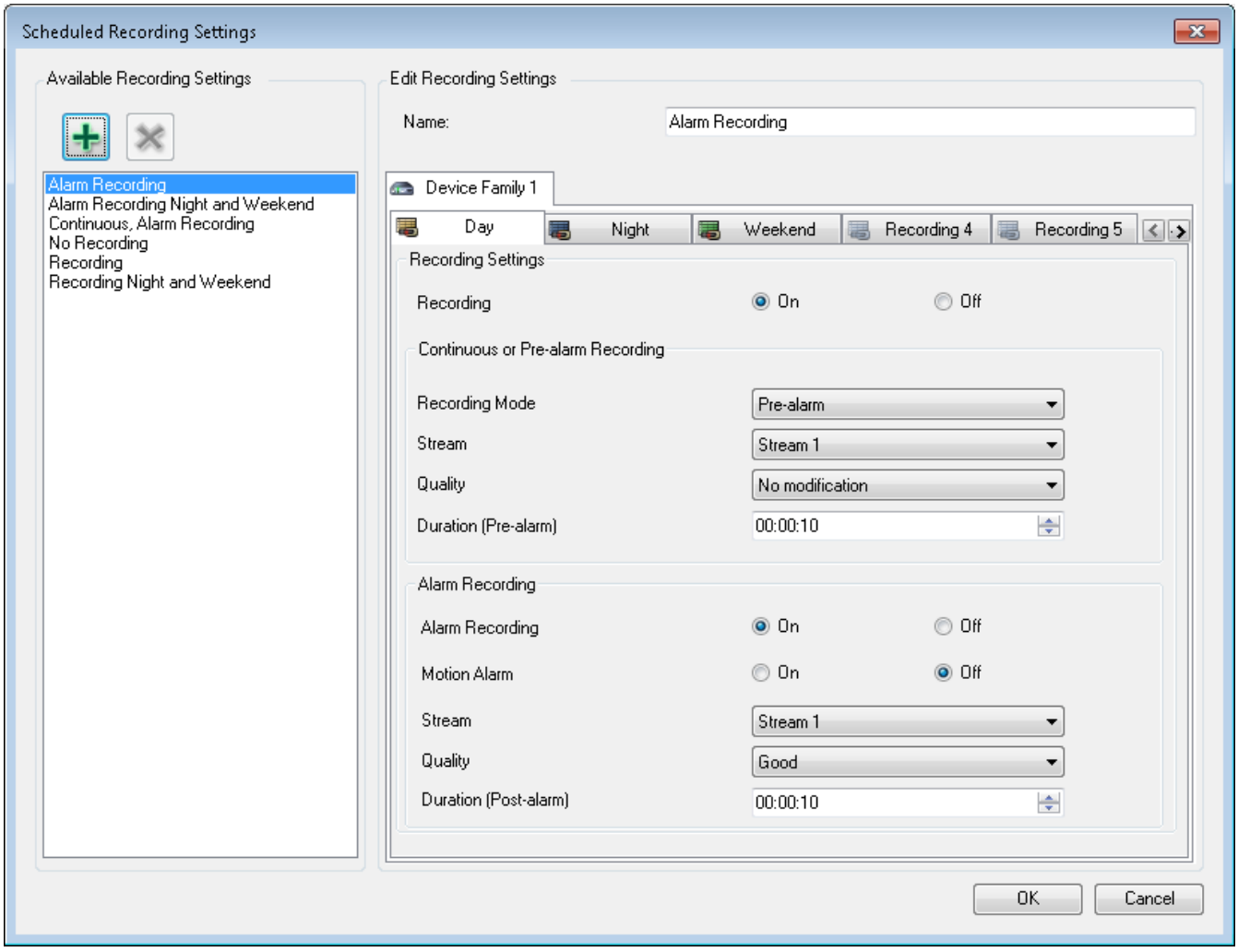
4 Stream assignment for Live Video

You can assign either stream 1 or stream 2 for Live Video. The quality and codec of the basic stream settings are used.

Stream 1		Stream 2		Live Video		Recording	
Codec	Quality	Codec	Quality	Stream	Profile	Device Family	Setting
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
H.264 MP 1080p25/30 fixed	HD Quality (1080p)	Copy from Stream 1	Quality of Strea	Stream 2		Device Family 3	Continuous, Alar
H.264 MP 1080p25/30 fixed	HD Quality (1080p)	Copy from Stream 1	Quality of Strea	Stream 2		Device Family 3	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
H.264 MP (Low Latency, SD)	Good	H.264 MP (Low Latency	Good	Stream 2		Device Family 2	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar

5 Scheduled Recording Settings

To display the **Scheduled Recording Settings** dialog box, click **Edit scheduled recording settings** in the toolbar of the **Cameras and Recording** page.
Cameras are typically grouped by location and/or schedule (e.g. **Alarm Recording Night and Weekend**), and not by technical differences between camera models.
You can map these groups as templates in the **Scheduled Recording Settings** dialog. You perform all recording configurations in this dialog box.
Continuous, Alarm Recording is the default setting for a camera that is added to Bosch VMS.



Stream 1		Stream 2		Live Video		Recording	
Codec	Quality	Codec	Quality	Stream	Profile	Device Family	Setting
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
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H.264 MP (Low Latency, SD)	Good	H.264 MP (Low Latency	Good	Stream 2		Device Family 2	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar
MPEG-4 SH++	Normal	MPEG-4 SH++	Good	Stream 2		Device Family 1	Continuous, Alar

In the dialog you configure for a device family and a schedule which stream for the selected recording mode is to be used. Usually you should not configure the quality for devices of **Device Family 2** or **Device Family 3** here. Select the quality for each camera individually in the Recording Table. For **Device Family 1** we recommend configuring a quality setting in the dialog, not in the Recording Table.

In the **Scheduled Recording Settings** dialog you configure the recording settings of the devices. Bosch VMS displays pre-defined recording settings (templates). You can modify these templates to your needs or you can add new templates.

You can configure the recording settings per device family independently per schedule. Possible recording settings are:

	Device Family 1	Device Family 2	Device Family 3
Recording Settings			
Recording	On / Off (setting valid for all device families)		
Normal Recording			
Recording Mode	Continuous Prealarm	Continuous Prealarm	Continuous Prealarm
Stream	Stream 1	Stream 1 Stream 2	Stream 1 Stream 2 I-Frame only (from stream 1)
Quality	No Modification Pre-defined / user-defined qualities (recommended)	No Modification (recommended) Pre-defined / user-defined qualities	No Modification (recommended) Pre-defined / user-defined qualities
Duration (pre-alarm)	15s - 3h	15s - 3h	15s - 3h
Alarm Recording			
Alarm Recording	On Off	On Off	On Off
Motion recording	On Off	On Off	On Off
Stream	Stream 1	Stream 1 Stream 2	Stream 1 Stream 2 I-Frame only (from stream 1)
Quality	No Modification (recommended) Pre-defined / user-defined qualities	No Modification (recommended) Pre-defined / user-defined qualities	No Modification (recommended) Pre-defined / user-defined qualities
Duration (post-alarm)	5s - 3h	5s - 3h	5s - 3h

You should give your configuration a descriptive name which is then displayed in the **Available Recording Settings** list.
You can select all configured recording settings in the cameras list. Assign one recording setting per camera. You can copy and paste one setting to all cameras for fast configuration.

5.1 Changing qualities in schedules

You can configure stream qualities per recording schedule. Depending on the encoder/camera devices, you can modify the quality properties.

Device Family 1	Device Family 2 and 3
Streams	
You can change recording qualities (incl. resolution change) for example for alarm recording.	You can modify the existing stream with the settings of another stream quality. But only **Image encoding interval** and **Target bit rate** are modified. Other settings like the resolution are not modified.
Notes	
For the XFM4 platform possible recording gaps can be up to 4 frames, 133/160ms (NTSC/PAL) on alarm recording and schedule change if active recording quality differs.	Possible recording gaps can be up to 12 frames, with 1 IPS up to 12 seconds on schedule change if active recording quality differs from old to new schedule.
Examples	
	Stream 2 is selected for normal recording and configured with **Normal** quality. For an alarm the **Excellent** quality is selected. When an alarm occurs, all settings of the **Normal** quality are used except **Image encoding interval** and **Target bit rate** which are modified with the values of **Excellent**.

6 Resolutions

In the following table the resolutions of Bosch cameras are listed:

Camera model	Resolution
XFM4	4CIF, 2CIF, 1/2D1, 2/3D1, CIF, QCIF
VIP-X1XF (CPP3)	4CIF, CIF
VGA cameras (Taiwan, CPP3)	VGA, QVGA
SD cameras (CPP3)	4CIF, CIF
HD cameras (CPP3, CPP4)	1080p, 720p

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