Overview

Bosch Security Systems manufactures hundreds of different video security devices. The IP video product line spans multiple product families to include standard definition (SD), 720p and 1080p high definition (HD), megapixel (MP), ultra-high definition (UHD), and panoramic cameras. Bosch Video Management System (BVMS) has the ability configure and manage stream quality and recording settings for all these different types of devices. The purpose of this guidebook is to help system owners maximize their usage of device features and capabilities.

Product Fundamentals:

Bosch video devices are broken up into categories known as Common Product Platforms (CPP). A device’s category is based on several factors to include the Digital Signal Processor (DSP) it is equipped with, and its inherent capabilities. When selecting firmware to install on a device, the firmware is also categorized by CPP number.

![CPP-Enc, CPP-3, CPP-4, CPP-5, CPP-6](image)

All Bosch video devices supply a minimum of two (2) independently configurable streams that can be configured and utilized while working with BVMS:

- Stream 1 is the default recorded stream
- Stream 2 is the default live viewing stream

When working in BVMS, you will notice that video devices are further broken down into categories called Device Families. These Device Family categories make the configuring and management of devices simpler and more effective.

- **Device Family 1**: This device family is comprised of older H.263 IP cameras and encoders that are categorized as CPP-ENC
- **Device Family 2**: This family includes SD and HD CPP-3 devices that are H.264 capable. This family also include the VIDEOJET multi 4000 encoder (CPP-5)
- **Device Family 3**: All CPP-4, 6, and 7 devices are members of this family

There are several “key” configurations that are performed in BVMS that are specific to a family type. These family groupings provide you a way to configure SD, HD, MP, UHD, and panoramic cameras simultaneously, even though they all support different resolutions, frame rates, aspect ratios, and compression codecs.
Schedules:
Prior to making any stream or recording setting modification, the system’s “Recording Schedules” should be modified to reflect the specification for the system

- Select the “Schedules” tab in the top portion of Configuration Client

By default, there are three (3) configured recording schedules, *Day, Night, and Weekend*, all of which can be modified. There are ten (10) available recording schedules, all of which are color coded

To modify any portion of the system's Recording Schedule, highlight one of the existing ten recording schedule options. In this example, “Day” was selected

- Select a starting spot on the system schedule, then click-hold, and drag your mouse across the time slots desired.

- Below is a simple modified schedule: Day 6AM to 8PM / Night 8PM to 6AM
Stream Quality Settings (SQS):

Because there can be a diverse collection of video equipment deployed in any given installation, and certain video products can be configured with different “Application Variants”, BVMS has an improved GUI that allows you to configure any stream quality for any given situation.

Setting the appropriate Stream Quality Setting for devices in your system is the first and most important step in configuring any system. The Stream Quality Settings are located in the “Set Recording Qualities” submenu and can be accessed in one of two ways:

- Select the main “Settings” menu and then select the “Set Recording Qualities...” submenu
- From the “Cameras and Recording” tab, select the “Diamond” icon on the toolbar

Once the menu has opened, you will see a listing of available Static base profiles on the left side. These base profiles provide a starting point for several scenarios based on FPS, target and maximum bit rate, and resolution. There are general options to choose from:

- **Image Optimized**: This setting is optimized for image quality and can be a burden on the network
- **Bit Rate Optimized**: This setting is optimized for low bandwidth. This profile can reduce the image quality but produces a lower bandwidth
- **Balanced**: This setting offers a balance between optimal image quality and optimal bandwidth usage.

**Note**: Excellent, Good, and Normal profiles are based on legacy devices and are no longer effective.

Each of these options provides four base frame rates to choose from:

- Option one (example; Image Optimized)= 30 Frames Per Second (FPS)
- 1/2 FR= 15 FPS
- 1/4 FR= 7.5 FPS
- 1/8 FR= 3.75 FPS
Creating and Modifying a New SQS:

To create and properly modify a new Stream Quality Setting:

- Select the desired base profile you want to use as a starting point
- Select the plus (+) tab under Stream Qualities
- This will create a duplicate of the base profile.
- In this example, it created "Bit Rate Optimized1."
- Highlighting the new profile allows the renaming of the profile as well as edit access to all sub profiles.

In this example, the profile is renamed to "My Installation". By selecting the "dropdown" option of the profile, it reveals multiple submenus:

- Each submenu is associated with a specific camera and any of the different Application Variants that it can be configured in. Example: A 5MP camera can be configured in either 4:3 or 16:9 aspect ratio
- Each submenu allows access to stream 1 and 2 of each profile device. This allows FPS and Bit Rate modification.

Device platform and Application Variant can quickly be identified in the “Cameras and Recording” tab, VRM submenu. This menu contains two important columns: Platform and Device Family.
Stream Settings

To modify specific stream settings for a particular device, select the type of device and select the desired stream:

- Stream 1 is the default “Recording Stream”
- Stream 2 is the default “Live Viewing Stream”

The following modifications can be made to each individual stream:

- **SD video resolution**: HD devices can be scaled down to SD. This setting reflects the resolution that will be used if downscaled.

- **Image encoding interval**: The DSP of a Bosch video device never changes cycles or “frame rates”, it is always running at 100% for efficiency purposes. It delivers the correct amount of video to users and storage devices by only placing the desired number of frames on the network when requested or assigned.
  - The equation for Frame Rate is: \(30 / \text{Encoding Interval} = \text{FPS}\). Example: \(30/2 = 15\) FPS
  - For 60 FPS devices, the same equation is used replacing the “30” with a “60”

- **Target data rate**: This is the bit rate that the encoder will always try to achieve when transmitting video, or sending video to storage.

- **Max data rate**: This is the maximum bit rate the encoder will produce and place on the network. Once the max bit rate has been achieved, the encoder will automatically reduce the resolution of the video’s I-Frames and P-Frames

Note: I-Frame distance should not be modified unless directed by Technical Support
Assigning Stream Settings

From the “Cameras and Recording” tab and the VRM submenu, each device has an assignment menu for both “Stream 1” and “Stream 2”.

- **Quality**: From this drop down menu, any base or newly created profiles can be selected
- If a different “Recording Schedule” profile is selected for Stream 1, then this setting will be overridden. Recording takes precedence

- If all sub profiles of a SQS were modified, the same profile can be quickly applied to all devices in the system.
- Right click the profile name in the “Quality” window and select “Copy Cell to”
- Select the “Complete Column” sub menu

Depending on the CPP of a device, “Stream 2” can be modified in one of several ways:

- If “Copy From Stream 1” is selected, no profile modification can be made
- If any other codec has been chosen, the “Quality” can be modified to reflect the desired profile

**Panoramic Cameras**

BVMS performs Client-Side dewarping for all Bosch panoramic cameras. This means that Stream 1 is the full panoramic view. To successfully configure and utilize a second stream at different frame rate, the codec for Stream 2 must be set to “H.264 MP HP 800x800.

- Shown below is the “Codec” for the 7000 Panoramic Camera
Recording Settings

In order to ensure that a system is configured to record at the correct bit rates and FPS, the correct recording settings must be configured.

- To access the recording settings menu, select the “Edit scheduled recording settings” icon in the toolbar.

The “Scheduled Recording Settings” menu comes with six (6) base recording profiles that can be modified. This menu can manage over fifty (50) different scheduled recording settings.

- To create a new scheduled recording setting, select any of the base recording profiles and then select the plus (+) tab at the top of the menu.
- A copy of the base recording schedule will be made.
- The newly created copy can be renamed and modified as needed. In this example, the recording profile was renamed “MY SYSTEM”.

Once you have created or selected a recording setting, prior to making modifications, be aware of the device family you are working with.

- Device Family tabs will appear only if an applicable device has been added to the system.
- If working with more than one Device Family, you must modify the recording settings for EACH family tab if the recording setting is used for all families.

Each Family tab also allows you to access the system’s “Recording Schedules”. Each family’s recording profile needs to be modified for each “active” schedule.
The Continuous or Pre-Alarm Recording section of the menu allows the following modifications:

- Recording: On or Off
- Recording Mode: Continuous or Pre
- Quality: Select the profile to be used by stream 1 to record
- This setting always takes precedence over Stream 1 quality settings

The Alarm Recording section of the menu allows the following modifications:

- Alarm Recording: This is enabled by default and allows the video to be tagged as alarm recording for any associated configured event in the system
- Motion Alarm: This is off by default. This must be enabled, if motion alarms from the device are to be tagged as alarm video
- Stream: This menu allows you to specify which stream will be recorded as alarm video
- Quality: This menu allows you to select the “profile” that will be used by the alarm stream

Assigning Recording Settings

Assigning specific “Scheduled Recording Settings” to devices is performed in the “Cameras and Recording” menu, VRM submenu.

On the far right hand portion of the menu page, there is the “Recording” section:

- Setting: This menu allows you to select the desired recording profile. Example “MY SYSTEM”
- Storage Min: This menu allows you to define the minimum time that recordings will be kept before they are allowed to be overwritten
- Storage Max: This menu allows you to define the maximum time that recordings will be kept before they are released
  - Unlimited places the recording into a classic “FIFO” mode, like a DVR