CONFIGURATION MANUAL

XT 4K

EVS

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Regional Contacts

You will find the full list of addresses and phone numbers on the following webpage: http://www.evs.com/contact.

User Manuals on EVS Website

The latest version of the user manual, if any, and other user manuals on EVS products can be found on the EVS download center, on the following webpage: https://www.evs.com/en/download-area.

Table of Contents

What's New?

In this Multicam Configuration manual, the icon **NEW !** has been added on the left margin to highlight information on new and updated features in release 15.3.

The changes linked to new features in release 15.3 are listed below:

New Color Gamut parameter for Wide Color Gamut support

- See section "Color Gamut" on page 122

New Make Local Auto parameter in Playlist settings

- See section "Make Local Auto" on page 251

New value for Second Lever Range parameter in EVS Controller settings

- See section "Second Lever Range" on page 263

Support of XAVC class 480 as XAVC-Intra 4K codec

- See section "Codec Availability" on page 128

- See section "Codec Settings" on page 124

- See section "Codec-Related Information" on page 129

- See section "General Information on UHD-4K Configurations" on page 102

Support of SMPTE 334M packets

- See section "Overview" on page 137

- See section "SMPTE 334M Packet Management Settings" on page 186

Monitoring of SDI and IP Inputs

- See section "Input Monitoring" on page 319

New Live IP configuration module in the Web Interface

- See section "Navigating and Editing in the Multicam Configuration Window" on page 113

- See section "LiveIP Configuration" on page 274

- See section "IP IO Configuration" on page 199

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

Precision on maximum audio channels with MADI connectors

• See section "Number of Audio Tracks" on page 163

Reviewed section Raid and Disk Status Window

• See section "Raid and Disk Status Window" on page 312

"Interface" setting (Base settings) reviewed and updated

• See section "Interface" on page 142

Configuration for PC LAN redundancy

• See section "Setting the Server PC LAN Connection" on page 27

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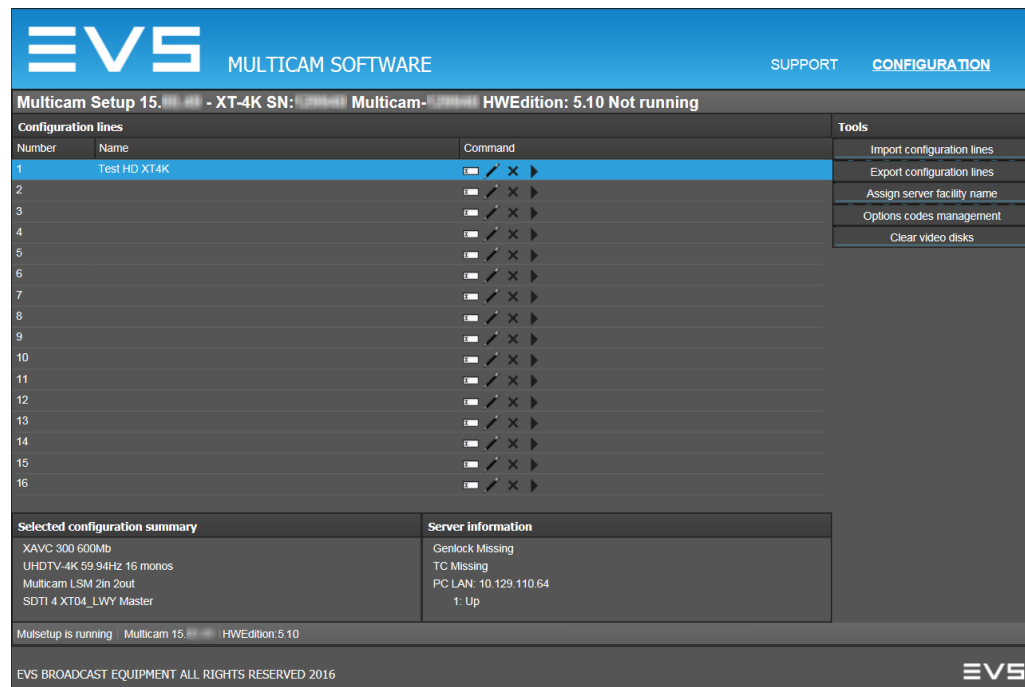
The configuration module has been developed along the lines presented in this section.

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.

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 MADIand Analog 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 now 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.

NOTE

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 12.

- 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 107.

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 13. 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://<PCLAN IP Address>`, for example `http://10.129.59.80`

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

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://<PCLAN IP Address>/cfgweb/.`

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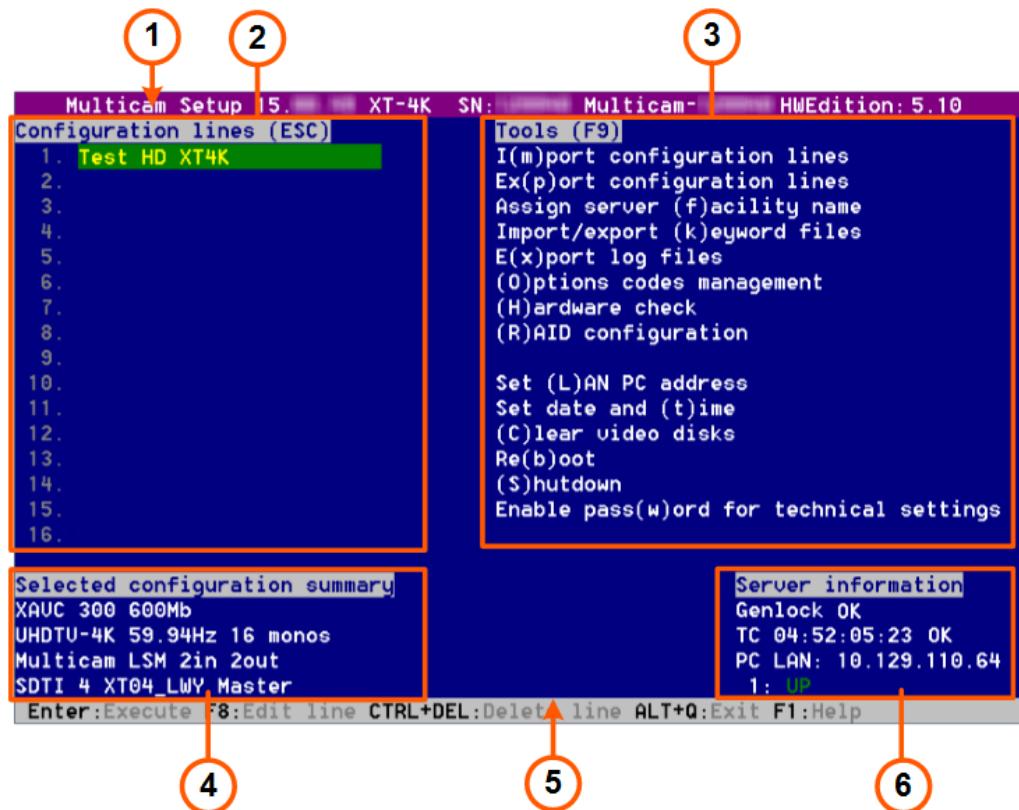
The following screenshot presents the Multicam Setup window in the web-based interface:
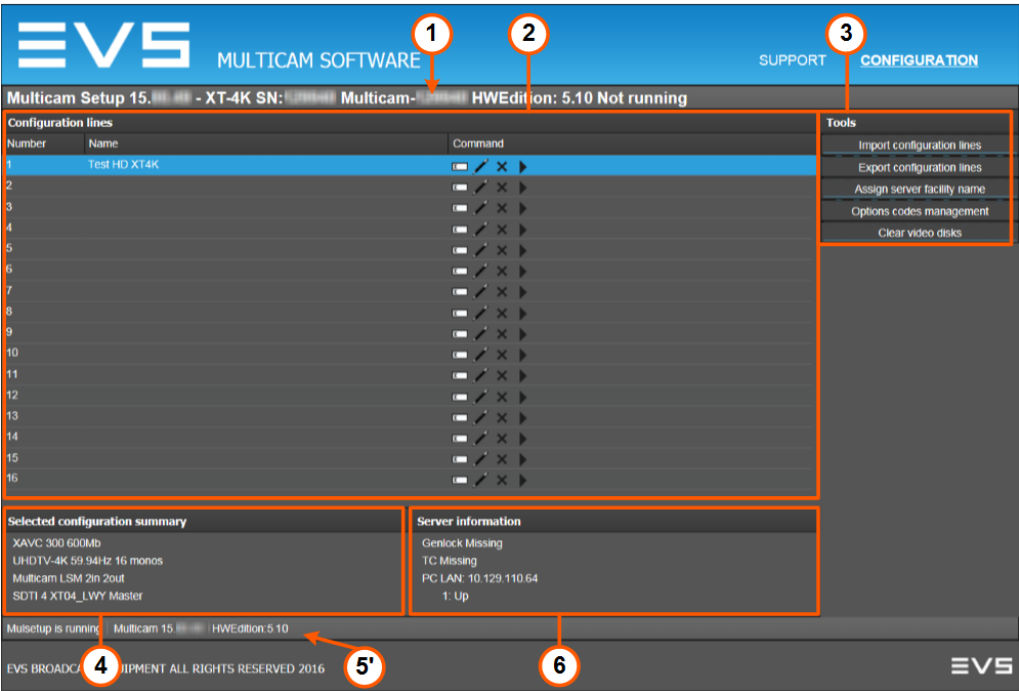
Description of the Areas

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 12 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 • Hardware check • Raid Configuration • 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. SDTI No. - server name - server type

#	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 10 for more information.
5'.	Status bar	The Status bar (web-based interface) displays: • the Multicam Setup application status • the date and time of the last refresh • the **Refresh** button
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 12 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

> **NOTE**
>
> 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

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.

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 107 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 107 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

NOTE

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 `C:/LSMCE/DATA/SETUP/USER` or a subfolder.

```
═══════════════════════EXPORT  CONFIGURATION  FILES═══════════════════════
      SERVER CONFIGURATION LINES         Copy configuration lines in new folder
                                                    XTNewADL-121025

      [X]  1. Spotbox 4IN 4OUT           Select where new folder is created
      [ ]  2.                            Local drive
      [ ]  3.                            \C\LSMCE\DATA\SETUP\USER
      [ ]  4.                                 NewADL-121024
      [X]  5. Spotbox 4IN 4OUT
      [ ]  6.
      [ ]  7.
      [ ]  8.
      [ ]  9.
      [ ] 10.
      [ ] 11.
      [ ] 12.
      [ ] 13.
      [ ] 14.
      [ ] 15.
      [ ] 16.


      Select lines to export and destination.            ENTER:Export
```
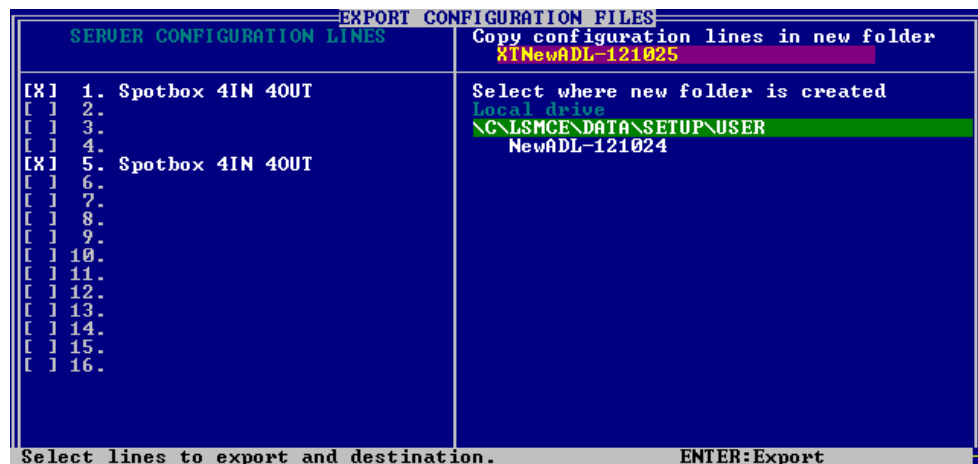
2. If requested, change the name of the folder the configuration lines will be exported to:

    ◦   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 `C:/LSMCE/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

> **NOTE**
>
> 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

⚠ **WARNING**

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.

```
┌─────────────────────IMPORT CONFIGURATION FILES─────────────────────┐
│Local drive                          SERVER CONFIGURATION LINES      │
│\C\LSMCE\DATA\SETUP\USER <0>      [X]  1. Spotbox 4IN 4OUT           │
│   NewADL-121024 <2>                   2.                            │
│                                       3.                            │
│                                       4.                            │
│                                  [X]  5. Spotbox 4IN 4OUT           │
│                                       6.                            │
│                                       7.                            │
│                                       8.                            │
│                                       9.                            │
│                                      10.                            │
│                                      11.                            │
│                                      12.                            │
│                                      13.                            │
│                                      14.                            │
│                                      15.                            │
│                                      16.                            │
│                                                                     │
│                                                                     │
│Select a folder or a line to replace on the server.   ENTER:Replace │
└─────────────────────────────────────────────────────────────────────┘
```
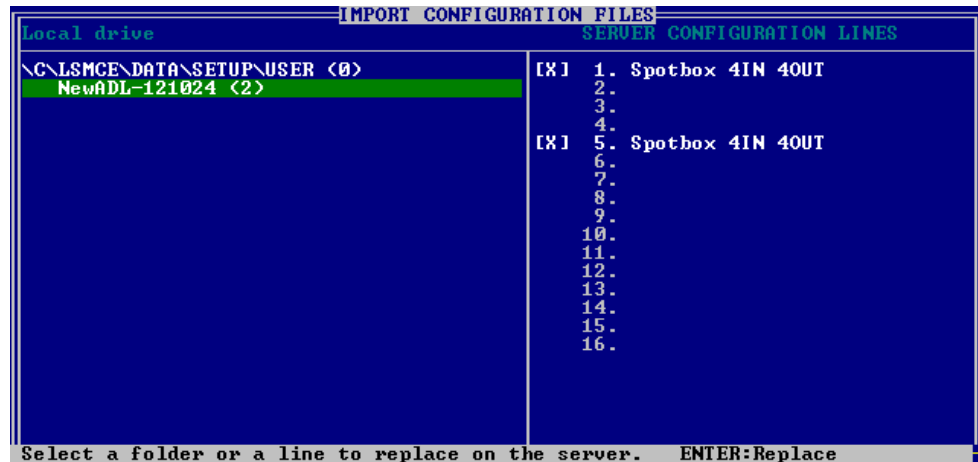
3. On the left pane, use the **UP ARROW** or **DOWN ARROW** key to highlight the folder that contains the configuration file you want to import.

   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

> **NOTE**
>
> 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.
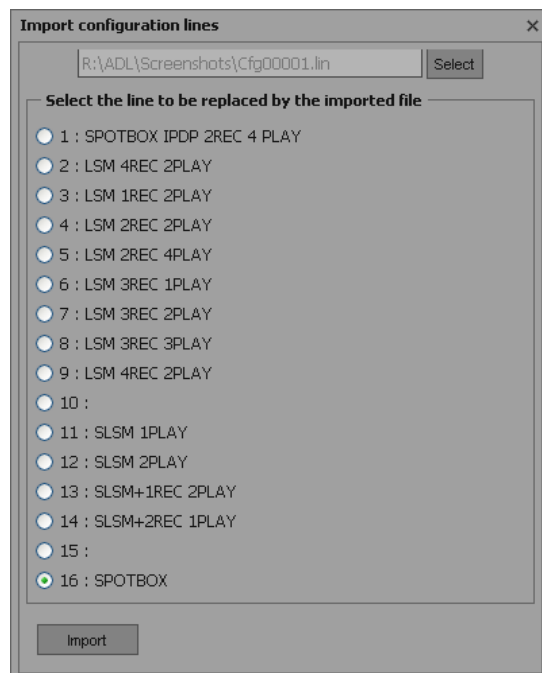
2. Click **Select** next to the top field and select the configuration file you want to import.

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

> ⚠️ **WARNING**
>
> Note that copying a line onto another position will erase 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

> ⚠️ **WARNING**
>
> 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
"Setting the Server Date and Time"	2.3.5	Yes	No
"Configuring Server Raids"	2.3.6	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).

> **NOTE**
>
> 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:

Assign server facility name	×
Facility Name :	
OK	Cancel
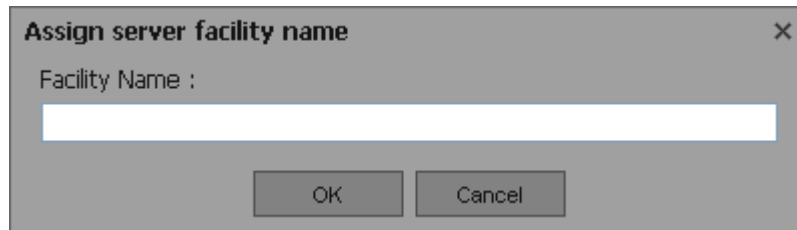
2. Type the server facility name and press **OK**.

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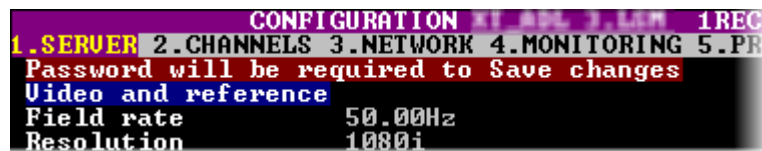
To enable changes in the configuration parameters during the session, you will be prompted for the password the first time you save changes to configuration parameters in a session.

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:

```
           CAUTION !!
 A password will no longer be required
     to modify technical settings.
           Are you sure ?

      <No>              <Yes>
```

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:

```
 Please enter the password :


<Esc> : Cancel <Enter> : Validate
```
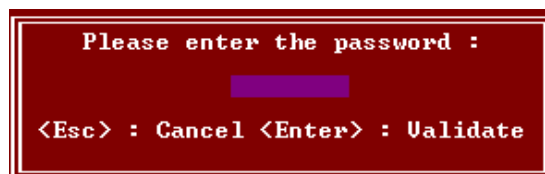
The password protection is directly removed from all user interfaces.
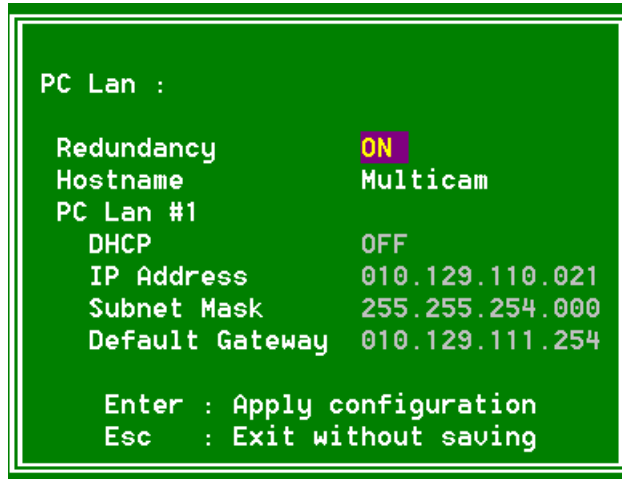
2.3.4. Setting the Server PC LAN Connection

Introduction

The internal switch module of the H3XP board of an EVS server provides more features on the PC LAN network. Thanks to the switch, the server can offer a redundancy on the PC LAN and supports now the DHCP protocol.

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

The following window shows the Set LAN PC address dialog box with the redundancy set to ON and the DHCP to OFF:

```
PC Lan :

Redundancy        ON
Hostname          Multicam
PC Lan #1
  DHCP            OFF
  IP Address      010.129.110.021
  Subnet Mask     255.255.254.000
  Default Gateway 010.129.111.254

  Enter : Apply configuration
  Esc   : Exit without saving
```
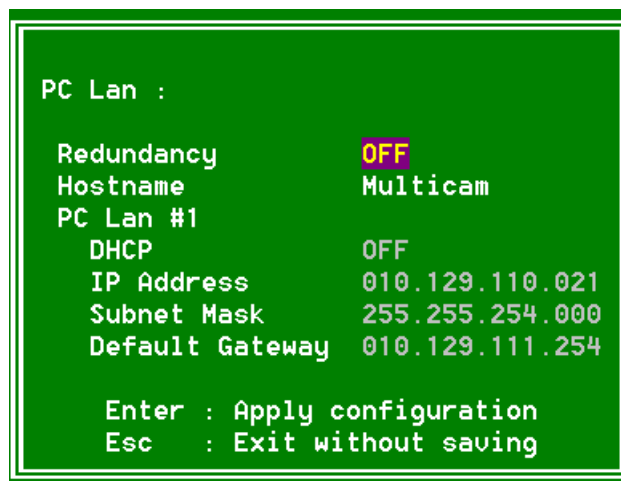
NOTE

You can achieve PC LAN redundancy by configuring the switch with static aggregation.

How to Set the PC LAN Connection

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

```
PC Lan :

Redundancy        OFF
Hostname          Multicam
PC Lan #1
  DHCP            OFF
  IP Address      010.129.110.021
  Subnet Mask     255.255.254.000
  Default Gateway 010.129.111.254

  Enter : Apply configuration
  Esc   : Exit without saving
```

2. In this window, click **TAB** to select the **Redundancy** field, and press the **Space** bar to enable or disable the redundancy.

   When the redundancy is enabled, the PC LAN #2 will automatically take over in case the PC LAN #1 fails.

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

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 #1. 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 #1. Go to step 4.

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

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.

✎ **NOTE**

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.   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.

✎ **NOTE**

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:

```
           System Date & Time

     Date : 04/10/2011 (DD/MM/YYYY)
     Time : 07:40:09

     ENTER : apply
     ESC   : quit without saving
```
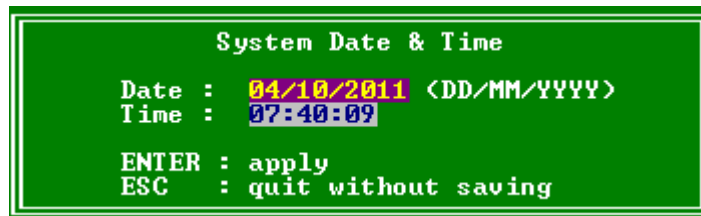
2. In this window, type:

    ◦ 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.

2.3.6. 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.

> **NOTE**
>
> 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 312.

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.

- (5+1) raid configuration with a maximum of 5 spares is used. First, all the 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 two raid organizations: • (4+1): raid of 5 disks • (5+1): raid of 6 disks

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 312 for more information.

2.4. Licenses and Maintenance

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.

This 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.

> **NOTE**
>
> 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:
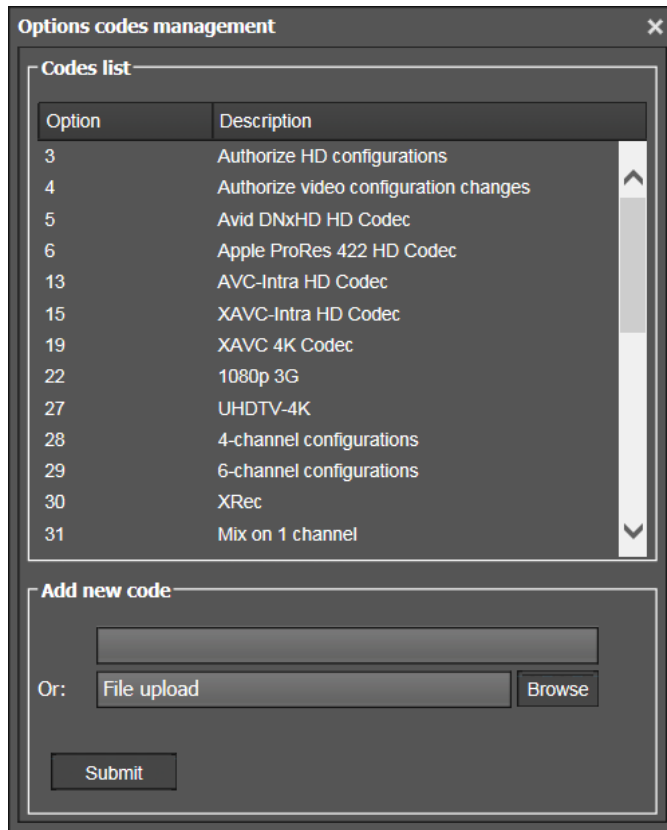
```
┌─Key settings═══════════════════════════════════════════════════════════════┐
║ System ID    161055326     Serial number 161050         User EVS DEMO       ║
║ Chassis type XT-4K          PSU type       Hot Swap                          ║
║ Key date and time are  05/12/16 16:26:25                                     ║
║─Options──────────────────────────────────────────────────────────────────  ║
║    0                        Full options                                     ║
║    3         Permanent      Authorize HD configurations                      ║
║    4         Permanent      Authorize video configuration changes            ║
║    5         Permanent      Avid DNxHD HD Codec                              ║
║    6         Permanent      Apple ProRes 422 HD Codec                        ║
║   13         Permanent      AVC-Intra HD Codec                               ║
║   15         Permanent      XAVC-Intra HD Codec                              ║
║   19         Permanent      XAVC 4K Codec                                    ║
║   22         Permanent      1080p 3G                                         ║
║   27         Permanent      UHDTV-4K                                         ║
║   28         Permanent      4-channel configurations                         ║
║   29         Permanent      6-channel configurations                         ║
║   30         Permanent      XRec                                             ║
║   31         Permanent      Mix on 1 channel                                 ║
║  102         Permanent      LSM all options                                  ║
║                                                                              ║
║        validation code    ─      ─      ─                                    ║
║                                                                              ║
║ <ALT-F>Update from local file      <ALT-U>Update from USB key     <Esc>Quit  ║
└══════════════════════════════════════════════════════════════════════════════┘
```

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**. 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 C:\ drive of the EVS server.
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:
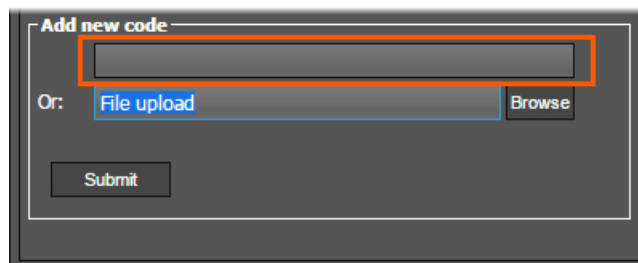
3. Click **Submit**.

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.   Server Maintenance

2.5.1.   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"	38	Yes	No
"Hardware Check"	39	Yes	No
"Clearing Video Disks"	43	Yes	No
"Record Train Maintenance"	45	Yes	No
"Importing and Exporting Keyword Files"	46	Yes	No
"Exporting Log Files"	47	Yes	No

2.5.2.   Rebooting the EVS Server

To reboot the EVS server 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.

2.5.3. Hardware Check

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.

> 💡 **Tip**
> 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
- H3XP 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 H3XP board is initialized.

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

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.

Rebuild Process

Introduction

The XT4K 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 40, 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.

NOTE

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.

WARNING

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

2.5.4.   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:
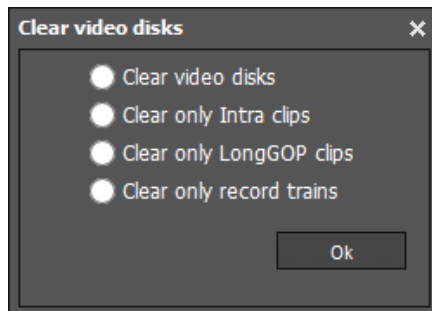
Depending on the option you select in the Clear Video Disks dialog box, you will delete:

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

- the record trains only (Clear only record trains)

> **NOTE**
>
> The options Clear only Intra clips, and Clear only LongGOP clips are not relevant on XT4K, which does not support the LongGOP essence.

When and What for is a Clear Action Required?

> **NOTE**
>
> 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 45)	Clear Record Trains
Change in the multi-essence configuration (See below for details)	Clear Record Trains

Which Clear Action is Required with Multi-Essence Changes?

When you change the multi-essence configuration, you may have to clear the record trains in some cases detailed in the table below.

When nothing is specified in the table, you do not have to perform any clear command.

A clear video disks or a partial clear clip command can always be called if requested, but is not required when you change the multi-essence configuration.

The Lo-Res clips associated to Hi-Res clips will be cleared when the user clears the clips of the on-air codec.

S o u r c e	C o n f i g.	Target Configuration		
			Intra	Intra+ Proxy
		Intra		Record trains
		Intra+ Proxy		

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.

NOTE

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.

2.5.5.   Record Train Maintenance

Preventing the Overflow of the Record Trains Field Counter

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**.

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.

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.

2.5.6.   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 `C:\LSMCE\DATA\KWD` directory of the server. 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:

```
Import\Export Keywords Files

Files on USB              Files on Server
TENNIS.KWD        ->  SAMPLE.KWD

        [ENTER] Import on Server
```
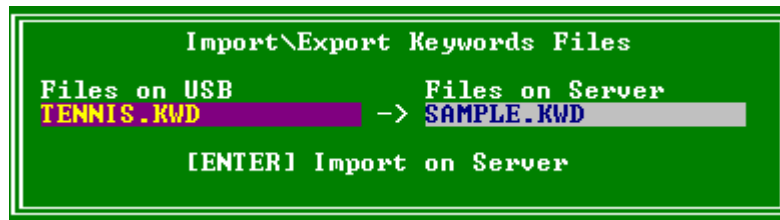
3. If several keyword files are stored on the USB key, press **SPACEBAR** until the requested file is selected on the left field.

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:

```
Import\Export Keywords Files

Files on USB              Files on Server
TENNIS.KWD        <- SAMPLE.KWD

        [ENTER] Export to USB
```

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.

2.5.7.   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 `C:\LSMCE\DATA` folder of the EVS server

•   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 `C:\LSMCE\DATA\LOG` and `C:\LSMCE\DATA\DUMP` 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://<PCLAN IP Address>`), a QR code allows you to download the EVS Server Configuration application from the Google Play or the Apple store.

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

The XT4K 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 XT4K server:

- 8-Channel mode with license codes 28, 29 and 30

  including 2-, 4-, 6- and 8-channel configurations.

- 10-Channel mode with license code 36

- ChannelMax mode with license code 34

See section "About Extended Configurations" on page 50 for more information about the extended configurations, that means configurations using more than 8 channels.

Requirements and Limitations

- The **3D** configurations are not supported.

- The **Mix on one channel** for play channels is available on all configurations.

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 139.

The number of play and record channels available may differ depending on the installed license codes, and on the configurations running on the XT4K 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	10	12
Min. # REC	1	0
Max. # REC	10	12
Min. # PLAY	1	0
Max. # PLAY	6	6

NOTE

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 MulticamLSM or 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 mode.

    Example

    ◦ 1 REC ==> 2 REC: Record trains are lost.
    ◦ 4 REC ==> 3 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.   About Extended Configurations

Definition

Extended configurations are configurations included into the 10-channel and ChannelMax modes which use the C&D links of the V4X modules.

Requirements

The extended configuration modes require the following license codes:

- 10-Channel mode with license code 36
- ChannelMax mode with license code 34

3.1.4. Channel Assignment Principles

General Principles

The following general principles apply to all configurations on the XT4K server:

- On hybrid panels:
  - The IP connectors (SFP+) and the SDI connectors (BNC) can not be used simultaneously.
  - The channel distribution among the codec modules is identical in IP and in SDI.
  - The configurations supported are therefore identical in IP and SDI, with a limitation to 8-channel configurations in SDI (due to the reduced number of connectors per codec module).
- The connectors within a codec module are only able to work in play or record mode.
- The **play channels** (OUT connectors) are always assigned from top to bottom, whether working in UHD-4K or HD:
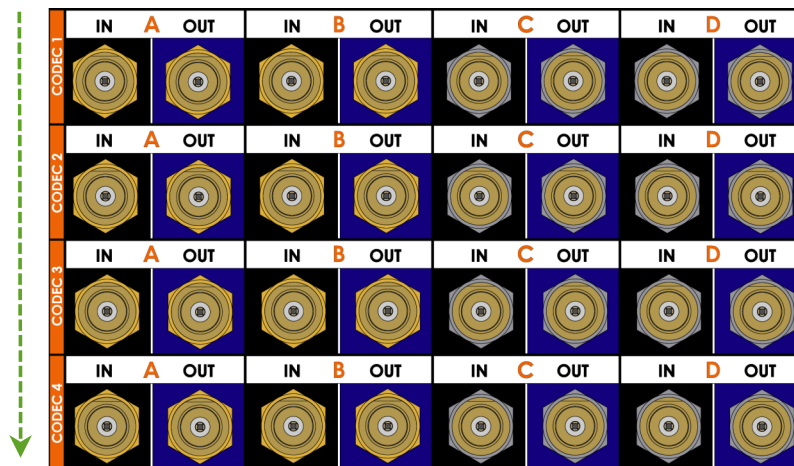
- The **record channels** (IN connectors) are always assigned from bottom to top, whether working in UHD-4K or HD.
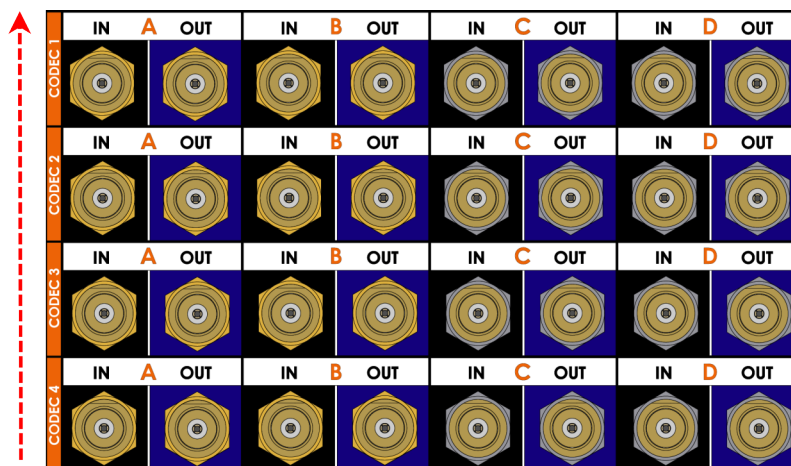
Cabling Procedure for HD

First, assign the **play channels** from top to bottom using only connectors A and B of a V4X module.

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

1. Assign the A & B connectors of the codec modules from bottom to top.

   Start with the SLSM recorders.

2. Continue the channel assignment using connectors C & D from bottom to top.

   Do not use the V4X modules already cabled for SLSM 3G recorders.

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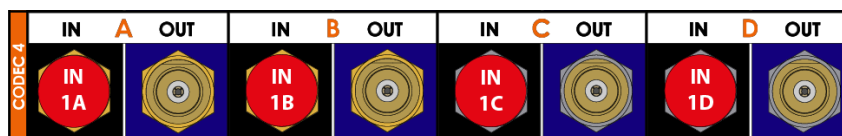
When using a **12G-SDI** interface, cable the UHD-4K input on the IN A connector of the codec module, and the UHD-4K output on the OUT A connector of the codec module.

Cabling of IN 1 is shown below as an example with SDI and SDI&IP hybrid panels:
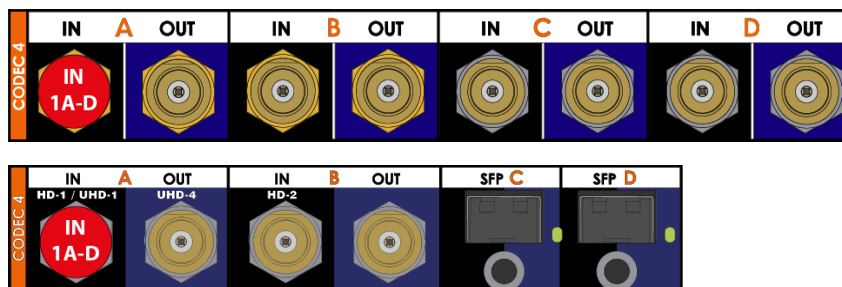
3.2. HD Standard Configurations

Introduction

The tables below show the available HD configurations (720p, 1080i) with an XT4K server, as well as how the BNC connectors should be cabled.

The 8-channel mode includes the 2-,4-,6- and 8-channel configurations.

The configurations in 10-Channel and ChannelMax modes make use of the C and D connectors of the codec module as an independent record channel. See section "About Extended Configurations" on page 50.

⚠ **WARNING**

The HD base configurations without any recorder or player are only supported in Spotbox and Server modes.

Configurations in 8-Channel Mode

	# I N	# O U T	Codec 1				Codec 2				Codec 3				Codec 4			
			A	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
Sp	1	0													IN1			
Sp	2	0													IN1	IN2		
	1	1	OUT1												IN1			
Sp	0	1	OUT1															
Sp	0	2	OUT1	OUT2														

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

	#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	3	0									IN3				IN1	IN2		
Sp	4	0									IN3	IN4			IN1	IN2		
	2	1	OUT1												IN1	IN2		
	3	1	OUT1								IN3				IN1	IN2		
	1	2	OUT1	OUT2											IN1			
	2	2	OUT1	OUT2											IN1	IN2		
	1	3	OUT1	OUT2			OUT3								IN1			
Sp	0	3	OUT1	OUT2			OUT3											
Sp	0	4	OUT1	OUT2			OUT3	OUT4										

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

	#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	5	0					IN5				IN3	IN4			IN1	IN2		
Sp	6	0					IN5	IN6			IN3	IN4			IN1	IN2		
	4	1	OUT1								IN3	IN4			IN1	IN2		
	5	1	OUT1				IN5				IN3	IN4			IN1	IN2		
	3	2	OUT1	OUT2							IN3				IN1	IN2		
	4	2	OUT1	OUT2							IN3	IN4			IN1	IN2		
	2	3	OUT1	OUT2			OUT3								IN1	IN2		
	3	3	OUT1	OUT2			OUT3				IN3				IN1	IN2		
	1	4	OUT1	OUT2			OUT3	OUT4							IN1			
	2	4	OUT1	OUT2			OUT3	OUT4							IN1	IN2		
	1	5	OUT1	OUT2			OUT3	OUT4			OUT5				IN1			
Sp	0	5	OUT1	OUT2			OUT3	OUT4			OUT5							
Sp	0	6	OUT1	OUT2			OUT3	OUT4			OUT5	OUT6						

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

	# I N	# O U T	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	7	0	IN7				IN5	IN6			IN3	IN4			IN1	IN2		
Sp	8	0	IN7	IN8			IN5	IN6			IN3	IN4			IN1	IN2		
	6	1	OUT1				IN5	IN6			IN3	IN4			IN1	IN2		
	7	1	OUT1				IN5	IN6			IN3	IN4			IN1	IN2	IN7	
	5	2	OUT1	OUT2			IN5				IN3	IN4			IN1	IN2		
	6	2	OUT1	OUT2			IN5	IN6			IN3	IN4			IN1	IN2		
	4	3	OUT1	OUT2			OUT3				IN3	IN4			IN1	IN2		
	5	3	OUT1	OUT2			OUT3				IN3	IN4			IN1	IN2	IN5	
	3	4	OUT1	OUT2			OUT3	OUT4			IN3				IN1	IN2		
	4	4	OUT1	OUT2			OUT3	OUT4			IN3	IN4			IN1	IN2		
	2	5	OUT1	OUT2			OUT3	OUT4			OUT5				IN1	IN2		
	2	6	OUT1	OUT2			OUT3	OUT4			OUT5	OUT6			IN1	IN2		

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

Example in 8-Channel Mode (4IN + 4OUT)

The BNC connectors to be used as record and play channels in a 4IN 4OUT configuration need to be cabled as shown below:

Configurations in 10-Channel Mode

	#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	9	0	IN7	IN8			IN5	IN6			IN3	IN4			IN1	IN2	IN9	
Sp	10	0	IN7	IN8			IN5	IN6			IN3	IN4			IN1	IN2	IN9	IN10
	8	2	OUT1	OUT2			IN5	IN6			IN3	IN4			IN1	IN2	IN7	IN8
	6	3	OUT1	OUT2			OUT3				IN3	IN4			IN1	IN2	IN5	IN6
2LSM NoSp	6	4	OUT1	OUT2			OUT3	OUT4			IN3	IN4			IN1	IN2	IN5	IN6
NoSp	4	6	OUT1	OUT2			OUT3	OUT4			OUT5	OUT6			IN1	IN2	IN3	IN4

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.

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

Example in 10-Channel Mode (6IN + 4OUT)

The BNC connectors to be used as record and play channels in a 6IN 4OUT configuration need to be cabled as shown below:

Configurations in ChannelMax Mode

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

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.

Example in 12-Channel Mode (8IN + 4OUT)

The BNC connectors to be used as record and play channels in a 8IN 4OUT configuration need to be cabled as shown below:
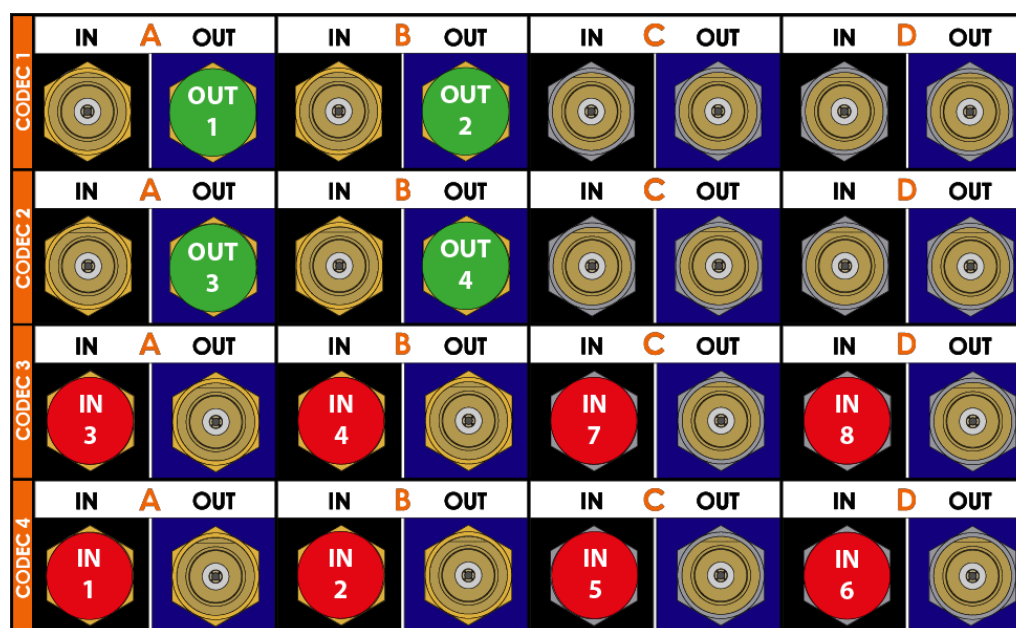
3.3.   SLSM Configurations

3.3.1.   General Information on Supermotion Configurations

Concepts

The **Supermotion cameras** are 2-phase to 10-phase cameras, that record the incoming feeds at a frame rate 2, 3, 4, 6, 8, 10 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 266 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.

Requirements

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

The SLSM configurations are available with the **HD** codecs natively supported by the EVS server.

These 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 Configurations

The 3G SLSM configurations are valid with all HD codecs natively supported by the EVS server.

These configurations are valid when the following conditions are fulfilled:

• The license code 110 (Super Motion) is valid.

• The base configuration is MulticamLSM.

• The parameter Interface is set to **No**.

NOTE

The 3G SLSM configurations are managed via the **On 3G-SDI** parameter in the **SLSM** settings, and 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.

Limitations

Limitations apply on bitrates with some codecs when using 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 131.

3.3.2.   SLSM Configurations

Principles

This section details the available multi-phase SLSM configurations on XT4K servers.

In SLSM configurations, a supermotion recorder of a 2-, 4-, 6-, 8- or 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- or 8-phase camera accounts for one logical channel. On the rear panel, it uses respectively 1, 2, 3 or 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.

Overview

The tables in this section show the available HD SLSM configurations with an XT4K 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:

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

⚠ **WARNING**

- 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 SLSM 2x in 8-Channel Mode

The 8-channel mode in SLSM 2x includes the 4-, 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1												IN 1,1	IN 1,2		
1	1	1	OUT1								IN2				IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2											IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	1	OUT1								IN2	IN3			IN 1,1	IN 1,2		
1	3	1	OUT1				IN4				IN2	IN3			IN 1,1	IN 1,2		
2	0	1	OUT1								IN 2,1	IN 2,2			IN 1,1	IN 1,2		
2	1	1	OUT1				IN3				IN 2,1	IN 2,2			IN 1,1	IN 1,2		
1	1	2	OUT1	OUT2							IN2				IN 1,1	IN 1,2		
1	2	2	OUT1	OUT2							IN2	IN3			IN 1,1	IN 1,2		
2	0	2	OUT1	OUT2							IN 2,1	IN 2,2			IN 1,1	IN 1,2		
1	0	3	OUT1	OUT2			OUT3								IN 1,1	IN 1,2		
1	1	3	OUT1	OUT2			OUT3				IN2				IN 1,1	IN 1,2		
1	0	4	OUT1	OUT2			OUT3	OUT4							IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	3	2	OUT1	OUT2			IN4				IN2	IN3			IN 1,1	IN 1,2		
1	4	2	OUT1	OUT2			IN4	IN5			IN2	IN3			IN 1,1	IN 1,2		
2	1	2	OUT1	OUT2			IN3				IN 2,1	IN 2,2			IN 1,1	IN 1,2		
2	2	2	OUT1	OUT2			IN3	IN4			IN 2,1	IN 2,2			IN 1,1	IN 1,2		
3	0	2	OUT1	OUT2			IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2		
1	2	3	OUT1	OUT2			OUT3				IN2	IN3			IN 1,1	IN 1,2		
1	3	3	OUT1	OUT2			OUT3				IN2	IN3			IN 1,1	IN 1,2	IN4	
2	0	3	OUT1	OUT2			OUT3				IN 2,1	IN 2,2			IN 1,1	IN 1,2		
2	1	3	OUT1	OUT2			OUT3				IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN3	
1	1	4	OUT1	OUT2			OUT3	OUT4			IN2				IN 1,1	IN 1,2		
1	2	4	OUT1	OUT2			OUT3	OUT4			IN2	IN3			IN 1,1	IN 1,2		
2	0	4	OUT1	OUT2			OUT3	OUT4			IN 2,1	IN 2,2			IN 1,1	IN 1,2		

Configurations SLSM 2x in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
3	2	1	OUT 1				IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4	IN 5
4	0	1	OUT 1				IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4,1	IN 4,2
4	1	1	OUT 1				IN 3,1	IN 3,2			IN 2,1	IN 2,2	IN 5		IN 1,1	IN 1,2	IN 4,1	IN 4,2
No Sp 2	4	2	OUT 1	OUT 2			IN 3	IN 4			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 5	IN 6
3	1	2	OUT 1	OUT 2			IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4	
4	0	2	OUT 1	OUT 2			IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4,1	IN 4,2
3	0	3	OUT 1	OUT 2			OUT 3				IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 3,1	IN 3,2

NEW !

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

Configurations SLSM 2x in ChannelMax Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	4	4	0	IN 4,1	IN 4,2			IN 3,1	IN 3,2			IN 2,1	IN 2,2	IN 7	IN 8	IN 1,1	IN 1,2	IN 5	IN 6
No Sp 2LSM	2	4	4	OUT1	OUT2			OUT3	OUT4			IN 2,1	IN 2,2	IN 5	IN 6	IN 1,1	IN 1,2	IN 3	IN 4
No Sp 2LSM	4	0	4	OUT1	OUT2			OUT3	OUT4			IN 2,1	IN 2,2	IN 4,1	IN 4,2	IN 1,1	IN 1,2	IN 3,1	IN 3,2

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.

Example SLSM 2x in 8-Channel Mode (2SLSM 2x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 2x + 2IN + 2OUT configuration need to be cabled as shown below:

Example SLSM 2x in 10-Channel Mode (2SLSM 2x + 4IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 2x + 4IN + 2OUT configuration need to be cabled as shown below:
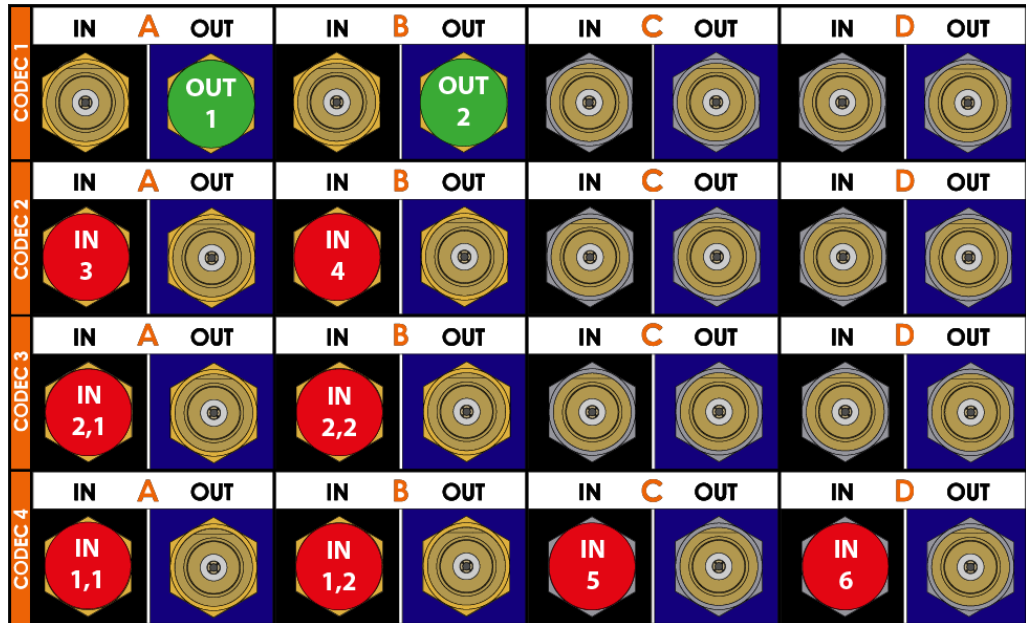
Example SLSM 2x in ChannelMax Mode (4SLSM 2x + 4OUT)

The BNC connectors to be used as record and play channels in a standard 4IN SLSM 2x + 4OUT configuration need to be cabled as shown below:
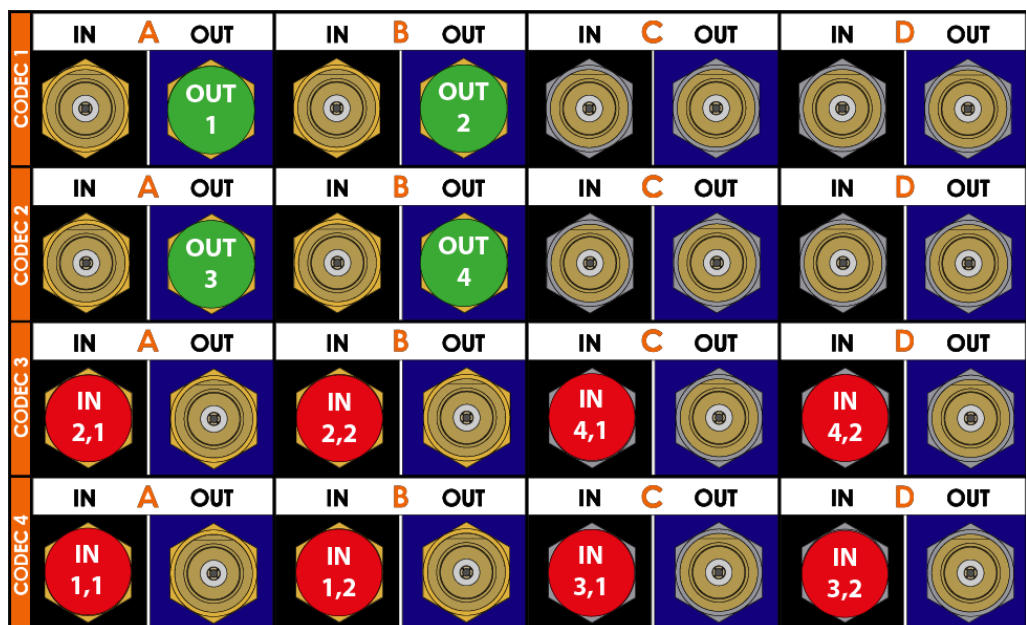
Configurations SLSM 2x 3G in 8-Channel Mode

The 8-channel mode in SLSM 2x 3G includes the 4-, 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1												IN1, 1-2			
1	1	1	OUT1								IN2				IN1, 1-2			
1	0	2	OUT1	OUT2											IN1, 1-2			

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	1	OUT1								IN2	IN3			IN1, 1-2			
1	3	1	OUT1				IN4				IN2	IN3			IN1, 1-2			
2	0	1	OUT1												IN1, 1-2	IN2, 1-2		
2	1	1	OUT1								IN3				IN1, 1-2	IN2, 1-2		
1	1	2	OUT1	OUT2							IN2				IN1, 1-2			
1	2	2	OUT1	OUT2							IN2	IN3			IN1, 1-2			
2	0	2	OUT1	OUT2											IN1, 1-2	IN2, 1-2		
1	0	3	OUT1	OUT2			OUT3								IN1, 1-2			
1	1	3	OUT1	OUT2			OUT3				IN2				IN1, 1-2			
1	0	4	OUT1	OUT2			OUT3	OUT4							IN1, 1-2			

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
3	0	1	OUT1								IN3, 1-2				IN1, 1-2	IN2, 1-2		
3	1	1	OUT1				IN4				IN3, 1-2				IN1, 1-2	IN2, 1-2		
1	3	2	OUT1	OUT2			IN4				IN2	IN3			IN1, 1-2			
1	4	2	OUT1	OUT2			IN4	IN5			IN2	IN3			IN1, 1-2			
2	1	2	OUT1	OUT2							IN3				IN1, 1-2	IN2, 1-2		
2	2	2	OUT1	OUT2							IN3	IN4			IN1, 1-2	IN2, 1-2		
3	0	2	OUT1	OUT2							IN3, 1-2				IN1, 1-2	IN2, 1-2		
1	2	3	OUT1	OUT2			OUT3				IN2	IN3			IN1, 1-2			
2	0	3	OUT1	OUT2			OUT3								IN1, 1-2	IN2, 1-2		
2	1	3	OUT1	OUT2			OUT3				IN3				IN1, 1-2	IN2, 1-2		
1	1	4	OUT1	OUT2			OUT3	OUT4			IN2				IN1, 1-2			
1	2	4	OUT1	OUT2			OUT3	OUT4			IN2	IN3			IN1, 1-2			
2	0	4	OUT1	OUT2			OUT3	OUT4							IN1, 1-2	IN2, 1-2		

Configurations SLSM 2x 3G in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
3	2	1	OUT 1				IN4	IN 5			IN3, 1-2				IN1, 1-2	IN2, 1-2		
4	0	1	OUT 1								IN3, 1-2	IN4, 1-2			IN1, 1-2	IN2, 1-2		
4	1	1	OUT 1				IN5				IN3, 1-2	IN4, 1-2			IN1, 1-2	IN2, 1-2		
No Sp 2	4	2	OUT 1	OUT 2			IN5	IN6			IN3	IN4			IN1, 1-2	IN2, 1-2		
3	1	2	OUT 1	OUT 2			IN4				IN3, 1-2				IN1, 1-2	IN2, 1-2		
4	0	2	OUT 1	OUT 2							IN3, 1-2	IN4, 1-2			IN1, 1-2	IN2, 1-2		
3	0	3	OUT 1	OUT 2			OUT 3				IN3, 1-2				IN1, 1-2	IN2, 1-2		

NEW !

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

Configurations SLSM 2x 3G in ChannelMax Mode

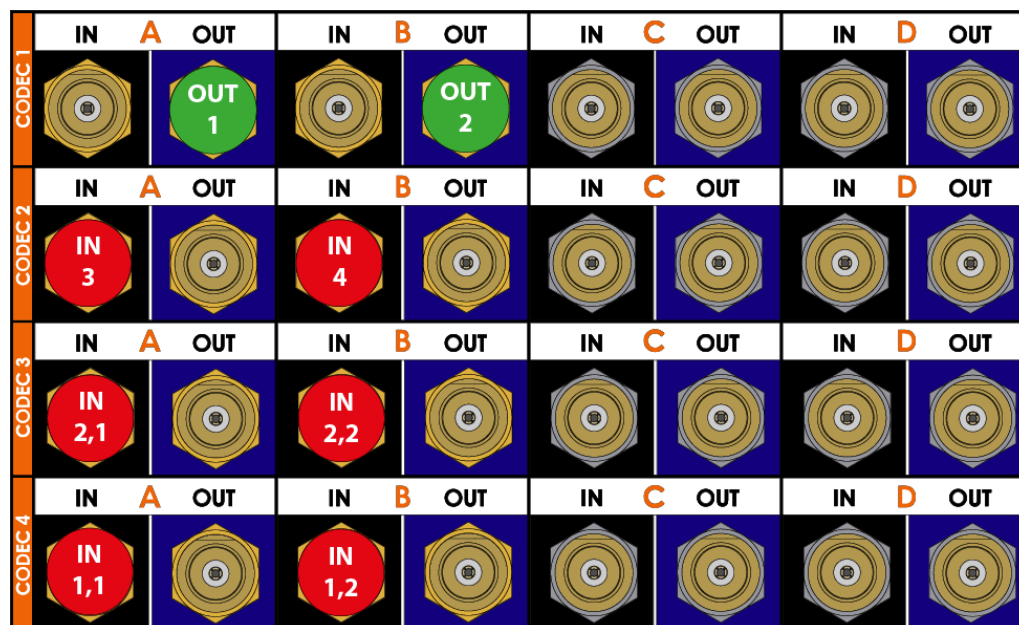| # IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp 4	4	0	IN7	IN8			IN5	IN6			IN3, 1-2	IN4, 1-2			IN1, 1-2	IN2, 1-2		
No Sp 2LSM 2	4	4	OUT1	OUT2			OUT3	OUT4			IN3	IN4	IN5	IN6	IN1, 1-2	IN2, 1-2		
No Sp 2LSM 4	0	4	OUT1	OUT2			OUT3	OUT4			IN3, 1-2	IN4, 1-2			IN1, 1-2	IN2, 1-2		

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.

Example SLSM 2x 3G in 8-Channel Mode (2SLSM 2x 3G + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 2x 3G + 2IN + 2OUT configuration need to be cabled as shown below:

	IN A OUT	IN B OUT	IN C OUT	IN D OUT
CODEC 1	OUT 1	OUT 2		
CODEC 2				
CODEC 3	IN 3	IN 4		
CODEC 4	IN 1, 1-2	IN 2, 1-2		

Example SLSM 2x 3G in 10-Channel Mode (2SLSM 2x 3G + 4IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 2x 3G + 4IN + 2OUT configuration need to be cabled as shown below:

	IN A OUT	IN B OUT	IN C OUT	IN D OUT
CODEC 1	OUT 1	OUT 2		
CODEC 2	IN 5	IN 6		
CODEC 3	IN 3	IN 4		
CODEC 4	IN 1, 1-2	IN 2, 1-2		

Example SLSM 2x 3G in ChannelMax Mode (4SLSM 2x 3G + 4OUT)

The BNC connectors to be used as record and play channels in a standard 4IN SLSM 2x 3G + 4OUT configuration need to be cabled as shown below:

Configurations SLSM 3x in 8-Channel Mode

The 8-channel mode in SLSM 3x includes the 4-, 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1								IN 1,3				IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	1	1	OUT1								IN 1,3	IN2			IN 1,1	IN 1,2		
1	2	1	OUT1				IN3				IN 1,3	IN2			IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2							IN 1,3				IN 1,1	IN 1,2		
1	1	2	OUT1	OUT2							IN 1,3	IN2			IN 1,1	IN 1,2		
1	0	3	OUT1	OUT2			OUT3				IN 1,3				IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	3	1	OUT1				IN3	IN4			IN 1,3	IN2			IN 1,1	IN 1,2		
1	4	1	OUT1				IN3	IN4			IN 1,3	IN2			IN 1,1	IN 1,2	IN5	
1	3	2	OUT1	OUT2			IN3	IN4			IN 1,3	IN2			IN 1,1	IN 1,2		
2	0	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1			IN 1,1	IN 1,2		
1	1	3	OUT1	OUT2			OUT3				IN 1,3	IN2			IN 1,1	IN 1,2		
1	1	4	OUT1	OUT2			OUT3	OUT4			IN 1,3	IN2			IN 1,1	IN 1,2		

Configurations SLSM 3x in 10-Channel Mode

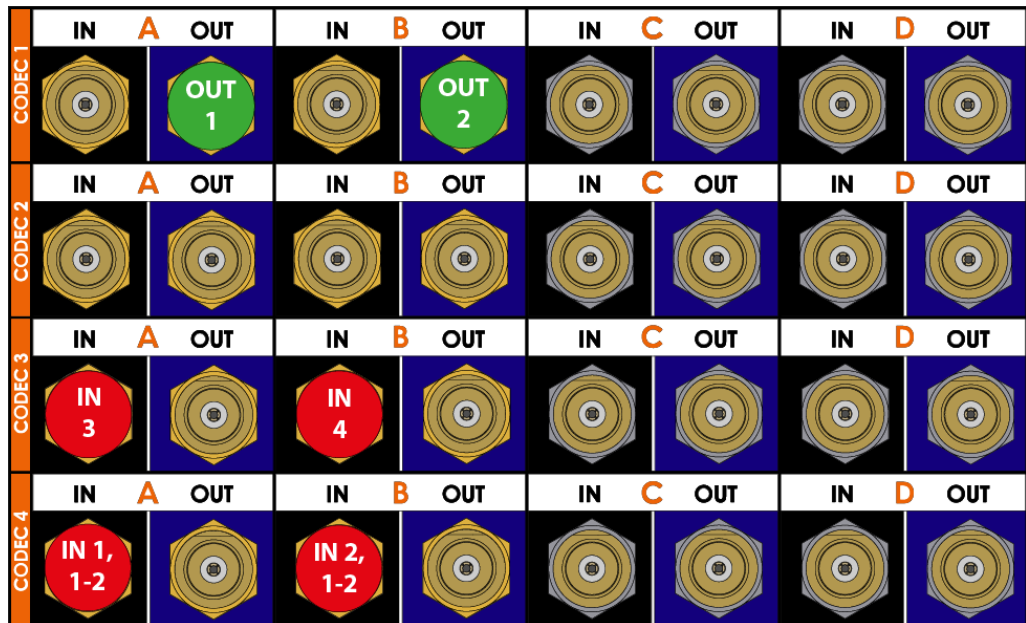|	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
		3	0	1	OUT1				IN 2,2	IN 2,3			IN 1,3	IN 2,1	IN 3,3		IN 1,1	IN 1,2	IN 3,1	IN 3,2
NoSp		1	5	2	OUT1	OUT2			IN3	IN4			IN 1,3	IN2			IN 1,1	IN 1,2	IN5	IN6
		2	1	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1			IN 1,1	IN 1,2	IN3	
		2	2	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1			IN 1,1	IN 1,2	IN3	IN4
		1	3	3	OUT1	OUT2			OUT3				IN 1,3	IN2			IN 1,1	IN 1,2	IN3	IN4
2LSM		1	3	4	OUT1	OUT2			OUT3	OUT4			IN 1,3	IN2			IN 1,1	IN 1,2	IN3	IN4

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.
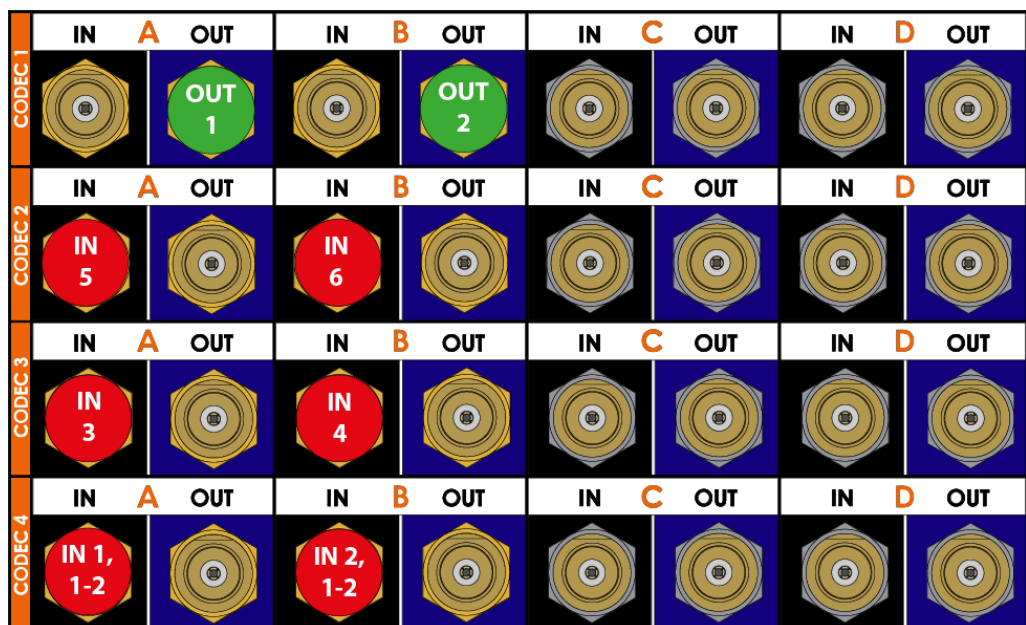
Configurations SLSM 3x in ChannelMax Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
	Sp	1	9	0	IN5	IN6			IN3	IN4			IN 1,3	IN2	IN9	IN 10	IN 1,1	IN 1,2	IN7	IN8
	Sp	2	6	0	IN3	IN4			IN 2,2	IN 2,3			IN 1,3	IN 2,2	IN7	IN8	IN 1,1	IN 1,2	IN5	IN6
	Sp	3	3	0	IN 3,1	IN 3,2			IN 2,2	IN 2,3			IN 1,3	IN 2,1	IN5	IN6	IN 1,1	IN 1,2	IN 3,3	IN4
NEW !	NoSp	1	7	2	OUT1	OUT2			IN 3	IN 4			IN 1,3	IN2	IN7	IN8	IN 1,1	IN 1,2	IN5	IN6
NEW !	NoSp	2	4	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1	IN5	IN6	IN 1,1	IN 1,2	IN3	IN4
	NoSp	3	1	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1	IN 3,3	IN4	IN 1,1	IN 1,2	IN 3,1	IN 3,2
	NoSp 2LSM	1	5	4	OUT1	OUT2			OUT 3	OUT 4			IN 1,3	IN2	IN5	IN6	IN 1,1	IN 1,2	IN3	IN4
	NoSp 2LSM	2	2	4	OUT1	OUT2			OUT 3	OUT 4			IN 1,3	IN 2,1	IN3	IN4	IN 1,1	IN 1,2	IN 2,2	IN 2,3
NEW !	Sp	4	0	0	IN 3,1	IN 3,2			IN 2,2	IN 2,3			IN 1,3	IN 2,1	IN 4,2	IN 4,3	IN 1,1	IN 1,2	IN 3,3	IN 4,1

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.

Example SLSM 3x in 8-Channel Mode (1SLSM 3x + 3IN + 2OUT)

The BNC connectors to be used as record and play channels in a 1SLSM 3x + 2OUT configuration need to be cabled as shown below:
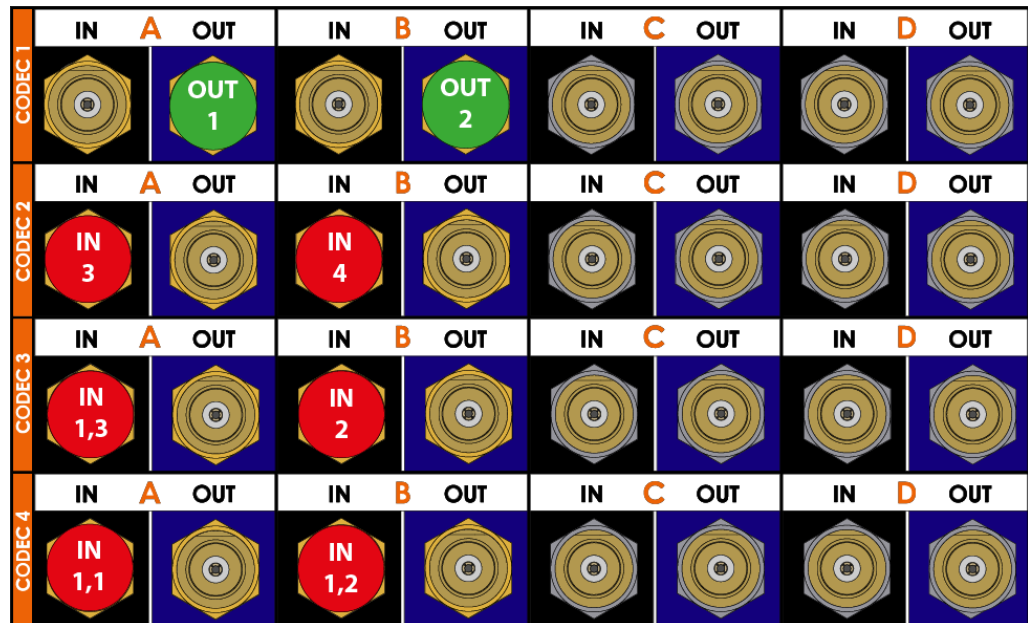
Example SLSM 3x in 10-Channel Mode (2SLSM 3x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 3x + 2IN + 2OUT configuration need to be cabled as shown below:
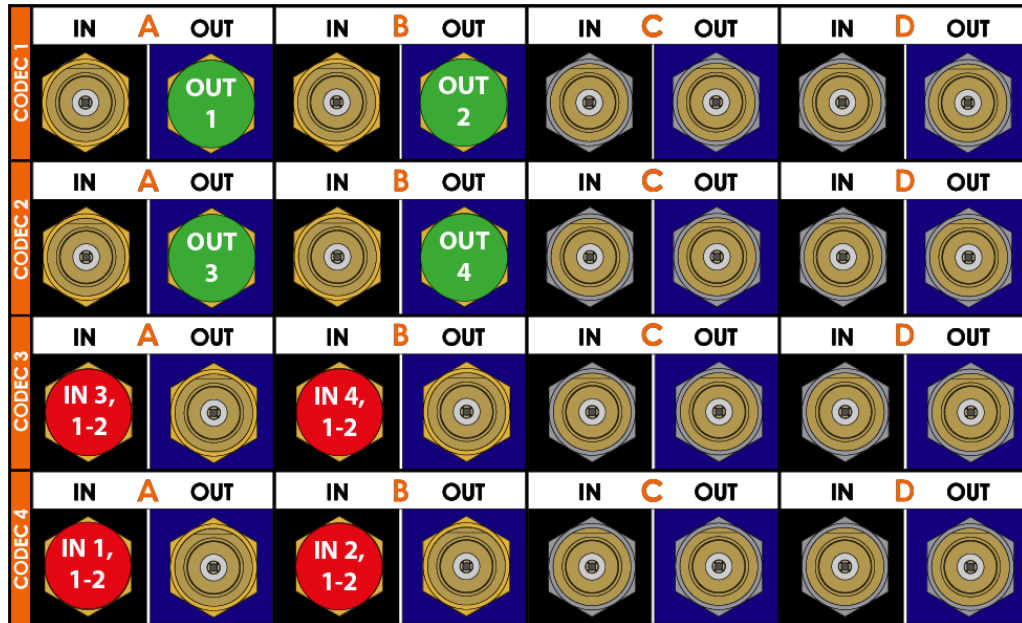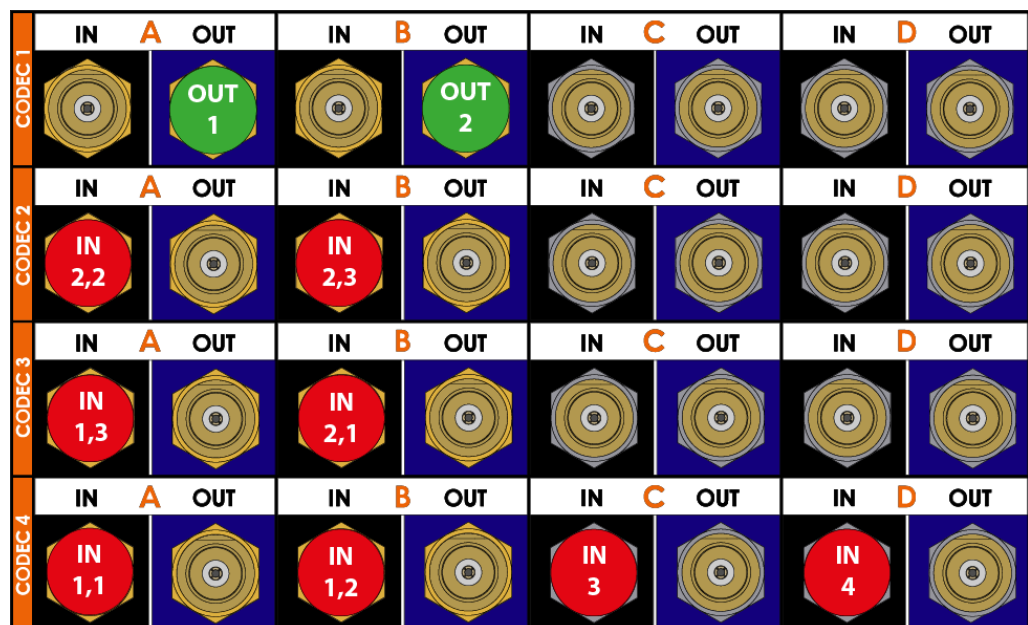
Example SLSM 3x in ChannelMax Mode
(1SLSM 3x + 5IN + 4OUT)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 3x + 5IN + 4OUT configuration need to be cabled as shown below:

Configurations SLSM 4x in 8-Channel Mode

The 8-channel mode in SLSM 4x includes the 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1								IN 1,3	IN 1,4			IN 1,1	IN 1,2		
1	1	1	OUT1				IN3				IN 1,3	IN 1,4			IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2							IN 1,3	IN 1,4			IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	2	OUT1	OUT2			IN2	IN3			IN 1,3	IN 1,4			IN 1,1	IN 1,2		

Configurations SLSM 4x in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	3	2	OUT1	OUT2			IN2	IN3			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN4	
	2	0	2	OUT1	OUT2			IN 2,1	IN 2,2			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN 2,3	IN 2,4

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

Configurations SLSM 4x in ChannelMax Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	5	2	OUT1	OUT2			IN2	IN3			IN 1,3	IN 1,4	IN6		IN 1,1	IN 1,2	IN4	IN5
NoSp	1	6	2	OUT1	OUT2			IN2	IN3			IN 1,3	IN 1,4	IN6	IN7	IN 1,1	IN 1,2	IN4	IN5
	2	2	2	OUT1	OUT2			IN 2,1	IN 2,2			IN 1,3	IN 1,4	IN3	IN4	IN 1,1	IN 1,2	IN 2,3	IN 2,4

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

Example SLSM 4x in 8-Channel Mode
(1SLSM 4x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a 1SLSM 4x + 2IN + 2OUT configuration need to be cabled as shown below:
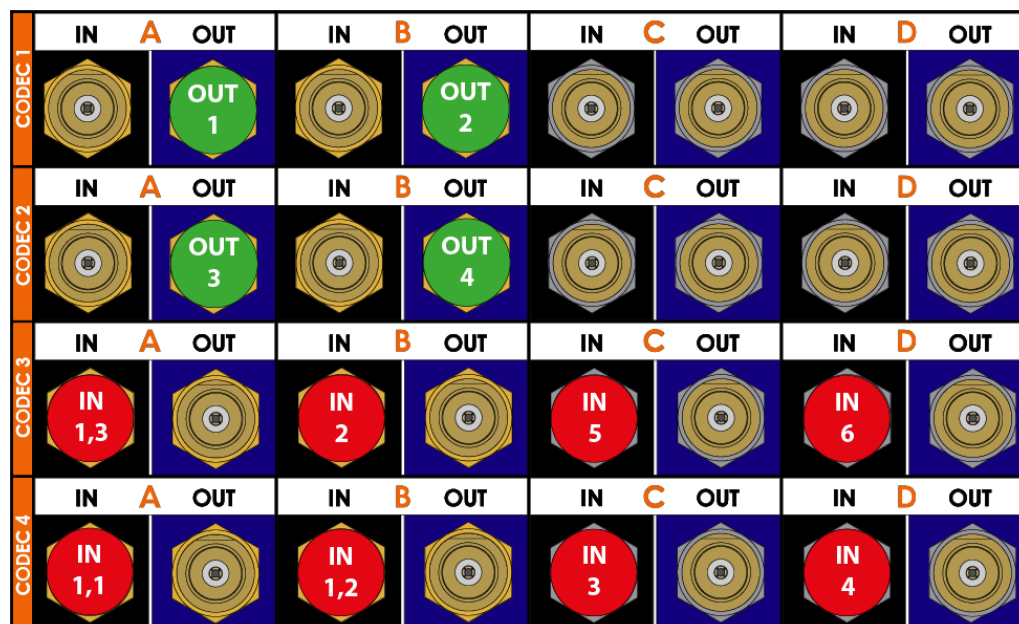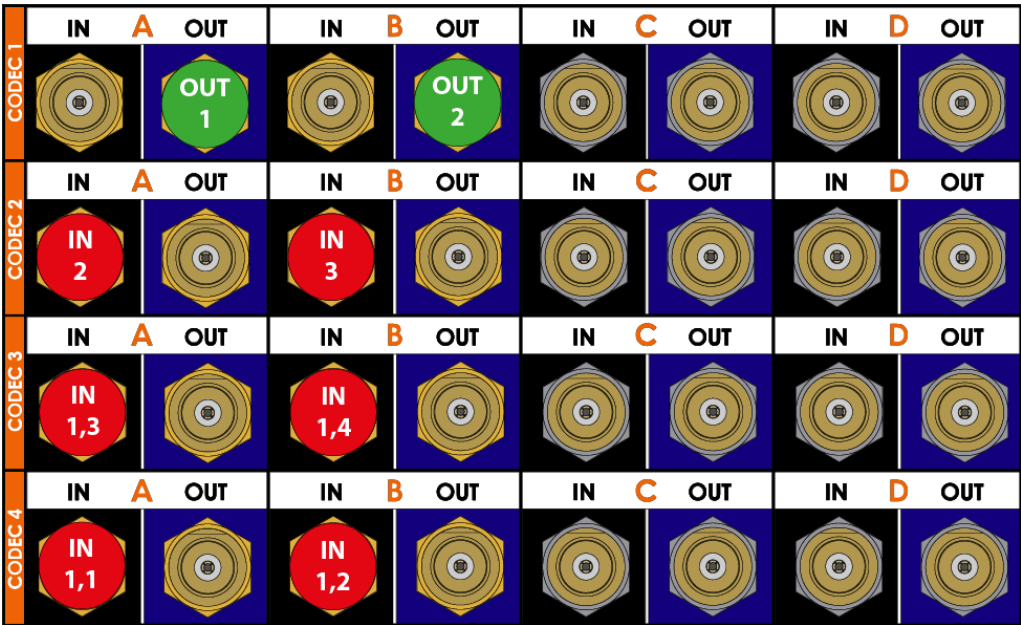

Example SLSM 4x in 10-Channel Mode
(1SLSM 4x + 3IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 4x + 3IN + 2OUT configuration need to be cabled as shown below:
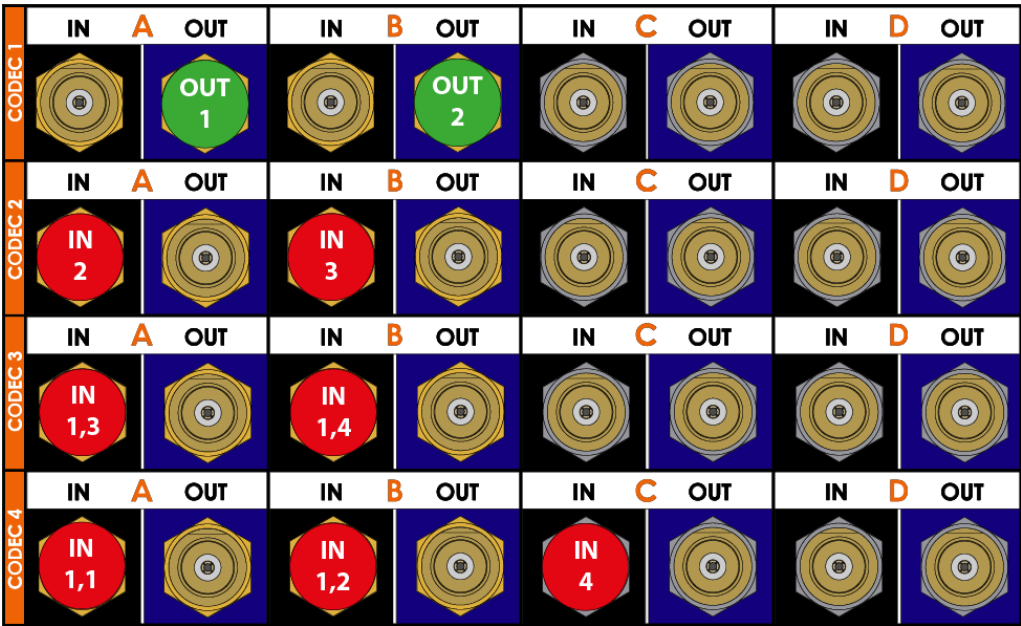
Example SLSM 4x in ChannelMax Mode (2SLSM 4x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 4x + 2IN + 2OUT configuration need to be cabled as shown below:
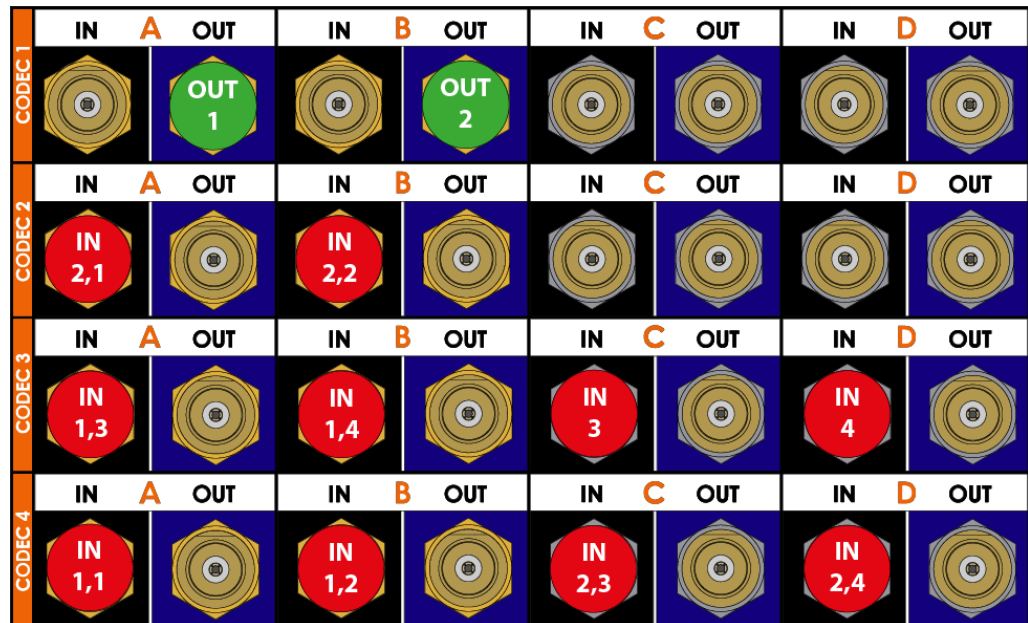
Configurations SLSM 4x 3G in 8-Channel Mode

The 8-channel mode in SLSM 4x 3G includes the 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1												IN1, 1-2	IN1, 3-4		
1	1	1	OUT1								IN2				IN1, 1-2	IN1, 3-4		
1	0	2	OUT1	OUT2											IN1, 1-2	IN1, 3-4		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	2	OUT1	OUT2							IN2	IN3			IN1, 1-2	IN1, 3-4		

Configurations SLSM 4x 3G in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp 1	3	2	OUT1	OUT2			IN4				IN2	IN3			IN1, 1-2	IN1, 3-4		
NoSp 1	4	2	OUT1	OUT2			IN4	IN5			IN2	IN3			IN1, 1-2	IN1, 3-4		
NoSp 2	0	2	OUT1	OUT2							IN2, 1-2	IN2, 3-4			IN1, 1-2	IN1, 3-4		

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

Configurations SLSM 4x 3G in ChannelMax Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp 1	5	2	OUT1	OUT2			IN4	IN5			IN2	IN3	IN6		IN1, 1-2	IN1, 3-4		
NoSp 1	6	2	OUT1	OUT2			IN4	IN5			IN2	IN3	IN6	IN7	IN1, 1-2	IN1, 3-4		
NoSp 2	2	2	OUT1	OUT2			IN3	IN4			IN2, 1-2	IN2, 3-4			IN1, 1-2	IN1, 3-4		

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

Example SLSM 4x 3G in 8-Channel Mode (1SLSM 4x 3G + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a 1SLSM 4x 3G + 2IN + 2OUT configuration need to be cabled as shown below:
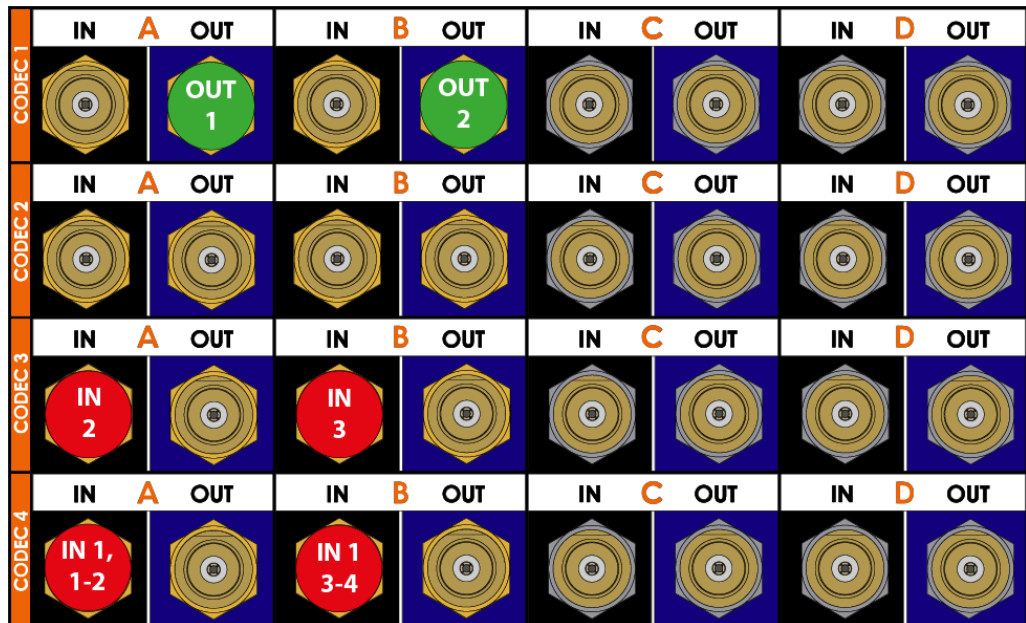

Example SLSM 4x 3G in 10-Channel Mode (1SLSM 4x + 3IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 4x 3G + 3IN + 2OUT configuration need to be cabled as shown below:

Example SLSM 4x 3G in ChannelMax Mode (2SLSM 4x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 4x 3G + 2IN + 2OUT configuration need to be cabled as shown below:
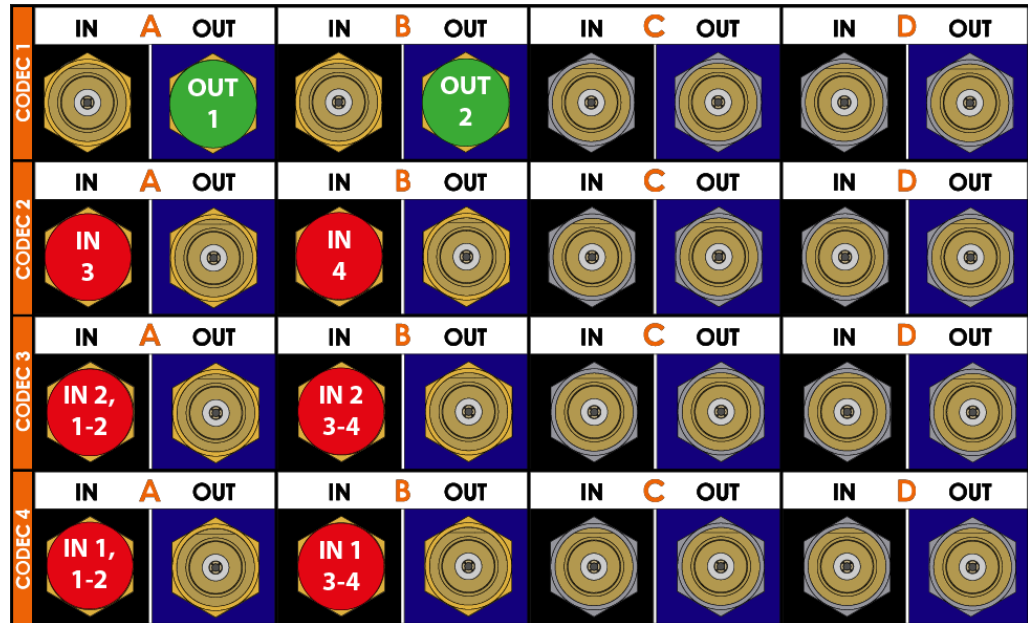
Configurations SLSM 6x in 8-Channel Mode

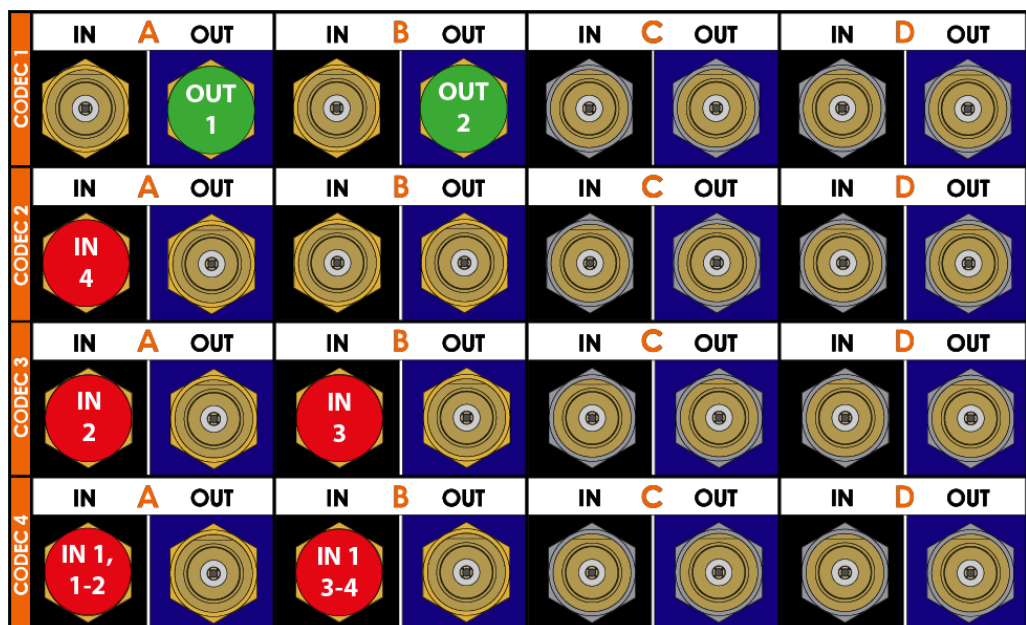| # IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2		
1	1	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN2	
1	0	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2		

Configurations SLSM 6x in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN2	IN3
1	1	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN2	
1	2	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN2	IN3

Configurations SLSM 6x in ChannelMax Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	1	6	0	IN 2	IN 3			IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 6	IN 7	IN 1,1	IN 1,2	IN 4	IN 5
Sp	2	0	0	IN 2,1	IN 2,2			IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 2,5	IN 2,6	IN 1,1	IN 1,2	IN 2,3	IN 2,4
NoSp	1	3	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 4		IN 1,1	IN 1,2	IN 2	IN 3
NoSp	1	2	3	OUT1	OUT2			OUT3				IN 1,3	IN 1,4	IN 2	IN 3	IN 1,1	IN 1,2	IN 1,5	IN 1,6

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.

Example SLSM 6x in 8-Channel Mode (1SLSM 6x + 2OUT)

The BNC connectors to be used as record and play channels in a 1SLSM6x + 2OUT configuration need to be cabled as shown below:
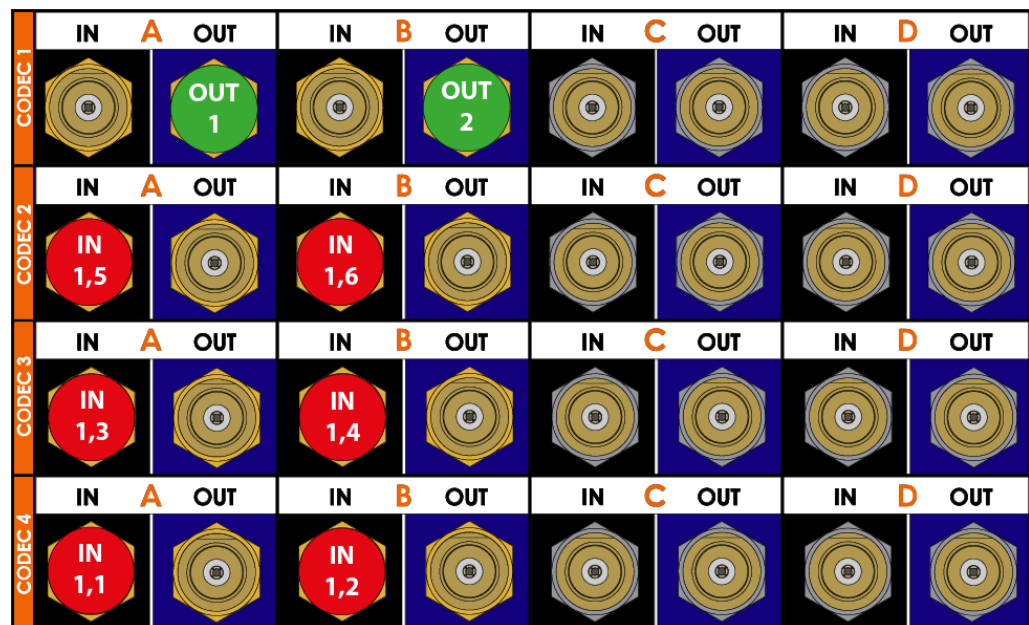
Example SLSM 6x in 10-Channel Mode
(1SLSM 6x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 6x + 2IN + 2OUT configuration need to be cabled as shown below:

Example SLSM 6x in ChannelMax Mode
(1SLSM 6x + 6IN)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 6x + 6IN configuration need to be cabled as shown below:

Configurations SLSM 6x 3G in 8-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1								IN1, 5-6				IN1, 1-2	IN1, 3-4		
1	1	1	OUT1				IN2				IN1, 5-6				IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2							IN1, 5-6				IN 1,1	IN 1,2		

Configurations SLSM 6x 3G in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	1	OUT1				IN2	IN3			IN1, 5-6				IN 1,1	IN 1,2		
1	1	2	OUT1	OUT2			IN2				IN1, 5-6				IN 1,1	IN 1,2		
1	2	2	OUT1	OUT2			IN2	IN3			IN1, 5-6				IN 1,1	IN 1,2		
1	0	3	OUT1	OUT2			OUT3				IN1, 5-6				IN 1,1	IN 1,2		

Configurations SLSM 6x 3G in ChannelMax Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	2	0	0					IN2, 3-4	IN2, 5-6			IN1, 5-6	IN2, 1-2			IN 1,1	IN 1,2		
	2	0	1	OUT1				IN2, 3-4	IN2, 5-6			IN1, 5-6	IN2, 1-2			IN 1,1	IN 1,2		
	2	0	2	OUT1	OUT2			IN2, 3-4	IN2, 5-6			IN1, 5-6	IN2, 1-2			IN 1,1	IN 1,2		

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

Example SLSM 6x 3G in 10-channel Mode (1SLSM 6x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a 1 SLSM 6x + 2IN + 2OUT configuration need to be cabled as shown below:
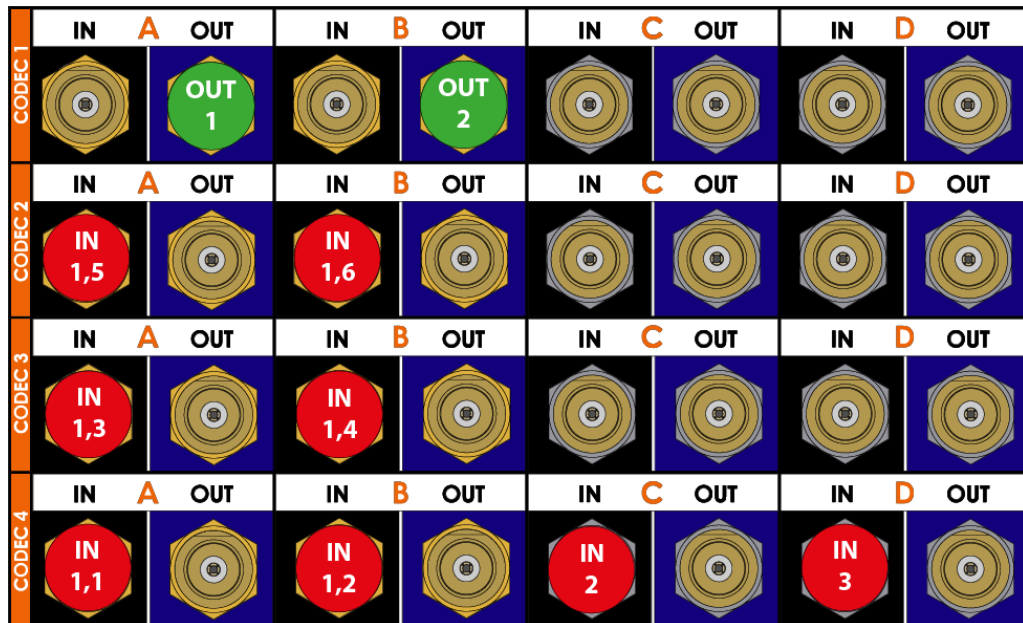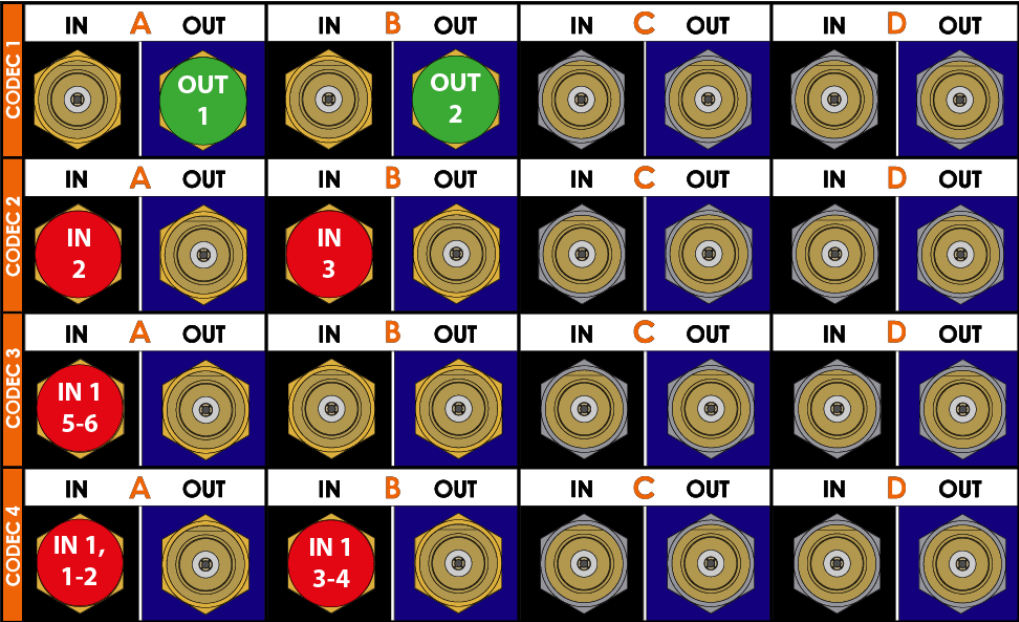
Example SLSM 6x 3G in 12-channel Mode (2SLSM 6x + 2OUT)

The BNC connectors to be used as record and play channels in a 2SLSM 6x + 2OUT configuration need to be cabled as shown below:
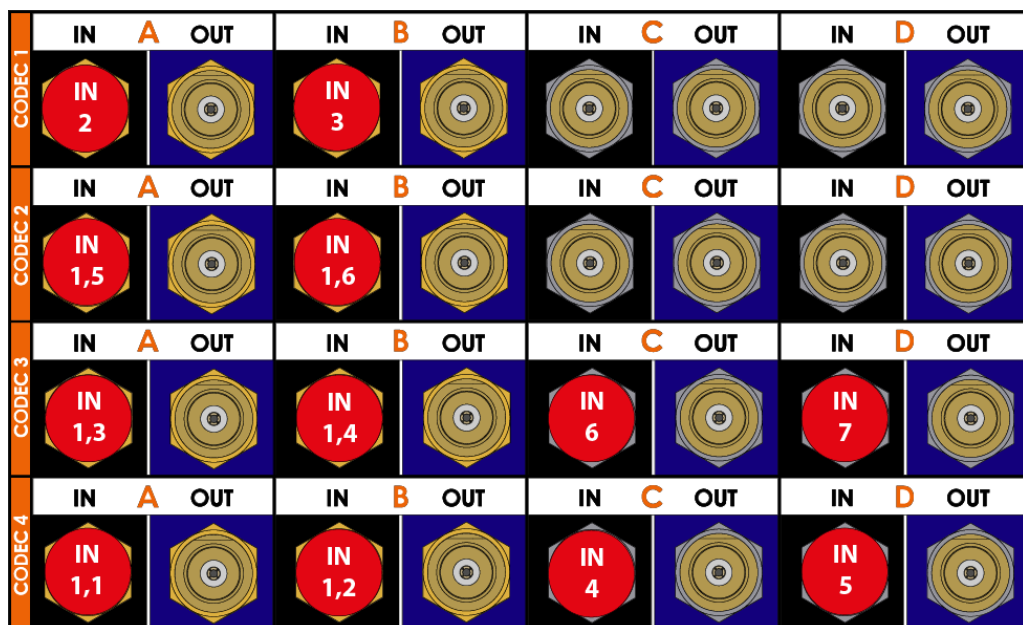

Configurations SLSM 8x in 10-Channel Mode
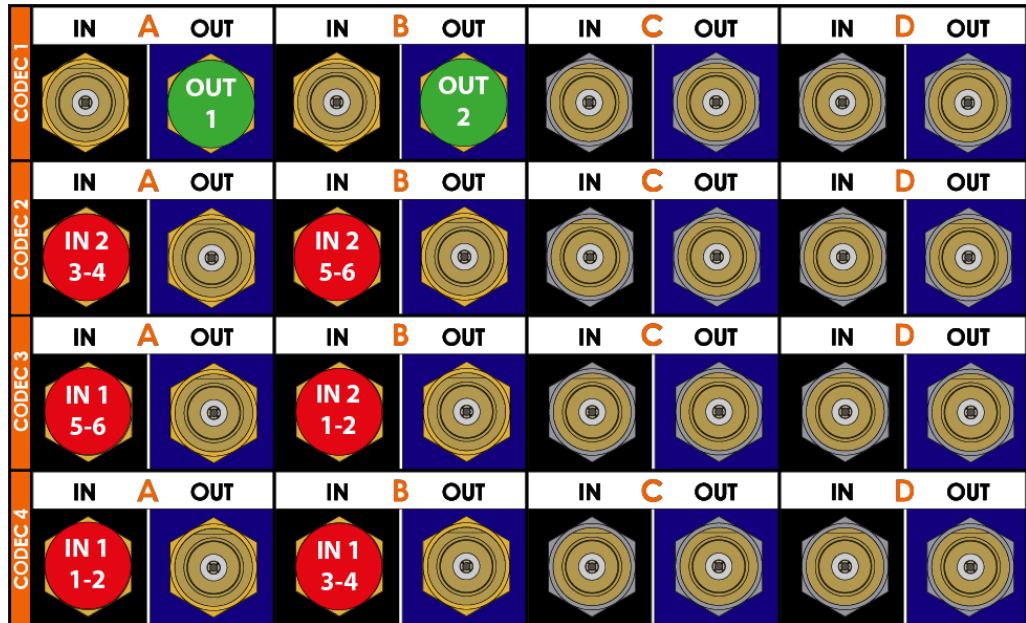
	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	0	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN 1,7	IN 1,8
NoSp	1	0	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN 1,7	IN 1,8

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

Configurations SLSM 8x in ChannelMax Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	2	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 2	IN 3	IN 1,1	IN 1,2	IN 1,7	IN 1,8
NoSp	1	1	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 2		IN 1,1	IN 1,2	IN 1,7	IN 1,8
NoSp	1	2	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 2	IN 3	IN 1,1	IN 1,2	IN 1,7	IN 1,8

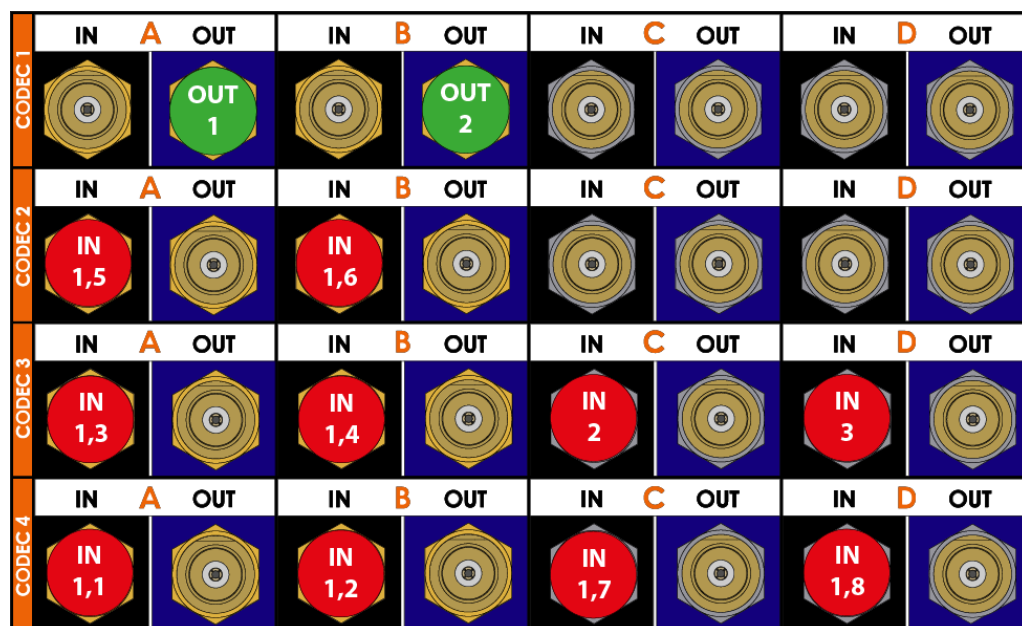The configurations preceded by **NoSp** are **not** available in Spotbox and Server modes.

Example SLSM 8x in ChannelMax Mode (1SLSM 8x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 8x + 2IN + 2OUT configuration need to be cabled as shown below:

Configurations SLSM 8x 3G in 10-Channel Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	0	1	OUT1								IN1, 5-6	IN1, 7-8			IN 1,1	IN 1,2		
NoSp	1	0	2	OUT1	OUT2							IN1, 5-6	IN1, 7-8			IN 1,1	IN 1,2		

Configurations SLSM 8x 3G in ChannelMax Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	2	1	OUT1				IN2	IN3			IN1, 5-6	IN1, 7-8			IN 1,1	IN 1,2		
NoSp	1	1	2	OUT1	OUT2			IN2				IN1, 5-6	IN1, 7-8			IN 1,1	IN 1,2		
NoSp	1	2	2	OUT1	OUT2			IN2	IN3			IN1, 5-6	IN1, 7-8			IN 1,1	IN 1,2		

Example SLSM 8x 3G in ChannelMax Mode (1SLSM 8x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 8x 3G + 2IN + 2OUT configuration need to be cabled as shown below:
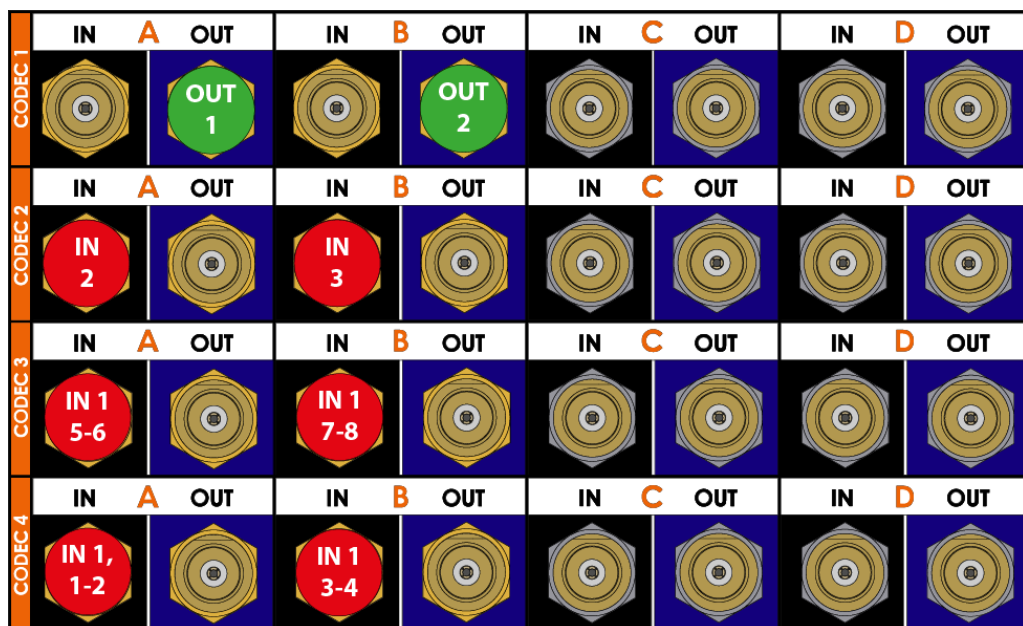

Configurations SLSM 10x in ChannelMax Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 1,9	IN 1,10	IN 1,1	IN 1,2	IN 1,7	IN 1,8

Example SLSM 10x in ChannelMax Mode (1SLSM 10x + 1OUT)

The BNC connectors to be used as record and play channels in a standard 1IN SLSM 10x 3G + 1OUT configuration need to be cabled as shown below:
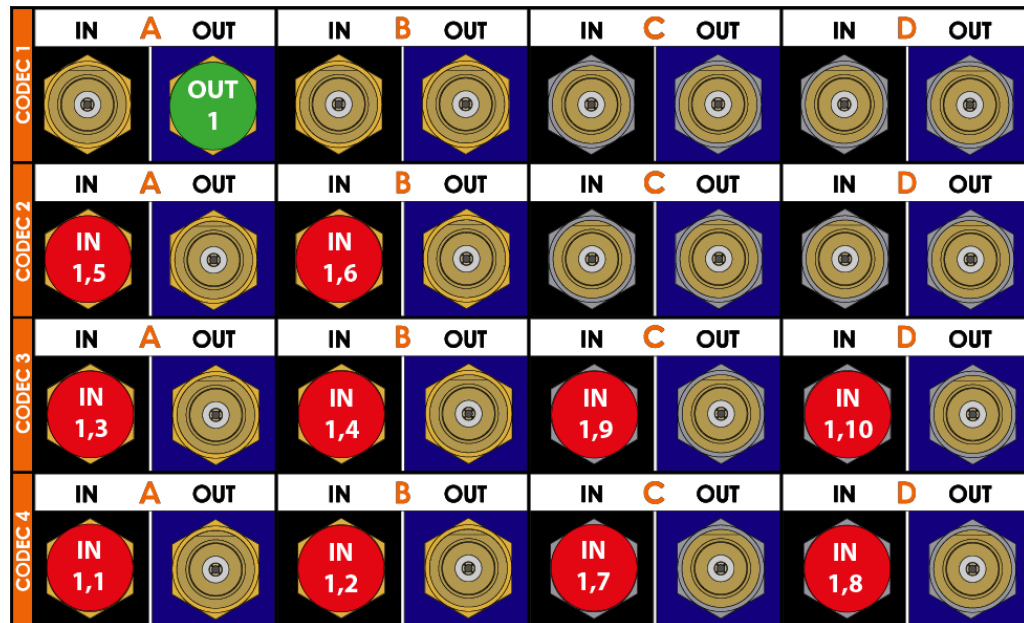

3.4. 1080p Configurations

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

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 139.

Limitations

Codec Limitations

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

Configuration Limitations

1080p configurations using 4 channels per codec module (at least 2 play channels or 4 recorders) are available with the following general limitations:

- Codecs with a bitrate < 250 Mbps: no limitations

- Codecs with a bitrate ≥ 250 Mbps:

  ◦ No Mix on one channel

  ◦ Configurations with max. 8 channels

3.4.2. 1080p Standard Configurations

Introduction

The tables below show the available 1080p configurations with an XT4K server, as well as how the BNC connectors should be cabled.

The 8-channel mode includes the 2-,4-,6- and 8-channel configurations.

The configurations in 10-Channel and ChannelMax modes make use of the C and D connectors of the codec module as an independent record channel. See section "About Extended Configurations" on page 50.

⚠️ **WARNING**

The HD base configurations without any recorder or player are only supported in Spotbox and Server modes.

Configurations in 8-Channel Mode

	# I N	# O U T	Codec 1				Codec 2				Codec 3				Codec 4			
			A	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
Sp	1	0													IN1			
Sp	2	0													IN1	IN2		
	1	1	OUT1												IN1			
Sp	0	1	OUT1															
Sp	0	2	OUT1	OUT2														

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

	#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	3	0									IN3				IN1	IN2		
Sp	4	0									IN3	IN4			IN1	IN2		
	2	1	OUT1												IN1	IN2		
	3	1	OUT1								IN3				IN1	IN2		
	1	2	OUT1	OUT2											IN1			
	2	2	OUT1	OUT2											IN1	IN2		
	1	3	OUT1	OUT2			OUT3								IN1			
Sp	0	3	OUT1	OUT2			OUT3											
Sp	0	4	OUT1	OUT2			OUT3	OUT4										

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

	#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	5	0					IN5				IN3	IN4			IN1	IN2		
Sp	6	0					IN5	IN6			IN3	IN4			IN1	IN2		
	4	1	OUT1								IN3	IN4			IN1	IN2		
	5	1	OUT1				IN5				IN3	IN4			IN1	IN2		
	3	2	OUT1	OUT2							IN3				IN1	IN2		
	4	2	OUT1	OUT2							IN3	IN4			IN1	IN2		
	2	3	OUT1	OUT2			OUT3								IN1	IN2		
	3	3	OUT1	OUT2			OUT3				IN3				IN1	IN2		
	1	4	OUT1	OUT2			OUT3	OUT4							IN1			
	2	4	OUT1	OUT2			OUT3	OUT4							IN1	IN2		
	1	5	OUT1	OUT2			OUT3	OUT4			OUT5				IN1			
Sp	0	5	OUT1	OUT2			OUT3	OUT4			OUT5							
Sp	0	6	OUT1	OUT2			OUT3	OUT4			OUT5	OUT6						

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

	#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Sp	7	0	IN7				IN5	IN6			IN3	IN4			IN1	IN2		
Sp	8	0	IN7	IN8			IN5	IN6			IN3	IN4			IN1	IN2		
	6	1	OUT1				IN5	IN6			IN3	IN4			IN1	IN2		
	7	1	OUT1				IN5	IN6			IN3	IN4			IN1	IN2	IN7	
	5	2	OUT1	OUT2			IN5				IN3	IN4			IN1	IN2		
	6	2	OUT1	OUT2			IN5	IN6			IN3	IN4			IN1	IN2		
	4	3	OUT1	OUT2			OUT3				IN3	IN4			IN1	IN2		
	5	3	OUT1	OUT2			OUT3				IN3	IN4			IN1	IN2	IN5	
	3	4	OUT1	OUT2			OUT3	OUT4			IN3				IN1	IN2		
	4	4	OUT1	OUT2			OUT3	OUT4			IN3	IN4			IN1	IN2		
	2	5	OUT1	OUT2			OUT3	OUT4			OUT5				IN1	IN2		
	2	6	OUT1	OUT2			OUT3	OUT4			OUT5	OUT6			IN1	IN2		

NEW !

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

Example in 8-Channel Mode (4IN + 4OUT)

The BNC connectors to be used as record and play channels in a 4IN 4OUT configuration need to be cabled as shown below:

Configurations in 10-Channel Mode

	# I N	# O U T	Codec 1				Codec 2				Codec 3				Codec 4			
			A	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
Sp	9	0	IN7	IN8			IN5	IN6			IN3	IN4			IN1	IN2	IN9	
Sp	10	0	IN7	IN8			IN5	IN6			IN3	IN4			IN1	IN2	IN9	IN10
	8	2	OUT1	OUT2			IN5	IN6			IN3	IN4			IN1	IN2	IN7	IN8
	6	3	OUT1	OUT2			OUT3				IN3	IN4			IN1	IN2	IN5	IN6
2LSM NoSp	6	4	OUT1	OUT2			OUT3	OUT4			IN3	IN4			IN1	IN2	IN5	IN6
NoSp	4	6	OUT1	OUT2			OUT3	OUT4			OUT5	OUT6			IN1	IN2	IN3	IN4

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.

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

Configurations in ChannelMax Mode

	# I N	# O U T	Codec 1				Codec 2				Codec 3				Codec 4			
			A	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
Sp	11	0	IN7	IN8			IN5	IN6			IN3	IN4	IN11		IN1	IN2	IN9	IN10
Sp	12	0	IN7	IN8			IN5	IN6			IN3	IN4	IN11	IN12	IN1	IN2	IN9	IN10
	10	1	OUT1				IN5	IN6			IN3	IN4	IN9	IN10	IN1	IN2	IN7	IN8
	10	2	OUT1	OUT2			IN5	IN6			IN3	IN4	IN9	IN10	IN1	IN2	IN7	IN8
2LSM	8	4	OUT1	OUT2			OUT3	OUT4			IN3	IN4	IN7	IN8	IN1	IN2	IN5	IN6

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.

3.4.3.   1080p SLSM Configurations

Principles

This section details the available multi-phase SLSM configurations in 1080p on XT4K 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 XT4K 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:

- SLSM 2x in 8-Channel Mode
- SLSM 2x in 10-Channel Mode
- SLSM 2x in ChannelMax Mode

- SLSM 3x in 8-Channel Mode
- SLSM 3x in 10-Channel Mode
- SLSM 3x in ChannelMax Mode

- SLSM 4x in 8-Channel Mode
- SLSM 4x in 10-Channel Mode

- SLSM 6x in 8-Channel Mode
- SLSM 6x in 10-Channel Mode

- SLSM 8x in 10-Channel Mode
- SLSM 8x in ChannelMax Mode

⚠ **WARNING**

- 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**.

Configurations SLSM 2x in 8-Channel Mode

The 8-channel mode in SLSM 2x includes the 4-, 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1												IN 1,1	IN 1,2		
1	1	1	OUT1								IN2				IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2											IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	1	OUT1								IN2	IN3			IN 1,1	IN 1,2		
1	3	1	OUT1				IN4				IN2	IN3			IN 1,1	IN 1,2		
2	0	1	OUT1								IN 2,1	IN 2,2			IN 1,1	IN 1,2		
2	1	1	OUT1				IN3				IN 2,1	IN 2,2			IN 1,1	IN 1,2		
1	1	2	OUT1	OUT2							IN2				IN 1,1	IN 1,2		
1	2	2	OUT1	OUT2							IN2	IN3			IN 1,1	IN 1,2		
2	0	2	OUT1	OUT2							IN 2,1	IN 2,2			IN 1,1	IN 1,2		
1	0	3	OUT1	OUT2			OUT3								IN 1,1	IN 1,2		
1	1	3	OUT1	OUT2			OUT3				IN2				IN 1,1	IN 1,2		
1	0	4	OUT1	OUT2			OUT3	OUT4							IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	3	2	OUT1	OUT2			IN4				IN2	IN3			IN 1,1	IN 1,2		
1	4	2	OUT1	OUT2			IN4	IN5			IN2	IN3			IN 1,1	IN 1,2		
2	1	2	OUT1	OUT2			IN3				IN 2,1	IN 2,2			IN 1,1	IN 1,2		
2	2	2	OUT1	OUT2			IN3	IN4			IN 2,1	IN 2,2			IN 1,1	IN 1,2		
3	0	2	OUT1	OUT2			IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2		
1	2	3	OUT1	OUT2			OUT3				IN2	IN3			IN 1,1	IN 1,2		
2	0	3	OUT1	OUT2			OUT3				IN 2,1	IN 2,2			IN 1,1	IN 1,2		
2	1	3	OUT1	OUT2			OUT3				IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN3	
1	1	4	OUT1	OUT2			OUT3	OUT4			IN2				IN 1,1	IN 1,2		
1	2	4	OUT1	OUT2			OUT3	OUT4			IN2	IN3			IN 1,1	IN 1,2		
2	0	4	OUT1	OUT2			OUT3	OUT4			IN 2,1	IN 2,2			IN 1,1	IN 1,2		

Configurations SLSM 2x in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
	3	2	1	OUT 1				IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4	IN 5
	4	0	1	OUT 1				IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4,1	IN 4,2
	4	1	1	OUT 1				IN 3,1	IN 3,2			IN 2,1	IN 2,2	IN 5		IN 1,1	IN 1,2	IN 4,1	IN 4,2
No Sp	2	4	2	OUT 1	OUT 2			IN 3	IN 4			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 5	IN 6
	3	1	2	OUT 1	OUT 2			IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4	
	4	0	2	OUT 1	OUT 2			IN 3,1	IN 3,2			IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 4,1	IN 4,2
	3	0	3	OUT 1	OUT 2			OUT 3				IN 2,1	IN 2,2			IN 1,1	IN 1,2	IN 3,1	IN 3,2

NEW !

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

Configurations SLSM 2x in ChannelMax Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
No Sp 2LSM	2	4	4	OUT1	OUT2			OUT3	OUT4			IN 2,1	IN 2,2	IN 5	IN 6	IN 1,1	IN 1,2	IN 3	IN 4
No Sp 2LSM	4	0	4	OUT1	OUT2			OUT3	OUT4			IN 2,1	IN 2,2	IN 4,1	IN 4,2	IN 1,1	IN 1,2	IN 3,1	IN 3,2

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.

Example SLSM 2x in 8-Channel Mode (2SLSM 2x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a standard 2IN SLSM 2x + 2IN + 2OUT configuration need to be cabled as shown below:

Configurations SLSM 3x in 8-Channel Mode

The 8-channel mode in SLSM 3x includes the 4-, 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1								IN 1,3				IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	1	1	OUT1								IN 1,3	IN2			IN 1,1	IN 1,2		
1	2	1	OUT1				IN3				IN 1,3	IN2			IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2							IN 1,3				IN 1,1	IN 1,2		
1	1	2	OUT1	OUT2							IN 1,3	IN2			IN 1,1	IN 1,2		
1	0	3	OUT1	OUT2			OUT3				IN 1,3				IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	3	1	OUT1				IN3	IN4			IN 1,3	IN2			IN 1,1	IN 1,2		
1	3	2	OUT1	OUT2			IN3	IN4			IN 1,3	IN2			IN 1,1	IN 1,2		
2	0	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1			IN 1,1	IN 1,2		
1	1	3	OUT1	OUT2			OUT3				IN 1,3	IN2			IN 1,1	IN 1,2		
1	2	3	OUT1	OUT2			OUT3				IN 1,3	IN2			IN 1,1	IN 1,2	IN3	
1	1	4	OUT1	OUT2			OUT3	OUT4			IN 1,3	IN2			IN 1,1	IN 1,2		

NEW !

Configurations SLSM 3x in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
3	0	1	OUT1				IN 2,2	IN 2,3			IN 1,3	IN 2,1	IN 3,3		IN 1,1	IN 1,2	IN 3,1	IN 3,2
2	1	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1			IN 1,1	IN 1,2	IN3	
2	2	2	OUT1	OUT2			IN 2,2	IN 2,3			IN 1,3	IN 2,1			IN 1,1	IN 1,2	IN3	IN4
1	3	4	OUT1	OUT2			OUT3	OUT4			IN 1,3	IN2			IN 1,1	IN 1,2	IN3	IN4

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

Configurations SLSM 3x in ChannelMax Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp 2LSM	1	5	4	OUT1	OUT2			OUT 3	OUT 4			IN 1,3	IN2	IN5	IN6	IN 1,1	IN 1,2	IN3	IN4
NoSp 2LSM	2	2	4	OUT1	OUT2			OUT 3	OUT 4			IN 1,3	IN 2,1	IN3	IN4	IN 1,1	IN 1,2	IN 2,2	IN 2,3
Sp	4	0	0	IN 3,1	IN 3,2			IN 2,2	IN 2,3			IN 1,3	IN 2,1	IN 4,2	IN 4,3	IN 1,1	IN 1,2	IN 3,3	IN 4,1

NEW !

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.

Example SLSM 3x in 8-Channel Mode (1SLSM 3x + 3IN + 2OUT)

The BNC connectors to be used as record and play channels in a 1SLSM 3x + 3IN + 2OUT configuration need to be cabled as shown below:

Configurations SLSM 4x in 8-Channel Mode

The 8-channel mode in SLSM 4x includes the 6- and 8-channel configurations.

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1								IN 1,3	IN 1,4			IN 1,1	IN 1,2		
1	1	1	OUT1				IN3				IN 1,3	IN 1,4			IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2							IN 1,3	IN 1,4			IN 1,1	IN 1,2		

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	2	OUT1	OUT2			IN2	IN3			IN 1,3	IN 1,4			IN 1,1	IN 1,2		

Configurations SLSM 4x in 10-Channel Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	3	2	OUT1	OUT2			IN2	IN3			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN4	
	2	0	2	OUT1	OUT2			IN 2,1	IN 2,2			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN 2,3	IN 2,4

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

Example SLSM 4x in 8-Channel Mode (1SLSM 4x + 2IN + 2OUT)

The BNC connectors to be used as record and play channels in a 1SLSM 4x + 2IN + 2OUT configuration need to be cabled as shown below:

Configurations SLSM 6x in 8-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2		
1	0	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2		

Configurations SLSM 6x in 10-Channel Mode

# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	2	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN2	IN3
1	1	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN2	
1	2	2	OUT1	OUT2			IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN2	IN3

Example SLSM 6x in 8-Channel Mode
(1SLSM 6x + 2OUT)

The BNC connectors to be used as record and play channels in a 1SLSM6x + 2OUT configuration need to be cabled as shown below:

Configurations SLSM 8x in 10-Channel Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	0	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4			IN 1,1	IN 1,2	IN 1,7	IN 1,8

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

Configurations SLSM 8x in ChannelMax Mode

	# IN SLSM	# IN	# OUT	Codec 1				Codec 2				Codec 3				Codec 4			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
NoSp	1	2	1	OUT1				IN 1,5	IN 1,6			IN 1,3	IN 1,4	IN 2	IN 3	IN 1,1	IN 1,2	IN 1,7	IN 1,8

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

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 consists of four 1080p frames transported via four 3G-SDI links. Each UHD-4K image therefore requires 4 SDI (BNC) connectors or 2 IP (SFP+) connectors on the XT4K Server.

Requirements

The UHD-4K is available by default on all XT4K servers.

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

- The license code 27 is granted 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 120.

- The **Interface** parameter is set to a **3G**, **12G** or **XIP** value.

  See section "Base Settings" on page 139.

Limitations

Codec Limitations

- UHD-4K can be used with the XAVC-Intra 4K codec.

Configuration 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.

- **NEW !** XAVC 480 can be used in the following conditions:

  - 4-channel configurations with a max. bitrate of 800 Mbps in 50Hz (PAL)

  - 3-channel configurations with a max. bitrate of 960 Mbps in 60Hz (NTSC)

Audio Limitations

- UHD-4K supports up to 16 embedded audio tracks.

Operational Limitations

The following features are not available with UHD-4K:

•   Replace external Loop

NEW !   **Limitations with SLSM Configurations**

•   In UHD-4K, SLSM configurations are supported in XAVC 300.

Assignment Principles

An UHD-4K image consists of four 1080p frames transported via four 3G-SDI links.

When the 4K images are transported using the square division UHD format (see "Base Settings" on page 139), 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:

A = Top Left	B = Top Right
C = Bottom Left	D = Bottom Right

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

3.5.2.   UHD-4K Configurations

Introduction

The tables below show the available 4K configurations on a XT4K server. They show the channel assignment on the back panel.

> ⚠️ **WARNING**
>
> The UHD-4K configurations without any recorder or player are only supported in Spotbox and Server modes.

Configurations in 2-Channel Mode

#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
		A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0													IN1			
2	0									IN2				IN1			
1	1	OUT1												IN1			
0	1	OUT1															
0	2	OUT1				OUT2											

Configurations in 4-Channel Mode

#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
		A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
3	0					IN3				IN2				IN1			
4	0	IN4				IN3				IN2				IN1			
2	1	OUT1								IN2				IN1			
3	1	OUT1				IN3				IN2				IN1			
1	2	OUT1				OUT2								IN1			
2	2	OUT1				OUT2				IN2				IN1			
1	3	OUT1				OUT2				OUT3				IN1			
0	3	OUT1				OUT2				OUT3							
0	4	OUT1				OUT2				OUT3				OUT4			

Example in UHD-4K (2IN + 2OUT)

The BNC connectors to be used as recorder and play channels in an UHD-4K configuration 2IN + 2OUT need to be cabled as shown below with 3G-SDI:
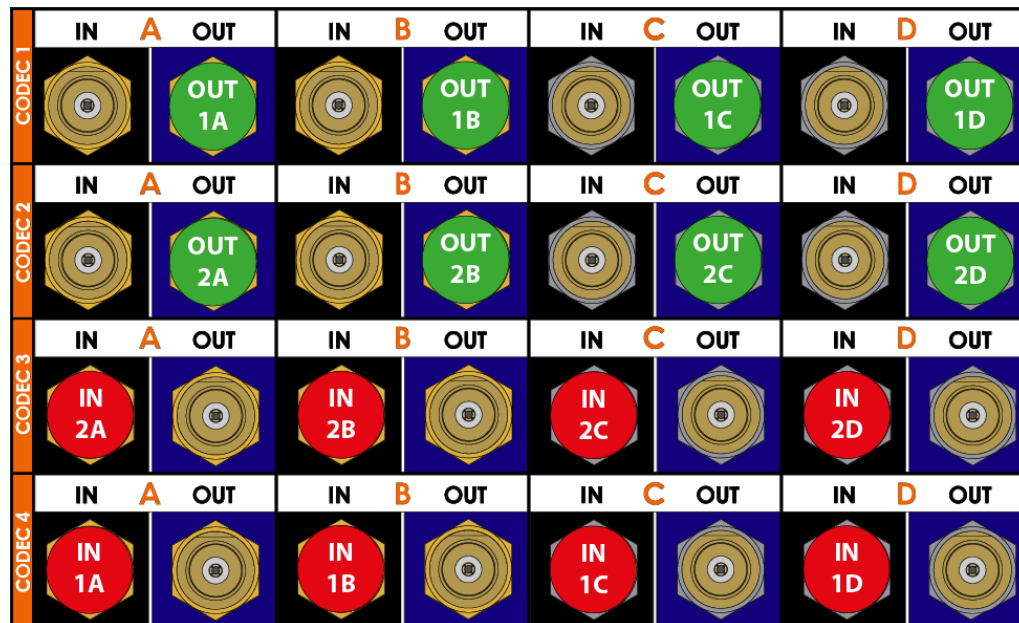
3.5.3. UHD-4K SLSM Configurations

SLSM Principles

This section details the available multi-phase SLSM configurations on XT4K 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.

Configurations SLSM 2x in 4-Channel Mode

The table below shows the available UHD-4K SLSM 2 Phase configurations with an XT4K server.

A separate physical connector is used for each phase. The table shows how the BNC connectors should be assigned on the back panel:

#IN SLSM	#IN	#OUT	Codec 1				Codec 2				Codec 3				Codec 4			
			A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
1	0	1	OUT1								IN1,2				IN1,1			

Example in UHD-4K SLSM (1IN SLSM2PH + 1OUT)

The BNC connectors to be used as recorder and play channels in a UHD-4K configuration with 1IN SLSM 2PH + 1OUT need to be cabled as shown below:

	IN	A	OUT	IN	B	OUT	IN	C	OUT	IN	D	OUT
CODEC 1			OUT1 A			OUT1 B			OUT1 C			OUT1 D
CODEC 2												
CODEC 3	IN1 2A			IN1 2B			IN1 2C			IN1 2D		
CODEC 4	IN1 1A			IN1 1B			IN1 1C			IN1 1D		
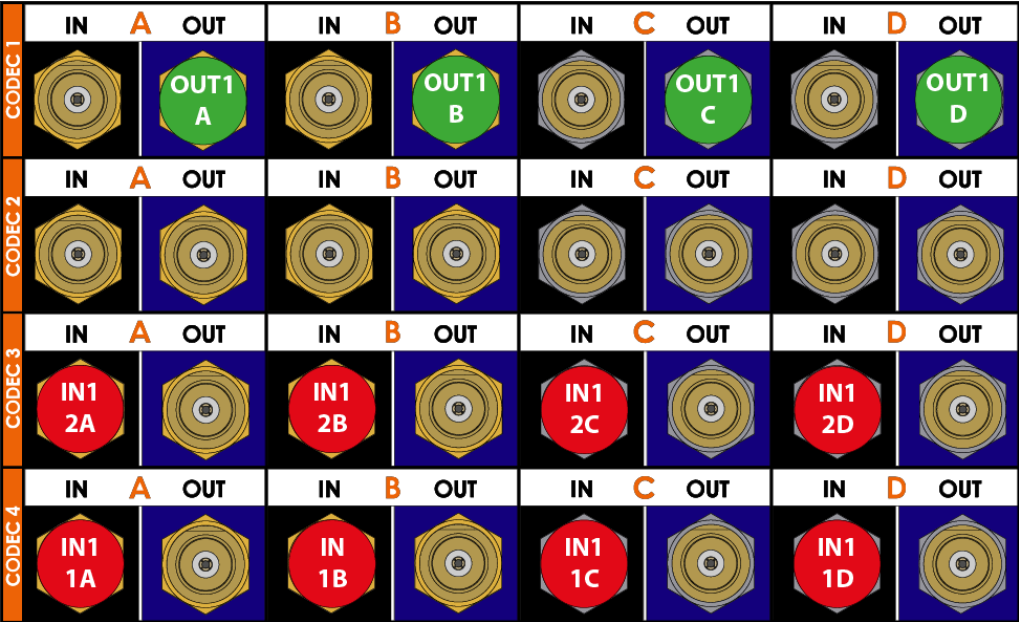
4. Multicam Configuration

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)
Web-Based Interface	Yes (tabs 1-6)	Yes (tab 7)
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?'
```

⚠️ **WARNING**

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.
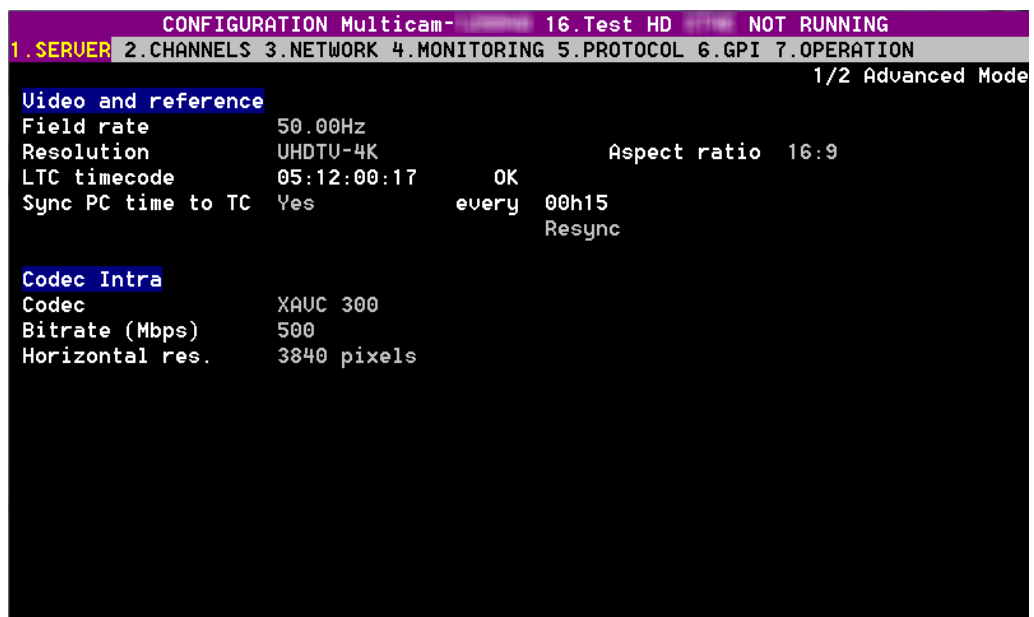
Web-Based User Interface

The following screenshot presents the 1st tab of the Multicam Configuration window of an XT4K 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.

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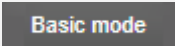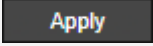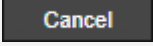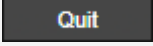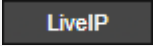
To enable a list of values for a given setting, proceed as follows:

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

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.

> **Note**
> 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:

			Setup
1PGM+PRV	2/3 PGM		

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 • LTC 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 SDTI settings: • Speed • Net name • Net number • Type
Network tab	All Gigabit settings: • Gigabit connection • Gigabit IP configuration

4.2. Server Tab

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 (T1.X) of the Remote Panel

Setting Name	Basic	Advanced	Technical Setup
Video and reference settings			
Field rate	X	X	–
Aspect ratio	X	X	–
Resolution	X	X	–
HDR Profile	–	X	–
Color Gamut	–	X	–
LTC Timecode	X	X	–
Sync PC Time to TC	–	X	–
Genlock	X	X	–
Codec Settings (Intra / Proxy)			
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	–

NEW!

Setting Name	Basic	Advanced	Technical Setup
Subnet Mask	X	X	–
Default Gateway	X	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.

> ⚠️ **WARNING**
>
> 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** (only available with code 22) In UHD-4K: • **UHDTV-4K**

HDR Profile

Availability	The parameter is only available in advanced mode.
Description	Specifies the conversion 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)

> **NOTE**
>
> HDR is supported with 10-bit codecs in HD and UHD-4K with the following bitrate limitations:
> • 12 channels up to 250 Mbps
> • 8 channels above 250 Mbps

NEW ! Color Gamut

Availability	The parameter is only available in advanced mode in HD and UHD-4K resolutions.
Description	Specifies the standard corresponding to the color space of the incoming feeds. This has to be set manually.
Values	• **rec. 709**: corresponds to the color space usually used with HDTV. • **rec. 2020**: corresponds to the Wide Gamut color space that offers a larger color range.
Default value	rec. 709

NOTE

Wide Color Gamut (rec. 2020) is supported with 10-bit codecs in HD and UHD-4K with the following bitrate limitations:
• 12 channels up to 250 Mbps
• 8 channels above 250 Mbps

LTC Timecode

Description	Longitudinal timecode (timecode information stored on a separate track from the video) delivered to the EVS server, and timecode status.
Values	The timecode is given as hh:mm:ss:fr (only on the server-based application). The timecode status can be: **OK** or **Valid**, **BAD**, **LOST** or **DRIFT** (defined by the EVS server).

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 status of the genlock signal, as well as the frame synchronizer mode. The type of genlock is automatically defined on an XT4K server.
Values	Status: (defined by the EVS server) • **Valid** • **Bad** Mode: • **Studio**: no correction of a shifted video signal • **Resync**: resynchronization of a shifted video signal

About Multi-Essence

Introduction

The XT4K 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 XT4K server in multi-essence.

Essence Combinations

The essences can be combined as follows:

• Intra + Proxy

• Intra only

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 can not 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

- Only one essence can be played out at a time. The codec used for playout is specified in the Server tab, after the codec sections.

- If the on-air essence is not available, a black clip is displayed.

- The Proxy essence is never played out.

Limitations With Proxy Codecs

Audio

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.

NOTE

The Lo-Res audio is Mpeg-1 Layer II at 48 kHz sampling frequency.

Codec Settings

Introduction

The XT4K 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 XT4K server.

Only the codec sections corresponding to the essences available on the EVS server will be displayed. See section "Codec Availability" on page 128 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.

User Interface
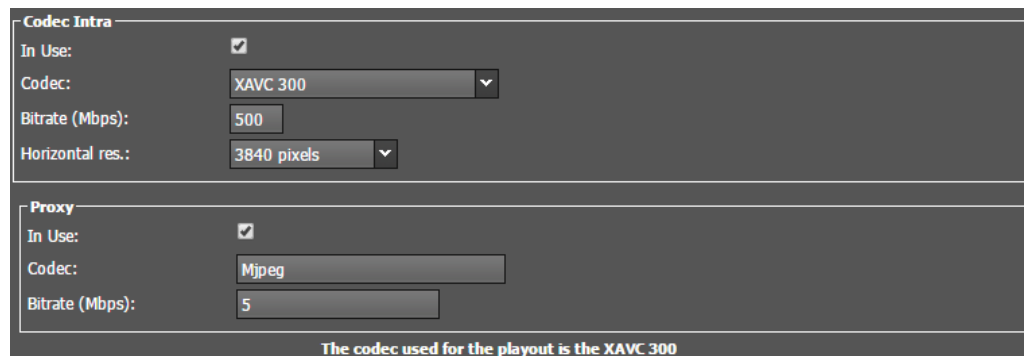
The Codec settings are available on the Server tab in the server-based application (1st page) and web-based interface. These settings are not available in the Technical Setup menu of the Remote Panel.

> ⚠️ **WARNING**
>
> 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** sections

Codec (Codec Intra)

Description	Algorithm used to compress and decompress 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, 422 LT, 422 HQ • AVC-Intra 100 • XAVC-Intra 100 In UHD-4K: • XAVC-Intra 300, 480 See section "Codec Availability" on page 128 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

NEW !

> ✏ **NOTE**
>
> 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 and decompress 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

Bitrate

Description	Number of megabits processed per second (Mbps). The bitrate depends on the codec.
Values	See section "Codec-Related Information" on page 129 for detailed information on bitrates per codec.

Horizontal Res. (HD)

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 129 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.

The Intra codecs are available when the respective license code is active.

On an XT4K 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.

License Codes

The following table presents the codec availability for an XT4K server depending on the license code.

Proxy codec	V4X Codec Board
Mjpeg (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 codecs	V4X Codec Board
XAVC-Intra 4K (XAVC class 300, XAVC class 480)	code 19

NEW !

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

NOTE

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)

NEW ! The following table presents the bitrate for the whole UHD-4K image:

Field rate	50 Hz	50 Hz	59.94 Hz	59.94 Hz
Codec	XAVC-Intra 300	XAVC-Intra 480	XAVC-Intra 300	XAVC-Intra 480
Default bitrate	500	800	600	960
Horizontal Resolution	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 4x - 50 Hz	120	185	185	85	120	185	111
SLSM 6x - 50 Hz	120	—	—	85	120	—	111
SLSM 8x - 50 Hz	120	—	—	85	120	—	111
SLSM 10x - 50 Hz	100	—	—	85	—	—	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 4x - 59.94 Hz	145	220	220	102	145	220	111
SLSM 6x - 59.94 Hz	145	—	—	102	145	—	111
SLSM 8x - 59.94 Hz	145	—	—	102	145	—	111
SLSM 10x - 59.94 Hz	100	—	—	102	—	—	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	200	—	—	170	—	—
SLSM 8x - 50 Hz	180	—	—	170	—	—

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	200	—	—	204	—	—
SLSM 8x - 59.94 Hz	180	—	—	204	—	—

Properties of the Proxy Codec

The Mjpeg Proxy codec has the following properties:

Property	Value
Bitrate (Mbps)	3 or 5
Default bitrate	3
Resolution	SD NTSC 352 x 240 pixels CIF 352 x 288 pixels CIF is used in all modes other than SD NTSC

4.2.3.   Phase Definition Settings

User Interface

The Phase Definition settings are available on the Server tab in the server-based application (2nd page) and web-based interface in the advanced mode.

The following screenshot displays the Phase Definition settings:
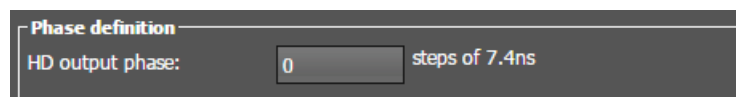
HD Output Phase

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

4.2.4.   Interpolation Settings

User Interface

The Interpolation settings are available on the Server tab in the server-based application (2nd page) and web-based interface in the advanced mode.

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.

> **NOTE**
>
> 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

4.2.5.   PC LAN Settings

User Interface

The PC LAN settings allow the H3XP 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 advanced mode.

The following screenshot displays the PC LAN settings defined on the Server tab in the web-based interface:

✎ **NOTE**

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 #1 of the internal switch module on the H3XP 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 the redundancy is enabled, the status of both PC LAN connections is specified.
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 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.

4.3. Channels Tab

4.3.1. Overview

The table below presents the settings of the Channels 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 web-based interface, the settings are all displayed on one page.

- in the **Technical Setup** menu (T2.X) of the Remote Panel.

The Channels tab includes the settings related to video and audio channels, type and configuration of recorders, audio format and audio-video synchronization parameters.

Setting Name	Basic	Advanced	Technical Setup
Base settings			
Inputs	X	X	X
Outputs	X	X	X
Base config	X	X	X
UHD Format	X	X	X
Interface	X	X	X
SLSM settings			
Number of cameras	X	X	X
SLSM speed	X	X	X
Port settings			
RS422 #1-#6	X	X	X
Channels and control settings			
OUT1-6 / IN1-6	X	X	X
Name	X	X	X
Main ctrl	X	X	X
Sec. ctrl	–	X	X
Mode	–	X	X
OSD	–	X	–
Audio I/Os settings			
MADI	X	X	X
Analog	X	X	X

Setting Name	Basic	Advanced	Technical Setup
Digital	X	X	X
Audio settings			
Number of tracks	X	X	X
Sample rate conv.	–	X	X
Audio monitoring settings	X	X	X
Mon #1-#4	X	X	X
Advanced audio settings (Inputs)	–	X	–
Advanced audio settings (Embedded outputs)	**–**	X	–
Advanced audio settings (Digital AES/EBU outputs)	**–**	X	–
Advanced audio settings (Analog outputs)	–	X	–
Recorder settings			
Loop recording	–	X	X
Rec auto start	–	X	X
Clip Capacity	–	X	X
Rec capacity	–	X	X
Mix on one channel setting			
OUT1-6	–	X	X
Timecode settings			
LTC	–	X	–
User	–	X	X
Primary TC	–	X	X
SMPTE 334M packets management settings			
Decoding	–	X	X
Encoding	–	X	X
Custom 1 / 2	–	X	–
SD OUT Encoding	–	X	–
Timecode insertion settings			
IN Loop settings	–	X	–

Setting Name	Basic	Advanced	Technical Setup
SD OUT settings	–	X	–
HD OUT settings	–	X	–

NOTE

The following features are not supported on XT4K:
- 3D
- TwinRec
- SD Autosense

4.3.2. Channels

Base Settings

User Interface

The base settings allow defining the main characteristics of a configuration as regards play and record channels.
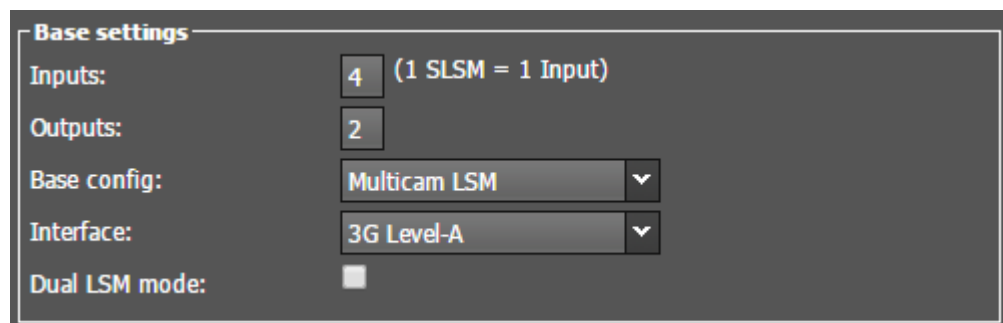
WARNING

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 XT4K: 0-12 (Spotbox), 1-10 (LSM/XSense) See section "About Supported Configurations" on page 49 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 XT4K: 0-6 (Spotbox), 1-6 (LSM/XSense) See section "About Supported Configurations" on page 49 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 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 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: 101 and/or 103 ... 109 + 111 and/or 112 + 96
	• **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)
Default value	Multicam LSM

UHD Format

Availability	The parameter is only available when the UHDTV-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. • **square division**: the UHD-4K is transported as four 1080p quadrants.
Default value	two-sample interleave

Interface

Availability	The parameter is only available with one of the following license code active or with the following hardware: • code 22 (3G-SDI interface in 1080p) • code 27 (UHD-4K resolution) • 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 frame of an UHD-4K image.
	  ◦ available with code 22 (1080p 3G) or code 27 (UHDTV-4K).
	• **12G**: 12G-SDI connection for an UHD-4K image.
	  ◦ available with code 27 (UHDTV-4K) with 12G or XIP rear panels.
	• **XIP**: V4X 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

> **NOTE**
>
> See section "Dual LSM Feature" on page 143 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.

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.

Availability

The Dual LSM feature, and the corresponding parameter, are available in the following conditions:

• on the XT4K 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 **DualLSM** in the relevant configuration tables:

- Standard configurations in 720p/1080i

- SLSM 2x configurations in 720p/1080i

- SLSM 2x 3G configurations in 720p/1080i

- SLSM 3x configurations in 720p/1080i

- Standard configurations in 1080p

- SLSM 2x configurations in 1080p

- SLSM 3x 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 143.

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 230.

- 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 MulticamLSM Configurations

The following limitations are applicable to the Dual LSM feature used with MulticamLSM configurations:

- The **standard mix** function using the PGM/PRV channel is available on the first two PGMs of each operator.

- 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 MulticamLSM 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 252).

- The **Paint** and **Target** features are only available on LSM operator #1.

- 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 **Paint** and **Target** features are only available on LSM operator #1.

- 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 (T2.X)

> **⚠ WARNING**
>
> 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:

Number of Cameras

Description	Number of SLSM cameras 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

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
Default value	2x

Port Settings
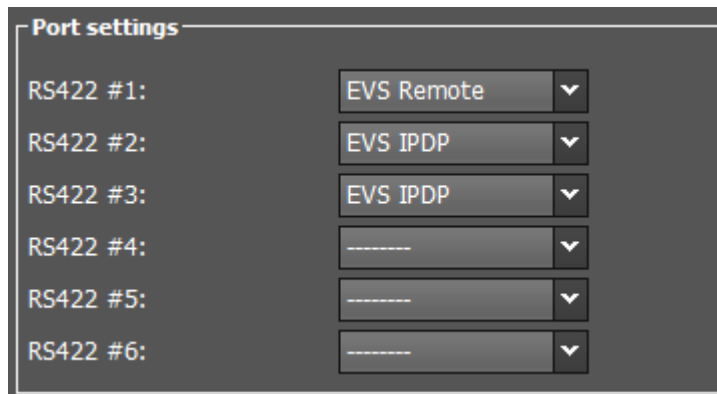
User Interface

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 96) • EVS IPDP (code 120 or 121) • Sony BVW75 (code 118) • XtenDD35 (code 118) • Odetics (code 119) • VDCP (code 119) • EVS AVSP (code 120 or 121) • LinX (code 123)

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 149 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 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 149 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.

Rules for Controller Assignment

Main Rules for XT4K server

On an XT4K 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 channel and play channels.

  ◦ 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 play channels on an EVS server can be assigned to Remote Panels.

  ◦ 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.

	Remote	IPDP	AVSP	VDCP	Sony	Odetics	DD35	VDCP Mix	VDCP F&K	Odetics F&K	LinX
Main Controller											
1 PGM	Green	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
2 PGM	Green	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
> 2 PGM	Green	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
1 PGM + 1 REC[1]	Green	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
1 REC	Red	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
> 1 REC	Red	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
Several PGM + 1 REC[1]	Red	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
Several PGM + Several REC[1]	Red	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red
Secondary Controller											
1 PGM	Red	Red	Green	Green	Green	Green	Green	Green (2)	Red	Red	Green
2 PGM	Red	Red	Green	Green	Green	Red	Red	Green	Red	Red	Green
> 2 PGM	Red	Red	Green	Green	Green	Red	Red	Red	Red	Red	Green
1 PGM + 1 REC[1]	Red	Red	Green	Green	Green	Red	Red	Red	Red	Red	Green
1 REC	Red	Red	Green	Green	Green	Red	Red	Red	Red	Red	Green
Several PGM + 1 REC[1]	Red	Red	Green	Green	Red	Red	Red	Red	Red	Red	Green
Several PGM + Several REC[1]	Red	Red	Green	Green	Red	Red	Red	Red	Red	Red	Green

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.

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								2			
2 PGM											
> 2 PGM											
1 REC											
> 1 REC											
1 PGM + 1 REC											
Several PGM + 1 REC											
Several PGM + Several REC											

3. Only if Mix on one channel is enabled.

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	-	green	green	green	green	green	green	green	red	red	red
IPDP	-	-	green	green	green	green	green	green	green	green	green
AVSP	-	red	-	red	red	red	red	red	red	red	red
VDCP	-	red	red	-	red	red	red	red	red	red	red
Sony	-	red	red	red	-	red	red	red	red	red	red
Odetics	-	red	red	red	red	-	red	red	red	red	red
DD35	-	red	red	red	red	red	-	red	red	red	red
LinX	-	red	red	red	red	red	red	-	red	red	red
Odetics F&K	-	red	red	red	red	red	red	red	-	red	red
VDCP F&K	-	red	red	red	red	red	red	red	red	-	red
VDCP Mix	-	red	red	red	red	red	red	red	red	red	-

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	gray	gray	gray	gray	gray	gray	gray	gray	gray	gray	gray
IPDP	gray	-	green	green	green	green	green	green	red	red	red
AVSP	gray	red	-	red	red	red	red	red	red	red	red
VDCP	gray	red	red	-	red	red	red	red	red	red	red
Sony	gray	red	red	red	-	red	red	red	red	red	red
Odetics	gray	red	red	red	red	-	red	red	red	red	red
DD35	gray	red	red	red	red	red	-	red	red	red	red
LinX	gray	red	red	red	red	red	red	-	red	red	red
Odetics F&K	gray	red	red	red	red	red	red	red	-	red	red
VDCP F&K	gray	red	red	red	red	red	red	red	red	-	red
VDCP Mix	gray	red	red	red	red	red	red	red	red	red	-

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	-	Green	Red	* (Green)	Green	* (Green)	* (Green)	Green	Red	Red	Red
IPDP	-	-	Red	* (Green)	Green	* (Green)	* (Green)	Green	Red	Red	Green
AVSP	-	Red	-	Red	Green	Red	Red	Red	Red	Red	Red
VDCP	-	* (Green)	Red	-	Green	Red	Red	Red	Red	Red	-
Sony	-	Green	Green	Green	-	Green	Green	Green	Red	Red	Red
Odetics	-	* (Green)	Red	Red	Green	-	Red	Red	Red	Red	Red
DD35	-	* (Green)	Red	Red	Green	Red	-	Red	Red	Red	Red
LinX	-	Green	Red	Red	Green	Red	Red	-	Red	Red	Red
Odetics F&K	-	Red	Red	Red	Red	Red	Red	Red	-	Red	Red
VDCP F&K	-	Red	Red	Red	Red	Red	Red	Red	Red	-	Red
VDCP Mix	-	Green	Red	-	Red	Red	Red	Red	Red	Red	-

* 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	-	-	Red	Red	Green	Green	Red	Green	Red	Red	Red
AVSP	-	Red	-	Red	Green	Red	Red	Red	Red	Red	Red
VDCP	-	Red	Red	-	Green	Red	Red	Red	Red	Red	-
Sony	-	Green	Green	Green	-	Green	Green	Green	Red	Red	Red
Odetics	-	Green	Red	Red	Green	-	Red	Red	Red	Red	Red
DD35	-	Red	Red	Red	Green	Red	-	Red	Red	Red	Red
LinX	-	Red	Red	Red	Green	Red	Red	-	Red	Red	Red
Odetics F&K	-	Red	Red	Red	Red	Red	Red	Red	-	Red	Red
VDCP F&K	-	Red	Red	Red	Red	Red	Red	Red	Red	-	Red
VDCP Mix	-	Red	Red	-	Red	Red	Red	Red	Red	Red	-
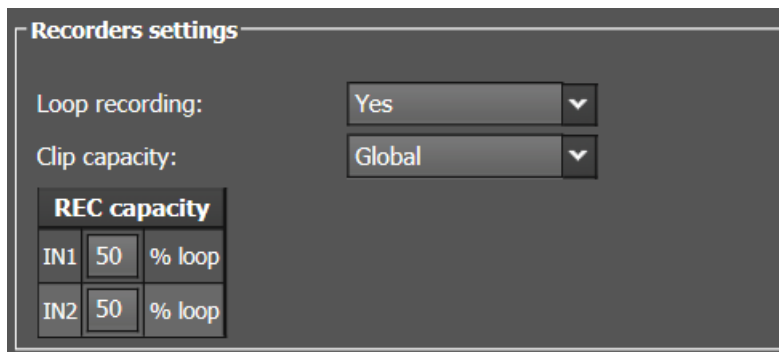
Recorder Settings

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

> ⚠️ **WARNING**
>
> 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 2 REC 2 PLAY configuration, the recording capacity will be 50% 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).

⚠️ **WARNING**

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), and with all supported codecs and resolutions.
Values	Yes / No (default)

4.3.3. 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.

✎ **NOTE**

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.

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 XT4K 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
	Refer to the technical reference manual for more information about the number of mono channels provided with each physical connector.

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
	Refer to the technical reference manual for more information about the number of mono channels provided with each physical connector.

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:
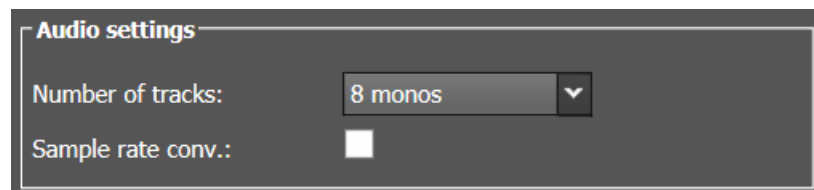
Number of Tracks

> ⚠️ **WARNING**
>
> 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. See section "Number of Audio Tracks" on page 163
Values	4 Monos (default), 8 Monos, 16 Monos

Sample Rate Conv. (Conversion)

Description	Specifies whether the input sample rate is converted. This parameter is only available with the digital AES/EBU audio format. If this parameter is set to 'No', the user has to ensure 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:
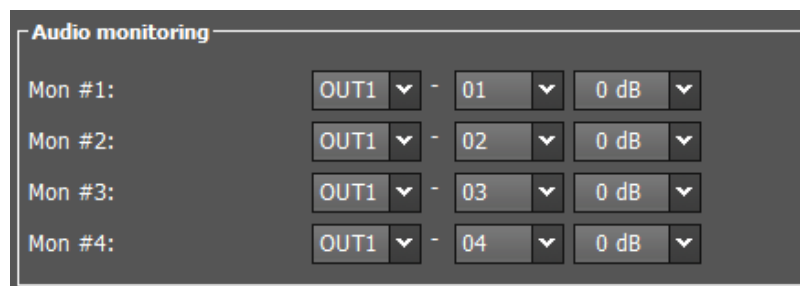
Audio Monitoring: Mon #1 - Mon #4

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 'OUT1-01' for Mon #1 means that the audio signal of the 1st audio mono channel of the PGM1 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.

Maximum Number of Tracks

The following table provides the default and maximum number of mono audio channels per video channel:

Configuration Mode	Embedded	MADI
2-channel configurations	2*16 audio mono (= 32 tracks)	2*16 audio mono (= 32 tracks)
4-channel configurations	4*16 audio mono (= 64 tracks)	4*16 audio mono (= 64 tracks)
6-channel configurations	6*16 audio mono (= 96 tracks)	6*16 audio mono (= 96 tracks)
8-channel configurations	8*16 audio mono (= 128 tracks)	8*16 audio mono (= 128 tracks)
10-channel configurations	10*16 audio mono (=160 tracks)	10*16 audio mono (=160 tracks)
ChannelMax LSM configurations	12*16 audio mono (=192 tracks)	12*16 mono (=192 tracks) if # IN ≤ 8 12*8 mono (= 96 tracks) if # IN > 8
UHD-4K	4*16 audio mono	4*16 audio mono

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 (digital connectors).

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.

NOTE

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 IN2 means that the 3rd audio mono channel of the embedded audio source plugged into the IN2 (CAMB) 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 (IN1 or IN2) 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 (IN1 or IN2) will be stored on mono channels 5 to 8 of the recorded material.

Example 3

	IN 1		IN 2		
	CAM A		**CAM B**		
1	D	01	D	05	D
2	D	02	D	06	D
3	D	03	D	07	D
4	D	04	D	08	D

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

	IN 1		IN 2		
	CAM A		**CAM B**		
1	E	1-01	E	1-01	E
2	E	1-02	E	1-02	E
3	E	1-03	E	1-03	E
4	E	1-04	E	1-04	E
5	E	1-05	E	1-05	E
6	E	1-06	E	1-06	E
7	E	1-07	E	1-07	E
8	E	1-08	E	1-08	E
9	E	1-09	E	1-09	E

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 three 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 171 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.

Inputs	**Embedded outputs**	Digital outputs	Analog outputs
	OUT1	**OUT2**	**OUT3**	**OUT4**
	PGM 1	**PGM 2**	**PGM 3**	**PGM 4**
1	EY 1-02	EY 2-02	EY 3-02	EY 4-02
2	EY 1-01	EY 2-01	EY 3-01	EY 4-01
3	EY 1-03	EY 2-03	EY 3-03	EY 4-03
4	EY 1-04	EY 2-04	EY 3-04	EY 4-04
5	EY 1-05	EY 2-05	EY 3-05	EY 4-05

Default Mapping for Audio Inputs and Outputs

Introduction

The tables below present the channel mapping for audio inputs and outputs in the following configuration:

• XT4K chassis

• Maximum number of recorders or players (see section "About Supported Configurations" on page 49).

• Audio hardware configuration: BNC MADI + 16 BNC 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 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 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.

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 the audio configuration with 8 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

4 or 16 Audio Tracks

With audio configurations with 4 or 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 an audio configuration with 16 tracks (mono channels):

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6
Mono1	D 01	D 05	D 09	D 13	None	None
Mono2	D 02	D 06	D 10	D 14	None	None
Mono3	D 03	D 07	D 11	D 15	None	None
Mono4	D 04	D 08	D 12	D 16	None	None
Mono5	None	None	None	None	None	None
Mono6	None	None	None	None	None	None
Mono7	None	None	None	None	None	None
Mono8	None	None	None	None	None	None
Mono9	None	None	None	None	None	None

	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6
Mono10	None	None	None	None	None	None
Mono11	None	None	None	None	None	None
Mono12	None	None	None	None	None	None
Mono13	None	None	None	None	None	None
Mono14	None	None	None	None	None	None
Mono15	None	None	None	None	None	None
Mono16	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 MADI - when 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:
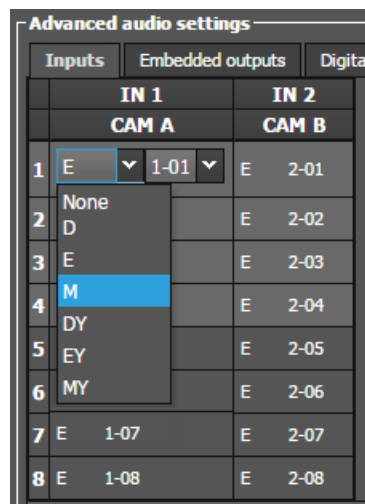
Modifying the Audio Gain and Mute Settings

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.

⚠️ **WARNING**

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.

> **NOTE**
>
> 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 XT4K server in all configurations.

- The audio can be digital or embedded depending on the configuration.

- In AES audio, if the audio is correctly genlocked to the video, the sample rate converter can be switched off.

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.

If the sample rate converter is activated and the audio configuration is a mix between PCM audio over AES and Dolby E over AES, the sample rate converter will only be applied to the PCM over AES signal.

- Dolby E Embedded in the HD SDI stream

  ◦ Set the configuration of the pair of channels carrying the Dolby E signal to "EY" in the Multicam Configuration window, Channels tab. This will force the transition to a hard cut.

  ◦ The sample rate converter parameter does not apply to embedded audio.

The Dolby E transitions will be correct as long as:

- the configuration is correct

- the AES stream containing Dolby E is correctly synchronized with the video

Dolby E transitions will not be correct (2 frames of mute at the transitions) if the audio type is set to E instead of EY or D instead of DY.

Audio effects (scrub, slow motion) are not possible in Dolby E. If they are used anyway, the audio will be muted.

4.3.4. 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:
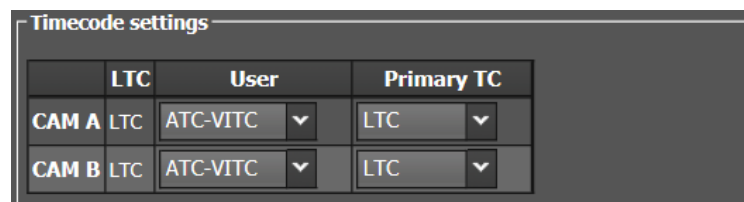
LTC

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.

The screenshot below shows the Timecode Insertion settings in HD on the Channels tab in the web-based application:

Input Tab

In Loop: D-VITC

The D-VITC (Digital Vertical Interval Timecode) and userbits are always written on the monitoring SD outputs of the record codec and are the same as on the source video.

In Loop: Lines

Description	Lines on which the VITC must be written on the output connectors of the record codec.
Values	From 06-08 to 20-22
Default Values	14-16 in NTSC 19-21 in PAL

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

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

> **NOTE**
>
> The SD OUT settings are not relevant with an XT4K server.

SMPTE 334M Packet Management Settings

NEW ! ## 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).

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 188 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 XT4K 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 186 for more information.
Values	Yes / No (default)

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

4.4.1. Overview

The Network tab includes the settings on the SDTI 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 (T3.X) of the Remote Panel

Setting Name	Basic	Advanced	Technical Setup
SDTI settings			
Speed	X	X	X
Net name	X	X	–
Net number	X	X	X
Type	X	X	X
SDTI Priorities settings			
High priority	–	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
Gigabit Prioritization settings			
Configuration mode	X	X	X
Connections (Lo-Res/Unreserved)	X	X	X
IP IO Configuration settings			
IP Address	X	X	X
Subnet Mask	X	X	X
Default Gateway	X	X	X

4.4.2. SDTI Settings

Introduction

The SDTI settings allow specifying the settings related to the SDTI network. This network allows the content between EVS servers to be visible across the network, and easily transferable.

⚠️ **WARNING**

Changes to the SDTI parameters require an application reboot (**ALT+Q** from the operational windows) to be applied.

User Interface

The **SDTI** and **SDTI Priorities** 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 menu of the Remote Control Panel (T3.X)

✏️ **NOTE**

The SDTI settings will only be displayed if the SDTI board is present on the EVS server and if the SDTI license code (117) is valid.

The following screenshots display the SDTI and SDTI Priorities settings on the Network tab in the web-based interface:

Speed

Description	Enables the selection of the SDTI option and the bandwidth for the XNet network. On the XT4K server, there is one pair of SDTI connectors: XNet2 No Relay connectors are used at 2970 Mbps. The SDTI circuit is closed only when the Multicam software is started.
Values	The following values are available: • No Relay 2970 (Mbps) • Off
Default value	Off

Net Name

Description	Machine name on the SDTI 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	Range between 1 and 29
Default value	1

Type

Description	Defines the privileges of the EVS server on the SDTI network.
Values	The following values are possible: • **Client:** It cannot access the content on other EVS servers. • **Master:** It can access all content on other EVS servers. • **Server:** It manages the SDTI network, and it can access all content on other EVS servers. Only one EVS server on the network should be set to Server type. If no Server type is defined on the network, XNet will not be established. If more than one EVS server is defined as Server type, only the first one to connect will be the actual Server. Whatever the server type defined, the content of an EVS server can be accessed without restrictions by the other EVS servers (with type Master or Server) on the SDTI network.
Default value	Server

High Priority

Description	Defines a higher priority for a play channel of the local server whenever they play network clips/trains. This higher priority will only apply in play, not in shuttle mode.
Values	Yes / No (default)

> **NOTE**
>
> Activating this setting will not prevent a freeze on the SDTI network if the network is completely stalled. It is always worth checking the network status and defining clear network usage rules if you wish to play footage across the network.

4.4.3.   Gigabit Connection

Introduction

The Gigabit connection allows the backup and transfer of the audio and video data without going through the SDTI 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.

⚠️ **WARNING**

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).
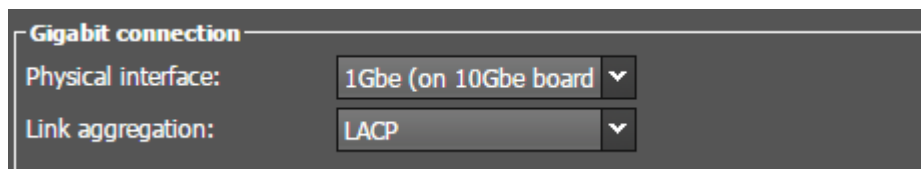
⚠️ **WARNING**

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

4.4.4. 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.

> ⚠️ **WARNING**
>
> 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 (T3.X).

The following screenshot displays the Gigabit IP Configuration settings on the Network tab in the web-based interface:

Gigabit IP configuration	Port 1				Port 2			
IP Address	10	129	59	21	192	168	12	10
Subnet Mask	255	255	255	0	255	255	255	0
Default Gateway	10	129	59	1	192	168	12	1

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.

4.4.5. 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.
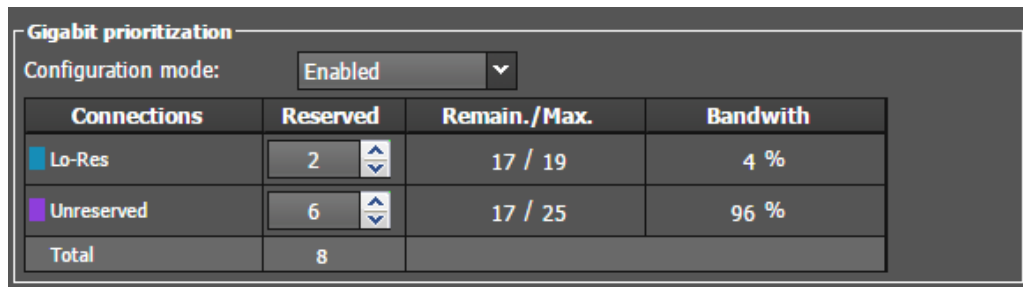
> ⚠️ **WARNING**
> - Changes to the Gigabit Prioritization settings require an application reboot (**ALT+Q** from the operational windows) to be applied.
> - When the Truck Manager is used in a given workflow, it automatically configures the Gigabit Prioritization settings to take into account the connection 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) connections on the Gigabit network.

Based on the effective bandwidth on the Gigabit interfaces of the EVS server, Multicam calculates the maximum number of Lo-Res connections that can be granted with priority.

Knowing the maximum number of connections which can have priority, the administrator can set the requested number of reserved connections for critical jobs (Lo-Res browsing, for example). The unreserved connections will be available for less prioritary jobs (backup of clips to be archived, for example).

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 automatically set to the maximum (25 connections).
	• **Enabled:**
	  ◦ You can set the number of Lo-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 (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

4.4.6.   IP IO Configuration
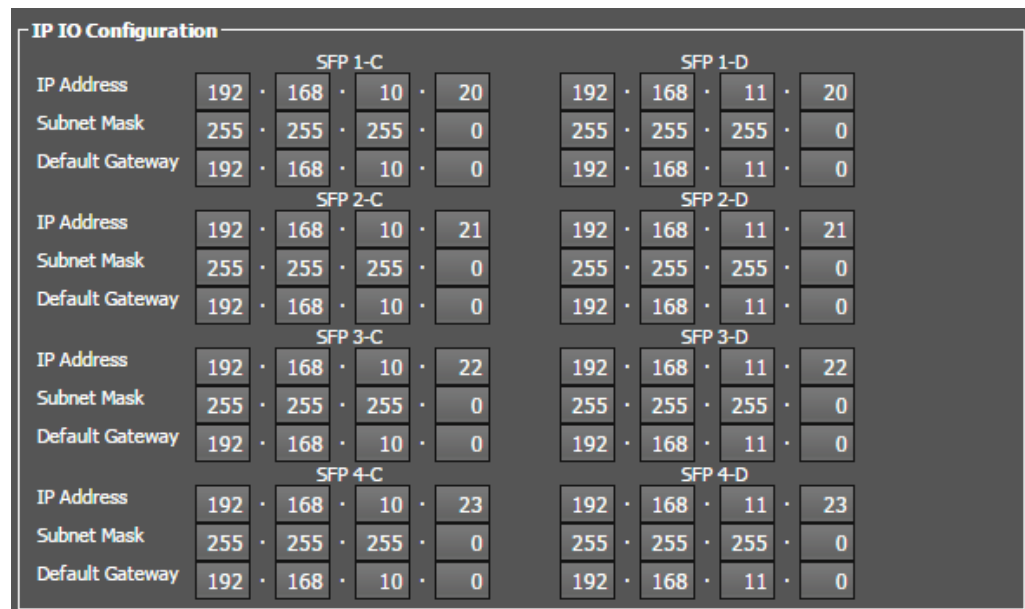
Introduction

The IP IO configuration allows to configure the IP addresses of the V4X SFP+ ports (10GbE) used to send or receive video from or onto the EVS server over an IP network.

User Interface

The **IP IO confguration** 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.

IP Address (SFP+ Ports)

Description	IP address of the specified SFP port used to transmit or receive video from or onto the EVS server.

Values	The last octet of the IP addresses must be an even number as each network interface of the V4X uses 2 IP addresses:
	• the IP address defined in this field
	  e.g. `10.129.59.42`
	• the defined IP address whose last octet value is incremented by one
	  e.g. `10.129.59.43`
	The IP addresses 0.0.0.0 and 255.255.255.255 are not allowed.

NEW !

Subnet Mask (SFP+ Ports)

Description	Range of logical addresses within the address space assigned to the LiveIP network (video-over-IP network).

Default Gateway (SFP+ Ports)

Description	IP address of the router on the LiveIP network that serves as an access point to external networks.

4.5. Monitoring Tab

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 (T4.X) of the Remote Panel

Setting Name	Basic & Advanced	Technical Setup
Multiviewer Settings		
Layout	X	–
Audio Monitoring from video	X	–
Audio Monitoring left-right tracks	X	–
HD output format	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 MV4 multiviewer on the MTPC board and with the internal LAN provide the following ports on the rear panels:

- four output ports to allow the connection of four independent HD-SDI multiviewers;

- two intput 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.

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.

OSD with MV4 Multiviewers

The monitoring outputs of the MV4 multiviewer provide the following main information:
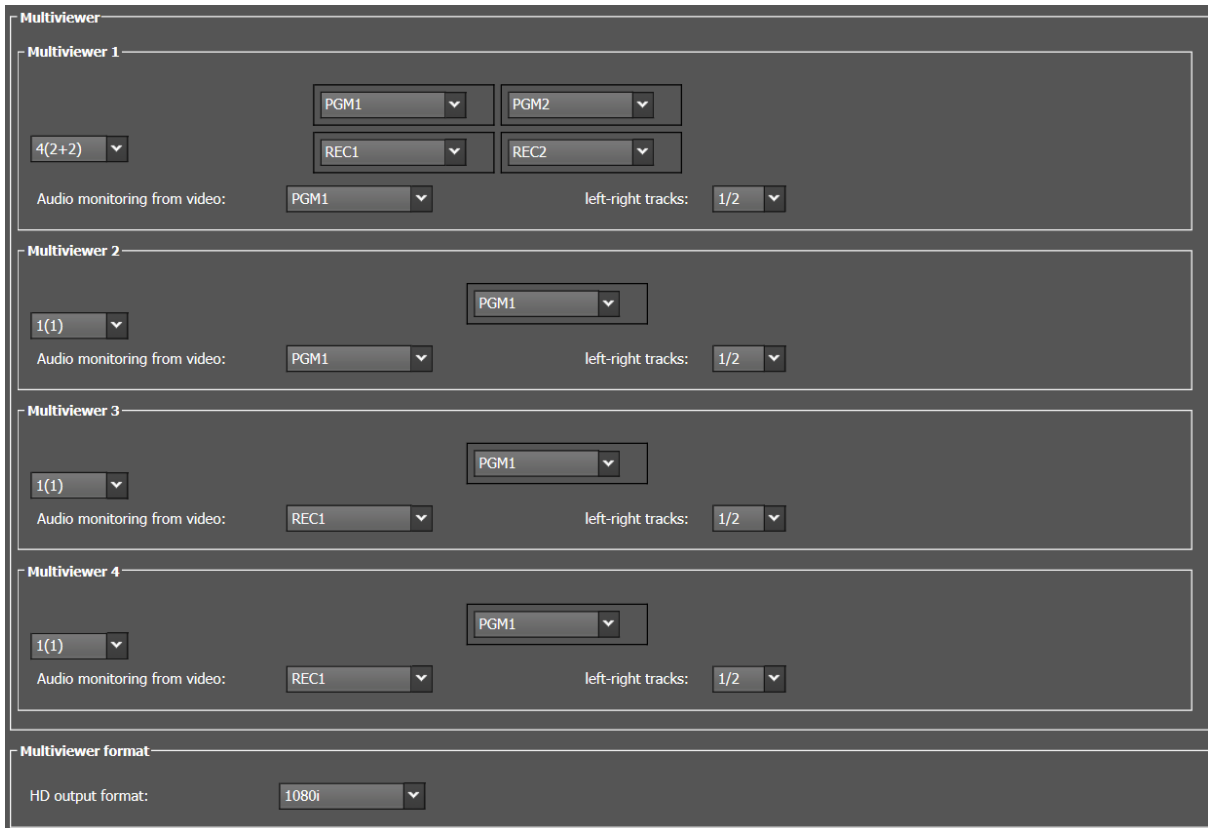
- The OSD is displayed over the full screen.

- 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

Maximum Number of Sources

With the MV4 multiviewer, the overall number of sources displayed in the multiviewers is not limited.

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: • **4 (2+2)** • **6 (4+2)** • **6 (3+3)** • **8 (3+3+2)** (not useful on all servers) • **1**
Default value	• **4 (2+2)** on Multiviewers 1 and 2

Available Layouts

The available layouts are:

• **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.
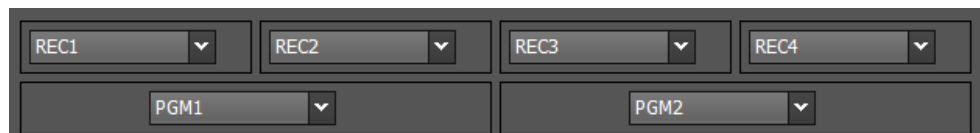
• **6 (3+3)**: 6 identical size images, 3 at the top, 3 at the bottom.
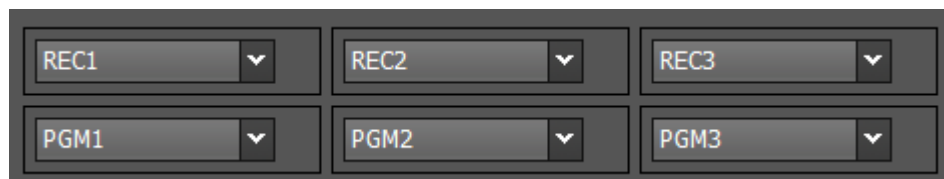
• **8 (3+3+2)**: 6 small size images in the first 2 rows, 2 larger images at the bottom. This layout is not useful on all servers.
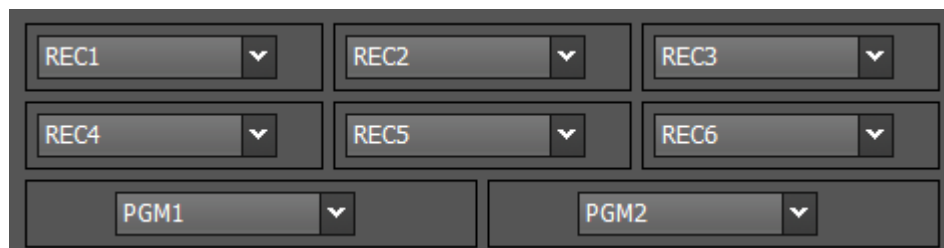
- **1**: It is available with any configuration.

Display 1 to 8

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.
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 **REC8** • **EXT1** and **EXT2**

Audio Monitoring from Video

Description	Specifies the channel for which the audio will be monitored via the SDI 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.

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**

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:
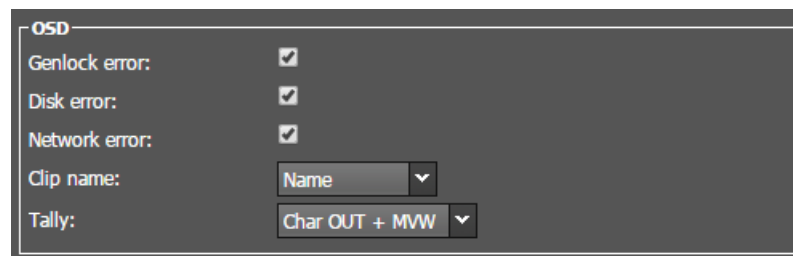
Genlock Error

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

> **NOTE**
>
> See section "Configuring OSD Display" on page 209 for more information on how the OSD-related settings can be configured with an XT4K 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 MV4 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 MV4 REC	OSD MV4 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 MV4 REC	OSD MV4 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 Protocol tab includes the settings that will be used with the Sony BVW75 protocol and the EditRec feature.

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 (T5.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
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	–

> **NOTE**
>
> The following features are not supported on XT4K:
> - Edit Rec

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 213 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:
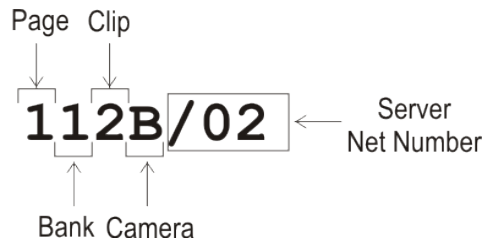
The digits after the LSM ID correspond to the Net Number of the server on which the clip is stored, i.e. the EVS video server ID on the XNet network. They are not part of the LSM ID.

UmID

The UmID is an 8-bytes ID with fixed length.

It is used for the unique clip identification on the SDTI 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)

✎ **NOTE**

The VarID allows a redundant architecture where the VarID can be identical on two different servers. All servers can stay on the same SDTI 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)

⚠️ **WARNING**

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.   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:

- with the MV4 multiviewer and internal LAN.
- 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	MV4 Multiviewer (and Internal LAN)
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 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.
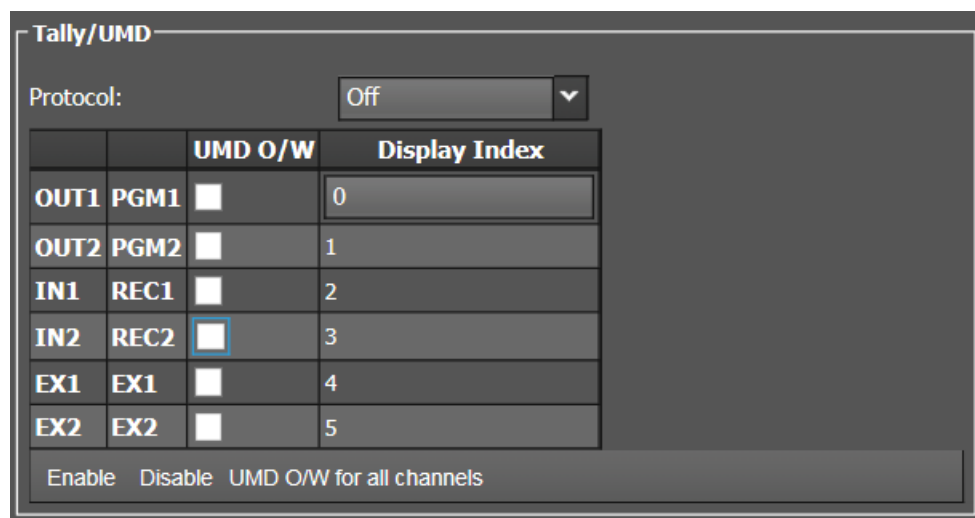
4.6.6. Tally/UMD Settings

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 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

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. The following ones are incrementally assigned.
Values	**0 to 65,535** (maximum value with TSL 5.0 protocol)
Default value	10 (1st number)

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**

4.6.7.   RS422 VarID Settings
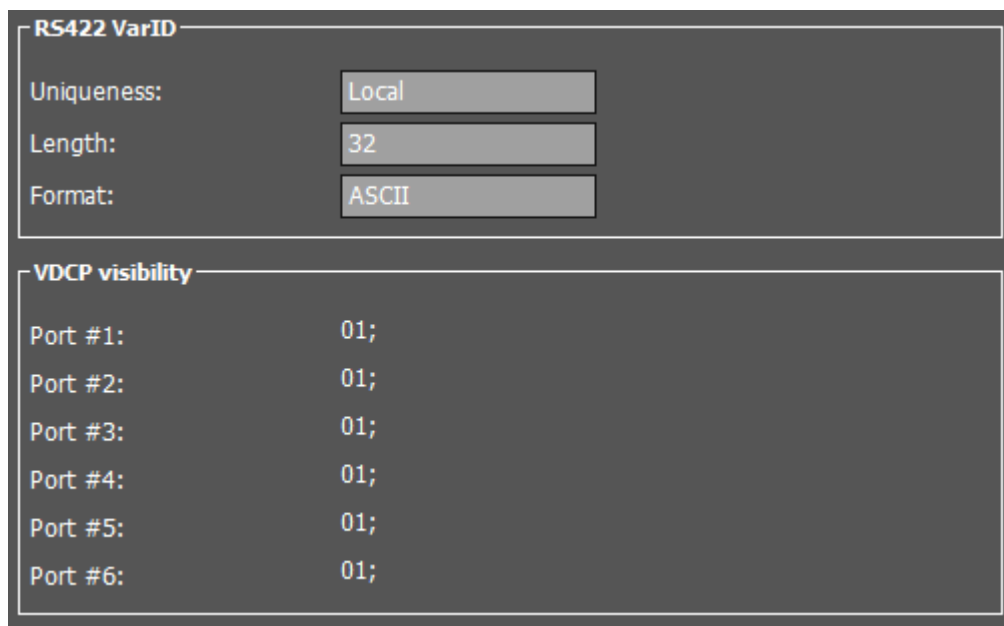
User Interface

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 following screenshot displays the RS422 VarID and the VDCP visibility settings on the Protocols tab in the web-based interface:

VarID Definition and Parameters

> ⚠️ **WARNING**
>
> 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 SDTI 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 `C:\LSMCE\DATA` directory.

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..29,*
;             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 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. • *****, 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:

> **NOTE**
>
> 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.

NOTE

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. • **RMTx**: 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. (This GPI is only used by IPDirector.) • **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:
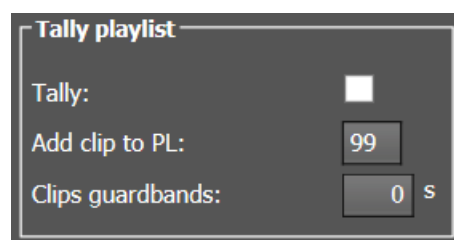
How to Activate the Tally Playlist Function

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 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.

OSD Settings

Setting Name	Basic	Operational Setup
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
Clips settings		**2.x**
Automake clip for cam A to F	X	X

Setting Name	Basic	Operational Setup
Make clips rem. trains	X	X
Guardbands	X	X
Default clip duration	X	X
Autoname clips	X	X
Clip post-roll	X	X
Mark cue points	X	X
Preroll	X	X
Record trains OUTs	X	X
Freeze on cue points	X	X
Network Copy/Push	X	X
Protocol receive page	X	X
Playlist receive page	X	X
Timeline receive page	X	X

Playlist Settings

Setting Name	Basic	Operational Setup
Playlist settings		3.x
Video effect duration	X	X
Audio locked to video	X	X
Audio effect duration	X	X
Wipe type	X	X
Default playlist speed	X	X
Insert SLSM native speed	X	X
Insert in playlist	X	X
Confirm Ins/Del clips	X	X
Advanced audio editing	X	X
Extend split transition	X	X
Swap audio tracks	X	X
Playlist loop	X	X
Playlist auto fill	X	X
Fade to/from color	X	X

Setting Name	Basic	Operational Setup
Load playlist	X	X
Make local auto	X	X

Miscellaneous Settings

Setting Name	Basic	Operational Setup
Timeline settings		**4.x**
Mono per group	X	X
TL Operator	X	X
Protection settings		**5.x**
Protect pages	X	X
Clip edit by network	X	X
Confirm delete clips/playlists	X	X
Keywords settings		**6.x**
Keyword files	X	X
Keyword mode	X	X
Push settings		**7.x**
Push target	X	X
Codec target	X	X
Push target 1/2	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
EVS Controller settings		**9.x**
Effect duration for take	X	X
Fast jog	X	X
PGM Speed/Var max	X	X
Lever engage mode	X	X
Second lever range	X	X
Recall clip toggle	X	X
Record key	X	X
VGA & Remote sync	X	X
Call channel VGA	X	X
PGM/PRV mode	X	X
Loop button	X	X
Browse button	X	X

Hypermotion Settings

Setting Name	Basic	Operational Setup
Hypermotion settings		**11.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		**12.x**
Set colour for	X	X
Colour	X	X
Epsio	X	X
IP address	X	X
Default tool	X	X
Auto mark	X	X

NOTE

The following features are not supported on XT4K:
- Internal loop mode
- Paint/target
- Offside line (internal)

The Split Screen feature is available with limitations.

The timeline feature is supported without limitations on HD and UHD-4K.

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 (1.1)

The following screenshot displays the OSD settings on the Operation tab in the web-based interface:
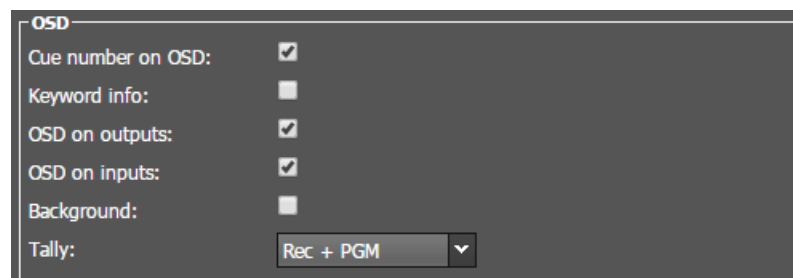
Cue Number on OSD

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 the Multiviewer (MV4) and discrete monitoring outputs. See section "Configuring OSD Display" on page 209 for more information on how to configure OSD-related settings on anXT4K equipped with V4X boards.
Values	Yes (default) / No

OSD on Inputs

Description	Enables / disables the OSD on the record channels on the Multiviewer (MV4) and discrete monitoring outputs. See section "Configuring OSD Display" on page 209 for more information on how to configure OSD-related settings on anXT4K 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 (1.2)

The following screenshot displays the Audio Meters OSD settings on the Operation tab in the web-based interface:
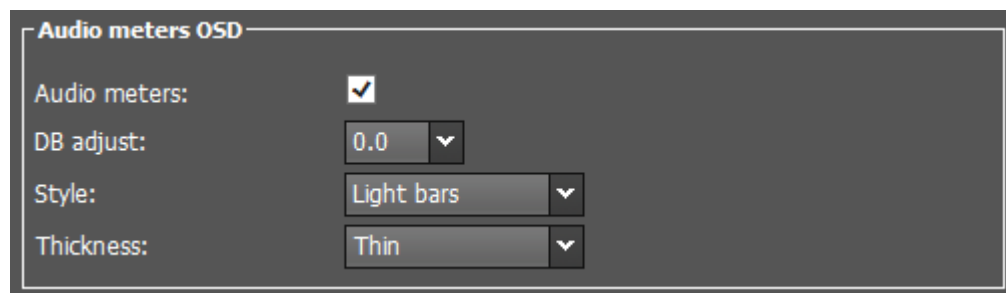
Audio Meters

Description	Shows/hides the audio meters on the OSD.
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 MV4 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 MV4 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 (2.X).

The following screenshot displays the Clips settings on the Operation tab in the web-based interface:

Automake Clip for CAM A to F

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 F) 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: • **Disable:** 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	Disable

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 SDTI and GbE networks.
Values	Two values are possible for this parameter: • **SDTI:** The operations are executed through the SDTI network. There is no failover mechanism to the GbE interface. • **Gigabit (SDTI 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 SDTI. 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 SDTI interface. The value is forced to Gigabit if the code 117 (SDTI) is not valid on the EVS server, or if the SDTI network is not active.
Default value	SDTI

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

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
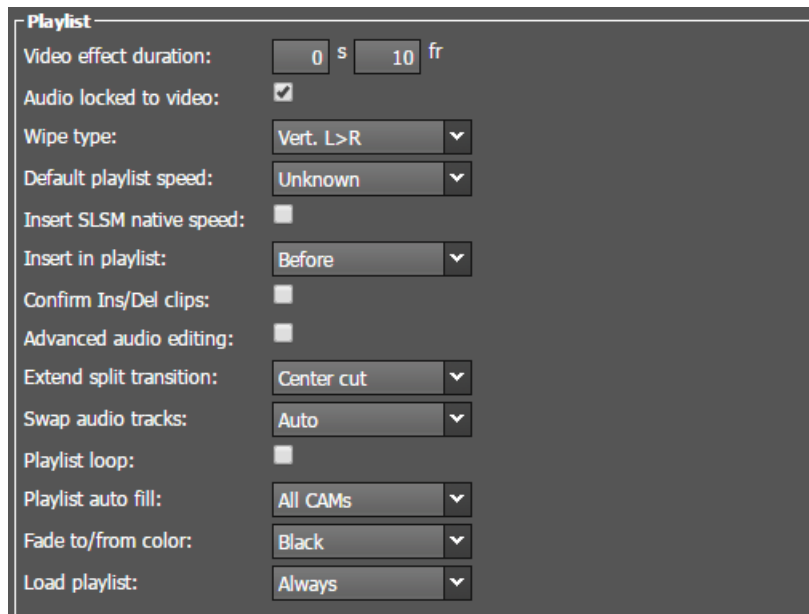
User Interface

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 (3.X)

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.

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. If the license code 112 for advanced audio editing is not valid, the parameter value is forced to 'Yes'.
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.
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.
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.
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 Cam:** 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 D** The clips corresponding to the defined camera angle will be added to the playlist.
Default value	All Cam

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

NEW !   # 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 (4.1)

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:
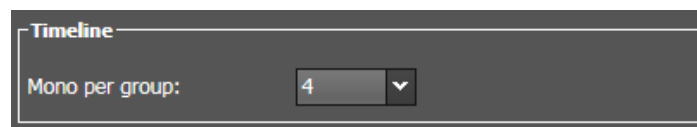
Mono per Group

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

> ✎ **NOTE**
>
> 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 (5.1)

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 113 for more information on how to enable pages.
Values	Page 1 to 10 (=0). Several pages can be selected.

> ⚠️ **WARNING**
>
> 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 SDTI 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

> **NOTE**
>
> 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.
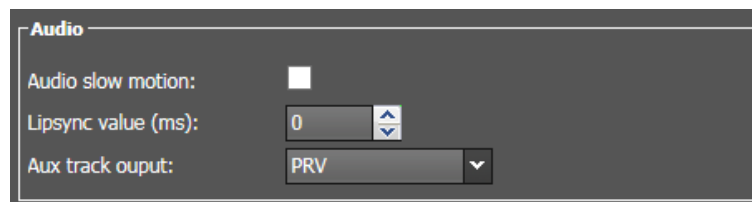
These fields are available in the following interfaces:

- 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 (6.1)

⚠ **WARNING**

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 SDTI network will be used. This value is only available if the SDTI network is used.
	• **<Keywords file name>:**
	  ◦ Other file names will appear if keywords files (files with a .KWD extension) have been loaded in the C:\LSMCE\DATA\KWD directory of the system.
	  ◦ 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 46 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 SDTI 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 (7.1)

⚠️ **WARNING**

The values available in the Push settings depend on the presence of the SDTI 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: • **SDTI:** Only SDTI 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 SDTI network will be listed. The servers are listed by their GbE server name, and IP Address. • **SDTI+Gigabit:** First the servers on the same SDTI network connected through SDTI are listed, then the servers not on the same SDTI network but reachable via the GbE network are listed. The **Gigabit** and **SDTI+Gigabit** values are not available if the EVS server does not have a GbE board.
Default Value	SDTI

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 SDTI 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 113 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 113 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 (8.1)

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 (300%).
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

> **NOTE**
>
> 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.
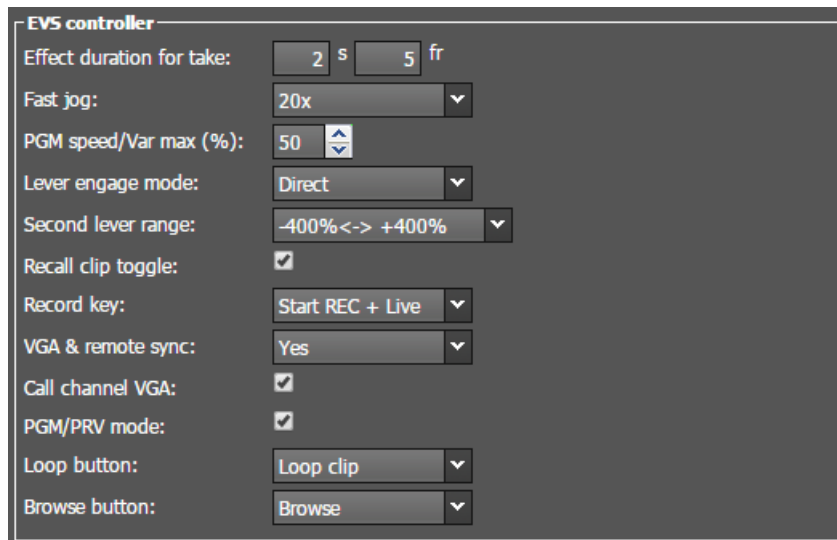
> ⚠ **WARNING**
>
> Most of the settings are only available or applicable with base configurations associated to the use of an EVS Remote Panel (LSM Remote, XSense Remote).

User Interface

These fields are available in the following interfaces:

•   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
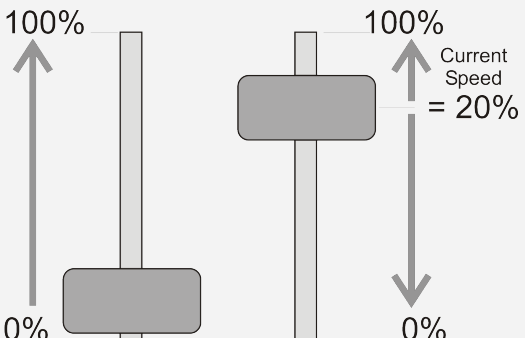
Fast Jog

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%

NEW !

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 XT4K server as the controlling Remote Panel.

In setups including a hypermotion camera, the following principles apply:

• An XT4K 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	
Hypermotion 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.

⚠️ **WARNING**

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'.

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 (pages 11.X)

> ⚠️ **WARNING**
>
> 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
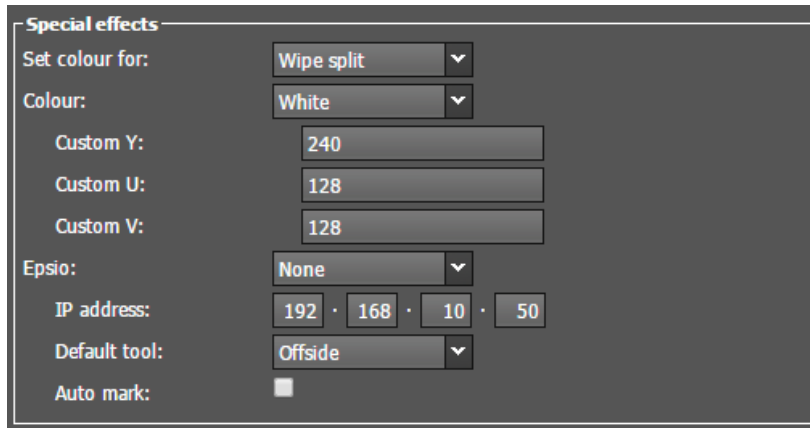
User Interface

On an XT4K 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 (pages 12.X)

The following screenshot displays the Special Effects settings on the Operation tab in the web-based interface:

NOTE

The settings displayed in the Special Effects section which are not relevant for XT4K 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 default color to a specific tool, either to the cursor, or to the border of the wipe effect or to the delimiter of the split screen.
Values	• Wipe Split • Cursor
Default value	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 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

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 XT4K with the license code 113.

Limitations

On an XT4K 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.

- The split mix mode 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 S-CORE Master 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 S-CORE Master and can be dynamically edited in S-CORE Master, and automatically reflected in the Live IP Configuration module and vice versa.

NOTE

The IP addresses of the V4X SFP+ ports from the codec modules area 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:
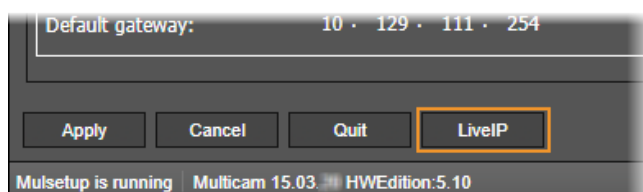
NOTE

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 two tabs:

- IP configuration tab: It allows you to configure the streams sent from output channels (senders) and streams received through input channels (receivers).

- PTP configuration tab: It allows you to monitor and configure some settings for time synchronization of all EVS server nodes on the IP network.

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:
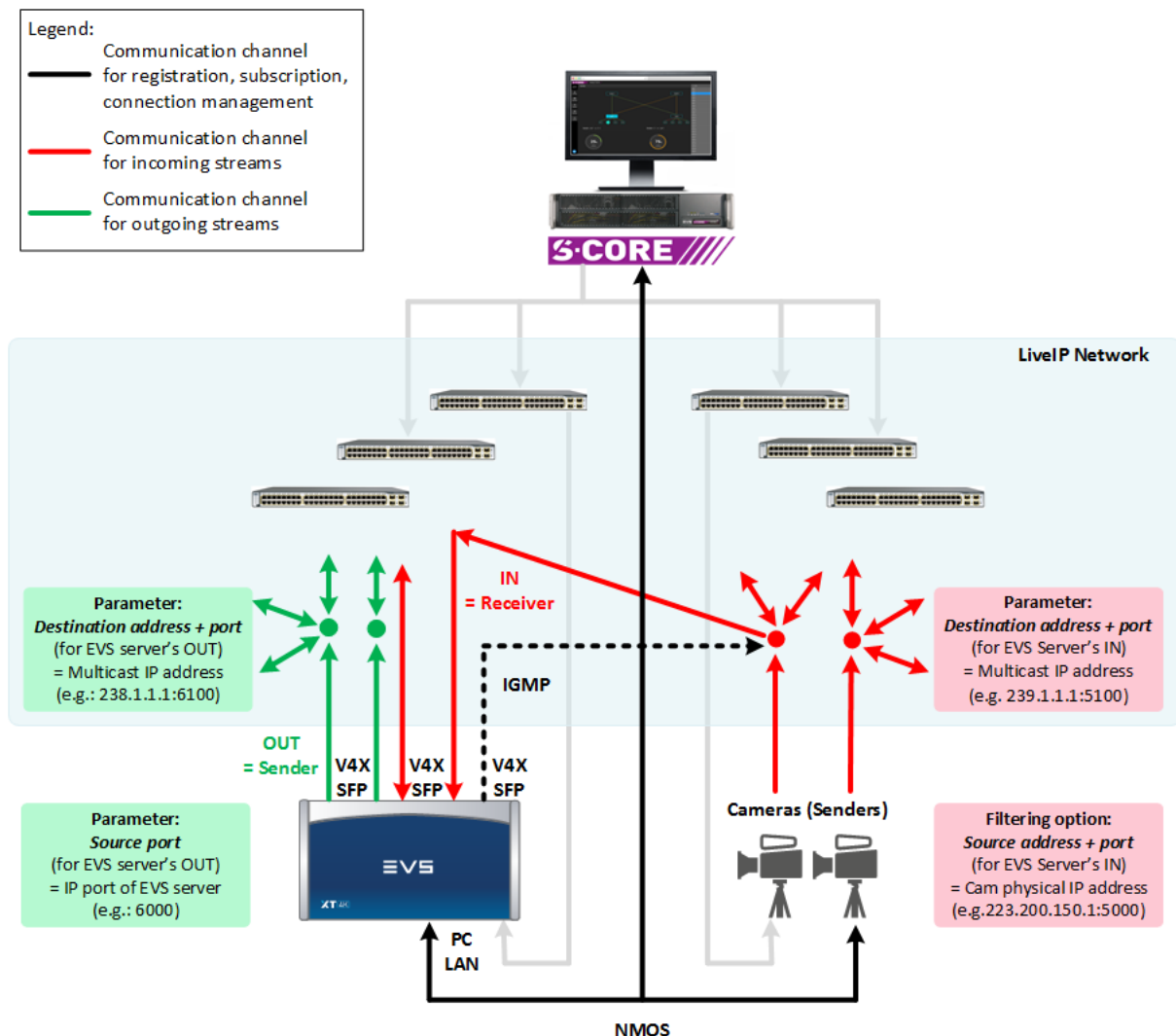
Discovery and Registration Management

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 and audio 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.

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.

NOTE

See section "About Media Streams" on page 278 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 **S-CORE Master**, 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:

• S-CORE Master 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 the Ember+ protocol to:

• receive and interpret SDPs advertising streams from senders and

• generate SDPs streams to potential receivers.

The PC LAN is used to communicate through the Ember+ protocol. Communication is established in UDP using port 9000.

The EVS server's senders and receivers will then use IGMP joins to subscribe to the streams advertised by SDP.

5.3.   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:
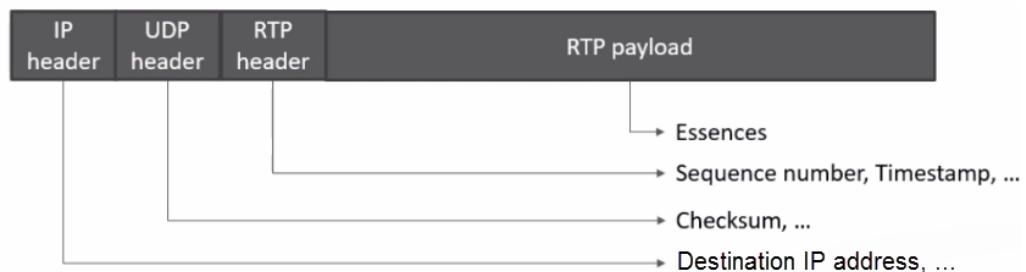
The video and audio media content is sent as separate RTP streams.

> ✎ **NOTE**
>
> The ancillary data (ST 2110-40) is not supported in Multicam 15.3.

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 2110-50, 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 "Protocol" on page 286 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

Type

When the audio streams are sent as separate streams, they are uncompressed audio streams built on AES67 (PCM audio).

Requirements

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

- **Supported profiles:**

   For inputs: level A & level B

   For outputs: level A

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 8 audio mono channels can be included in each OUT audio stream.

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.

5.3.2. Overview of IP Configuration

User Interface
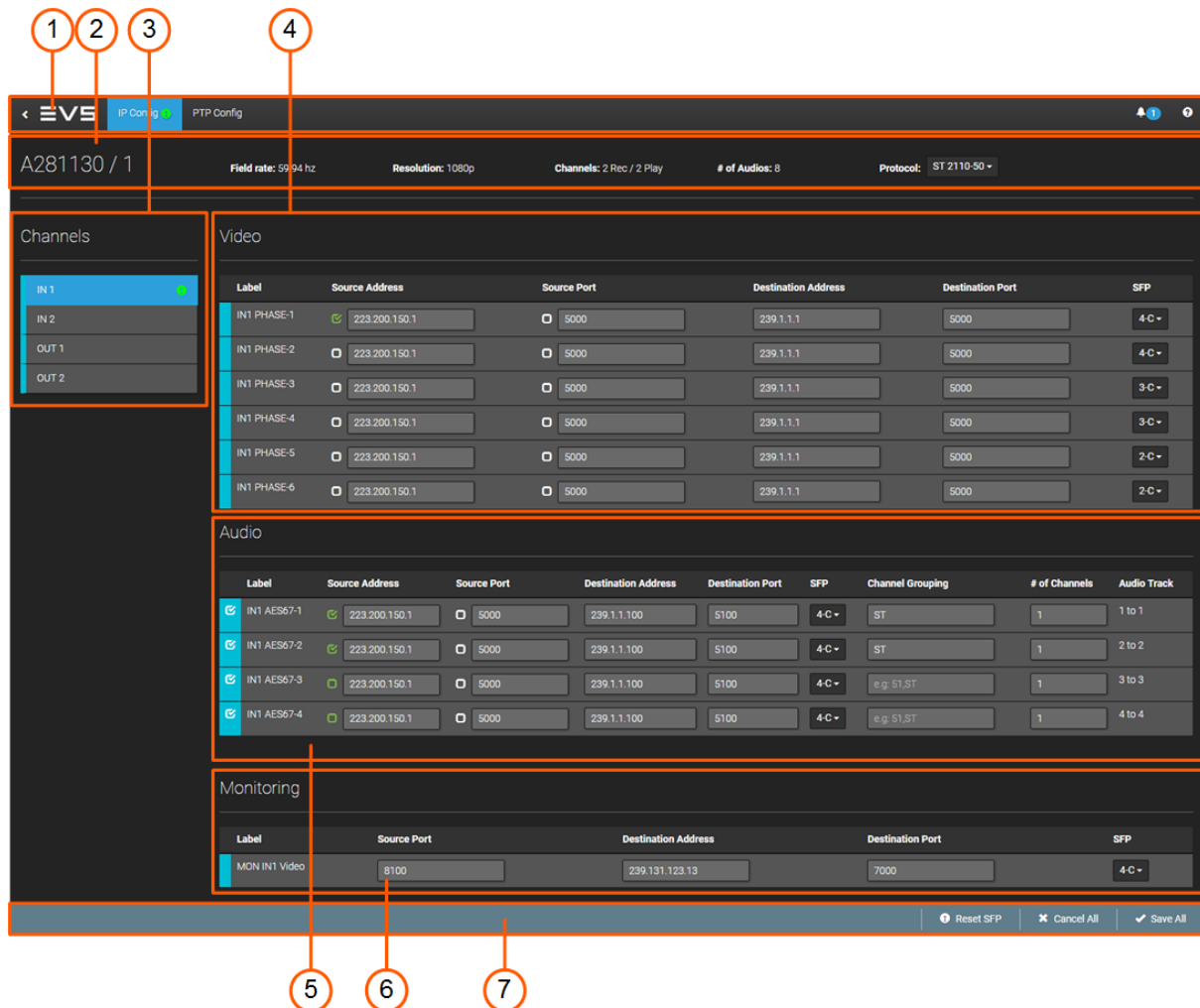
#	Name of area	Description
1.	Menu bar	It displays links to the pages including LiveIP settings. By default, the focus is on the **IP Config** page.
2.	General settings	It features general settings related to the running or selected configuration.
3.	Channels area	It features the logical IN and OUT channels.
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.

#	Name of area	Description
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.	Monitoring settings	It displays the LiveIP settings of the monitoring stream associated to the IN or OUT channel selected in the Channels area.
7.	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.
IP Config	Clicking **IP Config** displays the IP Configuration page where you configure your IP streams. See section "Overview of IP Configuration" on page 281.
PTP Config	Clicking **PTP Config** displays the PTP Configuration page where you configure and monitor the clock synchronization settings. See section "PTP Configuration" on page 306
🔔	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.

> ✎ **NOTE**
>
> 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 285

Channels Area (3)

This area shows the logical channels defined in the active configuration of the EVS server:
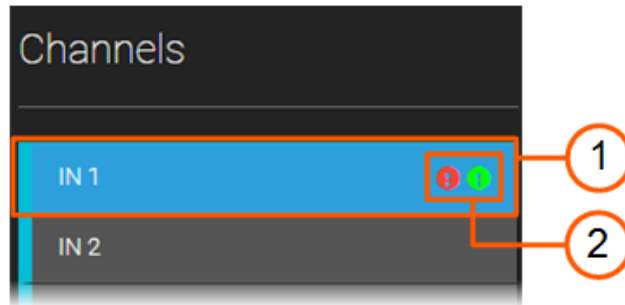
① A selected channel is highlighted in blue: The settings for the associated streams are displayed in the Video Settings, Audio Settings and Monitoring Settings areas.

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.

Video Settings (4)

See section "LiveIP Settings for Video Streams" on page 288

Audio Settings (5)

See section "LiveIP Settings for Audio Streams" on page 294

Monitoring Settings (6)

See section "LiveIP Settings for Monitoring Streams" on page 302

Edit Bar (7)

The following buttons can be displayed in the Edit bar depending on whether you are in Edit or View mode:

GUI Element	Description
✏ Edit All	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.
✖ Cancel All	In Edit mode, click this button to cancel all changes in the displayed settings.
✔ Save All	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.
❶ Reset SFP	In Edit mode, click this button to reset all SFP interface parameters to the default values.

5.3.3.   General Settings

Overview

The **IP Configuration page** displays some general settings in the **General** area.

These settings are related to the running or selected configuration and are mainly provided for information purposes.

The settings unrelated to LiveIP are not editable in this page. However they correspond to editable settings in the Multicam Configuration module.

A281130 / 1	**Field rate:** 59.94 hz	**Resolution:** 1080p	**Channels:** 2 Rec / 2 Play	**# of Audios:** 8	**Protocol:** ST 2022-8

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 120 for more information.

Resolution

Description	Resolution defined for the active configuration line. This field is read-only in this page. See section "Resolution" on page 121 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 140.

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 162

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 2110-20 (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.

NEW !
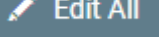
5.3.4.   Editing LiveIP Stream Settings

How to Edit LiveIP Stream Settings

1. Open the **LiveIP** Configuration module from the Multicam Configuration module.

2. Click **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:

IN 1

IN 2

OUT 1

OUT 2
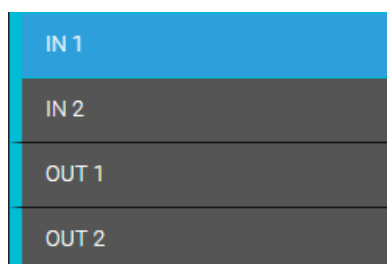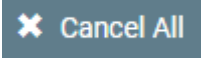
The physical streams (video, audio and monitoring) associated to the selected logical channel will be displayed in the areas on the right.

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 Video Streams" on page 288

    ◦ See section "LiveIP Settings for Audio Streams" on page 294

    ◦ See section "LiveIP Settings for Monitoring Streams" on page 302

    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 286 for a complete procedure on how to edit LiveIP streams.

✏️ **NOTE**

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

Label	Source Address	Source Port	Destination Address	Destination Port	SFP
IN1 PHASE-1	223.200.150.1	5000	239.1.1.1	5100	4-C ▾
IN1 PHASE-2	223.200.150.1	5000	239.1.1.1	5100	4-C ▾
IN1 PHASE-3	223.200.150.1	5000	239.1.1.1	5100	3-C ▾
IN1 PHASE-4	223.200.150.1	5000	239.1.1.1	5100	3-C ▾
IN1 PHASE-5	223.200.150.1	5000	239.1.1.1	5100	2-C ▾
IN1 PHASE-6	223.200.150.1	5000	239.1.1.1	5100	2-C ▾

Label

IN1 PHASE-1

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 (all)
	    ◦ **INX**
	 • phase number (SLSM)
	    ◦ **PHASE-X**
	 • UHD format and quadrant number (UHD-4K)
	    ◦ **2SI-X** (two-sample interleave)
	    ◦ **SDQS-X** (square division)
	 Examples:
	 • IN3 PHASE-1 (SLSM input channel 3, phase 1)
	 • IN3 SDQS-2 (UHD-4K input channel 3, square division, quadrant 2)

Source Address

☑ 223.200.150.1

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. Both unicast and multicast IP addresses are supported.
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].

SFP

Description	Physical V4X SFP+ port (IN connector) on the EVS server that receives the incoming streams. • The **codec module (1 to 4)** 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. **Maximum two streams can be processed per physical port.**
Values	• X-C (default for even channels) • X-D (default for odd channels) where *X* is the number of coded module.

LiveIP Output Streams

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**
	• UHD format and quadrant number (UHD-4K)
	  ◦ **2SI-X** (two-sample interleave)
	  ◦ **SDQS-X** (square division)
	Examples:
	• OUT2 Video (standard output channel 2)
	• OUT2 SDQS-2 (UHD-4K output channel 2, square division, quadrant 2)

Source Port

6000

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].

NOTE

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 199.

Destination Address

238.1.1.1

Description	IP address to which the output streams are sent. Both unicast and multicast 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

6100

Description	Port number to which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

SFP

Description	Physical V4X SFP+ port (OUT connector) on the EVS server from which the output streams are sent. • The **codec module (1 to 4)** 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 si automatically assigned. **Maximum two streams can be processed per physical port.**
Values	• X-C (default for even channels) • X-D (default for odd channels) where *X* is the number of coded module

5.3.6.   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 286 for a complete procedure on how to edit LiveIP streams.

> **NOTE**
>
> 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

	Label	Source Address	Source Port	Destination Address	Destination Port	SFP	Channel Grouping	# of Channels	Audio Track
☑	IN1 AES67-1	☑ 223.200.150.1	☐ 5000	239.1.1.1	5100	4-C ▾	ST	2	1 to 2
☑	IN1 AES67-2	☑ 223.200.150.1	☐ 5000	239.1.1.1	5100	4-C ▾	e.g: 51,ST	1	3 to 3
☑	IN1 AES67-3	☐ 223.200.150.1	☐ 5000	239.1.1.1	5100	4-C ▾	e.g: 51,ST	1	4 to 4
☑	IN1 AES67-4	☐ 223.200.150.1	☐ 5000	239.1.1.1	5100	4-C ▾	e.g: 51,ST	1	5 to 5

Check-Box

Click the check-box available in front of the 1st audio stream to receive the corresponding audio stream. By default, only the first audio stream is selected.

A check-box is displayed in front of an audio stream only if the preceding audio stream has been selected.

Label

IN1 AES67-1

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 AES67-Y>** where: • **X** is the channel number • **Y** is the audio stream number

Source Address

223.200.150.1

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. Both unicast and multicast 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	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].

SFP

Description	Physical V4X SFP+ port (IN connector) on the EVS server that receives the input streams. • The **codec module (1 to 4)** 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.
Values	• X-C (default for even channels) • X-D (default for odd channels) where *X* is the number of coded module.

Channel Grouping

ST

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.

of Channels

2

Description	Number of audio mono channels present in the AES67 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. • For an OUT, up to 8 audio channels can be included in each audio stream.

Audio Track

1 to 2

Description	Mapping between the AES67 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

Label

OUT1 AES67-1

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 **<OUTX AES67-Y>** where: • **X** is the channel number • **Y** is the audio stream number

Source Port

6000

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].

> **NOTE**
>
> 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 199.

Destination Address

238.1.1.1

Description	IP address to which the output streams are sent. Both unicast and multicast 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

6100

Description	Port number to which the output streams are sent.
Values	This must be a valid port number in the range [0-65535].

SFP

1-C ▾
  1-C
  1-D

Description	Physical V4X SFP+ port (OUT connector) on the EVS server from which the output streams are sent. • The **codec module (1 to 4)** 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.
Values	• X-C (default for even channels) • X-D (default for odd channels) where *X* is the number of coded module.

Channel Grouping

See section "Channel Grouping" on page 298.

of Channels

See section "# of Channels" on page 298

Audio Track

See section "Audio Track" on page 299

5.3.7.   LiveIP Settings for Monitoring Streams

Introduction

The Monitoring area will display the settings for the video monitoring LiveIP streams of the input or output streams depending on whether you have selected an input or output channel in the Channels area.

See section "Editing LiveIP Stream Settings" on page 286 for a complete procedure on how to edit LiveIP streams.

> **NOTE**
>
> 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.

Monitoring of Input Streams

Monitoring				
Label	**Source Port**	**Destination Address**	**Destination Port**	**SFP**
MON IN1 Video	8100	192.168.0.1	8100	4-C

Label

MON IN1 Video

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 Video>** where **X** is the channel number.

Source Port

8100

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].

NOTE

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 199.
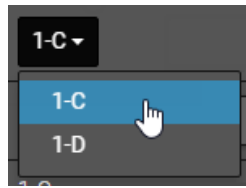
Destination Address

192.168.0.1

Description	IP address to which the monitoring streams of the input streams are sent. Both unicast and multicast 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

8100

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].

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.
Values	• X-C (default) • X-D where *X* is the number of coded module.

Monitoring of Output Streams

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 is based on the pattern **<MON OUTX Video>** where **X** is the channel number.

Source Port

8100

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].

> **NOTE**
>
> 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 199.

Destination Address

192.168.0.1

Description	IP address to which the monitoring streams of the output streams are sent. Both unicast and multicast 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

8100

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].

SFP

Description	Physical V4X SFP+ port (OUT connector) on the EVS server from which the monitioring streams are sent. The monitoring streams are sent from the same V4X SFP+ connector as the OUT connector.
Values	• X-C (default) • X-D where *X* is the number of coded module.

5.4.   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.

On the EVS servers, this slave clock is used to synchronize all streams inside the server:

• 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.

In Practice

The PTP is received via the V4X SFP+ connectors of the video codec modules.

One of the SFP+ modules operates as the single PTP client for the XT4K Server and synchronizes the other video codec modules. No configuration of PTP is expected from the server side.

The PTP page allows you to monitor the PTP status and make sure that the streams on the EVS server are correctly synchronized.

✎ **NOTE**

The PTP does not replace the genlock. The genlock is still necessary and must be synchronized to the PTP.

| Status: | OK | **Value:** 20:40:12:10 | **Master Clock IP:** 192.168.0.1 | **Profile:** INTErop_AES_SMPTE | **Domain:** 126 |

Status

| Status: | OK |

Description	Status of the PTP. This is a read-only field.
Values	• **OK** (green) • **Bad** (red)

Value

Value: 20:40:12:10

Description	Value generated by the grandmaster clock at regular intervals which allows time stamping the IP packets. This is a read-only field.

Master Clock IP

Master Clock IP: 192.168.0.1

Description	IP address of the grandmaster clock of the PTP infrastructure in the IP network. This is a read-only field.

Profile

Profile: INTErop_AES_SMPTE

Description	PTP profile (set of required options, prohibited options, ranges and defaults of configurable attributes) specific to the broadcast industry and used by SMPTE 2110. This is a read-only field.
Values	The profile **INTEROP_AES_SMPTE** is used. It allows the interoperability between AES67 and SMPTE 2059-2.

Domain

Domain: 126

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**.

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.

NOTE

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 (SD or HD).
#5	Log Management window	Allows a user-friendly and easy management of the logs.
#6 / #7	Input Monitoring	Provides information to monitor the status of the SDI inputs or IP input streams.

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.

Field Name	Description
Net name	Machine name on the SDTI 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, **SDTI** section, **Net name** parameter.
Net number	Machine number (from 1 to 29) on the network. This number is user-defined and must be unique for each system on the network.
SDTI type	Role and privileges of the EVS server on the SDTI 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.

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 fonction 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 45
Reconnect PC LAN	Reinitiates the PC LAN connexion. This option is only available on EVS servers fitted with an HS870 MTPC board. It prevents users from having to reboot the EVS server when the PC LAN has been disconnected and connected again, but the PC LAN connection status does not update properly.

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** or **5+1**) 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 313 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 41 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 312 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 fixed disks, the disks are numbered as follows from 1 to 6 or 12:

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, for example:

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 XT4K 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.

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
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. It varies somewhat depending on whether you work in HD.

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

NEW! 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, 4HD-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, 4HD-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.

NEW!

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.

```
                        SERVER MONITORING PAGE 5                       .st
SH+ESC:VGA EXPLORER                      Sh+F4:Network Monitoring F9:CLIP F10:PLST

   Input Monitoring

                     IN 1        IN 2        IN 3        IN 4        IN 5
   CRC errors:       0x00000000  0x00000000  0x00000000  0x00000000  0x00000000
   Pvid errors:      0x00000000  0x00000000  0x00000000  0x00000000  0x00000000


                     IN 6
   CRC errors:       0x00000000
   Pvid errors:      0x00000000








   ALT+R: RESET

TAB:SELECT <-/->:CHANGE     PgUp:Pg4 PgDn:Pg6          ALT+Q:EXIT MULTICAM
```

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

This monitoring table will not be displayed when working in SDI mode.

```
                    SERVER MONITORING PAGE ▪                    .d
SH+ESC:VGA EXPLORER              Sh+F4:Network Monitoring F9:CLIP F10:PLST

    Input Monitoring

                    MAC Address
    SFP 1-C:        00:1c:f3:01:c4:73
    SFP 1-D:        00:1c:f3:01:c4:74
    SFP 2-C:        00:1c:f3:01:c4:7b
    SFP 2-D:        00:1c:f3:01:c4:7c
    SFP 3-C:        00:1c:f3:01:c4:83
    SFP 3-D:        00:1c:f3:01:c4:84
    SFP 4-C:        00:1c:f3:01:c5:53
    SFP 4-D:        00:1c:f3:01:c5:54







TAB:SELECT <-/->:CHANGE       PgUp:Pg4 PgDn:Pg6        ALT+Q:EXIT MULTICAM
```

```
                    SERVER MONITORING PAGE ▪                    .d
SH+ESC:VGA EXPLORER              Sh+F4:Network Monitoring F9:CLIP F10:PLST

    Input Monitoring

                    SFP 1C      SFP 1D      SFP 2C      SFP 2D      SFP 3C
    CRC errors:     0x00000000  0x00000000  0x00000000  0x00000000  0x00000000
    Packets OK:     0x00005206  0x00000000  0x0000005f  0x00000060  0x0000005f
    Overflow:       0x00000000  0x00000000  0x00000000  0x00000000  0x00000000
    Pause Frame:    0x00000000  0x00000000  0x00000000  0x00000000  0x00000000


                    SFP 3D      SFP 4C      SFP 4D
    CRC errors:     0x00000000  0x00000000  0x00000000
    Packets OK:     0x00000060  0x00000060  0x00000061
    Overflow:       0x00000000  0x00000000  0x00000000
    Pause Frame:    0x00000000  0x00000000  0x00000000



    ALT+R: RESET

TAB:SELECT <-/->:CHANGE       PgUp:Pg4 PgDn:Pg6        ALT+Q:EXIT MULTICAM
```
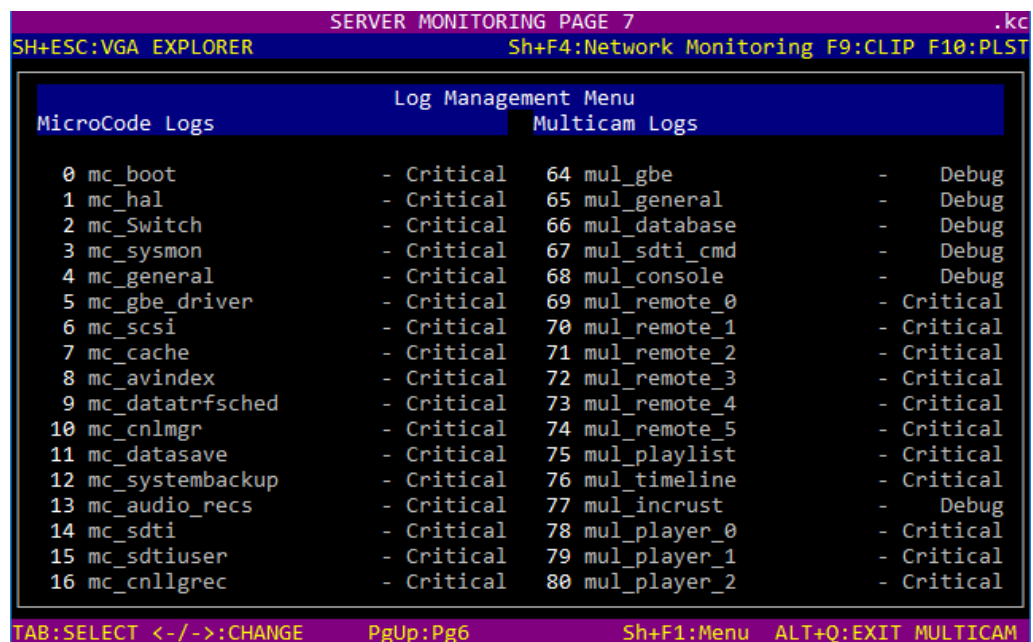
Field Name	Description
MAC Address	MAC address of the V4X SFP+ port
CRC error	The Cyclic Redundancy Check (CRC) validates packets of information sent by devices and verifies it against the data extracted, ensuring its accuracy. CRC errors indicate when data is corrupted. The value returned is the number 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 SFP+ interface. This value shall increase continously.
Overflow	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 SFP+ 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.

6.1.7. 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.

```
                    SERVER MONITORING PAGE 7                          .kc
SH+ESC:VGA EXPLORER               Sh+F4:Network Monitoring F9:CLIP F10:PLST

                         Log Management Menu
     MicroCode Logs                      Multicam Logs

     0 mc_boot            - Critical    64 mul_gbe         -     Debug
     1 mc_hal             - Critical    65 mul_general     -     Debug
     2 mc_Switch          - Critical    66 mul_database    -     Debug
     3 mc_sysmon          - Critical    67 mul_sdti_cmd    -     Debug
     4 mc_general         - Critical    68 mul_console     -     Debug
     5 mc_gbe_driver      - Critical    69 mul_remote_0    - Critical
     6 mc_scsi            - Critical    70 mul_remote_1    - Critical
     7 mc_cache           - Critical    71 mul_remote_2    - Critical
     8 mc_avindex         - Critical    72 mul_remote_3    - Critical
     9 mc_datatrfsched    - Critical    73 mul_remote_4    - Critical
    10 mc_cnlmgr          - Critical    74 mul_remote_5    - Critical
    11 mc_datasave        - Critical    75 mul_playlist    - Critical
    12 mc_systembackup    - Critical    76 mul_timeline    - Critical
    13 mc_audio_recs      - Critical    77 mul_incrust     -     Debug
    14 mc_sdti            - Critical    78 mul_player_0    - Critical
    15 mc_sdtiuser        - Critical    79 mul_player_1    - Critical
    16 mc_cnllgrec        - Critical    80 mul_player_2    - Critical

TAB:SELECT <-/->:CHANGE     PgUp:Pg6        Sh+F1:Menu  ALT+Q:EXIT MULTICAM
```

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.

> **⚠ WARNING**
>
> 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 `C:\LSMCE\DATA\LOG`. Their name starts with an underS-CORE: The regular log file `Multicam_Database.log` is renamed `_Multicam_Database.log` once extracted when the application is running.

> **✎ NOTE**
>
> 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. SDTI Network Monitoring

6.2.1. Overview on SDTI Network Monitoring Windows

The SDTI Network monitoring windows can be accessed via the server-based application when the EVS server is running in a given configuration. To access the SDTI Network Monitoring section, press **SHIFT+F4**.

It consists in the following pages:

- The **SDTI Network Schema** (page 1) shows a schematic representation of the SDTI network.

- The **Hardware Error Counters** (page 2) provides a list of the hardware for which an SDTI-related error has been returned .

6.2.2. SDTI Network Schema

Overview

This page shows a schematic representation of the SDTI network. This allows you to check the SDTI network status, and to see how hardware devices are interconnected on the SDTI network.
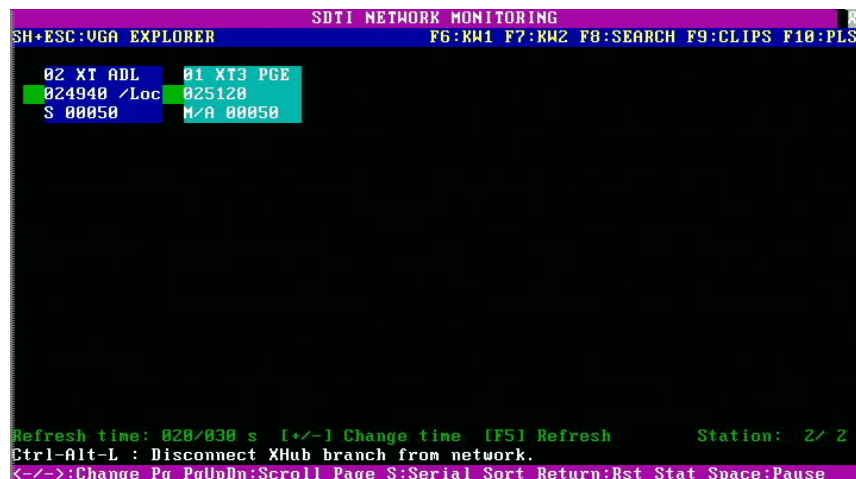
Data Displayed

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 (server, master or client) as defined in the EVS application.

Background Color

The background color of the data related to a given machine means:

- **blue:** effective server
- **gray:** not currently server

Text Color

The color of the text indicates the video network overload, based on how many SDTI 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

The color of the link indicates the physical link status between two machines:

- **green:** OK
- **red:** errors

Possible Actions

- Pressing **S** changes the presentation of the SDTI 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 SDTI network schema

- Pressing **RIGHT ARROW** to display the second SDTI 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 327 for more information.

6.2.3. Hardware Error Counters

The second page of the SDTI monitoring section provides a list of the hardware devices present on the SDTI network, sorted by serial number, with error counters information.

```
                        SDTI NETWORK MONITORING                        Z
SH+ESC:VGA EXPLORER              F6:KW1 F7:KW2 F8:SEARCH F9:CLIPS F10:PLST
SDTI  Sn     PrvSn   Name   CpLk   Frm    Mb     TimeOut
S02L  024940 025120  XT ADL 00000  00134  37          0
M01   025120 024940  XT3 PGE 00000 42736  37          0




Refresh time: 003/030 s  [+/-] Change time  [F5] Refresh    Station:  2/ 2
Ctrl-Alt-L : Disconnect XHub branch from network.              Scroll:1/2
<-/->:Change Pg PgUpDn:Scroll Page S:Serial Sort Return:Rst Stat Space:Pause
```

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.

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 SDTI network or troubleshooting an SDTI 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 SDTI 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 SDTI 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. Protocols

6.3.1. 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.

6.3.2. Sony BVW75

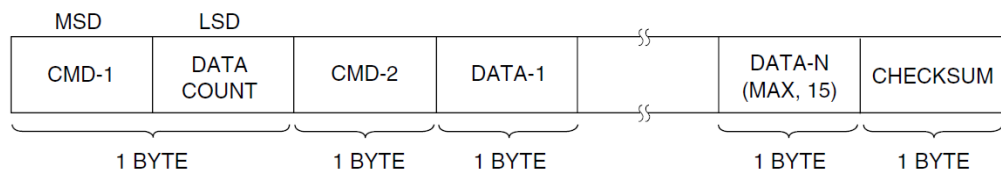## Protocol Capabilities

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
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

Command	Return
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
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

6.3.3. XTENDD35

Protocol Capabilities

The XTendDD35 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.

6.3.4. 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

Command	Return
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.

6.3.5. 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

STX	BC	CMD1	CMD2	Data 1	…	DataN	Check Sum

1 byte
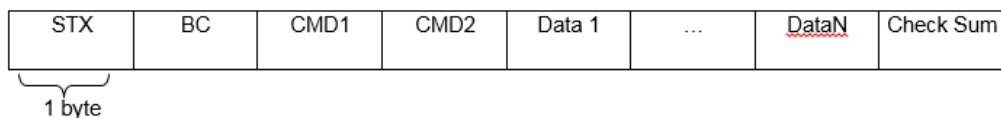
where:

- 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

Command		Return
VarID mode	**8-bytes ID mode**	**Return**
B0.02	30.02 Next	B0/30.82 Next ID
B0.03	30.03 Last	B0/30.83 Last ID
-	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.

7.   Truck Manager Plugin

7.1.   Introduction

Plugin Integration into Truck Manager

This chapter describes the Multicam plugin for the Truck Manager application.

The Multicam plugin consists of a list of operational settings relevant for Multicam. These settings are displayed in a specific area in the Truck Manager application, in the lower part of the Configuration pane.

The Multicam plugin allows users to define and apply remotely the settings required for the Multicam application to be operational.

Plugin Delivery

The plugin is delivered with the Multicam application.

The Truck Manager application automatically downloads the right plugin version when it connects to an EVS server for the first time on a given setup.

For this reason, the version of the Truck Manager is not tied to a given plugin version of the Multicam application.

7.2.   Plugin Overview

Introduction

The Multicam plugin contains the elements highlighted on the screenshot below:

Description

The table below describes the various elements of the Multicam plugin:
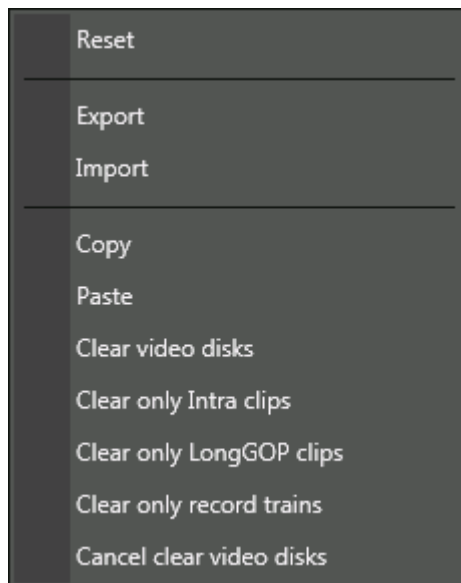
Part	Name	Description
1.	Plugin name	Field to expand or collapse the plugin area.
2.	**Apply** button	Button to apply the parameter values to Multicam.
3.	**Menu** icon	Icon to open the contextual menu, which provides general commands, or commands specific to Multicam. See section "Contextual Menu" on page 339.
4.	Configuration Area	Area that allows users to select the configuration line, and access the advanced Multitcam parameters. See section "Configuration Area" on page 340.
5.	Server Area	Area that allows users to set the main server parameters of Multicam. See section "Server Area" on page 341.
6.	Channels Area	Area that allows users to set the main channels parameters of Multicam. See section "Channels Area" on page 343.
7.	Network Area	Area that allows users to set the main network parameters of Multicam. See section "Network Area" on page 348

7.3. Contextual Menu

Introduction

The following contextual menu is available when you click on the contextual menu icon
≡ in the Multicam plugin in Truck Manager.

The contextual menu provides general commands, and commands specific to Multicam.

Reset
Export
Import
Copy
Paste
Clear video disks
Clear only Intra clips
Clear only LongGOP clips
Clear only record trains
Cancel clear video disks

Command Description

The table below describes the various commands of the contextual menu:

Command Name	Select that command to ...
Reset	Reset the values defined in the plugin to the values currently defined in the Multicamapplication.
Export	Export all setting values associated to the Multicam application to a .cnf file named according to the following pattern `<Name>-<ProductName>.cnf.`
Import	Import the setting values stored in a .cnf file into the application plugin.
Copy	Copy to the clipboard the parameters associated to the Multicam application.
Paste	Paste to another application the parameters previously copied to the clipboard.
Clear video disks	Delete all clips, playlists and record trains on the EVS server when users launch a new configuration.

Command Name	Select that command to ...
Clear only Intra clips	Delete all clips and playlists in an Intra essence on the EVS server. Not applicable on XT4K server.
Clear only LongGOP clips	Delete all clips and playlists in a LongGOP essence on the EVS server. Not applicable on XT4K server.
Clear only record trains	Delete the record trains on the EVS server.
Cancel clear video disks	Cancel the clear video disks command previously issued.

7.4.   Configuration Area

Introduction

This section describes the Configuration area located above the settings in the Multicam plugin:
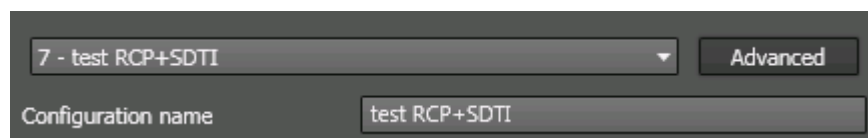
Field Description

The following table describes the fields in the Configuration area from left to right, and form top to bottom:

Item	Use this item to ...
Configuration Selection field	Select the Multicam configuration you want to edit in the Truck Manager.
Advanced button	Access the web-based interface of the Multicam Configuration window, and to access the advanced parameters not available in the Truck Manager.
Configuration Name field	Change the name of the selected configuration.

7.5.   Server Area

Introduction

This section describes the various settings available in the Server area.

Once you have specified the requested values for the various settings, click the **Apply** button to apply the values remotely to Multicam.

Video

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)

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** (only available with code 22) In UHD-4K: • **UHDTV-4K**

Codec Intra

Codec

Description	Algorithm used to compress and decompress 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, 422 LT, 422 HQ • AVC-Intra 100 • XAVC-Intra 100 In UHD-4K: • XAVC-Intra 300, 480 See section "Codec Availability" on page 128 for detailed information on codec availability.

Bitrate

Description	Number of megabits processed per second (Mbps). The bitrate depends on the codec.
Values	See section "Codec-Related Information" on page 129 for detailed information on bitrates per codec.

Codec Proxy

Codec

Description	Algorithm used to compress and decompress 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

Bitrate

See section "Bitrate" on page 342.

7.6. Channels Area

Introduction

This section describes the various settings available in the Channels area.

Once you have specify the requested values for the various settings, click the **Apply** button to apply the values remotely to Multicam.

Base Settings

Inputs

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 XT4K: 0-12 (Spotbox), 1-10 (LSM/XSense) See section "About Supported Configurations" on page 49 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 XT4K: 0-6 (Spotbox), 1-6 (LSM/XSense) See section "About Supported Configurations" on page 49 for more information on number of record channels and on supported configurations.

Base Config.

The default values are only applicable to the settings in the Multicam application, not to the settings in the Truck Manager plugin.

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 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 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: 101 and/or 103 … 109 + 111 and/or 112 + 96
	• **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)
Default value	Multicam LSM

UHD format

Availability	The parameter is only available when the UHDTV-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. • **square division**: the UHD-4K is transported as four 1080p quadrants.
Default value	two-sample interleave

Interface

Availability	The parameter is only available with one of the following license code active or with the following hardware: • code 22 (3G-SDI interface in 1080p) • code 27 (UHD-4K resolution) • 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 frame of an UHD-4K image. ◦ available with code 22 (1080p 3G) or code 27 (UHDTV-4K). • **12G**: 12G-SDI connection for an UHD-4K image. ◦ available with code 27 (UHDTV-4K) with 12G or XIP rear panels. • **XIP**: V4X 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

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).

SLSM Settings

Number of cameras

Description	Number of SLSM cameras 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

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
Default value	2x

Audio Settings

Description	Number of mono audio tracks associated to each video channel. See section "Number of Audio Tracks" on page 163
Values	4 Monos (default), 8 Monos, 16 Monos

Port Settings

Port #1 - #6

The default value is only applicable to the settings in the Multicam application, not to the settings in the Truck Manager plugin.

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 96) • EVS IPDP (code 120 or 121) • Sony BVW75 (code 118) • XtenDD35 (code 118) • Odetics (code 119) • VDCP (code 119) • EVS AVSP (code 120 or 121) • LinX (code 123)

Channel and Control Settings

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 149 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.

7.7.   Network Area

Introduction

This section describes the various settings available in the Network area.

Once you have specify the requested values for the various settings, click the **Apply** button to apply the values remotely to Multicam.

SDTI

Speed

Description	Enables the selection of the SDTI option and the bandwidth for the XNet network. On the XT4K server, there is one pair of SDTI connectors: XNet2 No Relay connectors are used at 2970 Mbps. The SDTI circuit is closed only when the Multicam software is started.
Values	The following values are available: • No Relay 2970 (Mbps) • Off

Net Name

Description	Machine name on the SDTI 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.

Type

Description	Defines the privileges of the EVS server on the SDTI network.
Values	The following values are possible: • **Client:** It cannot access the content on other EVS servers. • **Master:** It can access all content on other EVS servers. • **Server:** It manages the SDTI network, and it can access all content on other EVS servers. Only one EVS server on the network should be set to Server type. If no Server type is defined on the network, XNet will not be established. If more than one EVS server is defined as Server type, only the first one to connect will be the actual Server. Whatever the server type defined, the content of an EVS server can be accessed without restrictions by the other EVS servers (with type Master or Server) on the SDTI network.

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	Range between 1 and 29

Gigabit IP Configuration

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.

Glossary

3

3G-SDI

Interface to transfer digital video content. It consists of a single 2.970 Gbit/s serial link. It is standardized in SMPTE 424M and replaces the dual link HD-SDI.

3G Level-A

3G-SDI interface in which the 3G digital video stream is transferred as a single 3G-SDI stream.

C

Cable

Part of a cable that arrives from the camera and is plugged into a video BNC connector.

Channel

Video connection interface on the V3X codec module. It can be used and assigned as a player or record channel in a given configuration. They are named with J8 for the primary channel when the codec module is used as a recorder, J5 for the secondary channel when the codec module is used as a recorder, J7 for the primary channel when the codec module is used as a player, J3 for the secondary channel when the codec module is used as a player. One channel 3G-SDI can handle a bandwidth equivalent to 2 x HD-SDI.

Codec module

On the rear panel, it refers to a set of 6 BNC connectors labelled as "Codec 1" to "Codec 6". On the V3X board, it refers to the corresponding module board (COD A or COD B) fitted on one of the codec base board. There are two codec modules per codec board.

Connector

Video connection interface (BNC) on the rear panel. The primary connector is named with from 1 to 6, the secondary connector is named from 1B to 6B.

D

Decoder

Processing unit that actually decodes the video signal.

Dual Play

Feature in which both OUT connectors on one codec module are used as two independent player channels.

E

Encoder

Processing unit that actually encodes the video signal.

G

GPI

Abbreviation for General Purpose Interface. This refers to a device used as an communication interface with the EVS server. It has digital lines which may be used for input, output, or both, depending on the function.

H

Hypermotion camera

These are cameras that record at a frame rate much higher than real time. The content recorded at high frame rate on a memory block of the camera buffer is ingested into the EVS server through a single record channel when the operator initiates a play command on the camera. Hypermotion cameras can be controlled by an LSM Remote Panel.

I

Intra-frame codec

Codec type for which the compression techniques are performed relative to information contained within the current frame, and not relative to any other frame in the video sequence. It is shortened by 'intra' in the manual. This is opposed to long-GOP codecs. (Source Wikipedia)

L

Logical channel

Logical player or recorder channel in a given configuration, independent from the physical connections that have to be used to enable this logical channel.

M

Mix on One Channel

Feature that allows using the secondary link of the codec module of a player channel on the V3X board (J3) as the preview channel to provide the PGM/PRV mode with a single codec module.

Multi-Essence configuration

EVS server configuration that allows multiple and simultaneous encoding of the video materal into the server. Intra+ XDCAM is an example of a multi-essence configuration.

Multicam Configuration window

Window in the server-based and web-based Multicam Setup application from where you can define all configuration parameters.

Multicam Setup application

Term used to refer equally to the server-based or web-based user interface used to set up and configure the EVS servers.

Multicam Setup window

Initial Window in the server-based and web-based Multicam Setup application, that is displayed when the EVS server is not running a given configuration yet. It gives access to the configuration lines defined on the EVS server and to the commonly used maintenance

tools.

O

Operational Setup menu

Menu accessible on the Remote Panel using the SHIFT+D keys form the main menu. It allows users to define operational parameters.

OSD

Abbreviation for on-screen display.

P

Physical channel

See also Channel.

Play channel (or Player)

Codec module used as a player.

R

Record channel (or Recorder)

Codec module used as a recorder.

S

SDTI network

EVS proprietary network that allows users to view and share the content of interconnected EVS video servers. 'XNet network' is used as synonym for 'SDTI network'.

Server-Based Multicam Setup application

Server-Based application used to set up and configure the EVS servers. The short form is 'Server-Based application' in this user manual. This is accessible from the EVS Server itself when it has been started.

SLSM camera

Also called Supermotion cameras. These are cameras that record at a frame rate from 2 to 16 times higher than the normal frame rate of 25 frames/sec (PAL) or 29.97 frames/sec (NTSC).

T

Technical Setup menu

Menu accessible on the Remote Panel using the F0 key. It allows users to define currently used configuration parameters.

W

Web-Based Multicam Setup interface

Web-Based interface used to set up and configure the EVS servers. The short form is 'web-based interface' in this manual. This is accessible from any machine (PC or server)

that is on the same network range as the EVS server. This can be accessed from a web browser using the following URL pattern: http://xxx.xxx.xxx.xxx/cfgweb/ where the crosses correspond to the IP address of the PC LAN of the EVS server.

To learn more about EVS go to **www.evs.com**