CONFIGURATION MANUAL

XT-VIA Server

Version 20.6 | October 2023

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The latest version of the user manual and other EVS product documentation can be found on the EVS documentation portal. The documentation portal can be accessed through the VIA Portal on the following webpage: https://viaportal.evs.com/.

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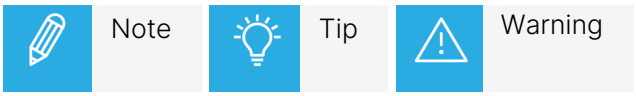
ICONOGRAPHY



What's New?

In the Configuration Manual the icon NEW ! has been added on the left margin to highlight information on updated features.

The changes linked to new features in version 20.6 are listed below.

The General settings in the Live IP Configuration window have been simplified. A Protocol Config tab regroups settings related to PTP, NMOS and Ember+ services and IP transport protocol.

- See section "Protocol Configuration" on page 482

A Group PGM Clean & Dirty parameter has been added in the new Protocol Config tab.

- See section "Protocol Configuration" on page 482

The Live IP configuration can be exported while Multicam is still running.

- See section "Importing and Exporting LiveIP Configurations" on page 490.

The default assignment of live IP video streams to the SFP+ ports has been reviewed.

- See section "Overview of Video IP Configuration" on page 410.
- See section "LiveIP Settings for Video Streams" on page 418.

New UHD-4K SLSM IO configurations are available.

- See section "UHD-4K SLSM Configuration Overview" on page 178.
- See section "UHD-4K SLSM Configurations" on page 179.

The following changes unrelated to new features, and therefore not highlighted with the New icon, have been brought to the configuration manual:

When upscaling 1080p to UHD-4K, 12G-SDI is not available.

- See section "Upscale of 1080p into UHD-4K" on page 185.

1. Introduction

1.1. Introduction to the Configuration of EVS Servers

Configuration Module

The Multicam Setup application is used for configuration and maintenance operations on EVS video servers. It is also used to select which application to run, since EVS disk recorders have the ability to run various dedicated applications (Video Server, Slow Motion, ...).

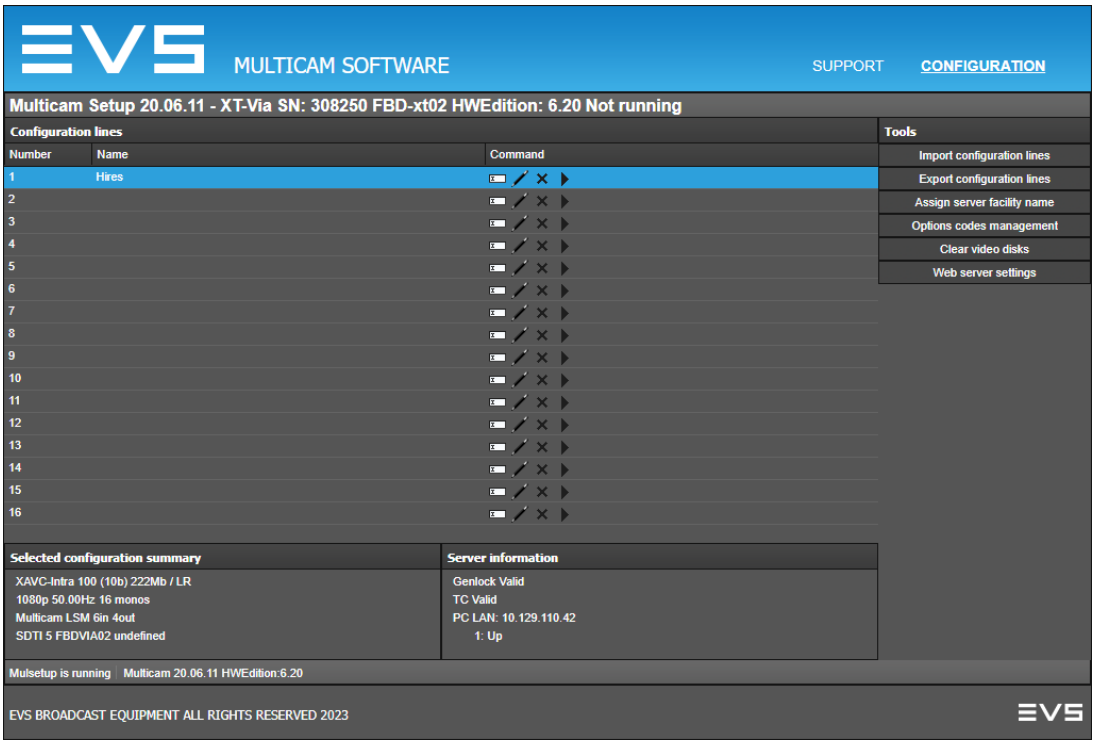
The configuration module has been developed along the lines presented in this section.

Consolidation into a Single User Interface

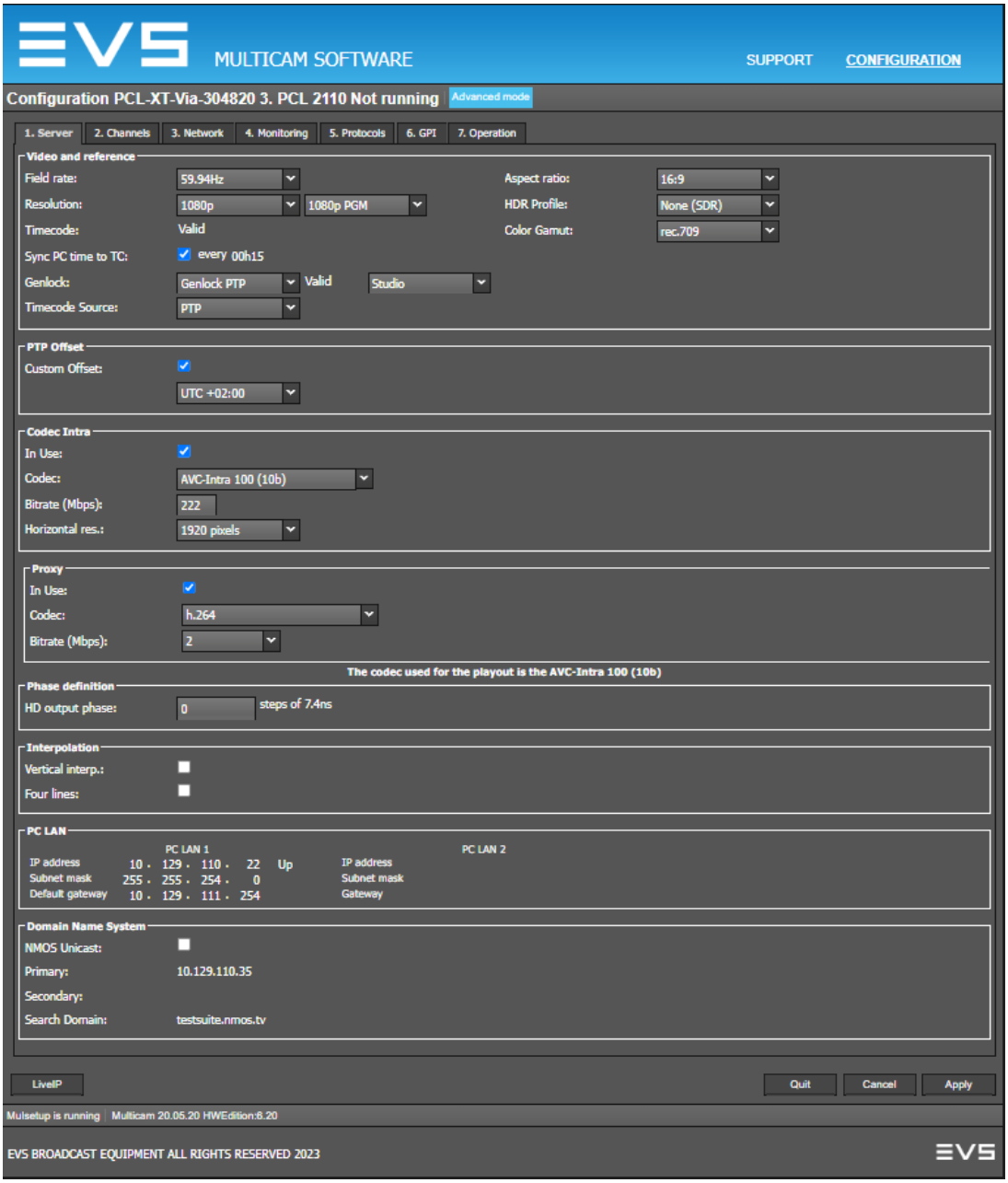
The server can be fully configured from a single user interface.

The user interface includes:

- a setup section presented on one page with two main areas which give access to the configuration lines and the most used maintenance commands:



- a configuration section for each configuration line. It is presented in seven tabs which easily give access to all configuration parameters:



Simple User Interface

The user interface is simple and clear thanks to:

- the separation of basic and advanced parameters

  The most commonly used parameters are displayed in a basic mode while more specific parameters are hidden, and can be displayed when you toggle to the advanced mode.

- the filtering of the parameters displayed

  The parameters are only displayed when they are applicable to the chassis type, the video standard and option codes.

Parameter Changes While Server is Running

Changes to most parameters can be performed and are taken into account while the server is running.

Changing some parameters requires an application reboot. See section "Required Application Reboot" on page 208 for a detailed list of these parameters.

Easy Audio Configuration

The audio configurations are open and easily configurable as it is possible to:

- modify the audio parameters while the server is running
- configure individual outputs for Embedded, Digital, and MADI audio.
- configure audio monitoring settings directly from the Remote Control panel.

Configuration Available from Server, Web and Remote Panel

You can configure the EVS server using one of the three available tools:

- The server-based application (VGA) features all settings and commands for the setup and configuration.
- The web-based interface is equivalent to the server-based application and enables engineers to configure the EVS server remotely.
- The Remote Panel includes:
  - a technical setup menu that gives access to the most commonly used technical settings.
  - an operational setup menu that only provides operational settings.

The following table gives an overview on the features available in each user interface:

	EVS Server Configuration		
	Setup Window	Configuration Window	
		Technical Settings	Operational Settings
Server-Based Application	Yes	Yes (tabs 1-6)	Yes (tab 7)
Web-Based Interface	Yes (except some Tools commands)	Yes (tabs 1-6)	Yes (tab 7)
Remote Panel	No	Yes (Technical Setup F0)	Yes (Setup Menu SHIFT+D)

1.2. Introduction to the Manual

Documented User Interfaces

The Server Configuration manual deals with all user interfaces used to configure Multicam: server-based application, web-based interface, and Remote Panel.

- On the one hand, the information on navigability and editing commands, specific to the user interface, is described in clearly separated sections.
- On the other hand, the reference information on and the description of configuration parameters are described in common sections valid for all user interfaces. A clear overview shows whether and where the parameters are available in each user interface.

The web-base interface has undergone small cosmetic changes. The screenshots have not yet been updated in the configuration manual.

Configuration Manual Structure

The Server Configuration manual is organized in two sections:

- A section dedicated to the Multicam Setup window that mainly features:
  - the configurations lines and their management
  - the functions related to server administration and maintenance.
- A section dedicated to the Multicam Configuration window, organized in seven tabs, which describes all server configuration parameters that can be defined for each configuration line. The section includes:
  - the parameter description itself
  - other server-related information needed for the configuration

1.3. Starting the EVS Server

Introduction

When switching on the EVS server, the first step is the PC boot sequence, followed by the boot of the video I/O boards, and finally the Multicam Setup application is started.

When Starting the EVS Server for the First Time

Before you first use your EVS server, you need to perform the following tasks:

- Define the configuration lines your EVS server should run.

  For more information, see section "Configuration Lines" on page 13.

- Define the configuration parameters for each configuration line you will need.

  In this step, you will define, among others, the channel configuration for the selected configuration line, as well as audio and video parameters for the EVS server.

  For more information, see section "Multicam Configuration" on page 1.

When Starting the EVS Server After Initial Configuration

After the initial configuration, you will select a configuration line and press ENTER to run the server in this configuration. See section "Launching a Configuration" on page 14. As soon as the EVS server is launched in a configuration, it starts the loop recording process.

1.4. Accessing the Web-Based Interface

Prerequisite

When the EVS server is started, you can access the web-based interface of the Multicam Setup application for that EVS server from any computer on the same network range as the EVS server. You can use any browser to open the web-based interface.

How to Access the Multicam Web Homepage

To open the homepage of the web-based interface in a browser, type the IP address of the PC LAN of the EVS server: `http(s)://<PCLAN IP Address>`, for example `http(s)://10.129.59.80`

See section "Setting the Server PC LAN Connection" on page 27 for more information.

The Multicam Web homepage gives access to:

- the configuration and technical reference manuals
- a QR code to download the EVS Server Configuration application from the Google Play store or the Apple store.

How to Access the Multicam Web Setup Window

To open the Multicam Setup window of the EVS server, type this URL: `http(s)://<PCLAN IP Address>/cfgweb/`.

Protection Against Clickjacking

The Multicam web-based interface (Multicam Setup application and LiveIP Configuration module) is protected against clickjacking.

Clickjacking is the practice of tricking a user into clicking on a link, button, etc. that is other than what the user thinks it is. This can be used, for example, to steal login credentials or to get the user's unwitting permission to install a piece of malware.

The Advanced View in Truck Manager might be impacted.

2. Multicam Setup

2.1. Overview of User Interfaces

2.1.1. Overview of the Setup Areas

General Description

The Multicam Setup window is the window that opens first when the Multicam Setup application is launched. It is displayed when the EVS server is started but does not run a given configuration yet.

The Multicam Setup window allows users to:

- view and manage the various configuration lines.
- perform some administration and maintenance tasks on the EVS server.
- view summary information on the EVS server and the selected configuration line.

This is available in both server-based and web-based Multicam Setup applications.

Both user interfaces include the same features, except that the Tools menu offers fewer commands in the web-based user interface.

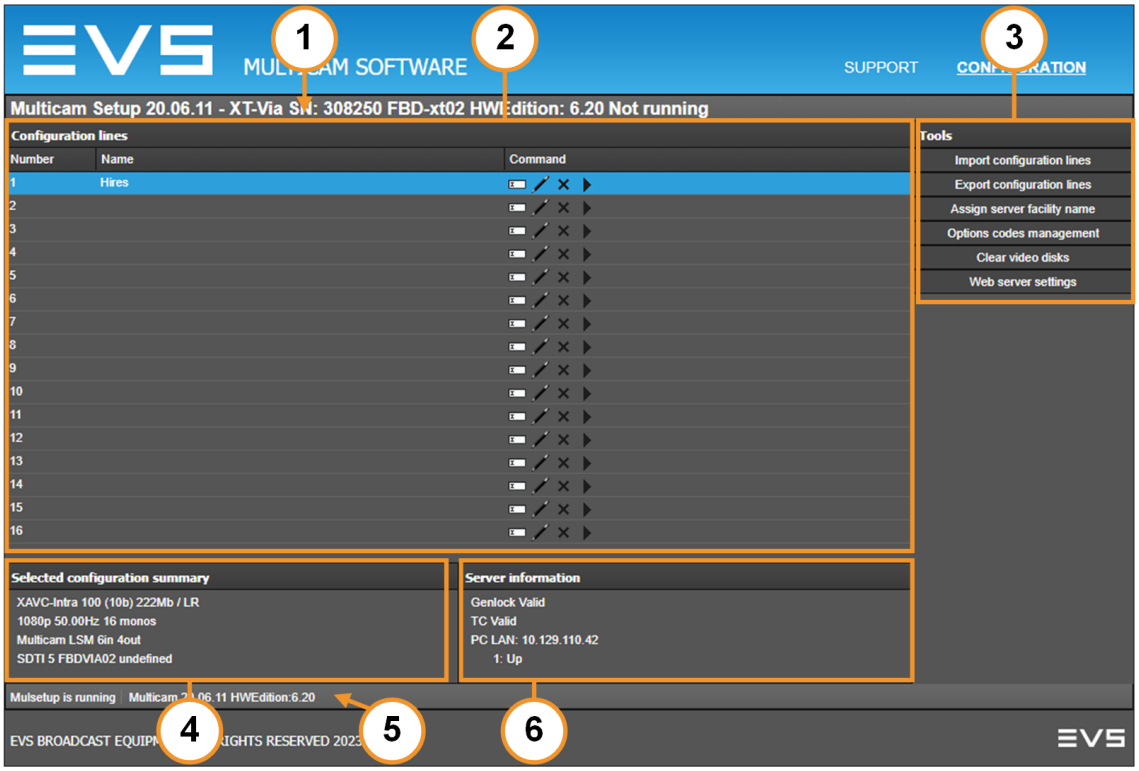
User Interfaces

The Multicam Setup window contains six areas highlighted and described below.

These areas contain similar information in both web-based and server-based applications.

The following screenshot presents the Multicam Setup window in the server-based application:

The following screenshot presents the Multicam Setup window in the web-based interface:



Description of the Areas

The table below describes the various parts of Multicam Setup window:

#	Name of area	Description
1.	Title bar	The title bar displays the following information: • Multicam version • chassis type • server serial number • server facility name (if any) • hardware edition
2.	Configuration Lines	This area shows all configurations the EVS server can run: • 16 configurations lines are available on an EVS server. A default configuration is defined behind all configuration lines, even if no name is assigned to the configuration line. • Each configuration line contains all configuration parameters, which allow a very flexible configuration of the EVS server. See section "Configuration Lines" on page 13 for more information.
3.	Tools	This area provides the main commands for server administration and maintenance. For more information, click the **Tools** command below to go to the dedicated sections in the Multicam Setup chapter: • Import/export configuration lines • Assign server facility name • Import/export keyword files • Export log files • Options code management • Web server settings • Hardware check • RAID Configuration • Upgrade disk firmware • Set LAN PC address • Set date and time • Clear video disks • Reboot • Enable password for technical settings
4.	Configuration Summary	This area shows a summary of the server parameters for the configuration line selected in the Configuration Lines area. The summary displays the following information: 1. codec type - bitrate - video standard (for each active codec) 2. based config - INs/OUTs - No. audios 3. XNet No. - server name - XNet server (Preferred, Allowed, Forbidden)

#	Name of area	Description
5.	Task bar	The Task bar (Server-based application) displays commands for the main actions in the window. See section "Navigability and Commands" on page 11 for more information.
5'.	Status bar	The Status bar (web-based interface) displays: • the Multicam process status • the Multicam software version • the Hardware Edition
6.	Server Information	This area displays the following information on the EVS server: • genlock status (OK or bad) • timecode and timecode status (OK or bad) • IP address of the PC LAN (if DHCP off) or **DHCP** (if DHCP on) • Status of the PC LAN connection(s): **Up** or **Down**

2.1.2. Navigability and Commands

In the Server-Based Application

General Navigability

The following table presents the general commands to navigate in the Multicam Setup window:

Command description	Command key
Moving the cursor to the first item of the Tools menu	F9
Moving the cursor to the first configuration line	ESC
Moving down in the list of editable items (configuration lines and Tools commands)	TAB
Moving up in the list of editable items	SHIFT+TAB
Displaying a Help window that gives a summary of the commands	F1

Configuration Lines

In the Configuration Lines area, a configuration line is highlighted when it is selected.

The main commands for configuration line management are presented below:

Command description	Command key
Moving up in the list of configuration lines	UP ARROW
Moving down in the list of configuration lines	DOWN ARROW
Starting the server with a given configuration line	ENTER on selected line.
Entering the Configuration window to edit the settings related to a selected line	F8
Renaming a configuration line	CTRL + F1
Deleting a configuration line	CTRL + DELETE

See section "Configuration Lines" on page 13 for more commands on configuration lines.

Tools Menu

Command description	Command key
Selecting a tool command	Pressing the shortcut key (between brackets in the command name)
Calling a tool command	ENTER on the selected command

In the Web-Based Interface

To be sure that changes have been taken into account in the web-based interface, refresh regularly the page by clicking the **Refresh** button  in the status bar.

Configuration Lines

Command description	Command icon
Renaming the configuration line	
Entering the Configuration window to edit the settings related the configuration line	
Deleting the configuration line	
Starting the server with the corresponding configuration line	

Tools Menu

To call a Tools command, simply click on the command in the Tools menu. This will open the corresponding window.

2.2. Configuration Lines

The table below presents the topics of this section and shows whether the feature described is available from the web-based interface and/or from the server-based interface.

Section	Page	Server-Based	Web-Based
"Launching a Configuration"	2.2.2	Yes	Yes
"Editing a Configuration"	2.2.3	Yes	Yes
"Renaming Configuration Lines"	2.2.4	Yes	Yes
"Importing and Exporting Configuration Lines"	2.2.5	Yes	Yes (one by one)
"Changing the Position of Configuration Lines"	2.2.6	Yes	Yes (indirectly)
"Copying, Pasting and Deleting Configuration Lines"	2.2.7	Yes	Yes (indirectly)

2.2.1. Chapter Contents

The table below presents the topics of this section and shows whether the feature described is available from the web-based interface and/or from the server-based interface.

Section	Page	Server-Based	Web-Based
"Launching a Configuration"	2.2.2	Yes	Yes
"Editing a Configuration"	2.2.3	Yes	Yes
"Renaming Configuration Lines"	2.2.4	Yes	Yes
"Importing and Exporting Configuration Lines"	2.2.5	Yes	Yes (one by one)
"Changing the Position of Configuration Lines"	2.2.6	Yes	Yes (indirectly)
"Copying, Pasting and Deleting Configuration Lines"	2.2.7	Yes	Yes (indirectly)

2.2.2. Launching a Configuration

Introduction

When the EVS server has initialized, the Multicam Setup window stays open, by default, until the operator selects the requested configuration line and launches it.

Multicam can encode the video signal simultaneously in a low-res and hi-res essences, and grant a seamless access to the video material in all active essences. The material ingested on an EVS server must therefore, as much as possible, be and remain available on this server in both active essences. For this reason, some restrictions or checks are applied when you launch a configuration.

How to Manually Launch a Configuration

In the Server-Based Application

To start a configuration in the server-based application, proceed as follows:

1. Press the **UP ARROW** or **DOWN ARROW** key to respectively move up and down in the list of configuration lines until the requested line is highlighted.
2. Press **ENTER** to run the configuration line on the EVS server.

In the Web-Based Interface

To start a configuration in the web-based interface, click the **Launch** icon  next to the configuration line you want to launch.

Automatic Launch

From the server-based application, it is possible to set the server so that the last used configuration line is automatically launched when the Multicam Setup window has stayed open for five seconds.

To activate the automatic launch, press **F7** on the requested configuration line in the Multicam Setup menu before launching this configuration. This configuration line is then highlighted in black (no longer in green) to indicate the automatic launch is active. The last used configuration line will then be launched automatically after a five seconds' delay the next time the EVS server will be restarted.

If you want to change the configuration line to be launched, you need to rapidly hit a key on the keyboard connected to the EVS server within five seconds after the Multicam Setup window has been displayed. Then, the Multicam Setup window will stay open and let you select another configuration.

2.2.3. Editing a Configuration

How to Edit a Configuration

Introduction

When the operator hits a key on the keyboard connected to the EVS server (within five seconds if the automatic launch of a configuration is active), the Multicam Setup window stays open, and the operator can select and enter the selected configuration to edit it.

16 configurations lines are available on an EVS server. A default configuration is defined behind all configuration lines, even if no name is assigned to the configuration line.

Each configuration line contains all configuration parameters, which allow a very flexible configuration of the EVS server.

In the Server-Based Application

To edit a configuration line in the server-based application, proceed as follows:

1. Press the **UP ARROW** or **DOWN ARROW** key to respectively move up and down in the list of configuration lines until the requested line is highlighted.
2. Press **F8**.

   The Configuration window opens. See section "Multicam Configuration" on page 1 to edit the configuration parameters.
3. When the configuration is defined for a given line, press **ALT+A** in the Configuration window to validate the changes
4. Press **ESC** to come back to the Setup window.

In the Web-Based Interface

To edit a configuration line in the web-based interface, proceed as follows:

1. Click the **Edit** icon  for the configuration line you want to configure.

   The Configuration window opens. See section "Multicam Configuration" on page 1 to edit the configuration parameters.

2. When the configuration is defined for the given line, click **Apply** to validate, and then **Quit** to come back to the Setup window.

Invalid Configuration

Invalid configuration lines are easily detected in the server-based application:

- When a configuration line becomes invalid, a red exclamation mark <!> is displayed next to the configuration line in both server-based and web-based interfaces:

- When the operator presses **F8** to edit the configuration line in the server-based application, a popup window indicates the line is invalid. When the operator acknowledges the message, the pages including the invalid parameters are displayed with the invalid parameters selected.

2.2.4. Renaming Configuration Lines

Introduction

When the EVS server is delivered, default names are assigned to the configuration lines. You can change them as explained below.

In the Server-Based Application

To rename the configuration line in the server-based application, proceed as follows:

1. Press the **UP ARROW** or **DOWN ARROW** key to respectively move up and down in the list of configuration lines until the requested line is highlighted.
2. Press **CTRL+F1**.

   The line if highlighted in pink and the cursor blinks on the first character.

3. Type the new name for the configuration line taking the following into account:
   - The space bar allows you to delete the selected character.
   - The **LEFT ARROW** and **RIGHT ARROW** keys allow you to move the cursor position on the line.
4. Press **ENTER** to validate the new name.

The new name is assigned to the configuration line and reflected in all user interfaces.

In the Web-Based Interface

To rename the configuration line in the web-based interface, proceed as follows:

1. Click the **Rename** button  next to the configuration line you want to rename.
2. In the **Rename** dialog box, type the new configuration name.
3. Click **OK**.

The new name is assigned to the configuration line and reflected in all user interfaces.

2.2.5. Importing and Exporting Configuration Lines

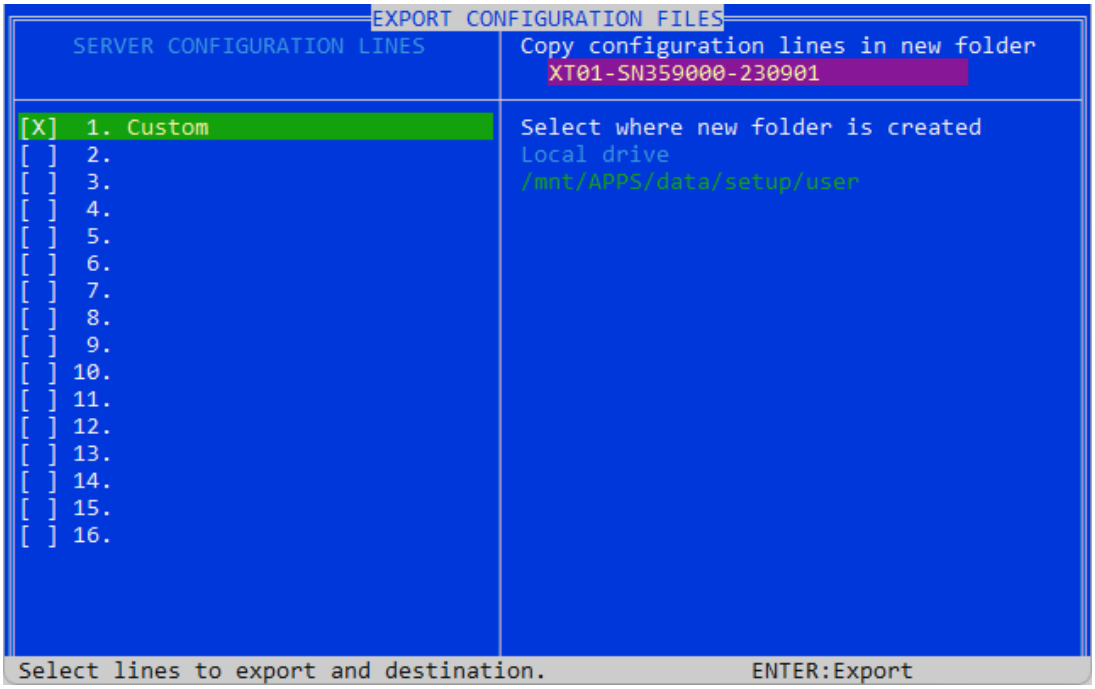
How to Export Configuration Lines

The screenshots in this section features configuration names which are examples, and may not reflect configurations supported on your EVS server.

In the Server-Based Application

To export configuration lines from an EVS server in the server-based application, proceed as follows:

1. In the Multicam Setup window, press **P** to call the **Export Configuration Lines** command. The Export Configuration Lines window opens:
   - The left pane allows the selection of the configuration lines to be exported
   - The right pane allows the selection of the location where the export folder will be created on the USB key, or on the local drive folder `/mnt/apps/data/setup/user` (`/setup/user` via FTP) or on a subfolder.



2. If requested, change the name of the folder the configuration lines will be exported to:
   - By default, the folder name, displayed in the upper right corner, follows the pattern: <server facility name_current date> where the date has the YYMMDD format.
   - To change the export folder name, type the requested name. You can do this any time in the procedure.
3. If requested, change the selection of configuration lines selected for export on the left pane:
   - By default, a cross is displayed in front of all configuration lines, which means they are all selected for export.
   - To deselect a line, use the **UP ARROW** or **DOWN ARROW** key to highlight the requested line, and press **SPACEBAR**. The cross is removed, and the deselected lines turn light gray.
4. Press **TAB** to shift the focus to the right pane.
5. If requested, change the location where the export folder will be created:
   - By default, the export folder is created on the USB key root or on the local drive folder the local drive folder `/mnt/apps/data/setup/user`.
   - To change the folder where the export folder will be created, highlight the requested folder. The last highlighted folder will be considered as the requested location.
6. To start the export process, press **ENTER**.

7. When the selected lines are exported (as a .lin file), a message opens to confirm the export. Click **OK** to acknowledge the message.

In the Web-Based Interface

In the web-based interface, it is only possible to export configuration lines one by one.

To export configuration lines from an EVS server in the web-based interface, proceed as follows:

1. From the Multicam Setup window, click **Export configuration lines** in the Tools menu.

   The Export configuration lines window opens.
2. Click **Export** next to the configuration line you want to export.
3. In the File Download dialog box, click **Save**.
4. Select the location where you will save the export configuration file (.lin file) and, if requested, change the file name.
5. Click **Save**.

The export file is saved at the requested location.

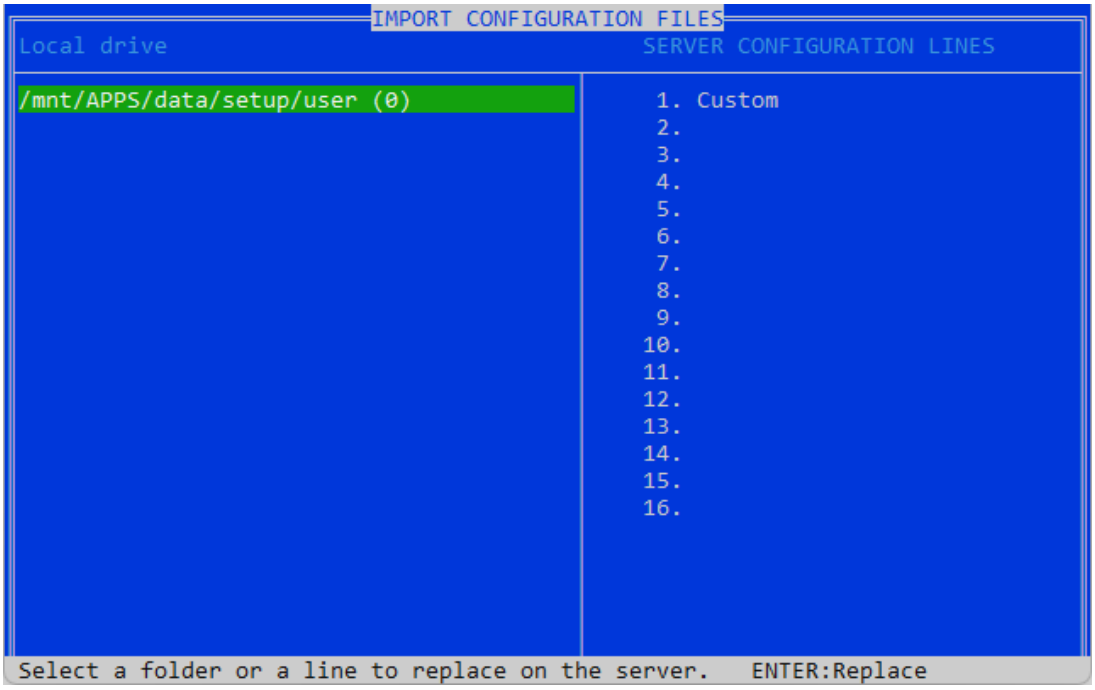
If you want to export several configuration lines, repeat this operation for all requested configuration lines.

How to Import Configuration Lines

In the Server-Based Application

If the EVS server is password-protected, you should deactivate the password protection. Otherwise, you will only be able to import the operational settings of the configuration lines selected for import.

1. In the Multicam Setup window, press **M** to call the Import Configuration Lines command.
2. The Import Configuration Files window opens:
   - The left pane allows the selection of the folder containing the configuration files to be imported.
   - The right pane allows the selection of the configuration lines to be imported onto the EVS server.



3. On the left pane, use the **UP ARROW** or **DOWN ARROW** key to highlight the folder that contains the configuration file you want to import.

   When the folder is selected, the right pane shows:

   - a cross in front of the configuration lines that will be imported.

     The lines are imported onto the same position and with the same name as in the export file.

4. Press **TAB** to shift the focus to the right pane.
5. If requested, deselect lines you do not want to import:
   - By default, all configuration lines present in the .lin file will be imported onto the EVS server.
   - To deselect a line, use the **UP ARROW** or **DOWN ARROW** key to highlight the requested line, and press **SPACEBAR**. The deselected lines turn light gray and the cross is removed.
6. Press **ENTER** to validate the selection of configuration lines to import.

   A warning message informs you about which configuration lines will be imported, and tells the next screen will allow you to select which settings to replace.
7. Select 'Yes' using the **RIGHT ARROW**, and press **ENTER**.
8. In the Select settings to replace window, select the type of settings you want to import for the selected configuration lines:
   a. Press **SPACEBAR** to select or deselect a settings type.
   b. Press **TAB** to move to the next settings type.
   c. Repeat these steps for all settings types you want to import.
9. Press **ENTER** to start the import process.

In the Web-Based Interface

In the web-based interface, it is only possible to import configuration lines one by one.

To import configuration lines onto an EVS server in the web-based interface, proceed as follows:

1. From the Multicam Setup window, click Import configuration lines in the Tools menu.

   The Import configuration line window opens.
2. Click **Select** next to the top field and select the configuration file you want to import.
3. Tick the configuration line to be replaced on the EVS server.
4. Click **Import**.

The configuration line is imported with its original name onto the selected configuration line on the EVS server.

2.2.6. Changing the Position of Configuration Lines

In the Server-Based Application

To move a configuration line up in the list in the server-based application, proceed as follows:

1. Press the **UP ARROW** or **DOWN ARROW** key to respectively move up and down in the list of configuration lines until the requested line is highlighted.
2. Do one of the following:
   - To move the selected line up, press **CTRL** + **UP ARROW**.
   - To move the selected line down, press **CTRL** + **DOWN ARROW**.

In the Web-Based Interface

The feature to move configuration lines up and down in the list of configuration lines is not available as such in the web-based interface.

You can however use the import and export feature to change the position of lines in the list of configuration lines.

2.2.7. Copying, Pasting and Deleting Configuration Lines

How to Copy/Paste Configuration Lines

In the Server-Based Application

Note that copying a line onto another position will overwrite the configuration on the selected position.

To copy and paste a configuration line in the server-based application, proceed as follows:

1. Press the **UP ARROW** or **DOWN ARROW** key to respectively move up and down in the list of configuration lines until the requested line is highlighted.
2. Press **CTRL+C** to copy the line to the clipboard.
3. With the **UP ARROW** and **DOWN ARROW** keys, move to the position where you want to copy the line.
4. Press **CTRL** + **V** to paste the line to the selected position.
5. Press **ENTER** to confirm that you agree to replace the former configuration line by the one copied on the selected position.

In the Web-Based Interface

The feature to copy and paste configuration lines is not available as such in the web-based interface.

You can however use the import and export feature to change the position of lines in the list of configuration lines.

How to Delete Configuration Lines

When you delete a configuration line, the line will automatically be deleted, without prior warning message.

In the Server-Based Application

To delete a configuration line in the server-based application, proceed as follows:

1. Press the **UP ARROW** or **DOWN ARROW** key to respectively move up and down in the list of configuration lines until the requested line is highlighted.
2. Press **CTRL+DEL** to delete the line.

The line is directly deleted.

In the Web-Based Interface

To delete a configuration line in the web-based interface, click the **Delete** icon  next to the configuration line you want to delete.

The configuration line is directly deleted.

2.3. Server Parameters

2.3.1. Chapter Contents

The table below presents the topics of this section and shows whether the described features are available from the web-based interface and/or from the server-based interface.

Commands	Page	Server-Based	Web-Based
"Assigning a Server Facility Name"	2.3.2	Yes	Yes
"Activating and Deactivating the Password Protection"	2.3.3	Yes	No
"Setting the Server PC LAN Connection"	2.3.4	Yes	No
"Configuring a DNS Server Connection"	2.3.5	Yes	No
"Setting the Server Date and Time"	2.3.6	Yes	No
"Configuring Server RAIDs"	2.3.7	Yes	No

2.3.2. Assigning a Server Facility Name

Introduction

You can assign a facility name to the EVS server. It allows the identification of the EVS server with a dedicated name, besides the server's serial number. This name is independent from any configuration.

The server facility name differs from the server net name, which can vary from a configuration to the other as it is defined in the configuration parameters.

The server facility name is displayed in the title bar of the Multicam setup and configuration windows, as well as on the OSD (on-screen display).

Modifying the facility name requires the network service to be restarted. You will have to wait some seconds to be able to connect again to the EVS server.

Naming Rules

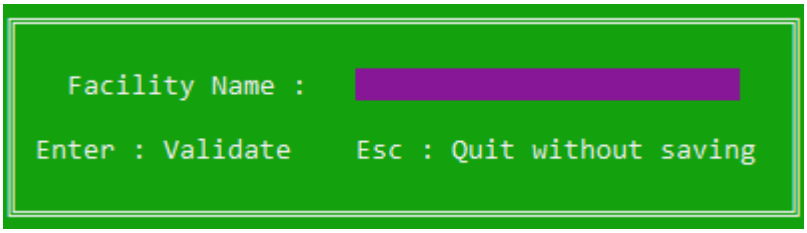
The server facility name is also used as the hostname in the PC LAN settings. For this reason, it has to comply with the following rules for hostname format:

- Characters should belong to the following character ranges: A-Z, a-z, 0-9, -
- Hostnames cannot start by a number or an hyphen <->
- Hostnames cannot finish by an hyphen <->
- Hostnames can be segmented with a full stop <.>

In the Server-Based Application

To assign a server facility name in the server-based application, proceed as follows:

1. In the Multicam Setup window, press **F** to call the **Assign server facility name** command. A dialog box opens:



2. Type the server facility name and press **ENTER**.

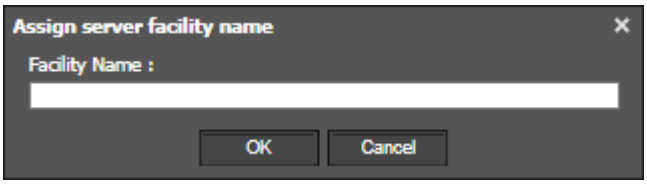
If the server facility name, also used as hostname for the PC LAN connections, does not comply with naming rules for hostnames, a warning will be displayed.

The facility name is directly assigned and displayed in the Title bar, as well as on the OSD.

In the Web-Based Interface

To assign a server facility name in the web-based interface, proceed as follows:

1. From the Multicam Setup window, click **Assign server facility name** in the Tools menu. A dialog box opens:



2. Type the server facility name and press **OK**.

If the server facility name, also used as hostname for the PC LAN connections, does not comply with naming rules for hostnames, a warning will be displayed.

The facility name is directly assigned and displayed in the Title bar, as well as on the OSD.

2.3.3. Activating and Deactivating the Password Protection

Activating the Password on the EVS Server

Introduction

The administrator can protect the EVS server with a password. This password protection prevents unauthorized users from changing configuration settings. It does not prevent from using operational commands.

The password protection can only be activated and deactivated from the server-based application.

The password protection has the following impact on the various user interfaces:

- The password is required to apply changes to configuration parameters in the server-based application and in the web-based interface.
- On the Remote Panel, the Technical Setup menu is not available.

How to Activate the Password on the EVS Server

To activate a password on the EVS server, proceed as follows:

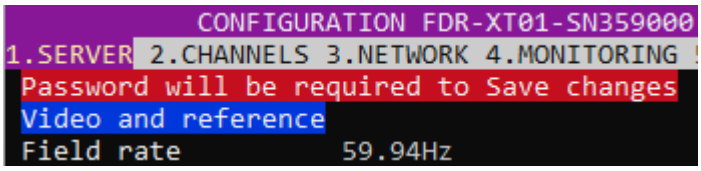
1. In the Multicam Setup window, press **W** to call the Enable password command. A warning message opens.
2. Read the warning message carefully. Press the **RIGHT ARROW** key to select 'Yes' and press **ENTER** to activate the password protection.

The password protection is directly active in all user interfaces, for all configuration parameters on all configuration lines.

Enabling Changes to Configuration Parameters

In the Server-Based Application

When the password protection is active, the following message is displayed in red at the top of each configuration tab in the Multicam Configuration window:



To enable changes in the configuration parameters during the session, you will be prompted for the password the first time you save changes to configuration parameters in a session.

In the Web-Based Interface

When the password protection is active, the Multicam Configuration window is completely dimmed and a closed lock icon is displayed at the top of the window: 

To enable changes in configuration parameters during the browser session, proceed as follows:

1. Click the Lock icon  .
2. Enter the password on the dialog box that is displayed.
3. Press **OK**.

The close lock icon changes to an open lock icon  , and the parameters can be modified and saved for the browser session.

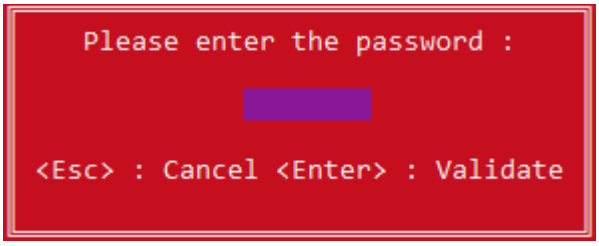
Deactivating the Password on the EVS Server

Once the password protection is active, it can only be deactivated from the server-based application as follows:

1. In the Multicam Setup window, press **W** to call the Enable password command.

   A message opens to warn you that you are about to remove the password protection:

2. Press the **RIGHT ARROW** key to select 'Yes' and press **ENTER**
3. Type the password in the dialog box that opens, and press **ENTER** to validate:



The password protection is directly removed from all user interfaces.

2.3.4. Setting the Server PC LAN Connection

Single, Redundancy and Dual Mode

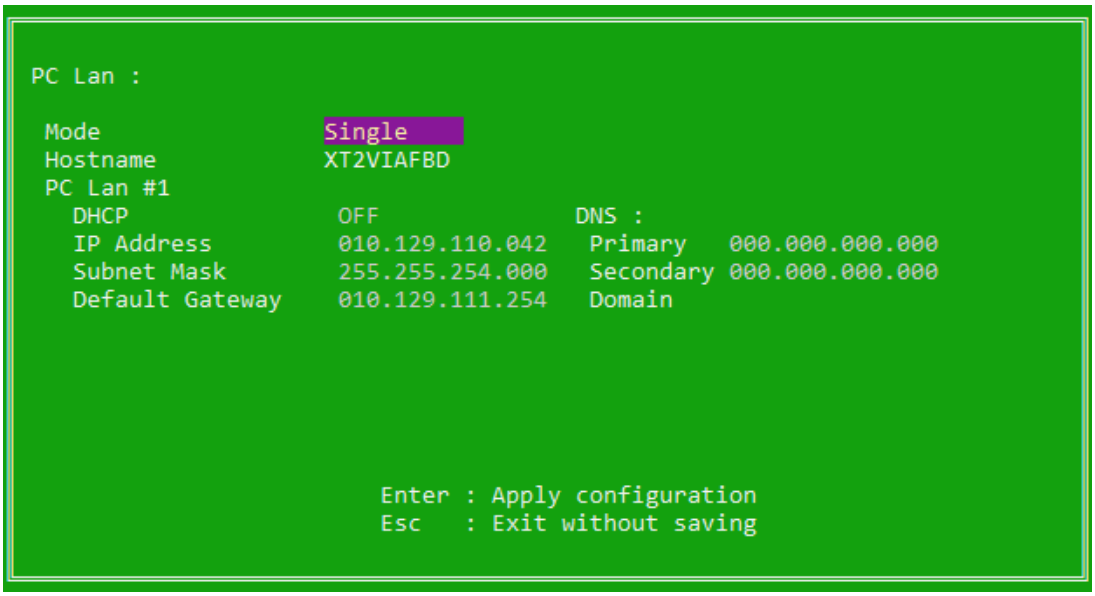
The internal switch module of the H4X board of an EVS server provides more features on the PC LAN network. Thanks to the switch, the PC LAN interfaces can be configured to run in Single, Redundancy and Dual Mode:

- In **Single Mode**, only PC LAN #1 is active. All ports are open by default on PC LAN #1.
- In **Redundancy Mode**, both PC LAN #1 and PC LAN #2 are active. PC LAN #1 and PC LAN #2 have 1 common IP address. All ports are open on both interfaces by default.
- In **Dual Mode**, both PC LAN #1 and PC LAN #2 are active. Each interface has its own IP address. Each interface has specific ports open and closed. See the Technical Reference manual for more information.

In Dual Mode, DHCP can be enabled or disabled for each interface individually.

How to Set the PC LAN Connection

1. In the Multicam Setup window, press L to call the **Set LAN PC address and DNS** command. A window such as the following one opens:

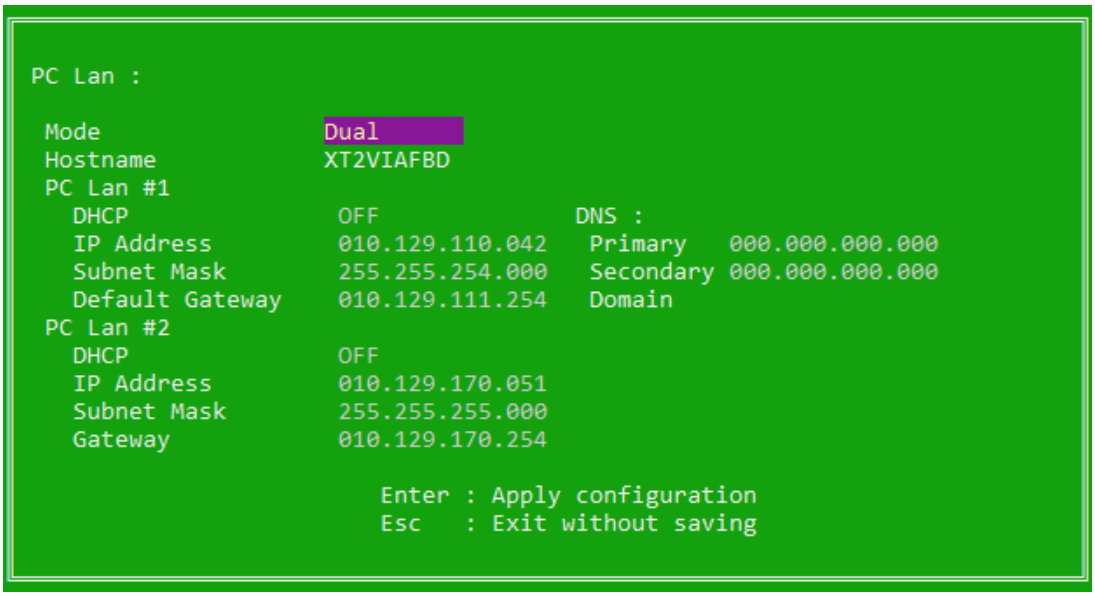


2. In this window, click **TAB** to select the **Mode** field, and press the **Space** bar to switch between Single, Redundancy and Dual Mode.

   By default, Single Mode is enabled. Only PC LAN #1 is active.

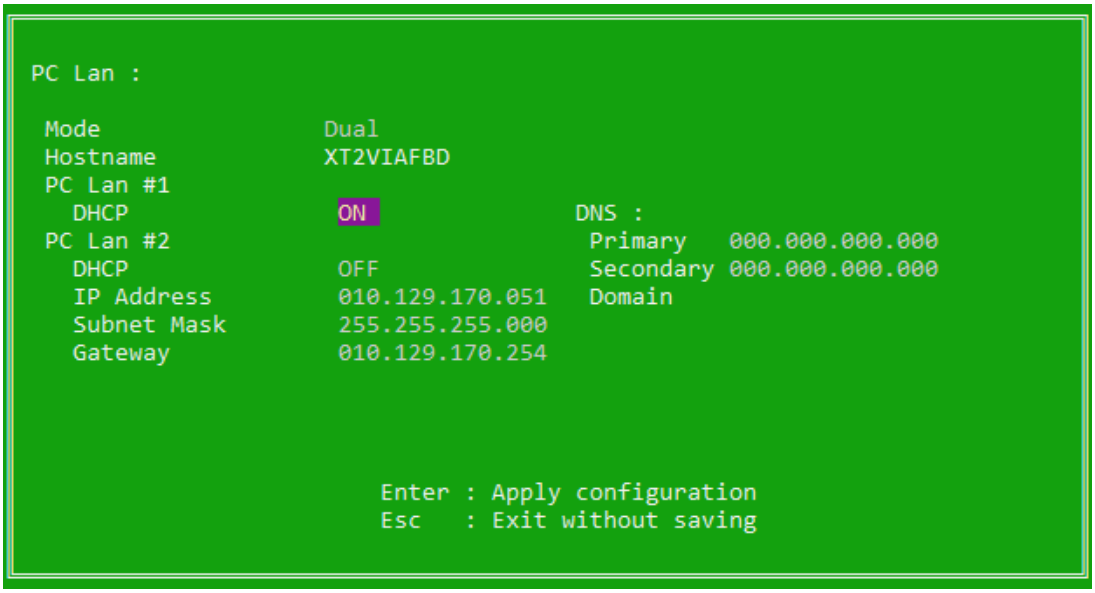
   When Redundancy Mode is enabled, PC LAN #2 will also be active and share a common IP address with PC LAN #1. PC LAN #2 will automatically take over in case PC LAN #1 fails.

   When Dual Mode is enabled, you will be able to manually configure an IP address, subnet mask and default gateway for each individual interface.



3. Press **TAB** to select the **DHCP** field, and press the **Space** bar to enable the **DHCP**.

   In Dual Mode, it is possible to enable or disable DHCP for each PC LAN individually.



If the DHCP is enabled, a DCHP server installed on your setup will automatically assign an IP address, subnet mask and default gateway to the PC LAN. Go to step 5.

If the DHCP is disabled, you need to assign an IP address, subnet mask and default gateway for the PC LAN. Go to step 4.

4. Click **TAB** to select the IP address, subnet mask, and default gateway fields, and type the requested values.

   When the combination of IP address and subnet mask does not allow to reach the default gateway, the following error message will be displayed:

   'Default Gateway address not valid. It must be in the same subnet as the PC LAN.'

   In Dual Mode, the IP address of PC LAN #1 and PC LAN #2 cannot be identical. In case they are, the following error message will be displayed:

   'The same IP address cannot be set on multiple IP interfaces'

5. Press **ENTER** to apply the PC LAN configuration.

   The PC LAN settings will automatically be applied to all configuration lines by default, and they will be available as read-only fields in the definition of the configuration lines. This is only configurable from the Multicam Setup module.

The **Hostname** is not editable. As it needs to be the same as the facility name, you can change it by editing the facility name via the **Assign server facility name** option, also available in the Multicam Setup module. It has to comply with the hostname format.

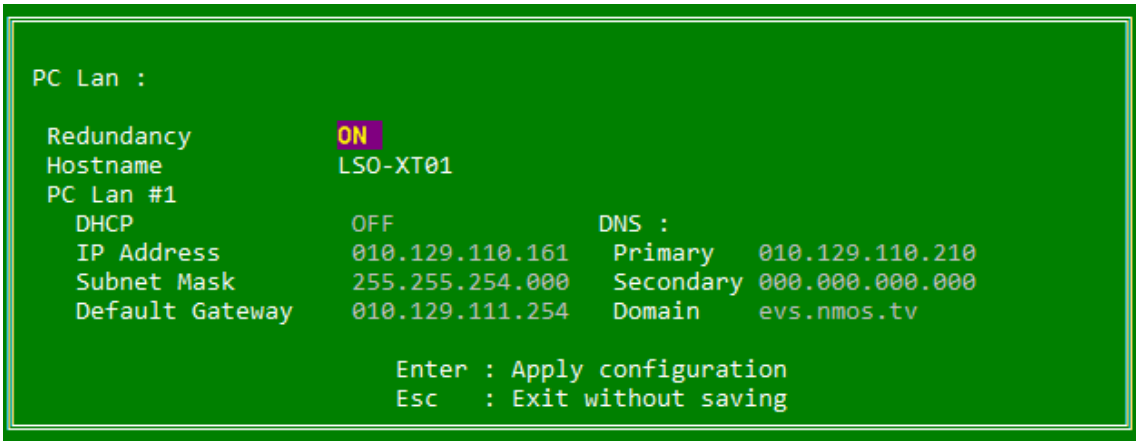
2.3.5. Configuring a DNS Server Connection

Introduction

A connection with a DNS server in the same PC LAN network can be configured.

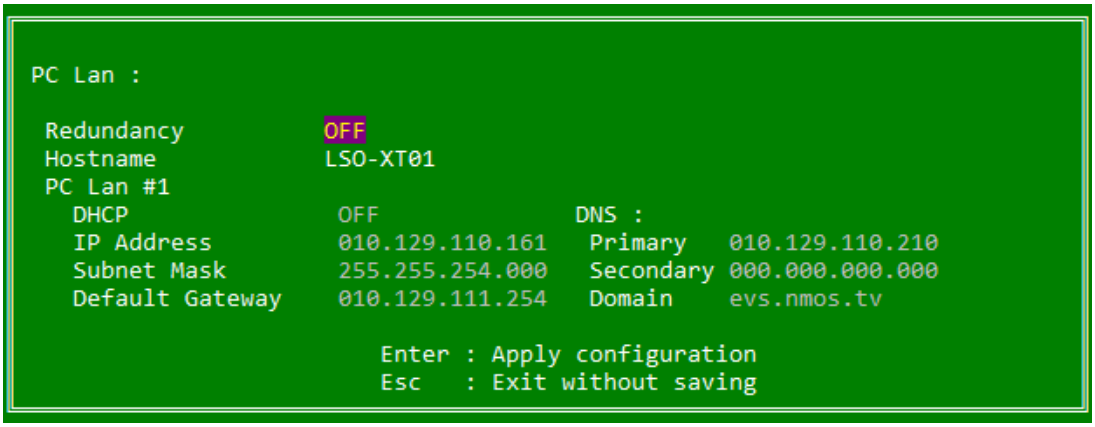
You can define the DNS server connection from the server-based application, in the Tools area, via the **Set LAN PC address and DNS** option.

The following window shows the Set LAN PC address and DNS dialog box:



How to Set the DNS Server Connection

1. In the Multicam Setup window, press **L** to call the **Set LAN PC address and DNS** command. A window such as the following one opens:



2. Click **TAB** to select the **Primary**, **Secondary** and **Domain** fields, and type the requested values.

- If you leave the **Primary** or **Domain** field empty, and you press **ENTER** to apply your changes, an error message will appear.
- You cannot enter a secondary DNS server IP address without entering a primary one.
- For the search domain, you can use up to 24 characters.

3. Press **ENTER** to apply the DNS server configuration.

   You can now switch to NMOS Unicast Mode. See section "Domain Name System Settings" on page 231 for more information.

2.3.6. Setting the Server Date and Time

Introduction

The **Set Date and Time** command allows you to adjust the system time & date from the Multicam Setup window in the server-based application. This is not available in the web-based interface.

When you have just launched a configuration, a window displaying the system date and time gives you another opportunity to modify these parameters.

Supported Formats

The supported date format is DD-MM-YYYY, as shown in the example below:

- 15-03-2011 for March 15, 2011

The supported time format is hh:mm:ss, as shown in the example below

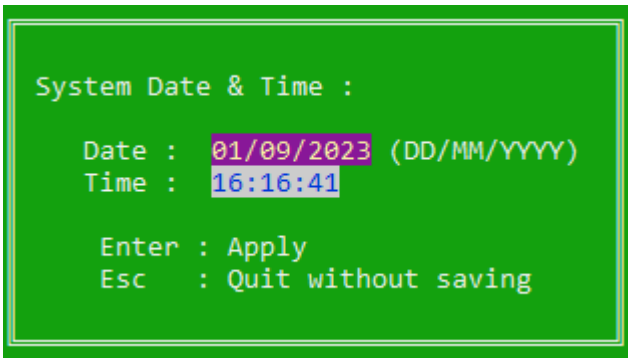
- 22:58:00 for 22 h 58 min 00 sec (24-hour display)

A warning message will inform you if the format you try to use is not valid.

How to Set the System Date and Time

To set up the system date and time from the Multicam Setup window, proceed as follows:

1. In the Multicam Setup window, press **T** to call the System date and time command. The following window opens:



2. In this window, type:
   - the date in the DD/MM/YYYY format
   - the time in the hh:mm:ss format (24-hour display)

using TAB to move from one field to the other.

3. Press ENTER to apply the changes to the system date and time.

The date and time you have entered here will automatically be taken into account when you launch a configuration.

2.3.7. Configuring Server RAIDs

Introduction

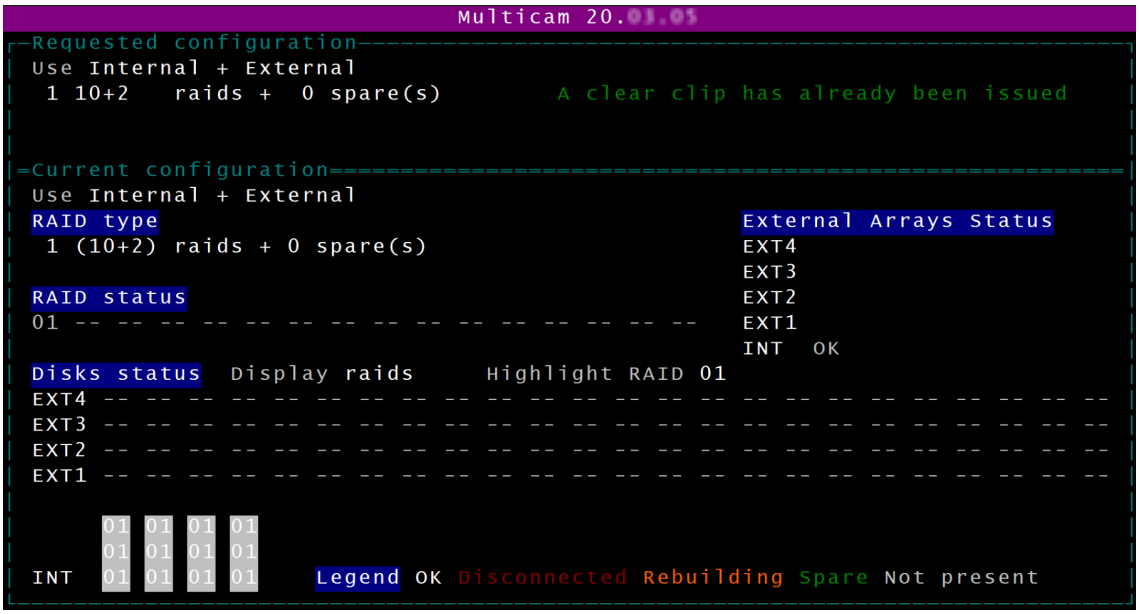
When the EVS server is started, the server raids are automatically detected, and built based on the default settings described in the 'Default RAID Configuration' section below.

You can view the default raid configuration and modify it from the RAID Configuration window. This window is only available in the server-based application.

Only hard disk drives from EVS can be used as they are specifically configured to work with EVS video servers.

Overview on the RAID Configuration Window

The RAID Configuration window is available from the Multicam Setup window, when pressing R to call the RAID Configuration command in the Tools menu.



The Requested Configuration area, in the upper part of the window, displays the default raid configuration. You can modify the default raid configuration in this area. You will find more information on editable parameters below.

The Current Configuration area, in the lower part of the RAID Configuration window, provides raid and disk status information. This is dealt with in the section "RAID and Disk Status Window" on page 496.

Default RAID Configuration

At the first start, the software builds the raids using the following settings:

- If internal and external storage are detected, both are used.
- With 6 disks, a (5+1) RAID configuration without spare is used.
- With 12 disks, a (10+1) RAID configuration with 1 spare is used.
- First, all RAIDs are built. The remaining disks are used as spare disks. The construction of RAIDs starts with internal arrays and carries on with external arrays. A RAID can be created across several hardware arrays.

Requested RAID Configuration

Overview

In the Requested RAID Configuration, you can modify the following parameters in the default raid configuration:

- Use of internal and/or external storage.
- Use of spare disks.
- Number of RAIDs to be used.

To modify one of these parameters, press TAB to select the requested field, and SPACE BAR to select the requested value, or type the requested value.

Field Description

The following table describes the fields editable in the Requested Configuration area in the RAID Configuration window. The fields are described in the sequence they appear. You can select them using the TAB key.

Field Name	Description
Storage type	Specifies which storage type you will use. When both storage types are available, the following values are possible: • Internal only • External + Internal • External only
Number of RAIDs	Specifies the number of raids you want to use. Type the number of raids you want to use.
RAID configuration type	Specifies the RAID configuration type. The software is able to handle four RAID organizations: • (4+1) or (5+1): RAID of 6 disks with 1 or 0 spare • (10+1): RAID of 11 disks with 1 spare • (10+2): RAID of 12 disks with 0 spare

Current RAID Configuration

This area is used to display the raid status for the selected configuration when the EVS server is running a configuration. See section "RAID and Disk Status Window" on page 496 for more information.

2.4. Option Codes Management

2.4.1. Overview on Options Codes Management

Introduction

To run a software application and/or specific software options, not only the software itself is required but also a license key (called 'license code' in Multicam), which is unique for every option on every system.

These license keys can be temporary, be valid only until a defined deadline for demonstration purposes, or be permanent with no time limit.

The license keys are managed from the Options codes management window. This window is available in both the server-based application and the web-based interface.

When a temporary license code will expire within the next two weeks or is expired, the system warns the operator when the Multicam Setup window opens.

Accessing the Options Codes Management Window

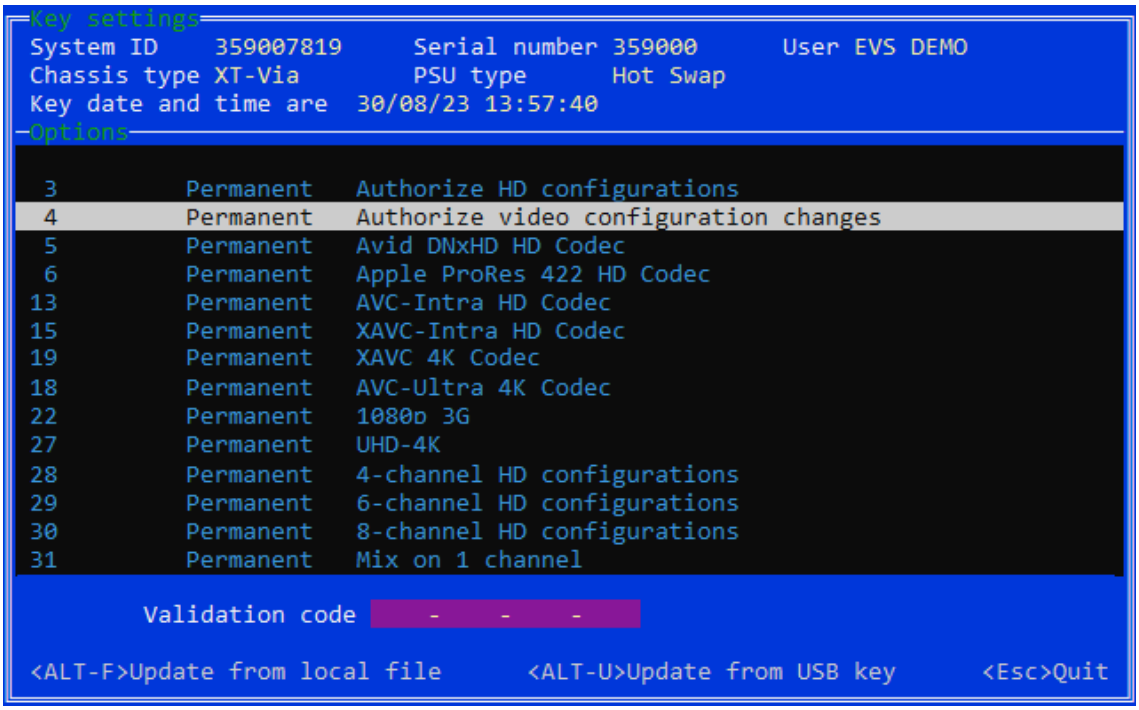
To open the Options codes management window in the server-based application, press O from the Multicam Setup window.

To open the Option codes management window in the web-based interface, click **Options code management** in the Tools menu from the Multicam Setup window.

2.4.2. Options Codes Management Window

In the Server-Based Application

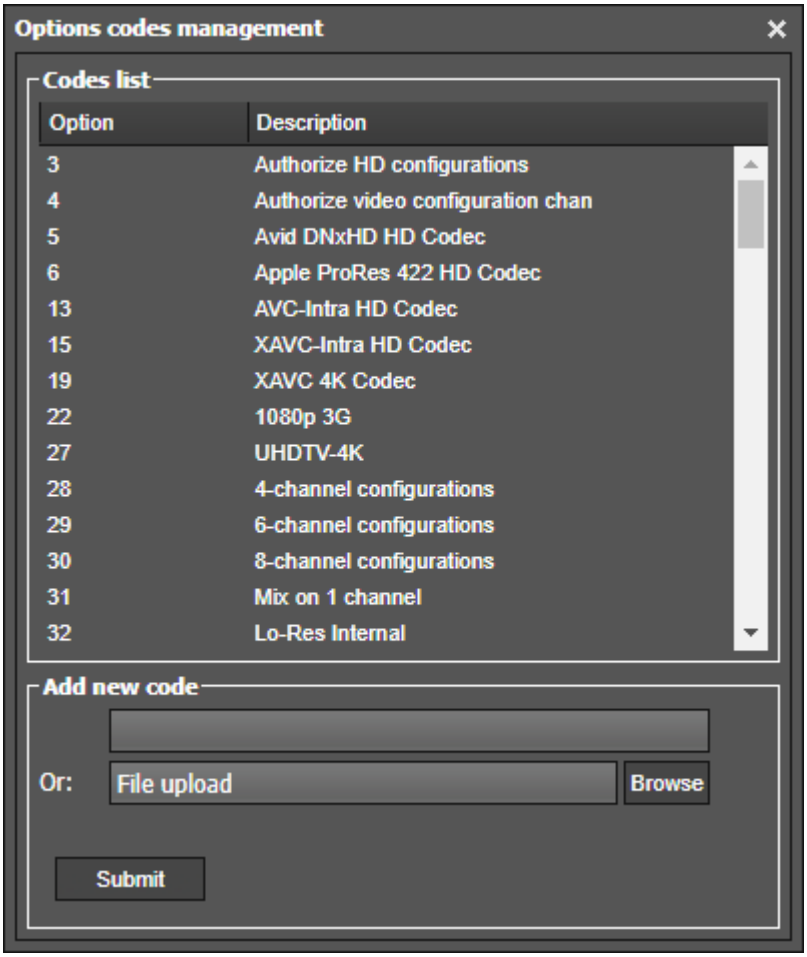
The window features three areas which contain the information mentioned below.



Area	Description
Upper area	List of key settings related to the EVS server: • **System ID:** ID code of the hardware key, necessary for license code calculation. • **Serial number:** Serial number of the mainframe, also written on the back plate of the mainframe. • **User:** The user name is a label for information's sake only. • **Chassis type:** Type of mainframe. If this value is wrong, audio and video routing inside the system will not work properly. • **PSU type:** Type of PSU installed on the chassis: standard or hot swap. • **Key date and time:** Expiration date & time for temporary license codes. Not available when the permanent codes are installed.
Central area	All codes **available for the given server chassis** for which a license key has been granted and is still valid. Next to each code name, the code number, the type of license (permanent, temporary, demo, or 'not granted'), as well as the expiration date are mentioned.
Lower area	Area where you can enter new license codes manually. The commands on how to import new license code from files are specified.

In the Web-Based Interface

The window features two areas which contain the information mentioned below:



Area	Description
Central area	All codes **available for the given server chassis** for which a license key has been granted and is still valid. Next to each code name, the code number is mentioned.
Lower area	Area where you can enter new license codes manually or upload a license code file.

2.4.3. Entering and Removing License Codes

Introduction

When you request new license codes to activate one or more features, you can receive the license keys from EVS in the form of:

- a xxxxx.COD file (xxxxx = serial number of the server for which this file has been calculated). You need to apply this file to the EVS server from the Option codes management window.
- a license code that you can type in the Option codes management window.

Once the license codes have been entered, the corresponding options or features are automatically active when you launch a configuration, without having to reboot the server.

How to Enter License Codes from a COD File

In the Server-Based Application

To enter a new license code delivered via a COD file, proceed in one of the following ways:

1. Copy the .COD file on a USB key that you connect to the USB port of the EVS server.
2. From the Multicam Setup window, press **O** to open the Options codes management window.
3. Press simultaneously **ALT**+ **U** keys.

OR

1. Copy manually the .COD file to the `/mnt/apps/data/setup` folder of the EVS server (`/setup` folder when you connect to the EVS server using an FTP client).
2. In the Multicam Setup menu, press **O** to open the Options codes management window.
3. Press simultaneously **ALT**+ **F** keys.

The license codes will be read from the .COD file and updated into the system. Next to the line corresponding to the code, the license type, and the expiration date, if any, are displayed.

In the Web-Based Interface

To enter a new license code delivered via a COD file, proceed as follows:

1. Copy the .COD file onto a drive available from your PC.
2. From the Multicam Setup window, click **Options code management** in the Tools menu to open the Options code management window.
3. Click the **Browse** button, select the .COD file and click **Open**.
4. Click **Submit**.

The license codes will be read from the local file and updated into the system.

The lines corresponding to the new codes area added to the code list.

How to Enter License Codes with a Key Number

In the Server-Based Application

To enter a new license code delivered via a key number, proceed as follows:

1. From the Multicam Setup window, press **O** to open the Options codes management window.
2. Type the code you have received. It will automatically be typed in the **Validation Code** field:

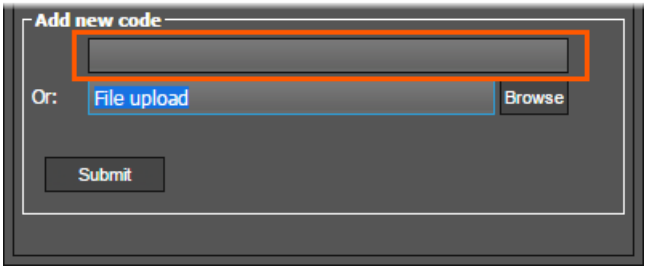
3. Press **ENTER**.

Next to the line corresponding to the activated codes, the license type and the expiration date (if any) are displayed.

In the Web-Based Interface

To enter a new license code delivered via a key number, proceed as follows:

1. From the Multicam Setup window, click **Options code management** in the Tools menu to open the Options code management window.
2. Type the code number in the first field of the Add new code group box:



3. Click **Submit**.

The lines corresponding to the new codes are added to the code list.

How to Remove a License Code

You can remove a license code from the server-based application. Proceed as follows:

1. Press the UP ARROW and DOWN ARROW keys to move inside the options list and select the option to be removed.
2. When the option is selected (highlighted in white), press simultaneously CTRL+ DELETE on the keyboard.
3. Confirm the deletion of the option with ENTER.

2.5. Web Server Parameters

2.5.1. Configuring a HTTPS Connection

Introduction

By default, the web-based user interface of the Multicam Setup application and the LiveIP Configuration module are accessible using HTTP.

To better protect the communication between these web applications and the users' browsers, HTTPS (Hyper Text Transfer Protocol Secure) can be enabled.

HTTPS uses a public and private key system for data encryption and data integrity. A digital certificate is needed to distribute the trusted public encryption key.

A digital certificate signed by a certificate authority (CA) can be uploaded on the EVS server.

The upload of the certificate can be performed in the server-based and the web-based Multicam Setup application. The manual switch between HTTPS and HTTP can only be performed in the server-based application.

If the certificate is no longer valid (expired or IP address or hostname changed), the access to the web configuration is completely blocked.

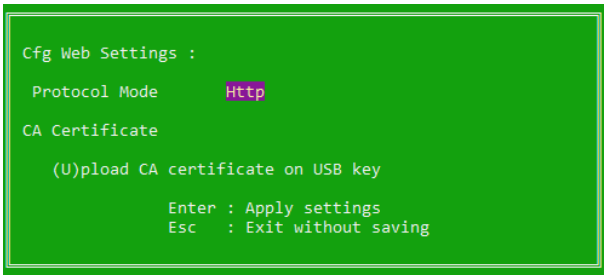
Uploading a Digital Certificate

In the Server-Based Application

To upload a digital certificate on the server for the first time, or to replace an existing certificate with a new one, proceed as follows:

1. Save the digital certificate you want to upload on a USB key, and plug it into the USB port of the EVS server as the Multicam Setup window is open.
2. In the Multicam Setup window, press **v** to call the **Web server settings** command.

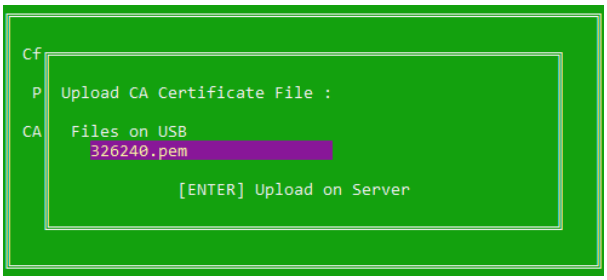
The following dialog box opens:



If no digital certificate has been uploaded yet, HTTP will be selected as web protocol by default. The **Protocol Mode** field is read-only. You will not be able to change the web protocol into HTTPS.

If a digital certificate has already been uploaded, the **Protocol Mode** field is editable. You will be able to change the web protocol. See Disabling and Enabling HTTPS.

3. Press **U** to open a window which allows you to browse the contents of the USB key.



4. If several digital certificates are stored on the USB key, press **SPACEBAR** until the requested file is selected.
5. Press **ENTER** to import the digital certificate from the USB key to the EVS server.
   - If no digital certificate has been uploaded yet and the import is successful, the following message is displayed: 'CA Certificate imported! The server is accessible through HTTPS after the next full server reboot.'

     The digital certificate will be renamed to `server.pem` and stored in the folder `/mnt/APPS/data/setup`.

     Press **ENTER** to continue.
   - If a digital certificate has already been uploaded, the following message is displayed: 'The CA Certificate file already exists. Do you want to overwrite it?'

     Press **ENTER** to confirm your action. Be aware that no history is kept of previous digital certificates!

     You get notified that the digital certificate has been successfully uploaded.

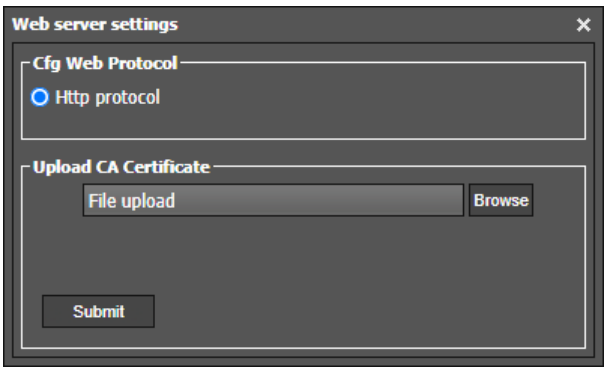
     Press **ENTER** to continue.
6. Remove your USB key.
7. Reboot the server.

HTTPS will be automatically enabled. All TCP connections to the Multicam Configuration and Live IP Configuration window are done through HTTPS (TCP port 443) and the TCP port 80 is blocked.

In the Web-Base Interface

To upload a digital certificate, proceed as follows:

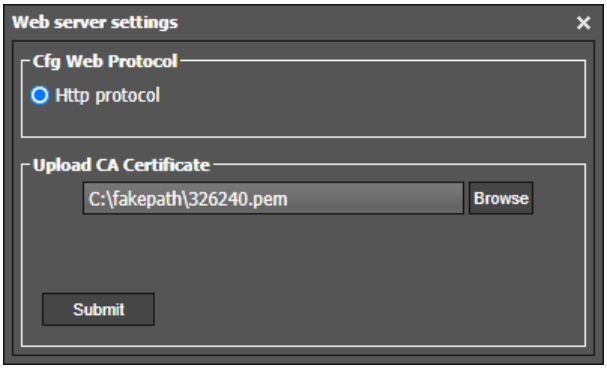
1. Copy the digital certificate onto a drive available from your PC.
2. From the Multicam Setup window, click **Web server settings** in the **Tools** menu to open the Web Server Settings window.



   By default, HTTP is selected as web protocol.

3. Click the **Browse** button, select the digital certificate file and click **Open**.

   The name of the digital certificate file will be displayed.



4. Click **Submit**.

   If the import is successful, the following message is displayed: 'CA Certificate imported! The server is accessible through HTTPS after the next full server reboot.'

5. Click **OK** to continue.
6. Reboot the server.

   HTTPS will be automatically enabled. All TCP connections to the Multicam Configuration and Live IP Configuration window are done through HTTPS (TCP port 443) and the TCP port 80 is blocked.

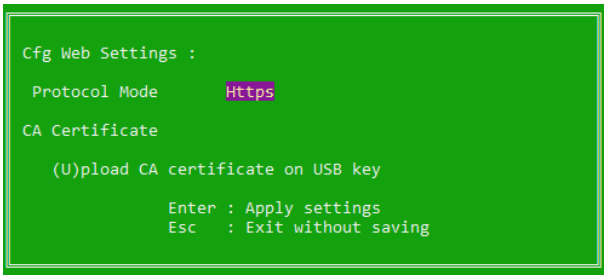
Disabling and Enabling HTTPS

In the Server-Based Application

To manually disable HTTPS, proceed as follows:

1. From the Multicam Setup window, press **v** to call the **Web server settings** command.

   The following dialog box opens.



   In the **Protocol Mode** field, HTTPS is selected as web protocol.

2. Press the **SPACEBAR** to switch to HTTP.
3. Press **ENTER** to apply the settings.

   The following message is displayed: 'The server is accessible through HTTP after the next full server reboot'.

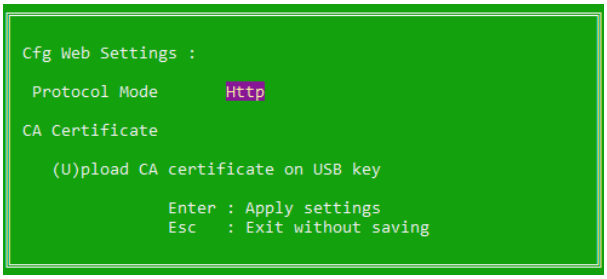
4. Press **ENTER** to continue.
5. Manually reboot the server.

   HTTP will be automatically enabled. All TCP connections to the Multicam Configuration and Live IP Configuration window are done through HTTP (TCP port 80) and the TCP port 443 is blocked.

To manually enable HTTPS, proceed as follows:

1. From the Multicam Setup window, press **v** to call the **Web server settings** command.

   The following dialog box opens.



   In the **Protocol Mode** field, HTTP is selected as web protocol.

2. Press the **SPACEBAR** to switch to HTTPS.
3. Press **ENTER** to apply the settings.

   The following message is displayed: 'The server is accessible through HTTPS after the next full server reboot'.

4. Press **ENTER** to continue.
5. Reboot the server.

   HTTPS will be automatically enabled. All TCP connections to the Multicam Configuration and Live IP Configuration window are done through HTTPS (TCP port 443) and the TCP port 80 is blocked.

In the Web-Based User Interface

In the web-based user interface, you cannot manually enable and disable HTTPS.

HTTPS is automatically enabled as soon as you upload a digital certificate and manually reboot the server. See section Uploading a Digital Certificate.

2.6. Server Maintenance

2.6.1. Chapter Contents

The table below presents the topics of this section and shows whether the described features are available from the web-based interface and/or from the server-based interface.

Commands	Page	Server-Based	Web-Based
"Rebooting the EVS Server"	44	Yes	No
"Hardware Check"	45	Yes	No
"Upgrading the Disk Firmware" on page 48	48	Yes	No
"Clearing Video Disks"	48	Yes	Yes
"Record Train Maintenance"	50	Yes	No
"Importing and Exporting Keyword Files"	54	Yes	No
"Exporting Log Files"	55	Yes	No

2.6.2. Rebooting the EVS Server

To reboot the EVS server when it is not running in a given configuration, press **B** from the Multicam Setup window, then **RIGHT ARROW** and **ENTER** to validate the action.

To reboot the EVS server when it is running in a given configuration, press **ALT+Q** when you are in the Clip or Playlist page, then press **ENTER** to confirm the action.

2.6.3. Hardware Check

Disk Errors and Disconnection

Disconnection

When one disk of the video raid array has sustained errors, Multicam automatically disconnects that disk and uses the parity disk to rebuild the missing data and provide the video and audio data blocks to the application. The operator can thus continue working normally and the message “!RAID” appears on all monitoring outputs.

A message is displayed each time a disk is disconnected:

- if the faulty disk is a spare disk:

```
"Warning: a spare disk has been disconnected. The system will operate normally
                          on the remaining disks.
                          At the next opportunity
please consider replacing the faulty disk. It can be identified in the Shift-F5
       screen or in the EVS - RAID configuration menu. [Enter]=Continue"
```

- if the faulty disk is contained in a RAID:

```
"Warning: a disk has been disconnected. The system will operate normally on the
                   remaining disks. At the next opportunity
please consider replacing the faulty disk. It can be identified in the Shift-F5
       screen or in the EVS - RAID configuration menu. [Enter]=Continue"
```

Exit

When exiting Multicam, a warning will appear to remind the operator that one disk was disconnected, and invite him to perform a hardware check to repair the video raid. This is displayed even if a spare disk is available:

- if the faulty disk is a spare disk:

```
"Warning: a spare disk has been disconnected. At the next opportunity please
consider replacing the faulty disk. It can be identified in the Shift-F5 screen
          or in the EVS - RAID configuration menu. [Enter]=Continue"
```

- if the faulty disk is contained in a RAID:

```
"Warning: a disk has been disconnected. At the next opportunity please consider
  replacing the faulty disk. It can be identified in the Shift-F5 screen or in
             the EVS - RAID configuration menu. [Enter]=Continue"
```

Restarting

If Multicam is restarted without the RAID being rebuilt, a message similar to the following one, and adapted to the disk type, is displayed during the bootwins:

- if a spare disk is OK:

```
[ Bad ] SEAGATE ST900MM0168   S401JQKR  NE04  900GB 00 07 512
```

- if no spare disk is OK and the RAID is no more complete:

```
[ Bad ] SEAGATE ST900MM0168   S401JQKR  NE04  900GB 00 07 512

WARNING !!! Tray XX is missing 1 disk(s) to be complete
```

Then when entering Multicam, another message appears, even if a spare disk is available:

- if the faulty disk is a spare disk:

```
"Warning: a spare disk has been disconnected. The system will operate normally
 on the remaining disks. At the next opportunity please consider replacing the
 faulty disk. It can be identified in the Shift-F5 screen or in the EVS - RAID
                    configuration menu. [Enter]=Continue"
```

- if the faulty disk is contained in a RAID:

```
"Warning: a disk has been disconnected. The system will operate normally on the
 remaining disks. At the next opportunity please consider replacing the faulty
     disk. It can be identified in the Shift-F5 screen or in the EVS - RAID
                    configuration menu. [Enter]=Continue"
```

The operator can press **ENTER** and operate normally on 4 disks (configuration “4+1”) or on 5 disks (configuration “5+1”) or exit the software and return to Multicam Setup window to run a hardware check.

H4X_4S Version Check

If the H4X_4S board is not up-to-date, the following warning message will be displayed:

```
H4X_4S current revision: T80R00C00L01_0001
[Warning] >> H4X_4S Rear I/O Panel is not at last revision
[Warning] >> Latest revision: T80R00C00L01_0002
```

Reboot your server and access the **Multicam Maintenance > Hardware Maintenance** menu to perform an update of the board. See the Installation Manual for more information.

Rebuild Process

Introduction

The XT-VIA server is capable of performing a rebuild process of the RAID. This process can happen either while the Multicam application is not running (offline process rebuild is faster) or while the Multicam application is running (online process rebuild is slower).

Disconnection Process

As explained in the section "Disk Errors and Disconnection" on page 45, the software will disconnect a disk that does not behave as expected.

Two options are available for the operator:

- Replace the disconnected disk and restart the server
  - Start the Multicam application. The rebuild process will start automatically.
  - Start a hardware check from the EVS menu and launch the rebuild. The process starts offline. The operator can wait for the rebuild to be completed or cancel it (that is to say postpone it) and start the Multicam application, in which case the rebuild carries on in online mode.
- The operator can also force the disk to be reconnected by starting the rebuild process in the hardware check. The process starts offline. The operator can wait for the rebuild to be completed or cancel it and start the Multicam application, in which case the rebuild carries on in online mode.

If errors are detected during the rebuild process, a message appears after the rebuild is complete to warn the operator, and the raid is not considered as properly rebuilt. In this state, the system will keep working on 4 disks (4+1 configuration) or on 5 disks (5+1 configuration). If you want to run on 5, or 6, disks again, you can try replacing the disk again and perform another rebuild, or clear all clips.

If you don’t need to retrieve the clips or the record trains, you don’t need to rebuild the RAID. In this case, select the 'Clear All Clips' answer when the message with this option appears in the hardware check.

If you don’t rebuild the RAID array or if you don’t clear clips, the EVS server will keep running on 4, or 5, disks only, and you will see a warning message appearing every time you start or close the Multicam application. Normal operation can be achieved on 4, or 5, disks, but then, if another disk fails, the system will hang and all video and audio data will be definitively lost.

By default, the online rebuild process takes up 10% of the disk bandwidth. If you want to change this, contact EVS support.

2.6.4. Upgrading the Disk Firmware

This tool will allow you to check the firmware version of the disks of the internal disk array and to upgrade if the version is not as expected.

In the Multicam Setup window, press **U** to start the upgrade procedure.

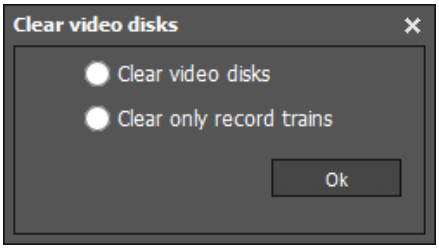
Once the upgrade procedure has finished, press **ALT + Q** to return to the Multicam Setup window.

2.6.5. Clearing Video Disks

Introduction

The function Clearing Video Disks is used to delete media from the RAID disk array.

It is accessible in the Clear Video Disks dialog box you can open from the Multicam Setup window:



Depending on the option you select in the Clear Video Disks dialog box, you will delete:

- the clips and record trains on all video disks (Clear video disks)
- the record trains only (Clear only record trains)

When and What for is a Clear Action Required?

When a clear action is required, the operator will get a warning in Multicam.

The table below lists when you have to perform a clear action, and which clear action you need to perform in the given situation:

Clearing action required when:	Clear Action
General Maintenance Decision	On request
Record Train Maintenance (See section "Record Train Maintenance" on page 50)	Clear Record Trains
Change in the multi-essence configuration from Intra + Proxy to Intra only	Clear Record Trains

How to Clear Clips and/or Trains in the Server-Based Application

To clear video disks in the server-based application, proceed as follows:

1. In the Multicam Setup window, press **C** to call the **Clear Video Disks** command.
2. Select one of the available options and press ENTER.

   A confirmation message is displayed.
3. Press **RIGHT ARROW**, and **ENTER** to select **Yes** and validate the deletion.

   OR

   Press **ENTER** to cancel the deletion.

After a Clear Video Disks action, the command toggles to **Undo Clear Video Disks At Next Start** as long as your server has not been rebooted after the **Clear Video Disks** command. This allows you to cancel the Clear Video Disks request.

How to Clear Clips/Trains in the Web-Based Interface

To clear video disks in the web-based interface, proceed as follows:

1. In the Multicam Setup window, click the Clear video disks command from the Tools area to open the **Clear Video Disks** window.
2. Select one of the available options and press OK.

   A confirmation message is displayed.
3. Click **Yes** to validate the deletion or No to cancel the deletion.

2.6.6. Overview on the Hardware Check

Purpose

During the hardware check, the following actions are performed:

- Retrieving and checking relevant information related to the various boards installed on the EVS server
- Verifying the validity of the data recorded on the video disk array

The hardware check is only available in the server-based application.

Hardware check is also used to rebuild the video and audio information after replacing a faulty disk.

Process

The hardware check runs the same steps and checks as the server boot process :

- MTPC check
- H4X check
- XHub-VIA presence check
- Video Codec check
- GbE download
- Disk check
- Data loading

After you have launched the hardware check by pressing H in the Multicam Setup window, the system automatically starts the test process.

One after the other, the various steps are displayed in the BOOT.H3X window. The test process is completed when the H4X board is initialized.

At the end of the hardware check, the hardware revisions information is displayed. The information is logged in the `bootwins.log`.

2.6.7. Record Train Maintenance

Introduction

A Clear Record Train can be necessary in one of the following situations:

- To prevent the overflow of the record trains field counter.

- To align the current block size used in the internal cache for each record train with the optimal block size calculated for a configuration.

Preventing the Overflow of the Record Trains Field Counter

Introduction

The record train uses a counter to identify each field being encoded in the server. This counter will overflow after 2 years and 8 months at 50 Hz or 2 years and 3 months at 59.94 Hz when the server is in continuous use.

When the field counter reaches its limit, the recorder and the player stop. It is possible to close the current file and start a new one without the need to clear the video disks (as required in earlier versions of Multicam), nor to exit Multicam.

How to Reset the Field Counter

You can reset the field counter from the Multicam Setup window, or from the Multicam Configuration window:

To reset the counter from the Multicam Setup window, proceed as follows:

1. Go to the **Clear video disk** dialog box.
2. Select **Clear only record trains**.

   See section "Clearing Video Disks" on page 48

To reset the counter from the Multicam Configuration window, proceed as follows:

1. In the VGA, press **SHIFT+F5** to open the **Server Monitoring** window.
2. In the **General Information** page (page 1), select the **Reset record train** command.

   See section "General Information Window" on page 494

Impacts of the Field Counter Maintenance

During the field counter maintenance:

- The players that are using content from local clips are not be disturbed.
- The players that are using content from a remote (XNet) server are not disturbed.
- Playing out a record train of the server in field counter maintenance on a remote server will impact the playout.

After performing the field counter maintenance:

- All the trains are erased, but neither the clips nor the playlists are erased.
- Multicam restarts the recorders that were running before the maintenance operation.
- Multicam restarts the players that were running before the maintenance operation. The record train used by each player remains unchanged.

Automatic Advance Warning

As the recorders and the players will stop if the field counter reaches its limit, warnings are automatically issued in advance:

- A message is displayed on the VGA 12 weeks before the counter overflow, then weekly from 8 to 4 weeks before the counter overflow.
- From 4 weeks to the day before the counter overflow, the message on the VGA is displayed daily, and the `!Rec` warning is displayed on all PGM OSD screens.
- On the last day, the OSD warning flashes.

Field Counter Overflow

When the field counter reaches the overflow:

- Multicam stops the recorders and the players.
- Multicam issues error messages on the VGA, the OSD, and the LSM.
- The operator is still allowed to browse and make clips with all the content available on the disks.

Align the Current Block Size with the Optimal Block Size

Introduction

The internal cache of the XT-VIA Server server supports different block sizes (8MB, 16MB, 32MB) for the intra codec record trains. This makes it possible to use larger block sizes when operating with high-bitrate configurations (e.g. UHD-4K, UDH-8K, high SLSM) and results in an improvement of the server performance.

For each configuration, the optimal block size is calculated. When starting a configuration, the block size currently used in the internal cache for each record train is compared with this optimal block size.

If the optimal and currently used block size are not identical, you will be alerted, and you might have to clear all record trains.

Optimal Block Size Calculation

For each record train the optimal block size to be used in the cache is calculated based on the following parameters:

- Bitrate of the intra codec
- Number of phases
- Framerate
- Maximum block size

See section 'Optimal Block Size' in the server's Technical Reference Manual for the optimal block size per intra codec.

Performing a Clear Record Trains

When starting a configuration, the block size currently used in the internal cache for each record train is compared with the calculated optimal block size for the configuration.

If the current and optimal block size are:

- identical for all record trains, then the configuration is started without any additional messages.
- not identical for all record trains, the following two cases can be distinguished:
  - The current block size used for one or more record trains is 8MB. A bigger block size, i.e. 16MB, is recommended.

    The following message will appear:

    'A block size of 16MB is recommended which requires a Clear Record Trains. Do you want to continue anyway with a block size of 8 MB?'

    You will have the choice to start the configuration with the current (non-optimal) block size, or to perform a Clear Record Trains first and then start the configuration with the recommended block size.
  - The current block size is smaller than the recommended block size. A bigger block size is mandatory.

    The following message will appear:

    'Clearing record trains is mandatory because this configuration requires a new block size (16 MB -> 8 MB).'

    You will have no other option but to perform a Clear Record Trains first and then start the configuration with the recommended block size.

Example

Consider the situation where the current block size of the internal cache is 8MB.

Start the following configurations:

- *DNxHD 242Mbps, 1080p @50Hz no SLMS*

  The current block size is big enough and can be kept. No Clear Record Trains is required.
- *DNxHD 242Mbps, 1080p @50Hz SLSM2x*

  The recommended block size is 16MB, but the current block size can be kept. You will have the choice to perform a Clear Record Trains and start the configuration with the recommended block size, or to continue with the non-optimal current block size.
- *DNxHD 242Mbps, 1080p @50Hz SLSM3x*

  The recommended block size is 16MB. A Clear Record Trains is required. The configuration is started with the recommended block size.

2.6.8. Importing and Exporting Keyword Files

Introduction

The keyword file is a simple text file with a name of 8 characters and a .KWD extension. All keyword files must be stored in the `/mnt/apps/data/kwd` folder of the EVS server (`/kwd` folder when you connect to the EVS server using an FTP client). A sample keyword file (SAMPLE.KWD) is provided by EVS when Multicam is installed.

You can also import and export keyword files to and from the EVS server via a USB key.

You can only perform this action in the server-based application.

How to Import a Keyword File

To import a keyword file, proceed as follows:

1. Save the keyword file you want to import on a USB key, and plug it into the USB port of the EVS server as the Multicam Setup window is open.
2. In the Multicam Setup window, press **K** to call the **Import/export keyword file** command.

   The following dialog box opens:

3. If several keyword files are stored on the USB key, press **SPACEBAR** until the requested file is selected on the left field.
4. Press **ENTER** to import the keyword file from the USB key to the EVS server.
5. Press **OK** to close the message box that appears when the keyword file has been imported.
6. Remove the USB key.

How to Export a Keyword File

To export a keyword file, proceed as follows:

1. Plug a USB key into the USB port of the EVS server as the Multicam Setup window is open.
2. In the Multicam Setup window, press **K** to call the Import/export keyword file command.

   The following dialog box opens:

3. Press **ENTER** to export the keyword file from the EVS server to the USB key.
4. Press **OK** to close the message box that appears when the keyword file has been exported.
5. Remove the USB key.

2.6.9. Exporting Log Files

When the EVS support team requests the log files to investigate an issue, you can export the log files to a plugged-in USB key by pressing the **X** shortcut key from the Multicam Setup window.

When you call the **Export log file** command, a .zip file is created on the root folder the USB key. It contains:

- all files and folders located on `/mnt/apps/data` folder of the EVS server (root folder when you connect to the EVS server using an FTP client).
- an Excel spreadsheet that contains the definition of your configuration lines

After the export action, a message box asks you whether you want to delete the logs on the EVS server. If you answer **Yes**, the content of the folders `/mnt/apps/data/log` (`/log` folder via FTP) and `/mnt/apps/data/dump` (`/dump` folder via FTP) are deleted.

You can also export log files from XNet Monitor. For more information, refer to the XNet Monitor user manual.

3. Supported Configurations

3.1. General Principles

3.1.1. About Supported Configurations

Generalities

On the Multicam web homepage of the EVS server (`http(s)://<PCLAN IP Address>`), a QR code allows you to access the EVS Toolbox application (toolbox.evs.com).

This will help you define the desired configuration and display how the video connectors should be cabled.

The XT-VIA server supports the following configuration types:

- HD standard and SLSM configurations
- 1080p standard and SLSM configurations
- UHD-4K standard and SLSM configurations

The following configurations are available with the XT-VIA server:

- 4-Channel mode with license code 28 including 2- and 4-channel configurations
- 6-Channel mode with license code 29
- 8-Channel mode with license code 30
- 10-Channel mode with license code 36
- 12-Channel mode with license code 34
- Supermotion Advanced mode with license code 41

Requirements and Limitations

- The Mix on one channel for play channels is available on all HD configurations without restrictions, but it is not available with UHD-4K.
- When working in SDI with the XIP rear panel, the connectors C and D cannot be used for discrete SDI monitoring for the play channels cables onto connectors A and B. The monitoring is only possible using the multiviewer.

  This limitation does not apply when working in IP with the XIP rear panel. In such a case, monitoring is available:

  - in IP over the two SFP interfaces (C and D)
  - in SDI through the OUT A and OUT B connectors

3.1.2. About Record and Play Channels

Number of Record and Play Channels

The number of record and play channels for a given configuration is defined in the Channels tab, in the Base settings. See section "Base Settings" on page 233.

The number of play and record channels available may differ depending on the installed license codes, and on the configurations running on the XT-VIA server:

- Multicam LSM or XSense mode, when the EVS server is controlled by the Remote Panel.
- Spotbox or Server modes, when the EVS server is controlled by the industry-standard protocols.

The following table shows the minimum and maximum number of channels that can be operated in both modes:

	LSM/ XSense	Spotbox/ Server
Max. # channels	12	12
Min. # REC	1	0
Max. # REC	10	12
Min. # PLAY	1	0
Max. # PLAY	6	6

Based on the above-mentioned limitations, among others, some configurations described in the section Supported Configurations are only available in Server/Spotbox mode or in Multicam LSM and XSense mode.

Clip and Record Train Compatibility

- Clips are compatible across all Multicam configurations including SLSM clips.
- Record trains are also compatible as long as the number of record channels (cameras) is not increased in LSM and XSense mode.

  Example

  - 2 REC ==> 4 REC: Record trains are lost.
  - 6 REC ==> 4 REC: Record trains are kept.
- Record trains are always kept in Spotbox mode, even when the number of record trains is increased.

3.1.3. Channel Assignment Principles

General Principles

The following general principles apply to all configurations on the XT-VIA server:

- The connectors within a codec module are only able to work in play or record mode.
- The **play channels** (OUT connectors) are assigned from left to right and from top to bottom, in other words from the lowest to the highest number of codec module.
- The **record channels** (IN connectors) are assigned from right to left and from bottom to top, in other words from the highest to the lowest number of codec module.

Cabling Procedure for HD SLSM

First, assign the **play channels** from left to right and from top to bottom using only connectors A and B of a codec module.

Then, assign the **record channels** from right to left and from bottom to top in the following order:

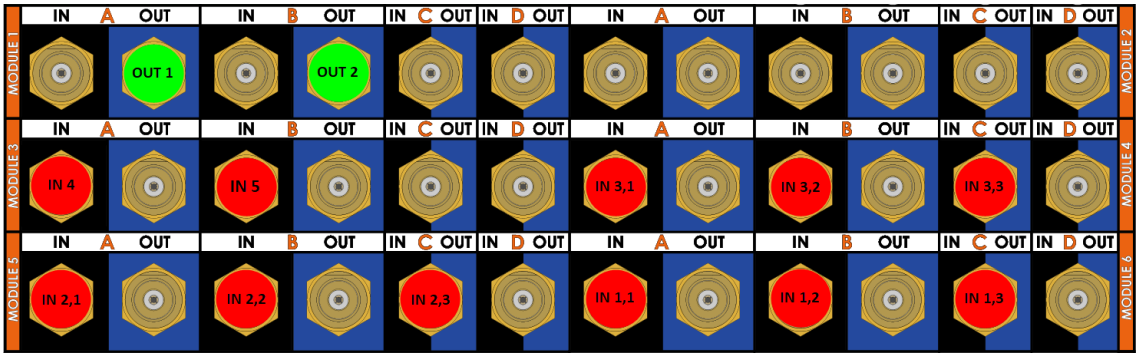
1. Assign first the SLSM recorders of the codec modules as this:
    - From SLSM 2x to SLSM x4, assign all phases of an SLSM recorder on the same codec module, using one codec module per SLSM recorder.
    - Above SLSM x4, assign the phases of the SLSM recorder using all available IN connectors of a codec module before using the next codec module.
    - With SLSM 2x **3G** and SLSM 6x **3G** with high density, 3G phases of two SLSM recorders may be assigned to the same codec module as you will use all available IN connectors of a codec module.
2. Continue the channel assignment using the remaining codec modules for standard HD recorders using only connectors A and B of the codec module.

    Do not use the V4X modules already cabled for SLSM recorders.

Some Examples

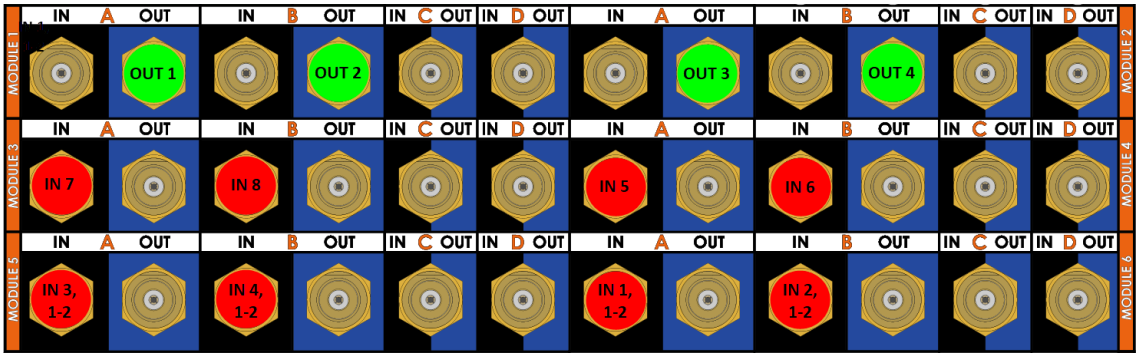
In general, you will not assign more than one SLSM recorder on one codec module.

The following screenshot shows a configuration 3SLSM3x-2IN-2OUT:

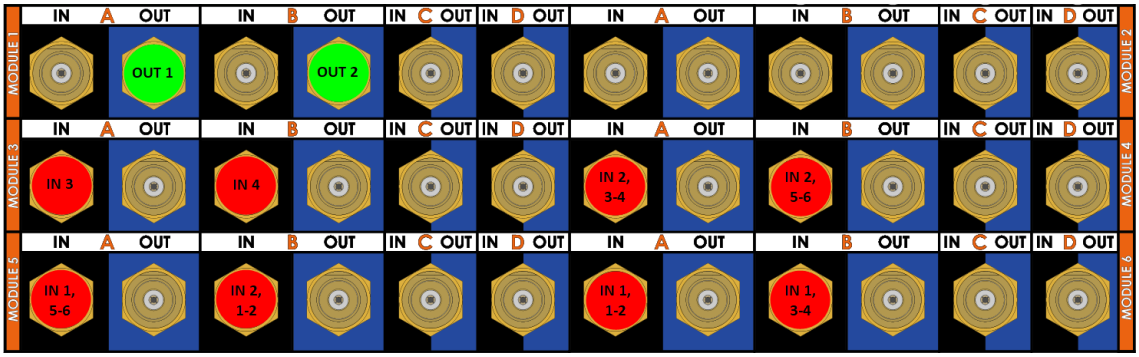


In SLSM 2x 3G and SLSM 6x 3G configurations, 3G phases of different SLSM recorders will be assigned to the same codec module.

The screenshot below shows the 4SLSM 2x 3G+4IN+4OUT configuration where SLSM recorders 1 **and** 2 are assigned to the codec module 6 , for example:



The screenshot below shows the 2SLSM 6x 3G+2IN+2OUT configuration where the codec phases 5&6 of the **first** SLSM recorder and phases 1&2 of the **second** SLSM recorder are all cabled onto the codec module 5:

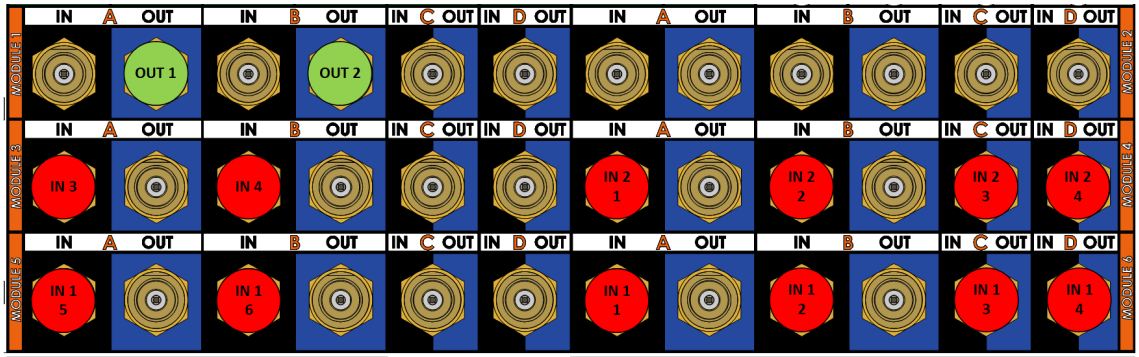


Cabling Procedure in Case of Mixed SLSM Speeds

- First, assign all regular playout channels.
- Then, assign the SLSM recorders with the highest SLSM speed. For example, SLSM 6x.
- Next, assign the SLSM recorders with the lowest SLSM speed. For example, SLSM 4x.
- Finally, assign all regular recorder channels.

Example

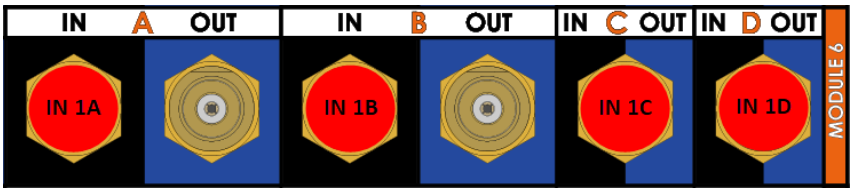
The screenshot below shows the SLSM6x + SLSM4x + 2IN + 2OUT configuration.



Cabling Procedure for UHD-4K

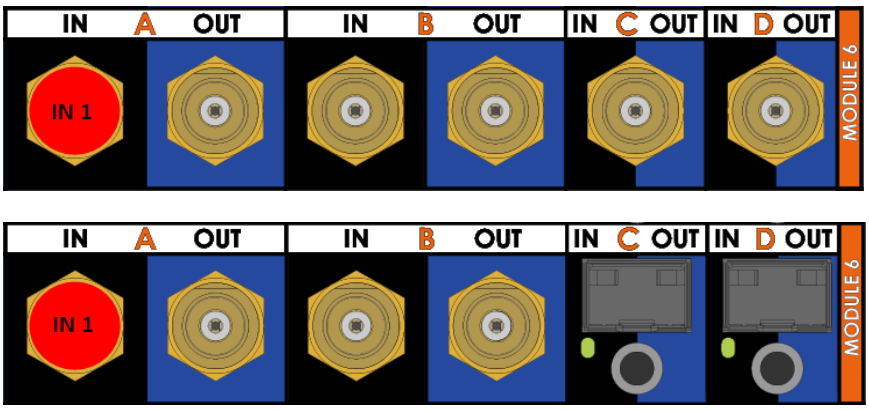
When using the 3G-SDI interfaces, cable the UHD-4K input or output on the connectors A to D of the codec module.

Cabling of IN 1 is shown below as an example:



When using a 12G-SDI interface, cable the UHD-4K input on the IN A connector of the codec module, and the UHD-4K output on the OUT A connector of the codec module.

Cabling of IN 1 is shown below as an example with SDI and XIP panels:



When using a XIP interface in UHD-4K 2SI or SQD, the IN/OUT C and D connectors of the codec module are cabled:

- The phases of UHD-4K input (1, 2, 3, 4) can either be sent to the IN C or IN D connector of the codec module. A maximum of 3 streams are allowed per connector. See section "LiveIP Settings for Video Streams" on page 418.

The same principle has to be applied to the UHD-4K output.

When using an XIP interface in UHD-4K single stream, cable the UHD-4K input on the IN C or IN D connector of the codec module. Cable the UHD-4K output on the OUT C or OUT D connector of the codec module.

Cabling Procedure for IP

- All I/O configurations that are supported for SDI are also supported for IP.
- The general channel assignment principles for SDI also apply to IP.
- When cabling the play and record channels, the physical SFP connector can be freely chosen.

  For example, in case there are 4 play and 4 record channels, the first 2 play channels can be cabled either on the OUT1 C or on the OUT1 D SFP connector of the codec module 1. The next 2 play channels can be cabled either on the OUT2 C or OUT2 D connector of the codec module 2.

  The same principle applies to the record channels. The first 2 record channels can be cabled either on the IN1 C or the IN1 D SFP connector codec module 6, etc.

3.2. HD Standard Configurations

3.2.1. General Information on HD Standard Configurations

The tables below show the available HD configurations (720p, 1080i) with an XT-VIA server, and how the BNC connectors should be cabled.

The 4-channel, 6-channel, 8-channel and 12-channel configurations can be purchased separately. Each configuration mode incorporates the configurations with less channels.

The HD base configurations without any recorder or player are only supported in Spotbox and Server modes. They are preceded by **Sp**.
The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.
The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.
The configurations preceded by **F&K** support Fill&Key mode with the license code 97.

3.2.2. HD Standard Configurations

Configurations in 4-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	1	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	2	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	1	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	0	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6
Sp	0	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	3	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
Sp	4	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	3	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	1	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
	2	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	0	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6
	1	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	0	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6
F&K	0	4	Mod. 1	OUT1 Fill	OUT1 Key			OUT2 Fill	OUT2 Key			Mod. 2
			Mod. 3	OUT3 Fill	OUT3 Key			OUT4 Fill	OUT4 Key			Mod. 4
			Mod. 5									Mod. 6

Configurations in 6-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	5	0	Mod. 1									Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	6	0	Mod. 1									Mod. 2
			Mod. 3					IN5	IN6			Mod. 4

	IN	OUT		A	B	C	D	A	B	C	D	
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	4	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	1	Mod. 1	OUT1								Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	3	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	4	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	3	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	3	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	1	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
	2	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	1	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	0	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5									Mod. 6
Sp	0	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6							Mod. 4
			Mod. 5									Mod. 6
F&K	1	5	Mod. 1	OUT1 Fill	OUT1 Key			OUT2 Fill	OUT2 Key			Mod. 2
			Mod. 3	OUT3 Fill	OUT3 Key			OUT4 Fill	OUT4 Key			Mod. 4
			Mod. 5	OUT5 Fill	OUT5 Key			IN1 Fill	IN1 Key			Mod. 6
F&K	0	6	Mod. 1	OUT1 Fill	OUT1 Key			OUT2 Fill	OUT2 Key			Mod. 2
			Mod. 3	OUT3 Fill	OUT3 Key			OUT4 Fill	OUT4 Key			Mod. 4
			Mod. 5	OUT5 Fill	OUT5 Key			OUT6 Fill	OUT6 Key			Mod. 6

Configurations in 8-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	7	0	Mod. 1									Mod. 2
			Mod. 3	IN7				IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	8	0	Mod. 1									Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	6	1	Mod. 1	OUT1								Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	7	1	Mod. 1	OUT1								Mod. 2
			Mod. 3	IN7				IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	6	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	4	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	3	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	4	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	3	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	2	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6							Mod. 4
			Mod. 5					IN1	IN2			Mod. 6

Configurations in 12-Channel Mode

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	9	0	Mod. 1					IN9				Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	10	0	Mod. 1					IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	9	1	Mod. 1	OUT1				IN9				Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	8	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	6	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	7	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3	IN7				IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
2LSM	6	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	4	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	4	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6							Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5				IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	11	0	Mod. 1	IN11				IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	12	0	Mod. 1	IN11	IN12			IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	10	1	Mod. 1	OUT1				IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	10	2	Mod. 1	OUT1	OUT2			IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
2LSM	8	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
2LSM	6	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

3.3. HD SLSM Configurations

3.3.1. General Information on Supermotion Configurations

Concepts

The **Supermotion cameras** are 2-phase to 16-phase cameras, that record the incoming feeds at a frame rate 2, 3, 4, 6, 8, 10 or 16 times higher than a standard camera.

The **Hypermotion cameras** should clearly be distinguished from the supermotion cameras in two respects:

- The A/V material from the supermotion cameras is continuously fed into the EVS server, whereas the A/V material from the hypermotion cameras is recorded on the camera buffer, and then ingested into the EVS server when the operator sends a play command to the hypermotion camera.
- The A/V material from supermotion cameras is ingested into the EVS server through one physical record channel per phase, whereas the A/V material from the hypermotion camera is ingested into the EVS server through one physical record channel.

See section "Hypermotion Management" on page 390 for more information on the configuration related to hypermotion cameras.

Introduction

The feeds from supermotion cameras can directly be ingested into EVS servers.

For all supermotion cameras with even or uneven phases, you can use a standard connection where each cable transports one phase.

For supermotion cameras with even phases (2x, 4x, 6x, etc.), you can use a 3G-SDI connection where a single cable transports two phases.

In SLSM configurations, a supermotion recorder of a 2-, 4-, 6-, 8-, 10-phase camera accounts for one logical channel, and corresponds respectively to 2, 4, 6, 8 or 10 physical channels.

In 3G SLSM configurations, a supermotion recorder of a 2-,4-, 6-, 8-, 10-,or 16-phase camera accounts for one logical channel. On the rear panel, it uses respectively 1, 2, 3, 4,... connections. If you have assigned the A and B connectors to SLSM 3G recorders, you can not use the connectors C and D of a V4X codec module.

Requirements

SLSM 2x-3x-4x-6x-8x-10x Configurations

The SLSM configurations are valid when the following conditions are fulfilled:

- The license code 110 (Super Motion) is valid.
- The base configuration is Multicam LSM.

3G SLSM 2x-4x-6x-8x-16x Configurations

These configurations are valid when the following conditions are fulfilled:

- The license code 110 (Super Motion) is valid.
- The base configuration is Multicam LSM.
- The parameter Interface is set to **No**.

The 3G SLSM configurations are managed via the **On 3G-SDI** parameter in the **SLSM** settings, not via the **Interface** setting. As the EVS server is operated in HD, this allows the connection of both a standard HD camera and a 3G SLSM camera at the same time.

Availability Depending on Codecs

A cross is displayed in the table below when a given SLSM configuration is available with the specified codec in 720p or 1080i.

SLSM	Avid DNxHD®	Apple ProRes	AVC-Intra / XAVC-Intra HD
2x	X	X	X
3x	X	X	X
6x	X	X	X
8x	X	X	X
10x (No 3G)	X	X	X
16x (3G only)	X	-	-

Limitations

Limitations on Bitrates

Limitations apply on bitrates with some codecs with configurations SLSM 6x and higher.

For more details about these limitations, refer to the section "Bitrates for SLSM Configurations in HD 720p/1080i" on page 224.

Limitations related to XIP Rear Panels

The SLSM configurations **3x and higher** are supported in SDI on a XIP rear panel when any of the following conditions is satisfied:

- You use 3G-SDI and you enable the **On 3G-SDI** parameter (Channels page, SLSM settings).
- You do **not** use 3G-SDI. In that case, you have to fit the EVS small form-factor pluggable SFP + to SDI adapters on the SFP connectors.

3.3.2. HD SLSM Configuration Overview

The tables in this section show the available HD SLSM configurations with an XT-VIA server, as well as how the BNC connectors should be cabled.

Click the request link in the overview table to jump to the corresponding configuration tables:

• SLSM 2x in 4-Channel Mode • SLSM 2x in 6-Channel Mode • SLSM 2x in 8-Channel Mode • SLSM 2x in ChannelMax Mode	• SLSM 2x 3G in 4-Channel Mode • SLSM 2x 3G in 6-Channel Mode • SLSM 2x 3G in 8-Channel Mode • SLSM 2x 3G in ChannelMax Mode • SLSM 2x 3G in 16-Channel Mode
• SLSM 3x in 4-Channel Mode • SLSM 3x in 6-Channel Mode • SLSM 3x in 8-Channel Mode • SLSM 3x in ChannelMax Mode	
• SLSM 4x in 6-Channel Mode • SLSM 4x in 8-Channel Mode • SLSM 4x in ChannelMax Mode	• SLSM 4x 3G in 6-Channel Mode • SLSM 4x 3G in 8-Channel Mode • SLSM 4x 3G in ChannelMax Mode • SLSM 4x 3G in 16-Channel Mode
• SLSM 6x in 8-Channel Mode • SLSM 6x in ChannelMax Mode	• SLSM 6x 3G in 8-Channel Mode • SLSM 6x 3G in ChannelMax Mode
• SLSM 8x in ChannelMax Mode • SLSM 8x in 16-Channel Mode	• SLSM 8x 3G in ChannelMax Mode • SLSM 8x 3G in 16-Channel Mode
• SLSM 10x in ChannelMax Mode	
• SLSM 16x in ChannelMax Mode	

Some configurations are subject to bitrate-related limitations.
See section "Bitrates for SLSM Configurations in HD 720p/1080i" on page 224.

3.3.3. HD SLSM Configurations

- The configurations without any play or record channel are **only** available in Spotbox and Server modes. They are preceded by **Sp**.
- Some SLSM configurations in 10-channel and ChannelMax modes are **not** available in Spotbox and Server modes. They are preceded by **NoSp**.
- Configurations which can be used in Dual LSM mode are preceded by **2LSM**.

Configurations SLSM 2x in 4-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 2x in 6-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	1	3	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	2	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6
	1	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6
	1	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 2x in 8-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	1	4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	2	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	3	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	1	3	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	2	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	1	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6
	1	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 2x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	4	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	4	1	1	Mod. 1	OUT 1				IN 5				Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	2	4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	3	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4				IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	4	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	3	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
Sp	4	4	0	Mod. 1	IN 7	IN 8			IN 5	IN 6			Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	6	2	Mod. 1	OUT 1	OUT 2			IN 7	IN 8			Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	8	2	Mod. 1	OUT 1	OUT 2			IN 8	IN 9			Mod. 2
				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp 2LSM	2	4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
NoSp 2LSM	4	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 2x 3G in 4-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2				Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1 1-2				Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2				Mod. 6

Configurations SLSM 2x 3G in 6-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2				Mod. 6
	1	3	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2				Mod. 6
	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2	IN 2 1-2			Mod. 6
	2	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3				IN 1 1-2	IN 2 1-2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1 1-2				Mod. 6
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2				Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2	IN 2 1-2			Mod. 6
	1	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2				Mod. 6
	1	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1 1-2				Mod. 6
	1	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2				Mod. 6

Configurations SLSM 2x 3G in 8-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	0	1	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3 1-2				IN 1 1-2	IN 2 1-2			Mod. 6
	3	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 3 1-2				IN 1 1-2	IN 2 1-2			Mod. 6
	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2				Mod. 6
	1	4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2				Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3				IN 1 1-2	IN 2 1-2			Mod. 6
	2	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3	IN 4			IN 1 1-2	IN 2 1-2			Mod. 6
	3	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3 1-2				IN 1 1-2	IN 2 1-2			Mod. 6
	1	2	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3	IN 4			IN 1 1-2				Mod. 6
	2	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2	IN 2 1-2			Mod. 6
	2	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3				IN 1 1-2	IN 2 1-2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1 1-2				Mod. 6
	1	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2				Mod. 6
	2	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2	IN 2 1-2			Mod. 6

Configurations SLSM 2x 3G in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 3 1-2				IN 1 1-2	IN 2 1-2			Mod. 6
	4	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6
	4	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 5				Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	2	4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 5	IN 6			Mod. 4
				Mod. 5	IN 3	IN 4			IN 1 1-2	IN 2 1-2			Mod. 6
	3	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 3 1-2				IN 1 1-2	IN 2 1-2			Mod. 6
	4	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6
	3	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3 1-2				IN 1 1-2	IN 2 1-2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
Sp	4	4	0	Mod. 1									Mod. 2
				Mod. 3	IN 7	IN 8			IN 5	IN 6			Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp 2LSM	1	5	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2				Mod. 6
NoSp 2LSM	2	4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3					IN 5	IN 6			Mod. 4
				Mod. 5	IN 3	IN 4			IN 1 1-2	IN 2 1-2			Mod. 6
NoSp 2LSM	2	6	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 7	IN 8			IN 5	IN 6			Mod. 4
				Mod. 5	IN 3	IN 4			IN 1 1-2	IN 2 1-2			Mod. 6
NoSp 2LSM	4	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6
NoSp 2LSM	4	4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 7	IN 8			IN 5	IN 6			Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6

Configurations SLSM 2x 3G in Supermotion Advanced Mode

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
2LSM	8	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 7 1-2	IN 8 1-2			IN 5 1-2	IN 6 1-2			Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6
2LSM	6	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 7	IN 8			IN 5 1-2	IN 6 1-2			Mod. 4
				Mod. 5	IN 3 1-2	IN 4 1-2			IN 1 1-2	IN 2 1-2			Mod. 6

Configurations SLSM 3x in 4-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 6-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 8-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	3	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	4	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
NoSp	1	5	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
	2	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	3	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
2LSM	1	3	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
1SLSM 3x		9	0	Mod. 1	IN 10				IN 8	IN 9			Mod. 2
Sp				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		6	0	Mod. 1					IN 7	IN 8			Mod. 2
Sp				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
3SLSM 3x		3	0	Mod. 1					IN 6				Mod. 2
Sp				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
4SLSM 3x		0	0	Mod. 1									Mod. 2
Sp				Mod. 3	IN 4,1	IN 4,2	IN 4,1		IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
1SLSM 3x		7	2	Mod. 1	OUT 1	OUT 2			IN 8				Mod. 2
Sp				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 5				IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		3	3	Mod. 1	OUT 1	OUT 2			OUT3				Mod. 2
				Mod. 3	IN 5				IN 3	IN 4			Mod. 4

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp 2LSM				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
3SLSM 3x		0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
3SLSM 3x		1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp 2LSM				Mod. 3	IN 4				IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
1SLSM 3x		5	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in Supermotion Advanced Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
4SLSM 3x		1	2	Mod. 1	OUT 1	OUT 2			IN 5				Mod. 2
NoSp				Mod. 3	IN 4,1	IN 4,2	IN 4,3		IN 3,1	IN 3,2	IN 3,3		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
1SLSM 3x	2SLSM 2x 3G	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 2 1-2	IN 3 1-2			IN 1,1	IN 1,2	IN 1,3		Mod. 6
1SLSM 3x	2SLSM 2x	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 4x in 6-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 4x in 8-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 4x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

- 12-Channel mode with license code 34
- 12-Channel mode with license code 34

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
1SLSM 4x		5	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1SLSM 4x		6	2	Mod. 1	OUT 1	OUT 2							Mod. 2

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
NoSp				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2SLSM 4x		2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2SLSM 4x		4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1SLSM 4x	2SLSM 2x	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 4x 3G in 6-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2	IN 1 3-4			Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1 1-2	IN 1 3-4			Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 4x 3G in 8-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 4x 3G in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	1	4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
1SLSM 4x 3G		5	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2	IN 1 3-4			Mod. 6
1SLSM 4x 3G		6	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1 1-2	IN 1 3-4			Mod. 6
2SLSM 4x 3G		2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
2SLSM 4x 3G		4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
2SLSM 4x 3G		6	2	Mod. 1	OUT 1	OUT 2			IN 7	IN 8			Mod. 2
NoSp				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
1SLSM 4x 3G	2SLSM 2x 3G	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 2 1-2	IN 3 1-2			IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 4x 3G in Supermotion Advanced Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3 1-2	IN 3 3-4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
	3	1	2	Mod.1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4				IN 3 1-2	IN 3 3-4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
	3	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4	IN 5			IN 3 1-2	IN 3 3-4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
2LSM	3	1	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
				Mod. 3	IN 4				IN 3 1-2	IN 3 3-4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
2LSM	3	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 4	IN 5			IN 3 1-2	IN 3 3-4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6
2LSM	2	4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2 1-2	IN 2 3-4			IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 6x in 8-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 6x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
Sp	1	6	0	Mod. 1					IN 6	IN 7			Mod. 2
				Mod. 3	IN 4	IN 5			IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
Sp	2	0	0	Mod. 1									Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
NoSp	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4				IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	1	2	Mod. 1	OUT 1	OUT 2			IN 3				Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	2	2	Mod. 1	OUT 1	OUT 2			IN 3	IN 4			Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
NoSp	1	2	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 6x 3G in 8-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 6x 3G in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
Sp	1	6	0	Mod. 1					IN 6	IN 7			Mod. 2
				Mod. 3	IN 4	IN 5			IN 2	IN 3			Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6
Sp	2	0	0	Mod. 1									Mod. 2
				Mod. 3					IN 2 3-4	IN 2 5-6			Mod. 4
				Mod. 5	IN 1 5-6	IN 2 1-2			IN 1 1-2	IN 1 3-4			Mod. 6
	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2 3-4	IN 2 5-6			Mod. 4
				Mod. 5	IN 1 5-6	IN 2 1-2			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4				IN 2	IN 3			Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2 3-4	IN 2 5-6			Mod. 4
				Mod. 5	IN 1 5-6	IN 2 1-2			IN 1 1-2	IN 1 3-4			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 3				IN 2 3-4	IN 2 5-6			Mod. 4
				Mod. 5	IN 1 5-6	IN 2 1-2			IN 1 1-2	IN 1 3-4			Mod. 6
	2	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 3	IN 4			IN 2 3-4	IN 2 5-6			Mod. 4
				Mod. 5	IN 1 5-6	IN 2 1-2			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	1	2	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1 5-6				IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 8x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
NoSp	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
NoSp	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
NoSp	2	2	1	Mod. 1	OUT 1				IN 3	IN 4			Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 8x 3G in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 2 5-6	IN 2 7-8			IN 2 1-2	IN 2 3-4			Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	2	2	1	Mod. 1	OUT 1				IN 3	IN 4			Mod. 2
				Mod. 3	IN 2 5-6	IN 2 7-8			IN 2 1-2	IN 2 3-4			Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6
NoSp	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 8x in Supermotion Advanced Mode

IN SLSM #1	IN SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
2 SLSM8x		0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2 SLSM8x		1	2	Mod. 1	OUT 1	OUT 2			IN 3				Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 8x 3G in Supermotion Advanced Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 2 5-6	IN 2 7-8			IN 2 1-2	IN 2 3-4			Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6
	2	1	2	Mod. 1	OUT 1	OUT 2			IN 3				Mod. 2
				Mod. 3	IN 2 5-6	IN 2 7-8			IN 2 1-2	IN 2 3-4			Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6

Configurations SLSM 10x in 12-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 1,9	IN 1,10			Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 16x 3G in 12-Channel Mode

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 1 13-14	IN 1 15-16			IN 1 9-10	IN 1 11-12			Mod. 4
				Mod. 5	IN 1 5-6	IN 1 7-8			IN 1 1-2	IN 1 3-4			Mod. 6

3.4. 1080p Configurations

3.4.1. General Information on 1080p Configurations

Introduction

The EVS video server working in 1080p encodes or decodes natively the full 1080p video on the EVS server. This provides file interoperability, without requiring transcoding.

Requirements and Limitations

The 1080p is available when the following software requirements are met:

- The license code 22 is activated on the EVS server.
- The **Interface** parameter is set to a proper value.

  See section "Base Settings" on page 233.

The 1080p only supports AVC-Intra, XAVC-Intra, Avid DNxHD, and Apple ProRes 422 codecs.

The SLSM configurations **3x and higher** are supported in SDI on a XIP rear panel when any of the following conditions is satisfied:

- You use 3G-SDI and you enable the **On 3G-SDI** parameter (Channels page, SLSM settings).
- You do **not** use 3G-SDI. In that case, you have to fit the EVS small form-factor pluggable SFP + to SDI adapters on the SFP connectors.

Without XHub-VIA IP Aggregator, the SLSM configurations **4x and higher** 60Hz (NTSC) are not supported with SMPTE ST2022-7. The SLSM configurations 4x 50Hz (PAL) are supported with SMPTE ST2022-7.

Introduction to Configuration Tables

The tables below show the available 1080p configurations with an XT-VIA server, and how the BNC connectors should be cabled.

These configurations can be purchased in 1080p with a Full HD license scheme.

The 4-channel, 6-channel, 8-channel and 12-channel configurations can be purchased separately. Each configuration mode incorporates the configurations with less channels.

The HD base configurations without any recorder or player are only supported in Spotbox and Server modes. They are preceded by **Sp**.

The configurations preceded by NoSp are not available in Spotbox and Server modes.
The configurations preceded by 2LSM are also available in Dual LSM mode with the license code 116.
The configurations preceded by **F&K** support Fill&Key mode with the license code 97.

3.4.2. 1080p Standard Configurations

Configurations in 4-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	1	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	2	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	1	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	0	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6
Sp	0	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	3	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
Sp	4	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	3	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	1	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
	2	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	0	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6
	1	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	0	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6
F&K	0	4	Mod. 1	OUT1 Fill	OUT1 Key			OUT2 Fill	OUT2 Key			Mod. 2
			Mod. 3	OUT3 Fill	OUT3 Key			OUT4 Fill	OUT4 Key			Mod. 4
			Mod. 5									Mod. 6

Configurations in 6-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	5	0	Mod. 1									Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	6	0	Mod. 1									Mod. 2
			Mod. 3					IN5	IN6			Mod. 4

	IN	OUT		A	B	C	D	A	B	C	D	
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	4	1	Mod. 1	OUT1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	1	Mod. 1	OUT1								Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	3	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	4	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	3	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	3	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	1	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1				Mod. 6
	2	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	1	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5					IN1				Mod. 6
Sp	0	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5									Mod. 6
Sp	0	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6							Mod. 4
			Mod. 5									Mod. 6
F&K	1	5	Mod. 1	OUT1 Fill	OUT1 Key			OUT2 Fill	OUT2 Key			Mod. 2
			Mod. 3	OUT3 Fill	OUT3 Key			OUT4 Fill	OUT4 Key			Mod. 4
			Mod. 5	OUT5 Fill	OUT5 Key			IN1 Fill	IN1 Key			Mod. 6
F&K	0	6	Mod. 1	OUT1 Fill	OUT1 Key			OUT2 Fill	OUT2 Key			Mod. 2
			Mod. 3	OUT3 Fill	OUT3 Key			OUT4 Fill	OUT4 Key			Mod. 4
			Mod. 5	OUT5 Fill	OUT5 Key			OUT6 Fill	OUT6 Key			Mod. 6

Configurations in 8-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	7	0	Mod. 1									Mod. 2
			Mod. 3	IN7				IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	8	0	Mod. 1									Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	6	1	Mod. 1	OUT1								Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	7	1	Mod. 1	OUT1								Mod. 2
			Mod. 3	IN7				IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	6	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	4	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3					IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	3	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6
	4	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5					IN1	IN2			Mod. 6
	3	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5	IN3				IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	2	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6							Mod. 4
			Mod. 5					IN1	IN2			Mod. 6

Configurations in 12-Channel Mode

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	9	0	Mod. 1					IN9				Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	10	0	Mod. 1					IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	9	1	Mod. 1	OUT1				IN9				Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	8	2	Mod. 1	OUT1	OUT2							Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	6	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	7	3	Mod. 1	OUT1	OUT2			OUT3				Mod. 2
			Mod. 3	IN7				IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
2LSM	6	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	4	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5								Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	4	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6							Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	5	5	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5				IN5				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	11	0	Mod. 1	IN11				IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
Sp	12	0	Mod. 1	IN11	IN12			IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	10	1	Mod. 1	OUT1				IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	10	2	Mod. 1	OUT1	OUT2			IN9	IN10			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
2LSM	8	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
2LSM	6	6	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
			Mod. 3	OUT5	OUT6			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

3.4.3. 1080p SLSM Configuration Overview

Principles

This section details the available multi-phase SLSM configurations in 1080p on XT-VIA servers.

In SLSM configurations in 1080p, a supermotion recorder of a 2-, 4-, 6-, or 8-phase camera accounts for one logical channel, and corresponds respectively to 2, 4, 6 or 8 physical channels.

Overview

The tables below show the available 1080p SLSM configurations with an XT-VIA server, as well as how the BNC connectors should be cabled.

Click the request links in the overview table to jump to the corresponding configuration table:

- The configurations without any play or record channel are **only** available in Spotbox and Server modes.
  They are preceded with **Sp**.
- Some SLSM configurations in 10-channel and ChannelMax modes are **not** available in Spotbox & Server modes.
  They are preceded with **NoSp**.

3.4.4. 1080p SLSM Configurations

Configurations SLSM 2x in 4-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 2x in 6-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	1	3	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	2	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6
	1	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6
	1	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 2x in 8-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	1	4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	2	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	3	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	2	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	1	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2			Mod. 6
	1	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
	2	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 2x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	4	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	4	1	1	Mod. 1	OUT 1				IN 5				Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	3	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4				IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	4	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
Sp	4	4	0	Mod. 1	IN 7	IN 8			IN 5	IN 6			Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	6	2	Mod. 1	OUT 1	OUT 2			IN 7	IN 8			Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	1	8	2	Mod. 1	OUT 1	OUT 2			IN 8	IN 9			Mod. 2
				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
2LSM	1	5	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2			Mod. 6
2LSM	1	6	4	Mod. 1	OUT1	OUT2			OUT3	OUT4			Mod. 2
				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN3			IN 1,1	IN 1,2			Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp 2LSM	2	4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
NoSp 2LSM	4	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
2LSM	3	2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 3x in 4-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 6-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	0	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 8-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	3	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	1	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6
	1	2	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
	2	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2LSM	1	3	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
1SLSM 3x		9	0	Mod. 1	IN 10				IN 8	IN 9			Mod. 2
Sp				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		6	0	Mod. 1					IN 7	IN 8			Mod. 2
Sp				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
3SLSM 3x		3	0	Mod. 1					IN 6				Mod. 2
Sp				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
4SLSM 3x		0	0	Mod. 1									Mod. 2
Sp				Mod. 3	IN 4,1	IN 4,2	IN 4,1		IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
1SLSM 3x		7	2	Mod. 1	OUT 1	OUT 2			IN 8				Mod. 2
Sp				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 5				IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		3	3	Mod. 1	OUT 1	OUT 2			OUT3				Mod. 2
				Mod. 3	IN 5				IN 3	IN 4			Mod. 4

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		4	2	Mod. 1	OUT 1	OUT 2							Mod. 2
2LSM				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
3SLSM 3x		0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
3SLSM 3x		1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
2LSM				Mod. 3	IN 4				IN 3,1	IN 3,2	IN 3,1		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
1SLSM 3x		5	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x	2SLSM 2x	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
NoSp				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in Supermotion Advanced Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
4SLSM 3x		1	2	Mod. 1	OUT 1	OUT 2			IN 5				Mod. 2
NoSp				Mod. 3	IN 4,1	IN 4,2	IN 4,3		IN 3,1	IN 3,2	IN 3,3		Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x		4	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
2LSM				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
2SLSM 3x	2SLSM 2x	0	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
NoSp 2LSM				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 4x in 6-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5					IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 4x in 8-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 4x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
1SLSM 4x		5	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 6				IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1SLSM 4x		6	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 6	IN 7			IN 4	IN 5			Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

SLSM #1	SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
2SLSM 4x		2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 4x in Supermotion Advanced Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

IN SLSM #1	IN SLSM 2#	IN	OUT		A	B	C	D	A	B	C	D	
4 SLSM 4x		0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4,1	IN 4,2	IN 4,3	IN 4,4	IN 3,1	IN 3,2	IN 3,3	IN 3,4	Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2 SLSM 4x		6	2	Mod. 1	OUT 1	OUT 2			IN 7	IN 8			Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2 SLSM 4x		2	4	Mod. 1	OUT 1	OUT 2			OUT 3	OUT 4			Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2 SLSM 4x	2 SLSM2x	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4,1	IN 4,2			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 6x in 8-Channel Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 6x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

The configurations preceded by **2LSM** are also available in Dual LSM mode with the license code 116.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
Sp	1	6	0	Mod. 1					IN 6	IN 7			Mod. 2
				Mod. 3	IN 4	IN 5			IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
Sp	2	0	0	Mod. 1									Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	3	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 4				IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	2	1	2	Mod. 1	OUT 1	OUT 2			IN 3				Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	3	Mod. 1	OUT 1	OUT 2			OUT 3				Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 6x in Supermotion Advanced Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

IN SLSM #1	IN SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
2 SLSM6x		2	2	Mod. 1	OUT 1	OUT 2			IN 3	IN 4			Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1 SLSM6x	2 SLSM3x	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 3,1	IN 3,2	IN 3,3		IN 2,1	IN 2,2	IN 2,3		Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1 SLSM6x	1 SLSM4x	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 3	IN 4			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1 SLSM6x	1 SLSM3x	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 3	IN 4			IN 2,1	IN 2,2	IN 2,3		Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 8x in 12-Channel Mode

The 12-Channel mode includes the 10- and 12-channel configurations.

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
NoSp	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	1	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	2	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 8x in Supermotion Advanced Mode

The configurations below are available in SDI on an XIP rear panel if you use SFP+ adapters.

IN SLSM #1	IN SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
2 SLSM8x		0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2 SLSM8x		2	1	Mod. 1	OUT 1				IN 3	IN 4			Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2 SLSM8x		0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
2 SLSM8x		1	2	Mod. 1	OUT 1	OUT 2			IN 3				Mod. 2
				Mod. 3	IN 2,5	IN 2,6	IN 2,7	IN 2,8	IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1 SLSM8x	1 SLSM6x	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
1 SLSM8x	1 SLSM4x	0	2	Mod. 1	OUT 1	OUT 2							Mod. 2

IN SLSM #1	IN SLSM #2	IN	OUT		A	B	C	D	A	B	C	D	
				Mod. 3					IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

3.5. UHD-4K Configurations

3.5.1. General Information on UHD-4K Configurations

Description

The UHD-4K format available on the EVS server is called UHDTV (Ultra-High Definition TV). It is activated by setting the **UHDTV-4K** value for the **Resolution** parameter.

In UHD-4K, the image resolution is 3840 x 2160. An UHD-4K image can consist of four 1080p frames transported via four 3G-SDI links or a single 12G-SDI link. Such an UHD-4K image therefore requires 4 3G-SDI (BNC) connectors, or 1 12G-SDI (BNC) connector or 2 IP (SFP+) connectors on the XT-VIA Server.

With a XIP rear panel, the UHD-4K configurations are possible in IP, in 12G-SDI or in 3G-SDI using the EVS small form-factor pluggable SFP+ to SDI adapters.

Requirements

The UHD-4K is available when the following software requirements are met:

- The license code 27 is active on the EVS server, in combination with the code for the configuration mode.
- The **Resolution** parameter is set to **UHDTV-4K**.

  See section "Video and Reference Settings" on page 212.
- The **Intra Codec** parameter is an UHD-4K codec.

  See section "Codec Settings" on page 217.
- The **Interface** parameter is set to a **3G**, **12G** or **XIP** value.

  See section "Base Settings" on page 233.

Limitations

Feature Limitations

- UHD-4K does not support the Mix on one channel feature.
- UHD-4K does not provide discrete OSD.
- UHD-4K does not support Dual LSM.
- UHD-4K supports up to 16 embedded audio tracks.
- UHD-4K 60Hz (NTSC) is not supported in ST2022-7 without the XHub-VIA IP Aggregator.

Bitrate-Related Limitations

The following table presents which configurations are supported for which codecs and codec flavors taking the codec bitrate and the hardware configuration into account:

	(4+1) RAID array	(5+1) RAID array	(10+1) RAID array
6-channel config	XAVC 300 50/59.94Hz XAVC 480 50Hz	XAVC 300 all XAVC 480 all DNxHR SQ 50Hz	XAVC 300 all XAVC 480 all DNxHR SQ all
5-channel config	XAVC 300 all XAVC 480 all DNxHR SQ 50Hz	XAVC 300 all XAVC 480 all DNxHR SQ all	XAVC 300 all XAVC 480 all DNxHR SQ all DNxHR HQ 50Hz DNxHR HQX 50Hz
4-channel config	XAVC 300 all XAVC 480 all DNxHR SQ all	XAVC 300 all XAVC 480 all DNxHR SQ all DNxHR HQ 50Hz DNxHR HQX 50Hz	All UHD-4K codecs, bitrates and frame rates
3-channel config	XAVC 300 all XAVC 480 all DNxHR SQ all DNxHR HQ 50Hz DNxHR HQX 50Hz	All UHD-4K codecs, bitrates and frame rates	All UHD-4K codecs, bitrates and frame rates

Limitations with SLSM Configurations

- SLSM2x: No limitations (all codecs and bitrates).
- SLSM3x: Support (in 50Hz and 59.94Hz) of XAVC 300, XAVC 480 and DNxHR SQ.

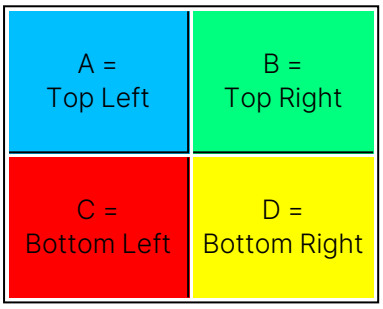
Assignment Principles with SDI Connectivity

An UHD-4K image consists of four 1080p frames which are transported via four 3G-SDI links or via a single 12G-SDI link.

3G-SDI Connectivity

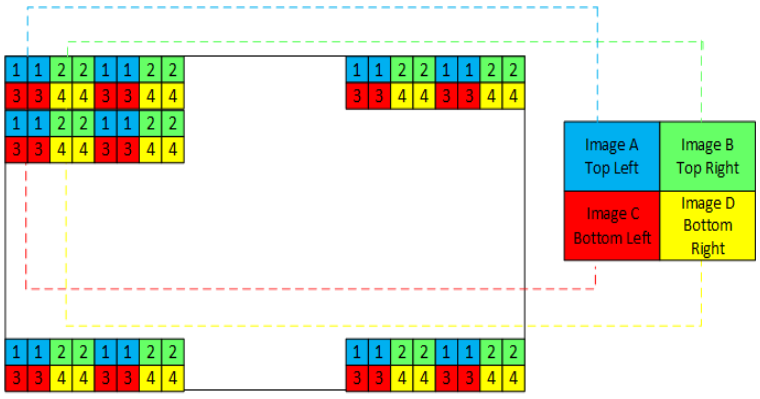
When the **square division** UHD format is selected (see "Base Settings" on page 233), the UHD-4K image is transported as four 1080p image quadrants.

Each image quadrant is assigned to its corresponding 3G-SDI link in the following sequence:



When the **two-sample interleave** UHD format is selected, the UHD-4K image is transported as four 1080p images at 1/4 of the original 4K resolution:

Each 1080p image is assigned to a 3G-SDI link in the following sequence:



The four 3G-SDI connectors of an UHD-4K channel are always cabled on the connectors A to D of a codec module.

12G-SDI Connectivity

With 12G-SDI connectivity, the UHD-4K image (made up of four 1080p images) are transported via a single 12G-SDI link.

This is always cabled on the A connector of a codec module.

Introduction to Configuration Tables

The tables below show the available 4K configurations on a XT-VIA server.

For each configuration, the connectors assigned on the back panel are displayed without distinction between 3G and 12G cabling as the connectors are assigned the same way:

- With 3G connectivity, each of the four connectors are cabled on all connectors (IN or OUT) of a given codec module.
- With 12G connectivity, the single connector is cabled on the A connector (IN or OUT) of the codec module.

3.5.2. UHD-4K Configurations

- The configurations without any play or record channel are **only** available in Spotbox and Server modes.
  They are preceded with **Sp**.

Configurations in 8-Channel (HD) Mode (up to 4 Channels 4K)

The 8-channel mode includes the 4- and 8-channel configurations.

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	1	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN 1				Mod. 6
Sp	2	0	Mod. 1									Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	1	1	Mod. 1	OUT 1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN 1				Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	0	1	Mod. 1	OUT 1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6
Sp	0	2	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5									Mod. 6

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	3	0	Mod. 1									Mod. 2
			Mod. 3					IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
Sp	4	0	Mod. 1									Mod. 2
			Mod. 3	IN 4				IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	2	1	Mod. 1	OUT 1								Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	3	1	Mod. 1	OUT 1								Mod. 2
			Mod. 3					IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN 1				Mod. 6
	2	2	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	1	3	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3								Mod. 4
			Mod. 5					IN 1				Mod. 6
Sp	0	3	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3								Mod. 4
			Mod. 5									Mod. 6
Sp	0	4	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3				OUT4				Mod. 4
			Mod. 5									Mod. 6

Configurations in ChannelMax Mode (up to 6 Channels 4K)

The configurations preceded by **Sp** are only available in Spotbox and Server modes.

	IN	OUT		A	B	C	D	A	B	C	D	
Sp	5	0	Mod. 1					IN 5				Mod. 2
			Mod. 3	IN 4				IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
Sp	6	0	Mod. 1	IN 6				IN 5				Mod. 2
			Mod. 3	IN 4				IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	4	1	Mod. 1	OUT 1								Mod. 2
			Mod. 3	IN 4				IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	5	1	Mod. 1	OUT 1				IN 5				Mod. 2
			Mod. 3	IN 4				IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	3	2	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3					IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	4	2	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	IN 4				IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	2	3	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3								Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	3	3	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3				IN 3				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6
	1	4	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3				OUT 4				Mod. 4
			Mod. 5					IN 1				Mod. 6
	2	4	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3				OUT 4				Mod. 4
			Mod. 5	IN 2				IN 1				Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	1	5	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3				OUT 4				Mod. 4
			Mod. 5	OUT 5				IN 1				Mod. 6
Sp	0	5	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3				OUT 4				Mod. 4
			Mod. 5	OUT 5								Mod. 6
Sp	0	6	Mod. 1	OUT 1				OUT 2				Mod. 2
			Mod. 3	OUT3				OUT 4				Mod. 4
			Mod. 5	OUT 5				OUT 6				Mod. 6

3.5.3. UHD-4K SLSM Configuration Overview

SLSM Principles

This section details the available multi-phase SLSM configurations on XT-VIA servers.

For UHD-4K SLSM configurations, a supermotion recorder of a two-phase camera corresponds to one logical channel, and each phase is cabled on a different codec module.

For each configuration, the connectors assigned on the back panel are displayed without distinction between 3G and 12G cabling as the connectors are assigned the same way:

- With 3G connectivity, each of the four connectors are cabled on all connectors (IN or OUT) of a given codec module.
- With 12G connectivity, the single connector is cabled on the A connector (IN or OUT) of the codec module.

Overview

The tables below show the available UHD-4K SLSM configurations with an XT-VIA Server server, as well as how the BNC connectors should be cabled.

Click the request links in the overview table to jump to the corresponding configuration table:

NEW ! Limitations

The SLSM 4x configurations in 8- and 12-Channel Mode are only supported in XAVC class 300.

3.5.4. UHD-4K SLSM Configurations

Configurations SLSM 2x in 8-Channel Mode

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6

Configurations SLSM 2x in 12-Channel Mode

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 3				IN 2				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	3	1	Mod. 1	OUT 1				IN 4				Mod. 2
				Mod. 3	IN 3				IN 2				Mod. 4

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	2	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 2,2				IN 2,1				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	2	1	1	Mod. 1	OUT 1				IN 3				Mod. 2
				Mod. 3	IN 2,2				IN 2,1				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	1	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
	1	2	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 3				IN 2				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	2	0	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 2,2				IN 2,1				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	0	3	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	OUT3								Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	1	3	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	OUT3				IN 2				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	0	4	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	OUT3				OUT 4				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6

Configurations SLSM 3x in 8-Channel Mode

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	0	Mod. 1									Mod. 2
				Mod. 3					IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3					IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6

Configurations SLSM 3x in 12-Channel Mode

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 2				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	2	1	Mod. 1	OUT 1				IN 3				Mod. 2
				Mod. 3	IN 2				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	0	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 1,3				Mod. 4

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	1	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 2				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	0	3	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	OUT 3				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6

NEW ! Configurations SLSM 4x in 8-Channel Mode

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	0	Mod. 1									Mod. 2
				Mod. 3	IN 1,4				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6

NEW ! Configurations SLSM 4x in 12-Channel Mode

	SLSM IN	IN	OUT		A	B	C	D	A	B	C	D	
	1	0	1	Mod. 1	OUT 1								Mod. 2
				Mod. 3	IN 1,4				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	1	1	Mod. 1	OUT 1				IN 2				Mod. 2
				Mod. 3	IN 1,4				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6
	1	0	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 1,4				IN 1,3				Mod. 4
				Mod. 5	IN 1,2				IN 1,1				Mod. 6

3.6. Mixed 1080p and UHD-4K Configurations

3.6.1. Upscale of 1080p into UHD-4K

Prerequisite

It is possible to upscale 1080p content on an XT-VIA server and play it out as UHD-4K in two different ways, as presented in this section.

The upscale feature is supported with 3G-SDI and XIP interface for the video connectors.

The upscale will only be possible, however it is implemented, when equivalent UHD-4K and 1080p codecs are used:

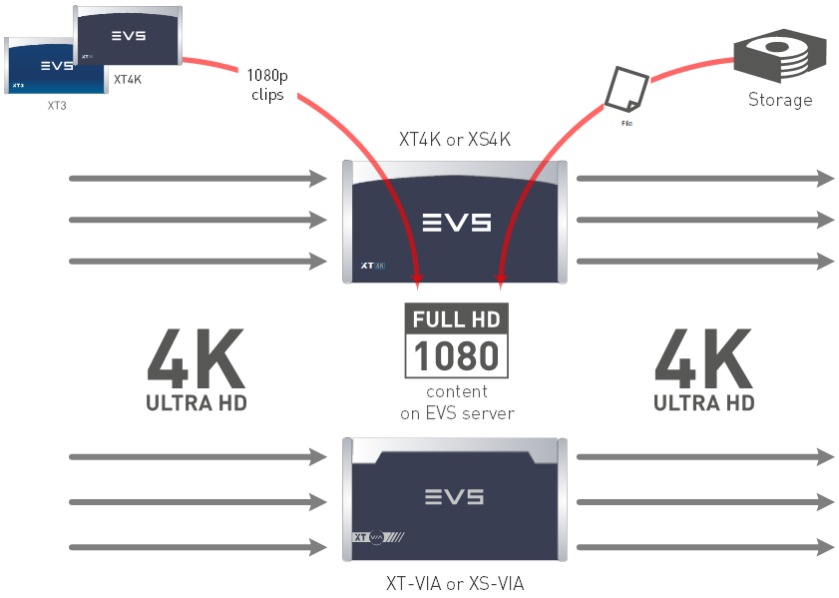
HD Codec	UHD-4K Codec
XAVC- Intra 100	XAVC-Intra 300 / 480
DNxHD	DNxHR

Upscale with UHD-4K Configurations

Description

1080p content has been transferred to the XT-VIA server from an external storage or from another EVS server via XNet or Gigabit network. The other EVS server runs an 1080p configuration.

When the 1080p content is present on the EVS server and all the requirements are fulfilled, it can be upscaled and played out in UHD-4K on an XT-VIA server running an UHD-4K configuration.



Requirements

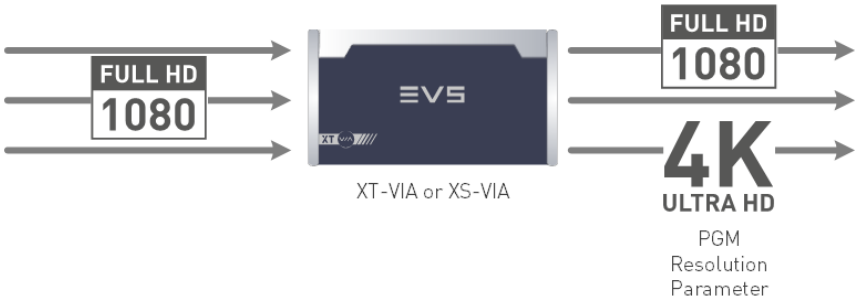
- The UHD-4K license (code #27) is active on the EVS server.
- The upscale license from 1080p to UHD-4K (code # 39) is active on the EVS server.
- The UHDTV-4K resolution is selected in the Server tab, Video and Reference settings, **Resolution** field.
- The UHD format is set to **two-sample interleave** in the Channels tab, Base settings, **UHD Format** field.
- The UHD-4K and 1080p codecs are equivalent (see Prerequisites section).
- This type of upscale feature is not tied to a fixed list of configurations.

Upscale with 1080p Configurations

Description

1080p content is ingested from the video feeds into the XT-VIA server running a 1080p configuration. The 1080p can also come from another EVS server or from an external storage.

When all requirements are fulfilled and the resolution of the player is set to UHD-4K, the 1080p content is upscaled and is played out in UHD-4K on the same XT-VIA server although it runs a 1080p configuration.



Requirements

- The UHD-4K license (code #27) is active on the EVS server, alongside with the 1080p 3G license (code # 22).
- The upscale license from 1080p to UHD-4K (code # 39) is active on the EVS server.
- The **1080p** resolution is selected in Server tab, Video and Reference settings, **Resolution** field.
- The **UHD-4K PGM** resolution is selected in the Server tab, Video and Reference settings, **Player Resolution** field.
- The UHD-4K and 1080p codecs are equivalent (see Prerequisites section).
- This type of upscale feature is only available with the configurations specified in the following sections.
  - Standard configurations
  - SLSM configurations
- The corresponding license code is required according to the configuration mode :
  - code #29 for 6-channel mode
  - code #30 for 8-channel mode
  - code #36 for 10-channel mode
  - code #34 for 12-channel mode

Limitations

- Mix on one channel is not supported with the upscale of 1080p into UHD-4K.
- The configurations supporting upscale are available in SDI on an XIP rear panel if you use SFP+ adapters.

You can mix 1080p and UHD-4K clips in playlists and in timelines when you use the upscale feature.
The split screen functionality is also supported with a mixed production.

3.6.2. 1080p / UHD-4K Standard Configurations

6-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
	2	2	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5					IN1	IN2			Mod. 6

8-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
	4	2	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3									Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	3	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3	OUT3								Mod. 4
			Mod. 5					IN1	IN2			Mod. 6

10-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
	6	2	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3					IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	4	3	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3	OUT3								Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	2	4	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3	OUT3				OUT4				Mod. 4
			Mod. 5					IN1	IN2			Mod. 6

12-Channel Mode

	IN	OUT		A	B	C	D	A	B	C	D	
	8	2	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3	IN7	IN8			IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6
	6	3	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3	OUT3				IN5	IN6			Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

	IN	OUT		A	B	C	D	A	B	C	D	
	4	4	Mod. 1	OUT1				OUT2				Mod. 2
			Mod. 3	OUT3				OUT4				Mod. 4
			Mod. 5	IN3	IN4			IN1	IN2			Mod. 6

3.6.3. 1080p / UHD-4K SLSM Configurations

Configurations SLSM 2x in 12-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	3	2	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 4	IN 5			IN 3,1	IN 3,2			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6
	2	4	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2			IN 1,1	IN 1,2			Mod. 6

Configurations SLSM 3x in 8-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3									Mod. 4
				Mod. 5	IN 2				IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 10-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	3	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 4				Mod. 4
				Mod. 5	IN 2	IN 3			IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 3x in 12-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	1	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 3				Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	2	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
	2	3	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 5				IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6
	2	4	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 5	IN 6			IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3		IN 1,1	IN 1,2	IN 1,3		Mod. 6

Configurations SLSM 4x in 12-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	2	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 3	IN 4			Mod. 4
				Mod. 5	IN 2,1	IN 2,2	IN 2,3	IN 2,4	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 6x in 12-Channel Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	2	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 2	IN 3			Mod. 4
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6
	1	3	2	Mod. 1	OUT 1				OUT 2				
				Mod. 3	IN 4				IN 2	IN 3			
				Mod. 5	IN 1,5	IN 1,6			IN 1,1	IN 1,2	IN 1,3	IN 1,4	

Configurations SLSM 6x in Supermotion Advanced Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	2	0	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3	IN 2,5	IN 2,6			IN 2,1	IN 2,2	IN 2,3	IN 2,4	Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

Configurations SLSM 8x in Supermotion Advanced Mode

	IN SLSM	IN	OUT		A	B	C	D	A	B	C	D	
	1	1	2	Mod. 1	OUT 1				OUT 2				Mod. 2
				Mod. 3					IN 2				Mod. 4
				Mod. 5	IN 1,5	IN 1,6	IN 1,7	IN 1,8	IN 1,1	IN 1,2	IN 1,3	IN 1,4	Mod. 6

4. Multicam Configuration

4.1. Overview on User Interfaces

4.1.1. Introduction

Preliminary Remarks

Configuration as Initial Step

Prior to using Multicam, the operator should set all necessary parameters in the Multicam Configuration window. If clips are stored with certain parameters and the operator wishes to change the parameter values afterwards, those clips and playlists will not change.

Configuration with Caution

Most parameters are factory preset, and should not be modified without advice of qualified EVS staff. Improper values for some parameters will prevent the proper operation of the system.

Parameter Availability

Only the parameters or parameter values valid for the given server type, server chassis, and active license codes are available for defining the various configurations.

General Comparison Between User Interfaces

You can configure the EVS server using one of the three available user interfaces:

- Multicam Configuration window in the server-based application
- Multicam Configuration window in the web-based interface
- Technical and Operational Setup menus in an EVS Remote Panel (if any)

The Multicam Configuration windows in the server-based and web-based interface are almost identical.

In the Remote Panel, however, only the most used technical settings are available in the Technical Setup menu, and all operational settings are available in the Operational Setup menu.

The following table provides an overview on the features available in each user interface:

	Configuration Window	
	Technical Settings	Operational Settings
Server-Based Application	Yes (tabs 1-6)	Yes (tab 7-8)
Web-Based Interface	Yes (tabs 1-6)	Yes (tab 7-8)
Remote Panel	Yes (partly) (Technical Setup: F0)	Yes (Setup Menu: SHIFT+D)

Overview on Configuration Parameters

The first topic of each section in the Multicam Configuration chapter gives you an overview on the parameters available in this section, and specifies whether you will find the parameter:

- in the basic or advanced view in the server-based application and the web-based interface
- in the Technical Setup, Operational Setup, or not at all on the Remote Control panel

The following list provides a hyperlink to all overview topics in the various sections:

- Server settings
- Channels settings
- Network settings
- Monitoring settings
- Protocol settings
- GPI settings
- Operations settings

Concurrent Modifications in the Remote Panel and the Server-Based Application

When a parameter is modified with the Remote Panel, and that parameter is not in conflict with the parameter modified in the Configuration page of the server-based application, the following message will be displayed on the VGA.

```
'The configuration has been modified by another user without any conflict. Your
                copy has been updated with these modifications.'
```

When a parameter is modified with the Remote Panel, and the parameter is in conflict with the parameter modified in the Configuration page of the server-based application, the following message will be displayed on the VGA or on the LCD display of the Remote Panel. The configuration will be updated if the user agrees.

```
'The configuration has been modified by another user.
 Do you want to load it and lose your modification?'
```

When this message is displayed on the Remote Panel and the user answers 'No' to the message (**Clear** button), the modifications performed on the Remote Panel will be preserved. The changes applied on the VGA will however be loaded after the user leaves the operational setup menu, except if the specific fields modified on the VGA have been modified and validated on the Remote Panel after the message display.

4.1.2. Overview of the Multicam Configuration Window

Introduction

In the server-based and web-based interfaces, all server settings related to each configuration file are grouped in a single window: the Multicam Configuration window.

When the server is not running a given configuration, the Multicam Configuration window allows you to define any of the configurations available in the Multicam Setup window.

When the server is running a given configuration, the Multicam Configuration window allows you to modify the settings of the running configuration.

The Multicam Configuration window is organized in a similar way in both user interfaces:

- It consists of seven tabs.
- Each tab contains one or more pages in the server-based application.
- Each tab displays all settings on a single page in the web-based interface.
- The settings on page/tab are organized in field groups having a dedicated name.

Accessing the Multicam Configuration Window

In the Server-Based Application

To access the Multicam Configuration window from the Multicam Setup window when the server is not running, proceed as follows:

1. Press the UP ARROW or DOWN ARROW key to respectively move up and down in the list of configuration lines until the requested line is highlighted.
2. Press F8.

   The Multicam Configuration window opens.

To access the Multicam Configuration window from the Clips or Playlist window when the server is running, press SHIFT+F2.

In the Web-Based Interface

To access the Multicam Configuration window from the Multicam Setup window when the server is not running, click the Edit icon  for the configuration line you want to configure. The Multicam Configuration window opens.

The Multicam Configuration window will directly be displayed on the web-based interface when the server is running a given configuration. You will directly be able to edit the settings for the running configuration.

Display Mode

The settings in the Multicam Configuration window have been categorized as basic or advanced settings depending on whether they are commonly used or not.

Two display modes are consequently available:

- Basic mode
- Advanced mode

Selecting the basic mode will hide settings on some pages, or completely hide other pages.

To change the display mode in the server-based application, press F3.

To change the display mode in the web-based interface, click on the display mode label 

or 

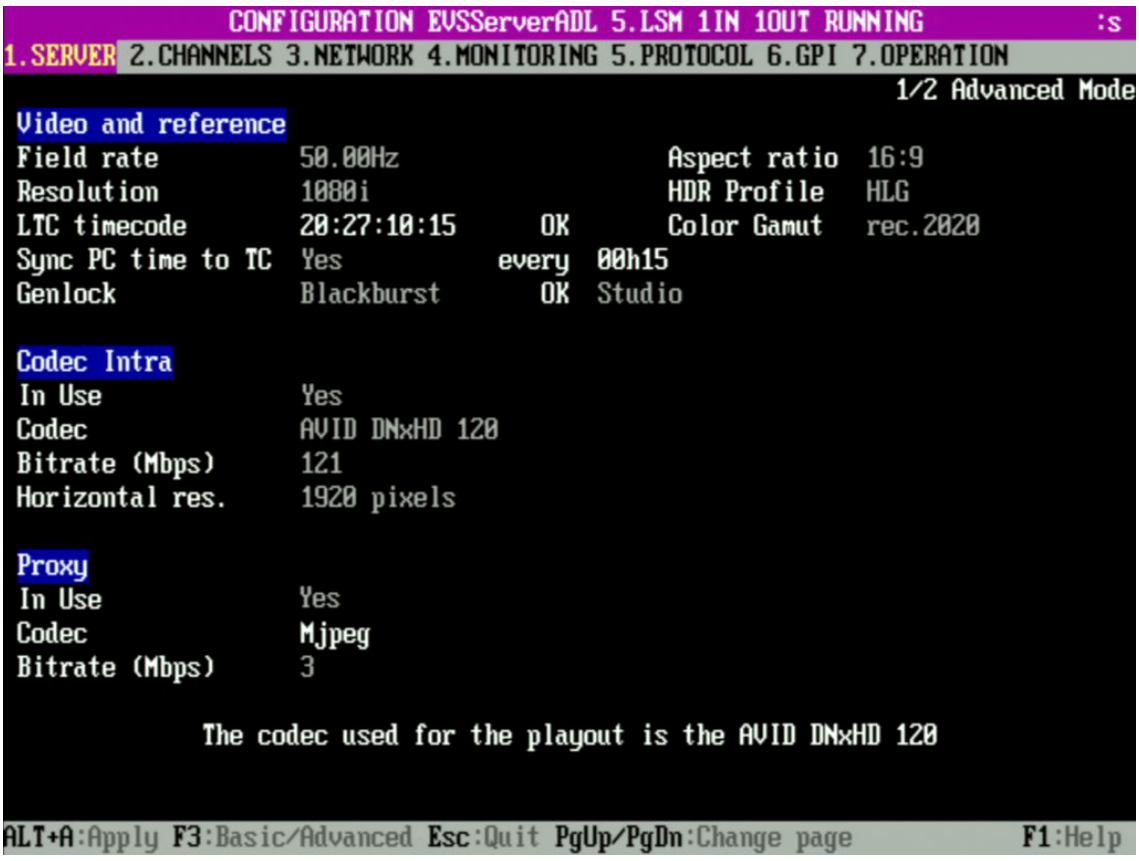
.

User Interfaces

Server-Based User Interface

The following screenshot presents the 1st tab, and 1st page of the Multicam Configuration window in the server-based application, shown in advanced mode:

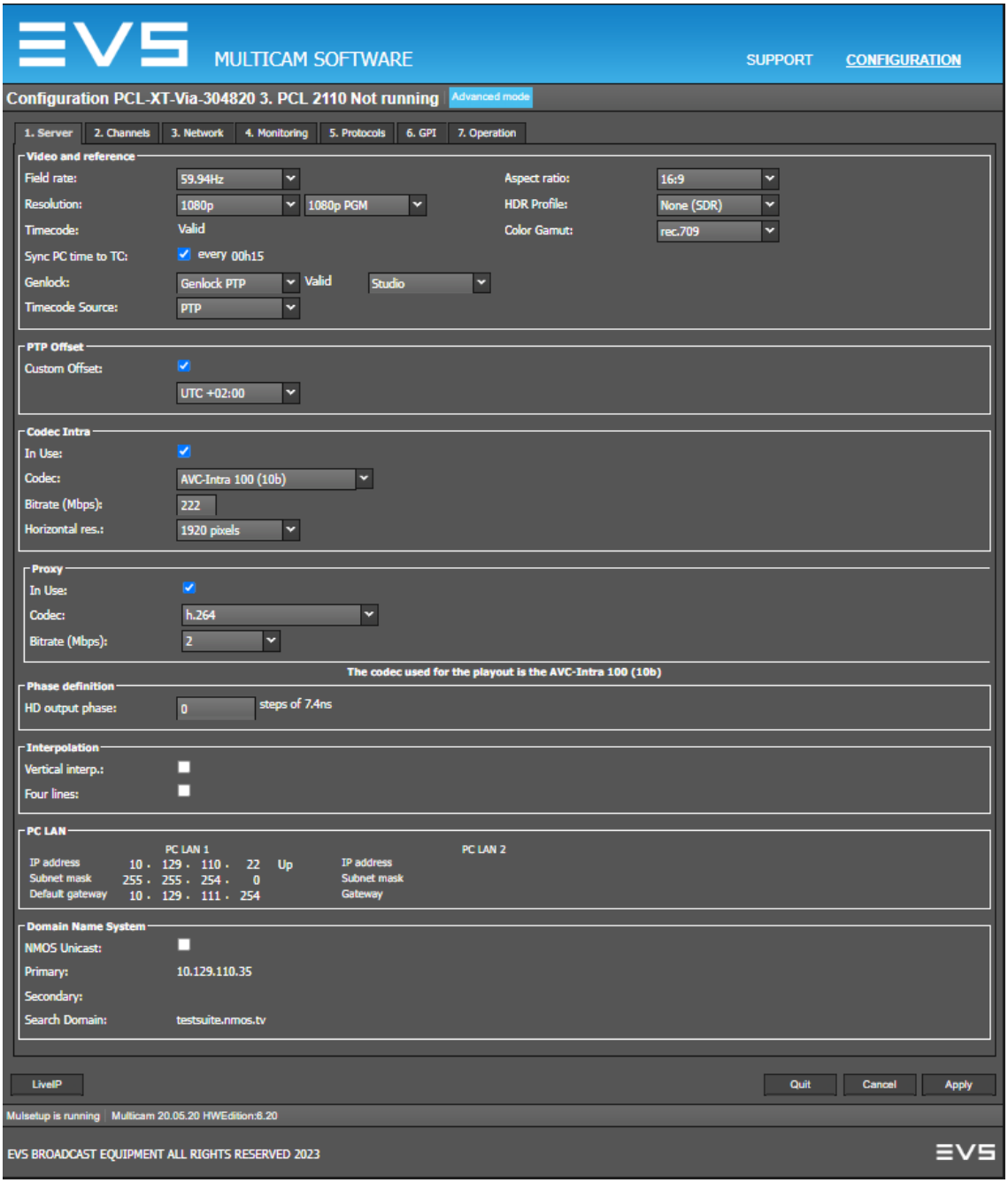
- The title bar displays the selected configuration, and specifies whether the configuration has been launched (running) or not (not running).
- The selected tab is highlighted in pink.
- The current page and number of pages in the tab are specified in the top right corner.
- The display mode (basic or advanced) is specified in the top right corner.



Web-Based User Interface

The following screenshot presents the 1st tab of the Multicam Configuration window of an XT-VIA server in the web-based interface, shown in advanced mode:

- The top line displays the name of the selected configuration, and specifies whether the configuration has been launched (running) or not (not running).
- The selected tab is displayed in a lighter gray color.
- The Display mode (basic or advanced) is specified on the top line.


MULTICAM SOFTWARE
SUPPORT
CONFIGURATION
Configuration PCL-XT-Via-304820 3. PCL 2110 Not running
Advanced mode
1. Server
2. Channels
3. Network
4. Monitoring
5. Protocols
6. GPI
7. Operation
Video and reference
Field rate: 59.94Hz
Resolution: 1080p 1080p PGM
Timecode: Valid
Sync PC time to TC: every 00h15
Genlock: Genlock PTP Valid Studio
Timecode Source: PTP
Aspect ratio: 16:9
HDR Profile: None (SDR)
Color Gamut: rec.709
PTP Offset
Custom Offset:
UTC +02:00
Codec Intra
In Use:
Codec: AVC-Intra 100 (10b)
Bitrate (Mbps): 222
Horizontal res.: 1920 pixels
Proxy
In Use:
Codec: h.264
Bitrate (Mbps): 2
The codec used for the playout is the AVC-Intra 100 (10b)
Phase definition
HD output phase: 0 steps of 7.4ns
Interpolation
Vertical interp.:
Four lines:
PC LAN
PC LAN 1
IP address 10 . 129 . 110 . 22 Up
Subnet mask 255 . 255 . 254 . 0
Default gateway 10 . 129 . 111 . 254
PC LAN 2
IP address
Subnet mask
Gateway
Domain Name System
NMOS Unicast:
Primary: 10.129.110.35
Secondary:
Search Domain: testsuite.nmos.tv
LiveIP
Quit
Cancel
Apply
Mulsetup is running | Multicam 20.05.20 HWEdition:6.20
EVS BROADCAST EQUIPMENT ALL RIGHTS RESERVED 2023

4.1.3. Navigating and Editing in the Multicam Configuration Window

In the Server-Based Application

Navigation Commands

The following table presents the commands to navigate in the Multicam Configuration window:

Command description	Command key
Selecting a given tab	CTRL + tab number
Moving from one tab to the other (when the tab is selected, i.e. rose highlighted)	LEFT ARROW / RIGHT ARROW
Moving down/up in the pages of the active tab	PAGE DOWN or PAGE UP
Moving down in the list of editable settings	TAB
Moving up in the list of editable settings	SHIFT + TAB
Toggling between Basic and Advanced display mode	F3

Editing Commands

The following table presents the commands to edit the configuration settings in the Multicam Configuration window when the field has been selected (using the **TAB** key).

In text fields, you can directly type the requested value for a selected field.

Command description	Command key
Increasing the value (or displaying the next value in the list)	SPACEBAR
Decreasing the value (or displaying the previous value in the list)	SHIFT+SPACEBAR
Moving the cursor position within a text field	SHIFT+ RIGHT ARROW / LEFT ARROW
Resetting the value of the selected setting	F5
Resetting **all** values of **all** settings in the **current** tab for the selected configuration	CTRL+F5

Command description	Command key
Resetting all values of **all** settings in **all** tabs for the selected configuration	CTRL+SHIFT+F5
Applying changes	ALT+A
Leaving without applying changes	ESC, ENTER

Enabling Values in a List

For some settings, you need to enable values in a list of displayed values. This is, for example, the case with the selection of pages (receive pages, protect pages) in the Operation tab.

The enabled pages are highlighted in blue, and the disabled pages are not highlighted.

To enable a list of values for a given setting, proceed as follows:

1. Select the list of values with the **TAB** key.

   Once the list of values is selected, the enabled values stay highlighted in blue, and the disabled values are highlighted in pink.

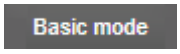
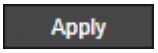
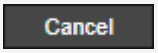
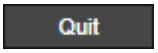
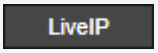
2. On the keyboard, type the digit (numbers/letter) you want to enable. They become highlighted in blue.

3. Apply the changes with **ALT+A**, and confirm the action.

In the Web-Based Interface

Navigation and Editing Commands

The navigation and editing commands in the web-based interface are the commonly used commands in a web-based interface. The command buttons available are the following ones:

Command description	Command key
Activating the Advanced display mode	
Coming back to the Basic display mode	
Applying changes	
Canceling changes	
Quit and return to the Setup module (when no configuration is running)	
Open the LiveIP Configuration module (available on EVS servers with IP connectivity on the rear panel).	

In Server- and Web-Based Interfaces

Display and Checks of Modified Values

Once modified, the field values are displayed in blue color as long as the changes have not been applied. No check on inconsistent or incompatible field values are performed at that stage.

When you apply the changes, the following occurs:

- The values you have modified are checked. If setting values are inconsistent, you will get an error message at that stage.
- The validated values return to the standard color.
- The inconsistencies are displayed as follows:
  - Inconsistent values are displayed in red.
  - A warning message tells you which field value is problematic.
  - The page containing the inconsistent field value is then displayed when you use the server-based application.

4.1.4. Overview of the Setup Menus in the Remote Panel

Introduction

When you work in LSM or XSense mode, the Technical and Operational Setup menus available on the Remote Panel allow you to define:

- the commonly used technical settings in the Technical Setup menu
- all operational settings in the Operational Setup menu.

The values assigned to the settings are saved as soon as they are modified.

Accessing the Technical Setup Menu

To access the Technical Setup menu, press **F0** from the Main Setup page.

The Technical Setup menu opens on the 1st page.

The Technical Setup menu is divided in sections and subsections, named by Tx.y where x is the section number, and y the subsection number.

In all sections dedicated to a tab of the Multicam Configuration window in this manual, you will find an overview table that lists the settings available in the Technical Setup menu, as well as the sections where you will find them.

The Setup menu of the Remote Panel is dynamically adapted based on the EVS server configuration and valid license codes. Consequently, the settings available on the Remote Panel do not have a fixed position in the Setup menu.

Accessing the Operational Setup Menu

To access the Operational Setup menu, proceed as follows:

1. If you are in Playlist mode, press RECORD first to exit this mode.
2. Press SHIFT + MENU to go to the Main menu:

3. Select Setup by pressing SHIFT + D to enter the Operational Setup menu.

The Operational Setup menu is divided in sections and subsections, named by x.y where x is the section number, and y the subsection number.

4.1.5. Navigating and Editing in the Setup Menus of the Remote Panel

Introduction

The way you navigate and edit settings is identical in the Technical Setup menu and Operational Setup menu. The navigation and editing commands are explained below.

Navigation Commands

The following table presents the commands to navigate in the Setup menus of the Remote Panel:

Command description	Command key
Moving to another section when you are inside a section	SHIFT+F_ key corresponding to the section
Moving to the next page inside a section When you are on the last page of a section, you will go to the 1st page of the next section.	F10
Moving to the previous page inside a section When you are on the first page of a section, you will go to the last page of the previous section.	F9
Exiting the Setup menu	Menu
Scrolling through section pages with the jog wheel	ENTER (when no setting is selected) + jog

Editing Commands

The following table presents the commands to edit a setting in the Setup menus of the Remote Panel:

Command description	Command key
Selecting a setting in a section	F_ key corresponding to the requested setting
Modifying the setting value	Turn the jog wheel
Validating the modification to a setting value	ENTER
Restoring the default value for the selected setting	CLEAR + F_ key corresponding to the requested setting
Restoring the default values on the entire Setup menu	CLEAR + F0
Validating the changes in the Setup menu (to answer to the message when you try to leave the menu)	MENU
Canceling the changes in the Setup menu (to answer to the message when you try to leave the menu)	CLEAR
Staying in the Setup menu (to answer to the message when you try to leave the menu)	ENTER

4.1.6. Required Application Reboot

Introduction

Modifications to some parameters will only be applied after rebooting the application. When you change one of the following parameters, a message will inform you that you need to reboot Multicam.

Such parameters are summarized below, but the parameter description also specifies when a reboot is required:

Tab Name	Setting Name
Server tab	Some video and reference settings: • Field rate • Resolution • Timecode
Server tab	All codec settings
Server tab	All PC LAN settings (only editable from the Multicam Setup window)
Channels tab	Some base settings: • Inputs • Outputs • Base config
Channels tab	One audio setting: • Number of tracks
Channels tab	One recorder setting: • REC capacity
Network tab	All XNet settings: • Operation Mode • Net name • Net number • Visibility • XNet server
Network tab	All Gigabit settings: • Gigabit connection • Gigabit IP configuration

4.2. Server Tab

Overview

The Server tab covers the settings related to video codecs and standards, time reference, phase definition, interpolation activation, and PC LAN.

The table below presents the settings of the Server tab. A cross is displayed in the corresponding column when the setting is available:

- in the basic or advanced display mode in the server-based and web-based interfaces
- in the **Technical Setup** menu (T2.X) of the Remote Panel

Setting Name	Basic	Advanced	Technical Setup
Video and reference settings			
Field rate	X	X	–
Aspect ratio	X	X	X
Resolution	X	X	–
HDR Profile	–	X	–
Timecode	X	X	–
Color Gamut	–	X	–
Sync PC Time to TC	–	X	–
Genlock	X	X	–
Timecode Source	X	X	–
PTP Offset Settings			
Custom Offset	X	X	–
Codec Settings (Intra / Proxy)			
In Use	X	X	-
Codec	X	X	–
Bitrate	X	X	–
Horizontal Res.	–	X	–
Phase definition settings			
HD output phase	–	X	X
Interpolation settings			

Setting Name	Basic	Advanced	Technical Setup
Vertical interp.	–	X	X
Four Lines	–	X	X
PC LAN settings			
IP Address	X	X	–
Subnet Mask	X	X	–
Default Gateway	X	X	–
Domain Name System Settings			
NMOS Unicast	-	X	–
Primary	-	X	–
Secondary	-	X	–
Search Domain	-	X	–

4.2.1. Overview

The Server tab covers the settings related to video codecs and standards, time reference, phase definition, interpolation activation, and PC LAN.

The table below presents the settings of the Server tab. A cross is displayed in the corresponding column when the setting is available:

- in the basic or advanced display mode in the server-based and web-based interfaces
- in the **Technical Setup** menu (T2.X) of the Remote Panel

Setting Name	Basic	Advanced	Technical Setup
Video and reference settings			
Field rate	X	X	–
Aspect ratio	X	X	X
Resolution	X	X	–
HDR Profile	–	X	–
Timecode	X	X	–
Color Gamut	–	X	–
Sync PC Time to TC	–	X	–
Genlock	X	X	–
Timecode Source	X	X	–

Setting Name	Basic	Advanced	Technical Setup
PTP Offset Settings			
Custom Offset	X	X	–
Codec Settings (Intra / Proxy)			
In Use	X	X	-
Codec	X	X	–
Bitrate	X	X	–
Horizontal Res.	–	X	–
Phase definition settings			
HD output phase	–	X	X
Interpolation settings			
Vertical interp.	–	X	X
Four Lines	–	X	X
PC LAN settings			
IP Address	X	X	–
Subnet Mask	X	X	–
Default Gateway	X	X	–
Domain Name System Settings			
NMOS Unicast	-	X	–
Primary	-	X	–
Secondary	-	X	–
Search Domain	-	X	–

4.2.2. Video Codecs and Reference

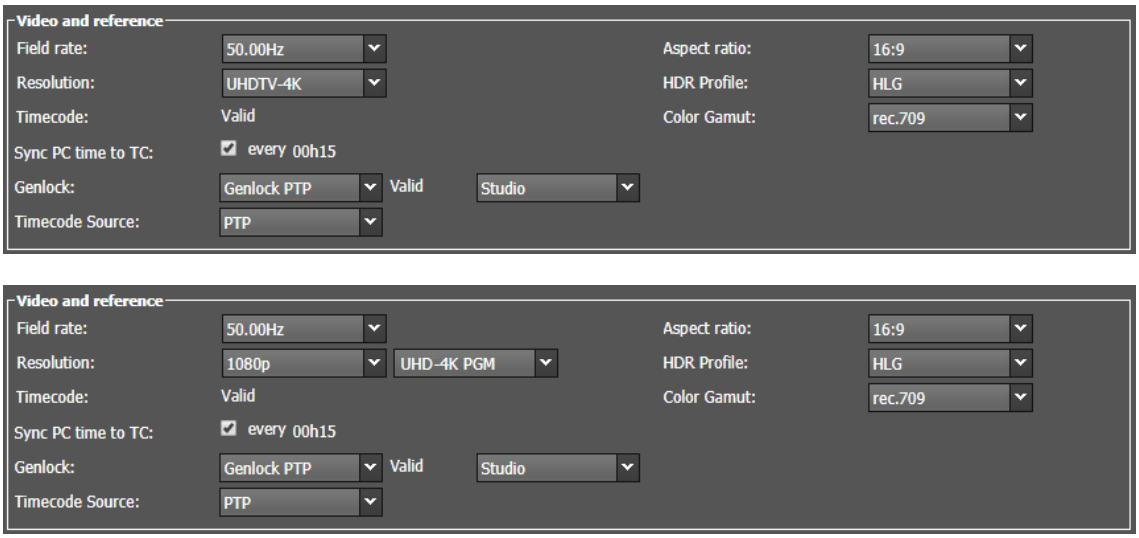
Video and Reference Settings

User Interface

The Video and Reference settings are available on the Server tab in the server-based application (1st page) and web-based interface. These settings are not available in the Technical Setup menu of the Remote Panel.

Most Video and Reference settings (all except Sync PC time and Genlock) require an application reboot (**ALT+Q** from the operational windows) for changes to be taken into account.

The following screenshot displays the Video and Reference settings defined on the Server tab in the web-based interface:



Field Rate

Description	Field frequency used (Hz). Both field rate and resolution give the video standard.
Values	50.00 Hz (PAL) - default 59.94 Hz (NTSC)

Aspect Ratio

Description	Specifies the aspect ratio of the content provided on the input video signal.
Values	The following values are available: • **16:9** • **16.9 Pillarbox**
Default value	16:9

Resolution

Description	Vertical resolution used (number of white-to-black and black-to-white transitions that can be seen from the top to the bottom of the picture) (pixel + type). Both field rate and resolution correspond to the video standard.
Values	In HD: • **720p** • **1080i** • **1080p** (available with code 22) In UHD-4K: • **UHD-4K** (available with code 27)

Player Resolution

Availability	This field is available in the following conditions: • The Resolution parameter is set to 1080p • The XT-VIA has valid license codes 39 (1080p upscale to UHD-4K) and 27 (UHD-4K)
Description	Resolution for the play channels when running a 1080p configuration. This field is located on the right of the **Resolution** field (no label). In case of UHD-4K, the video content is transported in 2-sample interleave format.
Values	• UHD-4K PGM • 1080p PGM
Default value	1080p PGM

HDR Profile

Availability	The parameter is only available in advanced mode.
Description	Specifies the OETF function (opto-electric transfer function) used for High Dynamic Profile (HDR). HDR is a digital technique of compositing and tone-mapping of images that aims at extending the dynamic range of an image beyond the native capability of the capturing device, in order to increase the luminosity contrasts in a picture.
Values	• **None** (SDR = Standard Dynamic Range) • **HLG** (= Hybrid Log-Gamma, developed by BBC and NHK) • **PQ** (= Perceptual Quantizer, developed by Dolby Lab. Inc.) • **S-Log3** (developed by Sony) • **V-Log** (developed by Panasonic)
Default value	None (SDR)

Color Gamut

Availability	The parameter is only available in advanced mode.
Description	Specifies the standard corresponding to the color space of the incoming feeds. This metadata, to be set manually, does not have a functional impact on the EVS server.
Values	• **Unknown**: no color space is specified. • **rec. 709**: corresponds to the color space usually used with HDTV. Only available in HD and UHD-4K. • **rec. 2020**: corresponds to the Wide Gamut color space that offers a larger color range, usually used with UHDTV. Only available in HD and UHD-4K.
Default value	• rec. 709

Timecode

Description	Status of the timecode signal delivered to the EVS server. The timecode information is stored on a separate track from the video. It can be provided in two different ways: • LTC (Longitudinal Timecode) provided via the Timecode IN connector on the EVS server rear panel • Timecode information is calculated from the PTP value
Values	The timecode status can be: **OK** or **Valid**, **BAD**, **LOST** or **DRIFT** (defined by the EVS server). The timecode is given as hh:mm:ss:fr.

Sync PC Time to TC

Description	Specifies whether the PC time is synchronized with the timecode, and how often the synchronization takes place.
Values	Synchronization: Yes/No Frequency: every 00h15 (not editable)

Genlock

Description	Specifies the source of the genlock signal, and indirectly of the timecode signal, as well as the status of the genlock signal and the frame synchronizer mode.
Values	Source: • **Genlock PTP**: the genlock is provided via the V4X module: 1-C or 1-D. This is only available when the XIP Interface is used (See Base Settings, Interface setting). In this case, the timecode information is calculated from the PTP value. • **Genlock SDI**: the genlock is provided via the Ref Video IN connector on the EVS server rear panel. In this case, the LTC timecode is provided via the Timecode IN connector on the EVS server rear panel. Status: (read-only) • **Valid\OK** • **Bad** • **Lost\Drift** (only applicable for Genlock SDI) Mode: • **Studio**: no correction of a shifted video signal • **Resync** (default): resynchronization of a shifted video signal

If you want the genlock and timecode signals to be delivered through PTP, contact the EVS support as this may require an upgrade of the V4X base module.

When your server is set in XiP mode and runs a configuration without any PGMs and only a limited number of recorders, none of the V4X modules on the first V4X board are used.

No PTP signal is received for the following configurations:
- **720p/1080i/1080p:** 1 IN 0 OUT, 2 IN 0 OUT, 3 IN 0 OUT, 4 IN 0 OUT
- **UHD-4K:** 1 IN 0 OUT, 2 IN 0 OUT

When selecting the Genlock PTP parameter, the following error message is displayed: 'The selected IN/OUT configuration does not support Genlock PTP'.

Timecode Source

Availability	The parameter is only available when **Genlock PTP** is selected as genlock signal source.
Description	Specifies the source of the timecode signal.
Values	• LTC • PTP (default)
Warning	The PTP and LTC source have to be synchronized with each other in order to have meaningful information inside Multicam.

About Multi-Essence

Introduction

The XT-VIA server can encode, at a time, a record train in two different codec types, which are called essences. The following essences are available: **Intra** and **Proxy (Lo-Res)**. This process is seamless to the user, who will go on working as before with the EVS server.

This section provides an overview of the multi-essence feature, and mainly specifies the rules and restrictions you should take into account when you configure an XT-VIA server in multi-essence.

Essence Combinations

The essences can be combined as follows:

- Intra only
- Intra + Proxy

General Rules

- You will only see one record train per record channel and one clip per LSMID even if the record trains and clips exist in several essences on the EVS server.
- A single clip is identical in all available essences.
- The **Proxy** essence cannot be used as a single essence on an EVS server.

Recording and Editing Rules

- When the server is configured in multi-essence mode, the clips are created in each active essence.
- In general, all editing actions on clips are applied seamlessly on all active essences of the clip.

Playout Rules

- The Intra essence is always played out.
- The Proxy essence is never played out.

Limitations With Proxy Codecs

Dolby E is not supported in Proxy essence. If audio channels are configured in Dolby E in a multi-essence configuration with Proxy, the Proxy output will have no associated audio.

The Lo-Res audio is Mpeg-1 Layer II at 48 kHz sampling frequency.

Codec Settings

Introduction

The XT-VIA server can encode, at a time, a record train in an Intra codec and in the Proxy codec.

Possible Codec Sections

The codec settings are organized in two codec sections, which correspond to the essences you can activate on the XT-VIA server.

Only the codec sections corresponding to the essences available on the EVS server will be displayed. See section "Codec Availability" on page 219 for more information on the availability of a given codec and/or codec section.

The following codec sections can be available:

- **Codec Intra:** It is always displayed as at least an Intra codec is available.
- **Proxy:** It is displayed when the Proxy essence is available. This essence is always used together with a Hi-Res Intra codec. It is hidden when F&K Spotbox or F&K XSense is selected as base configuration.

User Interface

The Codec settings are available on the Server tab in the server-based application (1st page) and web-based interface. These settings are not available in the Technical Setup menu of the Remote Panel.

The Codec settings require an application reboot (**ALT+Q** from the operational windows) for changes to be taken into account.

The following screenshot displays the Codec settings defined on the Server tab in the web-based interface:

In Use

Description	Specifies, in each essence section, whether the given essence is encoded or not on the EVS server.
Values	• Yes • No
Default value	Yes in **Intra Codec** section No in **Proxy** section

Codec (Codec Intra)

Description	Algorithm used to compress the video signal. With Intra codecs, the compression techniques are performed exclusiverly relative to information contained within the current frame.
Values	In HD: • Avid DNxHD 120,185 or 185x (only in 50 Hz) • Avid DNxHD 145, 220 or 220x (only in 59.94 Hz) • Apple ProRes 422 LT, 422 SQ, 422 HQ • AVC-Intra 100 • XAVC-Intra 100 In UHD-4K: • XAVC-Intra 300, 480 • Avid DNxHR SQ, HQ, HQX See section "Codec Availability" on page 219 for detailed information on codec availability.
Default values	• Avid DNxHD 120 in HD 50Hz • Avid DNxHD 145 in HD 59.94 Hz • XAVC-Intra 300 in UHD-4K

When the EVS server is configured to work in AVC-Intra codec, the XAVC-Intra HD codec is also available in playout. The opposite is also applicable.

Proxy

Description	Algorithm used to compress the video signal in low resolution. It is used for remote browsing purposes. It is not possible to run an EVS server with the Proxy essence only.
Values	• Mjpeg • h.264
Default Value	• Mjpeg

Bitrate

Description	Number of megabits processed per second (Mbps). The bitrate depends on the codec.
Values	See section "Codec-Related Information" on page 221 for detailed information on bitrates per codec.

Horizontal Res.

Description	Number of white-to-black and black-to-white transitions that can be seen from the left to the right of the picture (pixels). The setting value depends on the selected video standard and on the codec.
Values	See section "Codec-Related Information" on page 221 for detailed information on horizontal resolution for each video standard and codec.

Codec Availability

Introduction

The codec availability mainly depends on whether the license code required for a given codec is active or not.

The codec availability of the Proxy essence depends on additional hardware and software requirements detailed below.

Requirement Overview

Codec Intra

The Intra codecs are available when the respective license code is active.

On an XT-VIA server, several license codes are available as standard codecs on the base server hardware.

Codec Proxy

The **Proxy** settings, and the Mjpeg Proxy codec, are available when the license code 32 (Proxy) is granted on the server, and F&K Spotbox or F&K XSense is not selected as base configuration. See section "Base Settings" on page 233

License Codes

The following table presents the codec availability for an XT-VIA server depending on the license code.

Proxy codec	V4X Codec Board
Mjpeg, H.264 (Proxy codec)	code 32

HD codecs	V4X Codec Board
Avid DNxHD®	code 5
Apple ProRes (422, 422 LT, 422 HQ)	code 6
AVC-Intra	code 13
XAVC-Intra HD	code 15

UHD-4K codecs	V4X Codec Board
DNxHR 4K (SQ, HQ, HQX)	code 16
XAVC-Intra 4K (XAVC class 300, XAVC class 480)	code 19

Codec-Related Information

Bitrates and Horizontal Resolutions in HD 720p (50 Hz)

Codec	AVID DNxHD 115	AVID DNxHD 175	AVID DNxHD 175x (10b)	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
Bitrate (Mbps)	1-115	116-175	116-175	85	120	185	111
Default bitrate	115	175	175	85	120	185	111
Horizontal Resolution	1280	1280	1280	1280	1280	1280	1280

Bitrates and Horizontal Resolutions in HD 720p (59.94 Hz)

Codec	AVID DNxHD 145	AVID DNxHD 220	AVID DNxHD 220x (10b)	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
Bitrate (Mbps)	1-145	146-220	146-220	102	145	220	111
Default bitrate	145	220	220	102	145	220	111
Horizontal Resolution	1280	1280	1280	1280	1280	1280	1280

The dynamic bitrate management system modifies compression tables for each recorded field to keep the bitrate of the encoded stream as close as possible to the target. A higher bitrate means better picture quality and less storage capacity but a higher bandwidth is required. Improper values can exceed disks performance, causing frozen pictures during playback.

Bitrates and Horizontal Resolutions in HD 1080i (50 Hz)

Codec	AVID DNxHD 120	AVID DNxHD 185	AVID DNxHD 185x (10b)	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
Bitrate (Mbps)	1-121	122-185	122-185	85	120	185	111
Default bitrate	121	184	184	85	120	185	111
Horizontal Resolution	1920	1920	1920	1920	1920	1920	1920

Bitrates and Horizontal Resolutions in HD 1080i (59.94 Hz)

Codec	AVID DNxHD 145	AVID DNxHD 220	AVID DNxHD 220x (10b)	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
Bitrate (Mbps)	1-145	146-220	146-220	102	145	220	111
Default bitrate	145	220	220	102	145	220	111
Horizontal Resolution	1920	1920	1920	1920	1920	1920	1920

Bitrates and Horizontal Resolutions in HD 1080p (50 Hz)

Codec	AVID DNxHD 240	AVID DNxHD 365	AVID DNxHD 365x (10b)	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
Bitrate (Mbps)	1-242	243-367	243-367	170	245	367	222
Default bitrate	242	367	367	170	245	367	222
Horizontal Resolution	1920	1920	1920	1920	1920	1920	1920

Bitrates and Horizontal Resolutions in HD 1080p (59.94 Hz)

Codec	AVID DNxHD 290	AVID DNxHD 440	AVID DNxHD 440x (10b)	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
Bitrate (Mbps)	1-291	292-440	292-440	204	293	440	222
Default bitrate	291	440	440	204	293	440	222
Horizontal Resolution	1920	1920	1920	1920	1920	1920	1920

Bitrates and Horizontal Resolutions in UHD-4K (50 and 59.94 Hz)

The following tables present the bitrates for the whole UHD-4K image:

Field rate	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Codec	XAVC-Intra 300	XAVC-Intra 480	AVID DNxHR SQ (8bit)	AVID DNxHR HQ (8bit)	AVID DNxHR HQx (10 bits)
Default bitrate	500	800	965	1455	1455
Horizontal Resolution	3840	3840	3840	3840	3840

Field rate	59.9 Hz	59.94 Hz	59.9 Hz	59.94 Hz	59.94 Hz
Codec	XAVC-Intra 300	XAVC-Intra 480	AVID DNxHR SQ (8bit)	AVID DNxHR HQ (8bit)	AVID DNxHR HQx (10 bits)
Default bitrate	600	960	1155	1745	1745
Horizontal Resolution	3840	3840	3840	3840	3840

Bitrates for SLSM Configurations in HD 720p/1080i

The following table presents the available codecs in HD 720p/1080i and the corresponding maximum bitrates (Mbps) per SLSM phase for SLSM configurations.

The total record bitrate is the configured bitrate multiplied by the number of phases.

Codec	AVID DNxHD 120	AVID DNxHD 185	AVID DNxHD 185x	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
SLSM 2x - 10x - 50 Hz	120	185	185	85	120	185	111
SLSM 16x - 50 Hz	120	135	135	85	120	—	111

Codec	AVID DNxHD 145	AVID DNxHD 220	AVID DNxHD 220x	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ	AVC-Intra 100 XAVC-Intra 100
SLSM 2x - 10x - - 59.94 Hz	145	220	220	102	145	220	111
SLSM 16x - 59.94 Hz	145	165	165	102	145	—	111

Bitrates for SLSM Configurations in HD 1080p

The following table presents the available codecs in HD 1080p, and the corresponding maximum bitrates (Mbps) per SLSM phase for SLSM configurations.

The total record bitrate is the configured bitrate multiplied by the number of phases.

Codec	AVC-Intra 100 XAVC-Intra 100
SLSM 4x - 50 or 59.94 Hz	222
SLSM 6x - 50 or 59.94 Hz	
SLSM 8x - 50 or 59.94 Hz	

Codec	AVID DNxHD 240	AVID DNxHD 365	AVID DNxHD 365x	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ
SLSM 4x - 50Hz	242	367	367	170	245	367
SLSM 6x - 50 Hz	242	367	367	170	245	367
SLSM 8x - 50 Hz	242	367	367	170	245	—

Codec	AVID DNxHD 290	AVID DNxHD 440	AVID DNxHD 440x	Apple ProRes 422 LT	Apple ProRes 422 SQ	Apple ProRes 422 HQ
SLSM 4x - 59.94 Hz	291	440	440	204	293	440
SLSM 6x - 59.94 Hz	291	440	440	204	293	440
SLSM 8x - 59.94 Hz	291	440	440	204	293	—

Properties of the Proxy Codecs

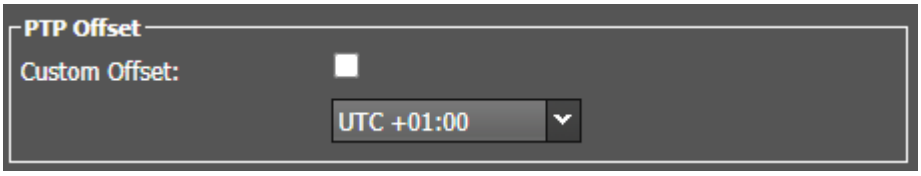
Property	Mjpeg	h.264
Bitrate (Mbps)	3 or 5	1, 1.5, 2
Default bitrate	3	1.5
Resolution	SD NTSC 352 x 240 pixels CIF 352 x 288 pixels CIF is used in all modes other than SD NTSC	640x360

4.2.3. PTP Offset Settings

User Interface

The PTP Offset settings allow you to specify an offset that needs to be taken into account when calculating the local time based on the PTP source.

The following screenshot displays the PTP Offset settings on the Server tab in the web-based interface.



Custom Offset

Description	This parameter allows to enable and select a custom UTC time offset
Availability	The **Custom Offset** parameter is only available if the following 2 requirements are met: • The **Interface** parameter in the Channels tab is set to **XiP**. See section "Base Settings" on page 233 • The **Genlock** parameter in the Server tab is set to **Genlock PTP**. See section "Video and Reference Settings" on page 212.

Values	• **False:** The UTC time offset provided along with the PTP management messages will be used to calculate the timecode. This is the default value. • **True:** The UTC time offset provided along with the PTP messages will be ignored. The UTC time offset value that is selected from the drop-down list will be used along with the leap seconds to calculate the timecode. The drop-down list contains the following UTC time offsets:

UTC +01:00	UTC +02:00	UTC +03:00	UTC +04:00
UTC +05:00	UTC +05:30	UTC +06:00	UTC +07:00
UTC +08:00	UTC +09:00	UTC +09:30	UTC +10:00
UTC 00:00	UTC -04:00	UTC -05:00	UTC -06:00
UTC -07:00	UTC -08:00	UTC -09:00	UTC -10:00

- Despite the use of the Custom Offset value, the OE messages still have to be activated on the PTP source.
- Activating the Custom PTP Offset mode or changing the custom offset value requires a Multicam reboot.
- The custom offset does not dynamically take into account the Daylight Saving Time (DST). This means when using the Custom PTP Offset mode, if you want to see the local time in summer time, the offset has to be adapted manually (e.g. UTC +2h instead of UTC +1h) on the XT.

4.2.4. Phase Definition Settings

User Interface

The Phase Definition settings are available:

- in the Multicam Configuration window, Server tab, in the advanced display mode in the server-based application (2nd page) and web-based interface.
- the Technical Setup menu of the Remote Control Panel (T2.X)

The following screenshot displays the Phase Definition settings:

HD Output Phase

Description	Allows you to define a phase correction for the HD output. The value is adjusted by steps of 7.4 ns, which corresponds to 1/2 pixel of HD.
Values	Steps of half pixels (7.4 ns): • from -4504500 to 4504500 in NTSC • from -5400000 to 5400000 in PAL
Default value	0

4.2.5. Interpolation Settings

User Interface

The Interpolation settings are available:

- in the Multicam Configuration window, Server tab, in the advanced display mode in the server-based application (2nd page) and web-based interface.
- the Technical Setup menu of the Remote Control Panel (T2.X)

The following screenshot displays the Interpolation settings defined on the Server tab in the web-based interface:

General Description

The interpolation process aims at reducing the vertical jitter of the pictures that is present during slow-motion replays. This vertical jitter is actually caused by a violation of the frame parity when playing back the pictures at less than 100 % speed.

The process consists in re-building new frames to produce a more transparent result. These frames have to be interpolated, that is calculated by making suitably weighted averages of adjacent lines.

There are two interpolation modes: the two-line interpolator and the four-line interpolator. They are not mutually exclusive:

- The two-line interpolator reduces the vertical jitter, but also the vertical bandwidth.
- The four-line interpolator makes it possible to have perfectly steady pictures, but reduces even more the vertical bandwidth.

All VTRs use interpolation in PLAY VAR mode.

Vertical Interp. (Vertical Interpolation)

Description	Enables or disables the two-line interpolation process.
Values	• No (default) • Yes

Four Lines

Description	Enables or disables the four-line interpolation process.
Values	• No (default) • Yes

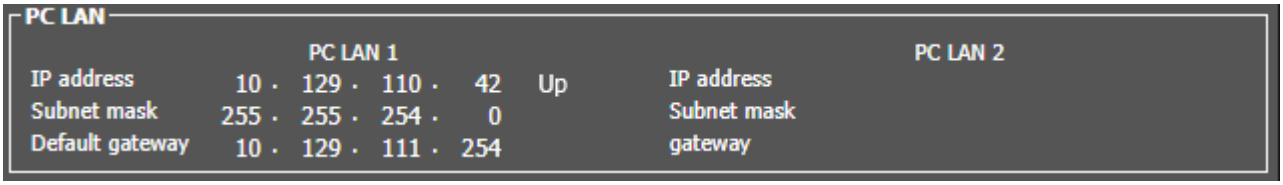
4.2.6. PC LAN Settings

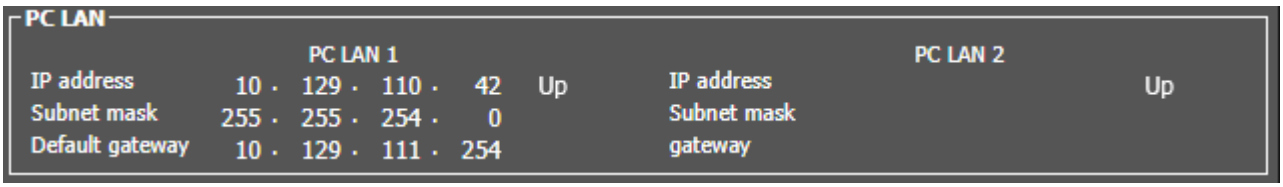
User Interface

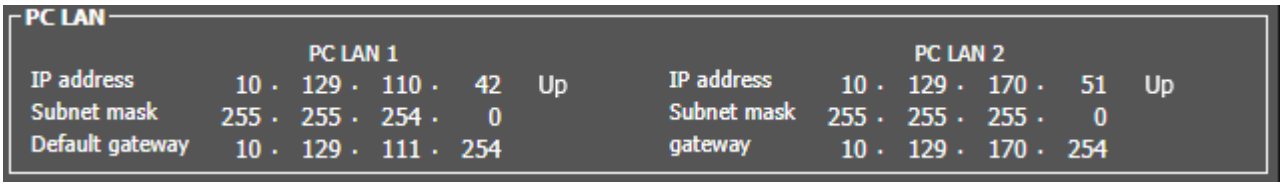
The PC LAN settings allow the H4X board of an EVS server to communicate and exchange information with other EVS hardware on a setup.

The PC LAN settings are displayed on the Server tab in the server-based application (2nd page) and web-based interface in the basic and advanced mode.

The following screenshots display the PC LAN settings defined on the Server tab in the web-based interface in Single, Redundancy and Dual Mode.







The PC LAN settings are read-only in the Multicam Configuration window. You can modify them in the Multicam Setup window, using the **Set LAN PC address** command. See section "Setting the Server PC LAN Connection" on page 27 for more information.

IP Address

Description	IP address to connect to the port of the internal switch module on the H4X board on the server. The status of the PC LAN connection(s) is specified next to the IP address on the web-based interface, and in a separate parameter on the server-based interface. When Redundancy or Dual Mode is enabled, the status of both PC LAN connections is specified and PC LAN #1 and PC LAN #2 share a common IP address. When Dual Mode is enabled, an IP address, subnet mask and gateway have been defined for PC LAN #2 that differ from PC LAN #1. When Redundancy Mode is enabled, PC LAN #1 and PC LAN #2 share a common IP address.
Values	The IP addresses 0.0.0.0 and 255.255.255.255 are not allowed. The connection status can be **Up** or **Down**.

Subnet Mask

Description	Range of logical addresses within the address space assigned to port #4 of the internal switch module.

(Default) Gateway

Description	IP address of the router on the network that the port #4 of the internal switch module can use as an access point to external networks.

4.2.7. Domain Name System Settings

User Interface

The Domain Name System settings allow an EVS server to retrieve from a DNS server in the same PC LAN network the address of the available NMOS Registry and Discovery Instances. The EVS server will register itself to one of these instances using unicast messages and will retrieve information about other NMOS Nodes.

The Domain Name System settings are displayed on the Server tab in the server-based application (2nd page) and web-based interface in the advanced mode.

The following screenshot displays the Domain Name System settings defined on the Server tab in the web-based interface:

Apart from the **NMOS Unicast** parameter, the Domain Name System settings are read-only in the Multicam Configuration window. You can modify them in the Multicam Setup window, by pressing **L**. See section "Configuring a DNS Server Connection" on page 30 for more information.

NMOS Unicast

Description	Allows to enable or disable NMOS Unicast Mode.
Values	• **Disabled (Default):** The EVS server sends multicast messages to make itself known to other NMOS Nodes in the network. • **Enabled:** The EVS server retrieves the IP address of the Registry and Discovery Service from the DNS-SD service. The registry and discovery is based on unicast messages. If no DNS server IP address (primary or secondary) or DNS server search domain has been defined, you cannot enable Unicast Mode. When you change the **NMOS Unicast** parameter, a message will inform you that you need to reboot Multicam.

Primary

Description	Specifies the IP address of the primary DNS server.
Values	Default value: 000.000.000.000.

Secondary

Description	Specifies the IP address of the secondary DNS server.
Values	Default value: 000.000.000.000.

Search Domain

Description	Specifies the search domain of the DNS server.

4.3. Channels Tab

4.3.1. Channels

Overview

Base Settings

User Interface

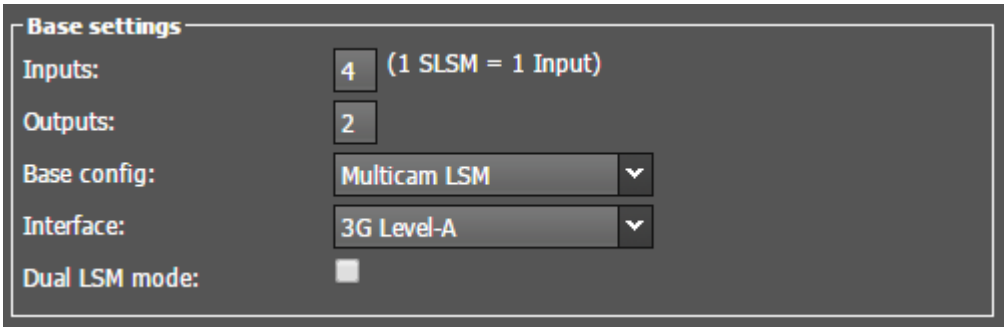
The base settings allow defining the main characteristics of a configuration as regards play and record channels.

Some base settings (Inputs, Outputs Base config.) require an application reboot (**ALT+Q** from the operational windows) for changes to be taken into account.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the basic and advanced display mode on the server- and web-based interfaces
- in the Technical menu of the Remote Control Panel (T2.X)

The following screenshot displays the Base settings defined on the Channels tab in the web-based interface:



Inputs (1 SLSM = 1 Input)

Description	Number of logical record channels in the given configuration, including the SLSM recorders. The partition of the disk storage between these channels, and the advanced audio settings are automatically adapted to the number of record channels. One SLSM recorder accounts for one input whatever the number of phases.
Values	The number of supported channels depends on the chassis, and the mode: • on XT-VIA: 0-12 (Spotbox), 1-12 (LSM) See section "About Supported Configurations" on page 57 for more information on number of record channels and on supported configurations.

Outputs

Description	Number of logical play channels in the given configuration.
Values	The number of supported channels depends on the chassis, and the mode: • on XT-VIA and XT-VIA: 0-6 (Spotbox), 1-6 (LSM/XSense) See section "About Supported Configurations" on page 57 for more information on number of record channels and on supported configurations.

Base Config.

Description	Mode the EVS server is working in. The base configurations available depend on the server type, and on the valid license codes.
Values	• Multicam LSM: mode where the EVS server is controlled by the Remote Control Panel and by industry-standard protocols: Sony BVW75, VDCP, Odetics, DD35, EVS' AVSP, IPDP or LinX API, or from the Multicam production screens. License codes: 103 ...109 + 111 and/or 112 • Replay-Only LSM: restricted Multicam LSM mode without playlist management, split audio, nor support of hypermotion cameras. License codes: 103 ...109 • Video Delay: mode where the server is used to play out the input with a video delay. License codes: 101 + 127 • Spotbox: mode where the EVS server can be controlled by industry-standard protocols: Sony BVW75, VDCP, Odetics, DD35, EVS' AVSP, IPDP, EditRec or LinX API, or from the Multicam production screens. License codes: 101 + 127 • XSense: mode where the EVS server can be controlled by the XSense Remote Panel or from the Multicam production screens. License codes: 96 + 101 and/or 103 ... 109 + 111 and/or 112 • Server: mode where the EVS server can only be controlled by the supported industry-standard protocols, but not from the Multicam production screens. License codes: 101 (without 127) • F&K Spotbox: Specific mode in which the EVS server can be used as a Fill & Key server. It requires the license code 97 (F&K Dual). In this base configuration, the EVS server can be controlled by industry-standard protocols: Sony BVW75, VDCP, Odetics, DD35, EVS' AVSP, IPDP, EditRec or LinX API, or from the Multicam production screens. License codes: 97 • F&K XSense: Specific mode in which the EVS server can be used as a Fill & Key server. It requires the license code 97 (F&K Dual). In this base configuration, the EVS server can be controlled by the XSense Remote Panel or from the Multicam production screens. License codes: 97
Default value	Multicam LSM

UHD-4K Format

Availability	The parameter is only available when the UHD-4K resolution is selected in the Server tab, Video and Reference settings, **Resolution** field.
Description	Defines the format used to transfer the UHD-4K image to and from the EVS server.
Values	The following values are possible: • **two-sample interleave**: the UHD-4K is transported as four 1080p images at 1/4 of the original 4K resolution. This value is mandatory with a 12G interface. • **square division**: the UHD-4K is transported as four 1080p quadrants. • **single stream:** the UHD-4K is transported as a single stream.This value is only with a XIP interface.
Default value	two-sample interleave

Interface

Availability	The parameter is only available: • with one of the following license codes active: ◦ code 22 (3G-SDI interface in 1080p) ◦ code 27 (4K resolution) • or with the following hardware ◦ XIP rear panel
Description	Defines the interface the EVS server will use in 1080p with UHD-4K resolutions or XIP rear panel: • The **HD-SDI interface** consists of a HD-SDI serial link and provides a bitrate of 1.485 Gbit/s. • The **3G-SDI interface** consists of a single serial link that provides 2.970 Gbit/s. • The **12G-SDI interface** consists of a single serial link corresponding to 4 x 3G-SDI links. This provides an uncompressed interface for UHD-4K. • The **IP SFP+ connectors** with the XIP rear panel.
Values	The following values are possible, but their availability depends on several conditions: • **HD-SDI**: HD-SDI connection for 720p or 1080i ◦ available with these resolutions. • **3G Level-A**: 3G-SDI connection for 1080p, or each 1080p quadrant of an UHD-4K image. ◦ available with code 22 (1080p 3G) or code 27 (UHD-4K). • **12G**: 12G-SDI connection for an UHD-4K image. ◦ available with code 27 (UHD-4K) with 12G or XIP rear panels. • **XIP**: V4X and MX4X SFP+ connection for IP streams. ◦ available with an XIP rear panel with all resolutions.
Default value	• HD-SDI for all resolutions except UHD-4K • 12G for UHD-4K resolution

Dual LSM Mode

See section "Dual LSM Feature" on page 240 for full information on this feature, and the availability of this parameter.

Availability	The parameter is only available in specific conditions, with the license code 116 (Dual LSM option).
Description	Activates the Dual LSM feature. This feature makes it possible for two LSM operators to work independently on the same server on their LSM Remote Panel(s).
Values	Yes / No (default).

Available Inputs Op 1

Availability	The parameter is only available in specific conditions, in advanced mode, and with the license code 116 (Dual LSM option).
Description	Assigns a number of recorders to the Operator #1 when working in Dual LSM mode. The remaining recorders are automatically assigned to the Operator #2.
Values	1 to 7 (depending on the number of inputs defined)
Default value	Half of the total inputs (rounded up in case of uneven number of inputs). For example: • In case of 4 inputs: Op.1 is assigned 2 inputs by default. • In case of 5 inputs: Op.1 is assigned 3 inputs by default.

Fill&Key Feature

About Keying

Keying is a video editing technique which allows to combine a foreground clip and a background clip into one video image.

The foreground clip is processed to remove either a color or a lightness value in areas of the image, allowing the background clip to show through in those areas.

Types of F&K Modes

Two types of Fill&Key modes are supported on the server:

- a F&K mode linked to a specific channel control protocol (VDCP F&K, Odetics F&K)
- a F&K mode linked to a specific base configuration (F&K Spotbox, F&K XSense)

VDCP F&K, Odetics F&K

Introduction

Separate Fill and Key clips are used in these modes.

The clips are linked with each other via a specific metadata field.

Up to 3 F&K pairs are supported.

Availability

The Fill&Key feature is available:

- in case a valid license code is present (code 119);
- the Odetics or VDCP protocol has been assigned to an RS422 port;

Limitations

The following limitations apply:

- You cannot mix VDCP F&K and Odetics F&K as main channel controllers;
- You need to assign VDCP F&K or Odetics F&K to consecutive channels, e.g. 1-2, 2-3, 5-6;
- VDCP F&K and Odetics F&K cannot be assigned as secondary controllers;

F&K Spotbox, F&K XSense

Introduction

When configured in F&K Spotbox and F&K XSense, the XT-VIA Server server can be used as a Fill & Key playout server.

Single clips with a Fill and Key track are used.

The F&K clips are flagged by a single, specific metadata field.

Up to 6F&K pairs are supported.

Availability

The Fill&Key feature is available:

- in case a valid license code 97 (F&K Dual) is present;
- in XiP and SDI;
- with a limited number of configurations;
- in 720p, 1080i and 1080p.

Limitations

The following limitations apply:

- UHD-4K is not supported.
- On a given server within the same base configuration regular channels cannot be mixed with F&K channels.
- Only the Fill channels are displayed in the Multiviewer.
- Proxy encoding is not supported in F&K mode.

  Note that the F&K servers will be separated from the XNet when using proxy encoding on the regular machines.

Dual LSM Feature

Introduction

The Dual LSM feature allows two LSM operators to work independently with their own LSM Remote Panel on the same EVS server, defining some operational settings independently from each other.

The Dual LSM mode can be used in specific conditions, with specific configurations in Multicam LSM or Replay-Only LSM, as detailed below.

You can activate the Dual LSM mode via the **Dual LSM mode** parameter available in the **Base Settings** section in the conditions specified below.

Limitations

The following limitations apply:

- Protocols are supported as primary controllers.
- When declaring protocols as primary controllers, they have to come in pairs.

  They are always controlling the last PGMs.

Availability

The Dual LSM feature, and the corresponding parameter, are available in the following conditions:

- on the XT-VIA servers with the license code 34 for ChannelMax configurations in Multicam LSM mode or Replay-Only LSM mode.
- with a valid license code 116 (Dual LSM).
- with a limited number of configurations, as listed in "Supported Configurations".
- with HD and 1080p configurations.

Supported Configurations

The Dual LSM feature is supported in **Multicam LSM** and **Replay-Only LSM** mode (Base settings, **Base Config** parameter) with the configurations identified with **2LSM** in the relevant configuration tables:

- Standard configurations in 720p/1080i
- SLSM configurations in 720p/1080i
- Standard configurations in 1080p
- SLSM configurations in 1080p

The parameter **Available Inputs Op1** (Base settings) allows you to define the number of recorders assigned to Operator 1. The remaining recorders are automatically allocated to Operator 2. See section "Available Inputs Op 1" on page 238.

LSM Remote Panel Association

The association of LSM Remote Panels is fixed and defined as follows:

	LSM Operator #1	LSM Operator #2	Hypermotion (LSM Op #2)
2 LSM Remote	1	1	-
3 LSM Remote	2	1	-
3 LSM Remote	1	1	1
4 LSM Remote	2	2	-
5 LSM Remote	2	2	1

When an operator has access to two LSM Remote Panels, they can turn the second Remote to idle or back to active on the spot by changing the remote allocation in the main menu (**F1** or **F2** keys). When a Remote Panel is idle, all buttons are off and a message is displayed on LCD screen.

Main Characteristics

The Dual LSM mode has following main characteristics:

- Both operators share the clips and playlist pages.
- A set of operational parameters is duplicated. Each operator can therefore define the duplicated parameters for their own needs without interfering with the second operator.

  The duplicated parameters are added in a separate page (page 8) in the Multicam Configuration window. See section "Overview" on page 355.
- On the LSM Remote Panel, the operators work by default with a predefined set of camera angles, or can also decide to work with a custom set of camera angles. However, he cannot work with more camera angles than initially assigned to him. Refer to the Multicam Operation manual.

Limitations in Multicam LSM Configurations

The following limitations are applicable to the Dual LSM feature used with Multicam LSM configurations:

- The **standard mix** function using the PGM/PRV channel is available in two conditions:
  - the playlist is loaded on an odd PGM (1, 3 or 5);
  - the following PGM is available for that same Remote Panel.
- The **Playlist** function is available simultaneously for both operators, with the following limitations for the LSM operator #2:
  - No **Clear Unavailable** feature which affects all playlists
  - No **Replace** feature which uses PGM1 and Loop IN.
- The **Timeline** feature is available only in Multicam LSM mode, and solely to one operator. You can define which operator has access to the timeline feature with the **TL Operator** parameter in the Operation page, Timeline Settings (See section "TL Operator" on page 377).
- The control of **Hypermotion Cameras** is only available on the LSM operator #2.

Limitations in Replay-Only LSM Configurations

The following limitations are applicable to the Dual LSM feature used with Replay-Only LSM configurations:

- The **standard mix** function using the PGM/PRV channel is available on the first two PGMs of each operator.
- The **Playlist** and **Timeline** functions are not available.
- The control of **Hypermotion Cameras** is not supported.

SLSM Settings

User Interface

The SLSM settings allow you to define the parameters specific to SLSM recorders.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the basic and advanced display mode on the server- and web-based interfaces
- in the Technical menu of the Remote Control Panel (T4.1 & T5.1)

The SLSM settings are only available if the license code 110 (Supermotion) is valid.

The following screenshot displays the SLSM settings defined on the Channels tab in the web-based interface:

Cameras with two different SLSM speeds can be mixed.

Number of Cameras

Description	Number of SLSM cameras with a given SLSM speed in the given configuration. An SLSM camera corresponds to one logical record channel.
Values	The maximum number of cameras depends on the SLSM speed, and on the total number of record channels. Range of values: 0-4
Default value	0
Limitation	In case cameras with one single SLSM speed are used, only define the number of SLSM cameras for SLSM #1. The number of SLSM cameras for SLSM #2 has to be set to 0.

SLSM Speed

Description	Field rate at which the SLSM camera records the incoming feeds, expressed in multiples of the standard field rate of 50 fields/sec (50Hz) or 60 fields/sec (59.95 Hz).
Values	2x, 3x, 4x, 6x, 8x, 10x, 16x
Default value	2x
Limitation	In case SLSM cameras with different SLSM speeds are used, the highest SLSM speed has to be assigned to the first SLSM camera. For example, SLMS #1 = 6x and SLSM #2 = 3x. If not, the following error message will be displayed: 'The first SLSM camera must have a higher SLSM speed than the second camera.'

On 3G-SDI

Availability	This setting is only available with a 720p or 1080i resolution.
Description	Specifies whether two SLSM phases are connected to the EVS server using a 3G-SDI interface consisting of a single serial link.
Values	Yes / No (default)
Limitation	In case SLSM cameras with different SLSM speeds are used, the value of this parameter has to be identical for SLSM #1 and SLSM #2. If not, the following error message will appear: 'On3G settings shall be identical for both SLSM camera types'.

Port Settings

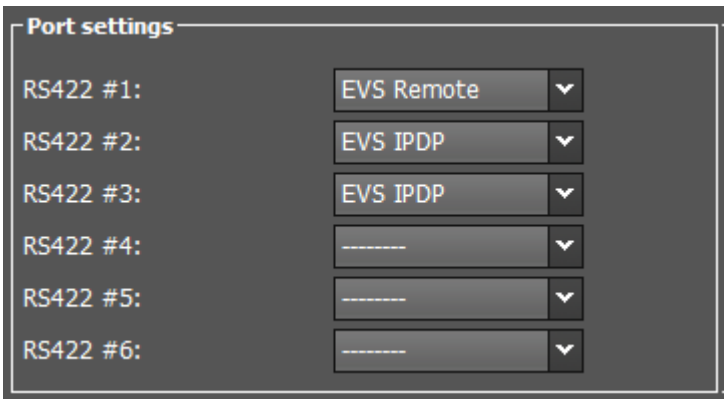
User Interface

The port settings allow assigning the RS422 ports to the various external controllers (EVS or third-party) that will communicate with the EVS server.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the basic and advanced display mode of the server- and web-based interfaces
- in the Technical menu of the Remote Control Panel (T2.X)

The following screenshot displays the Port settings defined on Channels tab in the web-based interface:



RS422 #1 - #6

Description	Specifies what type of device/controller is connected to each RS422 port of the EVS server.
Values	The following values can be available if the required license codes are active: • EVS Remote for LSM Remote Panel (code between 103 and 109). • EVS Remote for XSense Remote Panel (code between 103 and 109 or code 96) • EVS IPDP (code 120 or 121) • Sony BVW75 (code 118) • XtenDD35 (code 118) • Odetics (and 'Odetics FK') (code 119) • VDCP (and 'VDCP FK') (code 119) • EVS AVSP (code 120 or 121) • Edit Rec (code 122) • LinX (code 123)

Odetics FK and VDCP FK are not available directly from the Port setting, but when the Odetics or VDCP protocols are assigned to an RS422 port, the Fill and Key modes are available on the **Main Ctrl** field in the Channels and Control settings.

Channels and Control Settings

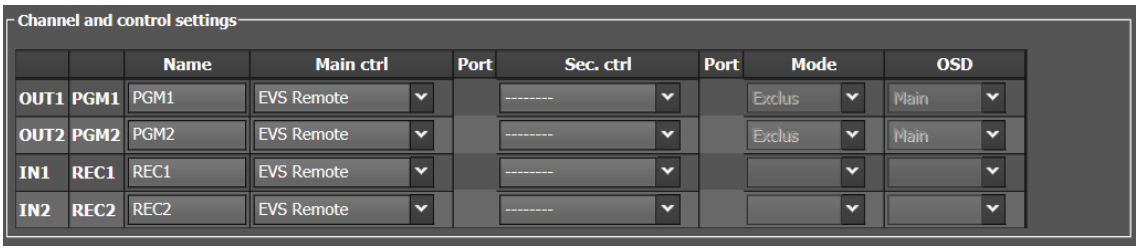
User Interface

The Channel and Control settings mainly allow specifying which controllers (main and possibly secondary) have the hand on which play or record channels.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the basic and advanced display mode of the server- and web-based interfaces.
- in the Technical menu of the Remote Control Panel (T2.X)

The following screenshot displays the Channel and Control settings defined on the Channels tab in the web-based interface:



Name

Description	User-defined name for play or record channel. This name will be used for the OSD, and in the IPDirector application suite. The name can contain maximum 24 characters.

Main ctrl (Main Controller)

Description	Name of the main device/controller allowed to control the given play or record channel.
Values	For a controller to be available in the list of values, it must first be assigned to an RS422 port in the port settings. In addition, rules specific to each controller apply to the assignment of the controller (used alone or in combination with other controllers) to play or/and record channels. See section "Rules for Controller Assignment" on page 249 for more information. An error message will be displayed to warn you in case of a wrong protocol selection or protocol combination, and the fields that contain errors will be highlighted in red.

Sec. ctrl (Secondary Controller)

Description	Name of the secondary device/controller allowed to control the given play or record channel.
Values	For a controller to be available in the list of values, it must first be assigned to an RS422 port in the port settings. In addition, rules specific to each controller apply to the assignment of the controller (used alone or in combination with other controllers) to play or/and record channels. See section "Rules for Controller Assignment" on page 249 for more information. An error message will be displayed to warn you in case of a wrong protocol selection or protocol combination, and the fields that contain errors will be highlighted in red.

Mode

Description	Specifies how the control on the given play or record channel is managed between the main and secondary controllers, when it is possible to define main and secondary controllers.
Values	Two control modes are possible: • **Exclusive mode:** The main controller can decide at any time to pass the control to, or to retrieve the control from the secondary controller. • **Parallel mode:** Any of both controllers can take the control as long as the other controller is not executing a command. The control can thus be freely passed on from one controller to the other.

OSD

Description	Specifies which device (main or secondary controller) will manage the OSD display characters in parallel mode.
Values	Two values are possible: • Main: The OSD display is managed by the main controller. • Sec.: The OSD display is managed by the secondary controller.

VIA Controller Settings

Introduction

The VIA Controller settings allow you to activate the control of the server's record and play channels by IPD-VIA and LSM-VIA.

These fields are available in the Multicam Configuration window, Channels tab, in the basic and advanced display mode of the server- and web-based interfaces.

IPD-VIA

Availability	The parameter is only available with the license code 99 and with all base configs.
Description	This option makes it possible to let IPD-VIA control all the server's channels. The control by IPD-VIA comes in addition to the already configured serial controllers.
Values	Yes / No (default).

LSM-VIA

Availability	The parameter is only available with the license code 100 and with the base config Multicam LSM.
Description	This option makes it possible to let LSM-VIA control the server's record and play channels.
Values	Yes / No (default).

In case LSM-VIA is enabled as controller, and a LSM Remote Panel is connected as well, the commands of the LSM Remote Panel are not taken into account.

Recorder Ganging

Availability	The parameter is only available in case LSM-VIA is enabled as controller.
Description	• If you enable this parameter, the live playout of all (local and remote) record channels is perfectly aligned. • If you keep this parameter disabled, there is no synchronization between the live playout of remote and local recorder channels.
Values	Yes / No (default).

Rules for Controller Assignment

Main Rules for XT-VIA server

On an XT-VIA server, the following main rules are applicable:

- In a Multicam LSM base configuration:
  - All Remote Panels must be the first in the list of main controllers, without gap. It is not allowed to have another controller preceding a Remote Panel in this list.
  - A Remote Panel has to be assigned as main controller of the record channels.
  - However, an even number of protocol primary controllers is allowed for play channels in Dual-LSM configurations.
  - Other controllers can be assigned as secondary controllers to PGMs taking into account the protocol-specific rules.
  - A record channel cannot have a secondary controller.
  - No more than 4 Remote Panels can be used to control the server play channels.
  - No more than 3 play channels can be assigned to one Remote Panel.
- In a Spotbox or Server base configuration:
  - A Remote Panel is not allowed.
  - Controllers other than a LSM Remote Panel can be assigned to play or record channels, taking into account the protocol-specific rules on controller use and combinations.

Protocol-Specific Assignment Rules

Standalone Protocol

The table shows whether or not the given protocol, used as a standalone (as main controller, without secondary controller) can be assigned to the specified number of play channels, record channels or play and record channel combinations.

The green cells refer to allowed assignments, the red ones to banned assignments. Numbers in the cells refer to the notes mentioned below the table.

	Remote	IPDP	AVSP	VDCP	Sony	Odetics	DD35	VDCP Mix	VDCP F&K	Odetics F&K	LinX
1 PGM								2			
2 PGM										3	
> 2 PGM											
1 REC	1										
> 1 REC											
1 PGM + 1 REC											
Several PGM + 1 REC											
Several PGM + Several REC											

1. Every recorder
2. Only if Mix on one channel is enabled.
3. Only consecutive PGMs

Protocol Used in Exclusive Mode

The table shows whether or not the given protocol, used in exclusive mode (as a main controller or secondary controller) can be assigned to the specified number of play channels, record channels or play and record channel combinations.

The green cells refer to allowed assignments, the red ones to banned assignments. Numbers in the cells refer to the notes mentioned below the table.

1. The recorder cannot be controlled by a secondary controller in exclusive mode. In these cases, the recorder must be standalone or in parallel mode.
2. Only if Mix on one channel is enabled.

3. The recorder cannot be controlled by LinX as secondary controller in Multicam LSM and XSense configurations.

Protocol Used in Parallel Mode

The table shows whether or not the given protocol, used in parallel mode (as a main, secondary or mix controller) can be assigned to the specified number of play channels, record channels or play and record channel combinations.

The green cells refer to allowed assignments, the red ones to banned assignments. Numbers in the cells refer to the notes mentioned below the table.

	Remote	IPDP	AVSP	VDCP	Sony	Odetics	DD35	VDCP Mix	VDCP F&K	Odetics F&K	LinX
1 PGM								1			
2 PGM											
> 2 PGM											
1 REC											2
> 1 REC											2
1 PGM + 1 REC											2
Several PGM + 1 REC											2
Several PGM + Several REC											2

1. Only if Mix on one channel is enabled.
2. The recorders cannot be controlled by LinX in Multicam LSM and XSense configurations.

Rules for Controller Combinations

Exclusive Mode - Play Channels

Secondary > Primary v	Remote	IPDP	AVSP	VDCP	Sony	Odetics	DD35	LinX	Odetics F&K	VDCP F&K	VDCP Mix
Remote	–										
IPDP	–	–									
AVSP	–		–								
VDCP	–			–							
Sony	–				–						
Odetics	–					–					
DD35	–						–				
LinX	–							–			
Odetics F&K	–								–		
VDCP F&K	–									–	
VDCP Mix	–										–

Exclusive Mode - Record Channels

The following table shows the supported protocol combinations in exclusive mode on record channels.

Secondary > Primary v	Remote	IPDP	AVSP	VDCP	Sony	Odetics	DD35	LinX	Odetics F&K	VDCP F&K	VDCP Mix
Remote											
IPDP		–									
AVSP			–								
VDCP				–							
Sony					–						
Odetics						–					
DD35							–				
LinX								–			
Odetics F&K									–		
VDCP F&K										–	
VDCP Mix											–

Parallel Mode - Play Channels

The following table shows the supported protocol combinations in parallel mode on play channels.

Secondary > Primary v	Remote	IPDP	AVSP	VDCP	Sony	Odetics	DD35	LinX	Odetics F&K	VDCP F&K	VDCP Mix
Remote	-			*		*	*				
IPDP	-	-		*		*	*				
AVSP	-		-								
VDCP	-	*		-							-
Sony	-				-						
Odetics	-	*				-					
DD35	-	*					-				
LinX	-							-			
Odetics F&K	-								-		
VDCP F&K	-									-	
VDCP Mix	-			-							-

* These protocol combinations in parallel mode have operational limitations.

Parallel Mode - Record Channels

The following table shows the supported protocol combinations in parallel mode on record channels.

Secondary > Primary v	Remote	IPDP	AVSP	VDCP	Sony	Odetics	DD35	LinX	Odetics F&K	VDCP F&K	VDCP Mix
Remote	-	-	-	-	-	-	-	-	-	-	-
IPDP	-	-									
AVSP	-		-								
VDCP	-			-							-
Sony	-				-						
Odetics	-					-					
DD35	-						-				
LinX	-							-			
Odetics F&K	-								-		
VDCP F&K	-									-	
VDCP Mix	-			-							-

Recorder Settings

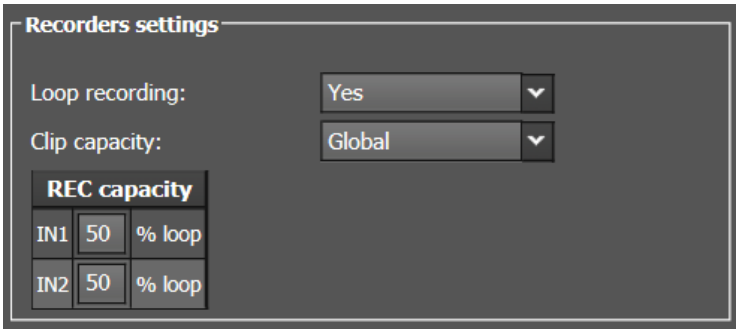
User Interface

The Recorder settings allow specifying configuration settings associated to the record channels.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the advanced display mode of the server- and web-based interfaces;
- in the Technical menu of the Remote Control Panel (T2.X).

  The following screenshot shows the Recorder settings defined on the Channels tab in the web-based application:



Loop Recording

Description	The **Loop recording** setting enables/disables the endless loop recording of all record channels of the EVS server.
Values	Yes (default) / No The value is forced to **Yes** in all configurations, except Spotbox and Server configurations.

Clip Capacity

Description	The **Clip capacity** setting specifies the recording mode on the record channels.
Values	The following values are available: Global / Per channel • **Global**: In this mode, the clip capacity is shared between the different record trains. **Example:** When 3 record trains are used, creating a clip of 30 min on REC1 will take 10 min of recording capacity equally from each record train. • **Per channel**: In this mode, the clip capacity is only relevant to the individual record train. **Example:** When 3 record trains are used, creating a clip of 30 min on REC1 will take 30 min of recording capacity from the 1st record train, but will not affect the recording capacity of the other two record trains.
Default value	The default value depends on the base configuration: • **Global**: ◦ in LSM configurations (locked value) ◦ in XSense configurations (locked value) ◦ in Video delay configurations (locked value) ◦ in Spotbox configurations • **Per channel**: ◦ in Server configurations

Rec Auto Start

Availability	This setting is displayed when a Spotbox or Server configuration is running.
Description	Automatic start of the record channels after the EVS server has initialized. In a Multicam LSM or an XSense configuration, the setting is not displayed and the **Rec Auto Start** is automatically activated in the background.
Values	Yes (default) / No

REC Capacity

A change to this parameter requires an application reboot (**ALT+Q** from the operational windows) to be taken into account.

Description	This parameter contains two types of information on the specified recorder: **Recording Capacity: XX%** percentage of the disk space allocated to each channel. **Loop / No Loop:** indicates whether the Loop Recording parameter is enabled or not.
Values	The following values are possible: • **Recording Capacity:** The value is defined by the user. The total of all values must not exceed 100%. By default, the recording capacity is evenly distributed among all recorders. **Example:** In a 4 REC 4 PLAY configuration, the recording capacity will be 25% for each recorder by default. • **Loop / No Loop:** The value directly depends on the Loop Recording setting: ◦ If the Loop Recoding is enabled, the value will be 'Loop'. ◦ If the Loop Recording is disabled, the value will be 'No Loop'.

Mix on One Channel Feature

Introduction

The **Mix on one channel** feature provides mixing with a single codec module. This function can be enabled for each individual play channel.

Availability

The Mix on one channel feature is available for playlists only, in Spotbox and Multicam LSM configurations and with all controllers.

The feature is available, in addition, in the following conditions:

- with a valid license code 31
- in HD and 1080p resolutions (not with UHD-4K).

Supported Modes

1 PGM Mode

In a single PGM mode, users working in a Spotbox configuration with IPDirector no longer need to use two channels in PGM/PRV mode to play back a playlist with effects.

When they activate the mix on one channel feature, they can play back a playlist with effects using only 1 PGM.

Multi-PGM Mode

In a multi PGM mode, the **Load PL** setting interacts with the use of the **Mix on one channel** setting as shown in the table below. The table summarizes how the play channels are used when you load a playlist in 2 PGM mode, depending on the defined settings:

Mode	Mix on one channel?	Load Playlist?	V4X Mod 1		V4X Mod 2	
			OUT A	OUT B	OUT A	OUT B
2 PGM	No	Conditional	Cut		Cut	
2 PGM	Yes	Conditional	Mix		Mix	
2 PGM	No	Always	Mix		PRV	
2 PGM	Yes	Always	Mix		PRV	

When users set the **Load PL** parameter to 'Conditional', and enable the **Mix on one channel** setting, they can use load playlists on both play channels, and play them with effects, or only play back a playlist with effects on PGM1, while using PGM2 to play back something else.

Mix on One Channel Settings

User Interface

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the advanced display mode of the server- and web-based interfaces;
- in the Technical menu of the Remote Control Panel (T2.X).

The Mix on one channel settings are only available if the license code 31 is valid.

The following screenshot displays the Mix on One Channel settings defined on the Channels tab in the web-based interface:

Mix on one Channel

Description	Enables/disables mixing on a single codec module. This function applies to mixes in playlists, not in timelines. The license code 31 is required for the Mix on One Channel feature to be available. Mix on One Channel is available for all controllers (Remote Panel or protocol), with all supported codecs and for HD resolutions.
Values	Yes (default) / No

4.3.2. Audio

Audio I/Os Settings

User Interface

The Audio I/Os settings allow users to specify the audio connectors (digital or MADI) that correspond to the physical connectors available on the rear panel of the EVS server.

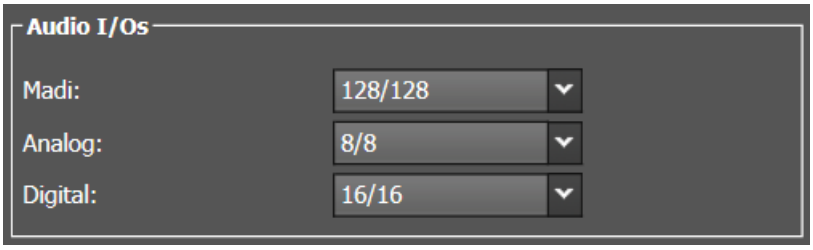
The hardware configuration defined in the audio I/O settings is used, among others, to provide a default audio channel association in the advanced audio settings.

The settings available and the setting values defined for these parameters are not automatically validated against the real hardware configuration. Therefore you have to make sure the settings you define reflect accurately the available physical connectors you want to use.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the basic and advanced display mode.
- in the Technical menu of the Remote Control Panel (T2.X).

The following screenshot displays the Audio I/Os settings defined on the Channels tab in the web-based interface:



MADI

Availability	This parameter is available even if the connectors are not fitted on the EVS server.
Description	Number of IN and OUT MADI audio mono channels available on the EVS server rear panel.
Values	• None • 128/128 ◦ 128 IN mono audio channels ◦ 128 OUT mono audio channels Refer to the technical reference manual for more information about the number of mono channels provided with each physical connector.
Default value	None

Analog

Availability	This parameter is available even if the connectors are not fitted on the EVS server.
Description	This parameter is not relevant on an XT-VIA server. Number of IN and OUT analog audio mono channels available on the EVS server rear panel.
Values	• None • 4/4 ◦ 4 IN mono audio channels ◦ 4 OUT mono audio channels • 8/8 ◦ 8 IN mono audio channels ◦ 8 OUT audio channels
Default value	None

Digital

Availability	This parameter is always available even if the connectors are not fitted on the EVS server.
Description	Number of IN and OUT digital audio mono channels available on the EVS server rear panel.

Values	• None
	• 8/8
	  ◦ 8 IN mono audio channels
	  ◦ 8 OUT audio channels
	• 16/16
	  ◦ 16 IN mono audio channels
	  ◦ 16 OUT mono audio channels

Default value	None

Audio Settings

User Interface

The Audio settings allow users to specify some general audio settings. Other general audio settings are available in the Audio I/Os settings and Audio Monitoring settings.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the advanced display mode.
- in the Technical menu of the Remote Control Panel (T2.X).

The following screenshot displays the Audio settings defined on the Channels tab in the web-based interface, in advanced mode:

Number of Tracks

A change to this parameter requires an application reboot (**ALT+Q** from the operational windows) to be taken into account.

Description	Number of mono audio tracks associated to each video channel.
Values	4 Monos (default), 8 Monos, 16 Monos, 24 Monos, 32 Monos

Sample Rate Conv. (Conversion)

Availability	This parameter is not available when the **Digital** parameter is set to **None** in the Audio IOs settings. The parameter is indeed only relevant with the digital AES/EBU audio format.
Description	This setting is not relevant on an XT-VIA server. Specifies whether the input sample rate is converted. If this parameter is set to **No**, the user has to make sure that the signals are properly synchronized.
Values	Yes (default) / No

Audio Monitoring Settings

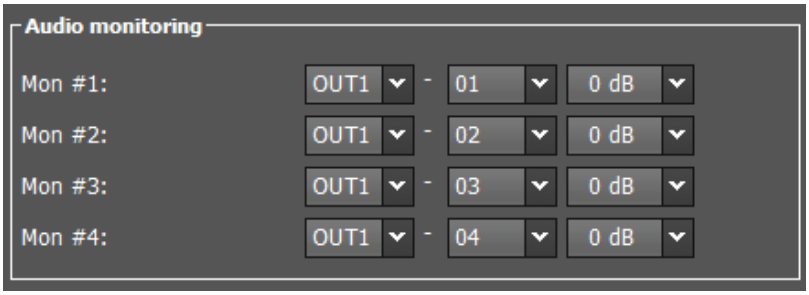
User Interface

The Audio Monitoring settings allow users to specify which audio signals are monitored on the 4 XLR audio monitoring outputs located on the right of the rear panel.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the advanced display mode.
- in the Technical menu of the Remote Control Panel (T2.X).

The following screenshot displays the Audio settings and Audio Monitoring settings defined on the Channels tab in the web-based interface:



Audio Monitoring: Mon #1 - Mon #4

Description	Specifies the source of the audio signal that will be sent to each of the four audio monitoring connectors (numbered from left to right on the backplane).
Value	For each audio monitoring connector, the audio signal to be monitored is specified by the video channel number and the audio mono channel number. **Example:** The value 'OUT2-04' for Mon #1 means that the audio signal of the 4th audio mono channel of the PGM2 is sent to the monitoring connector 1.
Default Values	By default, the audio signal of the first play channel, and the audio mono channels from 1 to 4 (OUT1-01 to OUT1-04) are respectively assigned to the Mon #1 to Mon #4 connectors.

Number of Audio Tracks

Introduction

In the audio settings, the Number of Tracks parameter makes it possible to define how many audio mono channels, called **Tracks** in Multicam, will be associated to each video channel (play or record channel).

The number of tracks that can be assigned to each video channel varies based on the following elements:

- Maximum number of audio mono channels supported on the EVS server;
- Number of play and record channels defined in the running Multicam configuration.

You can also refer to the Technical Reference manual, Audio section, for more information on the hardware possibilities on each EVS server.

The following table provides the default and maximum number of mono audio channels per logical server video channel:

Configuration Mode	Embedded	MADI
2-channel configurations	2*16 audio mono (=32 tracks)	2*32 audio mono (SDI) (= 64 tracks) 2*16 audio mono (XIP) (=32 tracks)
4-channel configurations	4*16 audio mono (= 64 tracks)	4*32 audio mono (SDI) (= 128 tracks) 4*16 audio mono (XIP) (= 64 tracks)
6-channel configurations	6*16 audio mono (= 96 tracks)	6*32 audio mono (SDI) (= 192 tracks) 6*16 audio mono (XIP) (= 96 tracks)
8-channel configurations	8*16 audio mono (= 128 tracks)	8*24 audio mono (SDI) (= 192 tracks) 8*16 audio mono (XIP) (= 128 tracks)
10-channel configurations	10*16 audio mono (=160 tracks)	10*16 audio mono (=160 tracks)
ChannelMax configurations	12*16 audio mono (=192 tracks)	12*16 mono (=192 tracks) if # IN ≤ 8 + LoRes 12*8 mono (= 96 tracks) if # IN > 8 + LoRes
UHD-4K	6*16 audio mono (=128 tracks)	6*32 audio mono (SDI) (=192 tracks) 6*16 audio mono (XIP) (= 128 tracks)

Limitations

- Configurations with 32 audio and 6 PGM are not allowed.
- Configurations with 24 audio and ≥ 5 PGM are not allowed with mix-on-one channel. See section "Mix on One Channel Settings" on page 258.
- Configurations with 32 audio and 4 or more PGM are not allowed with audio slow motion. See section "Audio Settings" on page 384.
- The following operational settings are not available in case of 24 or 32 audio:
  - Clips > Timeline Receive Page ("Clips Settings" on page 363)
  - Playlist > Advanced Audio Editing ("Playlist Settings" on page 369)

- Playlist > Extend Split Transition ("Playlist Settings" on page 369)
- Playlist > Swap Audio Tracks ("Playlist Settings" on page 369)
- Timeline ("Timeline Settings" on page 376)

Overview on Advanced Audio Settings

Introduction

The Advanced Audio settings are defined in the Channels tab of the Multicam Configuration window. In the server-based application, they are displayed from page 3 and are only available in the advanced mode. They allow audio channel routing, muting, and adjusting the audio gain.

The Advanced Audio settings for the **inputs** allow users to specify how the audio sources are routed to the audio mono channels of each record channel.

The Advanced Audio settings for the **outputs** allow users to specify how the audio mono channels are routed to each play channel (for embedded audio) or to the various physical audio connectors (MADI, digitalconnectors).

In the server-based application, the advanced audio settings are available on different pages:

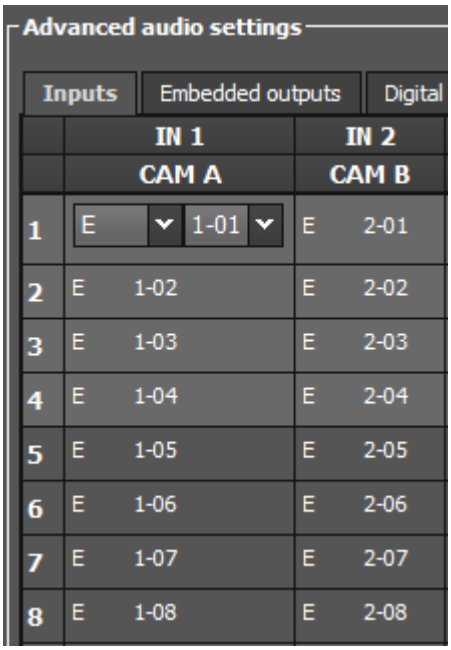
- audio inputs
- audio embedded outputs
- audio digital outputs (AES/EBU)
- audio MADI outputs

In the web-based interface, the audio inputs and the various audio output types are displayed in the Channels tab, Advanced Audio settings, as different tabs of a single table.

The settings for digital or MADI outputs are only available when the corresponding connectors are defined in the **Audio Connectors** field (Audio settings section) that reflects the audio hardware configuration.

General Table Structure

The screenshot below presents part of the input settings:

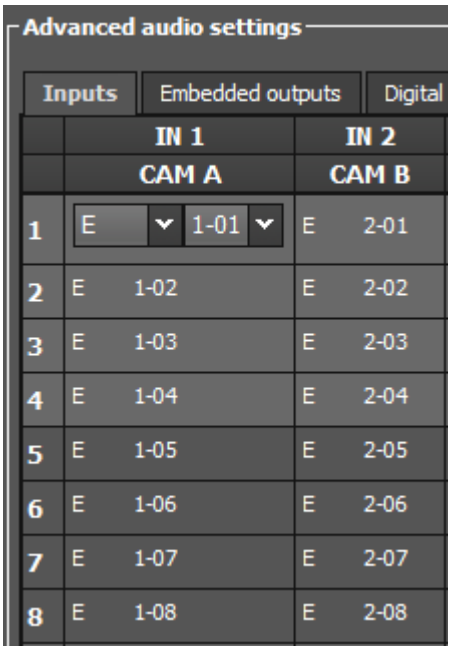


In the table, the information is organized as follows, for input or output settings:

- The rows correspond to the audio mono channels of the A/V material stored on the EVS server. The number of rows depends on the value assigned to the **Number of tracks** setting defined in the Audio settings field group.
- The columns correspond to the record channels or play channels.
- The values in the cells show the rooting of the audio mono channels:
  - from the source to the material stored on the EVS server (audio inputs)
  - from the material stored on the EVS server to the play channels (audio outputs)

Audio Types and Channel Numbers

The screenshot below presents part of the input settings, where the audio input from the record channels is routed by default to the embedded audio channels.



The values in the cells of the table refer to the audio channel assigned and are made up as follows:

- The first letter refers to the audio type (E for embedded, D for digital, DY for Dolby Digital, EY for Dolby Embedded, M for MADI, MY for Dolby MADI).

For **embedded audio or MADI** (for example 1-01):

- The first number before the hyphen refers to the number of the play or record channel.
- The figure after the hyphen refers to the audio mono channel.

For **digital audio** (for example D 05),

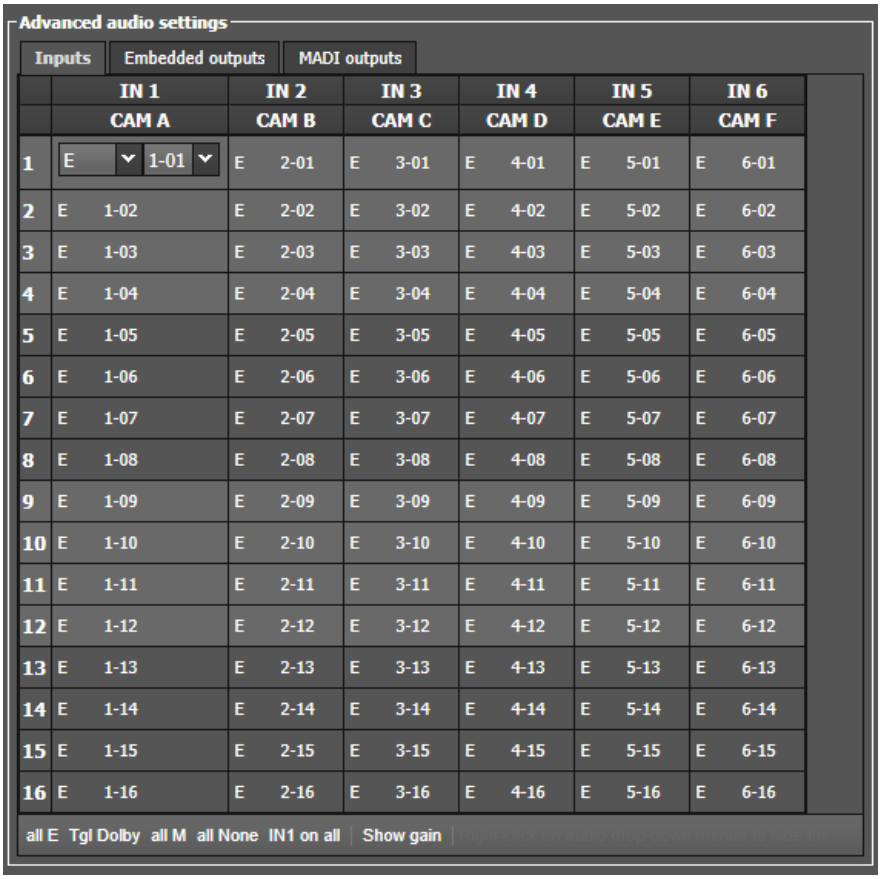
- The number refers to the number of the digital input or output.

Audio Input Settings

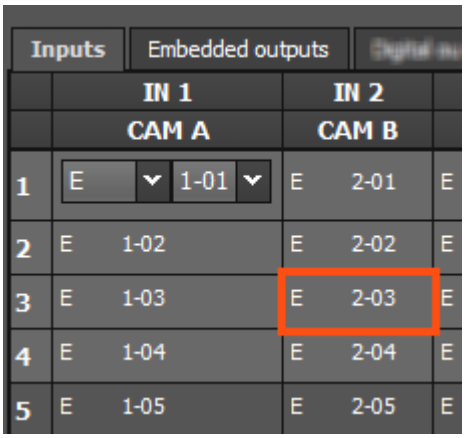
Introduction

The advanced audio input settings allow users to specify the following elements:

- Which type of audio source should be taken into account in the recording process.
- How the audio mono channels of the source material will be distributed to the material recorded on the EVS server.
- Whether an audio gain or audio muting should be applied in the recording process.

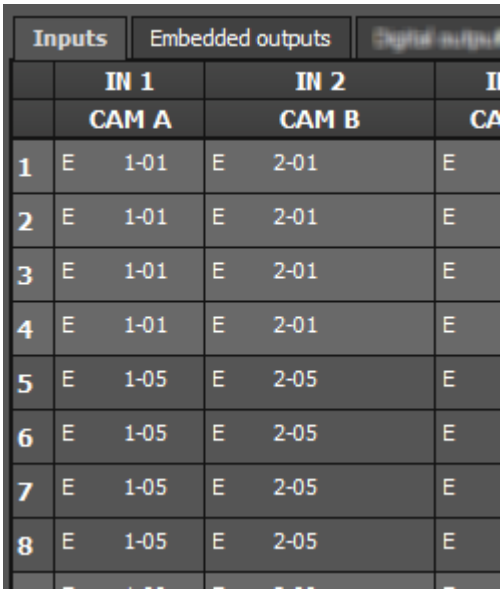


Example 1



The E2-03 value located in the intersection between row 3 and column IN 2 means that the 3rd audio mono channel of the embedded audio source plugged into the IN 2 (CAM B) connector will be recorded on the same position on the EVS server.

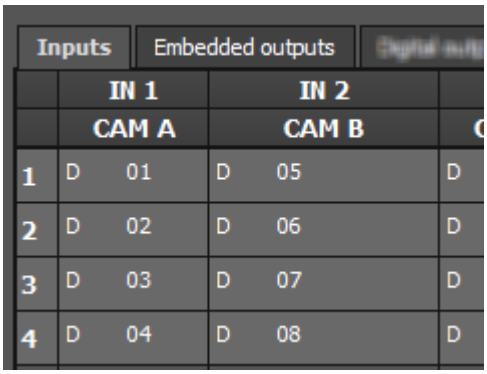
Example 2



The allocation of the source audio mono channels shown above means that:

- The embedded audio source of the 1st mono channel of the record channel (IN 1 or IN 2) will be stored on mono channels 1 to 4 of the recorded material.
- The embedded audio source of the 5th mono channel of the record channel (IN 1 or IN 2) will be stored on mono channels 5 to 8 of the recorded material.

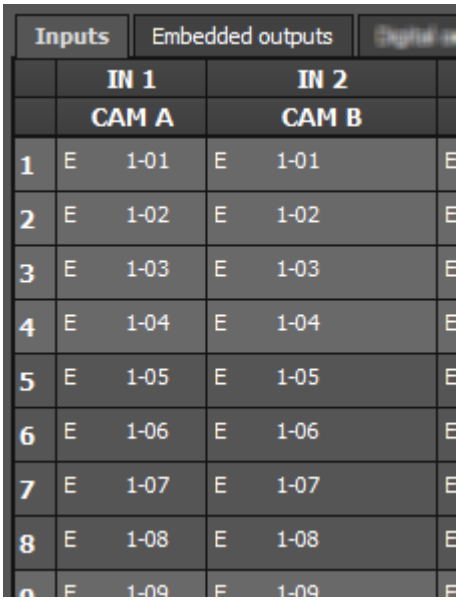
Example 3



The allocation of the source audio mono channels shown above means that:

- The audio source from the digital connectors is used for the material recorded on the EVS server.
- The audio source 1 from the digital connector will be mapped to the 1st mono channel of the material recorded on the EVS server, and so on.

Example 4



You will allocate the source audio mono channels as shown above when you want to send the audio mono channels from REC1 to all other record channels.

The command **IN1 on all** allows you doing this more rapidly in the web-based interface.

Audio Output Settings

Introduction

The audio output settings for audio allow users to do the following:

- Map the audio mono channels of the material stored on the EVS server to an output mono channel of a play channel.
- Specify the audio gain to be applied to each output mono channel.
- Mute an output mono channel.

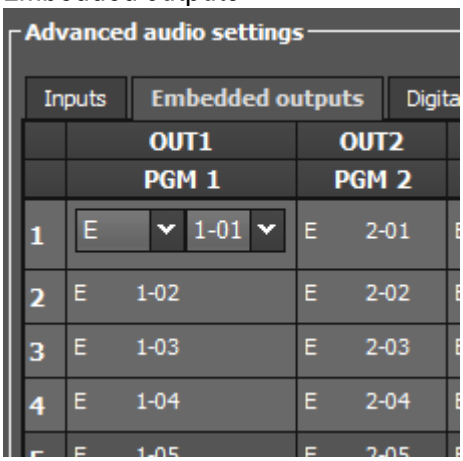
This can be defined for the various audio types: embedded audio, digital audio, if the corresponding connectors are available on the hardware configuration.

User Interface

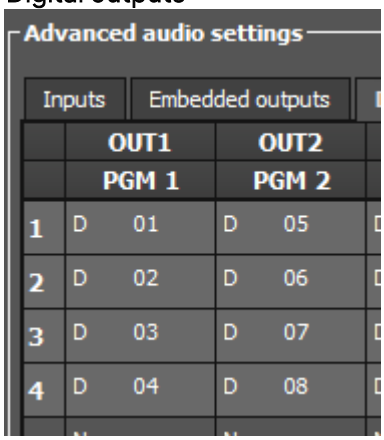
The screenshots below show an abstract of the default audio channel assignment for the various audio types in a configuration.

See section "Default Mapping for Audio Inputs and Outputs" on page 274 for a full overview on the default mono channel assignment in the various supported configurations.

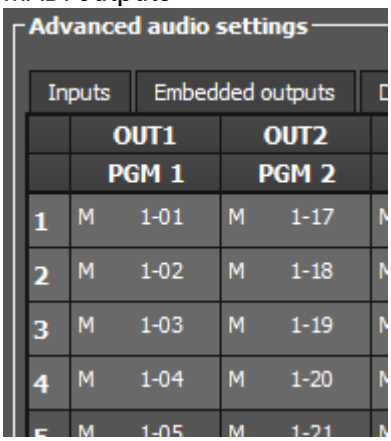
Embedded outputs



Digital outputs



MADI outputs



Example

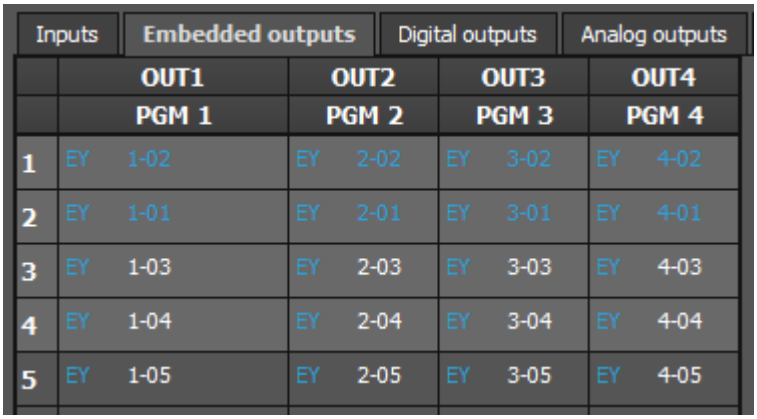
In the screenshot below, the audio mono channels defined on the A/V material on the EVS server are allocated to the play channels in the following way:

The audio outputs are in Dolby embedded format.

By default, an audio mono channel of the A/V material stored the EVS server is sent to the corresponding embedded channel of the play channel. In this example, this is the case for mono channels from 3 to 8.

For mono channels 1 and 2, the default mapping has been changed as follows:

- The audio mono channel 1 of the A/V material is sent to the mono channel 2 of the play channel, and this for all play channels.
- The audio mono channel 2 of the A/V material is sent to the mono channel 1 of the play channel, and this for all play channels.



Default Mapping for Audio Inputs and Outputs

Introduction

The tables below present the channel mapping for audio inputs and outputs in the following configuration:

- XT-VIA chassis
- 6 recorders or players (see section "About Supported Configurations" on page 57) .
- Audio hardware configuration: BNC MADI + 4 DB 15 Digital

In configurations with less recorders or players, the irrelevant rows or columns should be disregarded.

Audio (Embedded) Inputs

By default, the audio embedded mono channels from the source material are mapped as shown in the table below onto the A/V material stored on the EVS server.

The table shows 6recorders, and an audio configuration with 16 tracks (mono channels):

	IN 1	IN 2	IN 3	IN 4	IN 5	IN 6
Mono1	E 1-01	E 2-01	E 3-01	E 4-01	E 5-01	E 6-01
Mono2	E 1-02	E 2-02	E 3-02	E 4-02	E 5-02	E 6-02
Mono3	E 1-03	E 2-03	E 3-03	E 4-03	E 5-03	E 6-03
Mono4	E 1-04	E 2-04	E 3-04	E 4-04	E 5-04	E 6-04
Mono5	E 1-05	E 2-05	E 3-05	E 4-05	E 5-05	E 6-05
Mono6	E 1-06	E 2-06	E 3-06	E 4-06	E 5-06	E 6-06
Mono7	E 1-07	E 2-07	E 3-07	E 4-07	E 5-07	E 6-07
Mono8	E 1-08	E 2-08	E 3-08	E 4-08	E 5-08	E 6-08
Mono9	E 1-09	E 2-09	E 3-09	E 4-09	E 5-09	E 6-09
Mono10	E 1-10	E 2-10	E 3-10	E 4-10	E 5-10	E 6-10
Mono11	E 1-11	E 2-11	E 3-11	E 4-11	E 5-11	E 6-11
Mono12	E 1-12	E 2-12	E 3-12	E 4-12	E 5-12	E 6-12
Mono13	E 1-13	E 2-13	E 3-13	E 4-13	E 5-13	E 6-13
Mono14	E 1-14	E 2-14	E 3-14	E 4-14	E 5-14	E 6-14
Mono15	E 1-15	E 2-15	E 3-15	E 4-15	E 5-15	E 6-15
Mono16	E 1-16	E 2-16	E 3-16	E 4-16	E 5-16	E 6-16

Audio Embedded Outputs

By default, the audio mono channels from the A/V material stored on the EVS server are mapped to the embedded mono channels on the play channels as presented in the table below.

The table shows 6 players, and an audio configuration with 16 tracks (mono channels):

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6
Mono1	E 1-01	E 2-01	E 3-01	E 4-01	E 5-01	E 6-01
Mono2	E 1-02	E 2-02	E 3-02	E 4-02	E 5-02	E 6-02
Mono3	E 1-03	E 2-03	E 3-03	E 4-03	E 5-03	E 6-03
Mono4	E 1-04	E 2-04	E 3-04	E 4-04	E 5-04	E 6-04
Mono5	E 1-05	E 2-05	E 3-05	E 4-05	E 5-05	E 6-05
Mono6	E 1-06	E 2-06	E 3-06	E 4-06	E 5-06	E 6-06
Mono7	E 1-07	E 2-07	E 3-07	E 4-07	E 5-07	E 6-07
Mono8	E 1-08	E 2-08	E 3-08	E 4-08	E 5-08	E 6-08
Mono9	E 1-09	E 2-09	E 3-09	E 4-09	E 5-09	E 6-09
Mono10	E 1-10	E 2-10	E 3-10	E 4-10	E 5-10	E 6-10
Mono11	E 1-11	E 2-11	E 3-11	E 4-11	E 5-11	E 6-11
Mono12	E 1-12	E 2-12	E 3-12	E 4-12	E 5-12	E 6-12
Mono13	E 1-13	E 2-13	E 3-13	E 4-13	E 5-13	E 6-13
Mono14	E 1-14	E 2-14	E 3-14	E 4-14	E 5-14	E 6-14
Mono15	E 1-15	E 2-15	E 3-15	E 4-15	E 5-15	E 6-15
Mono16	E 1-16	E 2-16	E 3-16	E 4-16	E 5-16	E 6-16

Audio Digital Outputs

The default mapping to audio digital output connectors differ depending on the number of tracks (mono channels) defined.

16 Audio Tracks

With audio configurations with 16 tracks (mono channels), the audio mono channels of the A/V material stored on the EVS server are sent to the digital audio output connectors of the play channels as presented in the table below.

The table shows 6 players, and the audio configuration with 16 tracks (mono channels):

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6
Mono1	D 01	D 09	None	None	None	None
Mono2	D 02	D 10	None	None	None	None
Mono3	D 03	D 11	None	None	None	None
Mono4	D 04	D 12	None	None	None	None
Mono5	D 05	D 13	None	None	None	None
Mono6	D 06	D 14	None	None	None	None
Mono7	D 07	D 15	None	None	None	None
Mono8	D 08	D 16	None	None	None	None

8 Audio Tracks

With audio configurations with 8 tracks (mono channels), the audio mono channels of the A/V material stored on the EVS server are sent to the digital audio output connectors of the play channels as presented in the table below.

The table shows 6 players, and an audio configuration with 8 tracks (mono channels):

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6
Mono1	D 01	D 05	None	None	None	None
Mono2	D 02	D 06	None	None	None	None
Mono3	D 03	D 07	None	None	None	None
Mono4	D 04	D 08	None	None	None	None
Mono5	None	None	None	None	None	None
Mono6	None	None	None	None	None	None

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6
Mono7	None	None	None	None	None	None
Mono8	None	None	None	None	None	None

Audio MADI Outputs

By default, the audio mono channels from the A/V material stored on the EVS server are mapped to the MADI mono channels on the play channels as presented in the table below.

The table shows 6 players, and an audio configuration with 16 tracks (mono channels):

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6
Mono1	M1-01	M1-17	M1-33	M1-49	M2-01	M2-17
Mono2	M1-02	M1-18	M1-34	M1-50	M2-02	M2-18
Mono3	M1-03	M1-19	M1-35	M1-51	M2-03	M2-19
Mono4	M1-04	M1-20	M1-36	M1-52	M2-04	M2-20
Mono5	M1-05	M1-21	M1-37	M1-53	M2-05	M2-21
Mono6	M1-06	M1-22	M1-38	M1-54	M2-06	M2-22
Mono7	M1-07	M1-23	M1-39	M1-55	M2-07	M2-23
Mono8	M1-08	M1-24	M1-40	M1-56	M2-08	M2-24
Mono9	M1-09	M1-25	M1-41	M1-57	M2-09	M2-25
Mono10	M1-10	M1-26	M1-42	M1-58	M2-10	M2-26
Mono11	M1-11	M1-27	M1-43	M1-59	M2-11	M2-27
Mono12	M1-12	M1-28	M1-44	M1-60	M2-12	M2-28
Mono13	M1-13	M1-29	M1-45	M1-61	M2-13	M2-29
Mono14	M1-14	M1-30	M1-46	M1-62	M2-14	M2-30
Mono15	M1-15	M1-31	M1-47	M1-63	M2-15	M2-31
Mono16	M1-16	M1-32	M1-48	M1-64	M2-16	M2-32

Modifying the Audio Routing or Type

Introduction

Audio routing settings can be modified in the Channels tab, in the Advanced Audio Settings. It is possible to change:

- the audio type of all displayed audio channels at the same time by means of:
  - the shortcut keys described below in the server-based application
  - the buttons at the bottom of the table in the web-based interface
- the audio type of individual channels by manually editing the audio type value.
- the routing of an individual audio channel by editing the cell value in the advanced audio settings tables.

Collective Editing Actions in Server- and Web-Based Interfaces

You can apply the following editing actions to all audio channels of a page using the following shortcuts, when available on your EVS server, and on the current page:

Command description	Command key (Server-based app.)	Command button (Web-based interface)
Set all audio channels to Embedded	CTRL+E	all E
Set all audio channels to Digital	CTRL+D	all D
Set all audio channels to MADI	CTRL+M	all M
Toggle all audio channels to Dolby Audio	CTRL+Y	Tgl Dolby
Set all audio channels to None	CTRL+N	all None applicable to all E,D or A outputs at a time
Reset all the audio configuration (also on other pages) to default values	F5	-
Route all audio input channels of REC1 to the other record channels (only audio inputs)	CTRL+0	Rec 1 on all
Validating the changes	ALT+A	Apply

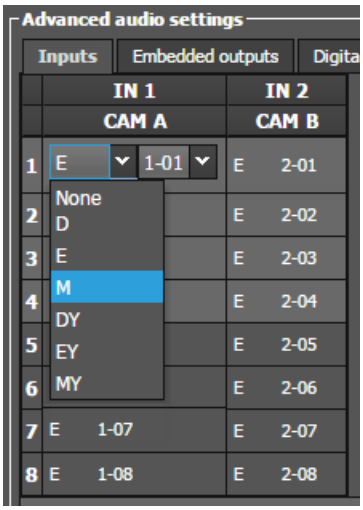
Individual Editing Actions in the Server-Based Application

In the server-based application, you can use the following editing commands for modifying individual field/cell values (audio type or audio routing), when available on your EVS server, and on the current page:

Command description	Command key
Selecting a field value	TAB
Scrolling down in the list of the possible values for the selected field	SPACEBAR
Scrolling up in the list of the possible values for the selected field	SHIFT + SPACEBAR
Increasing the audio channel number by 8 audio mono channels (valid when the audio channel is selected)	CTRL + RIGHT ARROW
Decreasing the audio channel number by 8 audio mono channels. This is valid when the audio channel is selected.	CTRL + LEFT ARROW
Increasing by 1 the ID of the audio source channel. This is valid with audio channels with ID embedded or MADI when the channel number is selected.	CTRL + ARROW UP
Decreasing by 1 the ID of the audio source channel. This is valid with audio channels with ID embedded or MADIwhen the channel number is selected.	CTRL + ARROW DOWN

Individual Editing Actions in the Web-Based Interface

In the web-based application, click on the values you want to edit in the requested cell(s). The available values are displayed in drop-down fields, which allow you to select the requested value individually:



Modifying the Audio Gain and Mute Settings

Introduction

From the Advanced Audio Settings pages of the Channels tab, you can not only modify the default routing of audio channels, but also do the following:

- Adjust the audio gain for each audio mono channel individually;
- Mute individual audio channels.

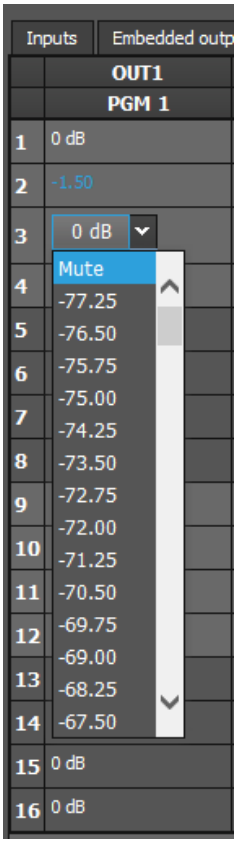
In the server-based application, the audio gain and audio mute information can be displayed via the CTRL+G command, which allows you to toggle the display in the tables to show the audio gain and mute information.

In the web-based interface, the audio gains can be displayed by selecting the Show gain command below the advanced audio settings.

The audio gain can be adjusted by steps of 0.75dB, 3dB or 6dB, in the range from -77.25dB to +23.25dB of the current audio level.

When an audio input is used for multiple tracks, the value of the gain shall be the same for all tracks.
When editing the gain of 1 of the replicated tracks, the gain of all the tracks shall also be modified. Otherwise, the following error message will be displayed `"Incoherent input audio gains"`.

The following screenshot shows the display of mute and audio gain settings:



In the Server-Based Application

The following table shows the various commands available to adjust the audio gain, and mute an audio channel in the server-based application.

One of the following command can be applied on an individual channel when it is selected and when the audio gain display is on.

Command Description	Command Key
Hiding and Showing the audio gain display	CTRL+G
Muting the selected audio channel	CTRL+M
Un-muting the selected audio channel	CTRL+U
Increasing by 0.75dB the audio level of the selected audio channel	SPACEBAR
Lowering by 0.75dB the audio level of the selected audio channel	SHIFT + SPACEBAR
Increasing by 3dB the audio level of the selected audio channel	CTRL+ARROW RIGHT
Lowering by 3dB the audio level of the selected audio channel	CTRL+ARROW LEFT
Increasing by 6dB the audio level of the selected audio channel	CTRL+ARROW UP
Lowering by 6dB the audio level of the selected audio channel	CTRL+ARROW DOWN

In the Web-Based Interface

To modify the audio gain of an audio channel or mute it, proceed as follows:

1. In the **Channels** tab, select the Inputs tab or Outputs tab of the Advanced Audio Settings depending on whether you want to work on audio input or output channels.
2. Click the **Show gain** button.

   The audio gain applied to each mono channel is displayed, instead of the audio type and routing data.
3. In the requested cell, click the value you want to modify, and select the requested audio gain or mute value from the list.

Dolby Audio Management

Concepts

- Dolby Digital or Dolby 5.1 or AC-3, is an audio coding system containing up to 6 discrete channels of sound, with 5 channels for normal-range speakers (20 Hz - 20,000 Hz) (Right front, Center, Left Front, Right Rear and Left Rear) and one channel (20 Hz - 120 Hz) for the LFE, or subwoofer.
- Dolby E is a professional coding system optimized for the distribution of surround and multichannel audio through two-channel postproduction and broadcasting infrastructures, or for recording surround audio on two audio tracks of conventional digital video tapes, video servers, communication links, switchers, and routers.

Dolby E is not supported in Proxy essence. If audio channels are configured in Dolby E in a multi-essence configuration with Proxy, the Proxy output will have no associated audio.

Available Dolby Configurations

Case 1: The 5.1 audio signal is carried on 6 discrete PCM audio channels

- It is available on an XT-VIA server in all configurations.
- The audio can be digital or embedded depending on the configuration.

Case 2: The 5.1 audio signal is coded in the two-channel Dolby E standard

- Dolby E over AES/EBU links
  - Set the configuration of the pair of channels carrying the Dolby E signal to “DY” in the Multicam Configuration window, Channels tab. This has two effects :
- It disables the sample rate converter on the input channels.
- It forces all transitions to a hard cut.

4.3.3. Timecode and Data Insertion

Timecode Settings

User Interface

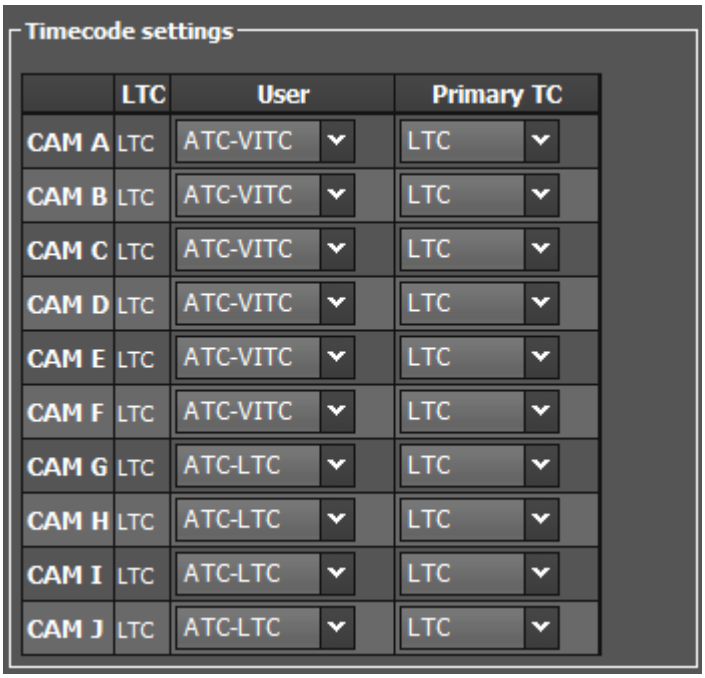
The Timecode settings allow specifying which type of timecode the users want to use as the reference to work on a given recorder of an EVS server.

The selection of a timecode type, using the timecode settings, rely on the management of two timecode jump tables.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the advanced display mode on the server- and web-based interfaces;
- partly in the Technical menu of the Remote Control Panel (T2.X)

The following screenshot displays the Timecode settings defined on the Channels tab in the web-based application:



LTC

Description	Longitudinal timecode (timecode defined on or plugged into the EVS server) automatically stored in the first timecode jump table (LTC table). This is not possible to modify the timecode type stored in the first timecode jump table.
Values	LTC (non-editable)

User

Description	Timecode type stored in the second timecode jump table (User TC table).
Values	In HD and UHD-4K: • LTC • ATC-LTC (Ancillary LTC Timecode) • ATC-VITC (Ancillary VITC Timecode)

Primary TC

Description	Timecode type that is displayed at the bottom the VGA and is used to work with the video material stored on the given recorder. Usually, an LTC timecode is used to perform operations on live events. A VITC timecode is used for video material ingested from tapes as it is the timecode embedded in the video signal.
Values	• **LTC:** LTC timecode, which is automatically stored in the LTC table. It is specified in the **LTC** field. • **User:** User-defined timecode, which is stored in the USER TC table and specified in the **User** field.
OSD Display	Depending on the value selected for this setting, the timecode displayed at the bottom of the user's OSD will have a different color: • If the LTC timecode is selected, the timecode color will be white. • If the USER timecode is selected, the timecode color will be yellow.

Timecode Insertion Settings

User Interface

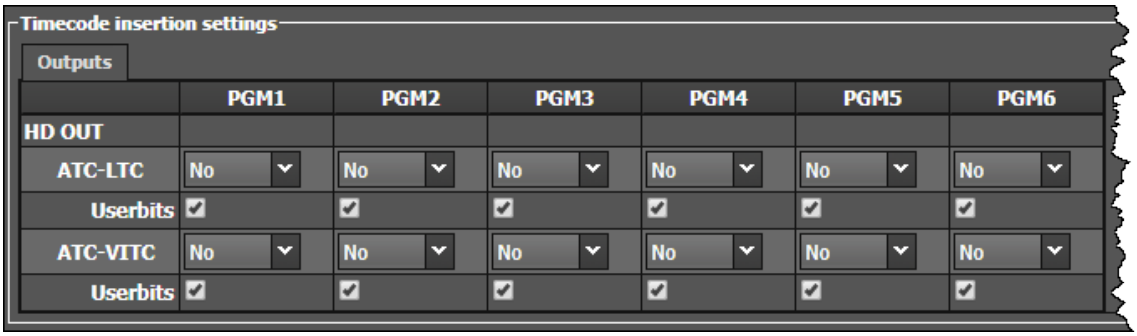
The Timecode Insertion settings allow the management of VITC or ancillary timecodes channel by channel.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the advanced display mode on the server- and web-based interfaces.

Some settings may not be relevant with an XT-VIA server.

The screenshot below shows the Timecode Insertion settings in HD on the Channels tab in the web-based application:



Output Tab

HD OUT (in HD): ATC-LTC / ATC-VITC

Description	Enables/disables the insertion of the embedded timecode (ATC-LTC or ATC-VITC) in the HD output.
Values	The values specified for the ATC-LTC and ATC-VITC fields have to be the same. The values can be as follows: • **No** No new timecode inserted in the output. • **In** Same timecode as in the input inserted in the output. • **LTC** Timecode from the LTC table inserted in the output. • **USER** User-defined timecode inserted in the output. • **TC 0** All ATC-LTC/ATC-VITC timecodes generated in the video signal coming out of the given PGM will remain static and fixed to 00:00:00:00.
Default value	No

The HD OUT ATC-LTC / ATC-VITC settings cannot be set both to 'No' if ancillary data is to be transfered via IP streams. See section "LiveIP Settings for Ancillary Data Streams" on page 445.

HD OUT (in HD): UserBits

Description	Enables/disables the insertion of the user bits in the HD output. The values specified for the ATC-LTC and ATC-VITC fields have to be the same. When TC0 is selected in the ATC-LTC and ATC-VITC field, the user bits values will also remain static and fixed to 00:00:00:00 whatever the selected value.
Values	Yes (default) / No

SMPTE 334M Packet Management Settings

User Interface

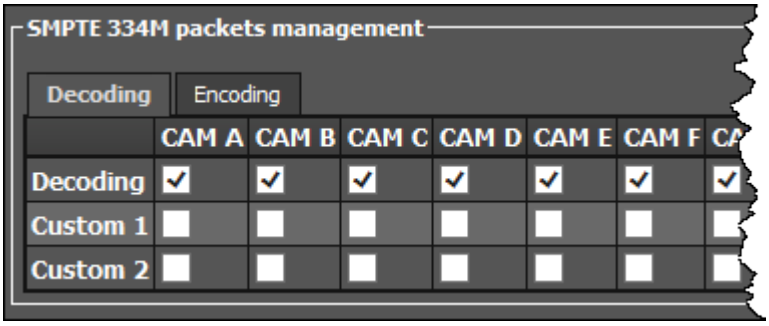
The SMPTE 334M Packet Management settings specify how ancillary data packets stored in the vertical ancillary data space in HD signals are handled.

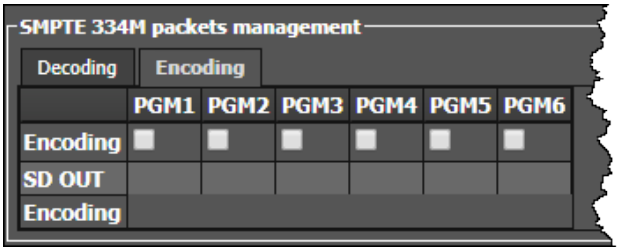
These fields are available in the following interfaces:

- in the Multicam Configuration window, Channels tab, in the advanced display mode on the server- and web-based interfaces;
- partly in the Technical menu of the Remote Control Panel (T2.X).

Some settings may not be relevant with an XT-VIA server.

The following screenshot shows the SMPTE Package settings defined on the Channels tab in the web-based application:





Supported Packets

The supported ancillary data packets must comply with the SMPTE standards 334M, 291M (type 2 ANC packet).

Up to now, SMPTE 334M data packets carried on the chrominance (C) data stream within the SMPTE 292M signal are not decoded (HD).

All DIDs mentioned in the SMPTE 334M standards are supported:

- 61 => 62
- 40 => 5F
- C0 => DF

Those DIDs are saved and restored on the output channels on their original lines. The other DIDs are not saved.

The maximum number of bytes saved per field (frame for 720p) is 2014. One saved SMPTE 334M packet is composed of user data word (UDW) plus 7 configuration bytes. It has to be taken into account to compute the number of bytes saved.

Please refer to the SMPTE RP 291-2006 standard for the assignment of DIDs to specific applications.

Decoding Tab

Decoding

Description	Enables/disables the decoding of SMPTE 334M data packets on each record channel.
Values	Yes (default) / No

Custom 1/2

Description	Enables/disables a customized decoding of the SMPTE 334M data packets. See section "Customizing the Decoding of SMPTE Data" on page 291 for more information.
Values	Yes / No (default)

Encoding Tab

Encoding

Description	Enables/disables the encoding of the SMPTE 334M data onto each play channel in HD.
Values	Yes / No (default)

SD OUT Encoding

Description	This setting is not relevant with an XT-VIA server. Enables/disables the encoding of the SMPTE334M data present on the HD output on the SD downconverted output on each play channel. See section "SMPTE 334M Packet Management Settings" on page 288 for more information.
Values	Yes / No (default)

The Encoding setting has to be set to 'Yes' to be able to transfer the ancillary data via IP streams. See section "LiveIP Settings for Ancillary Data Streams" on page 445.

Customizing the Decoding of SMPTE Data

Upon request, it is possible to customize the decoding of the SMPTE 334M data.

If you wish to keep uncompressed 8-bit data in the VANC data space, you can select two lines - L_a and L_b - on which N_a and N_b bytes can be saved per field (frame for 720p).

The saved data are left aligned after SAV (Start of Active Video) and the maximum number of data saved (N_a + N_b + regular SMPTE 334M packet) must not exceed 2014.

If you require this customization, please contact your EVS representative to specify the number of bytes you want to keep and on which lines. EVS will provide you with a specific customization file.

This customization file will be activated using the Custom 1, Custom 2 settings.

4.4. Network Tab

The Network tab includes the settings on the XNet network and Gigabit Ethernet network, both networks used for the backup and transfer of video and audio data.

The table below presents the settings of the Network tab. It specifies whether the setting is available:

- in the basic or advanced display mode in the server-based and web-based interfaces
- in the **Technical Setup** menu (T4.X) of the Remote Panel

Setting Name	Basic	Advanced	Technical Setup
XNet settings			
Operation Mode	X	X	X
Net name	X	X	–
Net number	X	X	X
Visibility	X	X	X
XNet server	X	X	X
Gigabit Connection settings			
Physical interface	X	X	X
Link aggregation	X	X	X
Gigabit IP Configuration settings			
IP address	X	X	X
Subnet mask	X	X	X
Default gateway	X	X	X
Proxy Streaming Configuration settings			
Enable Proxy Streaming	–	X	–
IP address	–	X	–
Subnet mask	–	X	–
Gigabit Prioritization settings			
Configuration mode	X	X	–
Connections (Lo-Res/Hi-Res/Unreserved)	X	X	–
IP IO Configuration settings			
IP Address	X	X	–
Subnet Mask	X	X	–
Default Gateway	X	X	–

4.4.1. Overview

The Network tab includes the settings on the XNet network and Gigabit Ethernet network, both networks used for the backup and transfer of video and audio data.

The table below presents the settings of the Network tab. It specifies whether the setting is available:

- in the basic or advanced display mode in the server-based and web-based interfaces
- in the **Technical Setup** menu (T4.X) of the Remote Panel

Setting Name	Basic	Advanced	Technical Setup
XNet settings			
Operation Mode	X	X	X
Net name	X	X	–
Net number	X	X	X
Visibility	X	X	X
XNet server	X	X	X
Gigabit Connection settings			
Physical interface	X	X	X
Link aggregation	X	X	X
Gigabit IP Configuration settings			
IP address	X	X	X
Subnet mask	X	X	X
Default gateway	X	X	X
Proxy Streaming Configuration settings			
Enable Proxy Streaming	–	X	–
IP address	–	X	–
Subnet mask	–	X	–
Gigabit Prioritization settings			
Configuration mode	X	X	–
Connections (Lo-Res/Hi-Res/Unreserved)	X	X	–
IP IO Configuration settings			
IP Address	X	X	–
Subnet Mask	X	X	–
Default Gateway	X	X	–

4.4.2. XNet Settings

Introduction

The XNet settings allow specifying the settings related to the XNet network. This network allows the content between EVS servers to be visible across the network, and easily transferable.

Changes to the XNet parameters require an application reboot (**ALT+Q** from the operational windows) to be applied.

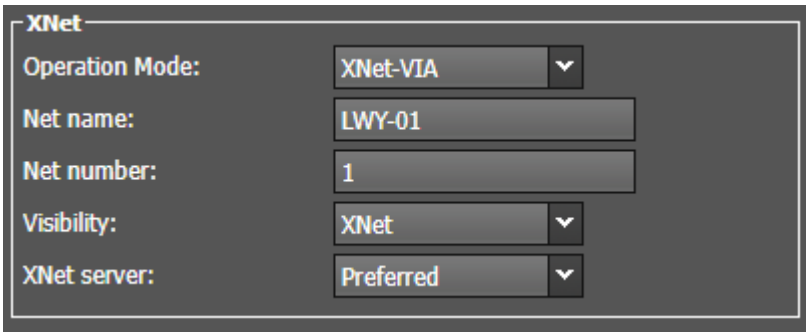
User Interface

The **XNet** settings, also dealt with in this section, are available:

- in the Multicam Configuration window, Network tab, in the basic and advanced display mode in the server-based application (page 1) and web-based interfaces
- partly in the Technical Setup menu of the Remote Control Panel (T4.X)

The XNet settings will only be displayed if the SDTI license code (117) is valid.

The following screenshot display the XNet settings on the Network tab in the web-based interface:



Operation Mode

Description	Enables the selection of the 3G-SDTI or XNet-VIA option and the bandwidth for the XNet network. The XNet circuit is closed only when the Multicam software is started.
Values	The following values are available: • 3G-SDTI (formerly No Relay 2970 Mbps) • XNet-VIA • Off
Default value	Off

For using XNet-Via we strongly recommend upgrading to the latest H4X_4S board firmware. For the update procedure you find more details in the Installation Manual (“Performing Hardware Maintenance”).

Net Name

Description	Machine name on the XNet network. It is not mandatory because a network number is assigned to the EVS server. It is however recommended as it helps to easily identify the servers connected to the XNet network. The Net Name will be displayed even if the SDTI code is not valid.
Values	The Net Name is user-defined and cannot exceed 8 characters.
Default value	By default, no Net Name is assigned.

Net Number

Description	The Net Number parameter defines the machine number on the network. This number is user-defined and must be unique for each system on the network. An error message appears if the number is already assigned to another machine.
Values	• in SDTI: range between 1 and 29 • in XNet-VIA: range between 1 and 34
Default value	1

Visibility

Description	Defines the privileges of the EVS server on the XNet network.
Values	The following values are possible: • **Local:** It cannot access the content on other EVS servers. • **XNet:** It can access all content on other EVS servers. Whatever the type of visibility defined, the content of an EVS server can be accessed without restrictions by the other EVS servers on the XNet network.
Default value	XNet

XNet Server

Description	Defines if the EVS server may or may not become the XNet server.
Values	The following values are possible: • **Preferred:** Can be selected as XNet server. • **Allowed:** Can only be selected as XNet server if none of the other EVS servers in the XNet network have been set to 'Preferred'. • **Forbidden:** It cannot be selected as XNet server. The XNet server is selected automatically.
Default value	Preferred

When upgrading from Multicam 16.1 or earlier to Multicam 16.2 or later, the following parameter conversion shall be applied.

Before Multicam 16.2		Multicam 16.2 or higher
Type	Visibility	XNet Server
Server	XNet	Preferred
Master	XNet	Allowed
Client	Local	Allowed

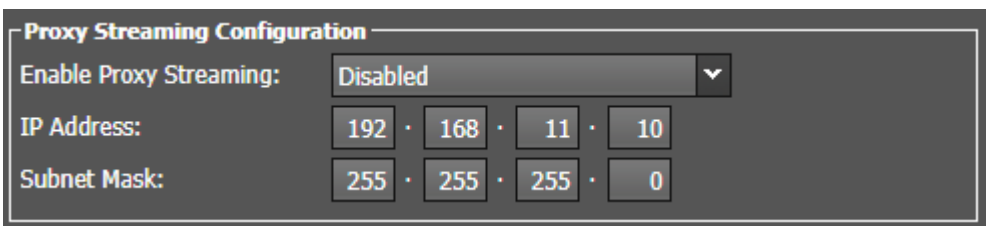
4.4.3. Proxy Streaming Configuration

Introduction

The Proxy Streaming Configuration settings allow to configure the proxy streaming interface IP address and manually activate the proxy streaming.

User Interface

The following screenshot display the Proxy Streaming Configuration settings on the Network tab in the web-based interface:



The Proxy Streaming configuration settings will only be visible if the license code 32 (Proxy) is granted on the server and the proxy encoding has been activated. See section "Codec Settings" on page 217.

Enable Proxy Streaming

By default, this parameter is disabled.

Select **Enabled** to activate the proxy streaming on the B1 XNet-VIA network interface. See the Technical Reference Manual for more information.

This parameter can only be enabled if:

- the proxy encoding is active. See section "Codec Settings" on page 217.

  If not, the following error message will be displayed: "Proxy streaming requires proxy encoding. Please activate proxy encoding or deactivate proxy streaming".

- the proxy codec is set to h.264. See section "Codec Settings" on page 217.

  If not, the following error message will be displayed: "Proxy streaming requires h.264 proxy. Please select h.264 proxy or deactivate proxy streaming."

IP Address

Description	IP address to connect to the proxy streaming network interface (B1 XNET-VIA).

Subnet Mask

Description	Range of logical addresses within the address space assigned to the proxy streaming network interface (B1 XNET-VIA).

4.4.4. Gigabit Connection

Introduction

The Gigabit connection allows the backup and transfer of the audio and video data without going through the XNet network. The Gigabit Connection settings specify which interface provides the gigabit connection on the EVS server.

The Gigabit connection can be available via the following interface, having the following characteristics:

- The internal GbE (Gigabit Ethernet) board is equipped with two 1GbE ports and two 10GbE ports.

  The 1GbE **or**10GbE ports can be used to provide the internal Gigabit connection.

Changes to the Gigabit Connection settings require an application reboot (**ALT+Q** from the operational windows) to be applied.

User Interface

The **Gigabit connection** settings are available:

- in the Multicam Configuration window, Network tab, in the basic and advanced display modes in the server-based application (page 1), and web-based interface.
- in the Technical menu of the Remote Control Panel (T3.X).

When you use the GbE board, you can use the 1GbE or the 10 GbE connections, but not both simultaneously.

Teaming

Teaming is available with the GbE board, on both its 1GbE or 10GbE interfaces. Teaming can be enabled using the **Link Aggregation** setting.

When teaming is active, and one of the GbE link fails, the other will seamlessly take over all ongoing and pending tasks.

Physical Interface

Availability	This section is only available if the server is equipped with a GbE board.
Description	Specifies the physical interface that provides the Gigabit Ethernet connection.
Values	The following values are available: • **None** No gigabit interface is present. • **1 GbE (on 10GbE board)** One or two of the 1GbE connections on the GbE board is/are used. • **10 GbE** One or two of the 10GbE connections of the GbE board is/are used.
Default Value	The default value corresponds to the most efficient physical interface installed on the EVS server.

Link Aggregation

Description	Specifies the teaming method when using the 1GbE or the 10GbE ports of the GbE board.
Values	The following values are available: • **None** No link aggregation method is applied, and no teaming is provided. • **LACP** The Link Aggregation Control Protocol is used to provide teaming. • **Adapter Fault Tolerance** The Adapter Fault Tolerance (AFT) method is used to provide teaming. • **Switch Fault Tolerance** The Switch Fault Tolerance (SFT) method is used to provide teaming.
Default Value	None

4.4.5. Gigabit IP Configuration

Introduction

The Gigabit IP Configuration settings specify the IP addresses for the Gigabit connections on the GbE board, depending on which GbE connections are specified in the **Physical Interface** parameter in the Gigabit Connection settings.

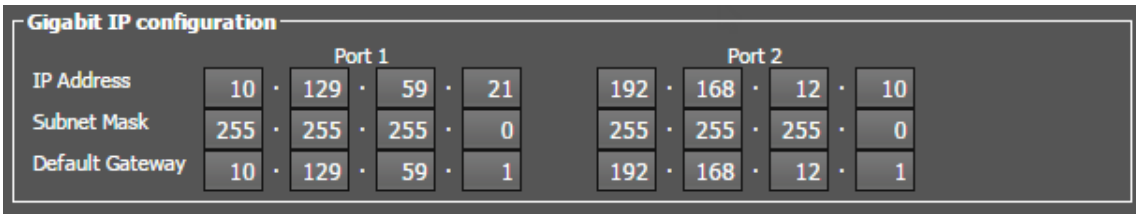
Changes to the Gigabit settings require an application reboot (**ALT+Q** from the operational windows) to be applied.

User Interface

The **Gigabit IP Configuration** settings are available:

- in the Multicam Configuration window, Network tab, in the basic and advanced display modes in the server-based application (page 1), and web-based interface.
- in the Technical menu of the Remote Control Panel (T4.X).

The following screenshot displays the Gigabit IP Configuration settings on the Network tab in the web-based interface:



Gigabit Connection Problems

When no Gigabit module is present or when the Gigabit connection has been lost, the first line of the Gigabit IP Configuration settings displays the message `!Not detected!`.

When the Gigabit connection of the GbE board has been lost, the last line of the Gigabit IP Configuration settings will display the message `Connection problem`.

When the teaming is active, and only one of the connection is lost, the Gigabit transfers will continue as the second connection will take over. No warning message is displayed in the Multicam configuration module, but this information is however available in XNet Monitor or XNet Web Monitor.

IP Address (Port 1/Port 2)

Description	IP address to connect to the port1/port2 of the Gigabit Ethernet connection on the EVS server.
Values	The IP addresses 0.0.0.0 and 255.255.255.255 are not allowed.

Subnet Mask (Port 1/Port 2)

Description	Range of logical addresses within the address space assigned to the Gigabit Ethernet connection. The IP addresses of both GbE ports must belong to different subnet masks. Otherwise, Multicam will return an error message.

Default Gateway (Port 1/Port 2)

Description	IP address of the router on the Gigabit Ethernet network that serves as an access point to external networks.

4.4.6. Gigabit Prioritization Settings

Introduction

The Gigabit connection is used for several tasks (browsing, streaming, transfer, etc.). For this reason, prioritization parameters can be defined to make sure the EVS server will have a sufficient bandwidth to smoothly perform tasks seen as critical within a given workflow.

The Gigabit prioritization settings allow users to prioritize the transfer from/to the Gigabit FTP server.

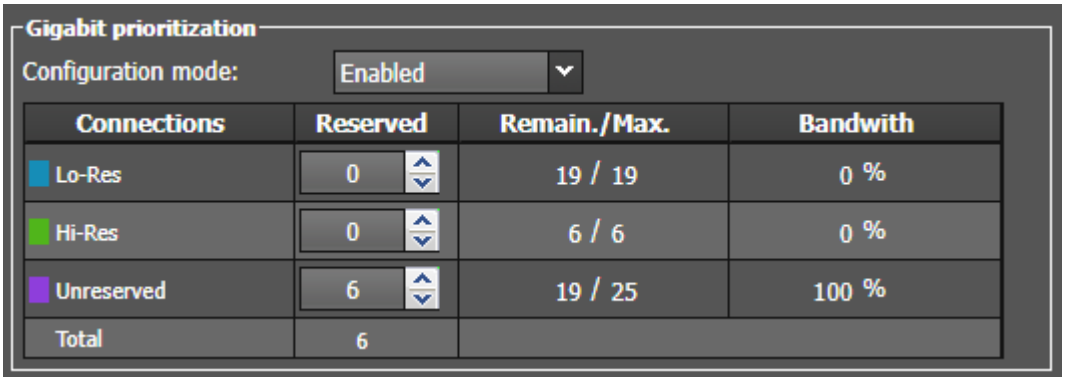
- Changes to the Gigabit Prioritization settings require an application reboot (ALT+Q from the operational windows) to be applied.
- When the Truck Manager is used in a given workflow, it automatically configures the Gigabit Prioritization settings to take into account the connection needs of all EVS products in the workflow.

User Interface

The **Gigabit Prioritization** settings are available:

- in the Multicam Configuration window, Network tab, in the advanced display modes on page 2 in the server-based interface, and in the web-based interface.

The following screenshot highlights the Gigabit prioritization settings on the Network tab in the web-based interface:



General Description

The prioritization settings consists in giving priority to a number of Lo-Res (Proxy) and Hi-Res connections on the Gigabit network.

Based on the effective bandwidth on the Gigabit interfaces of the EVS server, Multicam calculates the maximum number of Hi-Res or Lo-Res connections that can be granted with priority. The maximum value is based on the assumption that all connections are Hi-Res or Lo-Res (not a combination of both).

Knowing the maximum number of connections which can have priority, the administrator can set the requested number of reserved connections for critical jobs (playout, real-time transfer to third-party system or Lo-Res browsing, for example). The unreserved connections will be available for less prioritary jobs (backup of clips to be archived, for example).

When all reserved connections are used simultaneously, they may consume most of the bandwidth of the EVS server. During that time, the jobs using the unreserved connections will have limited bandwidth available, and will therefore be slowed down. When the jobs using priority connections are finished, they free up the bandwidth. This allows the jobs using the unreserved connections to be further processed with full bandwidth.

When processing jobs, Multicam always makes use of the full available Gigabit bandwidth: If the bandwidth is not fully allocated, the remaining bandwidth is automatically distributed among the connections.

Configuration mode

Description	Specifies whether and how you want to configure the priorities for the Gigabit connections.
Values	Two configuration modes are available: • Disabled: ◦ The parameters for setting prioritization are hidden: you cannot reserve connections. ◦ The number of unreserved connections is set to 6 by default. This value can be raised up to 25 based on the active codec essences, as well as on the playout codec and number of play channels. • Enabled: ◦ You can set the number of Lo-Res and Hi-Res connections. ◦ The number of unreserved connections is computed and set automatically (never lower than 6).
Default value	Disabled

Connections (Lo-Res)

Availability	The setting is only available in Enabled configuration mode, and if the Lo-Res codec essence is active on the EVS server.
Description	Allows configuring the number of Lo-Res connections allowed to the bandwidth of the EVS server. Each Lo-Res connection has a priority profile optimized for a smooth browsing of Lo-Res media, without impacting other transfers.
Values	The values is set in the **Reserved** column. The number of remaining and maximum Lo-Res connections for the given server configuration is specified in the **Remain./Max.** column.
Default value	0

Connections (Hi-Res)

Availability	The setting is only available in Enabled configuration mode.
Description	Allows configuring the number of Hi-Res connections allowed to the bandwidth of the EVS server. Each Hi-Res connection has a priority profile optimized for the transfer of Hi-Res content.
Values	The value is set in the **Reserved** column. The number of remaining and maximum Hi-Res connections for the given server configuration is specified in the **Remain./Max.** column.
Default value	0

Connections (Unreserved)

Availability	The setting is only displayed in Enabled configuration mode.
Description	Specifies the number of unreserved connections allowed to the Gigabit interface of the EVS server.
Values	6-25 A minimum of six unreserved connections is necessary to provide the same number of connections as in earlier versions of Multicam.
Default value	6

4.4.7. IP IO Configuration

Introduction

The IP IO configuration allows to configure the IP addresses of the V4X and MV4X SFP+ ports (10GbE). These ports are used to send or receive video from or onto the EVS server over an IP network.

If the XT-VIA server is connected to the XHub-VIA Live IP Aggregator, it allows you to configure the IP addresses of the two 100G QSFP interfaces connected to the Live IP network switch. Each QSFP interface is mapped onto 7 SFP+ interfaces on the XT-VIA server rear panel.

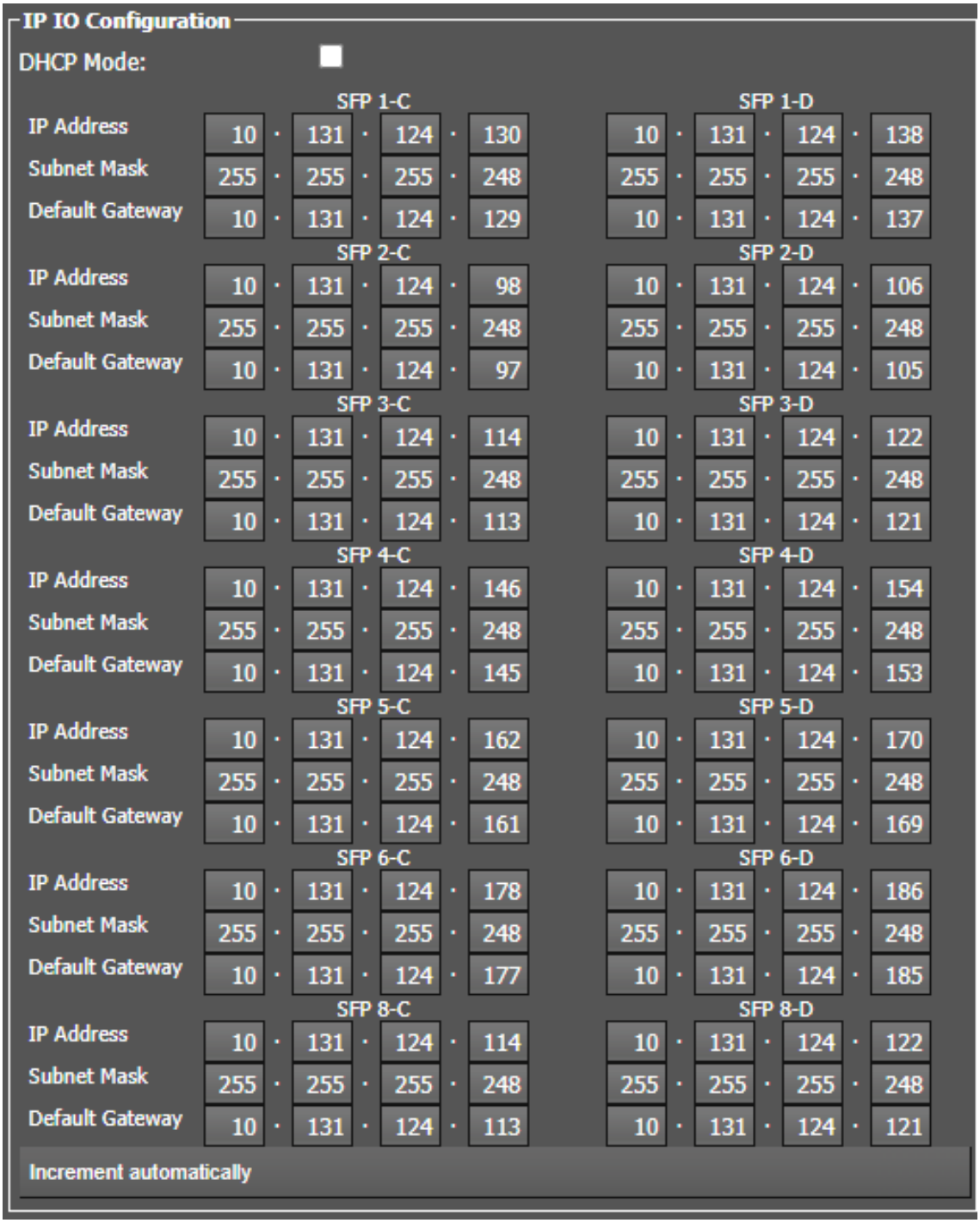
SFP+ Port	QSFP Port
1-8 (primary streams)	29
9-16 (duplicate streams in case ST 2022-7)	30

User Interface

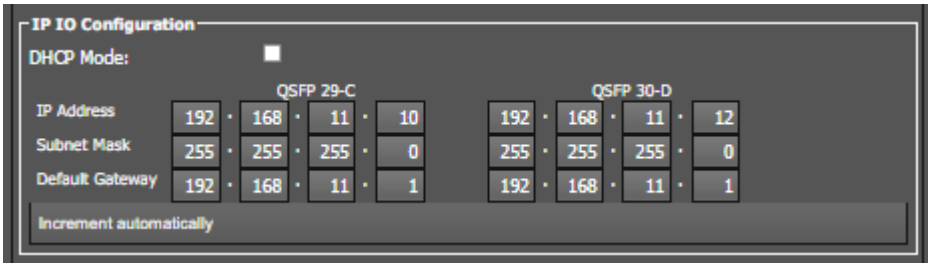
The **IP IO configuration** settings are available:

- in the Multicam Configuration window, Network tab, in the basic and advanced display modes in the server-based application and web-based interface.

Without XHUB-VIA Live IP Aggregator



With XHub-VIA IP Aggregator



IP Address

Description	IP address of the specified ethernet port used to transmit or receive video from or onto the EVS server.
Values	The IP addresses 0.0.0.0 and 255.255.255.255 are not allowed. Some applications require that all network interfaces are in a different subnet. The IP address does not need to be an even number.

Subnet Mask

Description	Range of logical addresses within the address space assigned to the LiveIP network (video-over-IP network).

Default Gateway

Description	IP address of the router on the LiveIP network that serves as an access point to external networks.

Automatic Incrementation of IP Addresses

To make the configuration of the different IP addresses of the SFP+ interfaces more easy, a mode can be enabled which will automatically set the addresses based on the values you enter for the ports 1-C and 1-D.

The different IP addresses are automatically incremented as follows:

- **IP Address:** The 4th decimal number is automatically incremented based on the previous address in the same category (C or D) between 1 and 254. In case an IP address is set to 254, the subsequent IP address is set to 1.

  Example: 1-C is set to 10.1.1.1 and 1-D is set to 10.1.2.253

  - 2-C is set to 10.1.1.2 and 3-C is set to 10.1.1.3
  - 2-D is set to 10.1.2.254 and 3-D is set to 10.1.2.1

- **Subnet Mask:** The value you set for 1-C and 1-D is repeated for all interfaces in the same category.

  Example: 1-C is set to 255.255.255.0 and 1-D is set to 255.255.255.0

  - 2-C is set to 255.255.255.0 and 3-C is set to 255.255.255.0
  - 2-D is set to 255.255.255.0 and 3-D is set to 255.255.255.0

- **Default Gateway:** The value you set for 1-C and 1-D is repeated for all interfaces in the same category.

  Example: 1-C is set to 10.1.1.100 and 1-D is set to 10.1.2.200

  - 2-C is set to 10.1.1.100 and 3-C is set to 10.1.1.100
  - 2-D is set to 10.1.2.200 and 3-D is set to 10.1.2.200

To enable this mode:

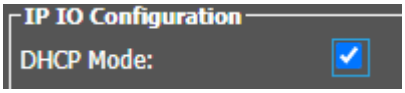
- in the server-based application (VGA), open the second page of the Network tab and press **CTRL + I**.
- in the web-based interface, open the Network tab and click the **Automatically Increment** button.

Automatically Configuring the IP Addresses Through DHCP

Introduction

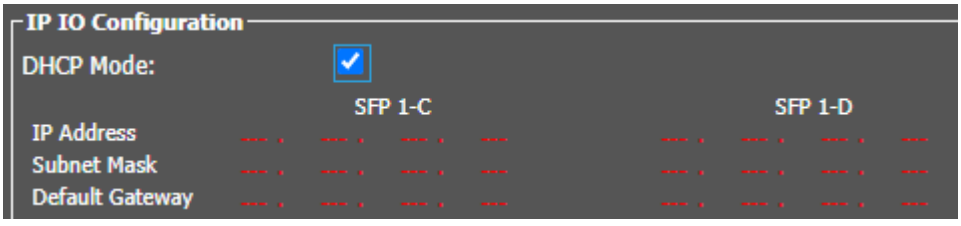
You can automate the IP address configuration of the ethernet interfaces through DHCP. For this, you only need a DHCP server running that is accessible on the LiveIP network.

Check the **DHCP Mode** option to enable this feature. By default, it is disabled.



The DHCP option is a global option, i.e. you cannot configure it for some interfaces and use the manual configuration for some others.

During configuration, the fields with the IP addresses become read-only and Multicam replaces the IP addresses by **---. ---. ---. ---**.



When you launch your configuration, Multicam will try to retrieve the IP addresses from the DHCP server.

Each ethernet interface negotiates its IP information independently with the DHCP server.

The type of information that will appear in the IP IO Configuration pane will depend on:

- the availability and accessibility of the DHCP server;
- there being active and inactive ethernet interfaces;

  Inactive SFP+ interfaces are interfaces that are connected to a V4X module that is electrically switched off because it is not used. For example on XT-VIA, in a 4IN 2OUT configuration we only use codec module #1 (for the 2 PGMs) and #5 and #6 (for the 4 RECs). The codec modules 2, 3 and 4 are not used, therefore the interfaces 2-C, 2-D, 3-C, 3-D, 4-C and 4-D are “inactive”;
- there being active SFP+ interfaces that have one or more LiveIP streams (senders or receivers) assigned to them.

The information is displayed as follows:

- All inactive ethernet interfaces will be displayed with ---.---.---.---;
- All active ethernet interfaces:
  - for which an IP address could be obtained, are displayed with the IP address;
  - for which no IP address could be obtained, are displayed with ---.---.---.--- and:
    - if the interface is used (at least 1 stream is attached), an error message is displayed.

      ```
      One or more Live IP network interface IP addresses could not be
      retrieved from the DHCP server. Please check your Live IP settings and
      make sure that those interfaces are not assigned to any stream

      {list of interfaces}

      Press any key to continue
      ```
    - if the interface is not used (no stream is attached), no error message is displayed.

If you disable the **DHCP Mode** option again, the manually added IP addresses are restored again.

4.5. Monitoring Tab

The Monitoring tab includes the settings of the Multiviewer output, the OSD information to be displayed, and the downconverted outputs configuration.

The table below presents the settings of the Monitoring tab. It specifies where the setting groups are available (page) and whether each setting is available:

- in the basic and advanced display mode in the server-based and web-based interfaces
- in the **Technical Setup** menu (T5.X) of the Remote Panel

Setting Name	Basic & Advanced	Technical Setup
Multiviewer Settings		
Layout	X	–
Display	X	–
Audio Monitoring from video	X	–
Audio Monitoring left-right tracks	X	–
HD output format	X	–
Multiviewer Input	X	–
OSD Settings		
Genlock Error	X	X
Disk Error	X	X
Network error	X	X
Clip name	X	X
Tally	X	–
Monitoring Settings		
Char OUT, format	X	X

4.5.1. Overview

The Monitoring tab includes the settings of the Multiviewer output, the OSD information to be displayed, and the downconverted outputs configuration.

The table below presents the settings of the Monitoring tab. It specifies where the setting groups are available (page) and whether each setting is available:

- in the basic and advanced display mode in the server-based and web-based interfaces
- in the **Technical Setup** menu (T5.X) of the Remote Panel

Setting Name	Basic & Advanced	Technical Setup
Multiviewer Settings		
Layout	X	–
Display	X	–
Audio Monitoring from video	X	–
Audio Monitoring left-right tracks	X	–
HD output format	X	–
Multiviewer Input	X	–
OSD Settings		
Genlock Error	X	X
Disk Error	X	X
Network error	X	X
Clip name	X	X
Tally	X	–
Monitoring Settings		
Char OUT, format	X	X

4.5.2. Multiviewer Settings

Introduction

The EVS servers equipped with the MV4X multiviewer on the MV4X board provide the following ports on the rear panels:

- four output ports to allow the connection of four independent 1080i or 1080p multiviewers;
- two input ports to allow external feeds to be displayed on the multiviewer.

The output ports allow the following uses:

- four operators working independently on the same EVS server.
- two operators working with one multiviewer displaying recorders, and a second multiviewer displaying players.
- operators to have a recorder display of an UHD-4K channel on one multiviewer, and a player display of the UHD-4K channel on a second multiviewer, for example.
- operators to have an OSD output of PGM 3 and PGM 4 in Dual LSM mode.

The **Multiviewer settings** make it possible to specify the settings for each multiviewer, such as the number of channels to combine and display, the audio and output video configuration.

Supported Input Formats

The MV4X multiviewer allows up to 2 external feeds to be displayed on the multiviewer.

These feeds have to be in the following video formats:

SDI Mode	IP Mode
SD PAL NTSC	SD PAL NTSC
720p 50/59.94	720p 50/59.94
1080i 50/59.94	1080i 50/59.94
1080p 50/59.94*	1080p 50/59.94
UHD-4K 50/59.94**	UHD-4K 50/59.94

* Both 3G-SDI (Level-A and Level-B) are supported.

** UHD-4K is only supported when transported as single stream over 12G-SDI.

OSD with MV4X Multiviewers

The monitoring outputs of the MV4X multiviewer provide the following main information:

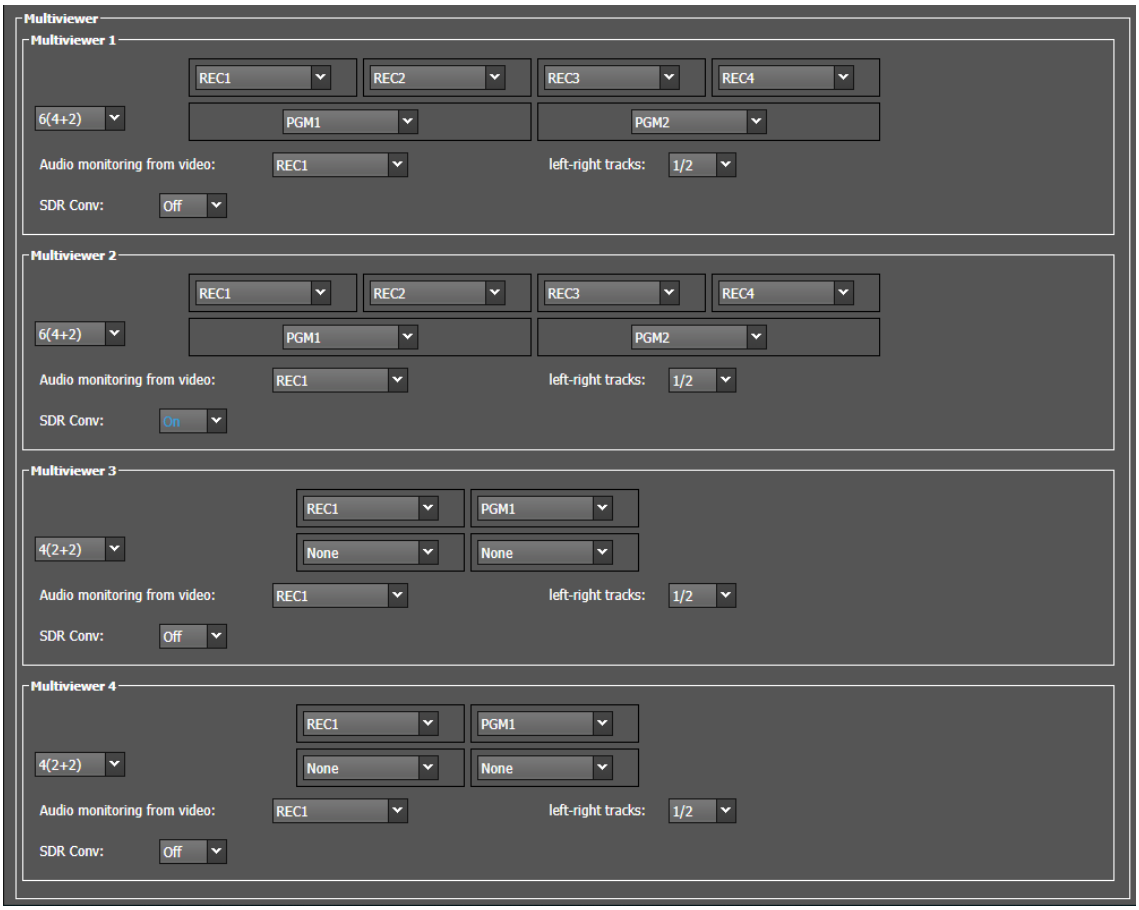
- The OSD is displayed over the full screen.
- Tally information is integrated into the OSD.
- Channel names can be assigned by UMD/Tally protocol.
- Audio meters are displayed on the right margin.
- Clip ID and name (up to 24 characters) are displayed on the upper right corner.

User Interface

The Multiviewer settings are available in the Multicam Configuration window, Monitoring tab.

The Multiviewer settings will only be displayed if a Multiviewer board is present on the EVS server.

The following screenshot displays the Multiviewer section on the Monitoring tab.



Multiviewer 1-4

Layout

Description	Specifies how the sources are displayed on the Multiviewer 1 to Multiviewer 4, one section being dedicated to each Multiviewer. The number of Multiviewer sections displayed depends on what the hardware configuration supports.
Values	The following layouts are available: • **1** • **2 (1+1)** • **4 (2+2)** • **6 (3+3)** • **6 (3+1+2)** • **6 (3+2+1)** • **6 (4+2)** • **7 (2+4+1)** • **8 (3+3+2)** (not useful on all servers) • **8 (4+2+2)** • **10 (4+3+3)** • **10 (4+4+2)** • **12 (4+4+4)** • **12 (5+5+2)** • **14 (5+5+3+1)**
Default value	• **4 (2+2)** with ≤ 4 channels • **6 (4+2)** with 6-channel configurations 4IN-2OUT or 4OUT-2IN • **6 (3+3)** with other 6-channel configurations • **8 (3+3+2)** with 8-channel configurations • **6 (3+3)** with more extended configurations • 1 in UHD-4K

Available Layouts

The available layouts are:

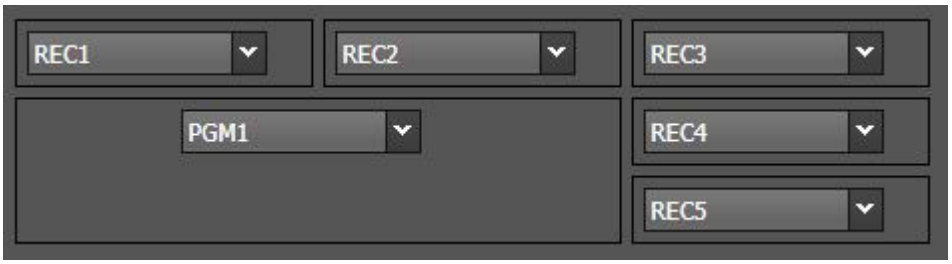
- **2 (1+1)**: 2 identical size images.

- **4 (2+2)**: 4 identical size images, 2 at the top, 2 at the bottom.

- **6 (4+2)**: 4 small size images at the top, 2 larger images at the bottom.

- **6 (3+3)**: 6 identical size images, 3 at the top, 3 at the bottom.

- **6 (3+1+2)**: 3 small size images at the top, 1 larger image in the bottom left corner, 2 small size images in the bottom right corner.



- 6 (3+2+1)**:** 3 small size images at the top, 1 larger image in the bottom right corner, 2 small size images in the bottom left corner.

- **7 (2+4+1:** 2 larger images at the top, 4 small size images in the bottom left corner, 1 larger image in the bottom right corner.

- **8 (3+3+2)**: 6 small size images in the first 2 rows, 2 larger images at the bottom. This layout is not useful on all servers.

- **8 (4+2+2):** 4 small size images in the top row, 4 larger images in the center.

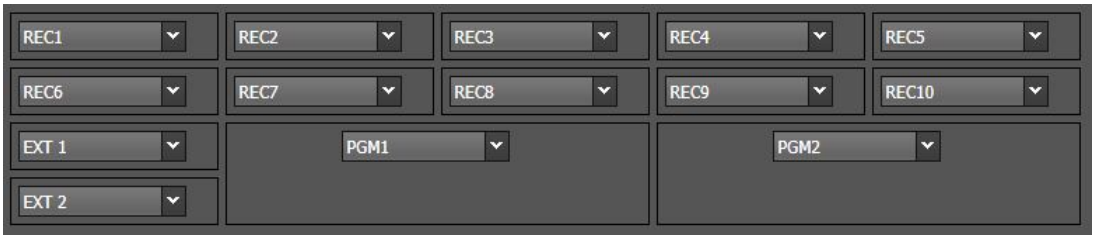
- **10 (4+3+3)**: 4 small size images at the top, 6 larger images at the bottom.

- 10 (4+4+2): 8 small size images in the first two rows, 2 larger images at the bottom.

- **12 (4+4+4)**: 12 identical size images, 4 in each row.

- 12 (5+5+2): 10 small size images in the first two rows, 2 larger images at the bottom.

- **14 (5+5+2+2):** 10 small images in the first two rows, 2 small images in the bottom left corner and two larger images in the bottom right corner.



- **1**: It is available with any configuration.

  This can be useful in Dual LSM configurations, for example, to provide an OSD output of a player channel when the OSD output of the given channel on the codec module is not available:

Source Display

Description	Specifies the source linked to the corresponding display in the selected layout. You can select: • no image (none). • play channels (PGM) • record channels (REC) • direct input into the Multiviewer I1 and I2 connectors on the back panel for external feeds. When running in base configuration F&K Spotbox or F&K XSense, the Fill channels shall be displayed.
Values	The values available for recorder or player channels correspond to the names the channels have been assigned in the **Channels** tab, **Channel and control** settings, which are the following by default: • **none** • **PGM1** to PGM6 • **REC1 to REC12** • EXT1 and EXT2 • **REC1-F**, **PGM1-F to PGM6-F** Only the first 14 characters of the channel name will be displayed. In case of Fill channels, the last two characters will be reserved to display **-F**.

Audio Monitoring from Video

Description	Specifies the channel for which the audio will be monitored via the SDI or IP outputs. This is selectable individually for each multiviewer.
Values	The list of values includes the channels selected above for multiviewer display.
Default value	None

Audio Monitoring Left-Right Tracks

Description	Specifies the pair of stereo audio tracks of the selected channel to monitor. This is selectable individually for each multiviewer.
Values	From **1/2** up to **15/16**, depending on the value defined for the **Number of tracks** setting in the Channels tab, Audio settings.
Default value	**1/2**: By default, the first stereo pair of the source is selected.

HDR to SDR Conversion

Description	If enabled, the MV4X will downconvert HDR content to SDR content and perform a colorspace conversion (from Rec.2020 to Rec.709). This is selectable individually for each multiviewer.
Values	• **On** • **Off**
Default value	**Off**
Availability	Unavailable in case the 2 parameters below are configured as follows: • **HDR Profile** = None (=SDR) • **Color Gamut** = Rec.709 or Unknown See section "Video and Reference Settings" on page 212.

Supported Conversions

Initial HDR Profile	Initial Color Gamut	Conversion
None (SDR)	Rec.2020	SDR - Rec.709
HLG		
PQ		
S-Log3		
V-Log		
HLG	Rec.709	
PQ		
S-Log3		
V-Log		

Multiviewer Format

HD Output Format

Description	Specifies the format for the HD output of the multiviewer. Both multiviewers use the same HD output format.
Values	The following values are available: • **1080i** • **1080p**
Default value	• **1080i**

Multiviewer Input

By default, the external Multiviewer input feeds are named EXT1 and EXT2. The Multiviewer Input area allows you to give a more meaningful name to each input.

The new name will appear in the Multiviewer layouts.

4.5.3. OSD Settings

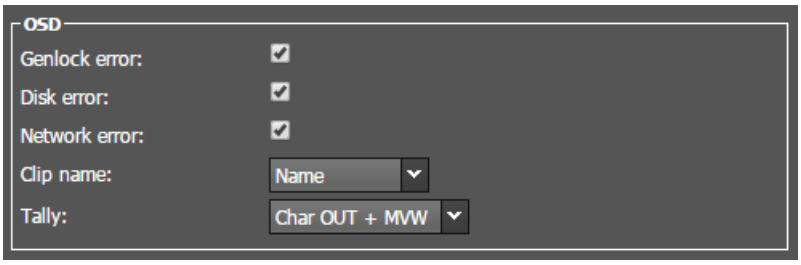
User Interface

The **OSD settings** allow specifying the settings related to the OSD and information to be displayed on the monitoring screen.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Monitoring tab
- in the Technical menu of the Remote Control Panel (T4.X)

The following screenshot displays the OSD settings on the Monitoring tab in the web-based interface:



Genlock Error

Description	Enables or disables the Genlock information display on the monitoring output. If the Genlock reference is not correct, the **!GkV** message appears on the monitoring output.
Values	**Yes** (default) / **No**

Disk Error

Description	Enables or disables the disk error information display on the monitoring output. As the server is equipped with a RAID disk array, the operation can continue seamlessly even with 1 faulty disk. If 1 disk is disconnected during operation, the **!RAID** message appears on all monitoring outputs, and another message appears when the operator shuts down the application, to invite him to replace the disk and rebuild the RAID array. Please, refer to the Technical Reference manual for details on the RAID system and its maintenance.
Values	**Yes** (default) / **No**

Network Error

Description	Enables or disables the network error information display on the monitoring output. If there is an problem with the network connection, the **!Net** message appears on the monitoring output. When the network is available again, the system will try to reconnect and the **→Net** message appears on the monitoring output.
Values	**Yes** (default) / **No**

Clip Name

Description	Specifies how the clip name is displayed.
Values	**VarID** / **Name**
Default	**Name**

Tally

Description	Defines on which monitoring outputs the Tally signal will be displayed.
Values	The following values are available: • Char OUT: The tally signal will be displayed on the discrete OSD of the Char OUT monitoring outputs. • Multiviewer: The tally signal will be displayed on the OSD of the Multiviewer monitoring outputs. • Char OUT + MVW: The tally signal will be displayed both on the OSD of the Multiviewer and of the Chart OUT monitoring outputs.
Default value	Char OUT + MVW

4.5.4. Monitoring Settings

User Interface

The **Monitoring settings** allow specifying the settings related to the monitoring output lines.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Monitoring tab
- in the Technical menu of the Remote Control Panel (T4.X)

The following screenshot displays the Monitoring settings on the Monitoring tab, in the web-based interface:

Char OUT, Format

Description	Allows enabling or disabling the OSD on the monitoring outputs, and setting the format of the monitoring output.
Values	The values available for the **Char OUT** setting are: • **No:** OSD is disabled on the monitoring outputs. • **Yes:** OSD is enabled on the monitoring outputs. The values for the **Format** setting is read-only and depends on the current resolution: • **3G** in UHD-4K and 1080p. • **HD** in 720p and 1080i.
Default value	No

See section "Configuring OSD Display" on page 323 for more information on how the OSD-related settings can be configured with an XT-VIA server equipped with V4X boards.

4.5.5. Configuring OSD Display

Overview

This section explains how you configure the OSD-related settings to get the requested OSD display on an EVS server equipped with V4X boards and an MV4X multiviewer.

Below the overview table, you will find details on how to configure the settings in the various possible cases.

		OSD Char. OUT REC	OSD Char. OUT PGM	OSD MV4X REC	OSD MV4X PGM
Monit. Char. OUT = YES	OSD on Outputs = **YES**		Yes		Yes
	OSD on Outputs = **NO**		No		No
	OSD on Inputs = **YES**	Yes		Yes	
	OSD on Inputs = **NO**	No		No	

		OSD Char. OUT REC	OSD Char. OUT PGM	OSD MV4X REC	OSD MV4X PGM
Monit. Char. OUT = NO	OSD on Outputs = YES	No	No		Yes
	OSD on Outputs = NO	No	No		No
	OSD on Inputs = YES	No	No	Yes	
	OSD on Inputs = NO	No	No	No	

Case 1: OSD on Char OUT and Multiviewer

If you want OSD display on both video connectors **and** multiviewer connectors:

- set the **Monit. Char. OUT** setting(s) to **YES** (see "Monitoring Settings"
  AND
- set the **OSD on outputs** and/or **OSD on inputs** setting(s) to **YES** (see "OSD Settings") depending on whether you want OSD on inputs, outputs or both.

Case 2: Clean Outputs on Char OUT and Multiviewer

If you do not want OSD display on both video connectors **and** multiviewer connectors:

- set the **OSD on outputs** and **OSD on inputs** setting(s) to **NO** (see "OSD Settings").

Case 3: OSD on Multiviewer + Clean Outputs on Char OUT

- set the **Monit. Char. OUT** setting(s) to **NO** (see "Monitoring Settings"
  AND
- set the **OSD on outputs** and/or **OSD on inputs** setting(s) to **YES** (see "OSD Settings") depending on whether you want OSD on inputs, outputs or both on the multiviewer.

4.6. Protocol Tab

4.6.1. Overview

The table below presents the settings of the Protocol tab. It specifies whether the setting is available:

- in the basic or advanced display mode in the server-based and web-based interfaces
- in the **Technical Setup** menu (T6.X) of the Remote Panel.

Setting Name	Basic	Advanced	Technical Setup
RS422 Protocols Settings			
Id Type	X	X	X
Sony BVW Settings			
FFW/REW speed	X	X	X
Use guardband	X	X	X
List Remote CAM	X	X	X
SONY Parallel Status	X	X	X
Edit Rec 1 / 2			
Port #	read only	read only	
Playlist Settings			
Default PL	X	X	X
Time Code Settings			
Serial Sony LTC	X	X	–
Serial Sony VITC	X	X	X
Insert TC in SDI	–	X	X
User TC of created clips	–	X	X
OSD Settings			
OSD on Output	X	X	X
Display sel	–	X	X
TC H-Pos	–	X	X
TC V-Pos	–	X	X
Name H-Pos	–	X	X
Name V-Pos	–	X	X
Audio Settings			
Edit audio Fade	X	X	X
Channel Settings			
EE	X	X	X

Setting Name	Basic	Advanced	Technical Setup
Stop Behavior	X	X	X
Full EE command 'value'	X	X	X
Tally/UMD Settings			
Protocol	X	X	–
UMD O/W	X	X	–
Display Index	X	X	–
RS422 VarID Settings			
Uniqueness	–	read only	–
Length	–	read only	–
Format	–	read only	–
VDCP visibility Settings			
Port #1...6	–	read only	–

4.6.2. RS422 Protocols Settings

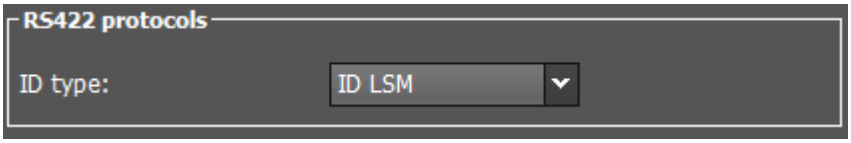
User Interface

The **RS422 Protocols settings** allow specifying the settings related to the clip identification used to access the video clips.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Protocol tab, on page 1 in the basic and advanced display mode in the server- and web-based interfaces

The following screenshot displays the RS422 Protocol settings on the Protocols tab in the web-based interface:



ID Type

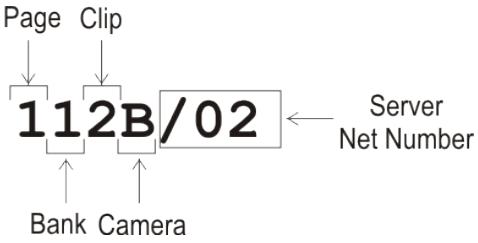
Description	Specifies the clip ID used by the protocols to access and identify the clips. Please note that at any time, the VDCP protocol can decide to use either the default value or the VarID (see RS422 VarID Settings). See section "Clip Identifiers" on page 330 for more information on clip identifiers.
Values	• **ID LSM** • **UmID**
Default value	**ID LSM**

4.6.3. Clip Identifiers

LSM ID

The LSM ID is a clip identifier based on the EVS video server structure.

The LSM ID is made up of 3 digits and 1 letter, for example 112B, where the digits and letter represent the following elements in the server structure:



The digits after the LSM ID correspond to the Net Number of the server on which the clip is stored, i.e. the EVS video server ID on the XNet network. They are not part of the LSM ID.

UmID

The UmID is an 8-bytes ID with fixed length.

It is used for the unique clip identification on the XNet network.

VarID

The VarID is a 32-bytes ID with variable length and format.

The following VarID parameters need to be set up:

- Length (8 bytes, 32 bytes)
- Format (ASCII, binary)
- Uniqueness level (local = server level, global = network level)
- Protocol visibility (list of Net Numbers of the servers)

The VarID allows a redundant architecture where the VarID can be identical on two different servers. All servers can stay on the same XNet network. Consequently, this does not require a full replication of the XNet network. With the UmID, the full replication was necessary as this clip ID has to be unique on the XNet network.

4.6.4. Sony BVW Settings

User Interface

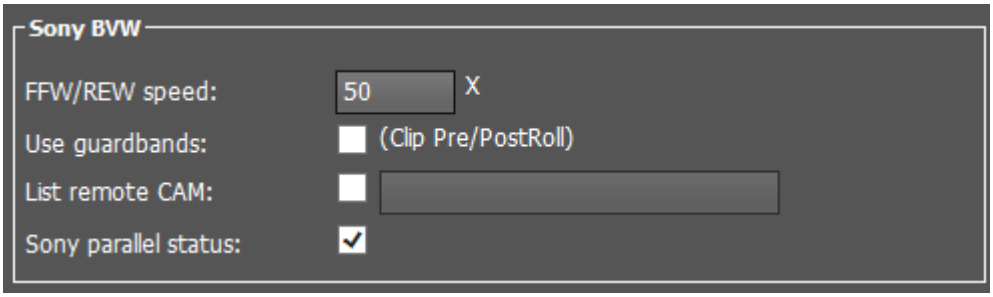
The **Sony BVW settings** allow specifying the settings that will be used with the Sony BVW75 protocol.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Protocol tab, on page 1 in the basic and advanced display mode in the server- and web-based interfaces
- in the Technical menu of the Remote Control Panel (T5.X)

The Sony BVW settings are only available if the license code 118, required to work with the Sony protocol, is valid.

The following screenshot displays the Sony BVW settings on the Protocol tab in the web-based interface:



FFW/REW Speed

Description	Specifies the speed used by the protocol for forward and rewind operations.
Values	**2** to **50** times the normal speed
Default value	**50**

Use Guardband

Description	Makes the OUT guardband available to the protocol.
Values	• **Yes**, meaning that the protocol has access to the IN and OUT guardbands. • **No**, meaning that the protocol has only access to the IN guardband.
Default value	**No**

List Remote CAM

Description	Allows access to the CAM recorders of the remote server specified in the field next to the check box.
Values	• **Yes**, meaning that the recorders of the local server and the remote server are available. When the setting is set to **Yes**, type the net numbers of the distant servers you want to allow access to as follows: `<2;3;4>` • **No**, meaning that only the recorders of the local server are available.
Default value	**No**

SONY Parallel Status

Description	Activates the Sony serial connection status reporting when several controllers are used in parallel mode.
Values	**Yes** / **No**
Default value	**Yes**

4.6.5. EditRec

Introduction to Edit Rec

Edit Rec Protocol

The Edit Rec is a linear editing engine associated to a play channel and a record channel on the EVS server. Its role is to emulate a VTR. The Edit Rec engine relies on the Edit Rec protocol. In addition, both the play and the record channels of the Edit Rec engine are associated to the same RS422 port.

For more information on the Edit Rec feature, refer to the Edit Rec manual.

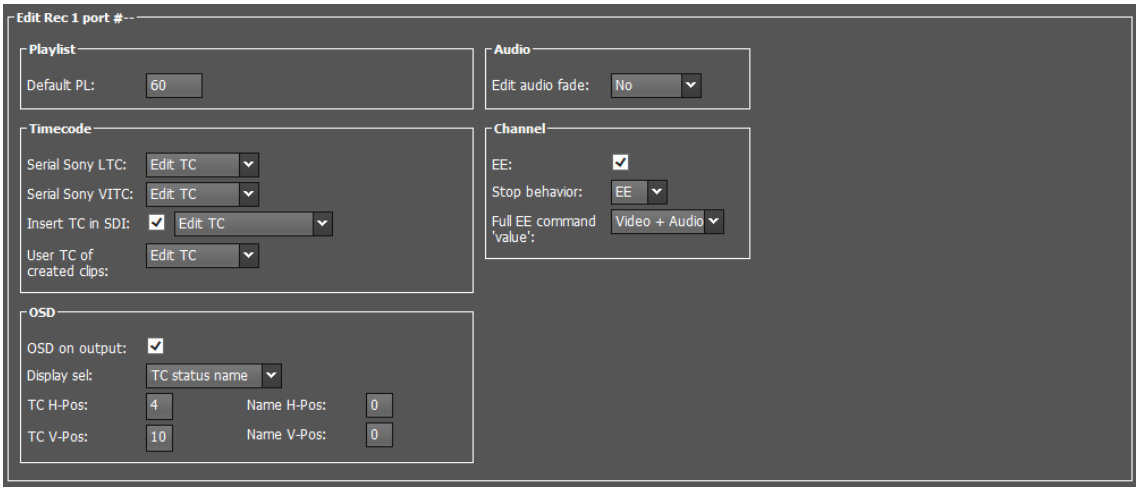
Overview on Edit Rec Settings

The **Edit Rec settings** allow specifying the settings that will be used by the Edit Rec feature.

The Edit Rec settings are available in the following interfaces:

- in the Multicam Configuration window, Protocol tab, on page 2 for Edit Rec 1 and on page 3 for Edit Rec 2, in the basic and advanced display mode in the server- and web-based interfaces
- in the Technical menu of the Remote Control Panel, pages T5.X for Edit Rec 1 and Edit Rec 2

The following screenshot displays the Edit Rec 1 settings on the Protocols tab in the web-based interface:



Edit Rec 1/2 Setting

As two Edit Rec engines can be defined on a server, two pairs of play and record channels can be assigned to this Edit Rec.

When an Edit Rec engine is set up on a server, the **Port #** parameter on the corresponding Edit Rec settings page specifies the port number of the associated play and record channels. If no Edit Rec engine has been configured, **Port #--** is displayed.

You can only edit the settings when the corresponding Edit Rec play channel is stopped.

Playlist Settings for Edit Rec

User Interface

The **Playlist settings** allow specifying the playlist that will be loaded by default when the Edit Rec starts.

The following screenshot displays the playlist settings for Edit Rec on the Protocols tab in the web-based interface:

Default PL

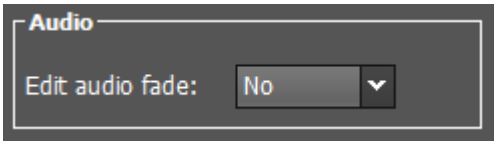
Description	Specifies the playlist loaded by default when the Edit Rec is started.
Values	**10** to **99**
Default value	**60**

Audio Settings for Edit Rec

User Interface

The **Audio settings** allow specifying the settings related to the fading applied at the clip boundaries.

The following screenshot displays the Audio settings for Edit Rec on the Protocols tab in the web-based interface:



Edit Audio Fade

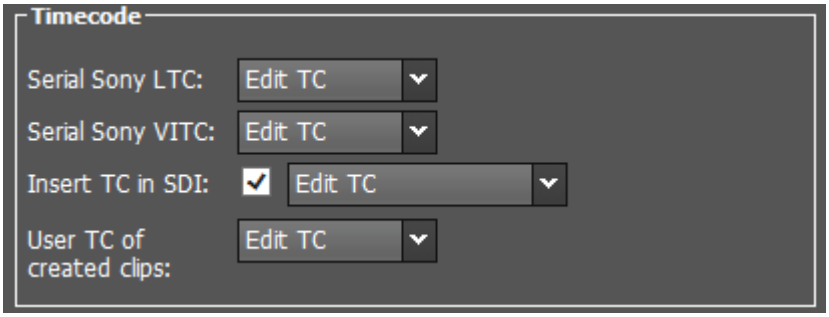
Description	Defines the audio effect to be applied to the clip boundaries and included in the clip material.
Values	• **No** • **V-Fade** • **µMix**
Default value	**No**

Time Code Settings for Edit Rec

User Interface

The **Time Code settings** allow specifying the timecode (TC) types used in various communication protocols.

The following screenshot displays the Timecode settings for Edit Rec on the Protocols tab in the web-based interface:



Serial Sony LTC

Description	Specifies the type of timecode used in communications between the Sony controller and the Edit Rec engine when the controller works with the LTC.
Values	This field is not editable. The value is always **Edit TC**, meaning the timecode of the playlist based on the Start TC.

Serial Sony VITC

Description	Specifies the type of timecode used in communications between the Sony controller and the Edit Rec engine when the controller works with the VITC.
Values	• **Edit TC**, the playlist timecode based on the defined Start TC. • **User TC**, the clip timecode from the USER TC table.
Default value	**Edit TC**

Insert TC in SDI (1 or 2 fields)

Description	Activates or deactivates the timecode insertion in the VITC in SD or in the HANC in HD when the playlist is played out on the Edit Rec play channel.
Values	• **No**, no timecode is inserted. • **Yes**, the following timecode is inserted: • **Edit TC**, the playlist timecode based on the defined Start TC. • **Default**, the timecode selected in the D-VITC field in SD, or in the HANC VITC / LTC fields in HD defined in Timecode Insertion Settings.
Default value	**Yes - Edit TC**

User TC of Created Clips

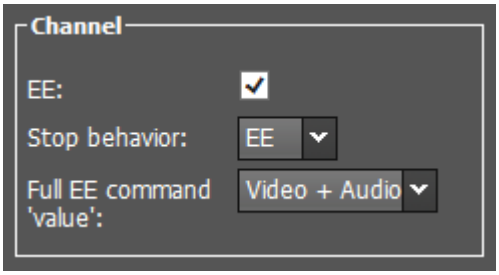
Description	Specifies the TC type inserted into the User TC for the created clips.
Values	• **Edit TC** • **User**
Default value	**Edit TC**

Channel Settings for Edit Rec

User Interface

The **Channel settings** allow specifying the settings related to the channel behavior.

The following screenshot displays the Channel settings for Edit Rec on the Protocols tab in the web-based interface:



EE

Description	Activates the EE (Electronic to Electronic) mode, the signal being recorded is played on the output channel without any delay.
Values	**Yes** / **No**
Default Value	**Yes**

Stop Behavior

Description	Defines the channel behavior when it is in stop mode.
Values	• **PB** (playback): The EditRec playlist is displayed on the EditRec output. • **EE**: The EditRec input passes through the server and is displayed on the EditRec output.
Default Value	**PB**

Full EE Command 'Value'

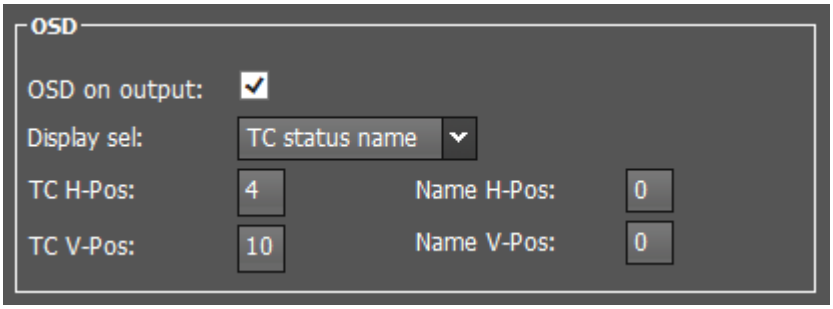
Description	Allows to specify whether the **Full EE** command is applied on the audio and/or to the video. The **Full EE** command makes it possible to view the source connected to the EditRec through the EditRec outputs without any audio or video delay. From a practical point of view, this command allows the operator to select the IN and OUT points of the sources and of the recorder from a single monitoring window (EditRec output).
Values	The following values are available: • **Video+Audio:** When the EVS server receives the **Full EE** command, it is applied to the video and audio feeds. • **Audio:** When the EVS server receives the **Full EE** command, it is applied to the audio feeds only. This is relevant with the Sony plugin Editor.
Default Value	Video + Audio

OSD Settings for Edit Rec

User Interface

The **OSD settings** allow specifying the settings related to the OSD and information to be displayed on the monitoring screen.

The following screenshot displays the OSD settings for Edit Rec on the Protocols tab in the web-based interface:



OSD on Output

Description	Activates or deactivates the OSD feature.
Values	**Yes** / **No**
Default value	**Yes**

Display Sel

Description	Specifies the field or combination of fields to be displayed on the screen. • The TC is the Edit TC or the User TC in case the controller uses the VITC and User TC has been selected for the Serial Sony VITC field. • The Name is the number of the edited playlist.
Values	• **Name** • **TC** • **TC Status** • **TC Status Name** • **TC Name** • **Status** • **Status Name**
Default value	**TC Status Name**

TC H-Pos

Description	Defines the horizontal position of the TC on the screens.
Values	**0** to **9**
Default value	**4**

Name H-Pos

Description	Defines the horizontal position of the edit name on the screen.
Values	**0** to **15**
Default value	**0**

TC V-Pos

Description	Defines the vertical position of the TC on the screen.
Values	**0** to **11**
Default value	**10**

Name V-Pos

Description	Defines the vertical position of the edit name on the screen.
Values	**0** to **11**
Default value	**0**

4.6.6. Tally Feature

Introduction

The Tally feature allows a protocol to send tally information on the monitoring outputs of the EVS server.

The Tally feature relies on the following technical characteristics:

- **Tally protocol:** TSL 5.0 (defined in the Tally settings).
- **Listening port (on EVS server):** 9800
- **Transport protocol:** UDP inbound

Tally information is available:

- via the SDI Char Out monitoring outputs.

The tally information consists in red, green or amber color applied to different OSD elements.

Displayed Tally Information

The tally information displayed on the monitoring outputs depends on the following elements:

- Configuration of the hardware
- Selection of the monitoring outputs (Char OUT and/or MVW)

  with the **Tally** setting in Monitoring tab, OSD section
- Selection of the channels (Rec and/or Play, or no display)

  with the **Tally** setting in Operation tab, OSD section

The following table summarizes which Tally information is displayed depending on the hardware and the **Tally** setting in the Monitoring tab.

Hardware > Tally value V	SDI Char Out outputs	MV4X Multiviewer
Char OUT	Channel name highlighted (upper left)	Nothing displayed
Multiviewer	Nothing displayed	Colored frame around channel thumbnail + Colored rectangles (lower left and right)
Char OUT + MVW	Channel name highlighted (upper left)	Colored frame around channel thumbnail + Colored rectangles (lower left and right) + Channel name highlighted (upper left)

In addition, the value for the **Tally** setting in the Operation tab will determine whether the tally information is displayed for record channels, play channels, for both record and play channels, or not displayed at all.

Protocol Tally versus GPI Tally

The GPI tally is independent of the protocol tally (over PC LAN) and cannot be used at the same time as the protocol tally.

A tally command sent via GPI will be represented as a red rectangle around the monitoring output of the channel on which the GPI is defined.

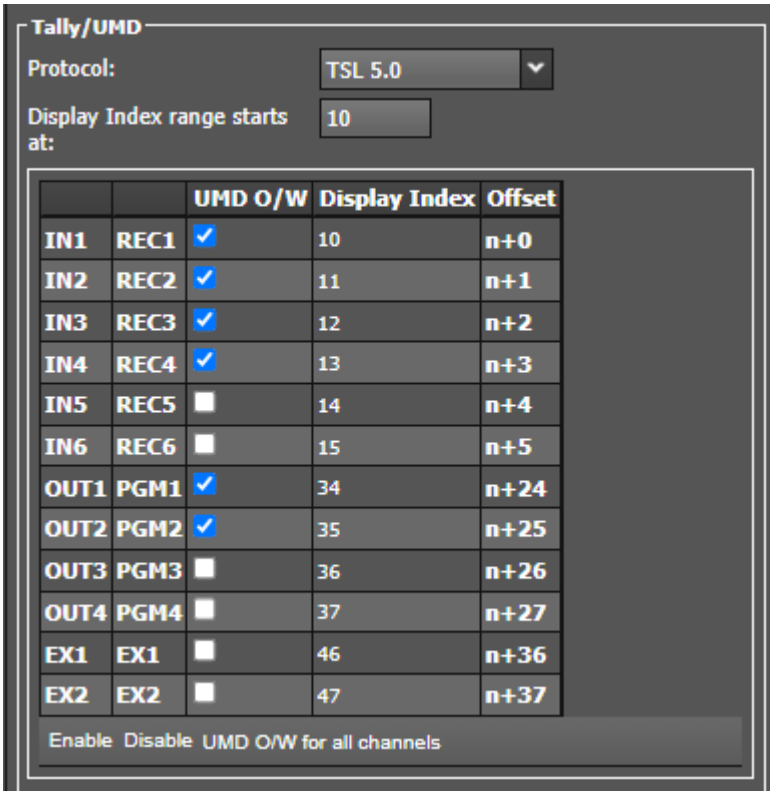
4.6.7. Tally/UMD Settings

User Interface

The **Tally/UMD settings** allow specifying some settings related to the Tally and UMD information that can be displayed on the monitoring outputs (multiviewer or discrete OSD).

The Tally/UMD settings are available in the Multicam Configuration window, Protocol tab, in the basic and advanced display mode in the server- and web-based interfaces.

The following screenshot displays the Tally/UMD settings on the Protocols tab in the web-based interface:



Protocol

Description	Specifies the UMD protocol used to communicate with the control system that provides the UMD and Tally information.
Values	• **Off**: No communication protocol is defined, and the Tally/UMD features over PC LAN are disabled. • **TSL 5.0**: The TSL protocol is used to communicate with the control system to provide the Tally/UMD information.
Default value	Off

Display Index Range

Description	Allows you to manually set the display value number of the first IN channel (REC). In case of a configuration without a IN channel (REC), the display index of the first PGM is calculated as n+24 in order to ensure persistence of the display index when restarting in different IO configurations.
Default value	10

UMD O/W

Description	Allows the UMD protocol to overwrite the name of the corresponding external MVW input or REC/PGM (Channels tab, Channel and Control settings, **Name** field) with the name defined in the control system. Once the channel names have been overwritten, the original channel names defined on the EVS server can not be restored. You have to retype them when you disable the **UMD O/W** field.
Values	• **Yes**: The channel names are overwritten. • **No**: The channel names are preserved.
Default value	No

Display Index

Description	Display number assigned to each EVS server output (REC/PGM or external MVW inputs). It should logically correspond to the display number defined in the control system. Only the first number is defined manually.
Values	**0 to 65,495** (maximum value with TSL 5.0 protocol)
Default value	10 (1st number)

The display number values for the IN, OUT and MVW channels are calculated and assigned as follows:

- The display number value of the first IN channel (REC) has to be set manually. The display number value of all subsequent IN channels is automatically calculated from that first value and incremented sequentially.

  Display number values are reserved for 24 IN channels.

- The display number value of the first OUT channel (PGM) is based on the display number value of the first IN channel + 24. The display number value of all subsequent OUT channels is sequentially and automatically incremented.

  Display number values are reserved for 12 OUT channels.

- The display number value of the first external multiviewer input (EXT) is based on the display number value of the first IN channel + 36 (24 + 12). The display number value of all subsequent external multiviewer input channels is sequentially and automatically incremented.

  Display number values are reserverd for 4 external multiviewer inputs.

The following example (8 IN and 4 OUT) clarifies the rules above:

CHANNEL	Display Index	Offset
IN1 (manually set by the user)	22	n+0
IN2	23	n+1
IN3	24	n+2
IN4	25	n+3
IN5	26	n+4
IN6	27	n+5
IN7	28	n+6
IN8	29	n+7
IN9	<not visible>	n/a
IN10	<not visible>	n/a

CHANNEL	Display Index	Offset
IN11	<not visible>	n/a
IN12	<not visible>	n/a
Multicam currently only supports up to 12 REC		
OUT1	46	n+24
OUT2	47	n+25
OUT3	48	n+26
OUT4	49	n+27
OUT5	<not visible>	n/a
OUT6	<not visible>	n/a
Multicam currently only supports up to 6 PGM		
EXT1	58	n+36
EXT2	59	n+37

Collective Commands

The following table presents the name and description of the collective command, as well as the keyboard shortcut available in the server-based interface:

Command	Description	Shortcut
Enable	Enables the overwrite command for all channels (Rec/Play) and external inputs that can be displayed in a monitoring output.	CTRL + Y
Disable	Disables the overwrite command for all channels (Rec/Play) and external inputs that can be displayed in a monitoring output.	CTRL + N

4.6.8. RS422 VarID Settings

User Interface

The **RS422 VarID settings** and the **VDCP visibility settings** display the read-only VarID settings.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Protocol tab in the advanced display mode in the server- and web-based interfaces.

The VDCP visibility settings are only available if the license code 119, required to work with the VDCP protocol, is valid.

The following screenshot displays the RS422 VarID and the VDCP visibility settings on the Protocols tab in the web-based interface:

VarID Definition and Parameters

Please contact the EVS support should you need to change the VarID definition or parameters.

The VarID is a 32-bytes ID with variable length and format. The VarID settings enable VDCP protocol to use the VarID to access the clip IDs on a server or on the XNet network.

This page in the Multicam Configuration menu only displays the parameter values. These values are extracted from the 'varid.ini' file and can only be changed by editing this external file. In case of error or undefined values, the corresponding parameter default value is used.

If any of the VarID settings does not correspond to the network defined values set on the XNet, the server will be disconnected from the network and operate in local mode. In this case:

- The Multicam Configuration window clearly displays the message **!Not XNet common value!** next to the incorrect parameter.
- A message is displayed on the XNet network monitoring screen indicating the incorrect parameter.

VarID Configuration File

The VarID parameters are defined in a configuration file. This file, named `varid.ini`, is located in the `/mnt/apps/data/user` folder (`/user` folder when you connect to the EVS server using an FTP client).

The file has the following syntax:

```
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; VARID settings
;------------------------------
;Parameter values and [default]
;
; Uniqueness= [Local] or Global
; Length= [32] or 8
; Format= [ASCII] or Binary
; Visibility= [], 1..34,*
;             default= empty is converted to local XT Net number
;             * for all XNet
;
;------------------------------
Uniqueness=Local
Length=32
Format=ASCII
1=
2=
3=
4=
5=
6=
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

Uniqueness

Description	Specifies whether the VarID will be unique at the XNet network level or at the EVS server level. This parameter is valid with VDCP, AVSP and LinX protocols.
Values	• **Global**, the VarID is unique at the XNet network level. • **Local**, the VarID is unique at the EVS server level.
Default value	**Local**

Length

Description	Specifies whether the VarID has a fixed length of 8 bytes or a variable length of 32 bytes.
Values	• **8**, fixed length. • **32**, variable length.
Default value	**32**

Format

Description	Specifies whether the VarID has an ASCII or binary format.
Values	• **ASCII** • **Binary**
Default value	**ASCII**

VDCP Visibility

Description	Specifies the list of servers which will be visible on the various communication ports that the VDCP protocol will use to communicate with. This parameter is only relevant for the VDCP protocol. For a list of servers, use the corresponding servers XNet numbers separated with a semi-colon (;). Please note that the list order is taken into account in the visibility. This means that the system first searches for the requested clips on the first server of the list, then on the second, and so on.
Values	• (empty), the local server is used (converted to the local XNet number). • **1** to **29**, the servers available on XNet. • 1 to 34 servers available on XNet-VIA. • *, for all XNet servers.
Default value	1

4.7. GPI Tab

4.7.1. Overview

The GPI tab includes the settings of the GPI inputs and outputs signals.

The table below presents the settings of the GPI tab. They specify where the setting groups are available (page) and whether each setting is available:

- in the server-based and web-based interfaces
- in the **Technical Setup** menu (T6.X) of the Remote Panel.

Setting Name	Basic & Advanced	Technical Setup
GPI Settings		
TTL GPIs set as GPIs	X	T6.1
GPIs IN		
Channel/Device	X	T6.2 to T6.3
Port	X	T6.2 to T6.3
Function	X	T6.2 to T6.3
Delay	X	T6.4
GPIs OUT		
Function	X	T6.5
Type	X	T6.5
Advance	X	T6.6
Pulse duration	X	T6.6
Tally Playlist Settings		
Tally	X	X
Add Clip to PL	X	X
Clips guardbands	X	X

4.7.2. GPI Settings

User Interface

The **GPI Settings** allow specifying the settings related to the GPI inputs and outputs features.

These fields are available in the following interfaces:

- in the Multicam Configuration window, GPI tab
- in the Technical menu of the Remote Control Panel (T6.X)

The following screenshot displays the GPI settings on the GPI tab in the web-based interface:

If the **TTL GPIs set as GPIs** parameter is set to **In**, then the display looks like the illustration above with 8 **GPIs IN** and 4 **GPIs OUT** lines.
If it is set to **Out**, then the display is reorganized to expose 4 **GPIs IN** and 8 **GPIs OUT** lines.

GPI Types and Functions

There are 3 types of GPIs available to be used on the servers:

- The input lines 1 to 4 are opto-isolated inputs.
- The output lines 1 to 4 are relay outputs.
- The GPIs TTL lines can be configured as 4 TTL inputs or 4 TTL outputs, in both cases numbered from 5 to 8.

According to the protocol you are using, the following functions are available and can be assigned to the GPIs lines as described hereunder in the **Function** parameter.

- AVSP: Play, Stop, Still, Recue, GotoClipIN, GotoClipOUT, Next, Skip.
- Sony: Play, Pause, Recue, Previous, Next, Skip.
- DD35: Play, Pause, Recue, Previous, Next, Skip.
- Odetics: Play, Pause, Recue, Next.
- VDCP: Play, Pause, Recue, Previous, Next, Skip.

For all protocols, except AVSP, use the channel assignment (PGM1 to PGMx) instead of the device protocol type (Sony BVW75, Odetics).
The AVSP protocol does not require any GPI IN setting in this page as they are defined through specific serial AVSP commands. For this reason, specific AVSP commands will not be available via the Function parameter for the GPIs IN.

TTL GPIs set as GPIs

Description	Defines the 4 configurable GPIs as inputs or outputs.
Values	**In** / **Out**
Default value	**In**

GPIs IN - Channel/Device

Description	Specifies the server channel or the external device connected to the corresponding GPI input line, and therefore to which channel or device the GPI will be sent to.
Values	The following values are possible and correspond to one of the channels or controllers assigned in the Channel and Control settings (Channels tab, page 1): • PGMx: The GPI is sent to the specified play channel. • RECx: The GPI is sent to the specified record channel. • RMT1: The GPI is sent to the remote controller. • <Protocol Name>: The GPI is sent to the third-party controlling device.

GPIs IN - Port

Description	Specifies the RS422 port on which the server will receive the input signal. This setting is relevant when the device is an EVS remote controller or third-party controller.
Values	The possible values are from 1 to 6: it corresponds to the RS422 port to which the controller specified in the Channel/Device field is assigned in the Port settings (Channels tab, page 1).

GPIs IN - Function

Description	Specifies the function associated to the GPI input line. According the configured protocol some or all of the functions described below are available.
Values	• **Play**: sends a play command at 100% speed on the selected channel. • **Pause**: sends a pause command on the selected channel. • **Recue**: sends a jump to the IN point of the on air element on the selected channel. (If this is a playlist, the jump is performed to the IN point of the first clip of the playlist.) • **Previous**: sends a command to go to the previous clip of a playlist on the selected channel. • **Next**: sends a command to go to the next clip of a playlist on the selected channel. • **Skip**: sends a command to skip the clip being played on the selected channel. • **Tally**: activates or deactivates the on-air flag on the selected channel. • **Mark IN**: sets an IN point on the corresponding record channel. • **Mark OUT**: sets an OUT point on the corresponding record channel. • **Mark Tly**: sets an IN and an OUT points on record trains based on changes in camera angles of the director's cut. An IN point is set on the train to which the director switches and an OUT point is set on the train that the director leaves. • **Exit ASP**: sends a command to exit the loop as soon as possible without playing the current element until its end then jump to the selected element. (This GPI is used with playlists in IPDirector.) • **Exit OUT**: sends a command to exit the loop as soon as the OUT point of the current element is reached then jump to the selected element. (This GPI is used with playlists in IPDirector.) • **None**: no value is defined.
Default value	**None**

GPIs IN - Delay

Description	Specifies the time (number of seconds and/or frames) that the server will wait after receiving the input signal before executing the input-related function.
Values	• **00s00fr** to **02s00fr** • **Disable**
Default value	**Disable**

GPIs OUT - Function

Description	Specifies the function that activates the output line.
Values	The following function can trigger a GPI OUT: • Replace

GPIs OUT - Type

Description	Specifies the type of GPI output signal that will trigger the specified function.
Values	The following values are possible: • **close**  The level changes to high level at activation. • **close pulse**  A rising edge pulse is generated at activation. • **open**  The level changes to low level at activation. • **open pulse**  A falling edge pulse is generated at activation.

GPIs OUT - Advance

Description	Defines the time (number of seconds and/or frames), at which the output will be generated ahead of the timecode linked to the output line.
Values	• **00s00fr** to **02s00fr** • **Disable**
Default value	**Disable**

GPIs OUT - Pulse duration

Description	Defines the pulse duration (number of seconds and/or frames) for pulse type output lines.
Values	• **00s00fr** to **02s00fr** (2fr steps) • **Disable**
Default value	**Disable**

4.7.3. Tally Playlist Settings

Introduction

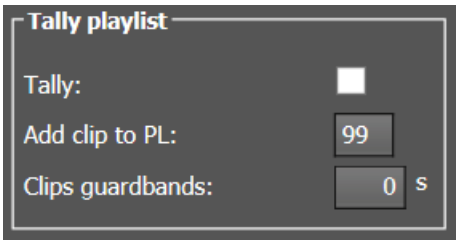
The **Tally Playlist settings** allow specifying the settings related to the tally feature. This feature allows the user to automatically create a clip for each change of camera performed with the Director's Cut and to add these clips to a playlist. The clips are created automatically by the server as it receives GPIs IN signals from a switcher when the director changes the camera angle.

User Interface

These fields are available in the following interfaces:

- in the Multicam Configuration window, GPI tab
- in the Technical menu of the Remote Control Panel (T6.X)

The following screenshot displays the Tally settings on the GPI tab in the web-based interface:



How to Activate the Tally Playlist Function

To use the tally function, proceed as follows:

1. Activate it using the **Tally** parameter.
2. Go to the GPIs IN settings area and select the GPI IN used for the tally control.
3. Set the Channel/Device on the REC on which the Director's Cut is performed.
4. Set the function as **Mark Tly**.

The tally function is now active, and works as follows:

When the server receives a 'Mark tally' GPI IN, an IN point is marked on the corresponding record train (for ex. cam a). When a second 'Mark Tally' GPI IN is received on a different record train (for ex. cam b), the server marks an OUT point on the first record train (cam a) and an IN point on the second record train (cam b). All the clips created this way are added to the defined playlist.

Tally

Description	Activate or deactivate the playlist tally function.
Values	**Yes**/**No**
Default Value	**Yes**

Add Clip to PL

Description	Selects the LSM ID of the playlist to which the tally clips will be added.
Values	**10** to **99**
Default Value	**99**

Clips Guardbands

Description	Specifies the guardbands length of the tally clips, in seconds.
Values	**0** to **250**
Default Value	**0**

4.8. Operation Tab

4.8.1. Overview

Operation Tab

The **Operation** tab is available as the default tab with operational settings. It consists of several pages in the basic mode in the server-based application. No advanced mode is available in this tab.

The table below presents the settings of the Operation tab. They specify whether the various settings are available:

- in the basic or advanced display mode in the server-based and web-based interfaces.
- in the **Operational Setup** menu of the Remote Panel.

- Some operational settings and/or setting values may be displayed although they are not relevant to the EVS server you are operating or to the configuration you are running.
- When the LSM-VIA and/or IPD-VIA parameter are enabled in the VIA Controller settings, certain parameters will be highlighted. This to make clear that these parameters do not apply to the LSM-VIA and/or IPD-VIA controller.

Op-Shared Tab versus Op-1/2 Tab

In the Dual LSM mode, the standard Operation tab is not available as such as the operational settings are split into two groups:

- Most operational settings remain common to both LSM operators working on the EVS server. They are available:
  - in the **Op-Shared** tab in the server-based and web-based interface.
  - in the **Operational Setup** menu of the (first) LSM Remote Panel of the **first** LSM operator.
- Some operational settings are duplicated so that each LSM operator can define its own setting values. They are available:
  - in the **Op-1/2** tab (page 8) in the server-based and web-based interface.
  - in the **Operational Setup** menu, in pages located after the standard sections, in **Operator 1** or **Operator 2** sections of the (first) LSM Remote Panel of each operator.

  In the following tables, where this is relevant, the settings duplicated in Dual LSM have a cross in the **Duplicated in Dual LSM** column.

OSD Settings

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
OSD settings		1.x	
Cue Number on OSD	X	X	-
Keyword info	X	X	-
OSD on outputs	X	X	-
OSD on inputs	X	X	-
Background	X	X	-
Tally	X	X	-
Audio Meters OSD settings		1.x	
Audio Meters	X	X	-
DB Adjust	X	X	-
Style	X	X	-
Thickness	X	X	-

Clips Settings

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
Clips settings		2.x	
Automake clip for cam A to L	X	X	X
Make clips rem. trains	X	X	-
Guardbands	X	X	X
Default clip duration	X	X	X
Autoname clips	X	X	X
Clip post-roll	X	X	-
Mark cue points	X	X	X
Preroll	X	X	-
Record trains OUTs	X	X	-
Freeze on cue points	X	X	X
Network Copy/Push	X	X	-

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
Protocol receive page	X	X	-
Playlist receive page	X	X	-
Timeline receive page	X	X	-

Playlist Settings

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
Playlist settings		3.x	
Video effect duration	X	X	X
Audio locked to video	X	X	X
Audio effect duration	X	X	X
Wipe type	X	X	-
Default playlist speed	X	X	X
Insert SLSM native speed	X	X	X
Insert in playlist	X	X	X
Confirm Ins/Del clips	X	X	-
Advanced audio editing	X	X	X
Extend split transition	X	X	X
Swap audio tracks	X	X	-
Playlist loop	X	X	X
Playlist auto fill	X	X	-
Fade to/from color	X	X	-
Load playlist	X	X	X
Make local auto	X	X	-

Miscellaneous Settings

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
Timeline settings		4.x	
Mono per group	X	X	-

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
TL Operator	X	X	-
Protection settings		5.x	-
Protect pages	X	X	-
Clip edit by network	X	X	-
Confirm delete clips/playlists	X	X	X
Keywords settings		6.x	
Keyword files	X	X	-
Keyword mode	X	X	-
Push settings		7.x	
Push target	X	X	-
Push target 1/2	X	X	X
Push mode	X	X	-
Push receive page	X	X	-
Push receive slots	X	X	-
Audio settings		8.x	
Audio slow motion	X	X	-
Lipsync value	X	X	-
Aux track output	X	X	-

EVS Controller Settings

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
EVS Controller settings		9.x	
Effect duration for take	X	X	X
Fast jog	X	X	-
PGM Speed/Var max	X	X	-
Lever engage mode	X	X	X
Second lever range	X	X	X
Recall clip toggle	X	X	X
Record key	X	X	-

Setting Name	Basic	Operational Setup	Duplicated in Dual LSM
VGA & Remote sync	X	X	
Call channel VGA	X	X	-
PGM/PRV mode	X	X	-
Loop button	X	X	X
Browse button	X	X	X

Hypermotion Settings

Setting Name	Basic	Operational Setup
Hypermotion settings		10.x
Hypermotion	X	X
Recorder	X	X
Remote mode	X	X
Port	X	X
Protocol	X	X
Dial Speed	X	X

Special Effects Settings

Setting Name	Basic	Operational Setup
Special Effects settings		11.x
Set colour for	X	X
Colour	X	X
Custom Y	X	X
Custom U	X	X
Custom V	X	X
Split screen tracking	X	X
Epsio	X	X
IP address	X	X
Default tool	X	X
Auto mark	X	X

The following features are not supported on XT-VIA:
- Internal loop mode
- Paint/target
- Offside line (internal)

4.8.2. OSD Settings

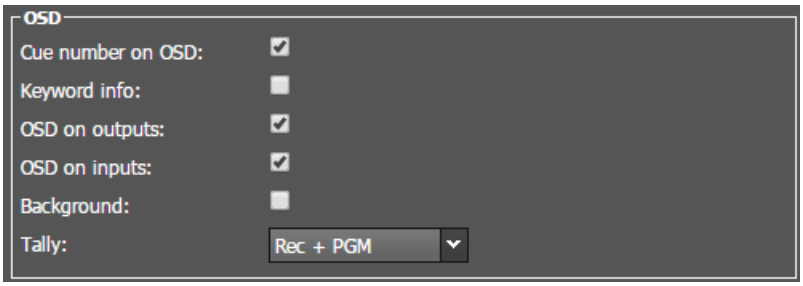
User Interface

The OSD settings allow users to specify which and how the information will be displayed on the OSD.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational menu of the Remote Control Panel

The following screenshot displays the OSD settings on the Operation tab in the web-based interface:



Cue Number on OSD

Description	Enables / disables the display of the cue point number on the OSD of the monitoring outputs when a cue point is recalled inside a record train.
Values	Yes (default) / No

Keyword Info

Description	Shows / hides the defined keywords and ranking on the OSD of the monitoring outputs when the clip is loaded on its Short IN point. As soon as the operator starts jogging into the clip or initiates a playback, this information is removed from the OSD so that the video content is clearly visible.
Values	Yes / No (default)

OSD on Outputs

Description	Enables / disables the OSD on the play channels on discrete monitoring outputs. See section "Configuring OSD Display" on page 323 for more information on how to configure OSD-related settings on an XT-VIA equipped with V4X boards.
Values	Yes (default) / No

OSD on Inputs

Description	Enables / disables the OSD on the record channels on discrete monitoring outputs. See section "Configuring OSD Display" on page 323 for more information on how to configure OSD-related settings on an XT-VIA equipped with V4X boards.
Values	Yes (default) / No

Background

Description	Applies a dark gray background to the OSD display.
Values	Yes / No (default)

Tally

Description	Defines whether the Tally signal will be displayed on the record and/or play channels.
Values	The following values are available: • No: The Tally signal is not displayed at all on the monitoring outputs. • Rec only: The Tally signal is displayed on the monitoring outputs of the record channels. • PGM only: The Tally signal is displayed on the monitoring outputs of the play channels. • Rec + PGM: The Tally signal is displayed on the monitoring outputs of the record and play channels.
Default value	PGM + REC

4.8.3. Audio Meters OSD Settings

User Interface

The Audio Meters OSD settings allow users to specify whether and how the audio meters are to be displayed on the OSD.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational menu of the Remote Control Panel

The following screenshot displays the Audio Meters OSD settings on the Operation tab in the web-based interface:

Display On PGM

Description	Shows/hides the audio meters on the OSD. The Audio Meters parameter impacts the output channels of both discrete OSD (Char OUT) and multiviewer, but not the input channels.
Values	Yes / No
Default value	Yes

DB Adjust

Description	Adjusts the value of the displayed audio meters.
Values	From - 83.2 to 0.0 dB, with a variable increments (larger in low values, and smaller with increasing values).
Default value	0.0

Style

Description	Specifies the style of the audio meters; The **Style** parameter impacts the audio meters of the discrete OSD (Char OUT), but not those of the multiviewer.
Values	Light Bars , Glowing Boxes , Dark Boxes , Light Boxes , Dark Bars
Default value	Light Bars

Thickness

Description	Specifies the thickness of the audio meters; The **Thickness** parameter impacts the audio meters of the discrete OSD (Char OUT), but not those of the multiviewer.
Values	Thin, Medium, Thick
Default value	Thin

4.8.4. Clips Settings

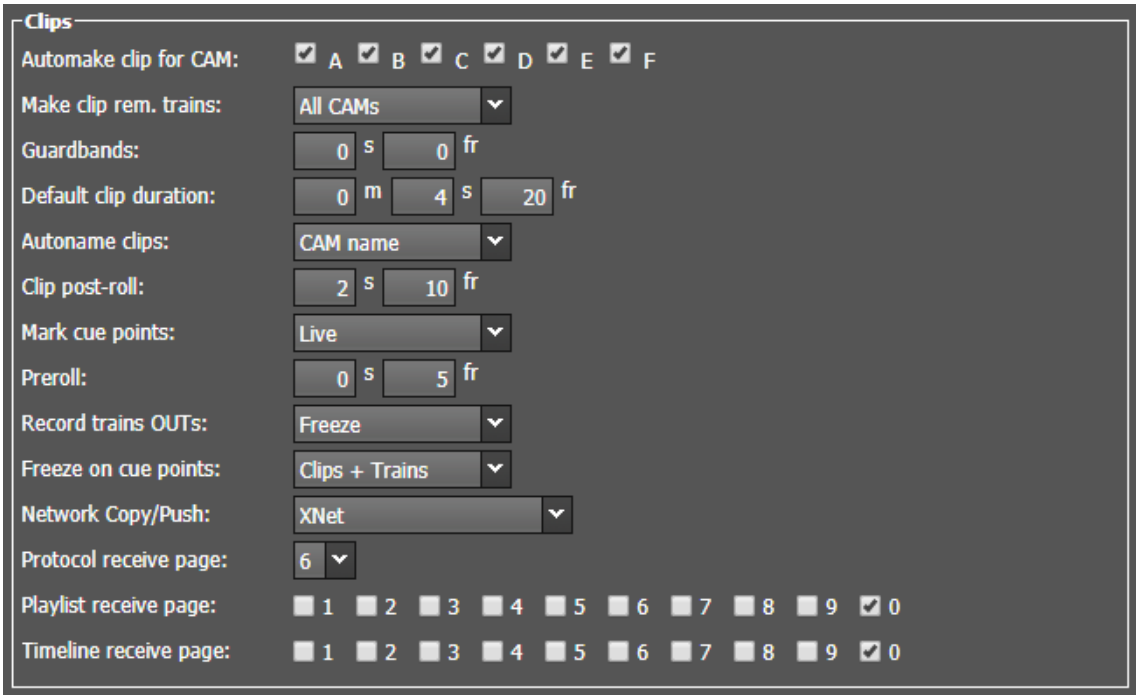
User Interface

The Clips settings relate to various aspects of the clip management: clip definition, storage location, metadata, and cue points.

The Clips settings are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational menu of the Remote Control Panel

The following screenshot displays the Clips settings on the Operation tab in the web-based interface:



Automake Clip for CAM A to L

Availability	This parameter is only displayed in Multicam LSM, Replay-Only LSM and XSense configurations.
Introduction	When creating clips, the clip corresponding to the camera on which IN/OUT points have been marked are always saved. It is possible to save automatically the same action on the other cameras. Only cameras letters applicable to the logical channels are displayed.
Description	Specifies that clips have to be created on the given cameras (A to L) even if no IN or OUT point has been marked on that camera.
Values	Yes / No
Default value	Yes

Make Clip Rem. Trains

Availability	The setting **Make clip remote trains** is only available if the license code 117 is valid.
Description	Allows users to clip all cameras of a remote EVS server if at least one record train of that server is controlled.
Values	Ctrled Cams / All cams
Default value	Ctrled Cams

Guardbands

Description	Specifies the amount of A/V material that remains available before and after a clip (called 'guardbands') when the clip is created.
Values	From 00s00fr to 60s00fr
Default value	05s00fr

Default Clip Duration

Description	Specifies the duration of clips created with only one reference point (IN or OUT point).
Values	Disable, or from 00s01fr to 4h. When set to 'Disable', both IN and OUT points are required to be able to create a clip. The duration can be set: • With second granularity up to 1 minute • With minute granularity from 1 minute up to 4 hours.
Default value	04s00fr

Autoname Clips

Description	If this function is enabled, the value of the selected field will automatically be used to name the clip upon creation.
Values	The values from the following fields can be used to automatically name clips: • **Disabled:** No name is assigned to a clip when it is created. • **TC IN:** The timecode of the IN point of the clip is automatically assigned to a clip when it is created. • **CAM Name:** The name of the record channel is automatically assigned to a clip when it is created. • **ID Louth:** The ID Louth of the clip, i.e. the unique identifier for the clip on the XNet network, is assigned to a clip when it is created. • **VarID 32:** The VarID of the clip is assigned to a clip when it is created. When this option is selected, the VarID used to assign a name to the clip will be limited to the first 8 characters of this field.
Default value	Disabled

Clip Post-Roll

Description	When the post-roll function is enabled from the secondary clip menu, the clip will play through its OUT point for the duration defined by the Clip post-roll parameter. This is also valid inside record trains if the Record Train OUTs parameter is set to **Freeze**.
Values	From 00s00fr to 600s00fr
Default value	02s00fr

Mark Cue Point

Description	Specifies how the cue point timecode will be memorized.
Values	Two values are possible for this parameter: • **Live:** Memorizes cue points based on the timecode of the LIVE input. • **Playback:** Memorizes cue points based on the timecode of the field loaded on the main play channel.
Default value	Live

Preroll

Description	Preroll duration used when recalling a cue point.
Values	From 0s01fr to 5s00fr.
Default value	0s05fr

Record Trains OUTs

Description	Specifies whether Multicam will freeze or play through when it reaches an OUT point marked on the record train that is being played back.
Values	Two values are possible for this parameter: • Play through: Multicam will still countdown to the OUT point, but will keep playing through this point. • **Freeze:** Multicam will countdown to the OUT point and will automatically freeze: ◦ on that picture if the post-roll mode is disabled ◦ on that picture + the post-roll duration if the post-roll mode is enabled. When playing a clip, Multicam always freezes on the OUT point (or OUT point + post-roll duration when post-roll mode is enabled).
Default value	Play through

Freeze on Cue Points

Description	Specifies whether Multicam will freeze or not when it reaches a cue point marked on the clip and/or the record train that is being played back. The post-roll parameter is not taken into account for this functionality.
Values	• No: The playout plays through the cue points when playing clips or record trains. • Clips + Trains: The playout freezes on the cue points when playing clips or record trains where cue points have been defined. • Clips: The playout freezes on the cue points when playing clips where cue points have been defined. • Record Trains: The playout freezes on the cue points when playing record trains where cue points have been defined.
Default value	No

Network Copy/Push (Supersedes 'Default Copy/Move')

Description	Allows you to select the prefered network for copying, pushing and creating a clip on a distant server. This setting is taken into account when the destination machine is visible both on the XNet and GbE networks.
Values	Two values are possible for this parameter: • **XNet:** The operations are executed through the XNet network. There is no failover mechanism to the GbE interface. • **Gigabit (XNet failover):** The copy operations are first executed via the GbE interface. If the transfer is not possible (ports not connected, IP address unknown, etc.) **and** the EVS server is in **mono-essence** mode, the transfer is then tried through XNet. Whatever the value defined for this setting, the following rules are applied if both networks are available: • Transfers to GbE targets are always performed via the GbE interface. • Metadata is always transferred via the XNet interface. The value is forced to Gigabit if the code 117 (SDTI) is not valid on the EVS server, or if the XNet network is not active.
Default value	XNet

Protocol Receive Page

Description	Specifies on which page the clips created by protocols are stored. When a page is full, clips are stored on the next page. Only clips created on this page (and the other protocol pages if the first page is full) are visible for protocols.
Values	1 to 10 (=0)
Default value	6

Playlist Receive Page

Introduction	This setting is linked to the copy function that allows users to automatically create a local copy of all network clips when copying a local or network playlist. For details, refer to the description of the Playlist copy function in the Operations manual.
Availability	The setting is only available if the license code 111 or 112 is valid.
Description	Specifies on which page(s) of your EVS server the clips received when using the PLST+CLIPS copy function must be stored. Clip pages can be assigned simultaneously as PUSH and PLST Receive Pages.
Values	1 to 10 (=0)
Default value	0 (page 10)

Timeline Receive Page

Availability	This settings is not available with 24 and 32 audio mono.
Description	Specifies on which page(s) the clips automatically created in timeline mode as part of the timeline editing process are stored.
Values	1 to 10 (=0)
Default value	0 (page 10)

4.8.5. Playlist Settings

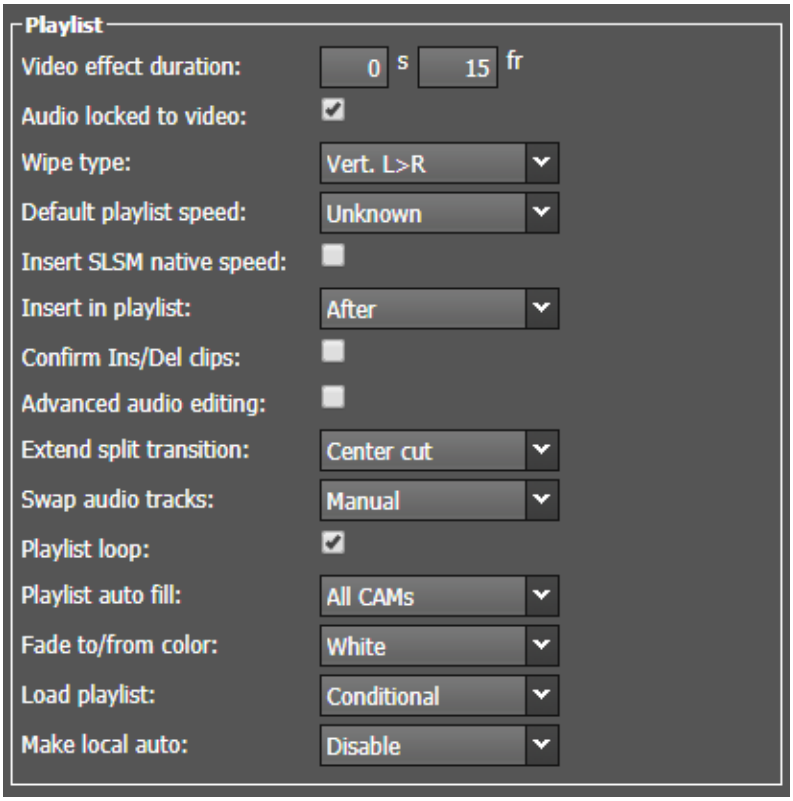
User Interface

The Playlist settings relate to various aspects of playlist management and effects.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel

- The following screenshot displays the Playlist settings on the Operation tab in the web-based interface:



Availability

The Playlist settings are only available if the license code 111 or 112 is valid. Some playlist settings are tied to the code 112, and will therefore not be available if the license code is not valid.

You can also create and manage playlist exclusively via protocols. In this case, the playlist settings will not be available, and all playlist-related parameters will be defined by the controlling application or device.

Some operational settings may be displayed although they are not relevant to the EVS server you are operating or to the configuration you are running.

Video Effect Duration

Description	Sets the duration of video transition effect. The specified value is used as default value in the Playlist Edit mode. Note that the duration of the video transition when using the **TAKE** button in 1PGM+PRV mode has its own parameter, **Effect for take**, defined in the EVS Controller section of the Operation tab.
Values	0s00fr to 20s00fr
Default value	00s10fr

Audio Locked to Video

Availability	This setting is only available if the license code 112 is valid.
Description	Specifies whether you will be able to define different durations for the audio and video transitions inside a playlist when the Advanced Audio Editing parameter is enabled. This setting is irrelevant if the Advanced Audio Editing parameter is disabled.
Values	The possible values are: • **Yes:** The duration of video and audio transitions in a playlist cannot be different. • **No:** The duration of the video and audio transitions in a playlist can be different.
Default value	Yes

Audio Effect Duration

Availability	This setting is only available if the license code 112 is valid. This setting is only available when the **Audio locked to video** setting is set to **No**.
Description	Sets the duration of the audio transition effect when: • the Advanced Audio Editing setting is enabled. • the Audio locked to video setting is set to 'No'. The specified value is used as default value in Playlist Edit mode. If the Advanced Audio Editing is disabled, this setting is not relevant since the video and audio transitions will always have the same duration, based on the Video Effect Duration.
Values	0s00fr to 20s00fr
Default value	0s00fr

Wipe Type

Description	Specifies the vertical wipe effects from Left to Right or from Right to Left.
Values	Vert. L>R / Vert. R>L
Default value	Vert. L > R

Default Playlist Speed

Description	Defines the default speed used to play clips in a playlist.
Values	The following values are possible Unknown, and from 0% to 100%: • **Unknown** means that the speed of the previous clip in the playlist will be used as a reference for the current clip. • **0%** will force the playlist to pause at the end of each clip. • **1% to 100%** will apply the specified speed as default speed for playlist elements.
Default value	Unknown

Insert SLSM Native Speed

Description	Defines whether an SLSM clip inserted into a playlist will automatically be set to be played out at its native speed, or at the value defined in the **Default playlist speed** parameter.
Values	The following values are possible: • **No** means that playout speed of the SLSM clips depends on value defined in the **Default playlist speed**. • **Yes** means that the speed of the playout SLSM clips is automatically set to its native speed.
Default value	No

Insert in Playlist

Description	Specifies if the clips add to a playlist are insert before or after the active clip in the playlist.
Values	After / Before
Default value	Before

Confirm Ins/Del Clips

Description	Specifies whether a confirmation will be required each time the operator wants to add a clip to the playlist or remove a clip from the playlist.
Values	• Enabled (Yes) • Disabled (No)
Default value	Disabled (No)

Advanced Audio Editing

Availability	This setting is only available if the license code 112 is valid. This settings is not available with 24 and 32 audio mono.
Description	Activates /deactivates the desynchrone (audio/video) editing in a playlist edit mode. Changing this parameter modifies the display on the monitoring outputs and adds special function keys on the LCD screen to define different transition points and durations on the video and audio tracks.
Values	• Enabled (Yes) • Disabled (No)
Default value	Disabled (No)

Extend Split Transition

Availability	This setting is only available if the license code 112 is valid. This settings is not available with 24 and 32 audio mono.
Description	Determines how the transition should be extended when the transition duration on the audio or video track only is modified. This parameter is only useful when performing split audio editing.
Values	The following values are possible: • **Center (on) Cut:** Extends equally on both sides of the transition. • **End (on) Cut:** Extends the beginning of the transition to the left so that the end of the transition is unchanged. • **Start (on) Cut:** Extends the end of the transition to the right so that the beginning of the transition is unchanged. • **Ask:** Allows the operator to select any of the above options when editing the duration of the transition.
Default value	Center Cut

Swap Audio Tracks

Availability	This setting is only available if the license code 112 is valid. This settings is not available with 24 and 32 audio mono.
Description	Defines whether the audio tracks to swap are automatically or manually selected, when performing split audio editing with at least 4 mono audio tracks per video.
Values	The following values are possible: • **Auto:** The audio tracks to swap are automatically selected by the application when inserting a swap point. This is the default value in 4-audio configurations. • **Manual:** The operator can define which audio tracks he wants to swap when inserting a swap point. This is the only value available in 8- and 16-audio configurations.
Default value	Auto

Playlist Loop

Description	Specifies whether the playlists in play mode will be looped and played back continuously.
Values	• Enabled (Yes) • Disabled (No)
Default value	Disabled (No)

Playlist Auto Fill

Description	Specifies which camera angles will be added to the playlists when using the **Fill Playlist (F9)** function from the main menu of the Remote Panel.
Values	The following values are possible: • All Cams: The clips for all camera angles will be added to the playlist. • Prim+Sec: The clips corresponding to the primary and secondary camera angles will be added to the playlist. • Primary: The clips corresponding to the primary camera angles will be added to the playlist. • Secondary: The clips corresponding to the secondary camera angles will be added to the playlist. • Cam A, Cam B, Cam C, Cam The clips corresponding to the defined camera angle will be added to the playlist.
Default value	All Cams

Fade To/From Color

Description	Specifies the color that is used in the transition effects 'fade to color', 'fade from color' and 'fade to/from color' (V fade).
Values	Black / White
Default value	Black

Load Playlist

Description	This parameter is only used in 2PGM or 3PGM mode.
Values	The following values are available: • Always: This always loads the selected playlist in PGM/PRV mode. • Conditional: This loads the selected playlist on the selected PGM only if only 1 channel is active when entering the Playlist Edit mode. It allows loading and playing multiple playlists using a single Remote Panel.
Default Value	Always

Make Local Auto

Description	When this setting is enabled and a local playlist is loaded on a play channel, local clips corresponding to distant elements of that playlist are automatically created. The local copy of the playlist elements are stored on the first available locations on the Playlist Receive Page.
Values	• Enabled (Yes) • Disabled (No)
Default value	Disabled (No)

4.8.6. Timeline Settings

User Interface

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel

The Timeline settings relate to the audio groups in timelines.

The following screenshot displays the Timeline settings on the Operation tab in the web-based interface:

The Timeline settings are not available with 24 and 32 audio mono.

Mono per Group

Description	Defines how many audio mono channels are associated to each of both audio tracks of a timeline.
Values	The following values are possible, depending on the value defined for the **Number of tracks** setting in the Channels tab:

# tracks	Possible values
4	2
8	4 (default) , 2+6, 6+2
16	8

The 2+6 feature is particularly useful when working in Dolby audio to assign a timeline track to the stereo pair and the other track to the Dolby 5.1 audio.

TL Operator

Availability	The parameter is only available in specific conditions, with the license code 116 (Dual LSM option).
Description	Defines, in Dual LSM mode, which operator can use the timeline feature and therefore control the timeline engine.
Values	1 (Operator # 1) or 2 (Operator # 2)

4.8.7. Protection Settings

User Interface

The Protection settings aim at protecting clips stored on the EVS server from deletion.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel

The following screenshot displays the Protection settings on the Operation tab in the web-based interface:

Protect Pages

Description	Specifies the pages on which the clips stored are protected from accidental deletion. The clips stored on these pages are also protected when using the **Clear All Clips (F7)** function from the main menu of the Remote Panel. See section "Navigating and Editing in the Multicam Configuration Window" on page 203 for more information on how to enable pages.
Values	Page 1 to 10 (=0). Several pages can be selected.

When the option **Clear Video Disks** is selected in the Multicam Setup window of the server-based application, all clips are deleted, including the protected ones.

Clip Edit by Network

Availability	This setting is only available if the license code 117 is valid.
Description	Allows users to edit clips on the whole XNet network.
Values	The following values are possible: • **Yes:** Other users on the network can trim, rename, delete, etc. your clips, or modify the keywords and ranking assigned to your clips. • **No:** Only the local operators can modify or delete clips on the server and edit their metadata.
Default value	No

Confirm Delete Clips/Playlists

Description	Enables a confirmation request when users delete clips, playlists or in both situations.
Values	The following values are possible: • **Off:** Clips and playlists are immediately deleted. • **Clips:** A confirmation is required for a clip deletion, but not for a playlist deletion. • **Playlists:** A confirmation is required for a playlist deletion, but not for a clip deletion. • **Clips & Playlists:** A confirmation is required both for a playlist deletion, and for a clip deletion.
Default Values	Off

This parameter does not apply to the **Clear Video Disks** command, available in the Multicam Setup window of the server-based application, which already has its own confirmation message.

4.8.8. Keywords Settings

User Interface

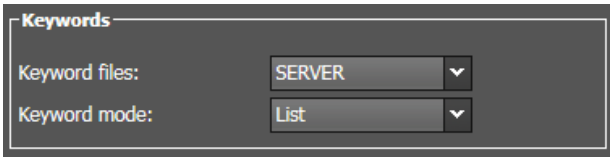
The Keywords settings allow the management of keywords on the EVS server.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
  - on page 1 on the web-based interface
- in the Operational setup menu of the Remote Control Panel

The Keywords settings are only available if the license codes 124 and 125 are valid.

The following screenshot displays the Keywords settings on the Operation tab in the web-based interface:



Keyword Files

Description	Specifies the keywords file that can be used to assign keywords to clips or to search the clips database.
Values	The following values are possible: • **--------** : No keywords file is selected, and the keyword assignment and related search functions are not available. • **SERVER:** The keywords file sent by the active EVS server to all systems on the XNet network will be used. This value is only available if the XNet network is used. • **<Keywords file name>:** ◦ Other file names will appear if keywords files (files with a .KWD extension) have been loaded in the `/mnt/apps/data/kwd` directory of the system (`/kwd` via FTP). ◦ Keyword files can be imported using the Import/Export Keyword Files function in the Multicam Setup window. See section "Importing and Exporting Keyword Files" on page 54 for details about keyword import/export function, ◦ See the "Keyword Management" section in the Multicam operational manual for details about the keywords file format and keywords-related functions.
Default Values	-------- (keywords file not selected)

Keyword Mode

Description	Specifies the keyword assignment/search mode on the EVS Remote Panel.
Values	The following values are possible: • **List:** It will display the keywords by groups of 8 on the LCD of the Remote Panel and the operator can select them with the corresponding F_ key. • **Numeric:** It doesn't display the keywords list on the LCD, but allows the operator to enter directly the keyword ID using the F_ keys. The Numeric mode is faster when the operator knows the position of the keywords inside the keywords file, either from memory, using the VGA keyword screens, or using a print of the keywords list.
Default Values	List

4.8.9. Push Settings

User Interface

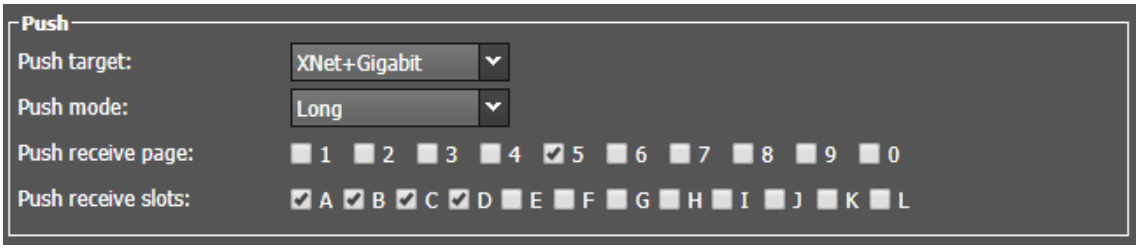
The Push settings relate to the management of the Push function on the EVS server. The Push function allows users to easily send a copy of a clip to another machine on the network via the GbE network or the XNet network.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel

The values available in the Push settings depend on the presence of the XNet hardware or GbE hardware.

The following screenshot displays the Push settings on the Operation tab in the web-based interface:



Push Target

Description	Specifies which EVS servers will be listed as possible targets for push actions when the user selects: • the default Target 1 and Target 2 in the settings, or • a target for a specific push action if no default target has been configured.
Values	The following values are possible: • **XNet:** Only XNet targets will be listed. The servers are listed by their network system name and number. • Gigabit: Only EVS servers reachable via the GbE network and not present on the same XNet network will be listed. The servers are listed by their GbE server name, and IP Address. • **XNet +Gigabit:** First the servers on the same XNet network connected through XNet are listed, then the servers not on the same XNet network but reachable via the GbE network are listed. The Gigabit and **XNet +Gigabit** values are not available if the EVS server does not have a GbE board.
Default Value	XNet

Push Target 1 / 2

Availability	These parameters are only available in the server-based application, not in the web-based interface.
Description	Specifies to which machine(s) on the network the clips must automatically be sent when the operator uses the PUSH function on the Remote Panel. The machines defined in this setting are also used as default target for clip copies. The users can define two default targets: Target 1/ Target 2. The clips will be pushed in sequential order.
Values	A list of values will be displayed depending on the value assigned to the Target setting: • --------: When no target is defined in these parameters, the user will be able to define the requested target when (s)he calls the PUSH function. • <network system name and number>are listed and can be assigned for targets belonging to the XNet network. • <GbE server name and IP Address> are listed and can be assigned for targets belonging on the GbE network.
Default Values	-------- (No target machine specified)

Push Mode

Description	Specifies how the clips should be sent using the **PUSH** function, that is to say with or without the original guardbands.
Values	The following values are possible: • **Short:** The clips are sent from the Short IN to the Short OUT points, to which the guardbands of the destination machine are added. • **Long:** The clips are sent from the Protect IN to the Protect OUT.
Default Values	Short

Push Receive Page

Description	Specifies the page of your machine where clips sent to you by other network operators using the **PUSH** function must be stored first. When the preferred slots on the first page are fulled, the clips are stored on the preferred slots of the next page. See section "Navigating and Editing in the Multicam Configuration Window" on page 203 for more information on how to enable pages.
Values	Page 1 to 10 (=0). A single page can be selected.
Default Values	(Page) 5

Push Receive Slots

Description	Specifies the clip position(s) (A to L) where the pushed clips will be stored in priority, starting on the page specified in the **Push Receive Page** setting. See section "Navigating and Editing in the Multicam Configuration Window" on page 203 for more information on how to enable slots.
Values	Slot A to L. Several slots can be selected.
Default Values	(CAM) A,B,C,D

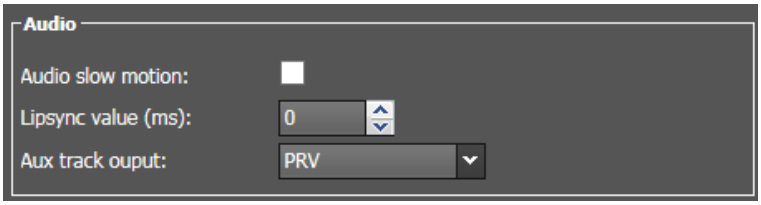
4.8.10. Audio Settings

User Interface

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel

The following screenshot displays the Audio settings on the Operation tab in the web-based interface:



Audio Slow Motion

Description	Allows users to play back or mute the audio track when the playing speed is different than 100%.
Values	The following values are possible: • **No**: The audio track is muted during the playback. • **Yes**: The audio track is not muted during the playback. It will be faded in, then muted above a given threshold (400%).
Default value	No

Lipsync Value (ms)

Description	Specifies the delay (in ms) between video and audio signals: • A positive value means video is ahead of audio. • A negative value means audio ahead of video.
Values	The following values are possible: • Range for PAL: from -41,458 ms to 14,708 ms → 848 to 3544 samples, 0 ms → 2838 samples • Range for NTSC: from -34,625 to 12,125 ms → 688 to 2932 (samples), 0 ms → 2350 samples
Default value	0 ms

This adjustment is done during the record process. A new Lipsync value will apply for the next recorded pictures only.

Aux Track Output

Description	Specifies to which audio outputs the auxiliary track of the playlist will be played out.
Values	The following values are possible: • PRV: The auxiliary track will use the audio outputs normally assigned to the PRV channel. If no PRV channel is available, the Aux Track will not be assigned to any audio output. • PRV&7-8/15-16: The auxiliary track will use the audio outputs normally assigned to the PRV channel if there is one, plus all the audio outputs from 7-8/15-16 that have not yet been assigned to another channel. Use this option if you need an auxiliary track without PRV channel available. • PGM: The auxiliary track will use the audio outputs normally assigned to the PGM channel.
Default value	PRV

4.8.11. EVS Controller Settings

Introduction

The EVS Controller settings gather:

- Settings related to the behavior of the keys, lever or jog of the Remote Panel.
- Settings associated to the EVS server itself.

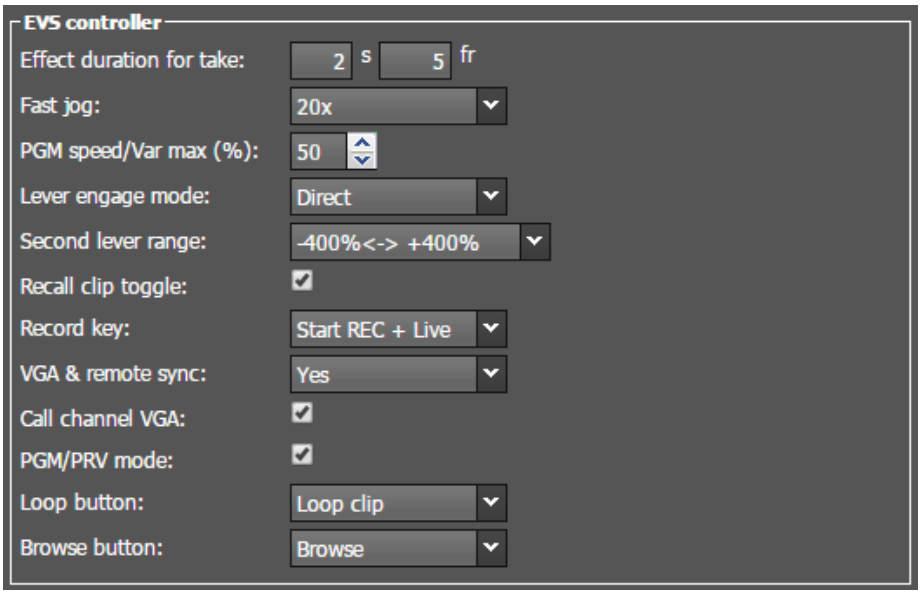
Most of the settings are only available or applicable with base configurations associated to the use of an EVS Remote Panel (LSM Remote , XSense Remote).

User Interface

These fields are available in the following interface:

- in the Multicam Configuration window, Operation tab.

The following screenshot displays the EVS Controller settings on the Operation tab in the web-based interface:



Effect Duration for Take

Description	Defines the duration of the transition when using the **TAKE** key to chain 2 sequences in PGM+PRV mode.
Values	Range of values: 00s00fr to 20s00fr.
Default value	00s05fr

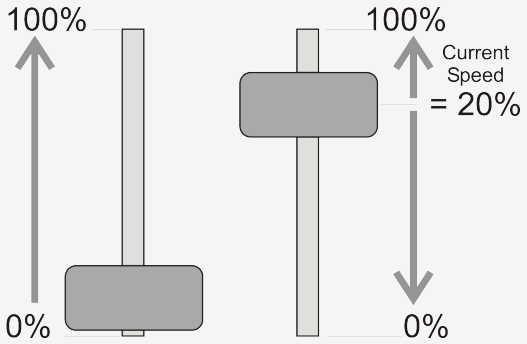
Fast Jog

Description	Sets the increment of the jump when the Remote Panel is used in Fast Jog mode.
Values	The values from 1 to 20 times are possible.
Default value	20x

PGM Speed / Var Max

Availability	The **Var Max** option is not available with XSense configurations.
Context	During playback, if PGM Speed or Var Max has been enabled in the secondary menu of the Remote Panel, the lever range will be adapted so that: • the only playback value for any position of the lever other than 0, is the one specified by this parameter in the setup (PGM Spd mode ON) OR • the speed range defined by the lever is limited to the value specified by this parameter (VarMax mode ON).
Description	Specifies the playback speed assigned to the lever when the **PGM Speed** or **Var Max** command is used.
Values	Range of values from 1 to 400 %
Default value	50%

Lever Engage Mode

Description	Specifies how the playback speed varies depending on the position of the lever. This parameter is not relevant in XSense configurations.
Values	The following values are possible: • **Direct mode:** The lever will engage directly when moved, resulting in a speed jump to the desired speed determined by the lever arm position. • **Current speed mode:** The lever will only engage when it reaches the current playback speed, whereas a move of the lever arm in the opposite direction of the current speed will result in a direct speed change. 
Default value	Direct

Second Lever Range

Context	The lever can be used in normal mode to play back clips at slow motion speed from 0 to 100%. A secondary range is available to playback material at other speed ranges. To gain access to the secondary speed from the remote controller, press **SHIFT** + **LEVER/TAKE**. The second lever range is also available when editing the speed of playlist clips.
Description	Specifies the secondary speed range on the Remote Panel.
Values	The following values are possible: • -100% → +100% • 0 → +200% • -200% → +200% • 0 → +300% • 0 → +400% • -400% → +400%
Default value	-100% → +100%

Recall Clip Toggle

Description	Enables/disables the selection of the camera of a clip through the Function keys: Pressing several times the F_ key browses to CAM A, CAM B, CAM C, CAM D, CAM E and CAM F.
Values	Yes / No
Default value	Yes

Record Key

Description	Changes the function of the **RECORD** key on the Remote Panel, as described below.
Values	The following values are possible: • **Start REC+Live:** Pressing the **RECORD** key starts the record process and switches to LIVE mode. • **Live:** Pressing the **RECORD** key only switches to last recorded picture, but the record is not restarted if it has been previously stopped by the operator.
Default value	Start REC+Live

VGA & Remote Sync

Description	Specifies whether and how the current clips machine, page and bank of VGA screens and Remote Panel must be synchronized.
Values	The following values are possible: • **No:** Clip machine, page and bank can be selected independently on the VGA screen and on the Remote Panel. • **Yes:** Clip machine, page and bank are synchronized between VGA screen and Remote Panel. Connecting to the clips of a network machine or coming back to the clips of the local machine, or selecting a new page or bank on one side will be automatically reflected on the other. • **Server:** Clip pages and banks can be selected independently on VGA and Remote Panel, but connecting to the clips of a network machine or coming back to the clips of the local machine on the VGA or Remote Panel will be automatically reflected on the other.
Default value	No

Call Channel VGA

Description	Enables or disables the **Call Channel** function on the VGA Clip screen. This function allows the operator to select on which PGM channel the clips called from the keyboard and VGA should be loaded.
Values	Yes / No
Default value	Yes

PGM/PRV Mode

Description	Allows the user to select the PGM/PRV mode on the LCD display as a function accessible from the **A** button on the Remote Panel's main menu. Otherwise, the PGM/PRV mode selection is not accessible from the A button.
Values	The following values are possible: • **Yes:** The PGM/PRV mode is available from the **A** key on the Remote Panel. • **No:** The PGM/PRV mode is not available from the **A** key on the Remote Panel.
Default value	Yes

Loop Button

Description	Defines the behavior of the loop function enabled with the **SHIFT + Loop**.
Values	The following values are possible: • **Loop clip:** Pressing the loop button loops the loaded clip between its Short IN and Short OUT points, when you are located between these two points. • **Loop clip bounce:** Pressing the loop button loops bounce the loaded clip between its Short IN and Short OUT points, when you are located between these two points. • **Disable:** Pressing the loop button has no effect.
Default value	Loop clip

Browse Button

Description	Allows users to convert the function of the **BROWSE** key.
Values	The following values are possible: • **Browse:** ◦ Without cue points: This will directly activate the playlist browse function, which is the default function assigned to this key. ◦ When cue points are defined: This activates the browsing through the cue points defined on the clip or on the record train. • **Sort TC:** The system will perform a Sort TC directly. The system will not prompt the user with a select menu, and it will use the current TC on the channel to search with the last selected criteria. If the user wants to perform a search with different criteria (Search Net or Local, StartDate, EndDate, CAM/CLIP, etc...), the user should use the normal Sort-TC selection in the upper menu.
Default value	Browse

4.8.12. Hypermotion Management

Principles

The hypermotion cameras can be controlled by the LSM Remote Panel. The camera is linked via a RS422 or LAN PC connector to the same XT-VIA server as the controlling Remote Panel.

In setups including a hypermotion camera, the following principles apply:

- An XT-VIA server cannot control more than one hypermotion camera.

- The hypermotion camera is used with the classical channel configurations.
- Not all Multicam LSM configurations with several PGMs and several Remotes are supported within the current RS422 and channel configuration constraints.
- If the **Remote Mode** setting in the Hypermotion Controller settings is set to 'Hypermotion only', an additional menu is made available in the main menu of the LSM Remote Panel.

Remote Panel Assignment

In setups where several LSM Remote Panels and a hypermotion camera are defined, the assignment of the various PGMs and hypermotion camera to the LSM Remote Panels is automatically performed as shown in the table below depending on:

- the number of PGMs in the selected channel configuration
- the selected Remote Mode (Hypermotion only or Hypermotion + LSM)
- the number of Remote Panels available

The following table presents the possible configurations:

# of Remotes	1		2		3		4	
Hyperm. Mode	Hyperm. Only	Hyperm. + LSM	Hyperm. Only	Hyperm. + LSM	Hyperm. Only	Hyperm. + LSM	Hyperm. Only	Hyperm. + LSM
1 OUT	NA	R1: PGM1 +hyperm.	R1: PGM1 R2: hyperm.	NA	NA	NA	NA	NA
2 OUT	NA	R1: PGM1 +PGM2 +hyperm.	R1: PGM1 +PGM2 R2: hyperm.	R1: PGM1 R2: PGM2 +hyperm.	R1: PGM1 R2: PGM2 R3: hyperm.	NA	NA	NA
3 OUT	NA	R1: PGM1 +PGM2 +PGM3 +hyperm.	R1: PGM1 +PGM2 +PGM3 R2: hyperm.	R1: PGM1 +PGM2 R2: PGM3 +hyperm.	R1: PGM1 +PGM2 R2: PGM3 R3: hyperm.	R1: PGM1 R2: PGM2 R3: PGM3 +hyperm.	R1: PGM1 R2: PGM2 R3: PGM3 R4: hyperm.	NA
4 OUT	NA	R1: PGM1 +PGM2 +PGM3 +hyperm.	R1: PGM1 +PGM2 +PGM3 R2: hyperm.	R1: PGM1 +PGM2 +PGM3 R2: PGM4 +hyperm. OR R1: PGM1 +PGM2 R2: PGM3 +PGM4 +hyperm.	R1: PGM1 +PGM2 R2: PGM3 +PGM4 R3: hyperm.	R1: PGM1 +PGM2 R2: PGM3 R3: PGM4 +hyperm.	R1: PGM1 +PGM2 R2: PGM3 R3: PGM4 R4: hyperm.	R1: PGM1 R2: PGM2 R3: PGM3 R4: PGM4 +hyperm.

'PGM1+PGM2' can represent the 2PGMs mode as well as the PGM/PRV mode.

The cells with 'NA' correspond to impossible configurations taking into account the existing constraints. In this case, the Hypermotion option is not available in the operational menu even if the Hypermotion setting is set to 'Yes'.

Dual LSM Mode and Hypermotion Cameras

An hypermotion camera can be used in Dual LSM mode taking the following information into account:

- The hypermotion camera is associated to the LSM operator #2.
- Only the LSM operator #2 can control the hypermotion camera.

  The operator can use a dedicated LSM Remote Panel to control solely the hypermotion camera, or use **SHIFT+ D** to control both the hypermotion camera and the EVS servers with one (of his) LSM Remote Panel(s).

4.8.13. Hypermotion Controller Settings

User Interface

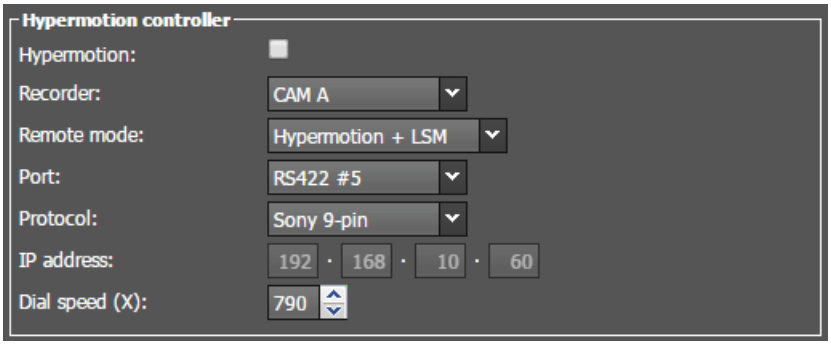
The Hypermotion controller settings allow specifying the settings related to the control of a hypermotion camera from an LSM Remote Panel.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel

The hypermotion feature and settings are only available with a valid license code 20. This license code allows controlling a hypermotion camera from the remote panel.

The following screenshot displays the Hypermotion Controller settings on the Operation tab in the web-based interface:



Hypermotion

Description	Enables or disables the hypermotion camera control feature. When this setting is enabled, you can access and use the hypermotion menu on the LSM Remote Panel via the **SHIFT+D** key combination in the operational menu.
Values	Yes / No
Default value	No

Recorder

Description	Selects the record channel to which the A/V material from the hypermotion camera will be sent.
Values	CAM A to CAM L
Default value	The default value is the last CAM defined in the channel configuration (for ex. CAM C in a 3 IN 3 OUT configuration).

Remote Mode

Description	Specifies the camera elements controlled by the server.
Values	• **Hypermotion only**: The server controls only the hypermotion camera. An additional remote is made available in the main menu of the remote panel, since the hypermotion camera is considered as an additional external camera. • **Hypermotion + LSM**: The server controls the hypermotion camera and one PGM in exclusive mode.
Default value	Hypermotion only

Port

Description	Specifies on which port (RS422 or Lan PC) the commands must be sent to the hypermotion camera, and possibly to the PGM if you have selected 'Hypermotion + LSM" in the **Remote Mode** parameter.
Values	The following values are possible: • RS422 #2 to RS422 #6 • Lan PC The port value is specific to the camera. See the camera-specific section in the operational manual.
Default value	RS422 #6

Protocol

Description	Specifies the protocol type used for data transfer on the selected port.
Values	The following values are possible: • TCP / UDP (when **Port** is set to **Lan PC**). • ASCII / Sony 9-pin (when **Port** is set to one of the **RS422**). The protocol value is specific to the camera. See the camera-specific section in the operational manual.
Default values	• TCP (when **Port** is set to **Lan PC**). • Sony 9-pin (when **Port** is set to one of the **RS422**).

IP Address

Availability	This setting is only available if the **Port** setting is set to **Lan PC**.
Description	Specifies the IP address of the PC LA N.
Values	xxx.xxx.xxx.xxx
Default value	192.168.10.60

Dial Speed

Description	Defines the multiplication factor applied to the jog value.
Values	Range of values: 10x to 1000x (multiple of 10x)
Default value	10x

4.8.14. Special Effects Settings

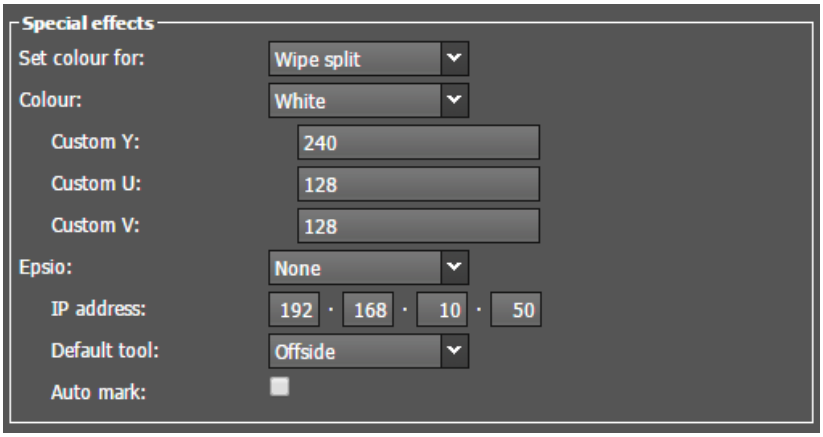
User Interface

On an XT-VIA server, the Special effects settings allow you to define settings for the Epsio applications.

These fields are available in the following interfaces:

- in the Multicam Configuration window, Operation tab
- in the Operational setup menu of the Remote Control Panel

The following screenshot displays the Special Effects settings on the Operation tab in the web-based interface:



The settings displayed in the Special Effects section which are not relevant for XT-VIA server have not been documented in the configuration manual.

Set Colour for

Availability	This setting is available with a valid license code 113, and a compatible base configuration.
Description	Applies the selected color to a specific tool: the delimiter of the split screen.
Values	Wipe Split

Colour

Availability	This setting, and the three related custom settings below, are available with a valid license code 113.
Description	Defines the default color applied to the cursor or to the wipe or split effect according to the **Set colour for** parameter value.
Values	• White • Black • Custom (defines with the **Custom Y**, **U** , and **V** parameters)
Default Values	White

Custom Y

Description	Defines the Y value of the custom color that can be used with the **Colour** parameter.
Values	0 to 255
Default value	240

Custom U

Description	Defines the U value of the custom color that can be used with the **Colour** parameter.
Values	0 to 255
Default value	128

Custom V

Description	Defines the V value of the custom color that can be used with the **Colour** parameter.
Values	0 to 255
Default value	128

Epsio

Description	Activates or deactivates the control of the Epsio application.
Values	• None: No Epsio interactivity. • Live (offside line): This enables the Epsio Live application (including the offside line). The **SHIFT+D** key gives access to the Epsio Live menu. • Zoom: This enables the connection to Epsio Zoom to create zoom sequences using Epsio Zoom external tool. This is not available in SD resolutions. The **SHIFT+D** key gives access to the Epsio Zoom menu. • Protocol This enables the connection of a generic Epsio Service to the LSM Remote Panel. This allows Epsio to define the interactivity on the LSM Remote Panel, and access the jog and lever controls.
Default value	None

IP Address

Availability	This setting is not available with **Protocol** set for the Epsio field.
Description	Defines the IP address of the Epsio workstation on the network when the Epsio connection is enabled via the Epsio parameter.
Values	xxx.xxx.xxx.xxx
Default value	192.168.10.50

Default Tool

Availability	This setting is not available with **Zoom** or **Protocol** set for the Epsio field.
Description	Selects the tool used by default in the Epsio Live menu on the remote when the Epsio Live connection is enabled via the **Epsio** parameter.
Values	• Offside • Arrow • Circle • Graphics
Default value	Offside

Auto Mark

Availability	This setting is not available with **Protocol** set for the Epsio field.
Description	Activates / deactivates the automatic insertion of a cue point on the record train every time the Epsio operator enters the Epsio menu on the remote.
Values	Yes / No
Default value	No

4.8.15. Split Screen Feature

Description

The Split Screen mode is a software option that allows a simple split screen effect on PGM 1. This mode operates very similarly to the 2PGM mode, except that the two outputs are left and right parts of the screen (**vertical split screen**) or top and bottom parts of the screen (**horizontal split screen**) or mixed together on the entire screen (**split mix mode**).

The Split Screen feature is available on XT-VIA with the license code 113.

Limitations

On an XT-VIA server, the split screen is supported with the following limitations:

- The split screen is available in HD (720p, 1080i, 1080p), and UHD-4K.
- In UHD-4K, it is only available in two-sample interleave, not in square division.
- The split screen tracking is not available.

5. LiveIP Configuration

5.1. Accessing the LiveIP Configuration Module

What is the LiveIP Configuration Module for?

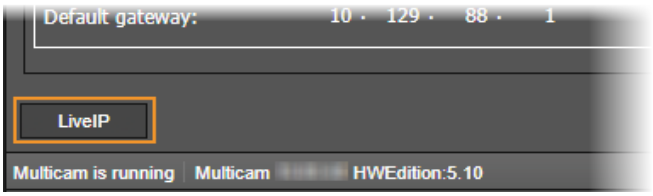
On the EVS server, the LiveIP Configuration module provides a web-based user interface for administrators to define and visualize all LiveIP-related settings, among others the configuration of receivers (streams received through input channels) and senders (streams sent from output channels) of an EVS server.

When Cerebrum is used to control and monitor the nodes in the IP network, the configuration of senders and receivers of the EVS servers is made available in Cerebrum and can be dynamically edited in Cerebrum, and automatically reflected in the Live IP Configuration module and vice versa.

The IP addresses of the V4X and MV4X SFP+ ports from the codec modules area are defined in the Multicam Configuration module, Network tab, IP IO Configuration section.

How to Access the LiveIP Configuration Module?

You can access the LiveIP Configuration module by clicking the **LiveIP** button at the bottom of the Multicam Configuration web interface:



Only one user can connect to the LiveIP Configuration module at a time. Should another user be connected, you will be informed and prompted to take the hand.

Clicking the **LiveIP** button opens the LiveIP configuration module, which is made up of three tabs:

- IP configuration tab: It allows you to configure the streams sent from output channels (senders) and streams received through input channels (receivers).
- MV configuration tab: It allows you to configure the video streams received by and sent from the internal multiviewer (MV4X).

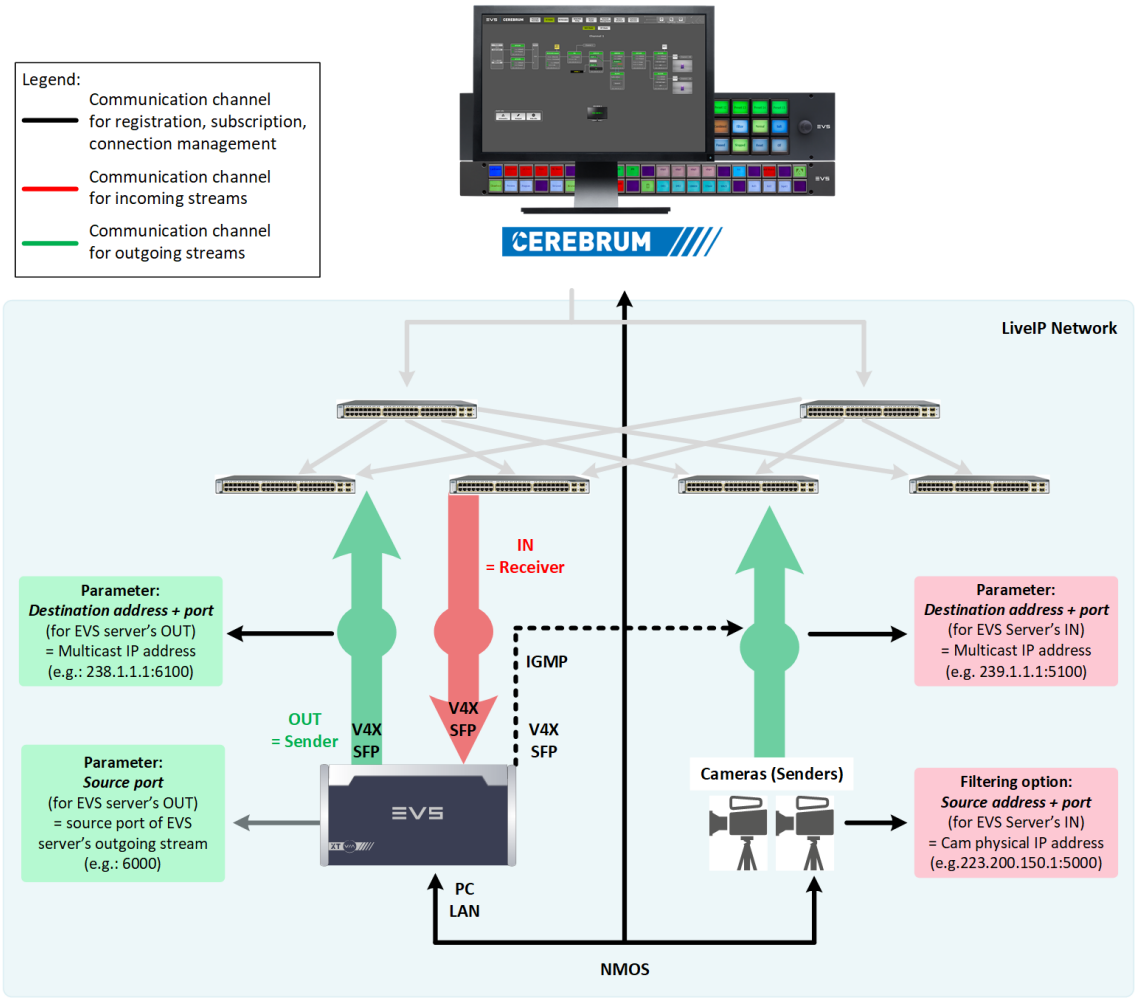
NEW !

- Protocol configuration tab: It allows you to monitor and configure settings for: time synchronization of all EVS server nodes on the IP network, NMOS and Ember+ services, and IP transport protocol settings.

5.2. About EVS Server in IP Network

Introduction

The following schema summarizes the main communication channels used by an EVS server to exchange data in the LiveIP network:



Discovery and Registration Management

An EVS server uses the NMOS IS-04 protocol to get itself and its resources (input / output channels and associated streams) discovered, identified and registered on the IP network.

In the NMOS model, an EVS server is called a **node**. The EVS server node includes a set of input and output channels called **devices**. Each device is able to send or receive video, audio and ancillary data streams.

These streams are called:

- **senders** when they are going out of the EVS server
- **receivers** when they are coming into the EVS server

As a node, the EVS server hosts an NMOS Node API.

An NMOS Registration API advertizes its presence on the network.

The EVS server node can post to the Registration API to register itself and its resources (senders and receivers).

Once the senders and receivers are registered in the NMOS registry, all other nodes on the network can get lists of resources and negotiate stream transmissions with the EVS server's senders and receivers on the network.

The following modes are supported:

- mDNS
- unicast via DNS-SD

Input Channels

The input channels can get incoming LiveIP streams (receivers) from cameras on the LiveIP network.

To get incoming LiveIP streams, the input channels subscribe to multicast flows using IGMP (Internet Group Management Protocol): the input channels automatically send IGMP joins to subscribe to the multicast streams identified in the **Destination address** and **Destination port** defined as IN parameters in the LiveIP configuration.

Both protocol versions IGMP v.2 and v.3 are supported.

The incoming LiveIP streams are RTP packets with an UDP header.

By default, all UDP streams coming from the specified multicast address will be received.

However, you can:

- filter these incoming streams using the **Source address** and/or **Source port**.
- select which audio streams you want to receive.

Unicast transmission directly between a camera and an input channel is also supported although this is not the typical communication mode.

Output Channels

The output channels send outgoing LiveIP streams (senders) to the LiveIP network.

The EVS server has to advertise its outgoing streams using SDP files (Session Description Protocol): the SDP files contain relevant metadata to inform the receivers about the stream content, and to allow the receivers to correctly interpret the streams.

The play channel sends the outgoing streams from a given **Source port** (logical port of the EVS server) to the multicast (or unicast) **Destination address and Destination port** specified in the LiveIP Configuration parameters of the output channel.

The outgoing streams have the same structure as the incoming streams: These are RTP packets with an UDP header.

See section "About Media Streams" on page 406 for more information on the RTP streams and the actual media payload.

Connection Management

SDN (Software Defined Networking) can provide a more flexible way to manage connections and flows between devices on the LiveIP network than solely through IGMP.

This can be achieved using **Cerebrum**, a flow routing system, which is able to talk to the EVS servers and to the network to manage the connections and flows on the LiveIP network:

- Cerebrum communicates stream information using SDPs through the NMOS protocol. The PC LAN (port 3000) is used to communicate in this context.
- The EVS server's senders and receivers will then use IGMP joins to subscribe to the streams advertised by SDP.

In addition, Multicam also supports Basic Ember+ Stream Switching (BESS) to:

- receive and interpret SDPs advertising streams from senders and
- generate SDP streams to potential receivers.

The PC LAN is used to communicate through BESS. Communication is established in TCP using port 9000.

The EVS server's receivers will then use IGMP joins to subscribe to the streams advertised by SDP.

Multicam supports NMOS IS-05 to:

- receive and interpret SDPs advertising streams from senders and
- receive transport parameters defining the incoming multicast stream
- configure a sender based on transport parameters defining the outgoing multicast stream
- generate SDP streams to potential receivers.

The PC LAN is used to communicate through NMOS. Communication is established in TCP using port 3000.

Switching Logic

The XT-VIA server supports both switching logics:

- Make-before-break (MBB)
- Break-before-make (BBM)

Make-before-break is the preferred switching logic and is used whenever applicable. You cannot manually select the switching logic to be used by the server.

MBB is not supported for ancillary data streams (2110-40).

Make Before Break Limitations for Video

This choice is done automatically and is determined by the following criteria:

- the resolution.
  - There are no limitations in 720p/1080i.
  - MBB is not supported at all with UHD-4K and UHD-8K.
  - There are some limitations in 1080p.

    Without XHub-VIA IP Aggregator:

    - Only 1 active input stream can be attributed to each SFP interface. If not, BBM is used.
    - SLSM is not supported with MBB.

      Examples

      In case you have one 1080p REC (A) for a given V4X module, and you switch to another 1080p REC (B) on the same SFP port, then the bandwith temporarily rises from 3G to 6G. MBB is supported during the switch.

      In case you have two 1080p REC (A and B) and each stream is attributed to a different SFP port of a given V4X module, and you switch both of the 1080p streams to another 1080p stream (A to C and B to D), then the bandwith on each port temporarily rises from 3G to 6G. MBB is still supported.

      In case you have 2 1080p REC (A and B) on the same SFP port for a given V4X module, and both 1080p REC (A and B) are switched to two other 1080p REC (C and D) on the same SFP port, then the bandwidth temporarily rises from 6G to 12G. MBB is not supported either.

      In case 2 1080p REC are attributed to the same SFP port of a given V4X module, and ST2022-7 is enabled, MBB is no longer supported.

      In case you have 1 1080p SLSM2x REC for a given V4X module, and both phases are attributed to a different SFP port, and you switch to another 1080p SLSM2x REC, MBB is supported.

      In case both phases of the 1080p SLSM2x REC are attributed to the same SFP port, or in case ST2022-7 is enabled, MBB is no longer supported.

With XHub-VIA IP Aggregator:

- SLSM is not supported with MBB.

The used switching logic is determined on a channel by channel basis.

For example, it is perfectly possible that module V4X #5 uses MBB and V4X module #6 not.

Make Before Break Limitations for Audio

This choice is done automatically and is determined by the following criteria:

- Make Before Break for audio is applied wherever possible.
- If you change the number of audio tracks for an audio stream in the LiveIP Configuration window, Make before Break is not applied. Break before Make is applied instead.

The used switching logic is determined stream by stream.

SMPTE ST2022-7 Seamless Protection Switching

Introduction

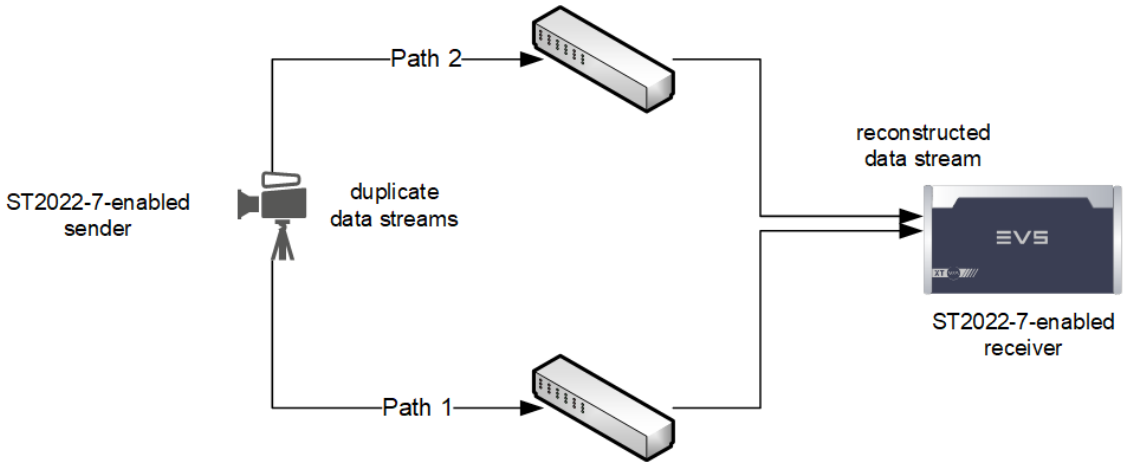
When sending a data stream (e.g. video, audio) over an IP network to a particular destination, some IP packets might get lost along the way. One method to recover those lost IP packets and to reconstruct the original data stream, is to send two identical data streams over two different network paths to the same destination.

The SMPTE standard ST2022-7 allows to reconstruct the original data stream in case IP packets are lost in any of the network paths. Switching from one network path to the other occurs without impact on the content of the stream.

The XT-VIA Server supports SMPTE ST2022-7 for video (ST2110-20), audio streams (ST2110-30, ST2110-31) and ancillary data streams (ST2110-40) for 720p, 1080i and 1080p (only for Clean Out and Character). ST2022-7 is only supported in UHD-4K with a XHub-VIA IP aggregator.

Concept

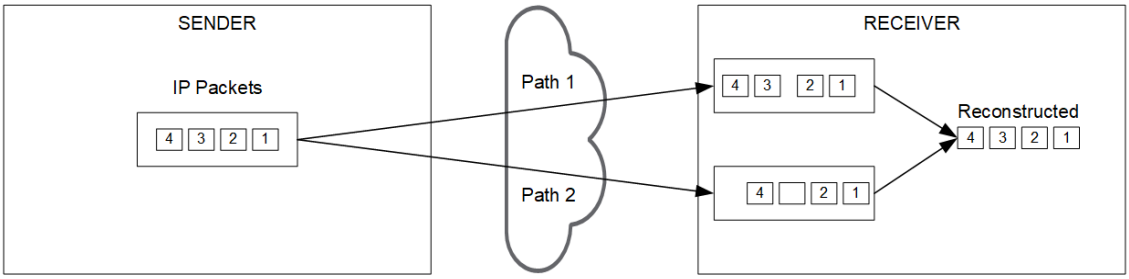
A SMPTE ST2022-7-enabled sender (e.g. a video camera) duplicates the data stream (e.g. recorded video and audio) and sends it via two different network paths to the destination receiver (i.e. the primary stream on the SFP+ port C, the secondary stream on the SFP+ port D). The SMPTE ST2022-7-enabled receiver combines the IP packets from the data streams from both network paths to reconstruct the original data stream. If an IP packet was lost on network path 1, the identical IP packet is taken from network path 2. In case network path 1 is completely gone, the entire data stream is taken from network path 2 and vice versa.



Detail

The SMPTE ST2022-7 enabled sender duplicates each IP packet of the data stream and sends it both to network path 1 and 2. The payload of the IP packets is identical, but their RTP, UDP and IP header may be different.

As both data streams use different network paths from sender to receiver, the IP packets will generally not be received at the same time. Due to other network traffic, extra jitter may also be introduced. To be able to switch between network path 1 IP packets and network path 2 IP packets seamlessly, some buffering is needed at the receiver side to deal with this delay difference and/or jitter.



Supported Protocol Versions

Multicam supports the following protocol versions:

- BESS (Basic Ember+ Stream Switching): v1.1
- IGMP: v.2, v.3
- NMOS IS-04: v1.0, v 1.1, v1.2
- **NMOS IS-05:** v1.0,

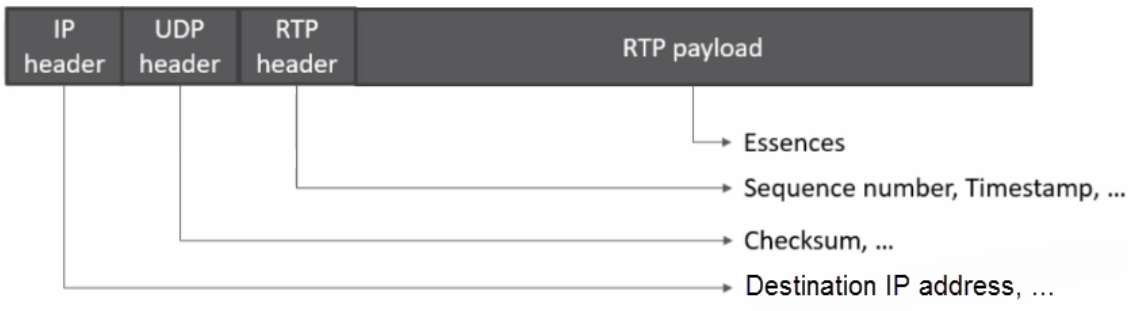
5.3. Video IP Configuration

5.3.1. About Media Streams

Composition of Media Streams

The input and output channels of the EVS server respectively receive and send media streams using the RTP protocol (Real-Time Transport Protocol). The RTP protocol provides a means to transfer media flows over UDP for fast delivery.

The RTP streams have the following structure:



The video media, audio content and ancillary data are sent as separate RTP streams.

Video Streams

Type

With SMPTE 2022-6, the uncompressed video streams are the same as the old SDI streams, and still contain the audio and data from the blanking interval.

With SMPTE 2022-8, the uncompressed video streams no longer include the audio or ancillary data, but they are still carried out over the IP network as ST 2022-6 Ethernet packets.

With SMPTE 2110-20, the video stream is uncompressed video complying with RFC 4175. The video streams are containing only the active video. No embedded audio and no ancillary data are sent.

See section "General Settings" on page 415 for more information on the differences in video streams depending on the applied protocol.

The video streams for each phase of SLSM and UHD-4K are sent as separate streams.

Audio Streams

Audio Type

Two types of audio streams are supported over IP:

- AES67
- AES3

The audio type can be configured individually for each sender and receiver.

Requirements AES67

They comply with SMPTE 2110-30 and meet the following requirements:

- **Audio sampling frequency:** 48 kHz
- **Bit depth:** 24 bits / sample
- **Packet time:**

  For inputs:

  - 1 ms up to 8 audio tracks or
  - 500µs, 333µs, 250µs & 125µs up to 16 audio tracks

  For outputs:

  - 1ms for 2, 4, 6 or 8 tracks or
  - 125µs for 2, 4, 6, 8 or 16 tracks
- **Supported profiles:**

  For inputs: level C (limited up to 16 tracks)

  For outputs: level A
- **ST2022-7 Jitter buffer:** 10ms

Requirements AES3

They comply with SMPTE 2110-31 and meet the following requirements:

- **Audio sampling frequency:** 48 kHz
- **Bit depth:** 32 bits / sample
- **Packet time:**

  For inputs:

  - 1 ms up to 6 AES subframe sequences
  - 500µs, 333µs, 250µs & 125µs up to 8 AES subframe sequences

  For outputs:

  - 1ms for 2, 4, or 6 tracks or
  - 125µs for 2, 4, 6, or 8 tracks
- **Supported profiles:**

  Receiver side: Conformance Level C (limited to 16 audio tracks)

  Sender side: Conformance Level B
- **ST2022-7 Jitter buffer:** 10ms

Maximum Numbers of Streams and Mono Channels

The maximum number of streams and audio mono channels per stream are as follows:

- Up to 4 streams audio can be associated to an IN or OUT channel.
- Up to 16 audio mono channels can be included in each IN audio stream.

  The max. number of audio mono channels depends on the packet time.
- Up to 16 audio mono channels can be included in each OUT audio stream.

  To support 16 audio mono channels, the packet time has to be set to 125µs.

Mapping to the EVS Server

The IN and OUT audio streams are considered as embedded audio by the EVS server. Audio channels carried in AES67 streams are logically wired to embedded audio inputs in the following way :

Stream 1 AES67 #1	Audio channel 1 of stream 1	Audio embedded 1
	Audio channel 2 of stream 1	Audio embedded 2
Stream 2 AES67 #1	Audio channel 1 of stream 2	Audio embedded 3
	Audio channel 2 of stream 2	Audio embedded 4
	Audio channel 3 of stream 2	Audio embedded 5
etc.	etc.	etc.

Ancillary Data Streams

Type

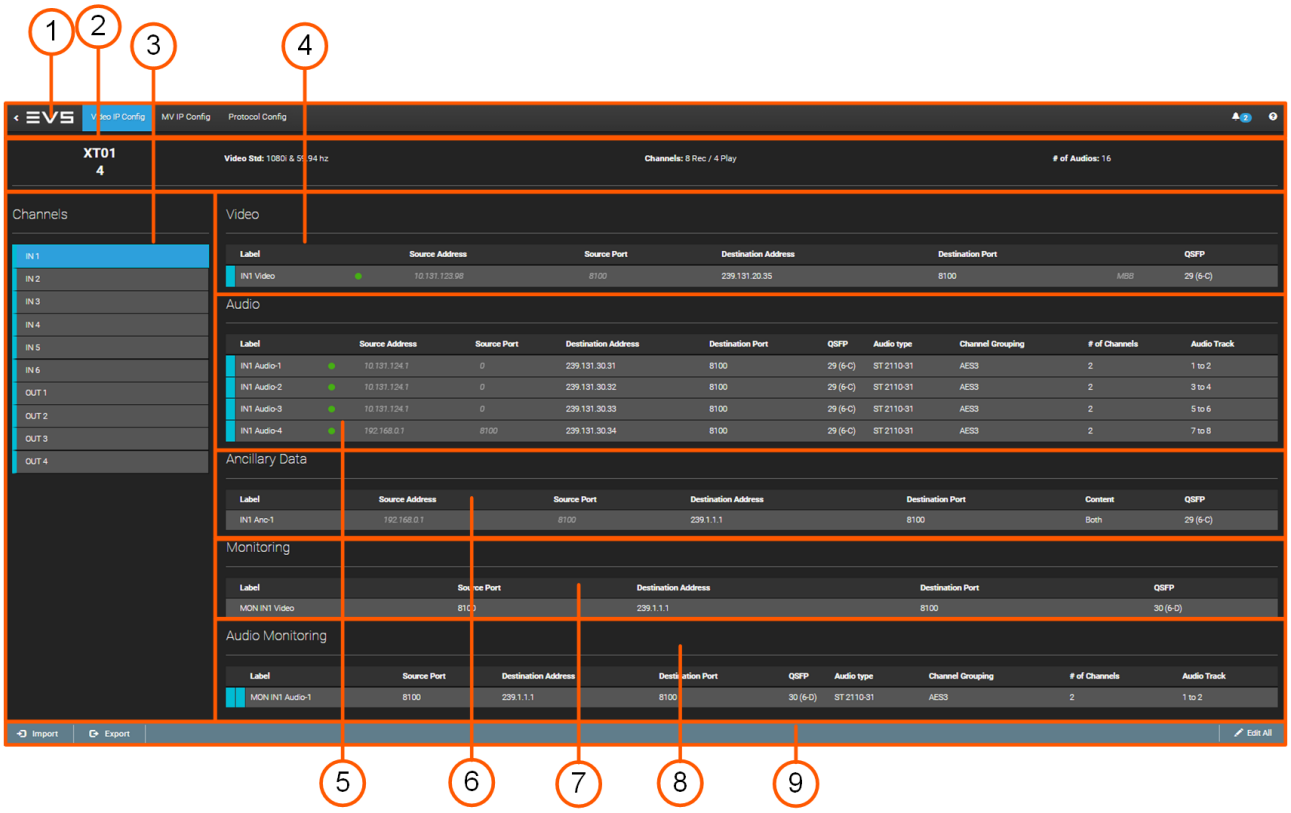
With SMPTE 2110-40, ancillary data (keywords, timecodes, closed captions) is transported as separate streams over RTP. The ancillary data streams can contain ancillary data encoded as SMPTE 334M packets, timecodes or both. Their SDP is in line with RFC 4566.

Limitations

Only packets with ancillary data that is related to video lines will be supported. Any other ancillary data will be ignored.

5.3.2. Overview of Video IP Configuration

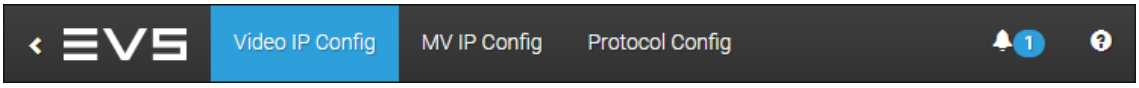
User Interface



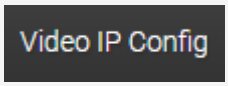
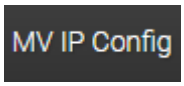
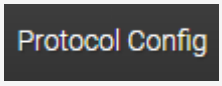
#	Name of area	Description
1.	Menu bar	It displays links to the pages including LiveIP settings. By default, the focus is on the **Video IP Config** page.
2.	General settings	It features general settings related to the running or selected configuration.
3.	Channels area	It features the logical IN and OUT channels.
4.	Video settings	It displays the LiveIP settings of the physical video streams associated to the IN or OUT channel selected in the Channels area.
5.	Audio settings	It displays the LiveIP settings of the physical audio streams associated to the IN or OUT channel selected in the Channels area.
6.	Ancillary Data settings	It displays the LiveIP settings of the physical ancillary data streams associated to the IN or OUT channel selected in the Channels area.
7.	Monitoring settings	It displays the LiveIP settings of the monitoring stream associated to the IN or OUT channel selected in the Channels area.

#	Name of area	Description
8.	Audio Monitoring settings	It displays the LiveIP settings for the audio monitoring LiveIP streams of the input streams.
9.	Edit bar	It features commands for editing the settings on the IP Configuration page.

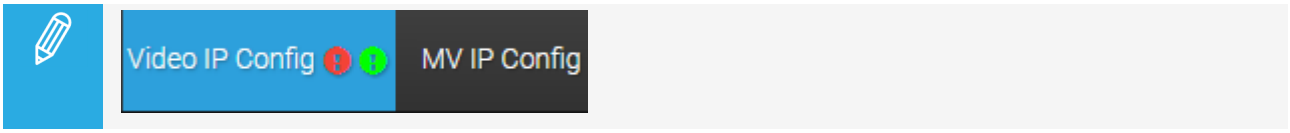
Menu Bar (1)



The menu bar features the following icons:

GUI Element	Description
	Clicking the **Back** icon brings you back to the Multicam configuration module.
	Clicking **Video IP Config** displays the Video IP Configuration page where you configure your IP streams. See section "Overview of Video IP Configuration" on page 410.
	Clicking **MV IP Config** displays the Multiviewer IP Configuration page where you configure the incoming and outgoing video IP streams of the internal multiviewer (MV4X) of your server. See section "MV IP Configuration" on page 468. The **MV IP Config** button will not be available if the protocol is 2022-6 or 2022-8.
NEW ! 	Clicking **Protocol Config** displays the Protocol Configuration page where you configure and monitor the clock synchronization, NMOS and Ember+ services and IP transport protocol settings. See section "Protocol Configuration" on page 482.
	Clicking the Import icon displays the errors that were encountered the last time a LiveIP configuration file was imported. This button only appears in the event of a failed import.
	Clicking the History icon displays former change notifications.
	Clicking the About icon opens the Welcome page of the Multicam web interface giving access to the documentation and support phone numbers.

When settings have been modified but not saved in one of the configuration pages, a red (invalid changes) and/or green (valid changes) icons are displayed next to the page name in the Menu bar. Only valid changes are committed when you save the changes:

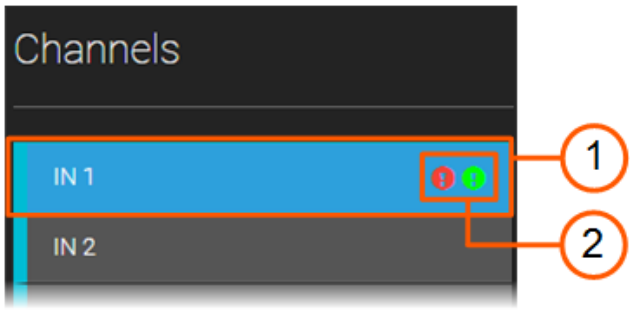


General Settings (2)

See section "General Settings" on page 415

Channels Area (3)

This area shows the logical channels defined in the active configuration of the EVS server:

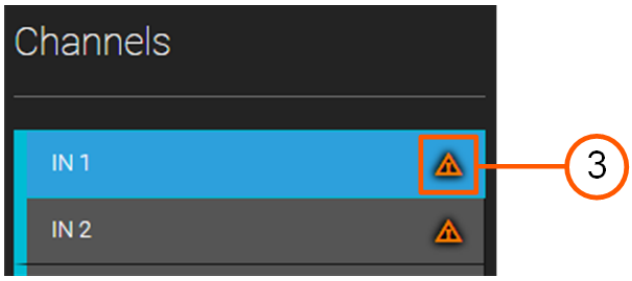


1 A selected channel is highlighted in blue: The settings for the associated streams are displayed in the Video Settings, Audio Settings, Ancillary Data Settings and Monitoring Settings areas.

2 Unsaved modifications to the stream settings related to a given channel are identified by one or two icons next to the channel number:

- A green circle for valid changes.
- A red circle for unvalid changes.

When saving changes, only valid changes are committed.



3 Indication that one or more incoming video or audio streams are missing for a logical channel.

Video Settings (4)

See section "LiveIP Settings for Video Streams" on page 418

Audio Settings (5)

See section "LiveIP Settings for Audio Streams" on page 434

Ancillary Data Settings (6)

See section "LiveIP Settings for Ancillary Data Streams" on page 445

Monitoring Settings (7)

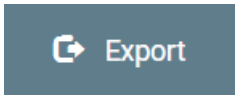
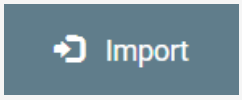
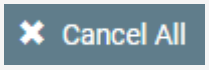
See section "LiveIP Settings for Video Monitoring Streams" on page 453

Audio Monitoring Settings (8)

See section "LiveIP Settings for Audio Monitoring Streams" on page 462.

Edit Bar (9)

The Edit bar can contain different buttons. Certain buttons will only be visible when the Multicam configuration is not running. Other buttons will only appear depending on whether you are in Edit or View mode.

GUI Element	Description
	Click this button to export the current LiveIP configuration to a .cfg or .csv file. See section "Importing and Exporting LiveIP Configurations" on page 490. This button is only visible when the server is in MulSetup.
	Click this button to import a saved LiveIP configuration file (.cfg or .csv). See section "Importing and Exporting LiveIP Configurations" on page 490. This button is only visible when the server is in MulSetup.
	In View mode, click this button to activate the Edit mode. When the Edit mode is active: • The editable fields are displayed on a lighter gray background. • A check box is displayed next to the fields on which you can filter the incoming or outgoing streams.
	In Edit mode, click this button to cancel all changes in the displayed settings.
	In Edit mode, click this button to commit all changes in the displayed settings. Modified settings whose field outline is red contain invalid values: these field values will not be committed when saving all changes.
NEW ! 	In Edit mode, click this button to perform one of the following actions: • **Reset SFP:** Reset all SFP interface parameters to the default values. ◦ When not working in ST2022-7, and if the bandwidth constraints do allow it, the streams are automatically assigned to the C interface.* ◦ When working in ST2022-7, the reset is equivilant to the mode **Set All Primary SFP C & Secondary D**. • **All SFP C/D:** Set all SFP interfaces to C or D. • **Set All Primary SFP C & Secondary D:** Set all primary streams to C and all secondary streams to D, or vice versa. (Only available in ST2022-7). • **Activate/Disable Soure Address Filtering:** Activate/disable the source address filtering on all active streams for all channels. • **Activate/Disable Source Port Filtering:** Activate/disable the source port filtering on all active streams for all channels.

* The only exceptions are the following:

- SLSMx4 (or higher) 1080p@59.94 without IP Aggregator
- UHD-4K over quad FHD@59.94 without IP Aggregator

In these cases, the first three 1080p phases are assigned to the C interface, whereas all remaining phases shall be assigned to the D interface.

5.3.3. General Settings

NEW !

Overview

The **Video IP Configuration** page displays some general settings in the **General** area.

These settings are related to the running or selected configuration.

Server Name

Description	Server hostname that consists of *<server facility name> / <configuration line number>*. This field is not editable in this page.

Video Standard

Description	Field rate and resolution defined for the active configuration line. This field is read-only in this page. See section "Field Rate" on page 212 for more information. See section "Resolution" on page 213 for more information.

Channels

Description	Channel configuration for the active configuration line. This field is read-only in this page. See sections "Inputs" and "Outputs" on page 234.

of Audios

Description	Number of mono audio channels per video channel. This field is read-only in this page. See section "Number of Tracks" on page 262

Format

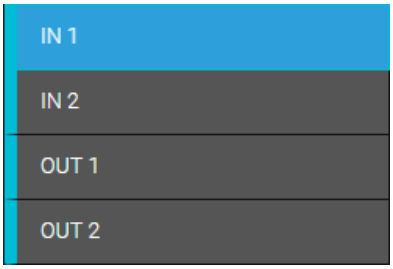
Availability	This field is only available with UHD-4K format.
Description	UHD-4K transport format.
Values	• **Quad-HD:**The UHD-4K image is transported either as four 1080p image quadrants (square division), or as as four 1080p images at 1/4 of the original 4K resolution (two-sample interleave). • **Single stream:** The UHD-4K image is transported as a single live IP video stream.

When working in UHD-4K Single Stream, only ST 2110 is allowed as protocol.

5.3.4. Editing LiveIP Stream Settings

How to Edit LiveIP Stream Settings

1. Open the **LiveIP** Configuration module from the Multicam Configuration module.
2. Click **Video IP Config** in the Menu bar.
3. In the Channels area (left), click the IN or OUT logical channel for which you want to define the stream settings:

   The physical streams (video, audio, ancillary data and monitoring) associated to the selected logical channel will be displayed in the areas on the right.
4. In the Edit bar, click the 

to enable the edit mode for the stream settings displayed.
5. Refer to the settings description to edit the settings as you want:
   - See section "LiveIP Settings for Video Streams" on page 418
   - See section "LiveIP Settings for Audio Streams" on page 434
   - See section "LiveIP Settings for Ancillary Data Streams" on page 445
   - See section "LiveIP Settings for Video Monitoring Streams" on page 453

The outline of the modified fields or check-boxes turns green if the change is valid, red if the change is invalid.

Unsaved changes are also identified by rectangles next to the channel number and next to the IP Config page name.

6. Click Save All to commit the changes or Cancel All to cancel all the modifications. Only the valid modifications will be committed when you save.

Enabled and Disabled Filter Fields

Some LiveIP parameters can be used as filters for incoming streams.

In **View** mode, the fields on which a filter can be defined are displayed differently if the filter is enabled or disabled.

On the following screenshot showing some input settings of video streams, the **Source Address** filter is enabled (regular font) and the **Source Port** filter is disabled (grey italic font):

Source Address	Source Port
223.200.150.1	*5000*

In **Edit** mode, the field is selected if enabled and unselected if disabled, as usual.

5.3.5. LiveIP Settings for Video Streams

Introduction

The Video area displays the video settings of the input or output LiveIP streams depending on whether you have selected an input or output channel in the Channels area:

- LiveIP Input Streams
- LiveIP Output Streams

See section "Editing LiveIP Stream Settings" on page 416 for a complete procedure on how to edit LiveIP streams.

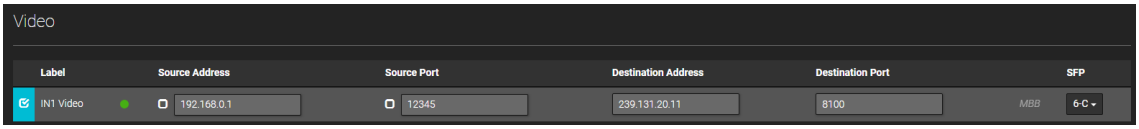
For flexibility reasons, there is no validation of the address and port numbers regarding the range authorized by the video standard. It is the user's responsibility to define a network compliant with the standards.

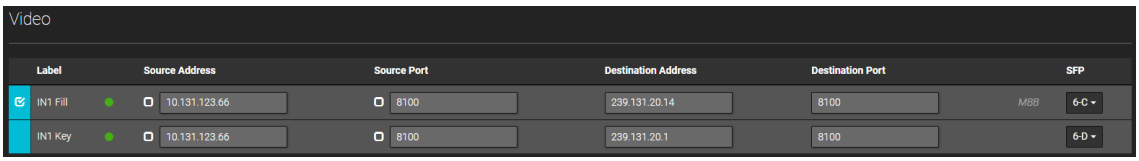
In Fill&Key mode, a Fill stream and a Key stream are to be configured independently from each other.

When ST2022-7 is active, the video stream configuration lines for each server channel are duplicated. The first line indicates the primary stream, the second line indicates the secondary stream.

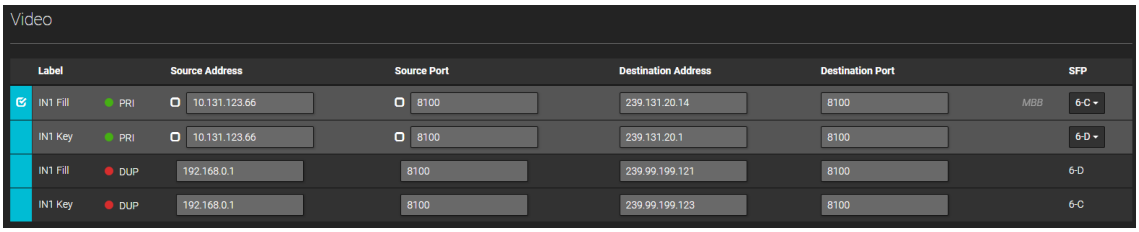
LiveIP Input Streams

Without ST2022-7 Activated





With 2022-7 Activated



Check Box

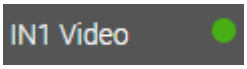
By default, the check box in front of the live IP video stream(s) is selected. The corresponding receiver is active.

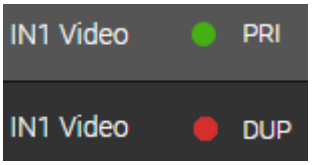
In Fill&Key mode, you cannot activate and deactivate the Key stream without doing this first for the Fill stream. In case of ST2022-7, you activate the duplicate Fill stream, and the primary and duplicate Key stream by activating the primary Key stream.

Label

Description	Label identifying the input stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label can include the following elements : • channel number (all) ◦ INX • fill or key stream (in case of F&K Spotbox or F&K XSense mode) ◦ **Fill** ◦ **Key** • phase number (SLSM) ◦ PHASE-X • UHD format and quadrant number (UHD-4K) ◦ 2SI-X (two-sample interleave) ◦ SDQS-X (square division) • PRI/DUP indicates the primary or secondary stream (in case of ST2022-7) Examples: • IN3 PHASE-1 (SLSM input channel 3, phase 1) • IN3 SDQS-2 (UHD-4K input channel 3, square division, quadrant 2) • IN3 Fill DUP

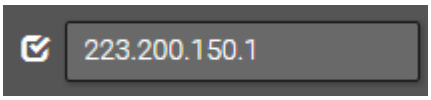
Link Status





Description	Dot indicating the (non)presence of a stream.
Availability	Only appears for active streams.
Values	• **Green:** The input stream is properly configured and connected. • **Red:** The input stream is not properly configured and/or connected. • One of the following might be wrong: ◦ the cable is no longer plugged into the connector; ◦ the IP of the stream is wrong; no packets are being received; ◦ the essence type of the stream is wrong.

Source Address



Description	IP address of the sender from which the incoming streams are sent. This is used as a filtering option you can activate with the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams with this source IP address in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source IP address. When you check or uncheck the check box of a primary stream, the check box of the corresponding secondary stream will be checked or unchecked at the same time.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Source Port

Description	UDP port number of the sender from which the input streams are sent. This is used as a filtering option you can activate using the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams having this source port in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source port number. When you check or uncheck the check box of a primary stream, the check box of the corresponding secondary stream will be checked or unchecked at the same time.
Values	This must be a valid UDP port number in the range [0-65535].

Destination Address

Description	IP address the sender sends its streams to. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must simply be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

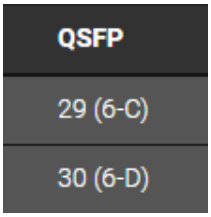
Destination Port

Description	UDP port number of the destination address the sender sends streams to. The EVS server listens to this port to get the streams from the sender.
Values	This must be a valid UDP port number in the range [0-65535].

MBB

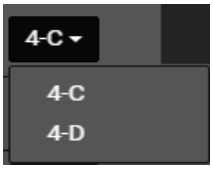
Description	Make-before-break determines how the receiver will handle the transition from one stream to another.
Availability	This field only appears if MBB is supported by the configuration of the server.
Values	**MBB:** the new input stream is ingested by the receiver before the original stream is disconnected.
Limitations	See section "About EVS Server in IP Network" on page 400 for more information.

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the video streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will receive the incoming video streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

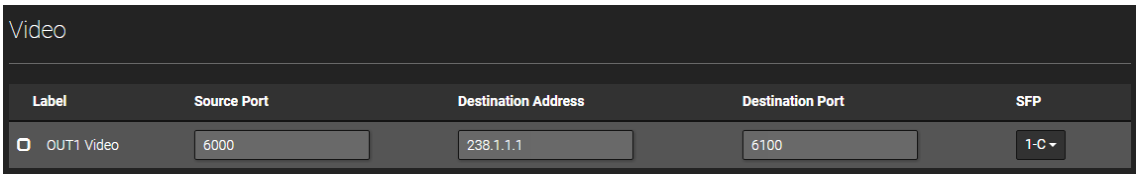
SFP



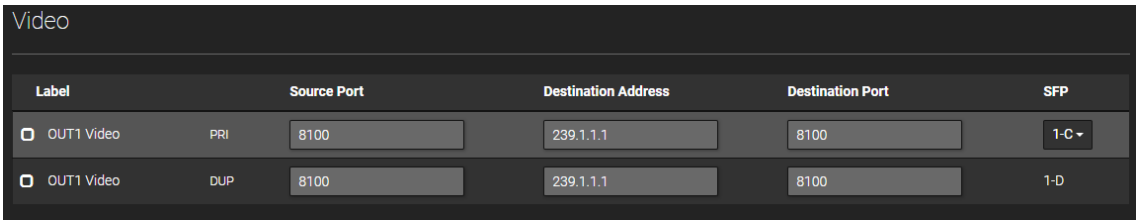
Description	Physical V4X SFP+ port (IN connector) on the EVS server that receives the incoming streams. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. It cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server receives the input streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the QSFP field.
Values	• X-C (default, for exceptions see "Overview of Video IP Configuration" on page 410) • X-D where *X* is the number of the codec module.
NEW ! **Limitations**	• When not in ST2022-7: ◦ In 720p and 1080i, a maximum of 6 streams are allowed per SFP+ interface. ◦ In 1080p and UHD-4K QuadHD 2SI or SDQS (59.94Hz), the incoming streams cannot exceed three streams per SFP+ interface. ◦ In UHD-4K single stream, only 1 stream is allowed per SFP+ interface. ◦ Streams are assigned to the SFP+ port C by default. Exceptions: In case of SLSM4x (or higher) in 1080p@59.94Hz and UHD-4K over quad FHD@59.94Hz, the first 3 phases are assigned to interface C, the remaining phases are assigned to interface D. • When in ST2022-7: ◦ UHD-4K is not supported in 59.94Hz. ◦ the primary stream has to be on SFP+ port C and the secondary stream on SFP+ port D.

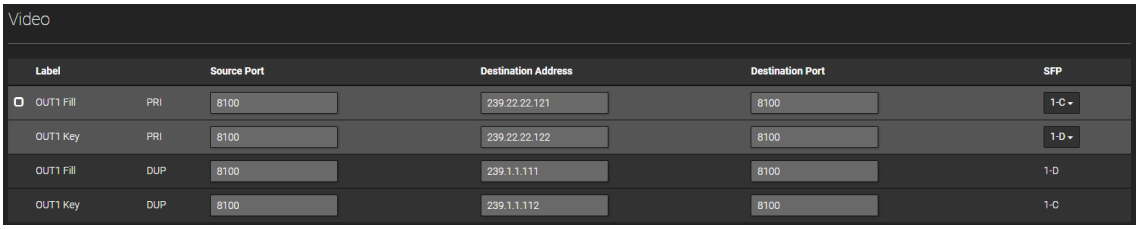
LiveIP Output Streams

Without 2022-7 activated



With 2022-7 activated





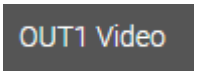
Check-Box

By default, the check box in front of the video output stream is unchecked. This means that the corresponding sender is inactive. The video output stream is not sent.

Check the check box to activate the sender and send the corresponding video output stream.

In Fill&Key mode, you cannot activate and deactivate the Key stream without doing this first for the Fill stream. In case of ST2022-7, you activate the duplicate Fill stream, and the primary and duplicate Key stream by activating the primary Key stream.

Label



Description	Label identifying the output streams. This is automatically assigned based on the defined naming principles explained in the **Values** section.
Values	The label includes the following elements : • channel number (all) ◦ **OUTX** • fill or key stream (in case of F&K Spotbox or F&K XSense mode) ◦ **Fill** ◦ **Key** • UHD format and quadrant number (UHD-4K) ◦ **2SI-X** (two-sample interleave) ◦ **SDQS-X** (square division) • **PRI/DUP** indicates the primary or secondary stream (in case of ST2022-7) Examples: • OUT2 Video (standard output channel 2) • OUT2 SDQS-2 (UHD-4K output channel 2, square division, quadrant 2) • OUT3

Source Port

Description	Port number of the source IP address (of the V4X SFP+) from which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

The source IP address of an output stream is that of the associated V4X SFP+ port and is defined in the section "IP IO Configuration" on page 306.

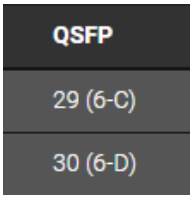
Destination Address

Description	IP address to which the output streams are sent. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

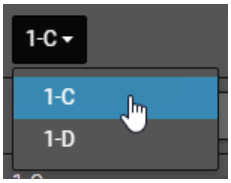
Description	Port number to which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the video streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will send the outgoing video streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

SFP



Description	Physical V4X SFP+ port (OUT connector) on the EVS server from which the output streams are sent. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. It cannot be changed. • The **letter (C or D)** of the SFP+ port from which the EVS server sends the output streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the QSFP field.
Values	• X-C (default, for exceptions see "Overview of Video IP Configuration" on page 410) • X-D where *X* is the number of coded module
NEW ! Limitations	• When not in ST2022-7: ◦ In 720p and 1080i, a maximum of 6 streams are allowed per SFP+ interface. ◦ In 1080p and UHD-4K QuadHD 2SI or SDQS (50Hz), the outgoing streams cannot exceed four streams per SFP+ interface. ◦ In 1080p and UHD-4K QuadHD 2SI or SDQS (59.94Hz), the outgoing streams cannot exceed three streams per SFP+ interface. ◦ In UHD-4K single stream, only 1 stream is allowed per SFP+ interface. ◦ Streams are assigned to the SFP+ port C by default. Exceptions: In case of UHD-4K over quad FHD@59.94Hz, the first 3 phases are assigned to interface C, the remaining phases are assigned to interface D. • When in ST2022-7: ◦ UHD-4K is not supported in 59.94Hz. ◦ the primary stream has to be on SFP+ port C and the secondary stream on SFP+ port D.

5.3.6. LiveIP Settings for External Input Video Streams

Live-to-Tape Feature

The IPEdit module that is part of IPDirector allows advanced Timeline editing. The "Live-to-Tape" feature in IPEdit allows to replace a part of the timeline with an external input (which is not recorded on disk). When replacing a portion of the Timeline by some external content we do see the "old" content on the PRV channel.

In the LiveIP Configuration module, for all PGM pairs (odd-even) that are controlled by IPDirector, an external input stream is added on the odd PGM. The even PGM will be used to see the old content, the odd PGM to view the resulting Timeline after insertion of the new content.

External Input Video Section

The External Input Video section appears for a specific PGM channel in case the following conditions are fulfilled:

- The PGM channel is controlled by IPDirector.
- The subsequent PGM channel is also controlled by IPDirector.
- The PGM channel number is an odd number (1, 3 or 5).
- F&K Spotbox and F&K XSense are not selected as base configuration.

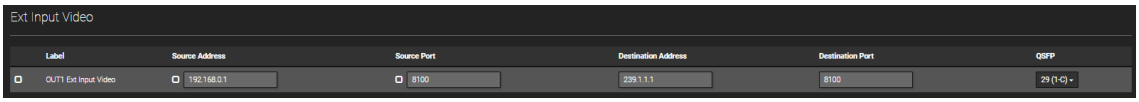
This section displays the video settings of a LiveIP external input video stream for a specific output channel in the Channels area:

- LiveIP Input Streams

See section "Editing LiveIP Stream Settings" on page 416 for a complete procedure on how to edit LiveIP streams.

For flexibility reasons, there is no validation of the address and port numbers regarding the range authorized by the video standard. It is the user's responsibility to define a network compliant with the standards.

LiveIP Input Streams



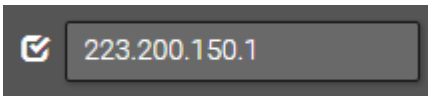
Check Box

By default, the check box in front of the live IP video stream is deselected. The corresponding receiver is inactive.

Label

Description	Label identifying the input stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label can include the following elements: • channel number (1, 3 or 5) ◦ **OUTX Ext Input Video**

Source Address



Description	IP address of the sender from which the incoming streams are sent. This is used as a filtering option you can activate with the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams with this source IP address in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source IP address. When you check or uncheck the check box of a primary stream, the check box of the corresponding secondary stream will be checked or unchecked at the same time.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Source Port

Description	UDP port number of the sender from which the input streams are sent. This is used as a filtering option you can activate using the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams having this source port in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source port number. When you check or uncheck the check box of a primary stream, the check box of the corresponding secondary stream will be checked or unchecked at the same time.
Values	This must be a valid UDP port number in the range [0-65535].

Destination Address

Description	IP address the sender sends its streams to. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must simply be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

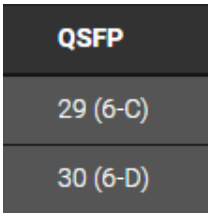
Destination Port

Description	UDP port number of the destination address the sender sends streams to. The EVS server listens to this port to get the streams from the sender.
Values	This must be a valid UDP port number in the range [0-65535].

MBB

Description	Make-before-break determines how the receiver will handle the transition from one stream to another.
Availability	This field only appears if MBB is supported by the configuration of the server.
Values	**MBB:** the new input stream is ingested by the receiver before the original stream is disconnected.
Limitations	See section "About EVS Server in IP Network" on page 400 for more information.

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the video streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will receive the incoming video streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

SFP

Description	Physical V4X SFP+ port (IN connector) on the EVS server that receives the incoming streams. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. It cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server receives the input streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the QSFP field.
Values	• X-C (default) • X-D where *X* is the number of the codec module.

5.3.7. LiveIP Settings for Audio Streams

Introduction

The Audio area will display the audio settings of input or output LiveIP streams depending on whether you have selected an input or output channel in the Channels area:

- LiveIP Input Streams
- LiveIP Output Streams

The audio streams are not available with the protocol ST 2022-6.

Up to 4 audio streams can be associated to an IN or OUT channel.

See section "Editing LiveIP Stream Settings" on page 416 for a complete procedure on how to edit LiveIP streams.

For flexibility reasons, there is no validation of the address and port numbers regarding the range authorized by the video standard. It is the user's responsibility to define a network compliant with the standards.

When ST2022-7 is active, the audio stream configuration lines for each server channel are duplicated. The first line indicates the primary stream, the second line indicates the secondary stream.

LiveIP Input Streams

Without ST2022-7 activated

Label	Source Address	Source Port	Destination Address	Destination Port	SFP	Audio type	Channel Grouping	# of Channels	Audio Track
IN1 Audio-1	10.131.88.12	8100	239.1.1.12	8100	6-C	ST 2110-30		8	1 to 8
IN1 Audio-2	10.131.88.12	8100	239.1.1.13	8100	6-C	ST 2110-31	AES3,AES3,AES3,AES3	8	9 to 16
IN1 Audio-3	192.168.0.1	8100	239.1.1.5	8100	6-C	ST 2110-30		2	17 to 18
IN1 Audio-4	192.168.0.1	8100	239.1.1.1	8100	6-C	ST 2110-30		8	19 to 26

With ST2022-7 activated

Audio

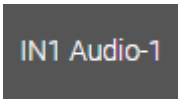
Label		Source Address	Source Port	Destination Address	Destination Port	SFP	Channel Grouping	# of Channels	Audio Track
IN1 AES67-1	PRI	10.129.110.210	0	239.131.30.11	8100	6-C		2	1 to 2
IN1 AES67-1	DUP	10.214.36.130	0	239.131.30.11	8100	6-D		2	1 to 2
IN1 AES67-2	PRI	10.129.110.210	0	239.131.30.12	8100	6-C		2	3 to 4

Check-Box

Check the check-box of the first audio input stream to activate the corresponding receiver and receive the audio input stream. By default, the check box is unchecked.

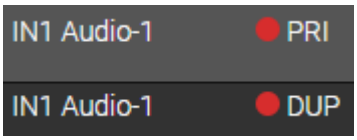
A check-box is displayed in front of an audio stream only if the check box of the preceding audio stream has been checked.

Label



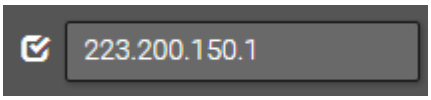
Description	Label identifying the audio input stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label is based on the pattern <INX Audio-Y PRI/DUP> where: • **X** is the channel number • **Y** is the audio stream number • **PRI/DUP** indicates the primary or secondary stream (in case of ST2022-7)

Link Status



Description	Dot indicating the (non)presence of a stream.
Availability	Only appears for active streams.
Values	• **Green:** The input stream is properly configured and connected. • **Red:** The input stream is not properly configured and/or connected. One of the following might be wrong: ◦ the cable is no longer plugged into the connector; ◦ the IP of the stream is wrong; no packets are being received; ◦ the essence type of the stream is wrong.

Source Address



Description	IP address of the sender from which the incoming streams are sent. This is used as a filtering option you can activate with the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams with this source IP address in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source IP address. In case ST2022-7 is enabled, when you check or uncheck the check box of a primary stream, the check box of the corresponding secondary stream will be checked or unchecked at the same time. If no source address is specified, the filter is seen as being inactive.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Source Port

Description	UDP port number of the sender from which the input streams are sent. This is used as a filtering option you can activate using the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams having this source port in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source port number. In case ST2022-7 is enabled, when you check or uncheck the check box of a primary stream, the check box of the corresponding secondary stream will be checked or unchecked at the same time.
Values	This must be a valid UDP port number in the range [0-65535].

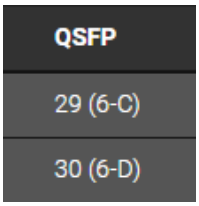
Destination Address

Description	IP address the sender sends its streams to. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

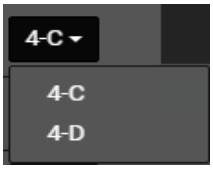
Description	UDP port number of the destination address the sender sends streams to. The EVS server listens to this port to get the streams from the sender.
Values	This must be a valid UDP port number in the range [0-65535].

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the audio streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will receive the incoming audio streams.
Availability	This field is displayed instead of the SFP field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

SFP



Description	Physical V4X SFP+ port (IN connector) on the EVS server that receives the input streams. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. IT cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server receives the input streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the **QSFP** field.
Values	• X-C (default) • X-D where *X* is the number of coded module.
Limitations	When in ST2022-7, the primary stream has to be on SFP C and the secondary stream on SFP D.

Audio Type

Description	Type of protocol used to transport the audio stream. The protocol used is closely linked to the type of audio stream to be transported.
Values	• ST 2110-30 (default) (AES67 uncompressed audio) • ST 2110-31 (compressed AES3 streams)
Limitations	In case of ST 2110-31, you need to flag the audio channels as EY (Dolby Embedded). See section "Overview on Advanced Audio Settings" on page 266.

Channel Grouping

Description	Free text to specify how audio mono channels are grouped in the stream.
Values	It is recommended to use the following values specified in the ST 2110-30 standard for a meaningful grouping. If several values are entered, separate them by a comma.

Grouping Symbol	Qty channels	Group Descr.	Order channels
M	1	Mono	Mono
DM	2	Dual Mono	M1, M2
ST	2	Standard Stereo	Left, Right
LtRt	2	Matric Stereo	Left Total, Right Total
51	6	5.1 Surround	L, R, C, LFE, Ls, Rs
71	8	7.1 Surround	L, R, C, LFE, Lss, Rss, Lrs, Rrs
U01...U64	As in symbol *Unn* where *nn* = nr ch. in group)	Undefined	None specified: ch. order in this group = Undefined.

Limitations	If ST2110-31 is selected, the **Channel Grouping** field will be read-only. The string AES3 will be displayed `n/2` times separated by a comma, where `n` is the number of configured audio tracks. For example, ST2110-31 with 8 audio tracks => Channel Grouping: AES3,AES3,AES3,AES3.

With duplicate streams (ST2022-7), you cannot set the channel grouping for secondary streams. The value is automatically taken over from the primary stream.

of Channels

Description	Number of audio mono channels present in the stream.
Values	Addition of all mono channels of all groupings in the stream. • For an IN channel, up to 16 audio mono channels can be included in each audio stream. The default value is 8.
Limitation	• For primary streams (in case of 2022-7), the sum of the number of audio mono channels set for the activated audio streams must be ≤ the number of audio channels mentioned in the General Settings of the Video IP Configuration page. • If ST2110-31 is selected as audio type, the number of audio tracks per stream has to be even. If not, the following error message will be displayed: 'In ST 2110-31 the number of audio tracks must be an even number'.

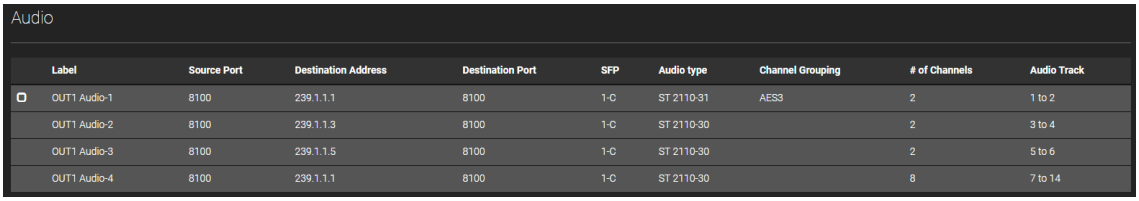
With duplicate streams (ST2022-7), you cannot set the number of audio mono channels for the secondary stream. The value is automatically taken over from the primary stream.

Audio Track

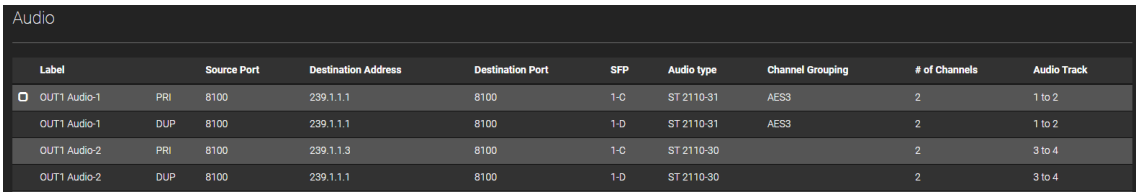
Description	Mapping between the streams and the embedded mono channels on the EVS server. This is a read-only field automatically calculated by the EVS server.
Values	X to Y where: • X is the first number of the mapped mono channel on the EVS server. • Y is the last number of the mapped mono channel on the EVS server.

LiveIP Output Streams

Without ST2022-7 activated



With ST2022-7 activated

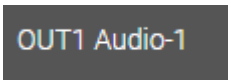


Check-Box

Check the check-box of the first audio output stream to activate the corresponding sender and send the audio output stream. By default, the check box is unchecked.

A check-box is displayed in front of an audio stream only if the check box of the preceding audio stream has been checked.

Label



Description	Label identifying the audio output stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label is based on the pattern **<OUTX Audio-Y PRI/DUP>** where: • **X** is the channel number • **Y** is the audio stream number • **PRI/DUP** indicates the primary or secondary stream (in case of ST2022-7)

Source Port

Description	Port number of the source IP address (of the V4X SFP+) from which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

The source IP address of an output stream is that of the associated V4X SFP+ port and is defined in the section "IP IO Configuration" on page 306.

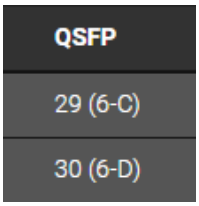
Destination Address

Description	IP address to which the output streams are sent. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

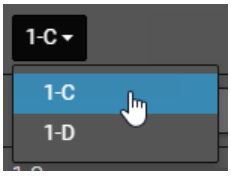
Description	Port number to which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the audio streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will send the audio streams.
Availability	This field is displayed instead of the SFP field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

SFP



Description	Physical V4X SFP+ port (OUT connector) on the EVS server from which the output streams are sent. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. It cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server sends the output streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the **QSFP** field.
Values	• X-C (default) • X-D where *X* is the number of coded module.
Limitations	When in ST2022-7, the primary stream has to be on SFP C and the secondary stream on SFP D.

Audio Type

Description	Type of protocol used to transport the audio stream. The protocol used is closely linked to the type of audio stream to be transported.
Values	• ST 2110-30 (default) (AES67 uncompressed audio) • ST 2110-31 (compressed AES3 streams)
Limitations	In case of ST 2110-31, you need to flag the audio channels as EY (Dobly Embedded). See section "Overview on Advanced Audio Settings" on page 266.

Channel Grouping

See section "Channel Grouping" on page 439.

of Channels

Description	Number of audio mono channels present in the stream.
Values	Addition of all mono channels of all groupings in the stream. • For an OUT, 2, 4, 6, 8 or 16 audio channels can be included in each audio stream. To support 16 audio channels, the packet time should be set to 125µs. The default value is 8.
Limitation	• For primary streams (in case of 2022-7), the sum of the number of audio mono channels set for the activated audio streams must be ≤ the number of audio channels mentioned in the General Settings of the Video IP Configuration page. • 16 audio channels is only supported if the server is running in maximally 8 video channels.

Audio Track

See section "Audio Track" on page 440

5.3.8. LiveIP Settings for Ancillary Data Streams

Introduction

The Ancillary Data area will display the ancillary data settings of input or output LiveIP streams depending on whether you have selected an input or output channel in the Channels area:

- LiveIP Input Streams
- LiveIP Output Streams

The ancillary data streams are not available with the protocol ST 2022-6 or ST 2022-8.

1 ancillary data stream can be associated to an IN or OUT channel.

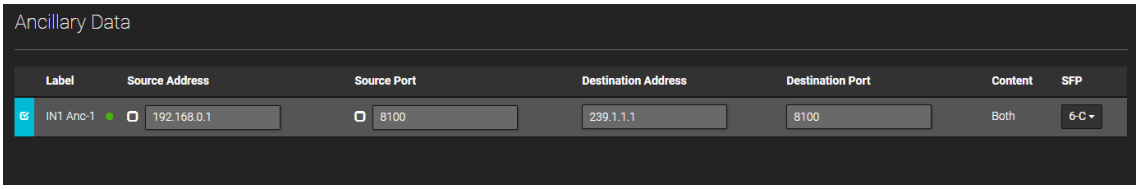
When ST2022-7 is active, the ancillary data stream configuration line for each server channel is duplicated. The first line indicates the primary stream, the second line indicates the secondary stream.

See section "Editing LiveIP Stream Settings" on page 416 for a complete procedure on how to edit LiveIP streams.

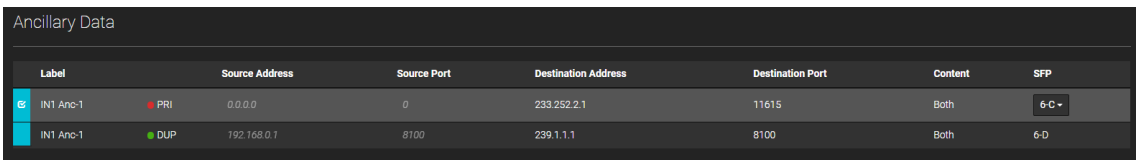
For flexibility reasons, there is no validation of the address and port numbers regarding the range authorized by the video standard. It is the user's responsibility to define a network compliant with the standards.

LiveIP Input Streams

Without ST2022-7 Activated



With ST2022-7 Activated



Check-Box

Check the check-box of the ancillary data input stream to activate the corresponding receiver and receive the ancillary data input stream. By default, the ancillary data stream is not selected.

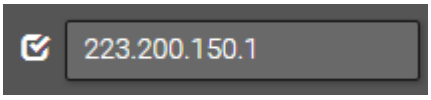
Label

Description	Label identifying the ancillary data input stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label is based on the pattern **<INX Anc-Y>** where: • **X** is the channel number • **Y** is the ancillary data stream number

Link Status

Description	Dot indicating the (non)presence of a stream.
Availability	Only appears for active streams.
Values	• **Green:** The input stream is properly configured and connected. • **Red:** The input stream is not properly configured and/or connected. One of the following might be wrong: ◦ the cable is no longer plugged into the connector; ◦ the IP of the stream is wrong; no packets are being received; ◦ the essence type of the stream is wrong; ◦ no valid IP address of SFP/QSFP interface is assigned to the stream (when working in DHCP).

Source Address



Description	IP address of the sender from which the incoming streams are sent. This is used as a filtering option you can activate with the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams with this source IP address in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source IP address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Source Port

Description	UDP port number of the sender from which the input streams are sent. This is used as a filtering option you can activate using the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams having this source port in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source port number.
Values	This must be a valid UDP port number in the range [0-65535].

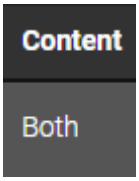
Destination Address

Description	IP address the sender sends its streams to. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

Description	UDP port number of the destination address the sender sends streams to. The EVS server listens to this port to get the streams from the sender.
Values	This must be a valid UDP port number in the range [0-65535].

Content

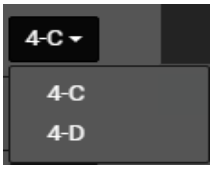


Description	Type of data contained in the stream.
Values	Both (334M and Timecode) This field cannot be edited.

QSFP

Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the ancillary data streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will receive the incoming ancillary data streams.
Availability	This field is displayed instead of the **SFP**field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D). • When not in ST2022-7, the IN1 has to be on 29 (X-C).

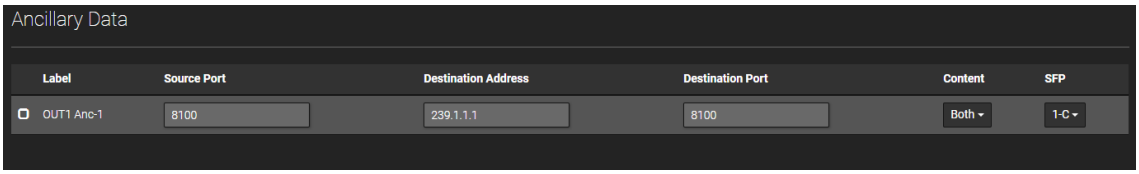
SFP



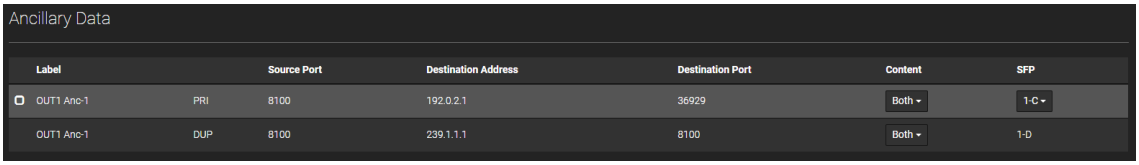
Description	Physical V4X SFP+ port (IN connector) on the EVS server that receives the input streams. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. IT cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server receives the input streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the **QSFP** field.
Values	• X-C (default) • X-D where *X* is the number of codec module.
Limitations	When in ST2022-7, the primary stream has to be on SFP C and the secondary stream on SFP D.

LiveIP Output Streams

Without ST2022-7 Activated



With ST2022-7 Activated



Check Box

Check the check-box of the ancillary data output stream to activate the corresponding sender and send the ancillary data output stream. By default, the check box is unchecked.

Label

Description	Label identifying the ancillary data output stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label is based on the pattern **<OUTX Anc-Y>** where: • **X** is the channel number • **Y** is the audio stream number

Source Port

Description	Port number of the source IP address (of the V4X SFP+) from which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

The source IP address of an output stream is that of the associated V4X SFP+ port and is defined in the section "IP IO Configuration" on page 306.

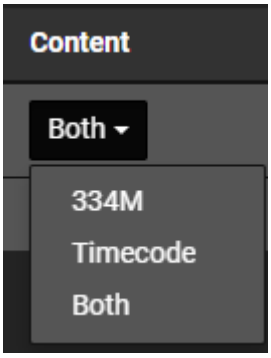
Destination Address

Description	IP address to which the output streams are sent. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

Description	Port number to which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

Content



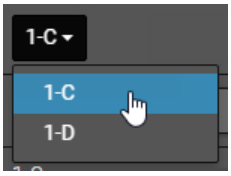
Description	Type of data contained in the stream.
Values	• 334M (closed captions and keywords) • Timecode • Both

- In case '334M' is selected, the Encoding setting in the SMPTE 334M Packet Management settings has to be set to 'Yes' to be able to transfer the ancillary data via IP streams. See section "SMPTE 334M Packet Management Settings" on page 288.
- In case 'Timecode' is selected, the HD OUT ATC-LTC / ATC-VITC settings in the Timecode Insertion settings cannot be set both to 'No'. See section "Timecode Insertion Settings" on page 287.
- In case 'Both' is selected, the Encoding setting has to be set to 'Yes' and the HD OUT ATC-LTC / ATC-VITC settings cannot be set both to 'No'.

QSFP

Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the ancillary data streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will send the ancillary data streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D). • When not in ST2022-7, the OUT1 has to be on 29 (X-C).

SFP



Description	Physical V4X SFP+ port (OUT connector) on the EVS server from which the output streams are sent. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. It cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server sends the output streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the QSFP field.
Values	• X-C (default) • X-D where *X* is the number of coded module.
Limitations	When in ST2022-7, the primary stream has to be on SFP C and the secondary stream on SFP D.

5.3.9. LiveIP Settings for Video Monitoring Streams

Introduction

The Video Monitoring area will display the settings for the video monitoring LiveIP streams of the input and/or output streams depending on whether you have selected an input or output channel in the Channels area.

1 video monitoring stream can be associated to an IN or OUT channel.

See section "Editing LiveIP Stream Settings" on page 416 for a complete procedure on how to edit LiveIP streams.

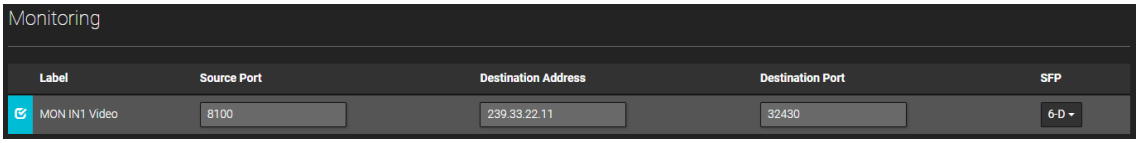
For flexibility reasons, there is no validation of the address and port numbers regarding the range authorized by the video standard. It is the user's responsibility to define a network compliant with the standards.

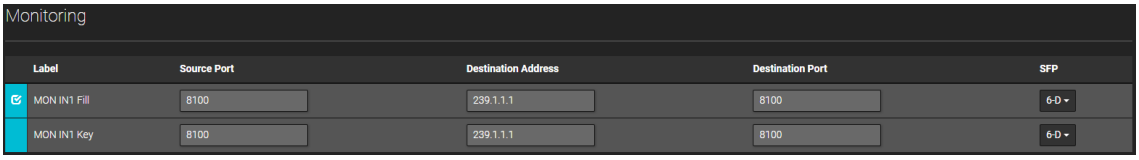
In Fill&Key mode, a Fill monitoring stream and a Key monitoring stream are to be configured independently from each other.

When ST2022-7 is active, the monitoring stream configuration lines for each server channel are duplicated. The first line indicates the primary stream, the second line indicates the secondary stream.

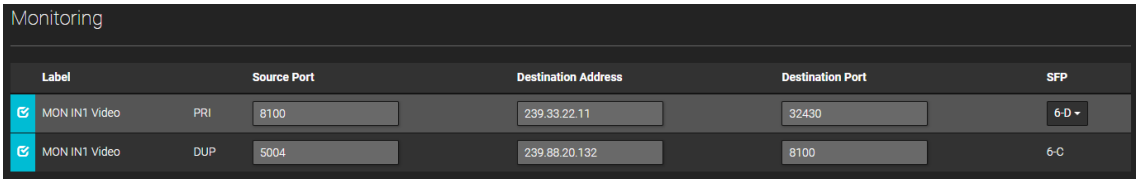
Monitoring of Input Streams

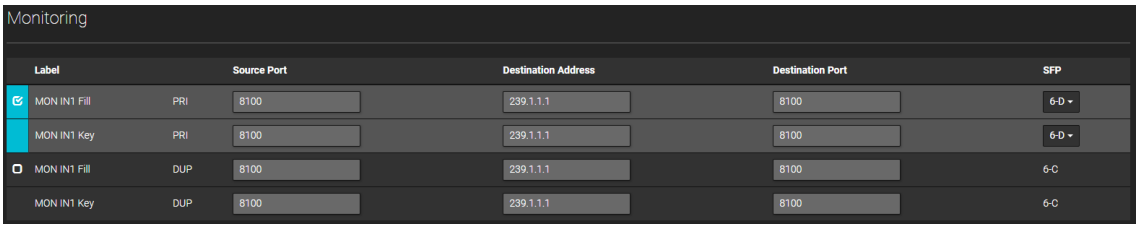
Without ST2022-7 activated





With ST2022-7 activated





Check-Box

Check the check-box of the 1st monitoring input stream to activate the corresponding receiver and receive the monitoring input stream. By default, none of the monitoring streams (primary, secondary) is activated.

When you uncheck the check box of a primary stream, the corresponding check box of the secondary stream will be unchecked as well.

When you check the check box of the primary stream, the check box of the secondary stream will appear. You can choose to activate it or not.

In Fill&Key mode, you cannot activate and deactivate the Key stream without doing this first for the Fill stream. In case of ST2022-7, you activate the duplicate Fill stream, and the primary and duplicate Key stream by activating the primary Key stream.

Label

Description	Label identifying the monitoring LiveIP stream of the input stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label can include the following elements : • channel number (all) ◦ **MON INX** • fill or key stream (in case of F&K Spotbox or F&K XSense mode) ◦ **Fill** ◦ **Key** • **PRI/DUP**indicates the primary or secondary stream (in case of ST2022-7)

Source Port

Description	Port number of the source IP address (of the V4X SFP+) from which the monitoring streams of the input streams are sent.
Values	This must be a valid port number in the range [0-65535].

The monitoring streams are sent from the V4X SFP+ connector receiving the corresponding input streams.
The source IP address of a monitoring stream is that of the associated V4X SFP+ port and is defined in the section "IP IO Configuration" on page 306.

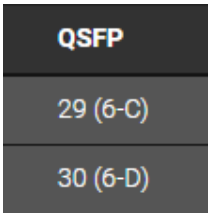
Destination Address

Description	IP address to which the monitoring streams of the input streams are sent. Multicast and unicast IP addresses are supported.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

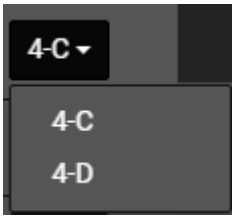
Description	Port number to which the monitoring streams of the input streams are sent.
Values	This must be a valid port number in the range [0-65535].

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the video streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that is used to send the outgoing video streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

SFP

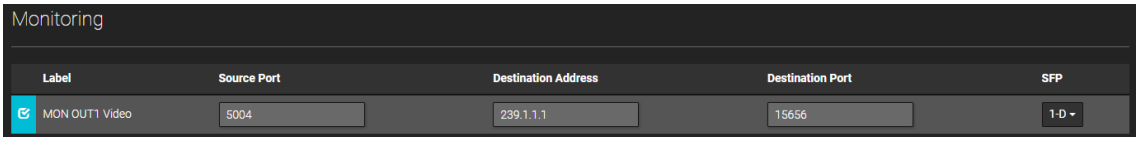


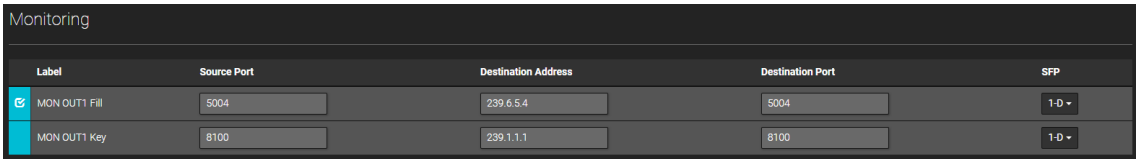
Description	Physical V4X SFP+ port (IN connector) on the EVS server from which the monitoring streams are sent. The monitoring streams are sent from the same V4X SFP+ connector as the IN connector.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the QSFP field.
Values	• X-C (default) • X-D where *X* is the number of coded module.
Limitations	• When in ST2022-7, the primary stream has to be on SFP+ port C and the secondary stream on SFP+ port D.

When working in ST2022-7 with the secondary stream deactivated, the monitoring stream may either be assigned to SFP+ port C or D.

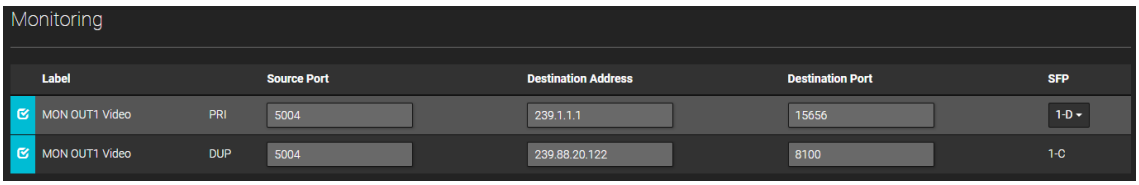
Monitoring of Output Streams

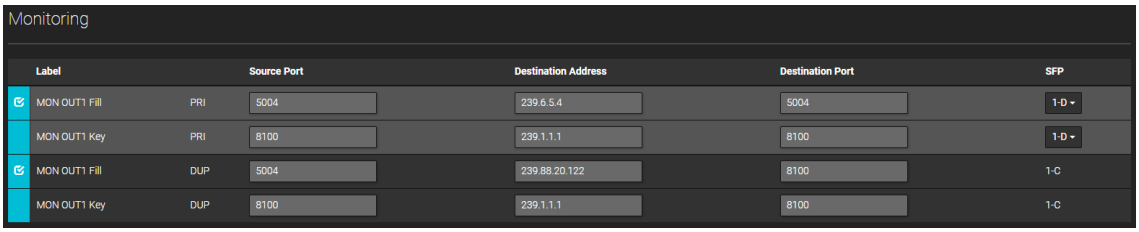
Without ST2022-7 Activated





With ST2022-7 Activated





Check-Box

Check the check-box of the 1st monitoring output stream to activate the corresponding sender and send the monitoring output stream. By default, none of the monitoring streams (primary, secondary) is activated.

When you uncheck the check box of a primary stream, the corresponding check box of the secondary stream will be unchecked as well.

When you check the check box of the primary stream, the check box of the secondary stream will appear. You can choose to activate it or not.

In Fill&Key mode, you cannot activate and deactivate the Key stream without doing this first for the Fill stream. In case of ST2022-7, you activate the duplicate Fill stream, and the primary and duplicate Key stream by activating the primary Key stream.

Label

Description	Label identifying the monitoring IP stream of the output stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label can include the following elements : • channel number (all) ◦ **MON OUTX** • fill or key stream (in case of F&K Spotbox or F&K XSense mode) ◦ **Fill** ◦ **Key** • **PRI/DUP**indicates the primary or secondary stream (in case of ST2022-7)

Source Port

Description	Port number of the source IP address (of the V4X SFP+) from which the monitoring streams of the output channel are sent.
Values	This must be a valid port number in the range [0-65535].

The monitoring streams are sent from the V4X SFP+ connector sending the corresponding output streams.
The source IP address of a monitoring stream is that of the associated V4X SFP+ port and is defined in the section "IP IO Configuration" on page 306.

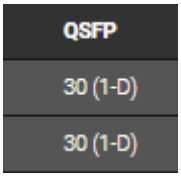
Destination Address

Description	IP address to which the monitoring streams of the output streams are sent. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

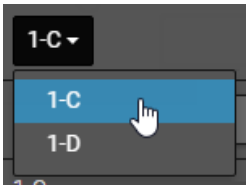
Description	Port number to which the monitoring streams of the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the video streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that is used to send the outgoing video streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

SFP



Description	Physical V4X SFP+ port (OUT connector) on the EVS server from which the monitoring streams are sent. The monitoring streams are sent from the same V4X SFP+ connector as the OUT connector.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the QSFP field.
Values	• X-C (default) • X-D where *X* is the number of coded module.
Limitations	• When in ST2022-7, the primary stream has to be on SFP+ port C and the secondary stream on SFP+ port D.

When working in ST2022-7 with the secondary stream deactivated, the monitoring stream may either be assigned to SFP+ port C or D.

5.3.10. LiveIP Settings for Audio Monitoring Streams

Introduction

The Audio Monitoring area will display the settings for the audio monitoring LiveIP streams of the input streams.

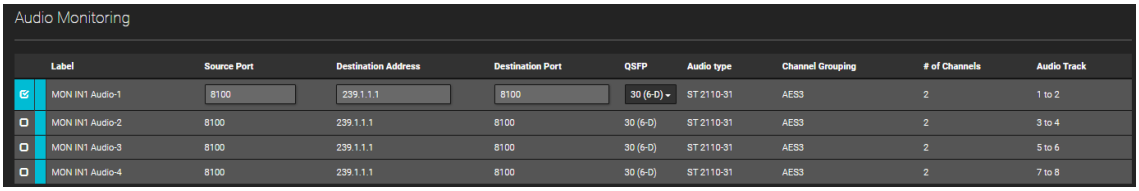
Up to 4 audio monitoring streams can be associated to an IN channel.

For flexibility reasons, there is no validation of the address and port numbers regarding the range authorized by the video standard. It is the user's responsibility to define a network compliant with the standards.

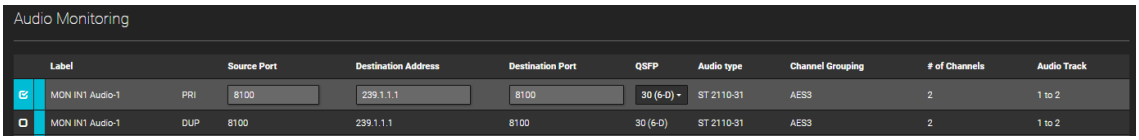
When ST2022-7 is active, the audio stream configuration lines for each server channel are duplicated. The first line indicates the primary stream, the second line indicates the secondary stream.

Monitoring of Input Streams

Without ST2022-7 activated



With ST2022-7 activated



Check-Box

Check the check-box of the first audio monitoring input stream to activate the corresponding receiver and receive the audio monitoring input stream. By default, the check box is unchecked.

Label

Description	Label identifying the monitoring LiveIP stream of the input stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label is based on the pattern **<MON INX Audio PRI/DUP>** where: • **X** is the channel number • **PRI/DUP**indicates the primary or secondary stream (in case of ST2022-7)

Source Port

Description	UDP port number of the sender from which the input streams are sent. This is used as a filtering option. Only input streams having this source port in their header will be passed through to the corresponding IN connector of the EVS server.
Values	This must be a valid UDP port number in the range [0-65535].

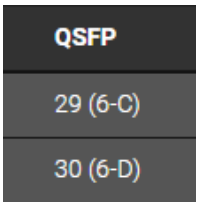
Destination Address

Description	IP address the sender sends its streams to. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

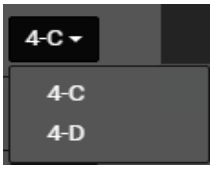
Description	UDP port number of the destination address the sender sends streams to. The EVS server listens to this port to get the streams from the sender.
Values	This must be a valid UDP port number in the range [0-65535].

QSFP



Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the audio streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will receive the incoming audio streams.
Availability	This field is displayed instead of the SFP field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (X-C) • 30 (X-D) where *X* is the number of the codec module.
Limitations	• When in ST2022-7, the primary stream has to be on 29 (X-C) and the secondary stream on 30 (X-D).

SFP



Description	Physical V4X SFP+ port (IN connector) on the EVS server that receives the input streams. • The **codec module (1 to 6)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. IT cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server receives the input streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the **QSFP** field.
Values	• X-C (default) • X-D where *X* is the number of coded module.
Limitations	When in ST2022-7, the primary stream has to be on SFP C and the secondary stream on SFP D.

Audio Type

Description	Type of protocol used to transport the audio stream. The protocol used is closely linked to the type of audio stream to be transported.
Values	• ST 2110-30 (default) (AES67 uncompressed audio) • ST 2110-31 (compressed AES3 streams)
Limitations	In case of ST 2110-31, you need to flag the audio channels as EY (Dobly Embedded). See section "Overview on Advanced Audio Settings" on page 266.

Channel Grouping

Description	Free text to specify how audio mono channels are grouped in the stream.
Values	It is recommended to use the following values specified in the ST 2110-30 standard for a meaningful grouping. If several values are entered, separate them by a comma.

Grouping Symbol	Qty channels	Group Descr.	Order channels
M	1	Mono	Mono
DM	2	Dual Mono	M1, M2
ST	2	Standard Stereo	Left, Right
LtRt	2	Matric Stereo	Left Total, Right Total
51	6	5.1 Surround	L, R, C, LFE, Ls, Rs
71	8	7.1 Surround	L, R, C, LFE, Lss, Rss, Lrs, Rrs
U01...U64	As in symbol *Unn* where *nn* = nr ch. in group)	Undefined	None specified: ch. order in this group = Undefined.

Limitations	If ST2110-31 is selected, the **Channel Grouping** field will be read-only. The string AES3 will be displayed `n/2` times separated by a comma, where `n` is the number of configured audio tracks. For example, ST2110-31 with 8 audio tracks => Channel Grouping: AES3,AES3,AES3,AES3.

With duplicate streams (ST2022-7), you cannot set the channel grouping for secondary streams. The value is automatically taken over from the primary stream.

of Channels

Description	Number of audio mono channels present in the stream.
Values	Addition of all mono channels of all groupings in the stream. • For an IN channel, up to 16 audio mono channels can be included in each audio stream. The default value is 8.
Limitation	• For primary streams (in case of 2022-7), the sum of the number of audio mono channels set for the activated audio streams must be ≤ the number of audio channels mentioned in the General Settings of the Video IP Configuration page. • If ST2110-31 is selected as audio type, the number of audio tracks per stream has to be even. If not, the following error message will be displayed: 'In ST 2110-31 the number of audio tracks must be an even number'.

With duplicate streams (ST2022-7), you cannot set the number of audio mono channels for the secondary stream. The value is automatically taken over from the primary stream.

Audio Track

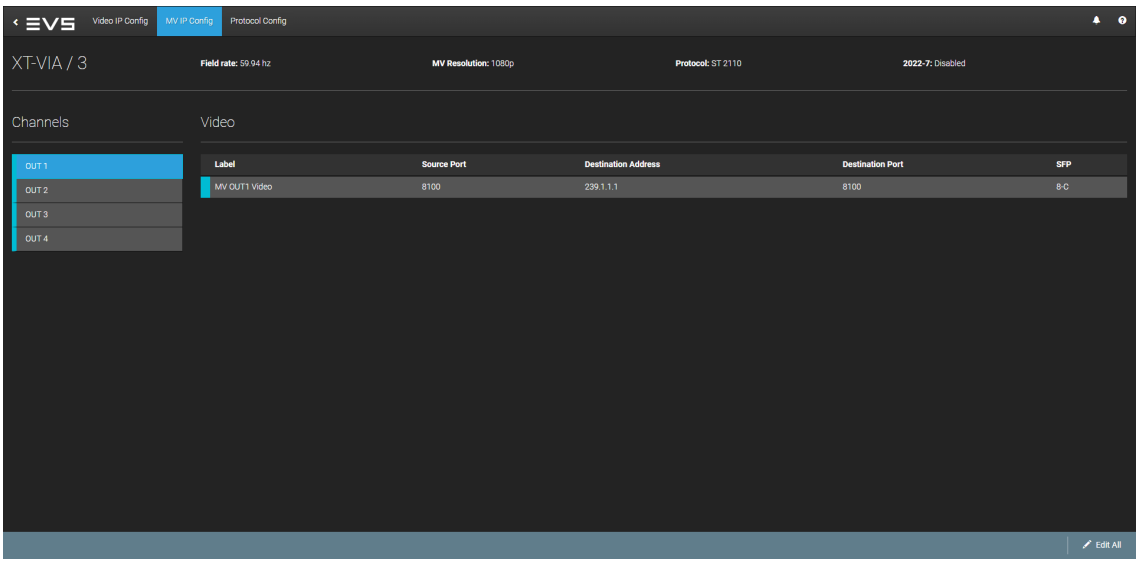
Description	Mapping between the audio streams and the embedded mono channels on the EVS server. This is a read-only field automatically calculated by the EVS server.
Values	X to Y where: • X is the first number of the mapped mono channel on the EVS server. • Y is the last number of the mapped mono channel on the EVS server.

5.4. MV IP Configuration

5.4.1. Overview of Multiviewer IP Configuration

User Interface

The Multiviewer IP Configuration user interface is quite similar to the Video IP Configuration user interface. It only differs in that there are no areas to configure audio and ancillary data streams



The MV IP Configuration page will not be available if:

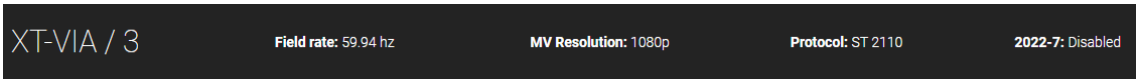
- the protocol is 2022-6 or 2022-8;
- the resolution is UHD-8K.

5.4.2. General Settings

Overview

The **MV IP Configuration** page displays some general settings in the **General** area.

These settings are related to the running or selected configuration.



Server Name

Description	Server hostname that consists of *<server facility name> / <configuration line number>*. This field is not editable in this page.

Field Rate

Description	Field rate defined for the active configuration line. This field is read-only in this page. See section "Field Rate" on page 212 for more information.

MV Resolution

Description	The multiviewer output resolution defined for the active configuration line. This field is read-only in this page. See section "Resolution" on page 213 for more information.

Protocol

Description	IP protocol used by the EVS server. This field is read-only in this page.
Values	ST 2110

ST 2022-7

Availability	This field is only available in 720p, 1080i, 1080p. If the XHub-VIA IP Aggregator is used, the field is also available in UHD-4K.
Description	Hitless protection switching. If enabled, the video, audio and monitoring stream configuration lines will be duplicated. All SDPs are automatically updated. There is no impact on the NMOS tree structure. The number of resources remains the same.

Format

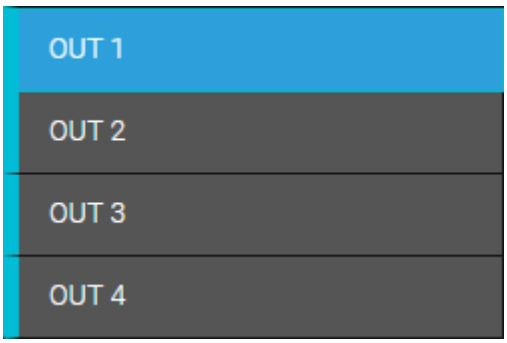
Availability	This field is only available with UHD-4K format.
Description	UHD-4K transport format.
Values	• **Quad-HD:**The UHD-4K image is transported either as four 1080p image quadrants (square division), or as four 1080p images at 1/4 of the original 4K resolution (two-sample interleave). • **Single stream:** The UHD-4K image is transported as a single live IP video stream.

When working in UHD-4K Single Stream, only ST 2110 is allowed as protocol.

5.4.3. Editing Live IP Stream Settings

How to Edit LiveIP Stream Settings

1. Open the **LiveIP** Configuration module from the Multicam Configuration module.
2. Click **MV IP Config** in the Menu bar.
3. In the Channels area (left), click the IN or OUT logical channel for which you want to define the stream settings:



The physical video streams associated to the selected logical channel will be displayed in the area on the right.

4. In the Edit bar, click the Edit All to enable the edit mode for the stream settings displayed.
5. Refer to the settings description to edit the settings as you want:
   - See section "LiveIP Settings for Multiviewer Video Streams" on page 472.

   The outline of the modified fields or check-boxes turns green if the change is valid, red if the change is invalid.

   Unsaved changes are also identified by rectangles next to the channel number and next to the IP Config page name.
6. Click Save All to commit the changes or Cancel All to cancel all the modifications. Only the valid modifications will be committed when you save.

Enabled and Disabled Filter Fields

Some LiveIP parameters can be used as filters for incoming streams.

In **View** mode, the fields on which a filter can be defined are displayed differently if the filter is enabled or disabled.

On the following screenshot showing some input settings of video streams, the **Source Address** filter is enabled (regular font) and the **Source Port** filter is disabled (grey italic font):

Source Address	Source Port
223.200.150.1	*5000*

In **Edit** mode, the field is selected if enabled and unselected if disabled, as usual.

5.4.4. LiveIP Settings for Multiviewer Video Streams

Introduction

The Video area displays the video settings of the input or output LiveIP Multiviewer video streams depending on whether you have selected an input or output channel in the Channels area:

- LiveIP Input Streams
- LiveIP Output Streams

See section "Editing Live IP Stream Settings" on page 470 for a complete procedure on how to edit LiveIP streams.

The EVS server supports 2 MV input streams and 4 MV output streams.

For flexibility reasons, there is no validation of the address and port numbers regarding the range authorized by the video standard. It is the user's responsibility to define a network compliant with the standards.

When the ST2022-7 parameter is enabled, the multiviewer input and output configuration lines for each server channel are duplicated. The first line indicates the primary stream, the second line indicates the secondary stream.

ST2022-7 is only supported for active **output** streams.

Input failover is supported for active **input** streams.

Supported Input Formats

The following input formats are supported when working in IP:

- SD PAL/NTSC
- 720p 50/59.94
- 1080i 50/59.94
- 1080p 50/59.94
- UHD-4K 50/59.94

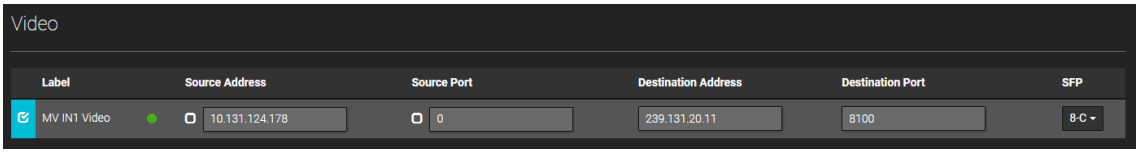
UHD-4K is only fully supported when transported as single stream. When working in 2SI, one of the four phases may be sent as input to the Multiviewer (corresponding to a regular 1080p stream). Square division is not supported as Multiviewer IP input.

The input format is completely transparent. You do not have to declare the input format for MV IN1 and MV IN2.

LiveIP Input Streams

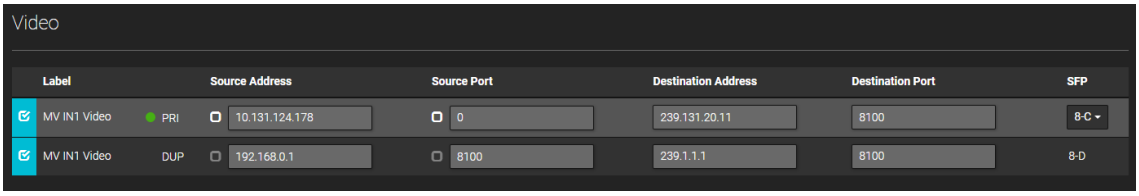
Without Input Failover Activated

Input failover is inactive when the ST2022-7 parameter is disabled.



With Input Failover Activated

Input failover is active when the ST2022-7 parameter is enabled.



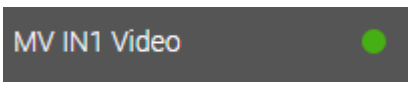
Check Box

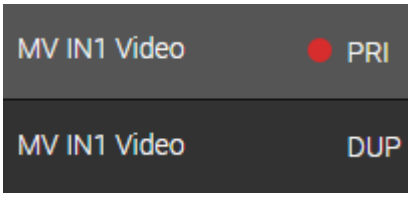
By default, the check box in front of the live IP MV video stream(s) is selected.

Label

Description	Label identifying the input stream. This is automatically assigned based on the naming conventions explained in the **Values** section.
Values	The label includes the following elements : • channel number ◦ **MV INX** ◦ **Video** • **PRI/DUP** indicates the primary or secondary stream (in case of ST2022-7) Example: • MV IN1

Link Status



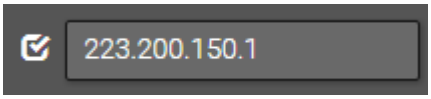


Description	Dot indicating the (non)presence of a stream.
Availability	Only appears for active streams. **NOTE:** In case ST2022-7 is activated, only one of the two streams is active. No status is displayed for the inactive stream.
Values	• **Green:** The input stream is properly configured and connected. • **Red:** The input stream is not properly configured and/or connected. One of the following might be wrong: ◦ the cable is no longer plugged into the connector; ◦ the IP of the stream is wrong; no packets are being received; ◦ the essence type of the stream is wrong.

Seamless Switching

In case the active stream disappears, due e.g. to too many data packet losses, the switching from one stream to another is not seamless or clean.

Source Address



Description	IP address of the sender from which the incoming streams are sent. This is used as a filtering option you can activate with the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams with this source IP address in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source IP address.
Values	This must be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Source Port

Description	UDP port number of the sender from which the input streams are sent. This is used as a filtering option you can activate using the check-box displayed next to the field in **Edit** mode: • If the filter is enabled (regular font in View mode), only input streams having this source port in their header will be passed through to the corresponding IN connector of the EVS server. • If the filter is disabled (grey italic font in View mode), the input streams are not filtered based on the source port number.
Values	This must be a valid UDP port number in the range [0-65535].

Destination Address

Description	IP address the sender sends its streams to. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must simply be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

Description	UDP port number of the destination address the sender sends streams to. The EVS server listens to this port to get the streams from the sender.
Values	This must be a valid UDP port number in the range [0-65535].

QSFP

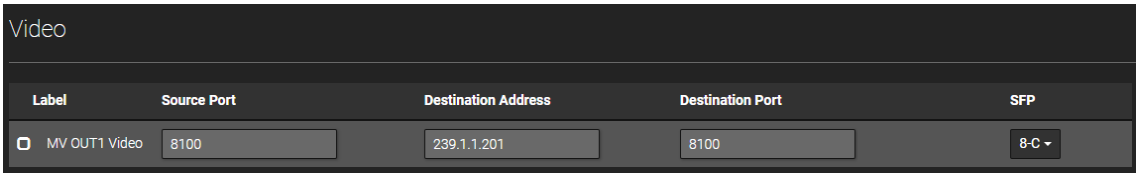
Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the multiviewer streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that receive the multiviewer streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (8-C) • 30 (8-D)

SFP

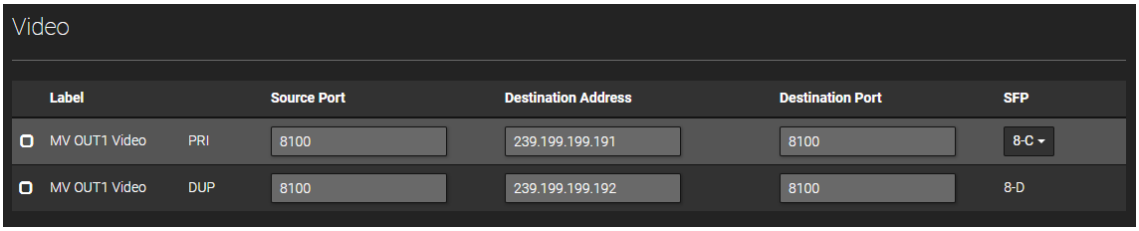
Description	Physical MV4X SFP+ port (IN connector) on the EVS server that receives the incoming streams. • The **codec module (8)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. It cannot be changed. • The **letter (C or D)** of the SFP+ port on which the EVS server receives the input streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the **QSFP** field.
Values	• 8-C (default) • 8-D

LiveIP Output Streams

Without ST2022-7 Activated



With ST2022-7 Activated



Check-Box

By default, the check box in front of the video output stream is unchecked. This means that the corresponding sender is inactive. The video output stream is not sent.

Check the check box to activate the sender and send the corresponding video output stream.

In case of ST2022-7, the check box of both the primary and secondary stream is unchecked.

If you deactivate the primary stream, the secondary stream is deactivated as well. Activating the secondary stream without the primary stream is not possible.

When working in ST2022-7 with the secondary stream deactivated, the monitoring stream may either be assigned to SFP+ port C or D.

Label

Description	Label identifying the output stream. This is automatically assigned based on the naming conventions explained in the **Values** section.

Values	The label includes the following elements :
	• channel number
	  ◦ MV OUTX
	  ◦ Video
	• **PRI/DUP** indicates the primary or secondary stream (in case of ST2022-7)

Source Port

Description	Port number of the source IP address (of the MV4X SFP+) from which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

The source IP address of an output stream is that of the associated MV4X SFP+ port and is defined in the section "IP IO Configuration" on page 306.

Destination Address

Description	IP address the sender sends its streams to. Multicast and unicast IP addresses are supported. When working in unicast mode, the receiver's IP address has to be specified as destination address.
Values	This must simply be a valid IP address of the format XXX.XXX.XXX.XXX where XXX is a number in the range [0-255].

Destination Port

Description	UDP port number of the destination address the sender sends streams to. The EVS server listens to this port to get the streams from the sender.
Values	This must be a valid UDP port number in the range [0-65535].

QSFP

Description	The QSFP interface of the XHub-VIA IP Aggregator that is connected to the Live IP network and through which the multiviewer streams pass. The QSFP interface is displayed together with the SFP+ port on the EVS server that will send the multiviewer streams.
Availability	This field is displayed instead of the **SFP** field when the EVS server is connected to an XHub-VIA IP Aggregator.
Values	• 29 (8-C) • 30 (8-D)
Limitations	• When in ST2022-7, the primary stream has to be on 29 (8-C) and the secondary stream on 30 (8-D).

SFP

Description	Physical MV4X SFP+ port (OUT connector) on the EVS server from which the output streams are sent. • The **codec module (8)** of the SFP+ port is automatically assigned based on the required cabling for the running configuration. It cannot be changed. • The **letter (C or D)** of the SFP+ port from which the EVS server sends the output streams is automatically assigned.
Availability	When the EVS server is not connected to an XHub-VIA IP Aggregator, this field will be displayed instead of the **QSFP** field.

Values	• 8-C (default) • 8-D
Limitations	• In 1080p 59.94Hz, a maximum of 3 streams are allowed per SFP+ interface. • When in ST2022-7, the primary stream has to be on 29 (8-C) and the secondary stream on 30 (8-D). When not in ST2022-7, the IN1 has to be on 29 (8-C). • When in 1080p 59.94Hz and ST2022-7, you can have: ◦ Up to 3 redundant streams with: - primary stream on interface C - secondary stream on interface D ◦ Up to two redundant streams with: - primary streams on interface C - secondary streams on interface D AND two additional outputs without redundancy with: - the first stream on interface C - the second stream on interface D

	C	D
MV OUT 1	PRI	DUP
MV OUT 2	PRI	DUP
MV OUT 3	PRI	DUP
MV OUT 4		

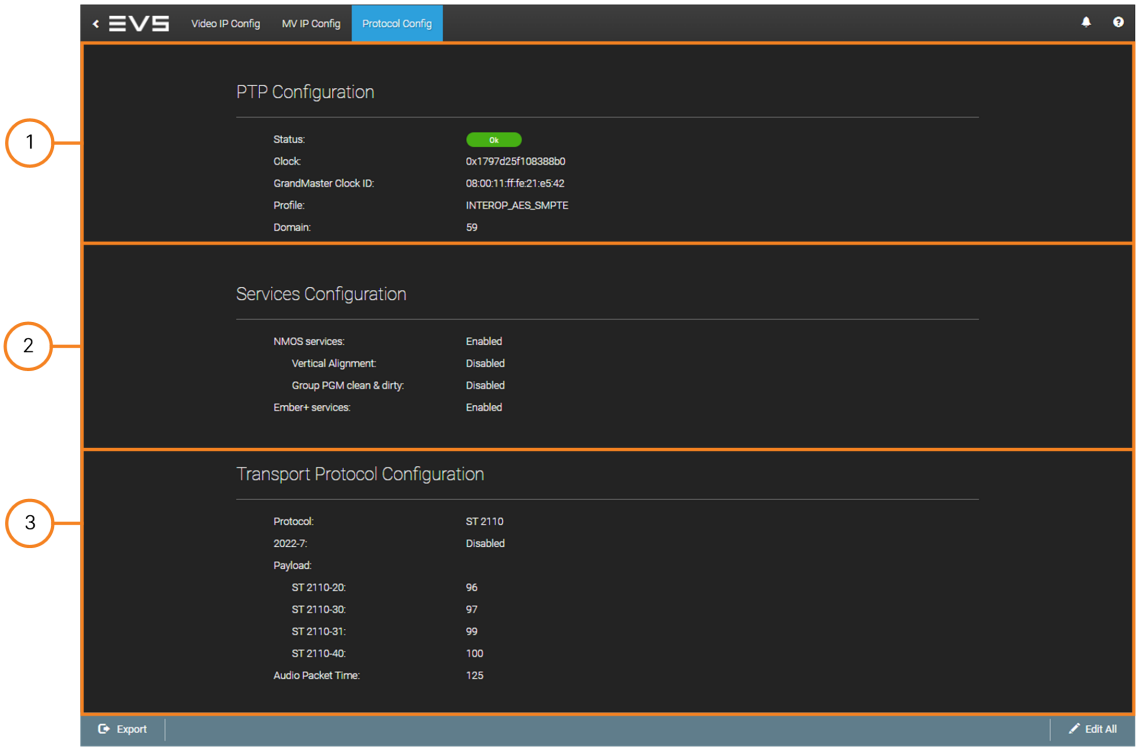
	C	D
MV OUT 1	PRI	DUP
MV OUT 2	PRI	DUP
MV OUT 3	PRI	
MV OUT 4		PRI

No physical audio stream is generated by the multiviewer output. Any AES67 audio stream associated to an output video stream is a link (reference) to an existing AES67 audio stream of a player.

The **Audio Monitoring from Video** setting allows to link the audio tracks of a specific player to a specific multiviewer output. See section "Multiviewer Settings" on page 312.

5.5. Protocol Configuration

NEW ! User Interface



#	Name of area	Description
1.	PTP Configuration	This area allows you to configure the clock synchronization.
2.	Services Configuration	This area allows you to configure NMOS and Ember+ services.
3.	Transport Protocol Configuration	This area allows you to configure IP transport protocol settings.

PTP Configuration

Principles

The PTP (precision time protocol) provides a mechanism that ensures that each device in an LiveIP network has the same high precision clock (elapsed time since timebase reference).

A PTP grandmaster clock provides the exact clock to the LiveIP network, and all devices on the network (PTP clients) host a slave clock that synchronizes to the PTP grandmaster clock.

The Best Master Clock Algorithm (BMCA) is used to select the grandmaster clock.

On the EVS server, the PTP is used to synchronize all streams inside the server, as explained below:

- It is used by senders to put timestamps (corresponding to the image capture time) on the streams so that they are aligned.
- It is used by receivers to compare the timestamps in order to align the different parts.

The PTP is also used to provide the **Genlock** and **Timecode** signals. They were provided through SDI up to Multicam 16.1. The PTP generator sends additional information such as the offset to account for leap seconds, different time zones.

In Practice

The PTP is received via the V4X SFP+ connectors of the video codec modules.

One of the SFP+ modules (PTP master module) operates as the single PTP client for the XT-VIA Server and synchronizes the other video codec modules. The PTP master module is the V4X module 1-C.

The PTP page allows you to monitor the PTP status and make sure that the streams on the EVS server are correctly synchronized.

If you want the PTP to provide the genlock and timecode signals, you need to select the **Genlock PTP** value in the **Video Reference** section, **Genlock** setting. See section "Genlock" on page 215.

When your server is set in XiP mode and runs a configuration without any PGMs and only a limited number of recorders, none of the V4X modules on the first V4X board are used.

No PTP signal is received for the following configurations:
- **720p/1080i/1080p:** 1 IN 0 OUT, 2 IN 0 OUT, 3 IN 0 OUT, 4 IN 0 OUT
- **UHD-4K:** 1 IN 0 OUT, 2 IN 0 OUT

When selecting the Genlock PTP parameter, the following error message is displayed: 'The selected IN/OUT configuration does not support Genlock PTP'.

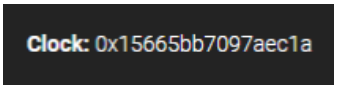
You also need to make sure the required PTP generation configuration is set for the synchronization metadata to be appended to the PTP signal. The configuration must be defined according to the section Organization Extension TLV: Synchronization Metadata, from SMPTE-2059-2. Those messages have to be sent once every second or when the Master Locking Status is changed.

If you want the genlock and timecode signals to be delivered through PTP, contact the EVS support as this may require an upgrade of the V4X base module.

Status

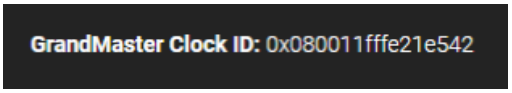
Description	Status of the PTP. This is a read-only field.
Values	• OK (green): locked to PTP clock, Organization Extension is activated on PTP generator, the framerate is supported. • Bad (red): not locked to PTP clock. • **OE issue** (orange): locked to PTP clock, Organization Extension is not activated on PTP generator or the framerate is not supported. • **System Framerate issue** (yellow): locked to PTP clock, Organization Extension is activated on PTP generator, the framerate configured on the PTP is not in line with the XT framerate.

Clock



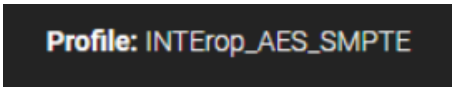
Description	Value generated by the grandmaster clock at regular intervals which allows time stamping the IP packets, as well as generating the genlock and timecode signals. This is a read-only field.

Grand Master Clock ID



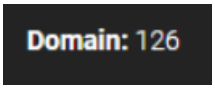
Description	MAC address of the grandmaster clock of the PTP infrastructure in the IP network. This is a read-only field.

Profile



Description	Editable field specifying the PTP profile (set of required options, prohibited options, ranges and defaults of configurable attributes) specific to the broadcast industry and used by SMPTE 2110.
Values	The supported profiles are: • IEEE_1588_2008 • AES67_2015 • SMPTE_2059 • INTEROP_DEFAULT_AES_SMPTE • INTEROP_AES_SMPTE The profile **INTEROP_AES_SMPTE** is used by default. It allows the interoperability between AES67 and SMPTE 2059-2.

Domain



Description	Editable field specifying the PTP domain • that contains the devices that need to share a common grandmaster clock • in which the specified PTP profile has to be used. This allows multiple timing systems to exist in the same network. Devices will ignore and drop all messages on a domain different from their own.
Values	Value between **0** and **127**.

Supported PTP Message Intervals

PTP master and slave devices exchange different types of PTP messages to determine the grandmaster clock and to calculate the timing offset at the slave devices.

The PTP messages include the following types:

- **Announce Message:** PTP message sent by a master device to a slave device carrying information related to the selected grandmaster clock.
- **Sync Message:** PTP message sent by a master device to a slave device initiating the time synchronization mechanism between both devices.
- **Delay Request:** PTP message sent by the slave device to the master device requesting a response message.

Each type of PTP message is sent after a specific time interval. Each PTP profile has different ranges of PTP message intervals.

The table below displays per PTP profile and per type of PTP message the time intervals that are supported by XT-VIA server.

PTP Profile	Announce Message	Sync Message	Announce Timeout	Delay Request Message
IEEE_1588	1	0	3	0
AES67_2015	1	-3	3	0
SMPTE_2059	-2	-3	3	-3
INTEROP_DEFAULT_AES_SMPTE	1	-1	3	0
INTEROP_AES_SMPTE	0	-3	3	-3

The **Announce Timeout** specifies the number of announcement intervals before the receiving node stops receiving announce messages.

The Announce Message, Sync Message and Delay Request Message time interval are expressed in log base 2 form, i.e. a mathematical form of expressing any natural number as an exponential form to the base of 2.

The Announce Timeout time interval is calculated by multiplying the Announce Message time interval with the value mentioned in the Announce Timeout column.

For example, in case of the PTP profile INTEROP_AES_SMPTE, the announce message is expected to be sent every 2^0 (=1) seconds. The sync message and the delay request message are sent every 2^{-3} or 0.125 seconds. The Announce Timeout is reached after 3 * 2^{-3} or 3x0.125 = 0.375 seconds.

Services Configuration

NMOS Services

Description	If enabled, the LiveIP resources will be exposed through NMOS IS-04 and IS-05.
Values	• Enabled • Disabled Default value: Enabled.

Vertical Alignment

Description	If enabled, the server will switch the Live IP video and/or audio streams at exactly the same point in time when receiving an NMOS Bulk request. Note that the vertical alignment is done by group according to the "groupe size" parameter (see below).
Values	• Enabled • Disabled Default value: Disabled.

Group Size

Availability	This field is only taken into account in case you have enabled the Vertical Alignment parameter.
Description	Allows to determine the number of LiveIP streams within the NMOS Bulk request to simultaneously switch each time.
Values	Default value: 5 • If set to 0, all streams within the NMOS Bulk request will be simultaneously switched. Be aware that for big NMOS Bulk requests, the switching will be performed once all stream are available. • If set to 1, the streams will be switched sequentially one after the other. • If set to >1, the streams will be switched in groups of n receivers.

NEW ! Group PGM Clean & Dirty

Description	Each PGM has a clean and dirty video sender. • If you enable this setting, the clean and dirty video sender will not only be part of the same NMOS device but also part of the same NMOS group. • If you disable this setting, the clean and dirty video sender remain part of the same NMOS device, but are now separated into different NMOS groups.
Values	• Enabled • Disabled Default value: Disabled.

Ember+ Services

Description	If enabled, the LiveIP resources will be exposed through Ember+ BESS.
Values	• Enabled • Disabled Default value: Enabled.

Transport Protocol Configuration

Protocol

Description	IP protocol used by the EVS server.
Values	ST 2022-6: • The streams contain the complete SDI signal (video, audio and data from the blanking interval) encapsulated in Ethernet packets. • No specific settings are defined for audio streams as audio streams are not sent separately. ST 2022-8: • The video streams are separated from the audio streams (AES67), but the video streams are still carried over as ST2022-6 Ethernet packets. • Specific settings are defined for audio streams. • The video streams no longer include ancillary data either. ST 2110 (default): • The video streams (RFC 4175) and audio streams (AES67) are all sent separately as uncompressed signals. • Specific settings are defined for audio streams. • The video streams no longer include ancillary data. All streams are advertized in SDP files which differ depending on the standard applied.

- Ancillary data streams, audio streams and multiviewer video streams are not available if the protocol is 2022-6 or 2022-8.
- Fill & Key is not supported with 2022-6 or 2022-8.

ST 2022-7

Availability	This field is available in all resolutions: 720p, 1080i, 1080p and UHD-4K. Without an XHub-VIA IP Aggregator, ST 2022-7 cannot be enabled in UHD-4K.
Description	Hitless protection switching. If enabled, the video, audio, ancillary data and monitoring stream configuration lines will be duplicated. All SDPs are automatically updated. There is no impact on the NMOS tree structure. The number of resources remains the same.

Payload ST 2110-20

Availability	This field is only available in case ST2110 is selected as protocol.
Description	Identifier used to characterize the type of LiveIP stream.
Values	Supported values: 96-127. Default value: 96.

Payload ST 2110-30

Availability	This field is only available in case ST2110 is selected as protocol.
Description	Identifier used to characterize the type of LiveIP stream.
Values	Supported values: 96-127. Default value: 97.

Payload ST 2110-31

Availability	This field is only available in case ST2110 is selected as protocol.
Description	Identifier used to characterize the type of LiveIP stream.
Values	Supported values: 96-127. Default value: 99.

Payload ST 2110-40

Availability	This field is only available in case ST2110 is selected as protocol.
Description	Identifier used to characterize the type of LiveIP stream.
Values	Supported values: 96-127. Default value: 100.

Audio Packet Time

Availability	This field is only available in case ST2110 is selected as protocol.
Description	Determines the packet time for outgoing ST2110-30 or ST2110-31 audio streams.
Values	Supported values: 1000µs and 125µs (in case of 16 mono channels per stream) Default value: 1000µs.

5.6. Importing and Exporting LiveIP Configurations

Introduction

Configuring all the senders and receivers in LiveIP Configuration module can be time-consuming and error-prone. To help speed up this process, you can export a LiveIP configuration for a selected Multicam configuration line, edit it in Excel, and then import it again for the same or another Multicam configuration line.

Exporting a LiveIP Configuration

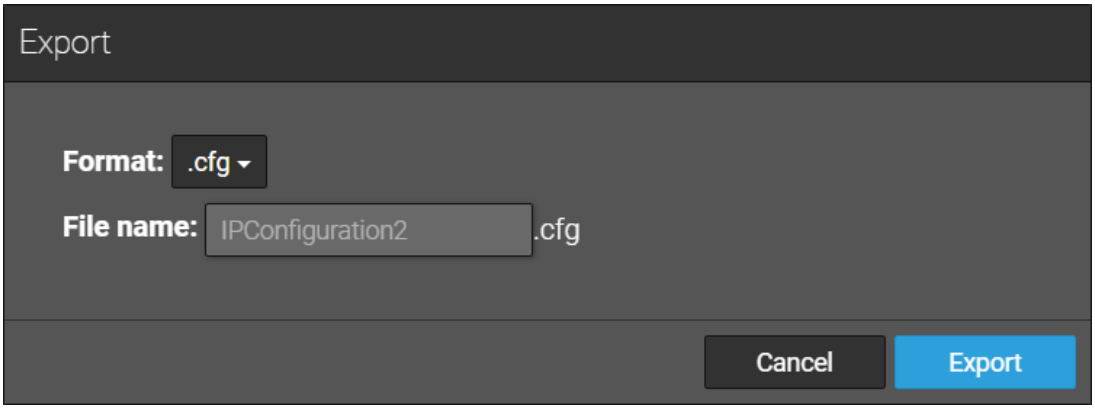
To export a LiveIP configuration, proceed as follows:

1. In the bottom left corner of the LiveIP configuration window, click the **Export** button.

   NEW !

   This button will remain visible regardless of whether the server is running the selected Multicam configuration line or not.

   The following dialog box appears:

   By default, the configuration will be exported in the form of a .cfg file. This format is used mainly to create a backup of a LiveIP configuration and to restore it at a later moment. The contents of the .cfg file are not to be modified.

   Continue to step 3.

2. Click the **Format** field, and select .csv as desired file format.

   This format is used mainly to easily and quickly modify a LiveIP configuration and import it back into the system.

3. Give a meaningful name to the file.

   `IPConfigurationX` is the default name automatically assigned to the file.

4. (Only in case you export to a .csv file) Select the delimiter to be used to separate the values in the .csv file.

You can chose between ',' and ';'. ',' is selected by default.

5. Click **Export**.
6. Browse for the folder where you want to store the .csv file and click **Save**.

Structure of the CSV File

The following sections of the LiveIP Configuration module will be exported to the .csv file:

Video IN	Monitoring IN
Video OUT	Monitoring OUT
Audio IN	AudioMonitoring IN
Audio OUT	LiveToTape OUT (if any)
Ancillary IN	Multiviewer IN
Ancillary OUT	Multiviewer OUT

There is a header line for each section and a list of senders and receivers with their respective properties (depending on the stream type).

At the top of the .csv file a line is reserved to display information about the selected Multicam configuration line.

Version	Field rate	Inputs	Outputs	SLSM #1	SLSM #2	SLSM Speed #1	SLSM Speed #2	XHub-Via	2022-7	Fill and Key
20.5.14	50	8	4	0	0	2	2			
Video	IN									
Label	Primary/Secondary	Enabled stream	Enabled Source Address	Source Address	Enabled Source Port	Source Port	Destination Address	Destination Port	SFP	
IN1 Video	PRI	X		10.131.88.18		8100	239.1.1.11	8100	C	
IN2 Video	PRI	X		192.168.0.1		8100	239.1.1.21	8100	C	
IN3 Video	PRI	X		192.168.0.1		8100	239.1.1.31	8100	C	
IN4 Video	PRI	X		192.168.0.1		8100	239.1.1.41	8100	C	
IN5 Video	PRI	X		192.168.0.1		8100	239.1.1.51	8100	C	
IN6 Video	PRI	X		192.168.0.1		8100	239.1.1.61	8100	C	
IN7 Video	PRI	X		192.168.0.1		8100	239.1.1.11	8100	C	
IN8 Video	PRI	X		192.168.0.1		8100	239.1.1.21	8100	C	

Leave the structure of the .csv file unchanged. Do not modify the order of the columns, and do not change the column headers. Only modify the sender and receiver properties.

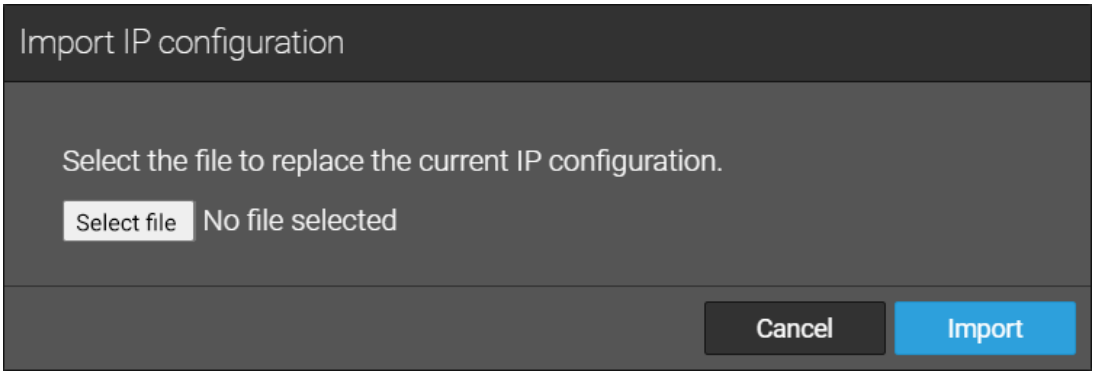
Importing a LiveIP Configuration

To import a LiveIP configuration, proceed as follows:

1. In the bottom left corner of the LiveIP configuration window, click the **Import** button.

   Note that this button will only be visible in case the server is not running the selected configuration.

   The following dialog box appears:

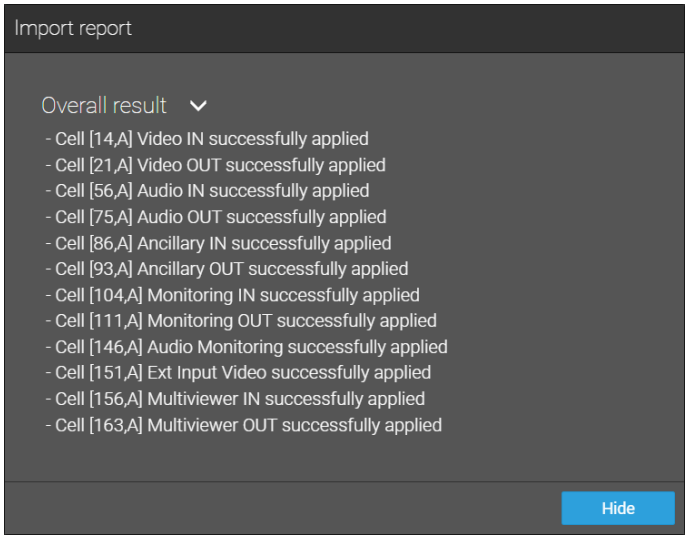


2. Click **Select File** and browse for and select the file you want to import.
3. Click **Import**.

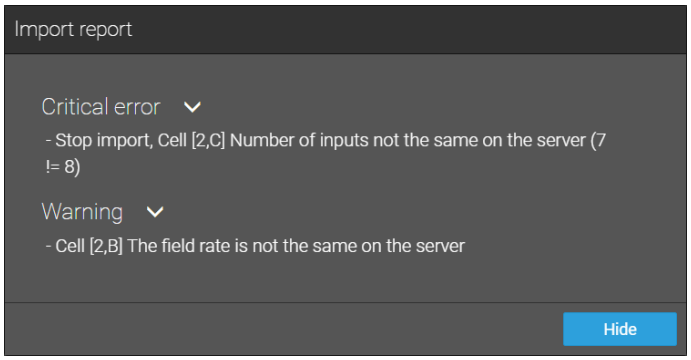
   The validity of the content of the .csv or .cfg file will be checked.

   - If the content is valid, the LiveIP configuration will be imported.

     In case of a .csv file, a report will appear listing all successfull checks.

   - In case you import a .csv file, and the content is invalid, an error message will be displayed listing the errors encountered. Also, a log file will be automatically generated. The file will fail to import.

     Open the .csv file in Excel try to correct the errors before importing it again.

6. Monitoring

6.1. Server Monitoring

6.1.1. Overview on Server Monitoring Windows

The Server Monitoring section is available by pressing **SHIFT+F5** from the operational windows on the VGA.

This section is only available in the server-based application. It is not available from the web-based interface.

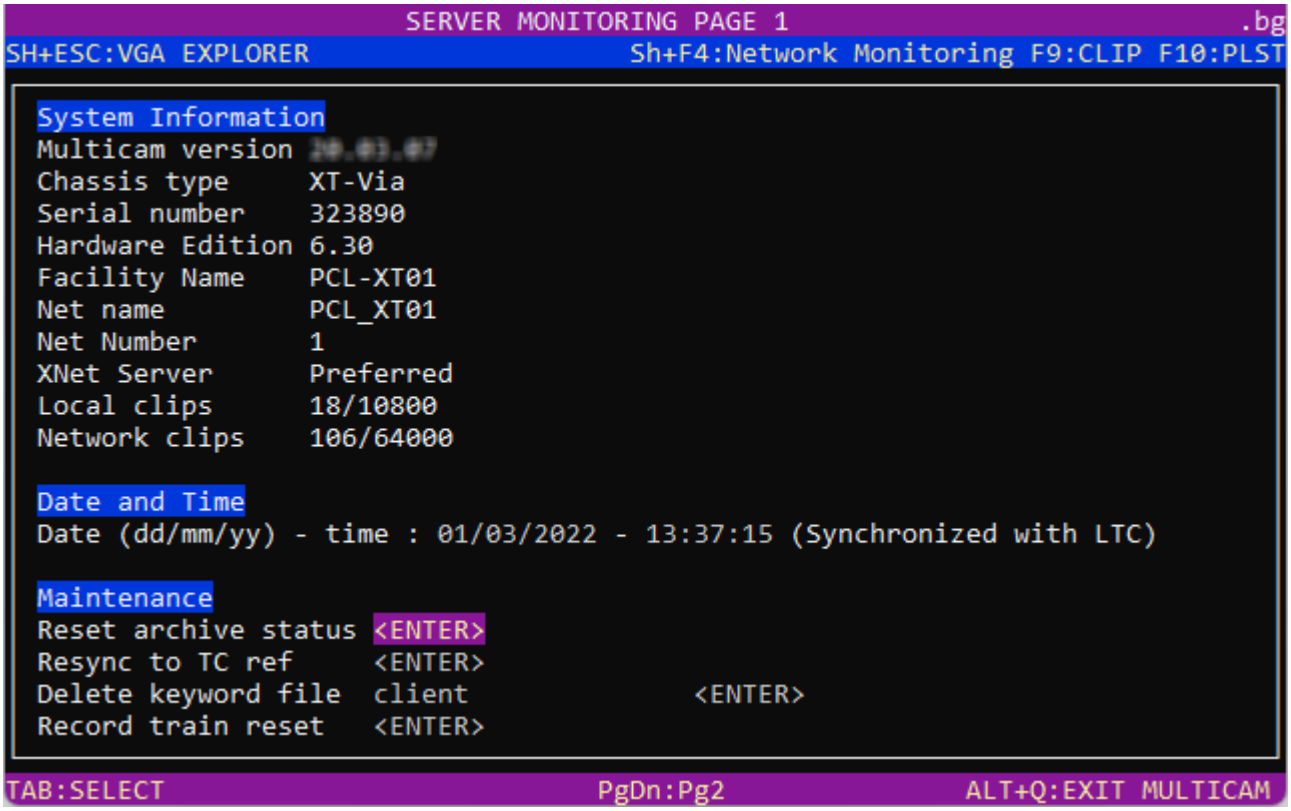
It contains the pages shortly presented in the following table. The page name in this table allows you to directly jump to the corresponding page:

Page	Page Name	Description
#1	General Information window	Provides general system information and maintenance commands on the EVS server.
#2	RAID and Disk Status window	Gives information on the disks or raids from internal and/or external storage.
#3	Timecode Status window	Gives information on the genlock, analog LTC and timecode statuses from the EVS server. This page is also used to set up how the timecodes are managed in the timecode jump tables.
#4	Timecode Monitoring window	Displays timecode information from recorders.
#5 / #6	Input Monitoring	Provides information to monitor the status of the SDI inputs or IP input streams.
#7	SFP Bandwidth Monitoring	Displays the amount of data (in Mbps) being received and sent by the SFP or QSFP ports.
#8	Log Management window	Allows a user-friendly and easy management of the logs.

6.1.2. General Information Window

Introduction

The page 1 in the Server Monitoring section, General Information window, provides system information on the EVS server, as well as some maintenance commands.



System Information

Field Name	Description
Multicam version	Version of Multicam running on the EVS server.
Chassis type	Type of server chassis (with server height when relevant).
Serial number	Serial number of the EVS server.
Hardware edition	Hardware version of the EVS server.
Facility name	Name assigned to the EVS server for internal maintenance via the **Tools** menu, **Assign server facility name** option, in the Multicam setup window. See section "Assigning a Server Facility Name" on page 24.

Field Name	Description
Net name	Machine name on the XNet network. It is not mandatory. It can however be useful to easily identify the servers running a given configuration, as it is tied to the running configuration. The Net Name will be displayed even if the SDTI code is not valid. It is defined in the Multicam Configuration window, **Network** tab, **XNet** section, **Net name** parameter. See section "XNet Settings" on page 296.
Net number	Machine number on the XNet network (from 1 to 29) or the XNet-VIA network (from 1 to 34). This number is user-defined and must be unique for each system on the network.
XNet server	Role and privileges of the EVS server on the XNet network.
Local clips	Number of clips (out of the max. clip numbers) stored locally on the EVS server.
Network clips	Number of clips (out of the max. clip numbers) stored on the XNet network. Up to 32,000 clips in the XNet network. Up to 64,000 clips in the XNet-VIA network.

Date and Time

This section specifies the date and time of the EVS server.

Maintenance

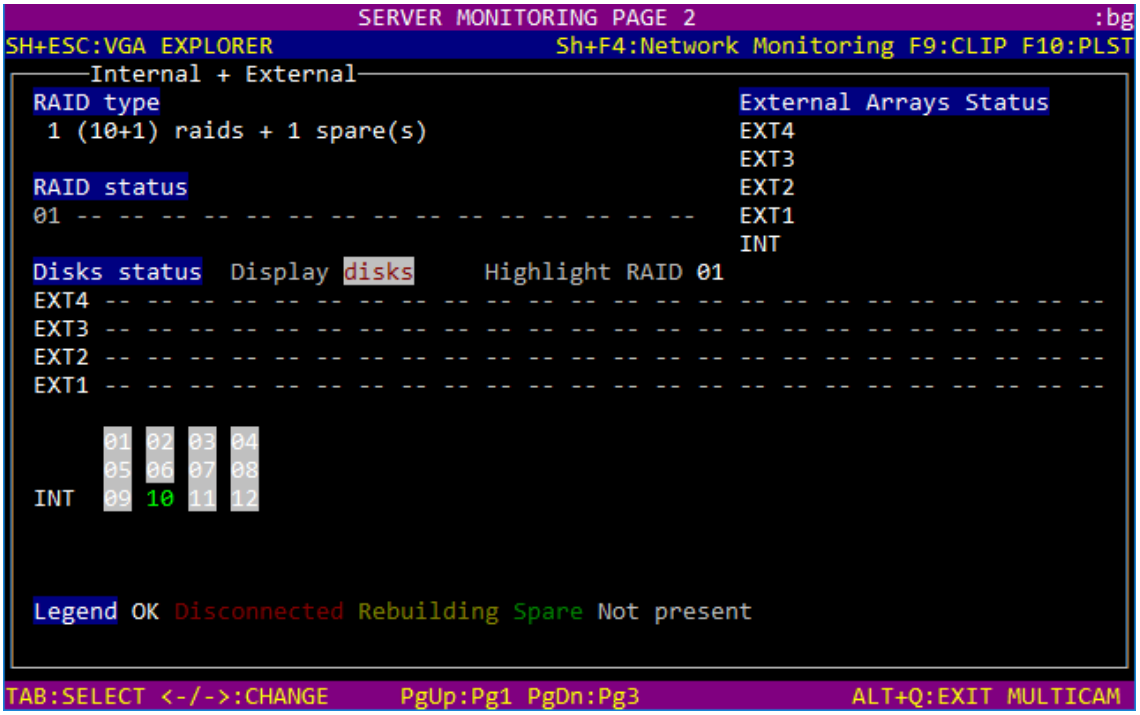
This section provides some commands to perform the following maintenance actions:

Command	Description
Reset archive status	Resets the flag of all clips whose archive status has been enabled with the Archive function on the Remote panel.
Resync to TC ref	Resynchronizes the server timecode to the timecode reference.
Delete keyword file	Deletes the selected keyword file. Press **SPACEBAR** until you select the keyword file to remove, and press **ENTER**.
Record train reset	Resets the record trains before their field counter overflows. Users are requested to confirm the action before performing the reset. See section "Record Train Maintenance" on page 50

6.1.3. RAID and Disk Status Window

Introduction

The second page gives information on the disks or RAIDs from internal and/or external storage.



RAID Type

The RAID type section displays the number of RAIDs, the type of RAID (**4+1**, **5+1**, **10+1** or **10+2**) and the number of spare disks. This information cannot be modified.

RAID Status

This section displays each RAID by its number and uses a color code to display its status. See section "Disk Status" on page 497 for more information on the disk statuses.

When a raid is rebuilding, the percentage rebuild is displayed instead of the raid number. This value shows the progress of the rebuild process. See section "Rebuild Process" on page 47 for more information on the rebuild process.

External Array Status

This section displays the status of the internal array and each external array, including potential alerts:

Status	Meaning
OK	No alert
PSU1!, PSU2!	Problem with a power supply unit
FAN1!, FAN2! or FAN3!	Problem with a fan

Disk Status

This section provides a representation of the disks contained in the external and/or internal arrays, as well as their status as described below:

Color Code	RAID Status
Light gray	**OK**: The disk is connected in a RAID.
Red	**Disconnected**: The disk is physically present but disconnected by the software.
Orange	**Rebuilding**: The disk is being rebuilt.
Green	**Spare**: The disk is connected but is not included in a RAID.
gray dashes	**Not present**: The disk is not physically connected to the hardware.

How to Highlight the Disks of a RAID

In the Disk Status area, the **Highlight RAID** field allows you to highlight, with a light gray background, the disks belonging to the raid number specified on the right of the field.

To change highlight a given disk raid:

1. Press **TAB** until you select the **Highlight RAID** field
2. Press the **+** or **-** keys or **up** and **down** arrow keys to change the raid you want to highlight.

How to Change the Disk Status Display

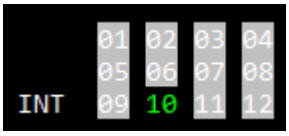
In the Disk Status area, two types of representations are available depending on the selection made in the **Display** field, by disk number or by RAID number.

To change the Disk Status display:

1. Press **TAB** until you select the **Display** field
2. Press the **Spacebar**,**+** and **-** keys or **up** and **down** arrow keys to toggle the value from **disks** to **raids** or vice versa.

Disk Display

The **Disk** display represents each disk by its number in the array, or gray dashes if not present, and uses a color code to display its status.



The external arrays can contain up to 24 disks, with a minimum of 5 disks.

The internal arrays can be organized as one or two arrays of 6 disks.

See section "RAID Status" on page 496 for more information on the raid status.

RAID Display

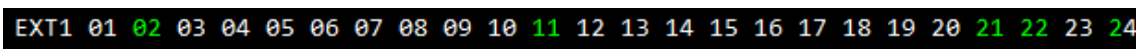
The **RAID** display represents each disk by the raid number it is included in, or gray dashes if not present, and uses a color code to display the disk status. Spare disks are represented by the letters **sp**.

Disk Numbering

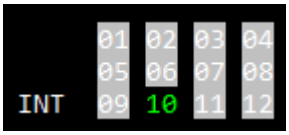
No specific disk numbering has to be followed or preserved with SAS disks.

By default, however, the disks will be numbered as described in this section.

In the external array, the disks are numbered from 1 up to 24, from left to right:



In an internal array of hot-swappable disks, the disks are numbered as follows from 1 to 6 or 12:

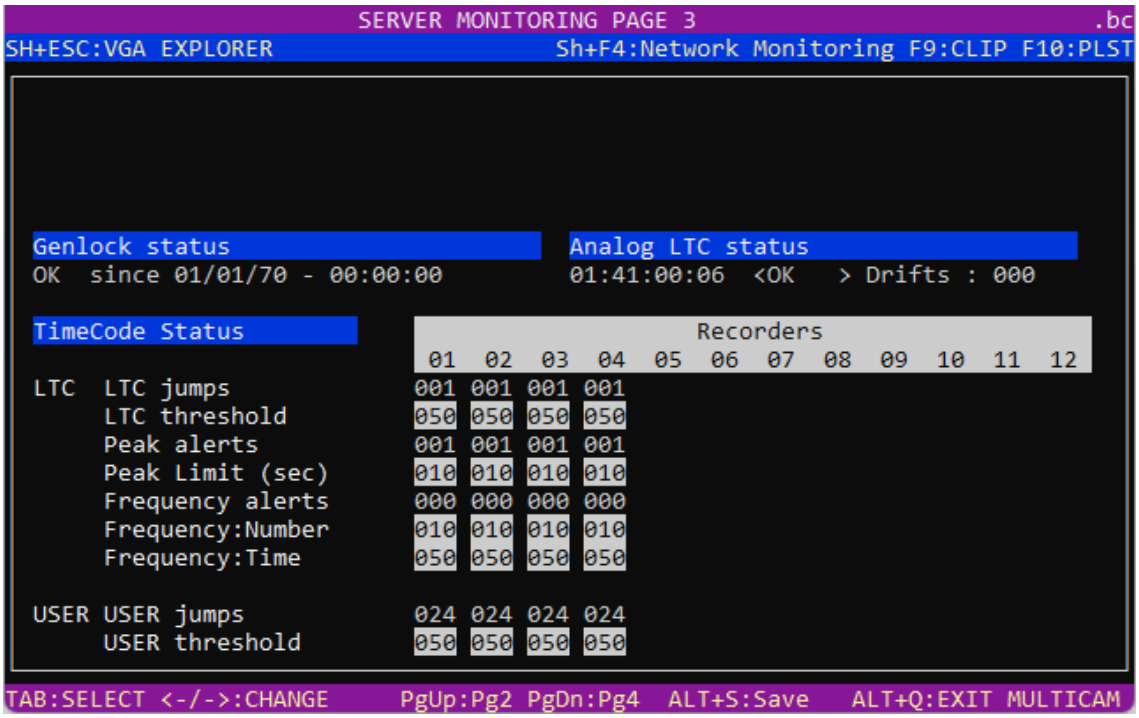


The disk within a raid are organized independently of the physical disk numbering.

6.1.4. Timecode Status Window

Introduction

This page of the Server Monitoring section provides information on the genlock, analog LTC and timecode statuses from the EVS server. This page is also used to set up how the timecodes are managed in the timecode jump tables.



Genlock Status

The Genlock Status section provides the following information:

- Genlock status: OK, bad
- Date and time when the genlock has been correctly set or restored.

Analog LTC Status

The Analog LTC Status section specifies the current status of the analog LTC timecode, as well as the number of drifts detected compared to the genlock.

The possible status values are the following depending on the MTPC board used:

Status	Description
OK	The timecode is incremented in a normal way.
Drift	The timecode received and the genlock are not synchronous.
Bad	The timecode received is not correct. For example when an NTSC timecode is received instead of a PAL timecode (freq. error), when there are disturbances in the timecode reception (bad signal).
Lost	No timecode is available.

Timecode Status

Introduction

The Timecode Status section displays the settings for managing and monitoring the timecode jump tables. Records are created in these tables when a break, or jump, in the timecodes occurs in the recorded material. The records in the timecode jump tables are then used to search for and manipulate the video material on the XT-VIA server.

There are two timecode jump tables:

- Timecode jump table for the LTC timecodes
- Timecode jump table for the timecodes specified by the user in the Multicam Configuration module, **Channels** tab, **Timecode Settings** area, **User** field. See section "Timecode Settings" on page 285 for more information on this setting.

LTC Timecode

LTC	Description	Default Values
LTC jumps	Number of timecode jumps calculated in the LTC timecode jump table for the given recorder since the last start of the server.	1
LTC threshold	Number of continuous timecodes to be received, after a break in LTC timecodes in the recorded material, in order to create a new record in the LTC timecode jump table.	50

LTC	Description	Default Values
Peak alerts	Number of peak alerts generated for the recorder since the last start of the server. A peak alert is generated each time the peak limit specified in the Peak Limit field is reached. In this case, this field is automatically incremented by one.	0
Peak limits (sec)	Period of time (in seconds) of continuous timecodes after which a break in timecodes in the recorded material will generate a peak alert. When a peak alert is generated, the value in Peak Alerts field is incremented by one.	10
Frequency alert	Number of frequency alerts generated for the recorder since the last start of the server. A frequency alert is generated when X timecode jumps have been detected in Y seconds. The X value is defined in the Frequency Number field. The Y value is defined in the Frequency Time field. In this case, this field is automatically incremented by one.	0
Frequency number	Number of timecode jumps detected for the recorder after which a frequency alert can be generated.	10
Frequency time	Period of time (in seconds) after which a frequency alert can be generated.	50

User Timecode

VITC	Description	Default Values
VITC jumps	Number of timecode jumps calculated in the VITC timecode jump table for the given recorder since the last start of the server.	1
VITC threshold	Number of continuous timecodes to be received, after a break in VITC timecodes in the recorded material, in order to create a new record in the VITC timecode jump table.	50

How to Make Changes to Threshold Values Persistent

When you modify threshold values in this monitoring page, they are saved for the current session, but the changes are lost when you restart the EVS server.

To make the changes to threshold values persistent, press **ALT + S** after you have updated the values.

6.1.5. Timecode Monitoring Window

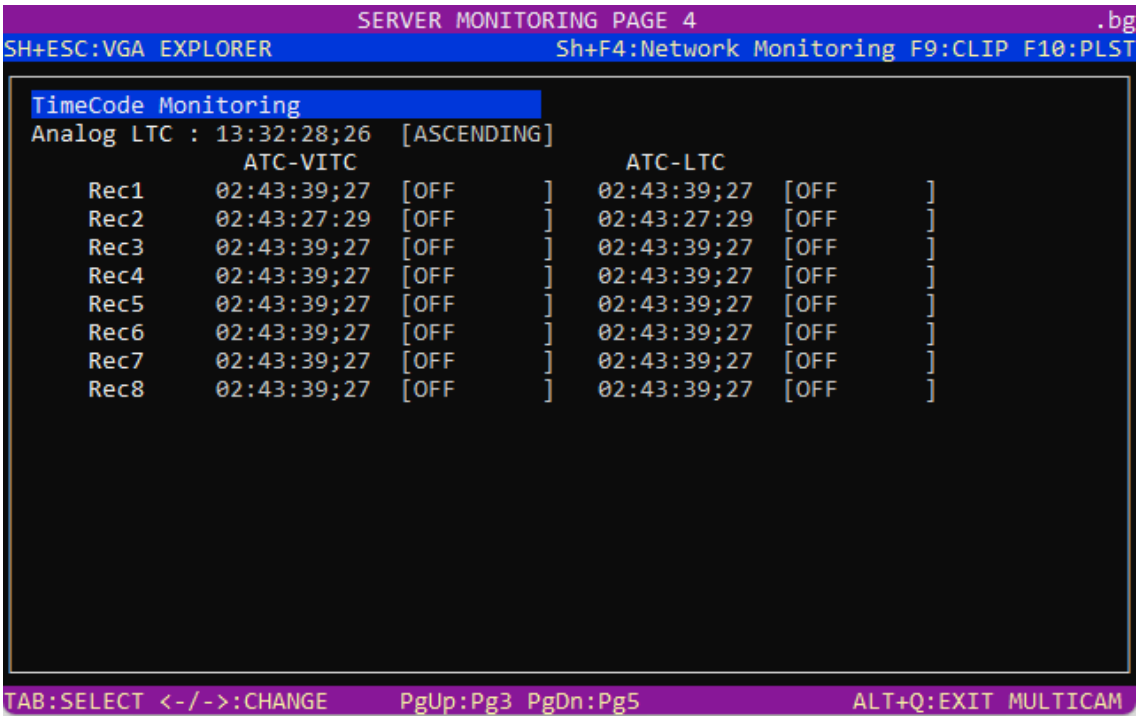
Introduction

The Timecode Monitoring Window displays the various timecodes used in the running configuration.

Timecodes on HD Recorders

When the server runs an HD codec, the following timecode information is displayed:

- LTC timecode
- ATC timecodes on the various recorders



6.1.6. Input Monitoring

Introduction

In the Input Monitoring window on page 5 (and 6), you can monitor the quality of the incoming SDI or IP signals. The inputs monitored and displayed will depend on whether you use the SDI interface (BNC V4X connector) or IP interface (SFP+ V4X connector) for the video inputs.

The monitoring data is delivered for each input signal. The values represent the total number of occurrences (per type) since the last Multicam reboot. They are displayed in hexadecimal format.

The counters can be reset by pressing **ALT+R**.

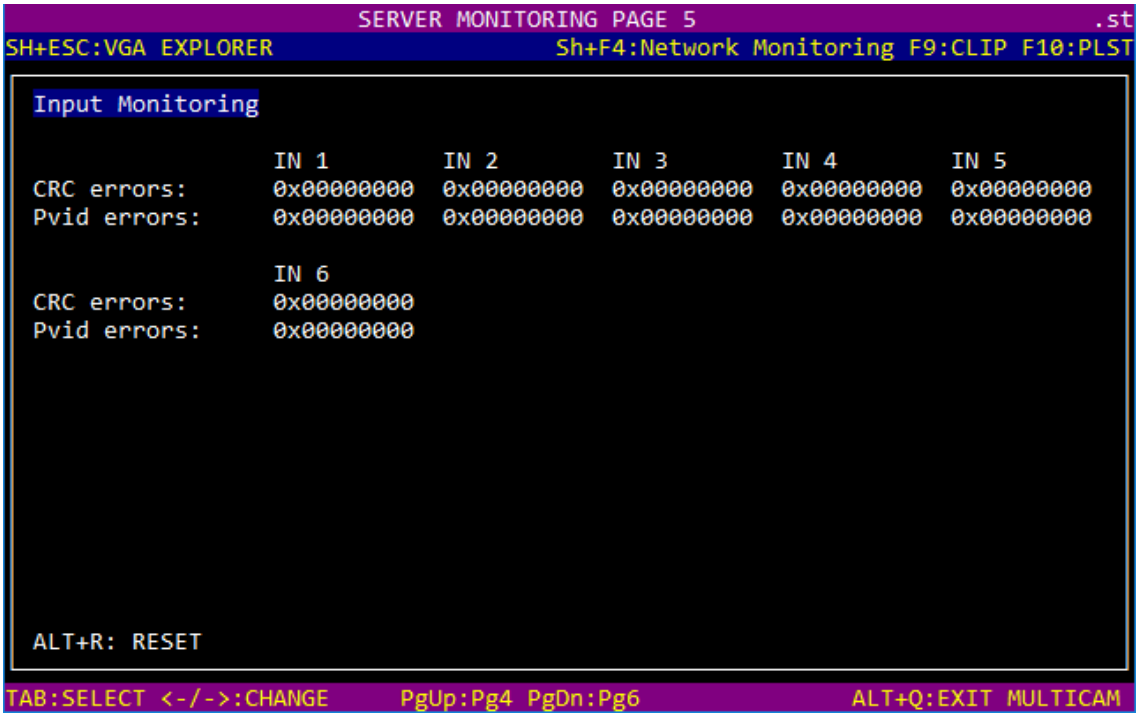
Input Display

The inputs will be referred to differently depending on the resolution:

Input Name	Description
IN 1	Record channel for a regular camera in 720p, 1080i, 1080p, UHD-4K with 12G. e.g.: IN1 refers to the 1st record channel.
IN 1-1	Record channel for an SLSM camera in resolution 720p, 1080i, 1080p,UHD-4K with 12G. e.g.: With an SLSM recorder 3x, IN1-1 is phase 1 of recorder 1, IN 1-2: phase 2 of recorder 1, IN1-3 is phase 3 of recorder 1.
IN 1-A	Record channel for a regular camera in UHD-4K resolution with 3G. e.g.: IN 1-A is 1st quadrant of recorder 1, IN 1-B is 2nd quadrant of recorder 1, IN 1-C is 3rd quadrant of recorder 1, IN 1-D is 4th quadrant of recorder 1.
IN 1-1-A	Record channel for an SLSM camera in UHD-4K resolution with 3G. e.g.: IN 1-1-A is 1st quadrant of the 1st phase of the 1st recorder, IN 2-3-D is the 4th quadrant of the 3rd phase of the 2nd recorder.
IN 1-1,2	Record channel for an SLSM camera with 3G. e.g. IN 1-1,2 are phases 1 and 2 of 1st recorder, IN 2-3,4 are phases 3 and 4 of recorder 2.

Monitoring of SDI Inputs

The monitoring of the SDI inputs is mainly relevant with SDI transceivers that support 12G-SDI. This monitoring table will not be displayed when working in IP mode.

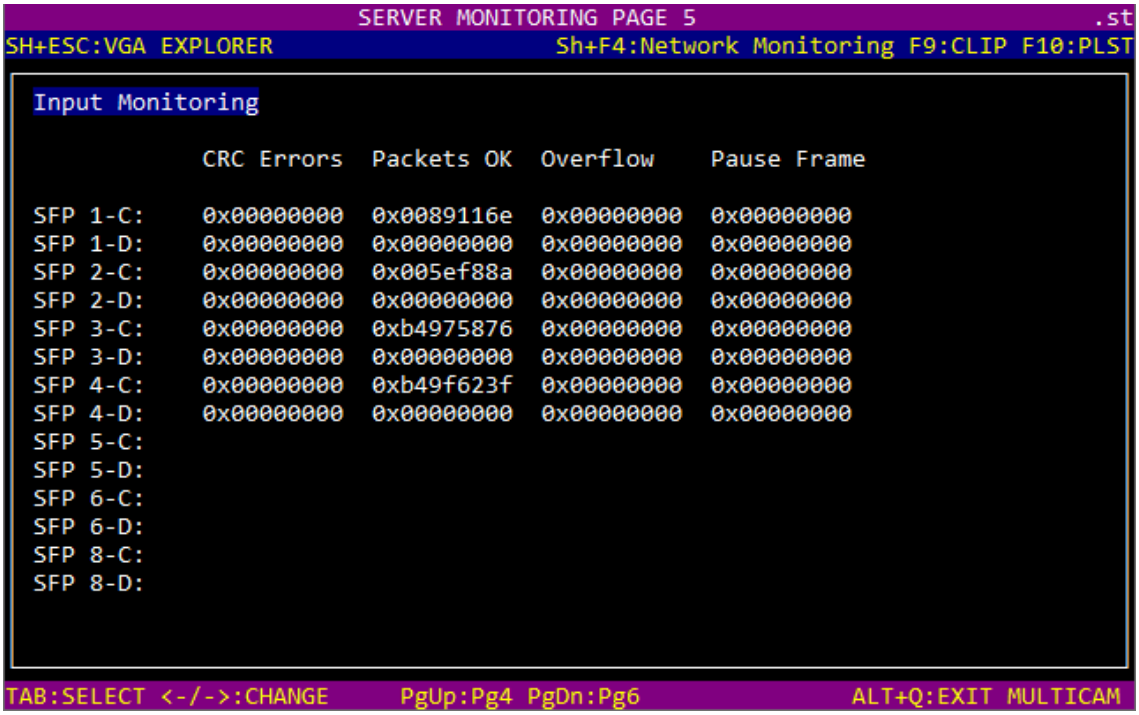


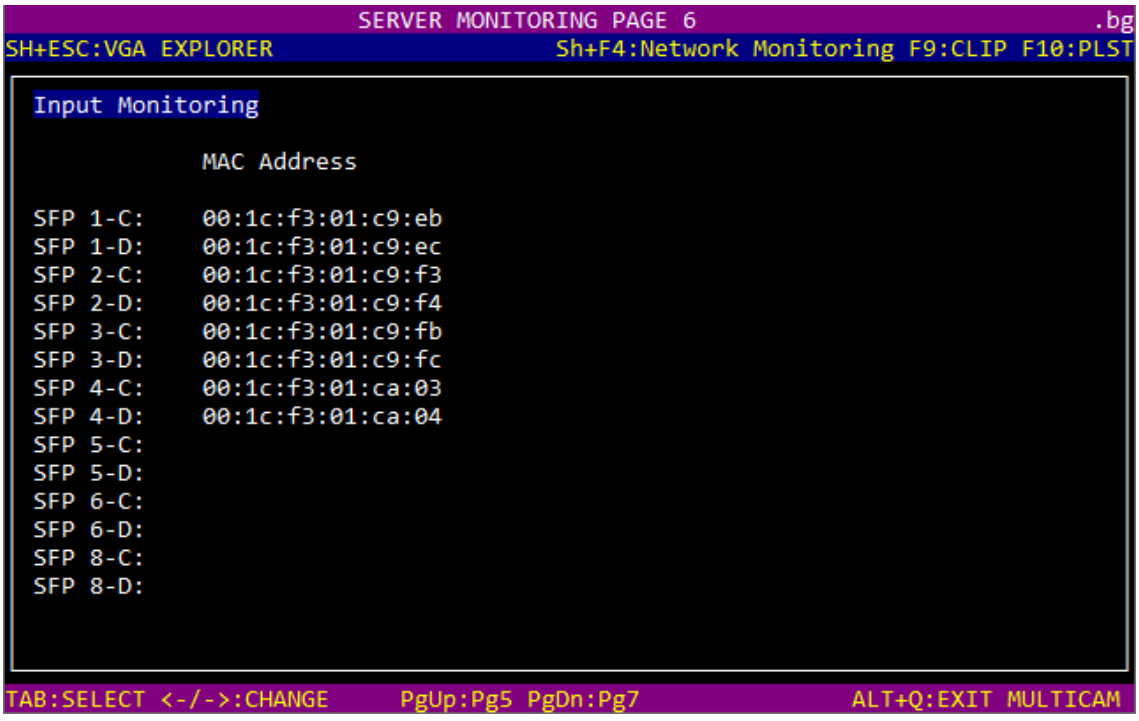
Field Name	Description
CRC error	• The Cyclic Redundancy Check (CRC) validates packets of information sent by devices and verifies it against the data extracted, ensuring its accuracy. • CRC errors indicate when data is corrupted. • The value returned is the number of corrupted and rejected packets. • Having some CRC errors is normal. Consequently, this is normal if this number grows slowly but not constantly.
PVID error	PVID errors occur when the video payload does not contain a valid signal. When this error occurs, the CRC errors are reset.

Monitoring of IP Inputs

At SFP+ Level

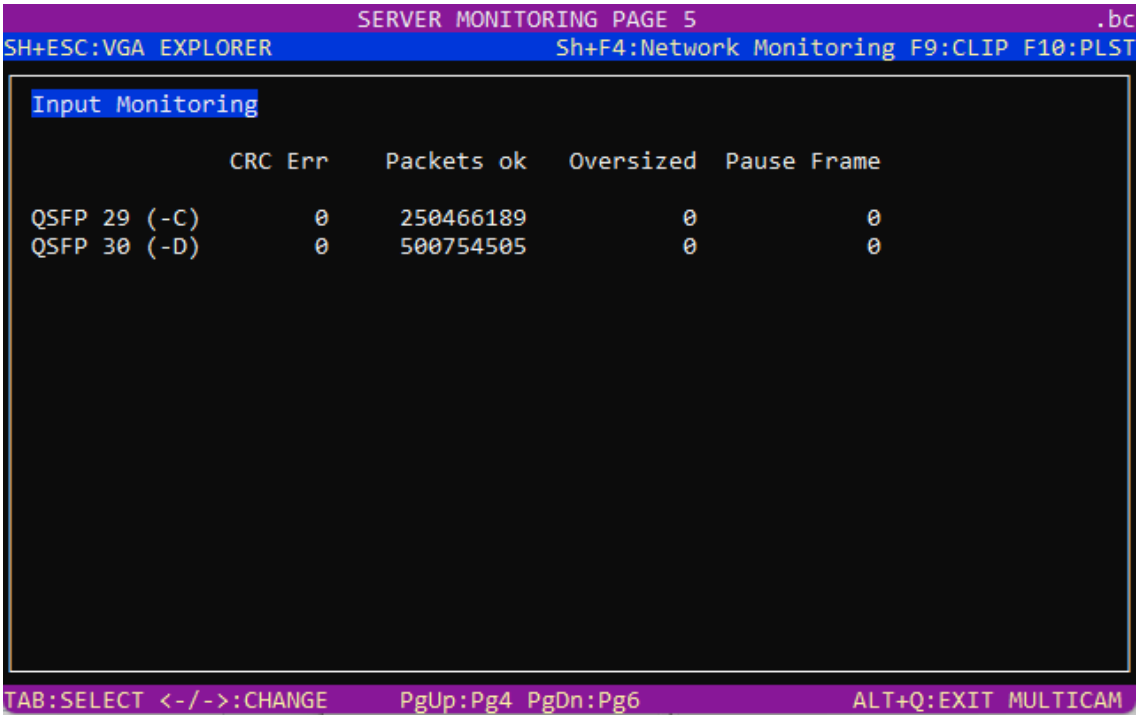
This monitoring table will not be displayed when working in SDI mode.

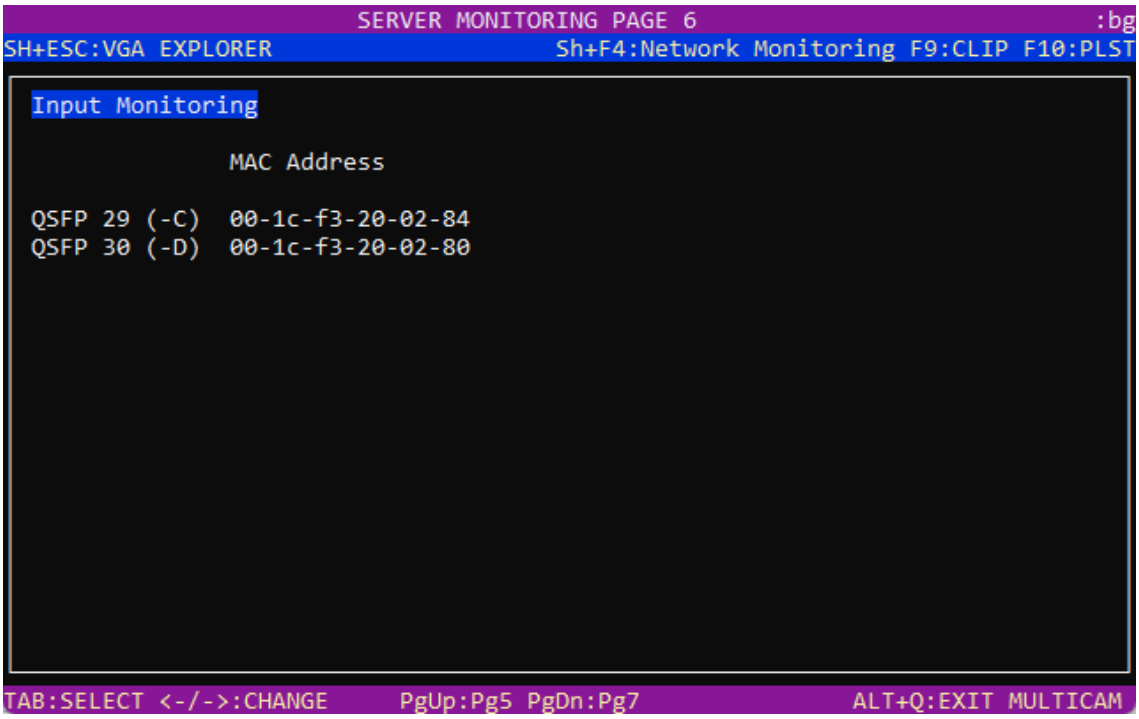




At QSFP+ Level

This monitoring table is only displayed when the server is connected with XHub-VIA. It displays the 2 QSFP+ ports of the XHub-VIA that are connected with the LiveIP network.



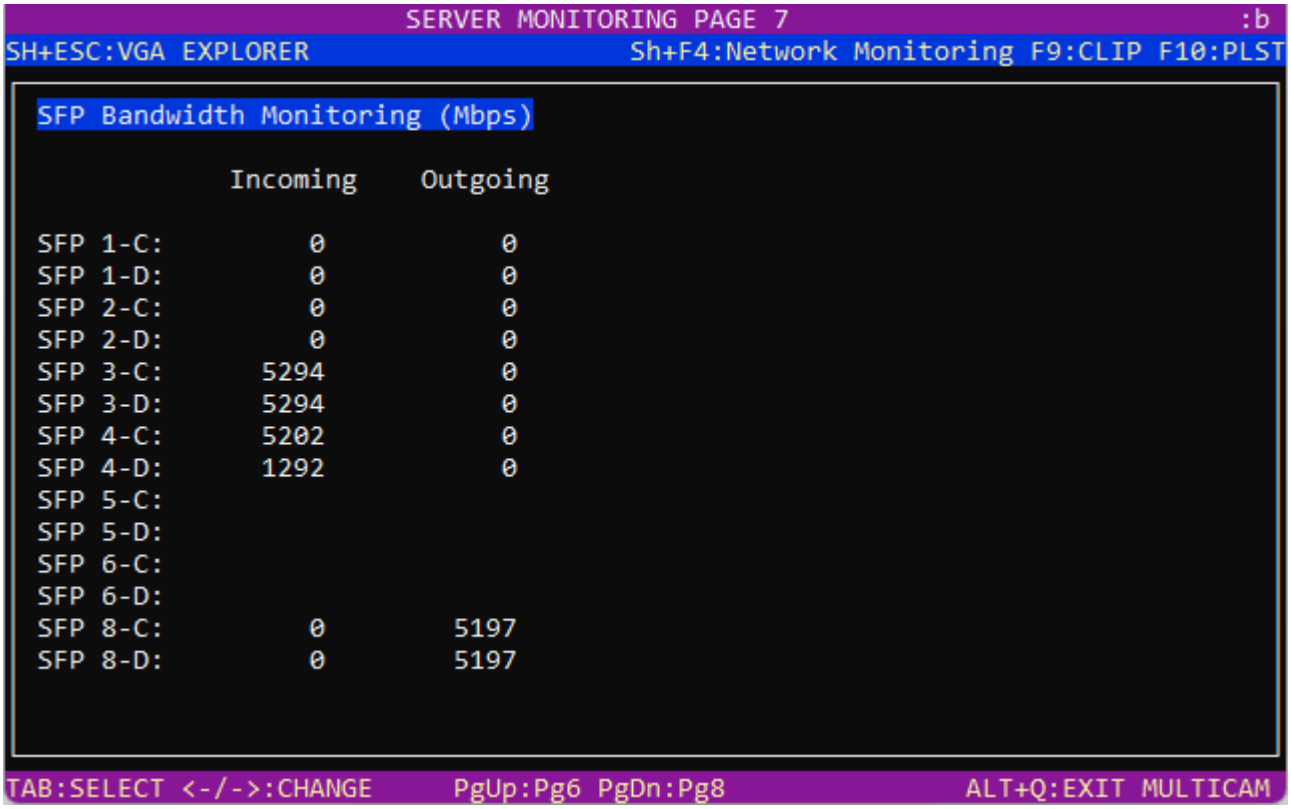


Field Name	Description
CRC error	The Cyclic Redundancy Check (CRC) validates packets of information sent by devices and verifies it against the data extracted, ensuring its accuracy. CRC errors indicate when data is corrupted. The value returned is the number of corrupted and rejected packets. Having some CRC errors is normal. Consequently, this is normal if this number grows slowly but not constantly.
Packets OK	Number of valid packets received on the interface. This value shall increase continuously.
Overflow/Oversized	Number of packets rejected due to their too large size or to a bad format. If this value increases, there should be a problem at the sender side.
Pause Frame	Number of pause frame received by the interface. The pause frame is a mechanism to control the speed of the flow between the sender and the receiver. If this number increases quickly, there should be a problem between the sender and the receiver.
MAC Address	MAC address of the port.

6.1.7. SFP Bandwidth Monitoring

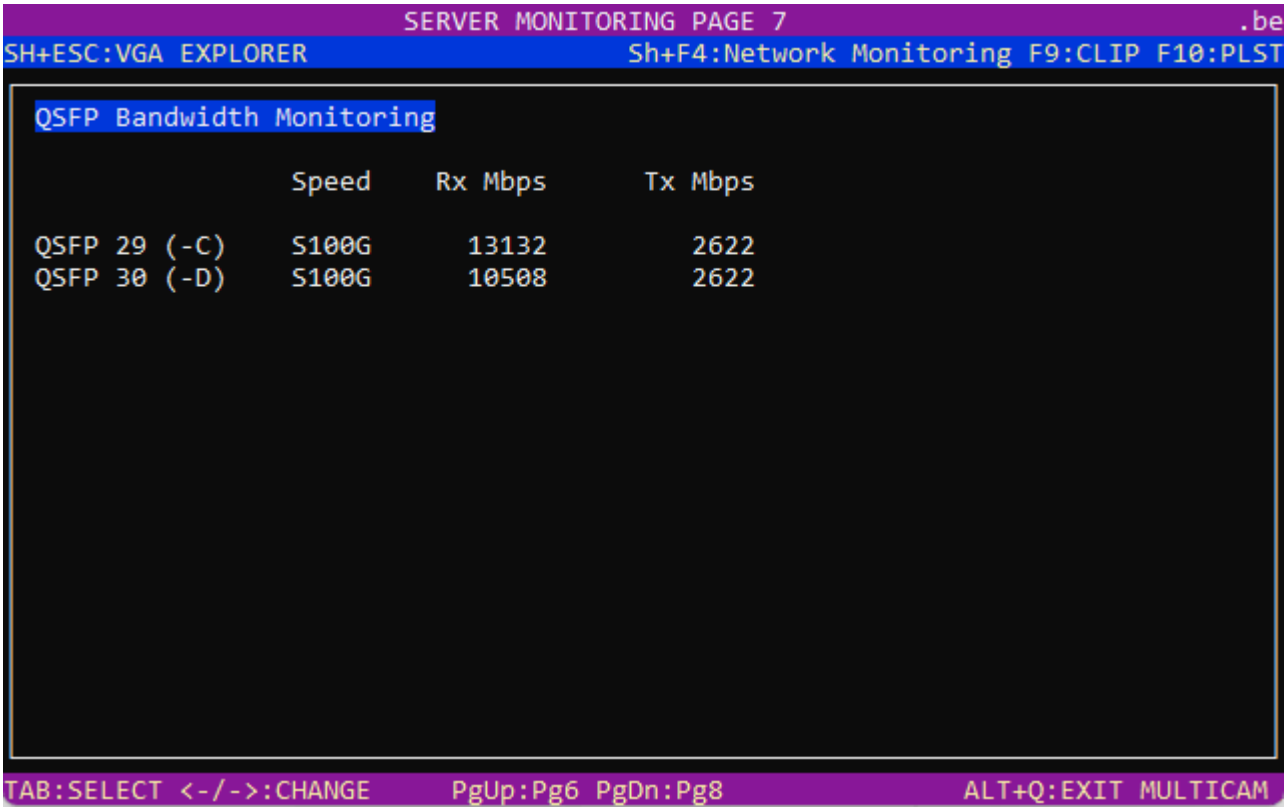
Introduction

The SFP Bandwidth Monitoring page allows to monitor the amount of data (in Mbps) being received and sent by the different SFP ports , including the 8-C and 8-D interfaces used for the Multiviewer.



This page will only be available if the server has an XIP rear panel.

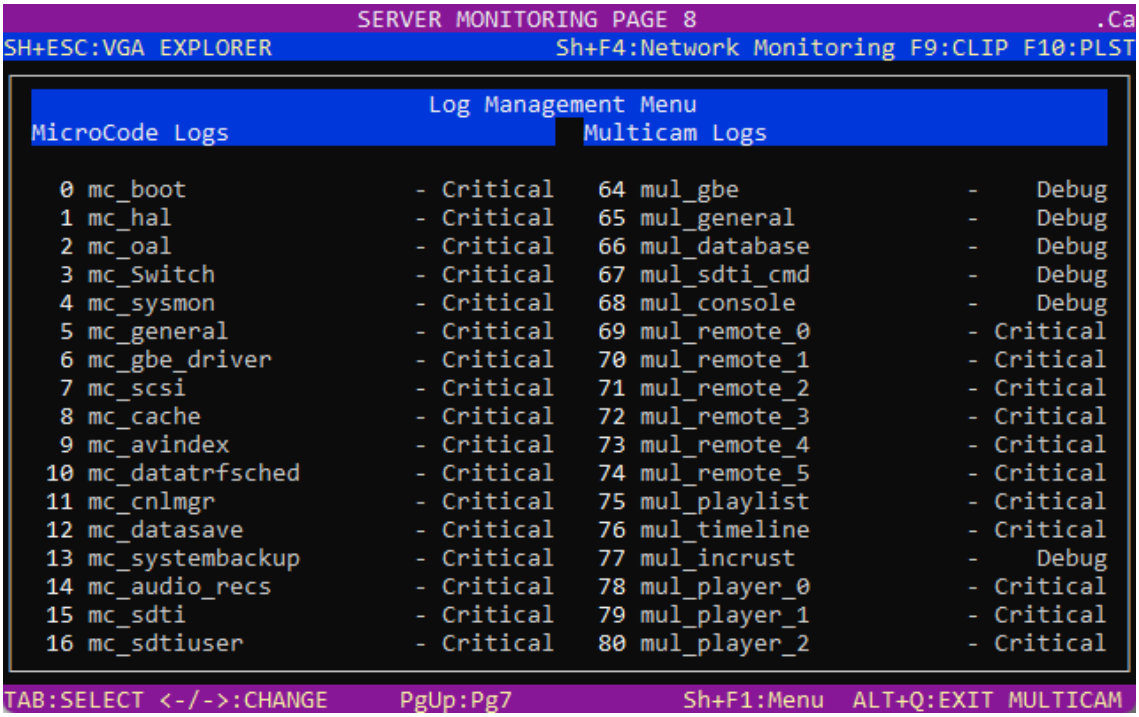
If the XT-VIA Server server is connected to an XHub-VIA configured as IP Aggregator, a QSFP Bandwidth Monitoring page will appear instead. This page allows you to monitor the amount of data (in Mbps) being received and sent by the two QSFP+ ports (29 and 30).



6.1.8. Log Management

Introduction

The Log Management window allows a user-friendly and easy management of the logs as log files can be accessed from a remote computer while the Multicam is still in use.



Log File Types

The left column displays items related to microcode. The right column displays those of the Multicam.

Each item has two associated log files:

- a regular log file
- a log file logging only errors

Criticality Levels

Each item has a criticality level that can be modified:

- The lowest and default level of criticality is **Critical**, where the log is limited to recording critical and important commands. This is the default value for all items.
- An intermediate level is **Normal**.
- The highest level is **Debug** which basically records every command.

  This highest level should never be chosen without advice of qualified EVS staff.

You can press **SHIFT+F1** to access a help screen that provides information on all commands available in this window.

When you have to switch to **Debug** mode, first reproduce the problem, then extract the logs, and finally switch back to the default **Critical** mode.

Extracting Log Files

This window also offers the ability to extract log files when the Multicam is running.

When the Log Management window is open, press **E** to extracts the log files instantly so that a user can access them through a common FTP client application from a remote computer.

The extracted files are located in `/mnt/apps/data` (root folder when you connect to the EVS server using an FTP client). Their name starts with an underscore: The regular log file `Multicam_Database.log` is renamed `_Multicam_Database.log` once extracted when the application is running.

You can extract logs from the XNetMonitor for any server running on the XNet network. For more information, refer to the XNetMonitor manual.

6.2. XNet Network Monitoring

6.2.1. Overview on XNet Network Monitoring Windows

The XNet Network monitoring windows can be accessed via the server-based application when the EVS server is running in a given configuration. To access the XNet Network Monitoring section, press **SHIFT+F4**.

It consists in the following pages:

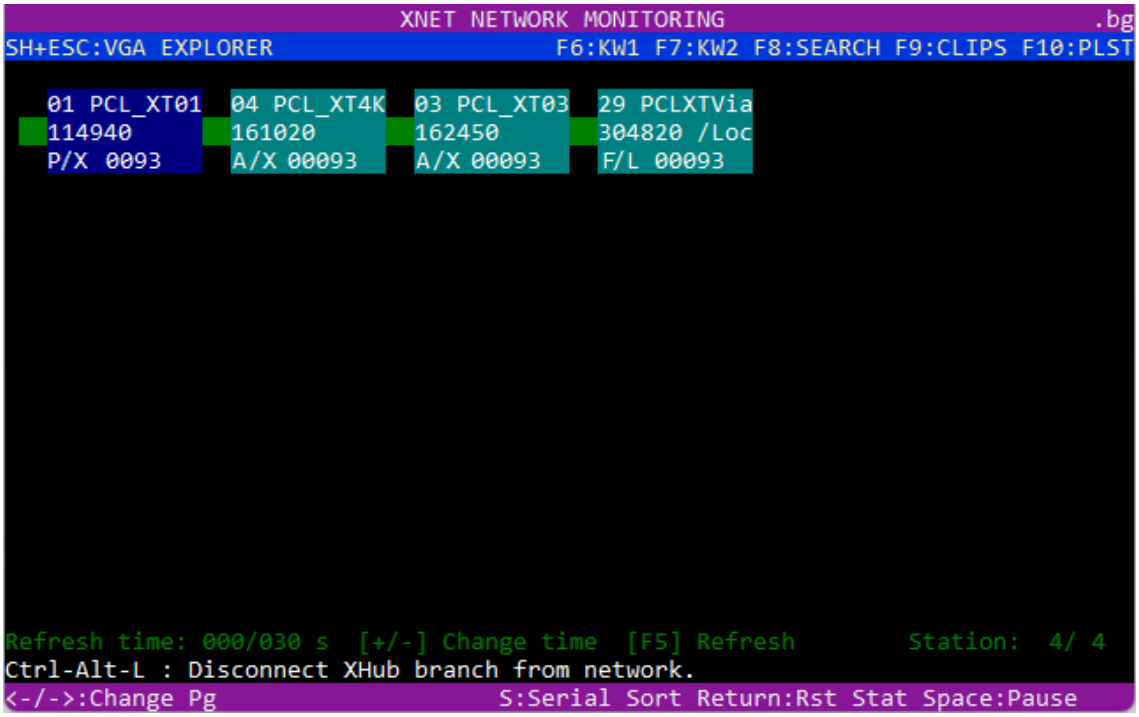
- The **XNet Network Schema** (page 1) shows a schematic representation of the XNet network.
- The **Hardware Error Counters** (page 2) provides a list of the hardware for which an XNet-related error has been returned.

6.2.2. XNet Network Schema

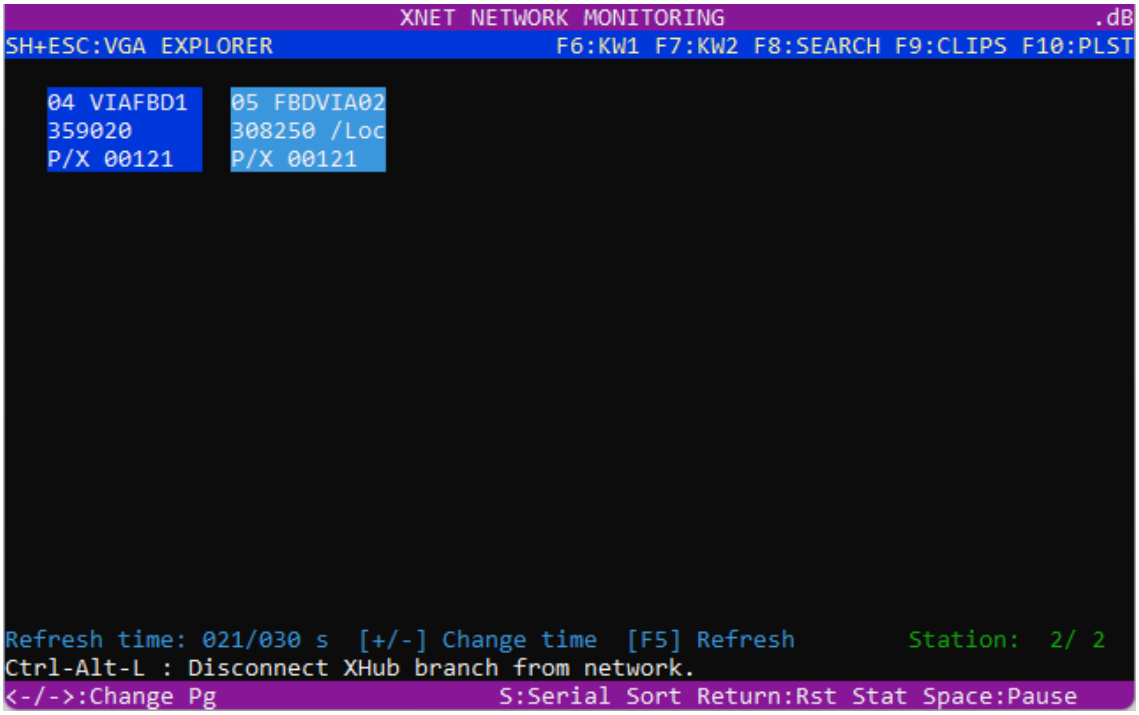
Overview

This page shows a schematic representation of the XNet network. This allows you to check the XNet network status, and to see how hardware devices are interconnected on the XNet network.

When the XNet operation mode is set to 3G-SDTI, the following network schema is displayed:



When the XNet operation mode is set to XNet-VIA, the following network schema is displayed:



Data Displayed

All machines are displayed in the logical connection order, i.e. the way they are effectively connected on the network.

For each machine, the following information is displayed:

- net number + name
- serial number
- main network configuration setting (Preferred, Allowed or Forbidden) (XNet or Local) as defined in the EVS application.
- number of clips in the database

Background Color

The background color of the data related to a given machine means:

- **dark blue:** selected server
- **turquoise:** all machines that may become server (server type = preferred or allowed)
- **grey:** all machines that cannot become server (server type = forbidden)

Text Color

The color of the text indicates the video network overload, based on how many XNet network mailboxes are used:

- **white:** (OK)

  Less than 90% of the network capacity is used.

- **red:** (warning)

  Over 90% of the network capacity is used, and the network risks to be overloaded.

Link Color

When the XNet operation mode is 3G-SDTI, the color of the link indicates the physical link status between two machines:

- **green:** OK
- **red:** errors

When the XNet operation mode is XNet-VIA, no link is displayed.

Possible Actions

- Pressing **S** changes the presentation of the XNet network, and shows alternately a representation based on the serial number, or on the topology.
- Pressing **ENTER** resets the status information.
- Pressing **SPACEBAR** to pause or restart the monitoring
- Pressing **F5** to refresh the XNet network schema
- Pressing **RIGHT ARROW** to display the second XNet network monitoring window.

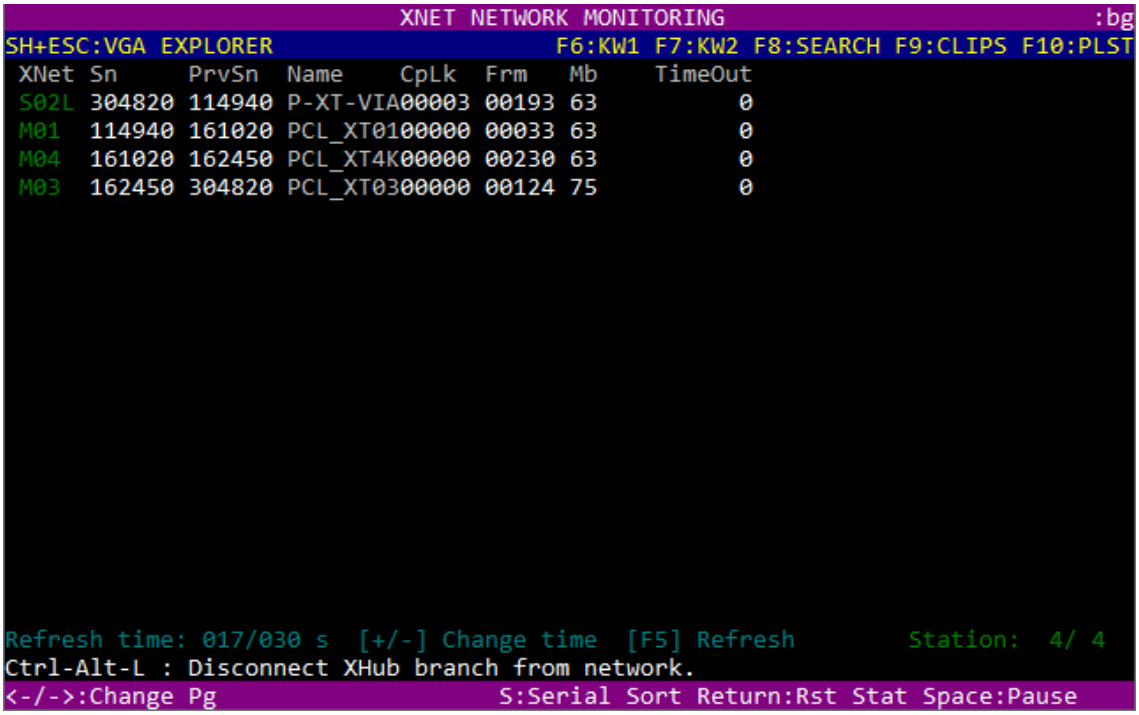
From this window, you can also disconnect the XHub branch on which the EVS server is located from the network. See section "Disconnecting a Machine from the XNet Network" on page 517 for more information.

6.2.3. Hardware Error Counters

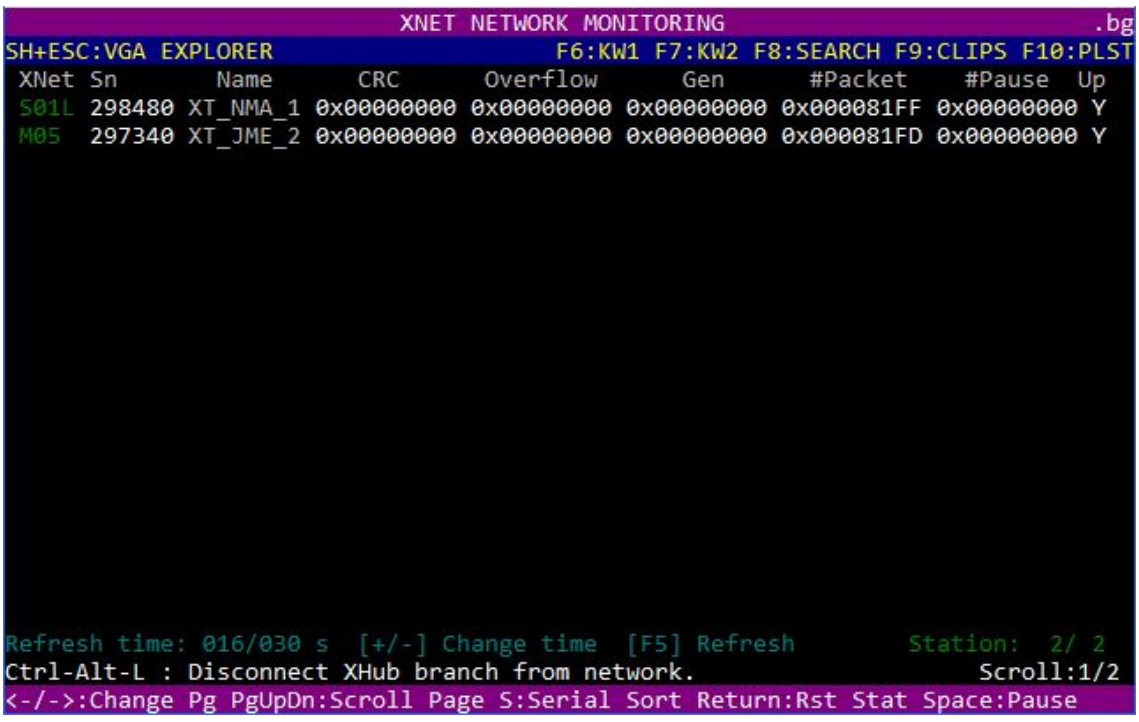
Overview

The second page of the XNet monitoring section provides a list of the hardware devices present on the XNet network, sorted by serial number, with error counters information.

When the XNet operation mode is 3G-SDTI, the following information is displayed:



When the XNet operation mode is XNet-VIA, the following information is displayed:



Data Displayed (3G-SDTI)

When the XNet operation mode is 3G-SDTI, the following data is displayed:

Column	Description
XNet	• XNet server (Preferred, Allowed or Forbidden) • Net number • Local machine
Sn	Serial number
PrvSn	Serial number of the previous machine in the network
Name	Name of the machine
CpLk	Electrical quality of the network
Frm	Checksum of the packets
Mb	Mailbox
TimeOut	Number of timeout commands

In operating conditions, when all machines are connected, the **CpLk** (electrical quality of the network) and **Frm** (checksum on the packets) counters should not increase at all.

At the contrary, the counters will increase during disconnection/connection of/to the network.

Data Displayed (XNet-VIA)

Column	Description
XNet	• XNet server (Preferred, Allowed or Forbidden) • Net number • Local machine
Sn	Serial number
Name	Name of the machine
CRC	Number of CRC errors
Overflow	Overflow of packets processed by the H4X memory
Gen	Number of Generic Errors if packet size is not coherent (between 64 and 1518 bytes)
#Packet	Number of packets received
#Pause	Number of pause frames requested by external protocols
Link state	Status of the two physical XNet interfaces (up/down)

6.2.4. Disconnecting a Machine from the XNet Network

Introduction

From the Monitoring section, page 2, you can disconnect from the XNet network the XHub branch the EVS server your are working on is connected to. This can be useful when setting up an XNet network or troubleshooting an XNet network issue.

This feature is only possible when using a XHub from version 3.03.

How to Disconnect a Machine from the XNet Network

To disconnect a machine from the server, proceed as follows:

1. Press SHIFT- F4 to access the XNet Network Monitoring window.
2. Press CTRL-ALT-L to disconnect the XHub branch from the network.

   The following warning is displayed: `'The network branch you are connected on will be disconnected from the network. All network actions will be disabled.'`
3. Click ENTER to confirm that you want to disconnect the XHub branch from the network.

On the XNet Network Monitoring window, the following message in red font informs that the machine is disconnected and how it can be connected again:

`'XHub branch disconnected from the network. Press CTRL-ALT-L to reconnect.'`

6.3. OpenMetrics

Introduction

Server metrics are made available in OpenMetrics format for powerful monitoring using Prometheus & Grafana. This feature is active by default.

Prometheus is a popular open-source time series database and monitoring system. It is designed to collect and store time series data, such as system metrics, application performance metrics, and other monitoring data, in a highly efficient and scalable manner.

Grafana is a popular open-source software that lets you create and view graphs and dashboards of data. The tool allows you to visualize your data in a way that is easy to understand, and you can customize your graphs and dashboards to suit your needs.

You can access and view the server metrics in your web browser using the following URL: `http://<your_xt_ip>:8088/metrics`.

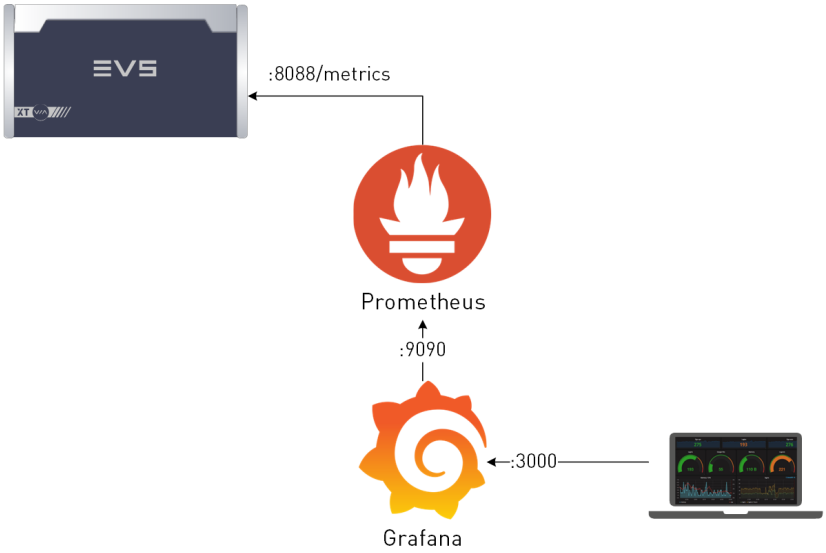
In order for this feature to work, Prometheus and Grafana need to be installed and properly configured. They can be installed on one and the same machine, or on a separate machine each. They are both running outside of the XT server and are both supported on Windows and Linux platforms. The Grafana web interface can even be accessed using a web browser running on a third machine network access. See https://prometheus.io/download/ and https://grafana.com/grafana/download for the installation files.

Prometheus will poll for the server metrics on listening port 8088 and store the information in its database.

If Prometheus is properly configured as data source in its settings, Grafana will fetch the server metrics through the listening port number 9090.

The server data originating from Prometheus can be used as source in Grafana to create a new dashboard and one or more panels.

You can access the Grafana dashboard and panels through your web browser.



Multicam Metrics

OpenMetrics Syntax

A metric has a name, a type (e.g. counter, gauge, histogram), key-value pairs that provide additional context and metadata for the metric (e.g. direction="out", type="data"), and a value (e.g. 0).

```
# HELP multicam_xnet_bandwidth_bytes Multicam xnet bandwidth (bps) (gauge)
# TYPE multicam_xnet_bandwidth_bytes gauge
multicam_xnet_bandwidth_bytes{direction="out",type="data"} 0
```

In the example above, **multicam_xnet_bandwidth_bytes** measures the bandwidth taken up by the incoming and outgoing data and management within the XNet.

This metric is of the type gauge. This is a type of metric that represents a single numerical value that can go up or down over time. The **direction** parameter indicates if we are dealing with **in**coming or **out**going data. The **type** parameter indicates the type of network (**data**, **management**).

The bandwidth currently measured is 0.

Multicam Metrics Usage in Grafana

Each of these Multicam metrics can be used in a Grafana dashboard to populate one or more panels with concrete data.

In the example below, 4 panels have been created displaying for each server in the XNet-VIA how much bandwidth is being consumed by the incoming and outgoing video and management data.

Create a new dashboard in Grafana and add one or more panels to it.

In the Query tab of a panel make use of the query editor. To add the name of the Multicam metric and one or more key-value pairs, you can make use of the Metric browser and the Label field. You can also directly type the name of the metric and the key-value pairs in the query field.

If you do not specify the additional key-value pairs, all data will be overplotted in the panel.

List of Metrics

31 different metrics are shared. The table below lists the available metrics and their type.

Metric	Type
hammer_services_web_socket_events_total	counter
hammer_services_zmq_publish_events_total	counter
hammer_services_busy_physical_memory_percent	gauge
hammer_services_physical_memory_used_cur_proc_percent	gauge
hammer_services_total_cpu_usage_percent	gauge
hammer_services_cpu_usage_cur_proc_percent	gauge
hammer_services_opened_sockets_total	gauge
hammer_services_request_duration_seconds	histogram
multicam_bgtask_for_100_interruptions	gauge
multicam_divergence_from_ucode_total	gauge
multicam_interruption_excess_total	gauge
multicam_microcode_errors_total	gauge
multicam_storage_drives_total	gauge
multicam_storage_raid_failure_total	gauge
multicam_storage_raid_rebuild_ratio	gauge
multicam_storage_raid_state_info	gauge
multicam_storage_bandwidth_bytes	gauge
multicam_xnet_bandwidth_bytes	gauge
multicam_xnet_connection_state_info	gauge
multicam_clip_lock_total	gauge
multicam_temperature_celsius	gauge
multicam_hammer_server_command_total	gauge
multicam_hammer_server_command_load_total	gauge
multicam_hammer_server_command_max_load_total	gauge
multicam_hammer_server_command_retry_total	gauge
multicam_hammer_server_event_total	gauge
multicam_hammer_server_event_load_total	gauge
multicam_hammer_server_event_max_load_total	gauge

Metric	Type
multicam_hammer_server_event_overflow_total	gauge
multicam_sfp_bandwidth_bytes	gauge
multicam_sfp_packet_total	gauge
multicam_bgtask_for_100_interruptions_total	histogram
multicam_storage_usage_ratio	histogram

7. Protocols

7.1. Introduction

The EVS servers can be controlled by several protocols. This section will describe briefly the supported protocols. The purpose of this description is not to be exhaustive but to give a quick overview of the protocols capabilities and the function supported.

7.2. Sony BVW75

Protocol Capabilities

This Sony protocol is able to:

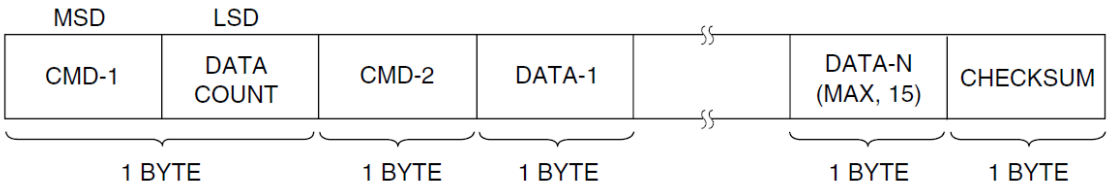
- use the transport command
- get the channel status
- get the channel TC

Characteristics

Bitrates

38.4 kilobits/s

Command Construction



where:

- CMD-1 : Command category
- DataCount : number of byte in the command
- CMD-2 : number of the command
- Data-x : Command parameters
- CheckSum : validity check

Replies

Ack: command received and executed

Name	CMD-1	Data Count	CMD-2	CheckSum
Command	1	1	0 1	*XX*

Nack: Error

Name	CMD-1	Data Count	CMD-2	Data-1	CheckSum
Command	1	1	1 2	*ZZ*	*XX*

Supported Commands

This table summarizes the supported commands:

Command	Return
00.0C Local Disable	10.01:Ack
00.11 Device Type Request	12.11.20.25 for PAL 12.11.21.25 for NTSC
00.0D Local Enable	10.01:Ack
20.00 Stop	10.01:Ack
20.01 Play	10.01:Ack
20.02 Record	10.01:Ack (customized)
20.04 StandByOff	10.01:Ack
20.05 StandByOn	10.01:Ack
20.0F Eject	10.01:Ack (customized)
20.10 Forward	10.01:Ack
2X.11 Jog Fwd	10.01:Ack
2X.12 Var Fwd	10.01:Ack
2X.13 Shuttle Fwd	10.01:Ack
20.20 Rewind	10.01:Ack
2X.21 Jog Rew	10.01:Ack
2X.22 Var Rew	10.01:Ack
2X.23 Shuttle Rew	10.01:Ack

Command	Return
20.30 Preroll	10.01:Ack
24.31 CueUp With Data	10.01:Ack
20.54 Anti-Clog Timer Disable	10.01:Ack (No action)
20.55 Anti-Clog Timer Enable	10.01:Ack (No action)
20.60 Full EE OFF	10.01:Ack (No action)
20.61 Full EE ON	10.01:Ack (No action)
20.64 Edit OFF	10.01:Ack (No action)
20.65 Edit ON	10.01:Ack (No action)
40.00 Timer-1 Preset	10.01:Ack
40.08 Timer-1 Reset	10.01:Ack
40.10 Set In	10.01:Ack
40.11 Set Out	10.01:Ack
44.14 IN Preset	10.01:Ack
44.15 OUT Preset	10.01:Ack
40.20 Reset In	10.01:Ack
40.21 Reset Out	10.01:Ack
40.30 Edit Preset	10.01:Ack
44.31 Preroll Preset	10.01:Ack
40.35 Color Frame Select	10.01:Ack (No action)
41.36 Set Timer Mode	10.01:Ack
40.40 Set Auto Mode OFF	10.01:Ack
40.41 Set Auto Mode ON	10.01:Ack
40.9E Superimpose	10.01:Ack (No action)
61.0A Request TCGen	74.08 : GEN TIME DATA 74.09 : GEN UB DATA 78.08 : GEN TC & UB DATA
61.0C Request TimeCode	74.00 TIMER-1 DATA 74.04 LTC TIME DATA 74.05 LTC UB DATA 78.04 LTC TIME & UB DATA 74.06 VITC TIME DATA 74.07 VITC UB DATA 78.06 VITC TIME & UB DATA
60.10 Request IN	74.10 IN DATA

Command	Return
60.11 Request OUT	74.11 OUT DATA
61.20 Request Status	7X.20 STATUS DATA
60.2E Request Speed	7X.2E COMMAND SPEED DATA
60.31 Request Preroll	74.31 PREROLL TIME DATA
60.36 Request Timer Mode	71.36 TIME MODE DATA

7.3. XTENDD35

Protocol Capabilities

The XTenDD35 protocol is a Sony Protocol extension

This protocol is able to:

- preload clips without chaining
- create clips
- get the server database

Characteristics

Same characteristics as the Sony Protocol.

Supported Commands

This protocol supports the same commands as the Sony protocol, as well as the following ones:

Command	Return
60.81: Request current ID	7X.81
60.82: Get First ID	7X.82
60.83: Get Next ID	7X.82
60.84: Get First Delete ID	7X.84
60.85: Get Next Delete ID	7X.84
60.86: Get First ID Added ID	7X.86
60.87: Get Next ID Added ID	7X.86
67.91: Request ID duration	7X.91
27.82: Open File	10.01

EVS adds some custom commands to the protocol in order to take advantage of the server potential. Please contact EVS to know more about these commands.

7.4. Odetics

Protocol Capabilities

The Odetics protocol is a Sony Protocol extension.

This protocol is able to:

- preload clips without chaining
- create clips
- get the server database

Characteristics

Same characteristics as the Sony Protocol.

Supported Commands

This protocol supports the same commands as the Sony protocol, as well as the following ones:

Command	Return
00.11 : Device Type Request	12.11 : Device Type
2X.31 CueUp With Data (Odetics extention)	10.01:Ack
44.14 Preset IN (Odetics extention)	10.01:Ack
44.15 Preset OUT (Odetics extention)	10.01:Ack
40.40 Auto Mode Off	10.01:Ack
40.41 Auto Mode ON (Odetics extention)	10.01:Ack
A0.01 Auto Skip	10.01:Ack
AX.02 Record Cue Up With Data.	10.01:Ack
AX.04 Preview In Preset	10.01:Ack
AX.05 Preview Out Preset	10.01:Ack
A0.06 Preview In Reset	10.01:Ack
A0.07 Preview OUT Reset	10.01:Ack
Ax.10 Erase ID	10.01:Ack
A0.14 List First ID	8X.14 ID Listing
A0.15 List Next ID	8X.14 ID Listing
A8.18 ID Status Request	81.18 ID Status
A0.1c Longuest Contiguous Available Storage.	84.1C Longest Contiguous Available Storage
A0.21 Device ID Request	88.21 Device ID
A8.20 Set Device ID	10.01:Ack

EVS adds some custom commands to the protocol in order to take advantage of the server potential. Please contact EVS to know more about these commands.

7.5. VDCP

Protocol Capabilities

The Video Disk Control Protocol (VDCP) is a protocol dedicated to the video server and design for the automation.

This protocol is able to:

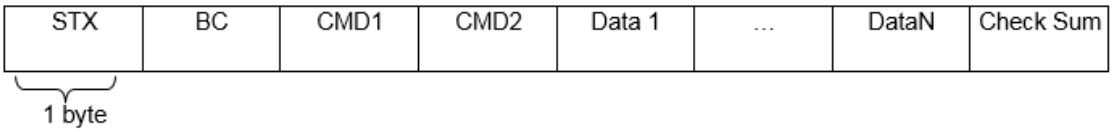
- control several channels with one serial connection
- preload and chain clips
- create clips
- get the server database

Characteristics

Bitrates

38.4 kilobits/s

Command Construction



where:

- STX : 02
- BC : number of byte in the command
- CMD-1 : Command type
- CMD-2 : Command number
- Data : Command parameter (max 255 Datas)
- CheckSum : validity check

Replies

- Ack (0x04) or Nack (0x05)
- Replies with data

Supported Commands

This table summarizes the supported commands:

Command		Return
VarID mode	8-bytes ID mode	
80.15	00.15 Delete Protect	04 Ack
80.16	00.16 Undelete Protect	04 Ack
-	10.00 Stop	04 Ack
-	10.01 Play	04 Ack
-	10.02 Record	04 Ack
-	10.04 Still	04 Ack
-	10.05 Step	04 Ack
-	10.06 Continue	04 Ack
-	10.07 Jog	04 Ack
-	10.08 Var Play	04 Ack
A0.1D	20.1D Rename ID	04 Ack
-	20.1E Preset Standard Time	04 Ack
A0.1F	20.1F New Copy	04 Ack
-	20.20 Sort Mode	04 Ack
-	20.21 Close Port	04 Ack
-	20.22 Select Port	04 Ack
A0.23	20.23 Record Init	04 Ack
A0.24	20.24 Play Cue	04 Ack
A0.25	20.25 Cue With Data	04 Ack
A0.26	20.26 Delete ID	04 Ack
-	20.29 Clear	04 Ack
A0.2C	20.2C Record Init With Data	04 Ack
-	20.43 Disk Preroll	04 Ack
-	30.01 Open Port	30.81 Port Opened
B0.02	30.02 Next	B0/30.82 Next ID
B0.03	30.03 Last	B0/30.83 Last ID

Command		Return
VarID mode	8-bytes ID mode	
-	30.05 Port Status	30.85 Status
-	30.06 Position Request	30.86 Position
B0.07	30.07 Active ID Request	B0/30.87 Active ID
-	30.08 Device Type Request	30.88 Device Type
-	30.10 System Status Request	30.90 System Status
B0.11	30.11 ID List	B0/30.91 ID
B0.14	30.14 ID Size Request	B0/30.94 ID Size
B0.16	30.16 ID Request	B0/30.96 ID Characteristic
B0.18	30.18 ID's Added List	B0/30.98 Added ID
B0.19	30.19 ID's Deleted List	B0/30.99 Deleted ID

EVS adds some custom commands to the protocol in order to take advantage of the server potential. Please contact EVS to know more about these commands.

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