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MV-8 SERIES CORE MULTIVIEWER

THE CORE MULTIVIEWER INSIDE MV-8XX MULTIVIEWERS

User Manual

RMY3 MV8-UM

Issue 2 Revision 1 2020 July 29, 16:19

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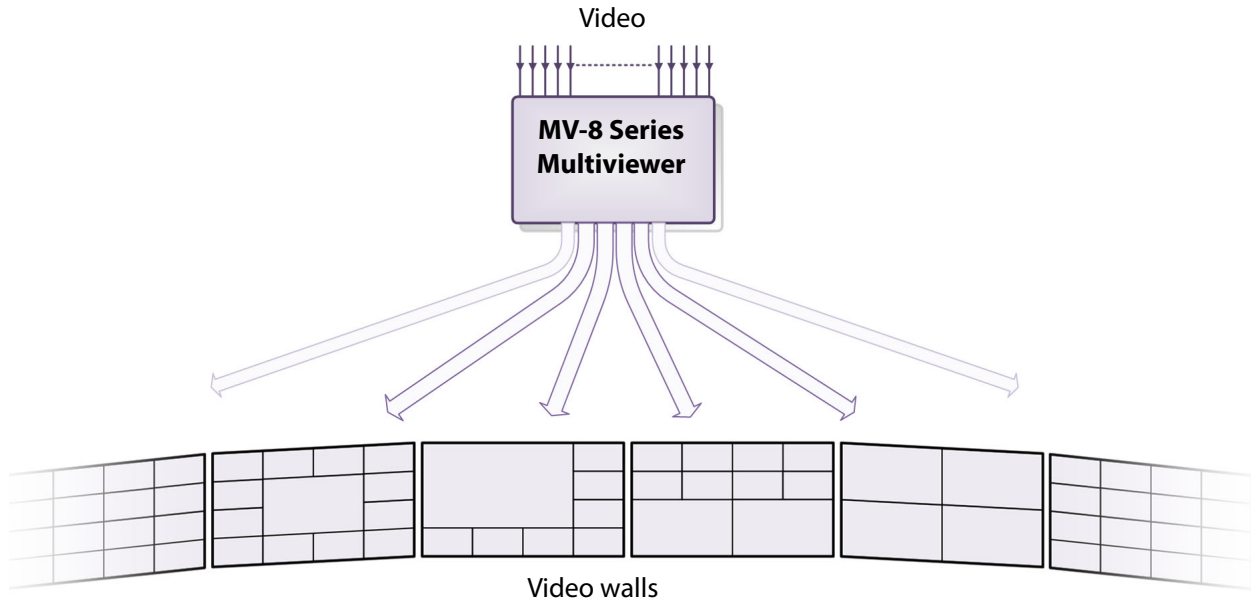
Part Number RMY3 MV8-UM

Revision Issue 2 Revision 1 2020 July 29, 16:19

About this Manual

Thank you for purchasing a Grass Valley multiviewer product which contains an MV-8 Series Core Multiviewer at its core. This user manual describes how to configure and operate the core MV-8 Series Core Multiviewer within your MV-8XX Multiviewer product.

If you have any questions regarding the installation and setup of your product, please contact Grass Valley Customer Support.



Related Documents

The following Grass Valley manuals are related documents:

	Related Document	Description
(This document)	MV-8 Series Core Multiviewer User Manual	Describes the core multiviewer engine within MV-8xx Multiviewer products.
	MV-801 Multiviewer User Manual	Describes physical and specific details of the MV-801 multiviewer product.
	MV-821 Multiviewer User Manual	Describes physical and specific details of MV-821-HDBNC and MV-821-IP products, including video IP rears.
	MV-831 Multiviewer User Manual	Describes physical and format-specific details of the MV-831 Multiviewer product.
	MV-841/851 Multiviewer User Manual	Describes physical and format-specific details of MV-841/851 Multiviewer products.

Document History

Publication Date	Document Number	Issue and Revision	Notes
2019-Mar-14	RMY3 MV8-UM	Iss-1 Rev-1	Original document. Description of the common core multiviewer v3.0 for MV-8X0 Multiviewers. Includes information on: HDR support, Media Biometrics, XDS support, Embedded audio on head display outputs, SNMP support.
2019-Jul-23	RMY3 MV8-UM	Iss-1 Rev-2	Covers emerging MV-8X1 multiviewer products and H.264 license option; and includes the MV-800-DT Orbit option and RTSP streams.
2020-Apr-14	RMY3 MV8-UM	Iss-1 Rev-3	Covers core MV-8 multiviewer s/w v3.2, includes: Input-Copy H.264 streams; HDR on support outputs. MV-821.
2020-Jul-29	RMY3 MV8-UM	Iss-2 Rev-1	Core MV-8 multiviewer s/w version v3.3, includes NTP timestamp in Media Biometrics signature. Document also includes: Input Audio chapter; and sub-sections on: Audio Meters, Input Audio Loudness and Phase. GV Orbit now replaces Orbit in the document and MV-800-DT information is removed.

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Core Multiviewer Overview

The MV-8 Series Core Multiviewer is the core multiviewer “engine” within the Grass Valley MV-8X0/8X1 Multiviewer product range. Various video input and video wall output signal types are supported by the MV-8XX product range.

This user manual describes the MV-8X0/8X1 Multiviewer product range’s common core multiviewer features and includes the features of v3.3 MV-8 Series Multiviewer software. (For descriptions of each specific MV-8X0/8X1 Multiviewer product, please refer to its corresponding product user manual.)



Fig. 1-1: MV-8 Series Multiviewer

An MV-8 Series Multiviewer core “engine” can provide up to 12 multiviewer head display outputs, displaying video tiles from 48 video inputs. Video wall layouts from multi-channel quad-splits to flexible multi-tile screens are available.

Features of MV-8 Series Multiviewer

A core MV-8 Series Multiviewer is found in MV-8X0/8X1 Multiviewer products and for all product-specific information, please refer to the respective product user manual (for example, MV-821 User Manual).

Video Inputs:

- 48 multiviewer video inputs.
- HDR support per input and output.
- Media biometrics support per input.

Up to 12 head display outputs:

- 3G 1080p or HD 720p head display outputs with embedded audio.
- 4K UHD support with four head display outputs used together as quad-link.
- Four head display outputs on a baseline MV-8 Series Multiviewer model. More head display outputs enabled with licenses.
- Video walls designed with the GV Orbit Client software tool.

Screen layout flexibility:

- Additionally display web pages, automation play lists, device status screens etc.
- Display status and alarms from external devices.
- Drag and Drop objects onto the screen layout and tailor custom on-screen functionality.
- Adjustable layering, transparencies and fine-positioning.

Flexible alarm capability:

- Monitoring of video, audio and metadata, with alarm notifications.
- Intelligent monitoring of external devices, with configurable on-screen alarms.
- Control and acknowledgment of alarms from hardware- and soft-panels.

H.264 Streaming out of MV-8 Series Multiviewer ‘Input-copies’:

- Extend and expand monitoring with this licensed option.
- MV-8 Series Core Multiviewer inputs may be scaled and compressed to create H.264-encoded copies which can then be streamed out over an IP connection.
Note: An MV-8X1 unit requires a ‘H.264 stream’ license.
- Viewable on a desktop PC with Grass Valley’s GV Orbit software or older Orbit Client software.

New in MV-8 Series Multiviewer Software

V3.3

New features in software v3.3 include:

- NTP timestamp in bio-metric signatures. (See [Media Biometrics Support](#), on page 79.)

Earlier Versions

Features in software v3.2 include:

- Input-copy - scaled/compressed H.264 streams for monitoring (See [Core MV Input-Copy H.264 Streams](#), on page 69.)
- High dynamic range (HDR) input/output support. (See [HDR Support](#), on page 75.)

Features in software v3.0 include:

- High dynamic range (HDR) input support. (See [HDR Support](#), on page 75.)
- Media Biometrics Generators on a per input basis. (See [Media Biometrics Support](#), on page 79.)
- CC.608 extended data services (XDS) support. (See [Extended Data Services Support](#), on page 81.)
- User-defined names for multiviewer video walls/layouts. (See [Layout Control Screen](#), on page 29.)
- Embedded audio on multiviewer head display outputs. (See [Output Embedded Audio Support](#), on page 87.)
- SNMP Community Strings user-definable. (See [SNMP Community Strings box](#), on page 22.)

Order Codes

Table 1-1: Order Codes MV-8 Series Multiviewer

Order Code	Description
Products:	For specific MV-8X0/MV-8X1 product order codes/licenses, refer to the corresponding multiviewer user manual.
Licenses:	A license comprises a code to enable more functionality.
Head outputs:	Enables more multiviewer head display outputs (output 5 onwards). Note: SFPs for extra head display outputs must be ordered separately.
MV-8XX-OP56 ‡	License to enable outputs 5 and 6.
MV-8XX-OP78 ‡	License to enable outputs 7 and 8.
MV-8XX-OP910 ‡	License to enable outputs 9 and 10.
MV-8XX-OP112 ‡	License to enable outputs 11 and 12.
Input-Copies:	
MV-8X1-H264	Enables H.264 streaming out of scaled, H.264-encoded multiviewer input-copies. ('H.264 Stream' license.) Note: This is a factory-installed option on MV-821.
‡ See the corresponding MV-8X0/8X1 Multiviewer product user manual for the respective output license name.	

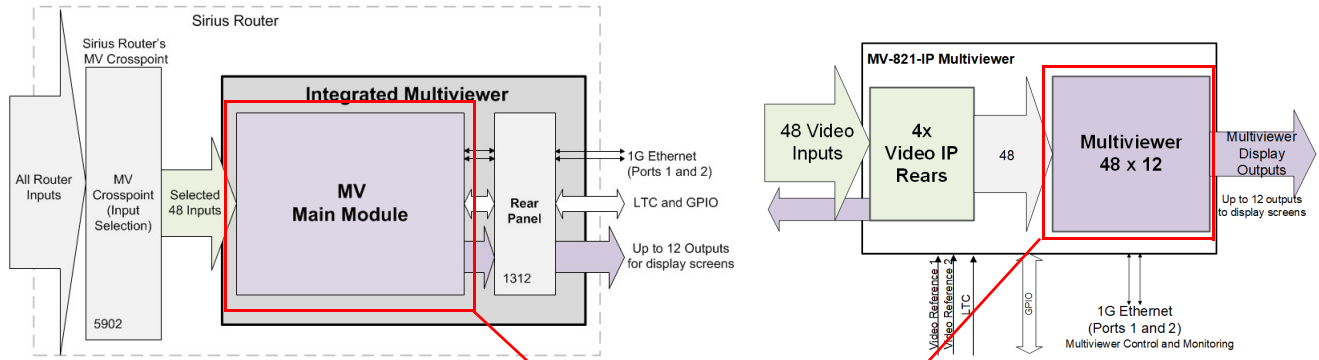
Software Compatibility

Table 1-2: Software Compatibility

Software	Version
MV-8 Series Multiviewer	3.3 or later
RollCall Control Panel	4.19.0 or later
Orbit Client	3.1.15 or later
GV Orbit Client	4.0.0 or later

MV-8 Series Multiviewer Architecture

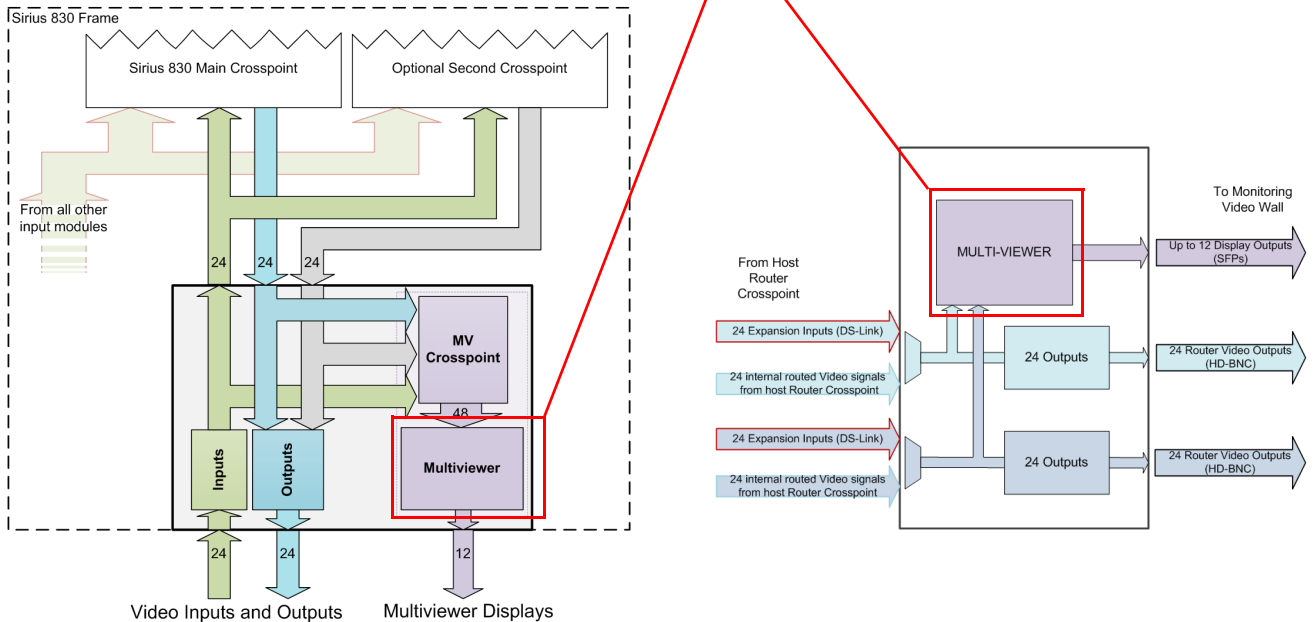
The MV-8 Series Multiviewer is found in the MV-8X0/8X1 Multiviewer range, which covers a multiplicity of products, including multiviewers that are integrated into routers, in standalone boxes, and/or have video IP input capabilities. Figure 1-2 identifies the MV-8 Series Multiviewer “engines” found in MV-8X0/8X1 Multiviewer functional block diagrams.



a) MV-801

b) MV-821-IP

MV-8 Series Core Multiviewer shown in MV-8X0/8X1 Multiviewer product functional block diagrams



c) MV-831

d) MV-841/MV-851

Fig. 1-2: Examples of MV-8 Series Core Multiviewers in MV-8xx Multiviewer Products:

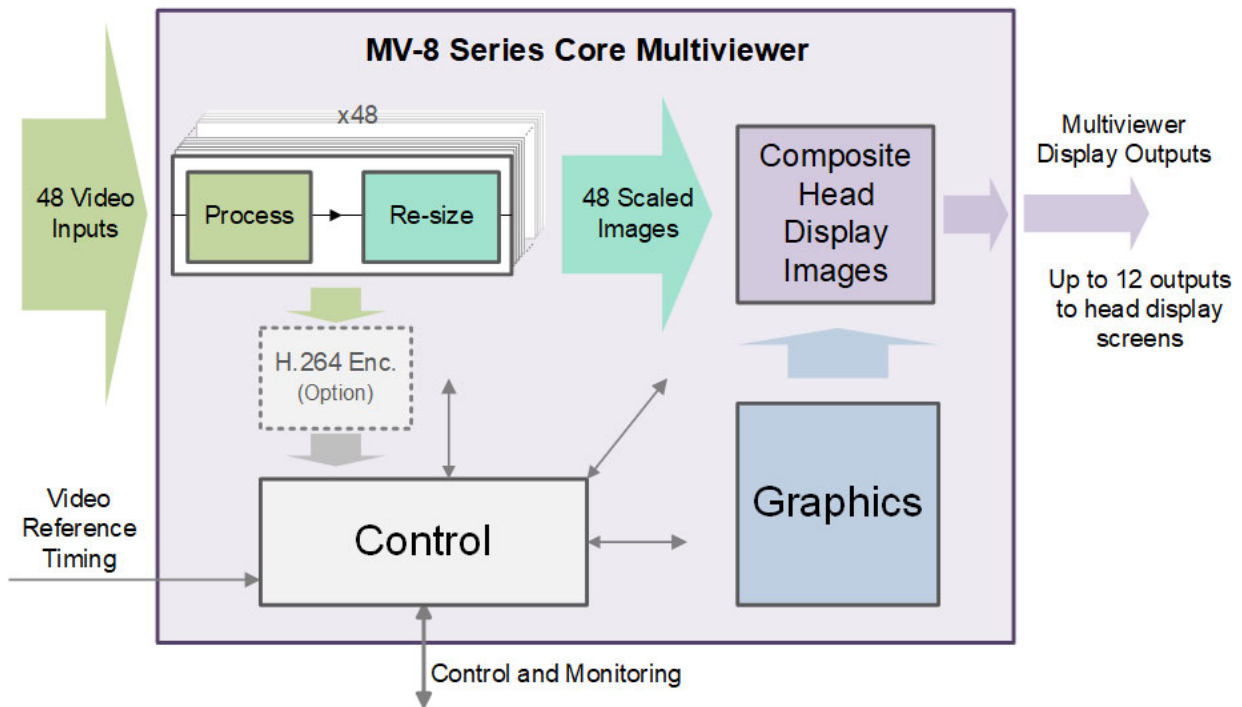


Fig. 1-3: Block Diagram of MV-8 Series Core Multiviewer

Figure 1-3 shows a simplified block diagram of the MV-8 Series Core Multiviewer. The main inputs and outputs of the MV-8 Series Multiviewer come from or go to the MV-8X0/MV-8X1 product and comprise:

- 48 Video Inputs.
- Video Reference Timing.
- Up to 12 Multiviewer Head Display Outputs.
- Control and Monitoring.

Each video input is processed and then re-sized. There is one re-sizer (scaler) per input.

Each multiviewer head display image is composited from re-sized video images, rendered graphical images and text.

Note: Each one of the 48 re-sized (scaled) inputs may appear any number of times on any head display output but *with the same re-sizing*.

Input Processing

Each video input undergoes the same processing. Processing includes:

- Status.
- HDR input support.
- Media biometrics.

Additionally, a copy of each video input can be sent to an H.264 scaler/encoder on the MV-8X0/MV-8X1 product and H.264-encoded, scaled-down copies of the video inputs are available as video streams.

Note: An MV-8X1 requires a 'H.264 stream' license, for example, MV-821-H264.

Note: Licensing for MV-821 products involves factory-fitted H.264 encoder modules.

HDR Input Support

The MV-8 Series Multiviewer supports HDR video inputs. Each multiviewer input has a selectable video dynamic range converter (HDR to SDR) which can handle different opto-electrical transfer functions (OETFs) and color space for HDR video inputs.

(See [HDR Support](#), on page 75.)

Media Biometrics on Inputs

The MV-8 Series Multiviewer supports media biometrics on video inputs for media assurance. Each multiviewer input has a media biometrics generator which generates signatures for the input video and for the input audio. The media biometrics generators are fully compatible with Grass Valley's Media Assurance SigMA platform.

(See [Media Biometrics Support](#), on page 79.)

Control and Monitoring

The control and monitoring interface is connected to one or more Ethernet network interfaces on the MV-8X0/MV-8X1 product. It is used for:

- control and monitoring;
- software upgrades and licensing;
- all RollCall messaging; and
- pushing/pulling video wall designs (GV Orbit multiviewer projects).

MV-8 Series Core Multiviewer Set up

Getting Started

Hardware installation is described in the user manual for the respective MV-8X0/MV-8X1 product. For initial getting started instructions, see [Core MV Getting Started](#), on page 115 which includes the basic configuration of the MV-8 Series Multiviewers unit.

Configuring alarms and audio for the core multiviewer is done via GV Orbit Client. See [Getting Started with GV Orbit](#), on page 127, for configuration instructions and a quick introduction to editing a video wall.

Video Wall Design with GV Orbit

The layout and style of video walls are designed with the GV Orbit Client software application: Wall designs are stored as individual projects (GV Orbit multiviewer projects), which are then pushed to an MV-8X0/MV-8X1 unit, for use by the MV-8 Series Core Multiviewer 'engine' inside.

Multiple wall layout designs may be generated and stored on a PC. Different wall designs can then be pushed to the multiviewer unit for various multiviewer applications.

Terminology

See [Multiviewer Terminology](#), on page 189 for some multiviewer terminology and its meaning.

Core MV Control Screens



Core MV Control Screens

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<i>Control Screen Banner</i>	page 11
<i>Control Screen Selection</i>	page 11
<i>System Box</i>	page 12
<i>NTP Status Box</i>	page 12
<i>Settings Changes and System Reset</i>	page 13
<i>System-Setup Control Screen</i>	page 14
<i>"System Reset" box</i>	page 16
<i>"Product" box</i>	page 17
<i>"Network Settings" box</i>	page 17
<i>"NTP Servers" box</i>	page 18
<i>"Router Controller Settings" box</i>	page 18
<i>"RollCall Settings" box</i>	page 19
<i>"Output Format" box</i>	page 19
<i>"Reference Input" box</i>	page 20
<i>"Streamed Output" box</i>	page 20
<i>"Information" box</i>	page 21
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<i>Biometrics Setup Control Screen</i>	page 40
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<i>Audio Codec Select Control Screen</i>	page 45

Introduction

This section describes the control screens (RollCall templates) of an MV-8 Series Core Multiviewer and is common to MV-8X0/8X1 Multiviewer products.

Note:

For multiviewer products which contain a core multiviewer plus one or more other functional block(s) which may require configuration, please also refer to the respective multiviewer user manual.

For example:

The MV-821 has an IP variant, MV-821-IP, and this contains four video IP rears which are configured separately. Please refer to the MV-821 Multiviewer user manual for video IP rear configuration.

Following initial configuration of the multiviewer, the control screen may then be used to configure and control various operational multiviewer items, including: selection of video wall layouts; monitoring alarm status; acknowledging alarms; and control of timer widgets on the video wall.

The control screens can be viewed with GV Orbit Client, or RollCall Control Panel.

Control Screen Banner

Several MV-8 Series Multiviewer control screens are available. The upper, 'banner' section of each control screen is the same, see Figure 2-1.

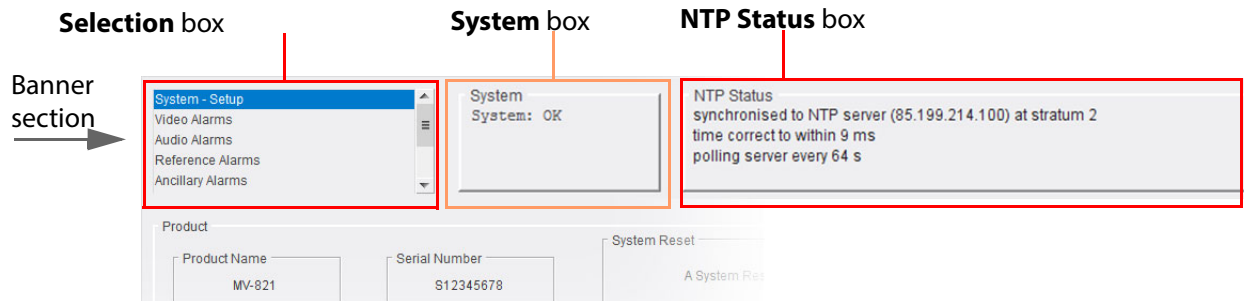


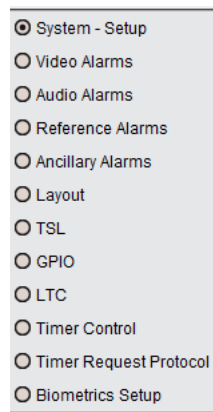
Fig. 2-1: Control Screen Upper 'Banner' Section

Control Screen Selection

MV-8 Series Multiviewer control screens may be selected from the **Selection** box in any control screen:

- | | |
|-------------------------|--|
| System - Setup: | See System-Setup Control Screen on page 14 |
| Video Alarms: | See Video Alarms Control Screen on page 23 |
| Audio Alarms: | See Audio Alarms Control Screen on page 24 |
| Reference Alarms: | See Reference Alarms Control Screen on page 26 |
| Ancillary Alarms: | See Ancillary Alarms Control Screen on page 27 |
| Layout: | See Layout Control Screen on page 29 |
| TSL: | See TSL Control Screen on page 33 |
| GPIO: | See GPIO Control Screen on page 34 |
| LTC: | See LTC Control Screen on page 35 |
| Timer Control: | See Timer Control Screen on page 37 |
| Timer Request Protocol: | See Timer Request Protocol Control Screen on page 39 |
| Media Biometrics: | See Biometrics Setup Control Screen on page 40 |
| HDR Setup: | See HDR Setup Control Screen on page 42 |
| Audio Codec Selection: | See Audio Codec Select Control Screen on page 45 |

A control screen may be accessed quickly from any of the control screens by right-clicking anywhere in a control screen and then selecting a control screen name in the full list that appears.



Right-click on a control screen to see this list; then click on a control screen name to access the control screen.

Fig. 2-2: Full List of MV-8 Series Multiviewer Control Screens

System Box

A control screen's **System box** (see Figure 2-1) displays the multiviewer system status at the top of each control screen:

- **OK** - the multiviewer is working correctly.
- **Fail** - the multiviewer has a problem.
- **Restart Required** - the MV-8 Series Core Multiviewer requires a restart. (This is indicated for some configuration changes which require a restart before the change takes effect.)

NTP Status Box

A control screen's **NTP Status box** (see Figure 2-1) displays the status of the multiviewer's network time (network time protocol, NTP) at the top of each control screen.

Settings Changes and System Reset

Settings changes can be done at any time. But settings changes done in the **System-Setup** control screen *will* need a 'System Reset'.

Settings changes outside of the **System-Setup** control screen do not require a system reset to be carried out. These settings include:

- **Video alarms** - See [Video Alarms Control Screen](#) on page 23
- **Audio alarms** - See [Audio Alarms Control Screen](#) on page 24
- **Reference alarms** - See [Ancillary Alarms Control Screen](#) on page 27
- **Ancillary data alarms** - See [Ancillary Alarms Control Screen](#) on page 27
- **Layout settings** - See [Layout Control Screen](#) on page 29
- **TSL settings** - See [TSL Control Screen](#) on page 33
- **GPIO settings** - See [GPIO Control Screen](#) on page 34
- **LTC settings** - See [LTC Control Screen](#) on page 35
- **Video wall timer control** - See [Timer Control Screen](#) on page 37
- **Timer Request Protocol** - See [Timer Request Protocol Control Screen](#) on page 39
- **Media Biometrics** - See [Biometrics Setup Control Screen](#) on page 40

CAUTION

Some **System-Setup** control screen changes may affect the MV-8X0/8X1 Multiviewer unit's network operation.

IMPORTANT

A **System Reset** of the multiviewer is required after settings changes are made in the RollCall **System-Setup** control screen.

Such a reset will affect all MV-8X0/8X1 Multiviewer product's connections, including the multiviewer outputs. See "[System Reset](#)" box, on page 16.

When the MV-8 Series Multiviewer has re-booted, the new settings will be adopted.

System-Setup Control Screen

Note: The multiviewer must be **System Reset** for any saved setting changes to take effect, "[System Reset](#)" box, on page 16.

The **System-Setup** control screen (see Figure 2-3) comprises various information boxes which display basic information about the multiviewer, for example, system status, product name and software version. It is also used to setup the following system details:

- Networking.
- NTP servers.
- Router controller addresses.
- RollCall settings.
- Multiviewer monitor output format.
- Multiviewer name.
- Multiviewer Input H.264 streaming out.
- SNMP settings.

Product Product Name: MV-800 Serial Number: S56040815 Software Version: 3.0A.72 Build Number: 3.0.10 FPGA Version: 280		System Reset A System Reset is Required for Changes to Take Effect. Pressing "System Reset" will result in outputs from the Multiviewer being interrupted. <input type="button" value="System Reset"/> <input type="button" value="Cancel"/> <input type="button" value="Confirm"/>
Network Settings		
1G1 Interface IP Address: 10.162.51.170 <input type="button" value="P"/> <input type="button" value="S"/> Subnet Mask: 255.255.0.0/16 MAC Address: 00:23:70:00:05:81 DHCP: <input type="checkbox"/> Enabled Default Gateway Address: 10.162.254.1 <input type="button" value="P"/> <input type="button" value="S"/> NIC Bonding:		1G2 Interface IP Address: 10.162.51.171 <input type="button" value="P"/> <input type="button" value="S"/> Subnet Mask: 255.255.0.0/16 MAC Address: 00:23:70:00:05:80 DHCP: <input type="checkbox"/> Enabled Default Gateway Address: <input type="button" value="P"/> <input type="button" value="S"/>
Eng Interface IP Address: 10.162.51.172 <input type="button" value="P"/> <input type="button" value="S"/> Subnet Mask: 255.255.0.0/16 MAC Address: 00:e0:4b:52:04:26 DHCP: <input type="checkbox"/> Enabled Default Gateway Address: <input type="button" value="P"/> <input type="button" value="S"/>		DNS Server Primary IP Address: 10.54.1.200 <input type="button" value="P"/> <input type="button" value="S"/> Secondary IP Address: 10.54.1.201 <input type="button" value="P"/> <input type="button" value="S"/>
NTP Servers		
Server 1: 1.uk.pool.ntp.org <input type="button" value="P"/> <input type="button" value="S"/> Server 3: 3.uk.pool.ntp.org <input type="button" value="P"/> <input type="button" value="S"/>		Server 2: 2.uk.pool.ntp.org <input type="button" value="P"/> <input type="button" value="S"/> Server 4: 0.uk.pool.ntp.org <input type="button" value="P"/> <input type="button" value="S"/>
Router Controller Settings		
Main Controller IP Address: 10.162.5.46 <input type="button" value="P"/> <input type="button" value="S"/> IP Port: 2019 <input type="button" value="P"/> <input type="button" value="S"/> Source name length: 8		Backup Controller IP Address: 10.162.5.47 <input type="button" value="P"/> <input type="button" value="S"/> IP Port: 2019 <input type="button" value="P"/> <input type="button" value="S"/>
RollCall Settings		
RollCall Network: FFFF <input type="button" value="P"/> <input type="button" value="S"/> Ethernet Interface: 1G1		RollCall Unit: 70 <input type="button" value="P"/> <input type="button" value="S"/> RollCall Port: 00 RollCall IP Port: 2050 <input type="button" value="P"/> <input type="button" value="S"/> Domain ID: 170 <input type="button" value="P"/> <input type="button" value="S"/>
Output Format Format Selection: 1080p50 Reference Input Reference Selection: Reference IP 1 Video Output Phase Adjust: 0 <input type="button" value="P"/> <input type="button" value="S"/>		
Streamed Output Ethernet Interface: 1G1 IP Port: 8554 <input type="button" value="P"/> <input type="button" value="S"/> Multicast Group Base Address: <input type="button" value="P"/> <input type="button" value="S"/> Enable: <input checked="" type="checkbox"/>		
Information		
Name: Validation MV-800 <input type="button" value="P"/> <input type="button" value="S"/> Notes: DDS=170, RollCall=70 <input type="button" value="P"/> <input type="button" value="S"/>		Location: Validation Rack <input type="button" value="P"/> <input type="button" value="S"/>
SNMP Managers		
IP Address 1: 10.162.64.90 <input type="button" value="P"/> <input type="button" value="S"/> IP Address 5: <input type="button" value="P"/> <input type="button" value="S"/>		IP Address 2: <input type="button" value="P"/> <input type="button" value="S"/> IP Address 6: <input type="button" value="P"/> <input type="button" value="S"/> IP Address 3: <input type="button" value="P"/> <input type="button" value="S"/> IP Address 7: <input type="button" value="P"/> <input type="button" value="S"/> IP Address 4: <input type="button" value="P"/> <input type="button" value="S"/> IP Address 8: <input type="button" value="P"/> <input type="button" value="S"/>
SNMP Community Strings		
Get: public <input type="button" value="P"/> <input type="button" value="S"/> Trap: trap <input type="button" value="P"/> <input type="button" value="S"/>		Set: private <input type="button" value="P"/> <input type="button" value="S"/>

Fig. 2-3: Multiviewer System-Setup Control Screen

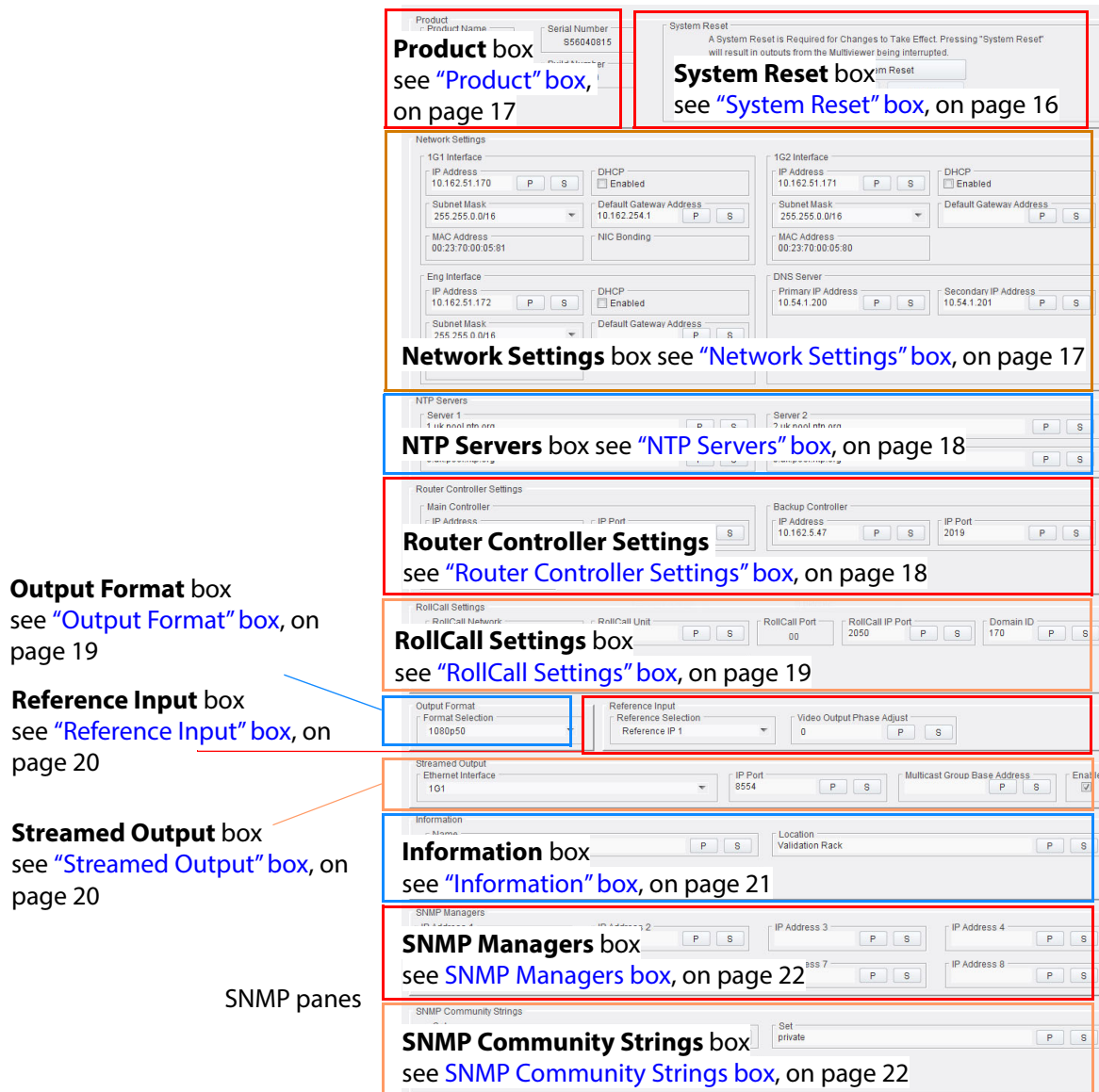


Fig. 2-4: System-Setup Control Screen Boxes

"System Reset" box

This box contains a **System Reset** button which resets (reboots) the MV-8 Series Multiviewer Multiviewer. This is used to make any **System-Setup** control screen configuration setting changes take effect. Performing a system reset makes the multiviewer use the new settings.

A system reset reboots the multiviewer by effectively powering it down and then powering it back up: This will interrupt and produce a picture disturbance on all MV-8 Series Multiviewer multiviewer outputs.

IMPORTANT A system reset of the multiviewer will affect all outputs.

Once all changes in the **System-Setup** control screen have been done, carry out a system reset:

- 1 Click on the **System Reset** button.
- 2 Then click on the **Confirm** button to perform a system reset.
Or click the **Cancel** button to abort the system reset.

See [Booting and Splash Screen](#), on page 9, for more information on module booting.

“Product” box

Displays multiviewer details:

- **Product** - The name of the MV-8X0/8X1 Multiviewer product containing the MV-8 Series Multiviewer.
- **Serial Number** - The serial number of the product.
- **Software Version** - The currently installed software version number.
- **Build Number** - The currently installed software build number.
- **FPGA Version** - The currently installed FPGA firmware version number.

“Network Settings” box

The Network Settings area of the **System - Setup** control screen shows the MAC addresses and any network interface bonding status of each of the MV-8 Series Multiviewer IP network interfaces and is used to set the network details for each of the MV-8 Series Multiviewer IP interfaces.

Network interfaces covered:

- 2-off 1G Ethernet interfaces (“1G1”, “1G2”).
(MV-8 Series Multiviewer default IP addresses are given the respective MV-8X0/8X1 Multiviewer product user manual.)
- 1-off “Eng” Interface, default IP address 10.54.31.224.
(Reserved for Grass Valley engineering use.)

Note: **“S” and “P” buttons** -

After entering information in each text box, always click on the adjacent **“S”** button or press **“return”** to locally save the new setting. Do this for each text box.
(Note: Clicking on the **“P”** button will return the setting to its preset default value).

“S” - Locally save new setting value (or press “return”).

“P” - Locally save default setting value.

Enter all the network interface details in the text boxes:

- **IP Address** - Set the interface IP Address.
- **Subnet Mask** - Set the interface Subnet Mask.

- **Default Gateway Address** - Set the interface Gateway address.
- **MAC address** - Displays the IP interface MAC address.
- **DHCP - Enabled** check box:
 - Select to automatically set the IP address details from the network DHCP server.
 - Leave box deselected to use the entered IP address settings.
- **DNS Server** - Set the primary and secondary DNS server IP addresses.

Note: The IP address details are only used when the corresponding “DHCP Enabled” box is deselected.

Note: At the next **System Reset**, the MV-8 Series Multiviewer will adopt all the locally saved settings.

“NTP Servers” box

Up to four NTP (Network Time Protocol) server URLs or IP addresses can be configured. The NTP servers are used to synchronize clocks displayed on multiviewer video walls with the specified NTP server.

Note: “S” and “P” buttons - After entering information in each text box, always click on the adjacent “S” button or press “return” to locally save the new setting. Do this for each text box. (Note: Clicking on the “P” button will return the setting to its preset default value).

- **NTP Server Address** - Enter the NTP server address in the text box and click on the **S** button to save the new setting. Do this for each address entered.

“Router Controller Settings” box

A Grass Valley router frame may provide input video to a multiviewer; the router will have a main router controller and possibly a backup controller. The IP address and IP port details of both router controllers are set up in this box: Port details must correspond to port settings in the router configuration.

This allows a multiviewer to display source tallies for the video inputs being displayed by the multiviewer and also to control router crosspoints when necessary.

Note: “S” and “P” buttons - After entering information in each text box, always click on the adjacent “S” button or press “return” to locally save the new setting. Do this for each text box. (Note: Clicking on the “P” button will return the setting to its preset default value).

For the main router controller and for the backup controller, enter

- **IP Address** - Set the router controller IP address.
- **IP Port** - Use the default controller IP port number, unless the port has been changed on the router controller.
Click on the **P** button to return the setting to its default value, if required.

Enter the source name length (number of characters):

- 4, 8, 12, 16 or 32.

“RollCall Settings” box

The RollCall settings are used to allow GV Orbit Client software applications to control the MV-8 Series Core Multiviewer and should normally be changed if you have multiple MV-8 Series Multiviewer units on the same RollCall network.

Note: “S” and “P” buttons - After entering information in each text box, always click on the adjacent “S” button or press “return” to locally save the new setting. Do this for each text box. (Note: Clicking on the “P” button will return the setting to its preset default value).

- **RollCall Network** - Displays the RollCall address, which may not be changed. It is not an IP network address.

Note: A RollCall address has the form: NNNN:UU:PP

where:

NNNN is the RollCall network number.

UU is the RollCall unit number.

PP is the multiviewer input number (01, 02 etc).

- **RollCall Unit** - Set the RollCall unit number. The unit number must be unique for each Multiviewer being configured. The initial default value is “01”.
- **RollCall Port** - Displays the RollCall port number.
- **RollCall IP Port** - IP port number used by RollCall messages. This can usually be left to its displayed value.
- **Domain ID** - RollCall+ uses the concept of domains to partition a RollCall network. Only those RollCall-enabled devices on the same RollCall+ Domain can communicate with one another. A domain is uniquely identified with a **Domain ID** number. **Domain ID** is also used by GV Orbit software when connecting to an MV-8 Series Core Multiviewer.
 - The **Domain ID** can typically be left at its default value, 100. (This default value is reserved for multiviewer RollCall traffic.)
 - To reset the **Domain ID** to the default value of 100 click on the **P** button.
 - To set the **Domain ID**, enter the Domain ID number in the text box and click the **S** button to locally save the new setting.
- **Ethernet Interface** - Set which multiviewer IP interface to use for RollCall messages. The selected interface must be connected to the network.

“Output Format” box

MV-8 Series Multiviewer multiviewer head display outputs can be 1080p or 720p.

The **Output Format** setting sets the format and frame rate for *all* of the multiviewer head display outputs. All outputs share the same format and timing.

Note: When changing output format, a GV Orbit multiviewer project change is required.

Note: When driving a 4K monitor, each MV-8 Series Multiviewer multiviewer head display output drives one quadrant of the 4K monitor.

Some 4K monitors have four 1080p inputs, so they can be fed from four MV-8 Series Multiviewer 1080p outputs. If this is not the case, a separate adapter must be used to convert four MV-8 Series Multiviewer multiviewer head display outputs to a single 4K signal suitable for the monitor.

"Reference Input" box

Set which router/unit reference input is used by the MV-8 Series Multiviewer to synchronize its head display outputs to. Select reference source from the drop down list. Settings choices are:

- Reference IP 1. (Rear panel analog reference input 1.)
- Reference IP 2. (Rear panel analog reference input 2.)
- Reference IP 3. (Rear panel analog reference input 3, on router-integrated multiviewers.)
- Reference IP 4. (Rear panel analog reference input 4, on router-integrated multiviewers.)
- Free Run.

Note: On the MV-820/821-IP products, there is only one rear analog reference input.

"Streamed Output" box

The **Streamed Output** settings box contains details about the 'H.264 streaming' out of multiviewer video input-copies. (This is a licensable codec option on MV-8X1 multiviewer units - 'H.264 stream' license option - and with factory-fitted hardware being required for the MV-821.)

Multiviewer video inputs are scaled-down (to standard definition size) and streamed out as multicast H.264-compressed copies of each input, one RTSP stream per multiviewer video input.

- **Ethernet Interface** - Select Ethernet interface, port 1 (1G1) or port 2 (1G2). This setting must be the same as the **RollCall Ethernet Interface** setting in the RollCall box of the **System-Setup** control screen.
- **IP Port** - Typically, use the default value.
- **Multicast Group Base Address** - The base IP address for multicast **Streamed Output**. Enter an IPv4 IP address in the range: 232.0.0.0 to 232.255.255.207. Click "S" to save a new setting.

If left blank, then a multicast base address will be chosen randomly from the range 232.0.0.0 to 232.255.255.207.

(See [Multicast Group Addresses](#), on page 21 for more details about the base address

and multicast addresses used.)

- **Enable** - Check box. Select to enable streaming out of the H.264 input-copies.

Multicast Group Addresses

The multicast group addresses used for **Streamed Output** will be sequential, starting at the set base address. There is one H.264-encoded input-copy stream per multiviewer video input.

For example:

- input 1 stream uses 232.0.0.0;
- input 2 stream uses 232.0.0.1;
- input 3 stream uses 232.0.0.2; and so on up to
- input 48 stream uses 232.0.0.47.

A **Multicast Group Base Address** configured on the **System-Setup** control screen must be within the allowed IPv4 range (232.0.0.0 to 232.255.255.207).

If the **Multicast Group Base Address** field on the **System-Setup** control screen is left blank, then a base address is automatically randomly chosen from the IP address allowed range 232.0.0.0 to 232.255.255.207.

Note: A **Multicast Group Base Address** in the range 232.0.0.0 to 232.255.255.207 will use the 'Source-Specific Multicast' assigned local host address block, 232/8, for the multicast addresses.

Define a **Multicast Group Base Address** for:

- An installation which requires particular multicast IP addresses to be used.
- Installations with more than one MV-8 Series Multiviewer device on the network.

Note: If there is more than one MV-8XX device is on the network, then it is recommended that specific **Multicast Base Addresses** are set up in the control screen of each MV-8XX device.

Explanation:

If **Multicast Group Base Address** is left blank, then it is automatically randomly chosen. In this case, there is a small chance that different multiviewers may use some or all of the same multicast addresses for H.264 streamed outputs.

“Information” box

This box contains text fields which can be set up by the user, enabling the user to enter name, location and notes about their multiviewer unit.

To enter/modify text in the text box, type directly into the editable text field and click the **S** button. To return to the default text, click the **P** button.

Note: "S" and "P" buttons - After entering information in each text box, always click on the adjacent "S" button or press "return" to locally save the new setting. Do this for each text box. (Note: Clicking on the "P" button will return the setting to its preset default value).

- **Name** - A meaningful name may be given to the multiviewer unit, making it easier to identify.
Maximum 32 characters.
Remember to press **S** or press **return** to save the name locally.
- **Location** - Multiviewer location details may be entered, to make it easier for the user to locate the multiviewer.
Maximum 64 characters.
Remember to press **S** or press **return** to save the name locally.
- **Notes** - Extra user information about the multiviewer may be entered.
Up to 64 characters can be displayed in the notes field.
Remember to press **S** or press **return** to save the name locally.

SNMP Managers box

This box contains IP addresses of all SNMP manager devices.
Enter each IP address.

SNMP Community Strings box

This box lists the SNMP community strings for SNMP Get, Set and Trap message types.
Enter the strings for each SNMP message type

System Reset to Implement Settings Changes

After all **System-Setup** control screen settings changes have been made, an MV-8 Series Multiviewer System Reset is required. See "[System Reset](#)" box, on page 16.

Video Alarms Control Screen

The **Video Alarms** control screen allows the user to:

- See the state of alarms related to the video picture for each MV-8 Series Multiviewer input
- Acknowledge alarms.

Note: Alarms can be viewed and acknowledged on this control screen.
Multiviewer alarms are set up with the GV Orbit Client software application.

The MV-8 Series Multiviewer input video number is selected by the **Video Input Selection** drop-down menu box. See Figure 2-5.

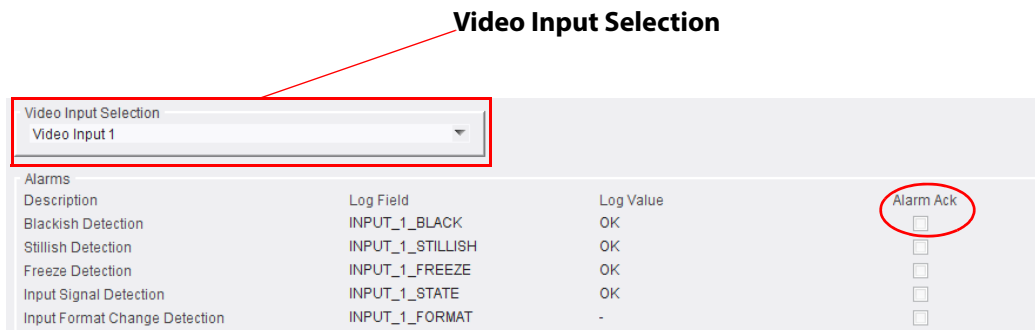


Fig. 2-5: Video Alarms Control Screen

To acknowledge an alarm, select the corresponding **Alarm Ack** check box on the right-hand side of the control screen.

Table 2-1: Video Alarms

Alarm	Description
Blackish Detection	Active when the video picture is detected to be black or nearly black.
Stillish Detection	Active when the video picture is detected to have no motion present.
Freeze Detection	Active when the video picture is frozen.
Input Signal Detection	Active when no input signal is detected.
Input Format Change Detected	Active when a change of video format is detected at an input. For example, from 1080p to 720p.

Audio Alarms Control Screen

The **Audio Alarms** control screen allows the user to:

- See the state of alarms related to embedded audio channels accompanying the video picture for each multiviewer input.
- Acknowledge alarms.

Note: Alarms can be viewed and acknowledged on this control screen.
Multiviewer alarms are set up with the GV Orbit Client software application.

Figure 2-6 on page 25 shows the **Audio Alarms** control screen.

The video input number is selected by the **Video Input Selection** drop-down menu box.

There are 32 audio channels per video input, i.e. 16 stereo pairs.

Audio channels, or channel pairs, are selected with the **Audio Channel Selection** pull-down box, in groups of eight (i.e. channels "1 to 8", "9 to 16", "17 to 24" and "25 to 32").

To acknowledge an alarm, select the corresponding **Alarm Ack** check box on the right-hand side of the control screen.

Audio alarms may operate on a per audio channel or channel-pair basis.

Table 2-2: Audio Alarms

Alarm	Channel or Channel-pair	Description
Audio Level	per channel	The following audio level conditions are detected: Silence and Over range.
AC3 Presence	per channel	Checks for the presence of AC3 encoded compressed audio data. Use this if AC3 audio data is expected on the channel.
Dolby E Presence	per channel-pair	Checks for presence of Dolby E encoded compressed audio data. Use this if Dolby E audio data is expected on the channel-pair
PCM Presence	per channel-pair	Checks for the presence of PCM encoded (uncompressed) audio data. Use this if PCM audio data is expected on the channel-pair.
DialNorm Under	per channel-pair	Checks audio normalization levels.
Dolby E Config Changed	per channel-pair	Checks for a change in Dolby E configuration.

System - Setup
Video
Ancillary
Audio
Reference

Video Input Selection
Video Input 1

Audio Channel Selection
Channels 1 - 8

Channel	Log Field	Log Value	Alarm Ack
1	INPUT_1_EMBED_AUDIO_1_LEVEL	WARN:Overload	<input type="checkbox"/>
2	INPUT_1_EMBED_AUDIO_2_LEVEL	WARN:Overload	<input type="checkbox"/>
3	INPUT_1_EMBED_AUDIO_3_LEVEL	OK	<input type="checkbox"/>
4	INPUT_1_EMBED_AUDIO_4_LEVEL	OK	<input type="checkbox"/>
5	INPUT_1_EMBED_AUDIO_5_LEVEL	WARN:Silent	<input checked="" type="checkbox"/>
6	INPUT_1_EMBED_AUDIO_6_LEVEL	WARN:Silent	<input checked="" type="checkbox"/>
7	INPUT_1_EMBED_AUDIO_7_LEVEL	WARN:Silent	<input checked="" type="checkbox"/>
8	INPUT_1_EMBED_AUDIO_8_LEVEL	WARN:Silent	<input checked="" type="checkbox"/>

Channel	Log Field	Log Value	Alarm Ack
1	INPUT_1_EMBED_AUDIO_1_AC3_STATE	Unknown	<input type="checkbox"/>
2	INPUT_1_EMBED_AUDIO_2_AC3_STATE	Unknown	<input type="checkbox"/>
3	INPUT_1_EMBED_AUDIO_3_AC3_STATE	Unknown	<input type="checkbox"/>
4	INPUT_1_EMBED_AUDIO_4_AC3_STATE	Unknown	<input type="checkbox"/>
5	INPUT_1_EMBED_AUDIO_5_AC3_STATE	Unknown	<input type="checkbox"/>
6	INPUT_1_EMBED_AUDIO_6_AC3_STATE	Unknown	<input type="checkbox"/>
7	INPUT_1_EMBED_AUDIO_7_AC3_STATE	Unknown	<input type="checkbox"/>
8	INPUT_1_EMBED_AUDIO_8_AC3_STATE	Unknown	<input type="checkbox"/>

Channel Pair	Log Field	Log Value	Alarm Ack
1	INPUT_1_EMBED_AUDIO_1_DOLBYE_STATE	Unknown	<input type="checkbox"/>
2	INPUT_1_EMBED_AUDIO_2_DOLBYE_STATE	Unknown	<input type="checkbox"/>
3	INPUT_1_EMBED_AUDIO_3_DOLBYE_STATE	Unknown	<input type="checkbox"/>
4	INPUT_1_EMBED_AUDIO_4_DOLBYE_STATE	Unknown	<input type="checkbox"/>
5	INPUT_1_EMBED_AUDIO_5_DOLBYE_STATE	Unknown	<input type="checkbox"/>
6	INPUT_1_EMBED_AUDIO_6_DOLBYE_STATE	Unknown	<input type="checkbox"/>
7	INPUT_1_EMBED_AUDIO_7_DOLBYE_STATE	Unknown	<input type="checkbox"/>
8	INPUT_1_EMBED_AUDIO_8_DOLBYE_STATE	Unknown	<input type="checkbox"/>

Channel Pair	Log Field	Log Value	Alarm Ack
1	INPUT_1_EMBED_AUDIO_1_PCM_STATE	OK	<input type="checkbox"/>
2	INPUT_1_EMBED_AUDIO_2_PCM_STATE	OK	<input type="checkbox"/>
3	INPUT_1_EMBED_AUDIO_3_PCM_STATE	OK	<input type="checkbox"/>
4	INPUT_1_EMBED_AUDIO_4_PCM_STATE	OK	<input type="checkbox"/>
5	INPUT_1_EMBED_AUDIO_5_PCM_STATE	OK	<input type="checkbox"/>
6	INPUT_1_EMBED_AUDIO_6_PCM_STATE	OK	<input type="checkbox"/>
7	INPUT_1_EMBED_AUDIO_7_PCM_STATE	OK	<input type="checkbox"/>
8	INPUT_1_EMBED_AUDIO_8_PCM_STATE	OK	<input type="checkbox"/>

Channel Pair	Log Field	Log Value	Alarm Ack
1	INPUT_1_EMBED_AUDIO_1_DIALNORM_UNDER	Unknown	<input type="checkbox"/>
2	INPUT_1_EMBED_AUDIO_2_DIALNORM_UNDER	Unknown	<input type="checkbox"/>
3	INPUT_1_EMBED_AUDIO_3_DIALNORM_UNDER	Unknown	<input type="checkbox"/>
4	INPUT_1_EMBED_AUDIO_4_DIALNORM_UNDER	Unknown	<input type="checkbox"/>
5	INPUT_1_EMBED_AUDIO_5_DIALNORM_UNDER	Unknown	<input type="checkbox"/>
6	INPUT_1_EMBED_AUDIO_6_DIALNORM_UNDER	Unknown	<input type="checkbox"/>
7	INPUT_1_EMBED_AUDIO_7_DIALNORM_UNDER	Unknown	<input type="checkbox"/>
8	INPUT_1_EMBED_AUDIO_8_DIALNORM_UNDER	Unknown	<input type="checkbox"/>

Channel Pair	Log Field	Log Value	Alarm Ack
1	INPUT_1_EMBED_AUDIO_1_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>
2	INPUT_1_EMBED_AUDIO_2_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>
3	INPUT_1_EMBED_AUDIO_3_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>
4	INPUT_1_EMBED_AUDIO_4_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>
5	INPUT_1_EMBED_AUDIO_5_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>
6	INPUT_1_EMBED_AUDIO_6_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>
7	INPUT_1_EMBED_AUDIO_7_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>
8	INPUT_1_EMBED_AUDIO_8_DOLBYE_CONFCHANGED	Unknown	<input type="checkbox"/>

Fig. 2-6: Audio Alarms Control Screen

Reference Alarms Control Screen

The **Reference Alarms** control screen allows the user to see the state of and to acknowledge MV-8 Series Multiviewer alarms relating to loss of input reference and to genlock source.

To acknowledge an alarm, select the corresponding **Alarm Ack** check box on the right-hand side of the control screen.

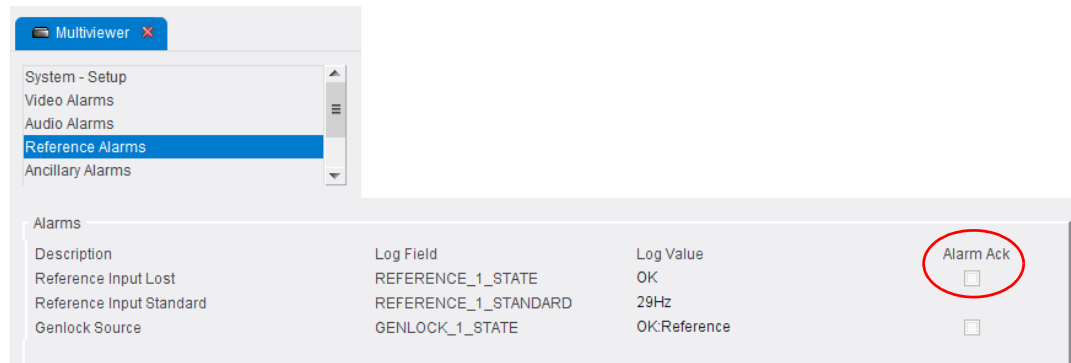


Fig. 2-7: Reference Alarms Control Screen

Note: Alarms can be viewed and acknowledged on this control screen. Multiviewer alarms are set up with the GV Orbit Client software application.

Note: To see the 'Reference Input Lost' (REFERENCE_1_STATE) and the 'Genlock Source' (GENLOCK_1_STATE) alarm states in the **Reference Alarms** control screen, the corresponding 'Unit Alarms' in the GV Orbit multiviewer project running on the multiviewer must be enabled.

Otherwise, the alarms' states are shown as: '-'

Ancillary Alarms Control Screen

The **Ancillary Alarms** control screen allows the user to see the state of alarms and to acknowledge alarms related to the ancillary data for each multiviewer input.

All alarms sourced by the multiviewer can be monitored by GV Orbit and are available to a RollCall LogServer.

1. Select Video Input channel being shown.

2. Acknowledge an alarm by selecting the corresponding **Alarm Ack** check box on the right-hand side of the control screen.

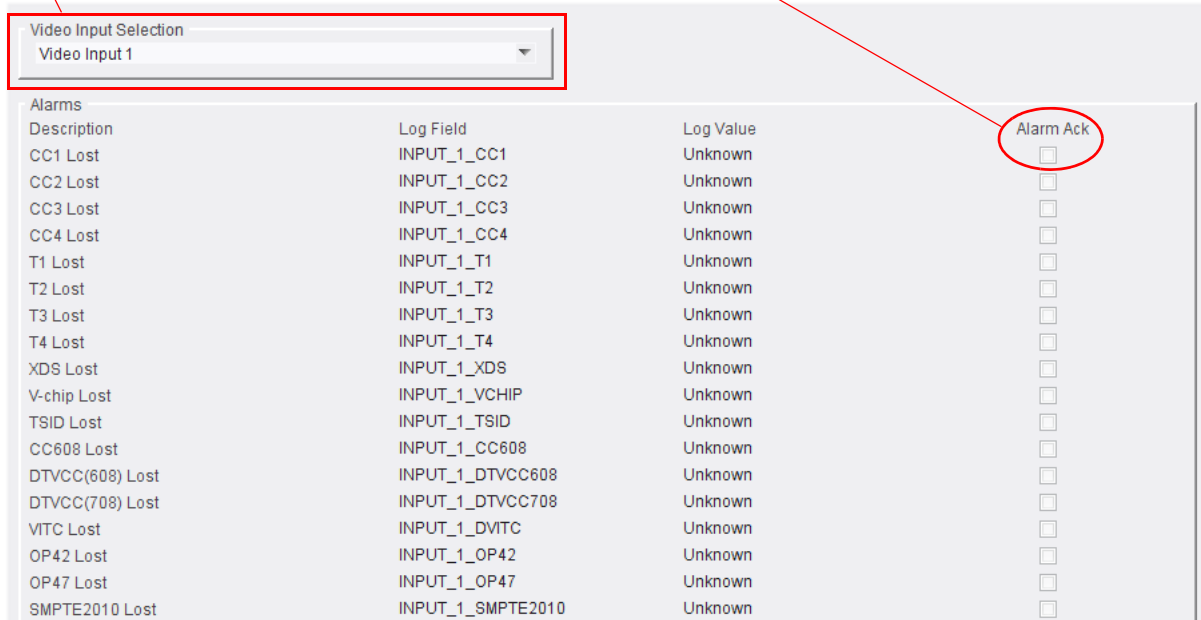


Fig. 2-8: Ancillary Alarms Control Screen

Table 2-3: Ancillary Data Alarms

Video Alarm	Description
CC1 Lost, CC2 Lost, CC3 Lost, CC4 Lost	Loss of Closed Caption data
T1 Lost, T2 Lost, T3 Lost, T4 Lost	Loss of Teletext data.
XDS Lost	Loss of Extended Data Service information.
V-Chip Lost	Loss of V Chip content rating information.
TSID Lost	Loss of Transport Stream ID information.
CC608 Lost	Loss of Closed Caption EIA 608 information.
DTVCC(608) Lost	Loss of DTV Closed Caption EIA 608 data.
DTVCC(708) Lost	Loss of DTV Closed Caption EIA 708 data.
VITC Lost	Loss of Vertical Interval Time Code information.

Table 2-3: Ancillary Data Alarms (continued)

Video Alarm	Description
OP42 Lost	Loss of OP42 Closed Caption information.
OP47 Lost	Loss of OP47 Closed Caption/Subtitling information.
SMPTE2010 Lost	Loss of SMPTE 2010 data.

Note:

Alarms can be viewed and acknowledged on this control screen.

Multiviewer alarms are set up with the GV Orbit Client software application.

Layout Control Screen

Video walls are designed with the GV Orbit Client software tool. A wall may have one or more layout (alternative layouts) which may be selected.

The **Layout** control screen allows the user to select which wall layout to apply to each video wall on one or more multiviewer head display outputs. (Alternatively, a Grass Valley soft-panel or hard-panel may also select wall layout, via the RollCall protocol) Additionally, the on-screen transition type between one wall layout and the next can be set up.

The layouts are all contained within a GV Orbit multiviewer project which is pushed to the multiviewer unit.

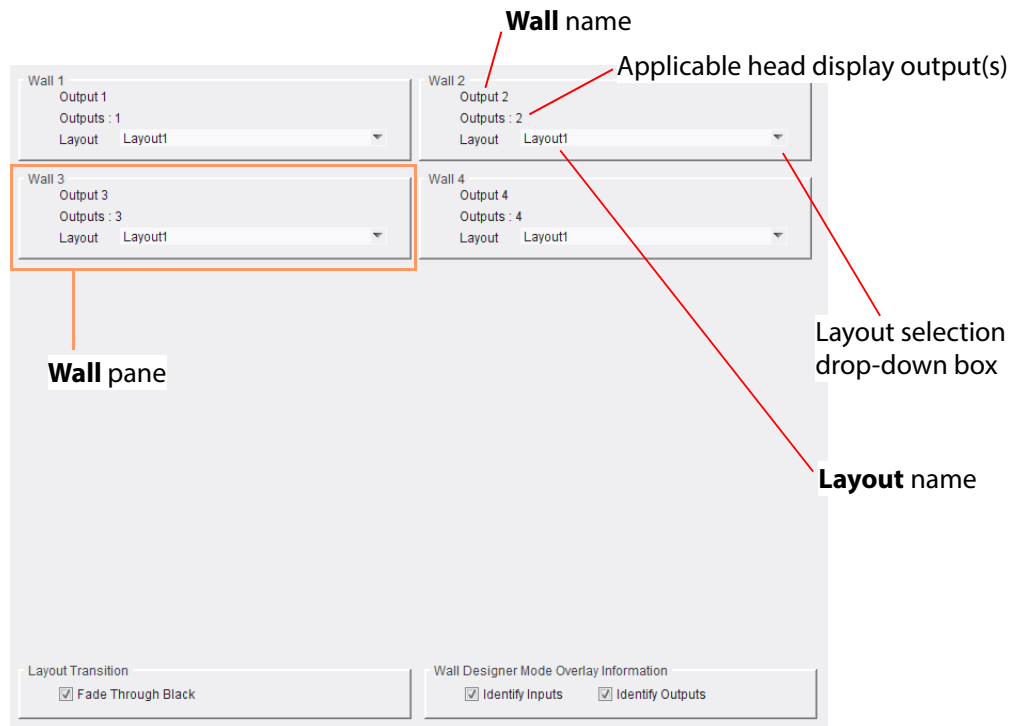
The control screen also enables an output overlay feature to be enabled, which show information about the multiviewer inputs on the output screen and about the head display outputs themselves.

In a GV Orbit multiviewer project:

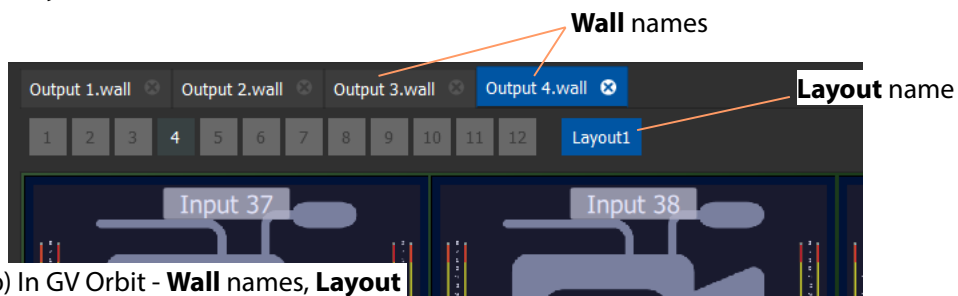
- Each video wall has a name property in the GV Orbit Client, set to "Wall 1", "Wall 2" etc. by default.
The wall name may be edited in GV Orbit Client by the user. It is shown on the **Layout** control screen.
- Each wall layout has a name property in GV Orbit Client, set to "Layout1", "Layout2" etc. by default.
This layout name is editable in GV Orbit Client by the user. It is also reflected on the **Layout** control screen.

Note: These names are case-sensitive.

On the **Layout** control screen, there is a **Wall** pane per video wall defined in the GV Orbit multiviewer project. See Figure 2-9.



a) **Layout** Control Screen



b) In GV Orbit - **Wall** names, **Layout**

Fig. 2-9: Layout Control Screen: a) Layout Control Screen; b) In GV Orbit.

Table 2-4: Wall Pane Settings

Wall 1 ... up to Wall 12	Description
Wall N:	Wall number, as defined in the GV Orbit multiviewer project. (1 ... up to 12.)
Wall name	Wall name, as defined in the GV Orbit multiviewer project.
Outputs	Head display output number(s) associated with the wall.
Layout	Drop-down box. Select the wall layout to use from the drop-down list.

Table 2-5: Layout Transition Settings

Setting	Description
Layout Transition: Fade Through Black	<p>Check box. Controls the type of on-screen transition seen when changing between wall layouts.</p> <ul style="list-style-type: none"> • Select for fade down to black, then fade up to new layout. • Deselect for a cut from current to new wall layout.

Overlays

Overlays can be enabled on the head display outputs which show information about multiviewer inputs in video tiles on multiviewer outputs and about the head display outputs themselves.

In particular, the **Output Overlay** feature briefly shows extensive information after the **Output Overlay** feature is enabled. This includes IP addresses of the MV-8X0/8X1 Multiviewer.

Table 2-6: Overlay Settings

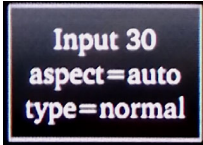
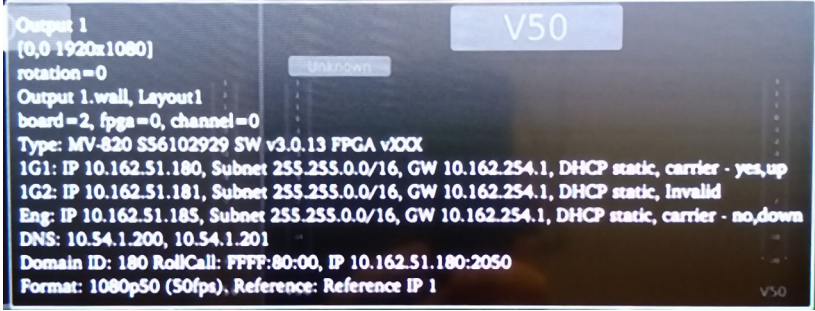
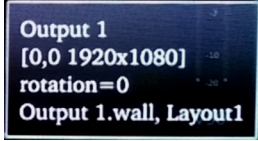
Setting	Description
Wall Designer Mode Overlay Information:	
	Controls the display of overlay information on each multiviewer head display output. See Figure 2-10. (Multiviewer software 2.16.16 or later.)
Identify Inputs	<p>Check box. Select to display overlay information which identifies each video input on each video tile on the head display output screen.</p> 
Identify Outputs	<p>Check box. Select to display overlay information which identifies each head display output screen (1 ... up to 12). The overlay appears in the bottom right-hand side of each output.</p> <ul style="list-style-type: none"> • Immediately after this Identify Output feature is enabled, the overlay information shown about the outputs is extensive.

Table 2-6: Overlay Settings (continued)

Setting	Description
	
	<ul style="list-style-type: none"> After 20 seconds, the overlay then reverts to showing only brief output information, as shown in Figure 2-10. 

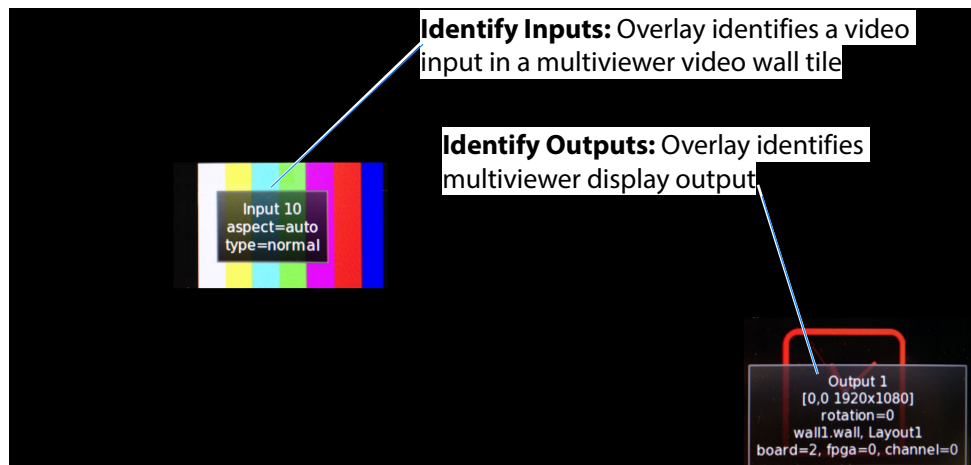


Fig. 2-10: Multiviewer Head Display Output with Example Input and Output Overlays

TSL Control Screen

The **TSL** control screen allows the user to select settings related to MV-8 Series Multiviewer support of the TSL protocol.

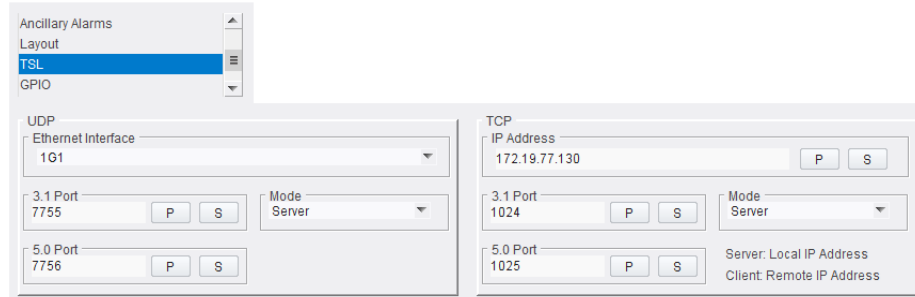


Fig. 2-11: TSL Control Screen

TSL protocol is supported in TSL Server Mode or TSL Client Mode, see [TSL Support](#), on page 92, [Figure 5-2](#) on page 93.

For two types of Ethernet protocols (UDP and TCP), the user can separately set up IP address and network port information.

Table 2-7: TSL Mode Settings

Setting	Description
UDP:	
Ethernet Interface	Drop-down box. Select port 1 (1G1) or port 2 (1G2).
3.1 Port	Text box. Network port to receive TSL 3.1 messages on. Enter the network port number.
5.0 Port	Text box. Network port to receive TSL 5.0 messages on. Enter the network port number.
Mode	Drop-down box. Select 'Server' mode, or 'Disabled'.
TCP:	
IP Address	Text box. In Server Mode: Enter local IP address of the MV-8 Series Multiviewer. In Client Mode: Enter IP address of TSL Controller.
3.1 Port	Text box. Network port to receive TSL 3.1 messages on. Enter the network port number.
5.0 Port	Text box. Network port to receive TSL 5.0 messages on. Enter the network port number.
Mode	Drop-down box. Select 'Server' mode, 'Client' mode or 'Disabled'.

Remember to press the **S** button.

GPIO Control Screen

The **GPIO** control screen allows the user to set up settings related to the MV-8 Series Multiviewer unit's GPIO interface.

There are four GPIO ports, 1 to 4, on a MV-8X0/8X1 Multiviewer product. For connector pinouts, see the respective MV-8X0/MV-8X1 product user manual.

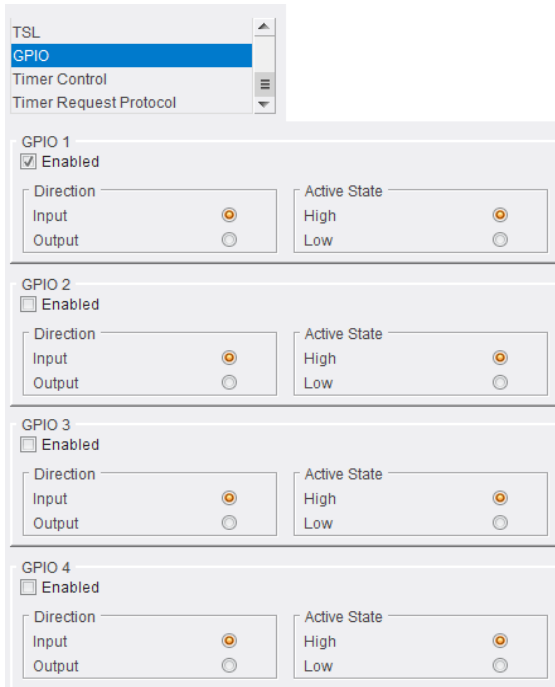


Fig. 2-12: GPIO Control Screen

Table 2-8: GPIO port Settings.

Setting	Description
GPIO 1 to GPIO 4:	
Enabled	Check box. Select to enable the GPIO port on the MV-8 Series Multiviewer unit.
Direction	Radio buttons. Select the GPIO port to be an input or an output.
Input	Selected: GPIO port is an input.
Output	Selected: GPIO port is an output.
Active State	Radio buttons. Select the active state of the GPIO port.
High	Selected: Active state of the port is a high voltage.
Low	Selected: Active state of the port is a low voltage.

LTC Control Screen

The **LTC** control screen allows a user to select an LTC source for the MV-8 Series Multiviewer multiviewer.

Note: This control screen is not applicable to *standalone* multiviewer products (which are not integrated into a router frame).

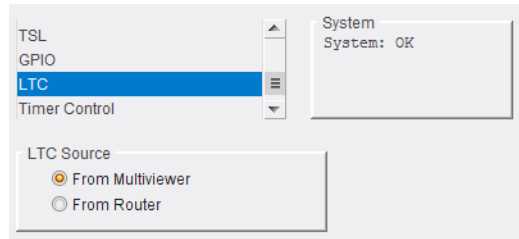


Fig. 2-13: LTC Control Screen

The following LTC sources may be selected:

- From Multiviewer.
- From Router.

See Table 2-9.

Table 2-9: LTC Source Radio Button Options

Setting	Description
LTC Source	Radio buttons to select source of LTC for MV-8 Series Core Multiviewer.
From Multiviewer	When selected, use the LTC signal applied to the multiviewer module rear panel.
From Router	When selected, use the LTC information from the host router frame. See Note 1 .
Note 1:	The host router's controller configuration must have EmbeddedTimecodeEnable set to 'True'. This is set in the Grass Valley WorkBench router configuration tool. Configuration item = Controller > Devices > LocalRouterDevice > LocalRouterConfig > EmbeddedTimecodeEnable See Figure 2-14.

(WorkBench tool screenshot)

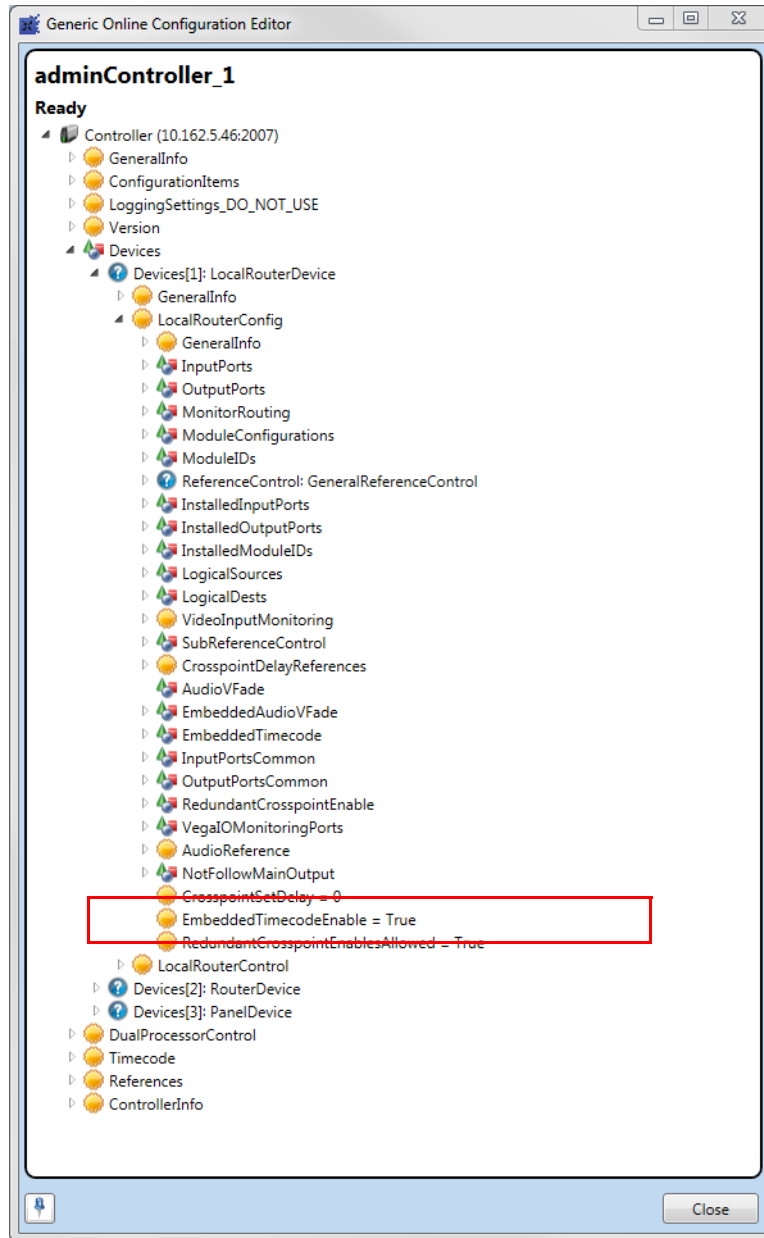


Fig. 2-14: EmbeddedTimecodeEnable Router Controller LTC Source Configuration Item

Timer Control Screen

The **Timer Control** screen allows a user to set up timers used in widgets on a video wall and then remotely control the timers. Timers may also then be remotely started or stopped controlled with RollCall soft-panels or hard-panels.

Note: All **Timer** widget styling and configuration of trigger points etc. are set through the GV Orbit Client application.

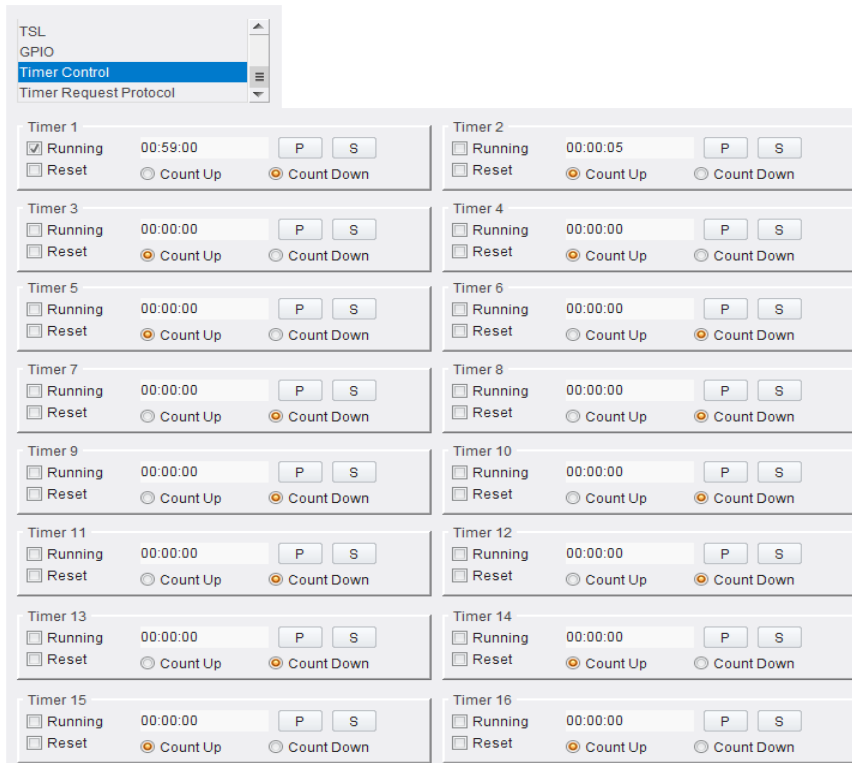


Fig. 2-15: Timer Control Screen

Table 2-10: Timer Control Settings

Setting	Description
Timer 1 to Timer 16:	
Running	Check box. Select to start the timer. Deselect to stop.
Reset	Check box. Select to reset the timer. The check box automatically is deselected when the timer has reset.
Text box	Enter the timer's target time. Target time format: HH:MM:SS For example, 12:30:00 Note: When the target time is changed, the timer is reset.

Table 2-10: Timer Control Settings (continued)

Setting	Description
Count Up	Radio button. Select to reset the timer and count up.
Count Down	Radio button. Select to reset the timer and count down.

Remember to press the **S** button.

Timer Request Protocol Control Screen

The **Timer Request Protocol** control screen allows a user to define the IP address of an “eTimer” server device and the IP port number to use. The protocol used is the Plura™ timer request protocol.

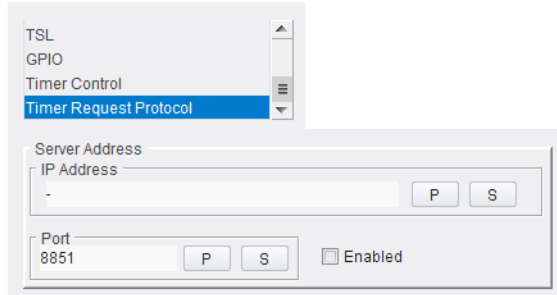


Fig. 2-16: Timer Request Protocol Control Screen

Table 2-11: Timer Request Protocol Settings

Setting	Description
IP Address	Enter IP Address of an ‘eTimer’ server device.
Port	Enter IP port number to use for Timer Request Protocol messages.
Enabled	Check box. Select to enable use of Timer Request Protocol messages.

Remember to press the **S** button when changing the IP Address settings.

Note: “S” and “P” buttons - After entering information in each text box, always click on the adjacent “S” button or press “return” to locally save the new setting. Do this for each text box. (Note: Clicking on the “P” button will return the setting to its preset default value).

“S” - Locally save new setting value (or press “return”).

“P” - Locally save default setting value.

Note: Configuring a **Timer Widget** for eTimer:

A **Timer** widget is configured on a video wall tile with the GV Orbit Client application. It can be configured to be connected to an eTimer service.

Biometrics Setup Control Screen

The **Biometrics Setup** control screen sets up the multiviewer’s media biometric generators (MBGs) on a per multiviewer input basis. Each of the 48 inputs has an MBG which can produce a video and audio signature from the media at the corresponding input.

Each multiviewer input’s MBG is separately configurable and is assigned a name on a per input basis which is user-editable. The name identifies a signature when it is checked and verified (media assurance).

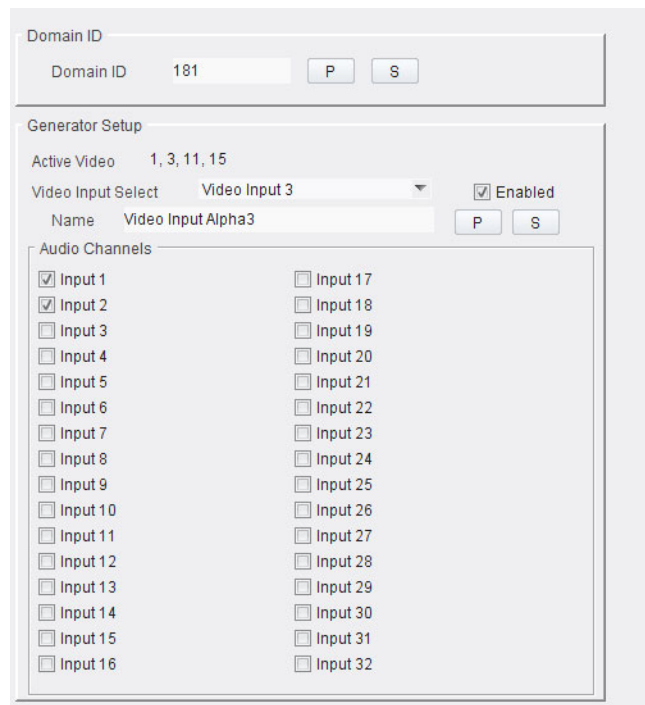


Fig. 2-17: Media Biometrics Control Screen

Table 2-12: Media Biometrics Settings

Setting	Description
Domain ID	RollCall domain ID for media biometrics signature messages.
Domain ID	Text box. Enter RollCall+ domain ID. Press S to save value. Note 1: Set the Domain ID to be the same as the one used by the media assurance system, for example Grass Valley SigMA. Note 2: Use a <i>different Domain ID</i> value from the RollCall Settings domain ID, set up in the System-Setup Control Screen. (See “RollCall Settings” box on page 19.)
Generator Setup	

Table 2-12: Media Biometrics Settings (continued)

Setting	Description
Active Video	Displays which video inputs have media biometrics generators (MBGs) enabled.
Video Input Select	Check box. Select the video input to configure.
Enabled	Check box. Select to enable the MBG at the selected input.
Name	Text box. Name for the media biometrics generator (MBG) at the selected input. Defaults to the video input name, e.g. 'Video Input 6'. The name is user editable. Enter a unique name for the MBG if required. Press S to save the value. Note: A name identifies a signature's video input source, useful in a media assurance system.
Audio Channels	Check boxes for audio channels 1 to 32. Select the audio channel signatures required.

Note: "S" and "P" buttons - After entering information in each text box, always click on the adjacent "S" button or press "return" to locally save the new setting. Do this for each text box. (Note: Clicking on the "P" button will return the setting to its preset default value).

"S" - Locally save new setting value (or press "return").

"P" - Locally save default setting value.

HDR Setup Control Screen

The **HDR Setup** control screen sets up the multiviewer's HDR/SDR conversions on a per multiviewer video input or per head display output basis. Each of the 48 inputs has a HDR-SDR conversion block which can convert an HDR input into an internal SDR signal. Each of the 12 head display outputs has an SDR-HDR conversion block which can convert a the internal SDR output signal to HDR for output.

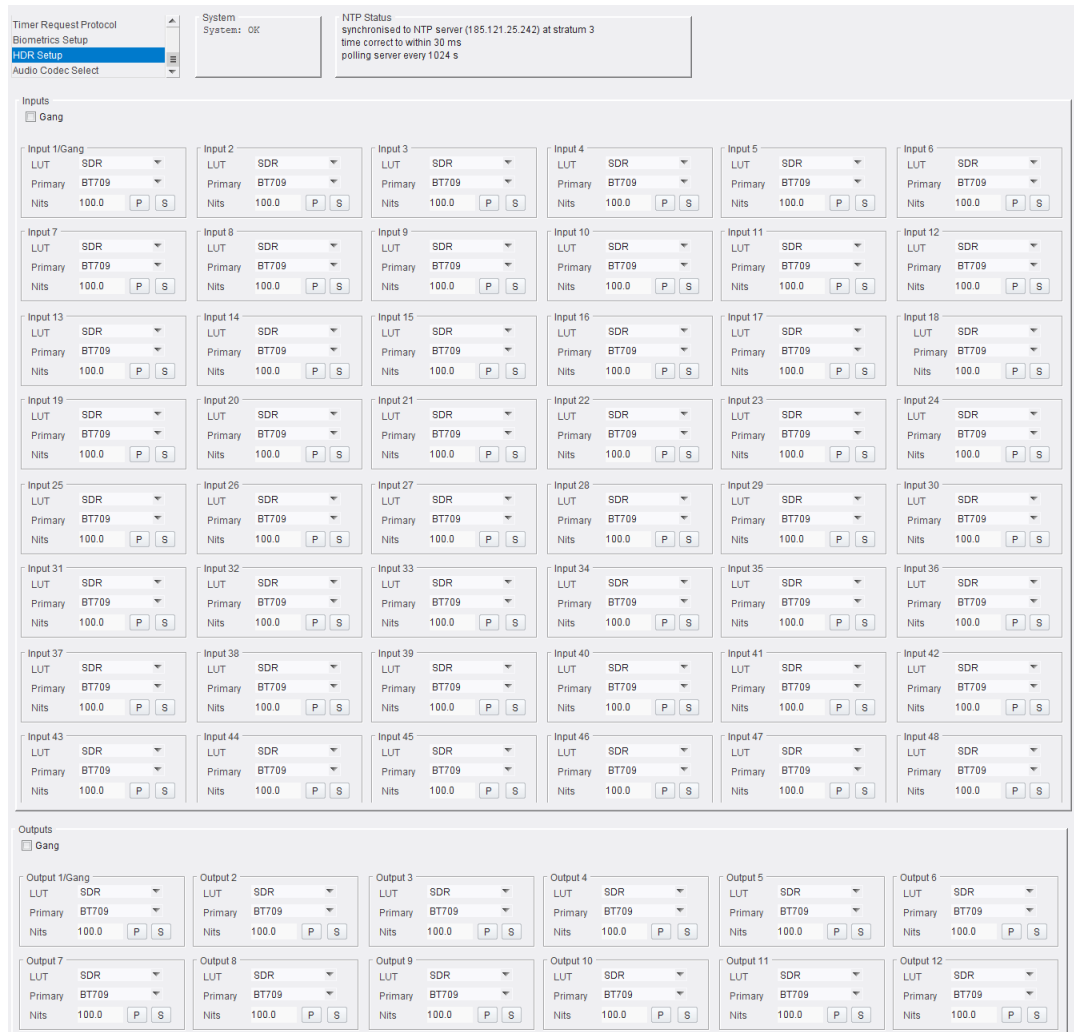
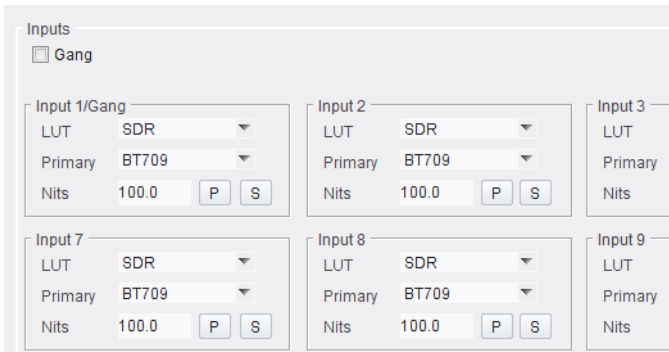


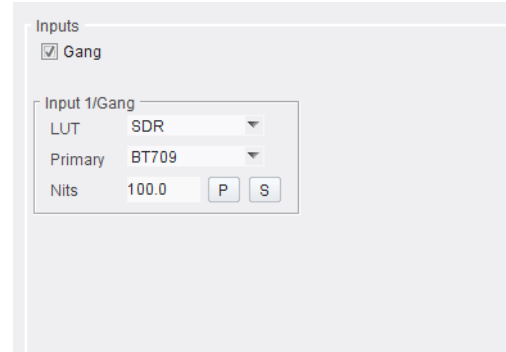
Fig. 2-18: HDR Setup Control Screen

Each of the 48 video inputs may be set up individually or all together (ganged). See Figure 2-19a and b.

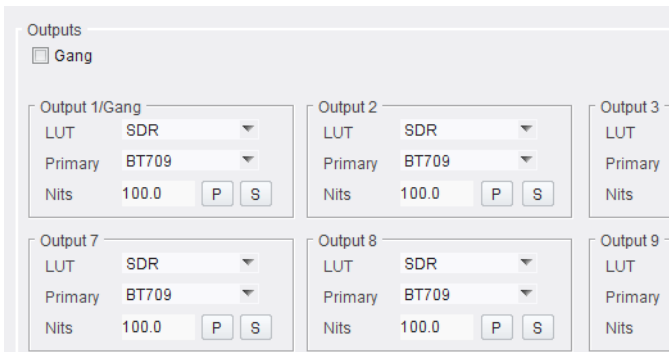
Each of the 12 head display outputs may be set up individually or all together (ganged). See Figure 2-19c and d.



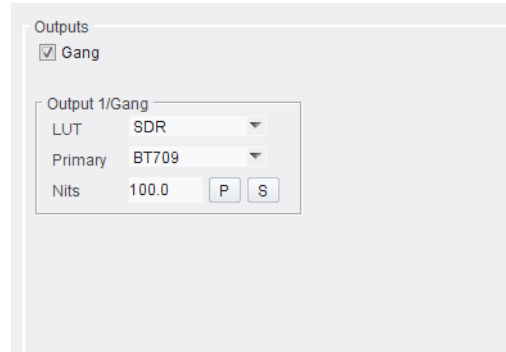
a) Video Input HDR Settings



b) Video Input HDR Settings (Ganged)



c) Head Display Output HDR Settings



d) Output HDR Settings (Ganged)

Fig. 2-19: HDR Setup Controls:
a) Video Inputs.
b) Ganged.
c) Head Display Outputs.
d) Ganged.

Table 2-13: HDR Setup Settings

Setting	Description
Inputs:	Configure settings for each input here.
Gang	Check box. Select to setup up HDR on all inputs together.
LUT	Drop-down box. Select dynamic range of video input.

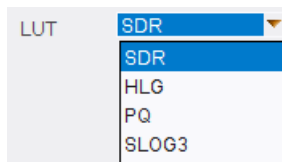
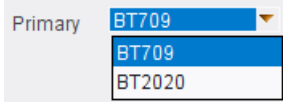
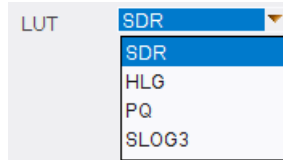
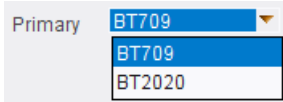


Table 2-13: HDR Setup Settings (continued)

Setting	Description
Primary	<p>Drop-down box. Select the color space of the video input.</p> 
Nits	<p>Text box. Enter the Nits value for the HDR to SDR conversion. See Nits, on page 77, for information about this setting.</p>
Outputs:	<p>Configure settings for each output here.</p>
Gang	<p>Check box. Select to setup up HDR on all outputs together.</p>
LUT	<p>Drop-down box. Select required dynamic range of head display output.</p> 
Primary	<p>Drop-down box. Select the required color space of the head display output.</p> 
Nits	<p>Text box. Enter the Nits value for the SDR to HDR conversion. See Nits, on page 77, for information about this setting.</p>

Note: "S" and "P" buttons - After entering information in each text box, always click on the adjacent "S" button or press "return" to locally save the new setting. Do this for each text box. (Note: Clicking on the "P" button will return the setting to its preset default value).

"S" - Locally save new setting value (or press "return").

"P" - Locally save default setting value.

Audio Codec Select Control Screen

The **Audio Codec Select** control screen selects optional audio channel(s) to be compressed for each 'input-copy' RTSP stream. The audio stream and the corresponding input video H.264-compressed stream are wrapped into a RTSP stream. (Requires the 'H264 stream' license.)

This feature applies to *MV-8X1 multiviewer products* only.

For each of the 48 video inputs, a mono audio channel can be selected from the first 8 stereo audio pairs. This can be the left- or right-audio channel of the pair, or a stereo down-mix.

Core MV Control Screens

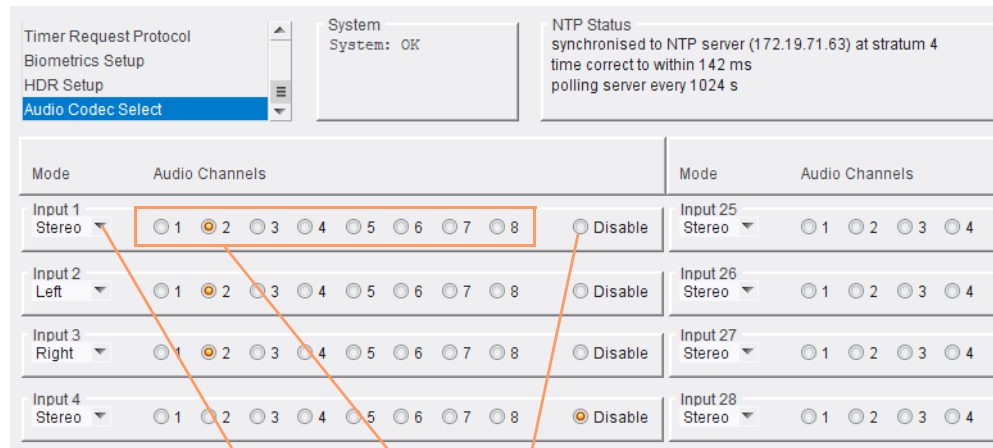
Audio Codec Select Control Screen



Fig. 2-20: Audio Codec Select Control Screen

Note:

A mono audio can be set up for each multiviewer video input. Settings are for the 48 inputs. They do not reflect any quad-link input associations that might be applied in the multiviewer.



- 1 De-select to enable the audio codec for this audio channel.
- 2 Select stereo pair.
- 3 Select audio from the pair:
 - Stereo (i.e. a down-mix);
 - Left; or
 - Right.



Fig. 2-21: Audio Channel Selection

3

Core MV Input Alarms

Chapter summary:

Core MV Input Alarms

<i>Introduction</i>	page 50
<i>Input Alarms Dialog</i>	page 50
<i>Overview of Configuring Input Alarms</i>	page 51
<i>Input Tab</i>	page 52
<i>Selecting a Multiviewer Input to Configure</i>	page 52
<i>Copying Input Alarm Settings to One or More Other Inputs</i>	page 53
<i>Alarm Tab</i>	page 54
<i>Alarm Tab - Basic Alarm Properties</i>	page 55
<i>Selected Alarm List</i>	page 56
<i>Alarm Properties</i>	page 57
<i>Additional Properties of Video Input Alarms</i>	page 58
<i>Levels Tab</i>	page 62
<i>Audio 1-16 and Audio 17-32 Tabs</i>	page 63
<i>Introduction</i>	page 63
<i>Audio Channel Tabs</i>	page 63

Introduction

Input alarms for each input of a core MV-8 Multiviewer are set up in a GV Orbit multiviewer project under the 'Multiviewer > Input Alarms' main menu item. All the alarms for each multiviewer input need to be configured in the GV Orbit project: Input alarms can be set up and enabled for *one* multiviewer input, and then those settings can be *copied* to other inputs. Finally, the project needs to be pushed to the core MV-8 Series Multiviewer for the setting changes to take effect.

Input Alarms Dialog

Enable and configure input alarms with the **Input Alarms** dialog. With a multiviewer project open in GV Orbit Client:

- 1 Select 'Multiviewer > Input Alarms' in the main menu.

The **Input Alarms** dialog is shown.

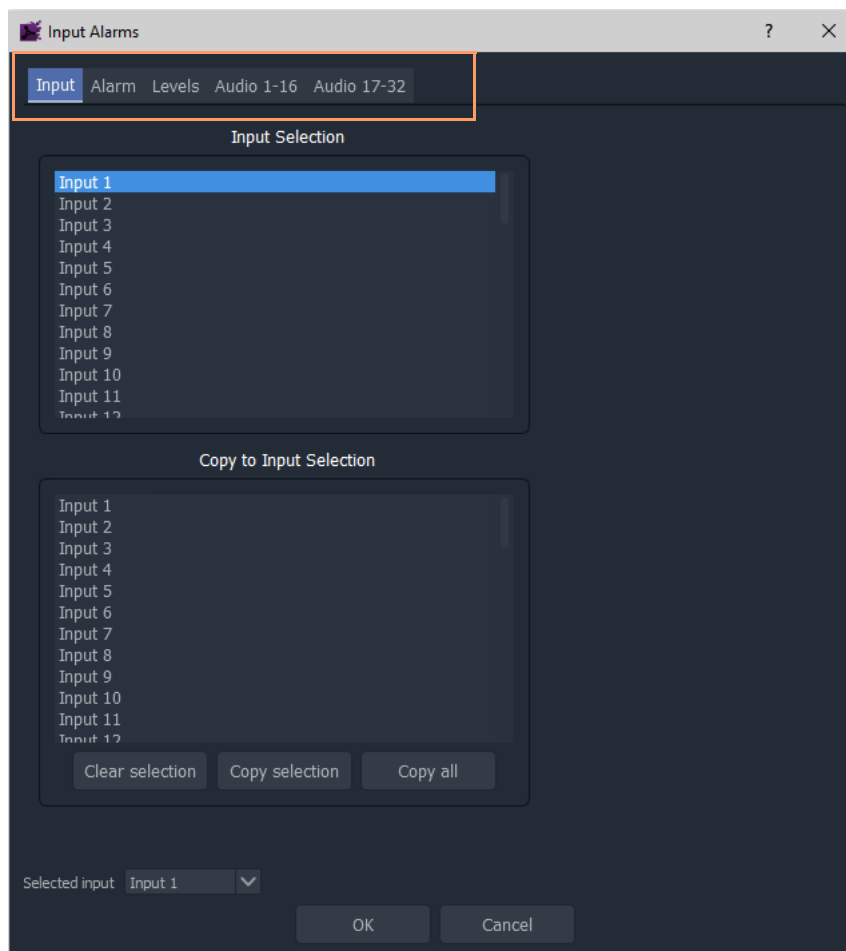


Fig. 3-1: Input Alarms Dialog

The dialog contains the following tabs: Input, Alarm, Levels, Audio 1-16, and Audio 17-32.

Overview of Configuring Input Alarms

This is the procedure for configuring input alarms:

- 1 Select a multiviewer input (**Selected Input**) in the **Input** tab.
- 2 Configure alarms for the selected input (for example, for frozen video, video presence, audio levels etc.); this is done using the other tabs, see Table 3-1.
(The following sections describe each tab of the **Input Alarms** dialog.)
- 3 Then set up alarms for all other multiviewer inputs.
To help, alarms settings for one input may be copied to other inputs.

Note: Alarm settings for one input can be copied to other inputs; this is useful if the same settings are needed for several inputs.

- 4 Click OK to save the changes and close the **Input Alarms** dialog.
- 5 Save the GV Orbit multiviewer project.
- 6 For alarm setting changes to take effect on a unit, the GV Orbit project must be pushed to the multiviewer unit.

Table 3-1: Input Alarms Dialog Tabs

Input Alarms Dialog Tab	Description
Input	Enables a user to: <ul style="list-style-type: none"> • Select the multiviewer video input to be configured for alarms. • Copy input alarms settings from one input to one or more other inputs. See Input Tab , on page 52.
Alarm	Enable and configure alarms on video inputs and for the multiviewer unit. See Alarm Tab , on page 54.
Levels	Separate tab for configuring some audio alarm properties. See Levels Tab , on page 62.
Audio 1-16, Audio 17-32	Separate tab for configuring some extended audio alarm properties. See Audio 1-16 and Audio 17-32 Tabs , on page 63.

The following sections describe each tab of the **Input Alarms** dialog.

Input Tab

The **Input** tab of the **Input Alarms** dialog has two functions. It allows the user to:

- Select a multiviewer input to be configured for alarms, see [Figure 3-2](#) on page 52. (See [Selecting a Multiviewer Input to Configure](#), on page 52.)
- Copy input alarm settings from one input to one or more other inputs, see [Figure 3-3](#) on page 53. (See [Copying Input Alarm Settings to One or More Other Inputs](#), on page 53.)

Selecting a Multiviewer Input to Configure

Input Selection list box:
The list box is used to select the multiviewer input to be configured for alarms.

To select an input:

- Click on an input name to select an input.

The selected input appears in the **Selected Input** box below.

The **Selected Input** drop-down box displays the selected input on each tab.

The **Selected Input** can also be changed at this drop-down box on any tab.

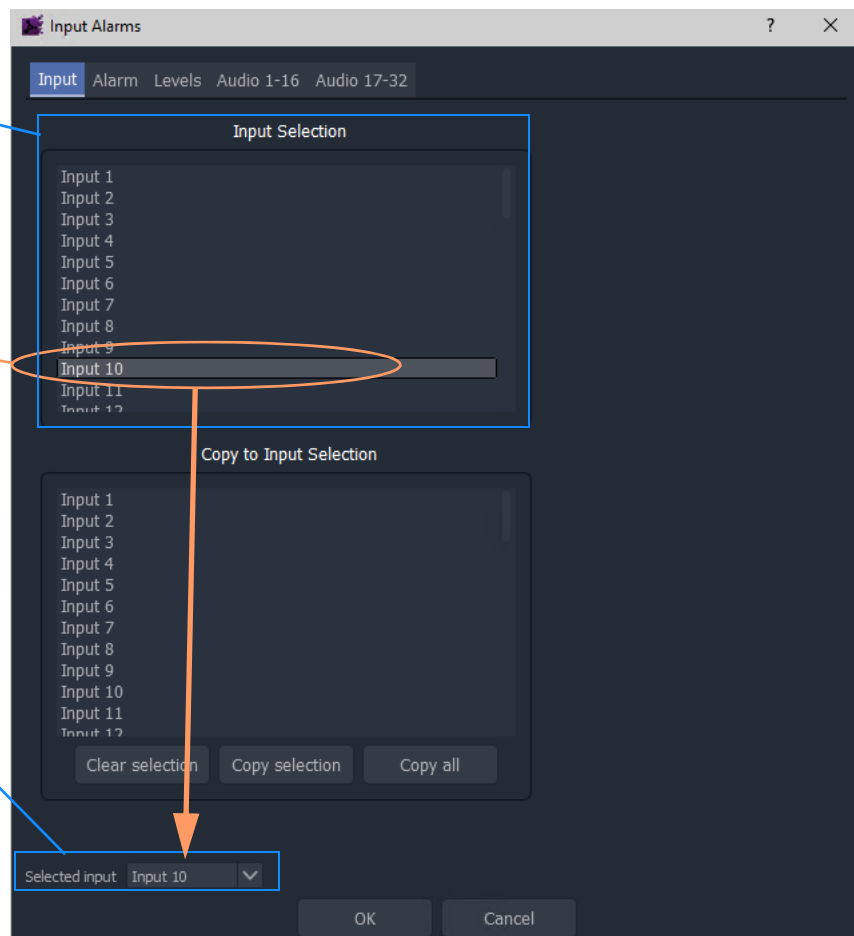


Fig. 3-2: Selecting an Input

When an input is selected, all alarm settings for the selected input can be configured using the other tabs in the **Input Alarms** dialog.

Note: The **Selected Input** may be changed on any tab.

CAUTION The **Selected Input** may be changed on any tab.
Do not unintentionally change this setting.

Copying Input Alarm Settings to One or More Other Inputs

This sub-section describes copying input alarm settings from one input to one or more other inputs. Settings can be copied to all inputs or to a selection of inputs. When one input has all of its alarm settings fully configured (i.e. all tabs in the **Input Alarms** dialog have been set up for that input), copy its alarm settings to one or more other inputs.

Figure 3-3 describes the copying action.

Note: Copying alarm settings from an input to one or more other input(s) will overwrite all the alarm settings for those input(s).

The **Selected Input** to copy *from* is shown here.

Caution: Always check that the correct input is selected before copying alarm settings.

Copy to Input Selection list box

1) Check that the **Selected Input** is correct.

To select which inputs to *copy to*:

2) In the **Copy to Input Selection** list box:

- Click on an input item to select it.
- Select multiple inputs by clicking on each item in turn.
- To remove an item from your selection, (re-)click on the item.
- To clear the whole selection, click **Clear Selection**.

When a 'Copy to' selection has been made:

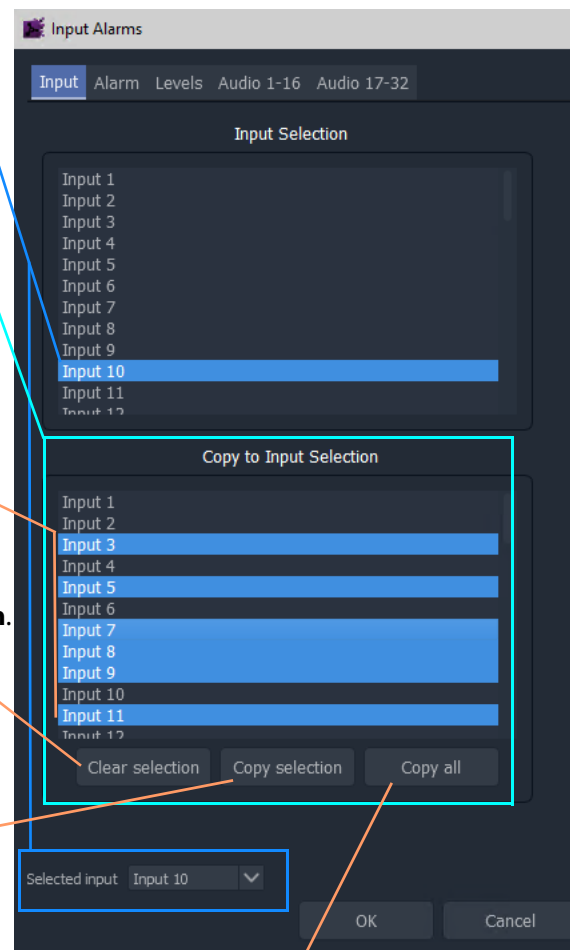
3) To copy alarm settings *from* the **Selected Input** to the 'Copy to' selection, click **Copy Selection**.

Or:

4) To copy alarm settings from the **Selected Input** to *all of the inputs*, click **Copy All**.

This copies alarm settings to *all* of the inputs.

Fig. 3-3: Copying Alarm Settings



CAUTION

Selected inputs in the 'Copy to Input Selection' box will have their alarm settings overwritten.

Alarm Tab

The **Alarm** tab in the **Input Alarms** dialog allows one or more audio, video and ancillary data alarms to be enabled and set up for the **Selected Input**. Alarm properties can be viewed and settings changed.

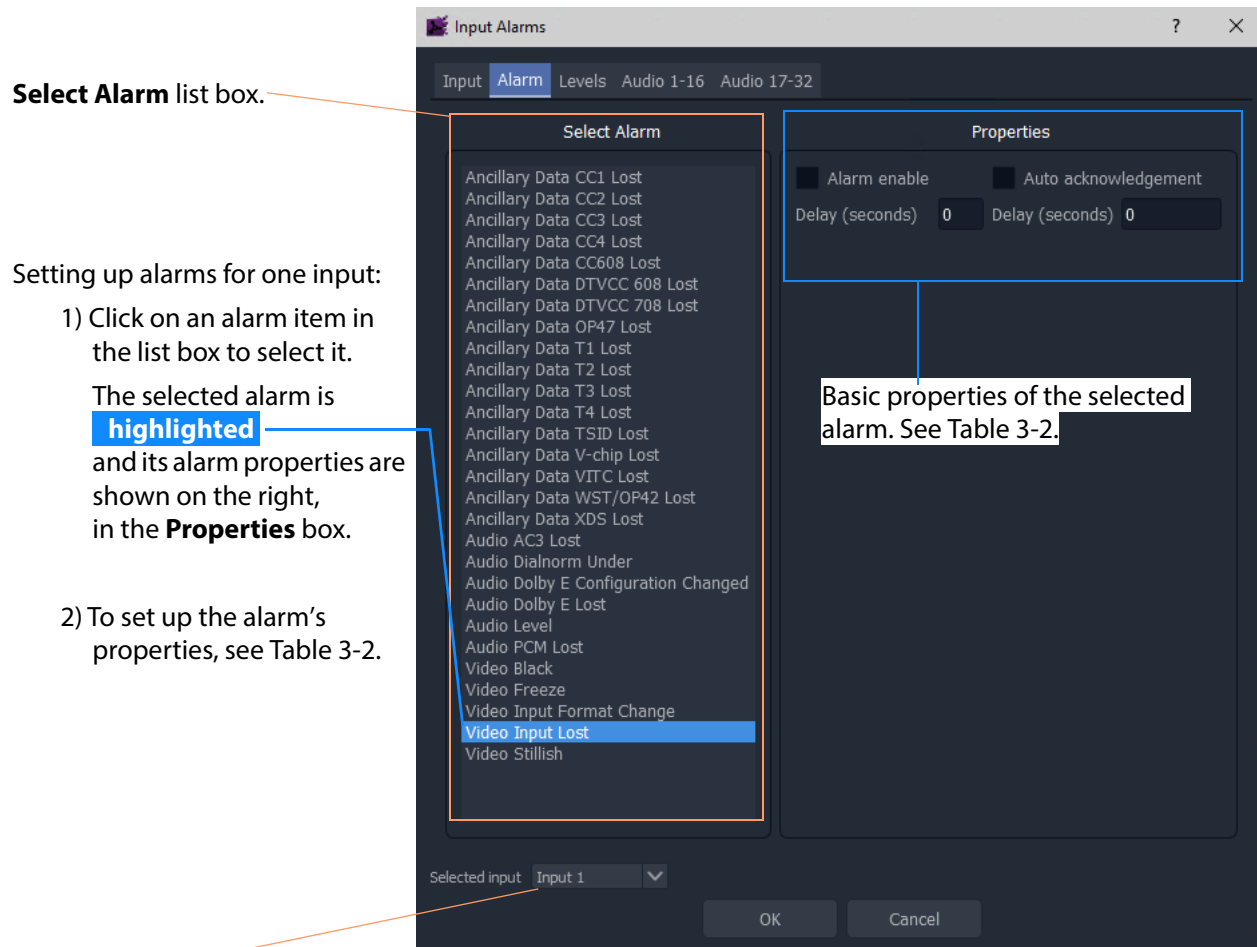


Fig. 3-4: Selecting an Alarm

There are basic alarm properties which are common to all alarms and additional alarm properties for some specific alarms. Further, there are extended alarm properties for audio-based alarms. See [Alarm Tab - Basic Alarm Properties](#), on page 55, and [Alarm Properties](#), on page 57 for more information.

Alarm Tab - Basic Alarm Properties

The basic properties are shown in [Figure 3-4](#) on page 54.

Note: Alarms are enabled in the tab on a per input basis.
For example, disabling the **Audio PCM Lost** alarm for input 2 disables the checking for the presence of PCM audio on *all* audio channels of input 2 only.
To affect other inputs, copy alarm settings from one input to one or more other inputs.

Table 3-2: Basic Alarm Properties

Property	Description
Alarm Enable	<p>Check box. Select to enable the selected alarm for the Selected Input. Enabling/disabling applies per Selected Input. Note: Once an alarm is enabled, it is shown <u>underlined and in bold</u> in the Select Alarm list.</p> <p>Note: Alarm Enable enables or disables an alarm type on a <i>per input</i> basis.</p>
Delay (Seconds)	<p>Text box (located below Alarm Enable check box). The time in seconds:</p> <ul style="list-style-type: none"> from when a fault is detected; to when the alarm is displayed on the multiviewer video wall. <p>This sets up a small delay to prevent transient alarms being displayed - filtering out transient alarms.</p>
Automatic Acknowledgment	<p>Check box.</p> <ul style="list-style-type: none"> Select to enable the selected alarm to be automatically acknowledged by the multiviewer system. De-select to manually acknowledge alarms. Alarms will have to be acknowledged by the user, to stop an alarm flashing.
Delay (Seconds)	<p>Text box (located below Automatic Acknowledgment check box). The time in seconds:</p> <ul style="list-style-type: none"> from when the alarm occurs; to when it is automatically acknowledged by the multiviewer system. <p>Set up a delay to allow an alarm to flash and be displayed for a short time before being automatically acknowledged.</p>

Selected Alarm List

All alarm types for the **Selected Input** are listed in the **Select Alarm** box. When alarms are enabled for the Selected Input, they are underlined in the **Select Alarm** box. See Figure 3-5.

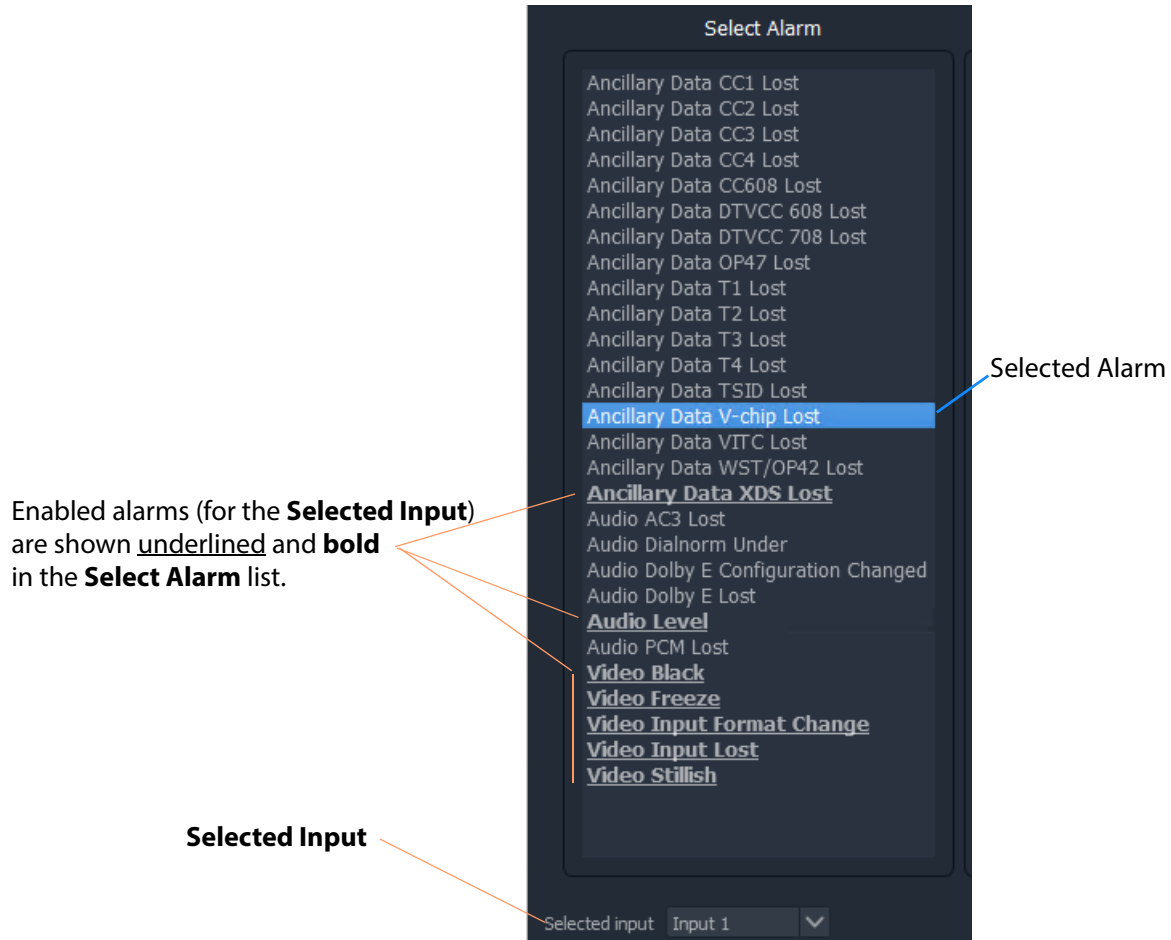


Fig. 3-5: Select Alarm List - Enabled Alarms for the Selected Input

Alarm Properties

Alarm properties depend on the alarm type. There are the following classes of alarm properties:

- [Basic Alarm Properties](#)
- [Additional Alarm Properties](#)
- [Extended Alarm Properties](#)

Basic Alarm Properties

[Alarm Tab - Basic Alarm Properties](#), on page 55, are common to all alarms and are shown on the **Alarm** tab, in the **Properties** box.

Additional Alarm Properties

Some alarms have additional properties which are also shown in the **Properties** box. For example, 'Video Black' or 'Video Freeze' alarms.

See [Additional Properties of Video Input Alarms](#), on page 58.

Extended Alarm Properties

Some alarms have extended properties which also involves the **Levels**, **Audio** tabs of the **Input Alarms** dialog. A message appears at the **Properties** box in the **Alarm** tab. See Figure 3-6.

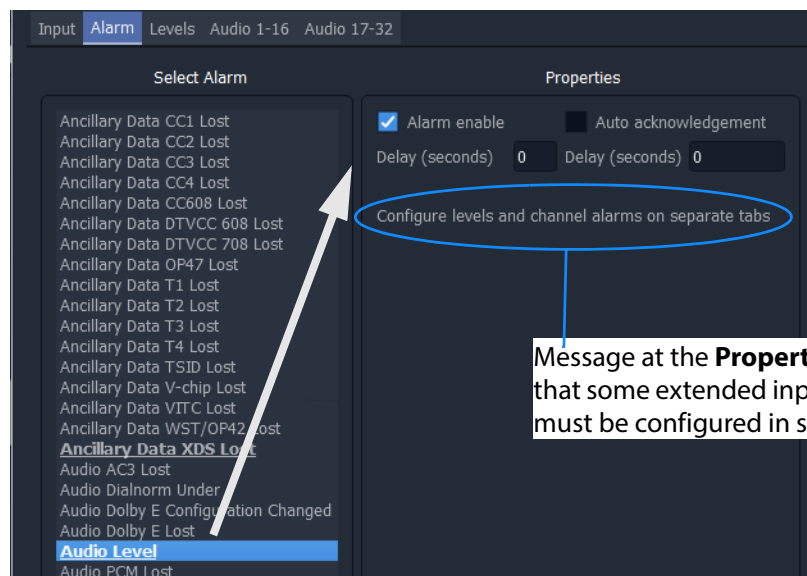


Fig. 3-6: Example - Audio Level Properties Box and Message

For example,

audio alarms have extended settings for each audio channel of the **Selected Input**. These separate tabs are covered in separate sub-sections in this manual. See:

- [Levels Tab](#), on page 62.
- [Audio 1-16 and Audio 17-32 Tabs](#), on page 63.

Additional Properties of Video Input Alarms

Some video input alarms have specific additional properties. These are covered here and include:

- [Additional Properties - Video Black Alarm](#), on page 58.
- [Additional Properties - Video Freeze Alarm](#), on page 59.
- [Additional Properties - Video Stillish Alarm](#), on page 59.
- [Additional Properties - Video Input Format Change Alarm](#), on page 61.

Additional Properties - Video Black Alarm

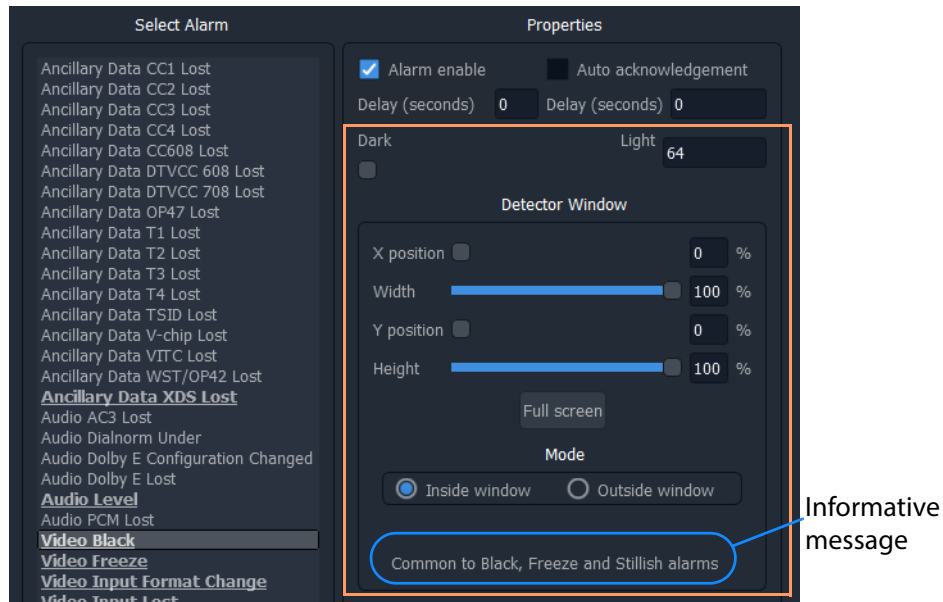


Fig. 3-7: Video Black Alarm - Additional Properties

See [Table 3-3](#) on page 60 for a description of the additional alarm properties.

Additional Properties - Video Freeze Alarm

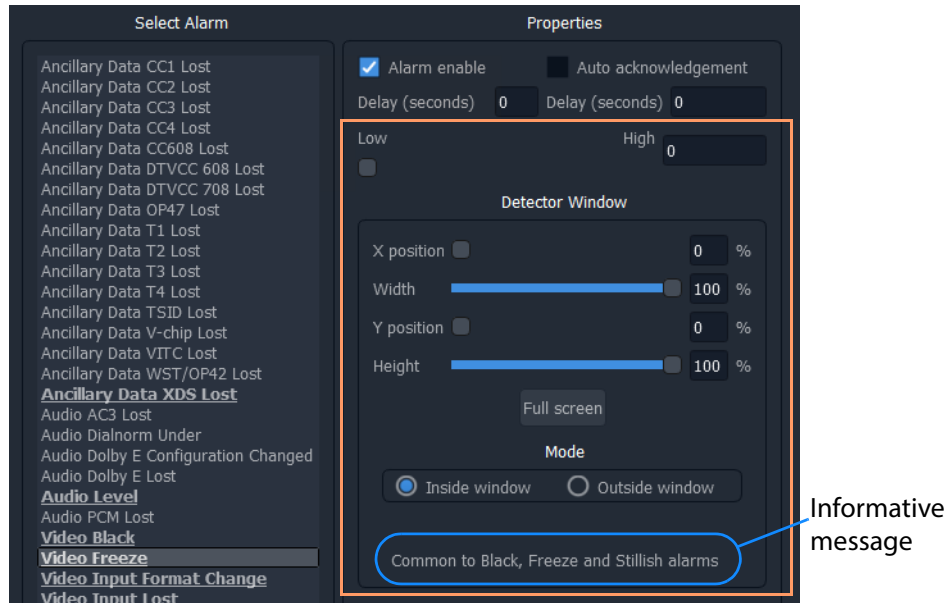


Fig. 3-8: Video Freeze Alarm - Additional Properties

See Table 3-3 on page 60 for a description of the additional alarm properties.

Additional Properties - Video Stillish Alarm

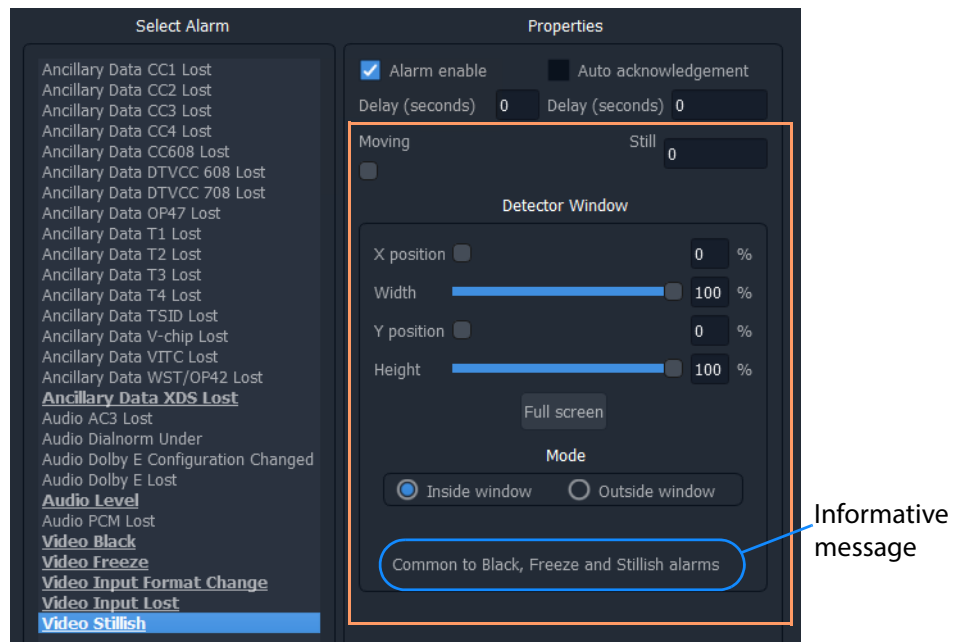


Fig. 3-9: Video Stillish Alarm - Additional Properties

See Table 3-3 on page 60 for a description of the additional alarm properties.

Video Black, Freeze, and Stillish Alarm Properties

The properties described in Table 3-3 relate to [Figure 3-7](#) on page 58, [Figure 3-8](#) on page 59, and to [Figure 3-9](#) on page 59.

Table 3-3: Video Black, Freeze and Stillish - Additional Alarm Properties

Property	Description
Dark.....Light	Slider bar. Sets the on-screen dark level, below which the Video Black alarm is triggered.
Low.....High	Slider bar. Sets the on-screen movement level deemed to be a “frozen picture” for the Video Freeze alarm.
Moving.....Still	Slider bar. Sets the on-screen movement level for the Video Stillish alarm to be triggered.
Detector Window:	An on-screen area where an alarm detector operates.
X Position	Slider bar. Defines horizontal start position of left-hand edge of a rectangular on-screen area.
Width	Slider bar. Defines horizontal size of a rectangular on-screen area.
Y Position	Slider bar. Defines vertical start position of top edge of a rectangular on-screen area.
Height	Slider bar. Defines vertical size of a rectangular on-screen area.
Full Screen	Button. Click to set rectangular area to be full screen.
Mode:	Radio buttons: Defines in which region on-screen to detect in, i.e. within or outside a rectangular on-screen area defined above. Used for video image-related alarms. For example, video black.
Inside Window	Select to detect <i>inside</i> the rectangular on-screen area.
Outside Window	Select to detect <i>outside</i> the rectangular on-screen area.

Additional Properties - Video Input Format Change Alarm

The additional properties for this alarm are *not* shared by another video alarm.

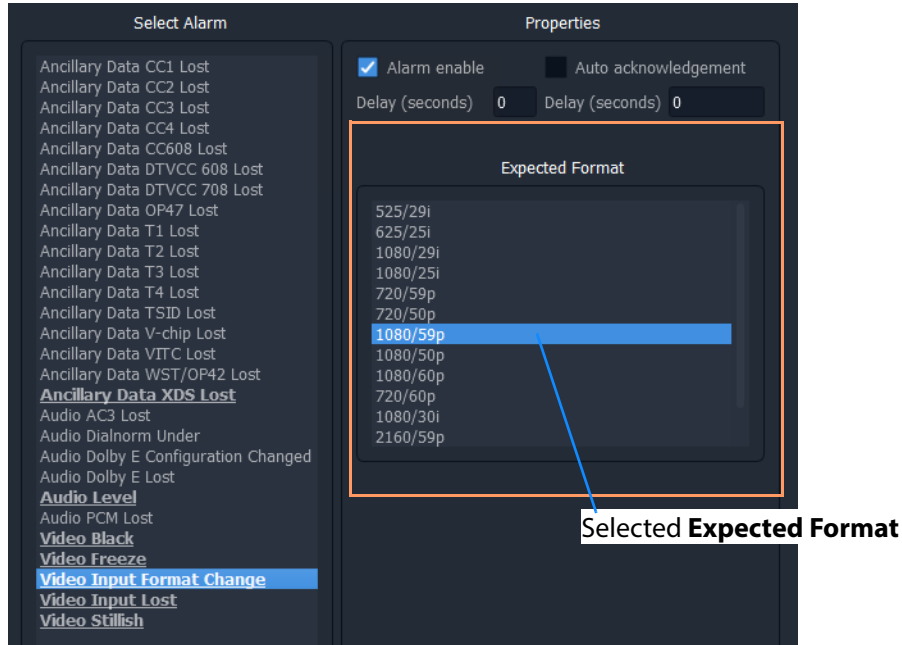


Fig. 3-10: Video Input Format Change Alarm - Additional Properties

Table 3-4 Video Input Format Change - Alarm Properties

Property	Description
Expected Format	<p>List box.</p> <p>Click on one video format in the list to select the expected video input format.</p> <p>The alarm alerts the user to any difference between the video format detected at an input and the expected format.</p> <p>Note: The Video Input Format Change alarm is commonly used as a “format-mismatch-from-expected” alarm.</p>

Levels Tab

This **Input Alarm** dialog tab presents some [Extended Alarm Properties](#) associated with some audio alarms.

The **Levels** tab sets audio trigger levels for input alarms associated with the **Selected Input**. The same trigger levels are used for *all audio channels of the Selected Input*. (The **Selected Input** is shown at the bottom of the tab.)

Note: The same audio level settings are used for *all* audio channels on the **Selected Input**.

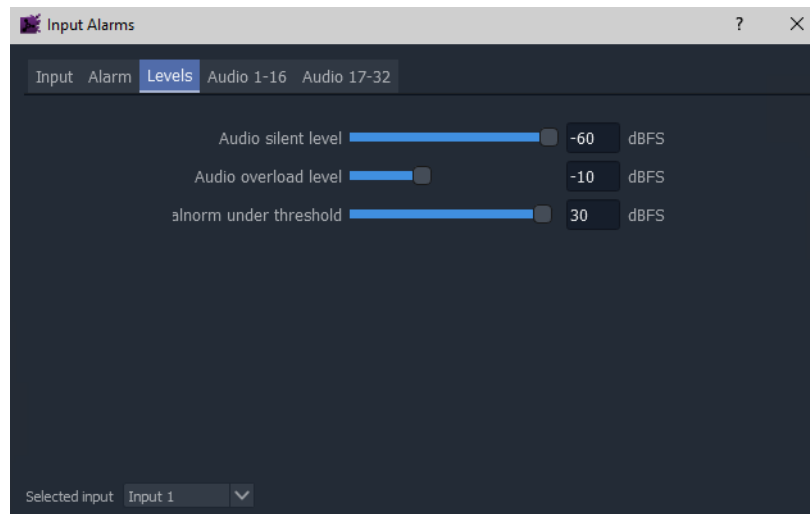


Fig. 3-11: Levels Tab

Table 3-5: Levels Tab Properties

Property	Description
Audio Silent Level	Slider bar. Sets the audio level below which the audio silence alarm triggers. Range -99 to -60 dBFS
Audio Overload Level	Slider bar. Sets the audio level above which the audio overload alarm triggers. Range -15 to 0 dBFS
Dialnorm Under Threshold	Slider bar. Sets the Dialnorm (Dialog Normalization) threshold audio level below which the Dialnorm Under Alarm is triggered. Range 1 to 31 dBFS
Selected Input	Text drop box. Displays the selected input, repeated on each tab. The Selected Input may also be changed here. Caution: Do not change the selected input unintentionally.

Audio 1-16 and Audio 17-32 Tabs

Introduction

These **Input Alarm** dialog tabs presents some embedded-audio, channel-specific [Extended Alarm Properties](#) associated with input audio alarms for the **Selected Input**. There are two similar tabs:

- **Audio 1-16** - sets up input audio channels 1 to 16.
- **Audio 17-32** - sets up input audio channels 17 to 32.

Audio alarms are set up on a per mono-channel or per channel-pair basis, depending on the type of alarm. Alarms are set up per multiviewer input (i.e. **Selected Input**).

Note: The **Selected Input** is shown on the tab in a drop-box and may be changed on the tab.

CAUTION

Do not inadvertently change the **Selected Input** here.

Each audio alarm must first be enabled in the **Alarm** tab before its channel properties can be modified in the **Audio 1-16** and **Audio 17-32** tabs. See [Alarm Tab - Basic Alarm Properties](#), on page 55.

Setting up Audio Channel Alarms

To set up audio channels for one or more audio alarms on a multiviewer input:

- 1 Select the input.
(Do this either in the **Input Tab**, or in the **Selected Input** drop-down box.)
- 2 Select and enable the required audio alarms in the **Alarm Tab**.
(See [Alarm Tab - Basic Alarm Properties](#), on page 55.)
- 3 In the **Audio 1-16** and **Audio 17-32** tabs, settings can be modified on a per-channel basis for enabled alarms.
(See [Audio Channel Tabs](#), on page 63.)

Audio Channel Tabs

The audio alarm types covered by the **Audio 1-16** and **Audio 17-32** tabs are shown in Figure 3-12. There is a column for each alarm type. Audio channels are shown in rows. Columns are grayed-out if the corresponding alarm is not enabled in the **Alarms** tab.

Note: Columns are grayed out unless the alarm has been first enabled on the **Alarms** tab.

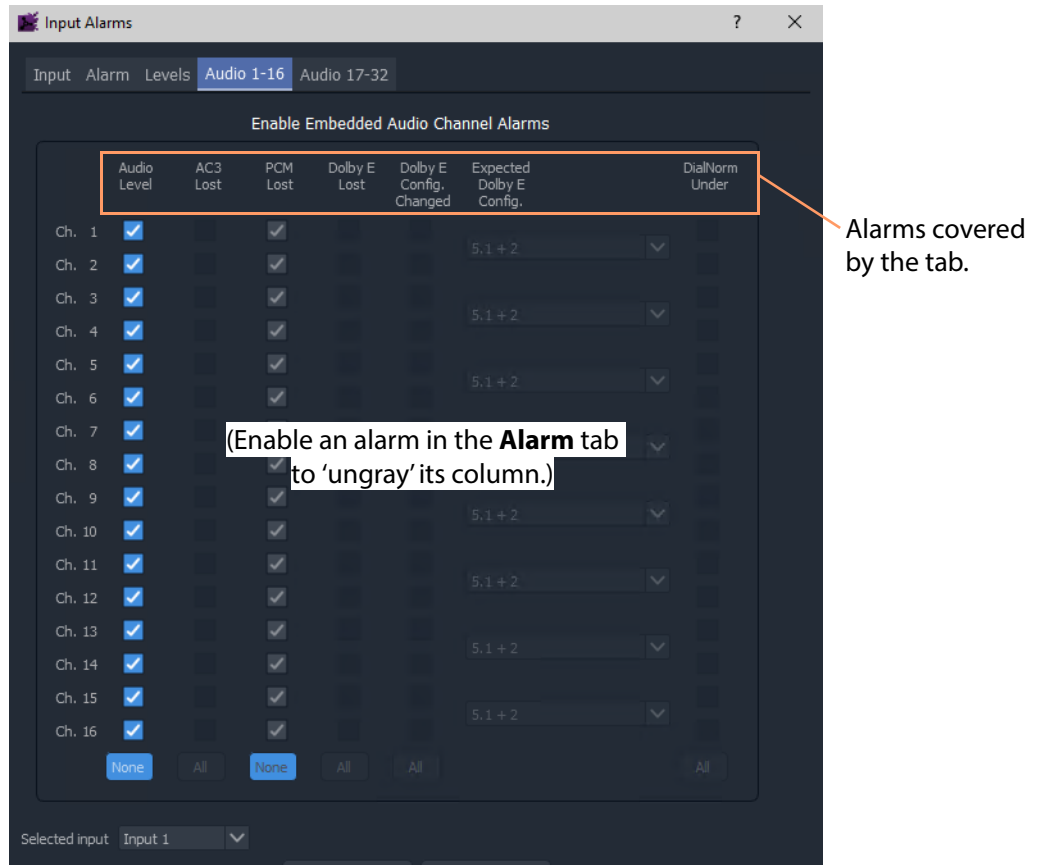
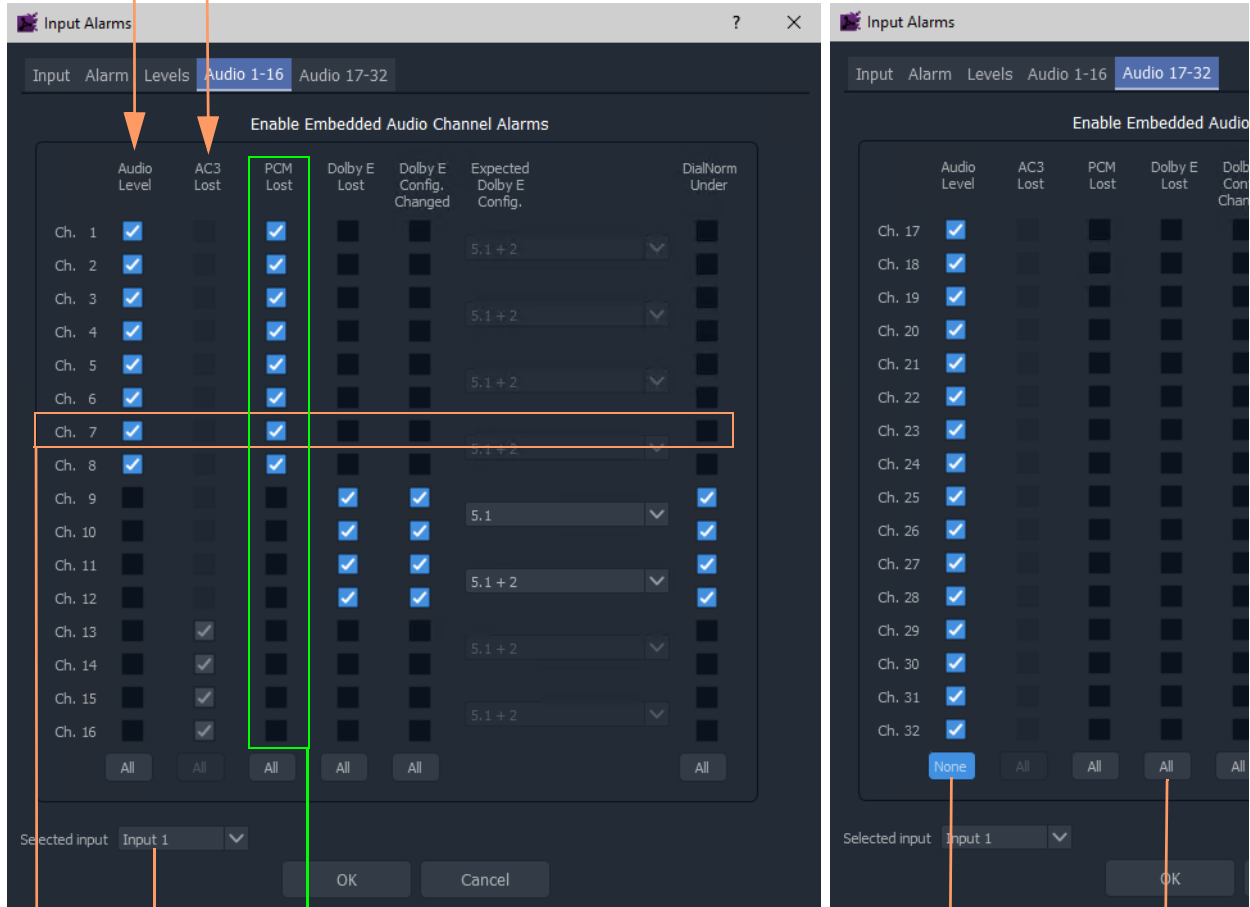


Fig. 3-12: Audio Tab (Audio 1-16 shown)

The **Audio 1-16** and **Audio 17-32** tabs are similar and are further shown in Figure 3-13 and their various alarm properties are described in [Table 3-6](#) on page 66.

Audio Level column is active, not grayed-out, indicating **Audio Level** alarm is enabled.

AC3 Lost column is inactive, grayed-out, indicating **AC3 Lost** alarm is not enabled.



Selected Input

One column per audio alarm type.

One row per audio channel.

Click **None** to de-select *all* channels in the column

Click **All** to select *all* channels in the column

Fig. 3-13: Audio 1-16 and Audio 17-32 Tabs

Table 3-6: Audio 1-16 and Audio 17-32 Tab Properties

Property (Column Heading)	Description
Audio Level	<p>Check box, per embedded audio channel. Select to enable the Audio Level alarm for the channel.</p> <p>Audio channels may be selected individually or all channels can be selected/deselected by clicking the All / None button at the base of the column.</p>
AC3 Lost	<p>Check box, for audio channels in <i>pairs</i>. Select to enable the AC3 Lost alarm for the channel pair.</p> <p>Audio channels are selected in <i>pairs</i> or all channels can be selected by clicking the All / None button at the base of the column.</p>
PCM Lost	<p>Check box, for audio channels in <i>pairs</i>. Select to enable the PCM Lost alarm for the channel-pair.</p> <p>Channels are selected in <i>pairs</i>, or all of the channels can be selected/deselected by clicking on the All / None button at the base of the column.</p>
Dolby E Lost	<p>Check box, for audio channels in <i>pairs</i>. Select to enable the Dolby E Lost alarm for the channel-pair. (Only available if the input's Dolby E Lost alarm is enabled in the Alarms tab.)</p> <p>Channels are selected in <i>pairs</i>, or all of the channels can be selected/deselected by clicking on the All / None button at the base of the column.</p>
Dolby E Config Changed	<p>Check box, for audio channels in <i>pairs</i>. Select to enable the Dolby E Config Changed alarm for the channel-pair. (Only available if the input's Dolby E Config Changed alarm is enabled in the Alarms tab.)</p> <p>Alarm alerts the user to a change in Dolby E audio channel configuration expected on an audio channel pair, for example "5.1 + 1 + 1" changing to "5.1 + 2".</p> <p>The expected Dolby E Configuration is set up in the adjacent Expected Dolby E Config drop-down box.</p> <p>Channels are selected in <i>pairs</i> or all of the channels can be selected/deselected by clicking on the All / None button at the base of the column.</p>

Table 3-6: Audio 1-16 and Audio 17-32 Tab Properties (continued)

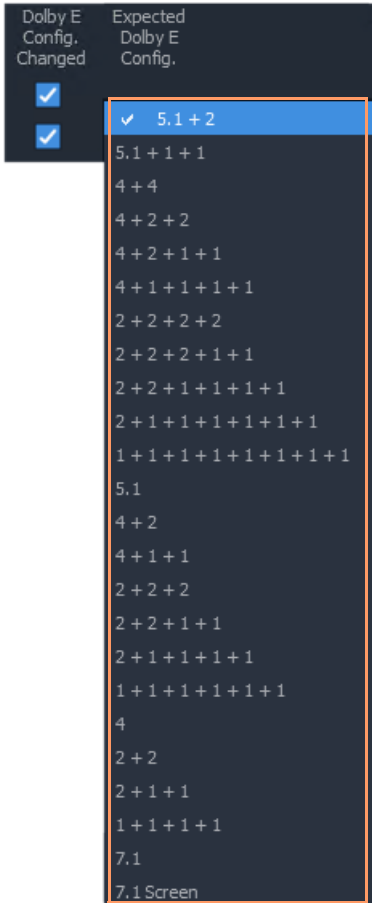
Property (Column Heading)	Description
<p>Expected Dolby E Config</p>	<p>Drop-down list. Select the Dolby E configuration to be expected on the audio channel-pair. The Dolby E configurations selectable are shown below:</p> 
<p>DialNorm Under</p>	<p>Check box. Select to enable the DialNorm Under alarm for the audio channel-pair. Alarm monitors if the dialog normalization value, described in metadata, is below the level set up in the alarm properties, Input Alarms dialog, Levels tab. (Only available if the input's DialNorm Under alarm is enabled in the Alarms tab.) Channels are selected in <i>pairs</i> or all of the channels can be selected/de-selected by clicking on the All / None button at the base of the column.</p>

Table 3-6: Audio 1-16 and Audio 17-32 Tab Properties (continued)

Property (Column Heading)	Description
All / None	Toggle buttons. Located at the bottom of each alarm type column. Click on the All button to select all entries in that column. Click on the None button to deselect all items in that column.
Selected Input text box	Displays the selected input, repeated on each tab. The Selected Input may also be changed here.

4

Core MV Input-Copy H.264 Streams

Section contents:

Core MV Input-Copy H.264 Streams

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This chapter describes an MV-8 Series Multiviewer's H.264 'input-copy' feature.

Note:

An MV-8X1 multiviewer requires a 'H.264 stream' license. For example, license 'MV-821-H264'.

For MV-801, MV-831, and MV-841/851 multiviewers, the license can be added in the field.

However, an MV-821 multiviewer (MV-821-HDBNC or MV-821-IP) requires a factory-fitted hardware option to use with this license.

Introduction

The MV-8 Series Multiviewer supports sending out H.264-compressed copies of video inputs on a control network interface for displaying on a PC screen as a simple confidence monitor facility using Grass Valley's GV Orbit Client application (product: GV Orbit Lite).

Each MV-8 Series Multiviewer video input image is scaled-down and compressed to create an H.264-encoded 'input-copy' stream. For each input, an audio channel can also be selected and compressed into an accompanying audio stream. The image and audio streams are transmitted on a control network interface of the multiviewer unit. They are transmitted as an RTSP stream and may be viewed on a PC for thumbnail/confidence monitoring applications.

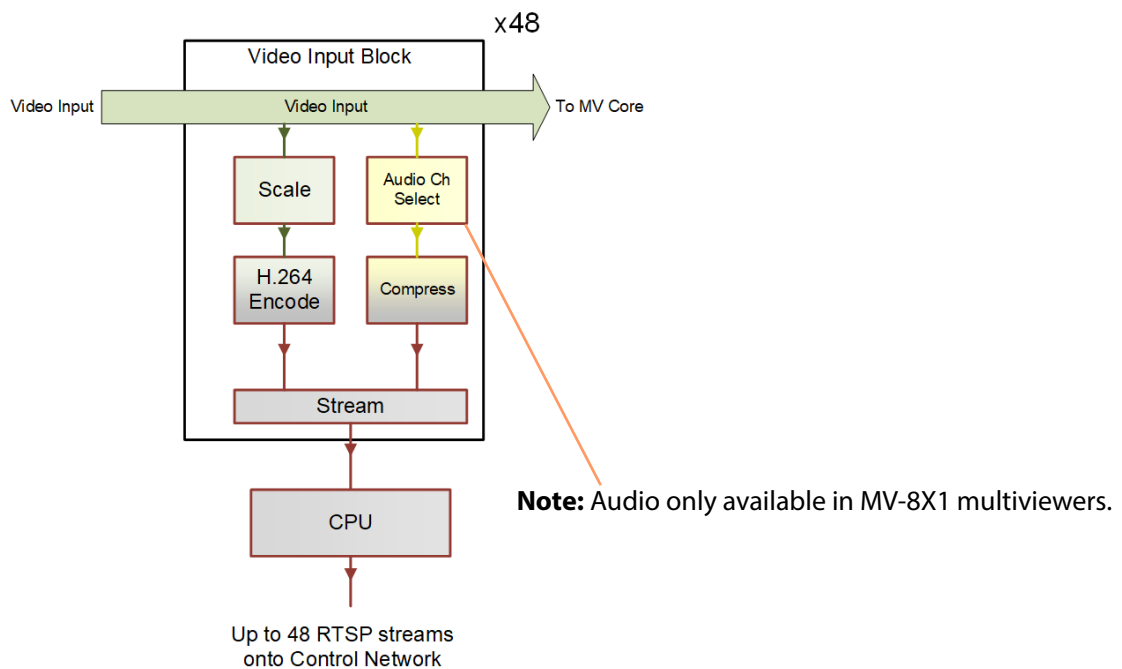


Fig. 4-1: Multiviewer Video Input-Copy RTSP Streams

Each RTSP stream is a wrapper for:

- an H.264-compressed image stream; and
- an optional (compressed) mono audio channel selected from audio channels of the video input. (MV-8X1 multiviewers only.)

Note:

MV-8 Series multiviewers can potentially source an RTSP 'Input-Copy' H.264 video stream for each multiviewer video input.

In practice, in order to minimize image artifacts for real-world video signals, it is recommended a maximum of 30 streams is sourced from any one multiviewer.

Control Settings

The following 'Input-Copy' stream settings are defined on the **System - Setup** control screen, see [System-Setup Control Screen, "Streamed Output" box](#), on page 20:

- Ethernet interface to use.
- IP port number.
- Specific Multicast Group Base Address, if required.
- Global-enable of all streams.

Audio channel selection is done in the [Audio Codec Select Control Screen](#), on page 45. For each video input, a single mono audio channel can be selected to be either:

- any left- or right-audio channel; or
- a down-mix of any stereo pair.

Stream URLs

Each stream has the same stem URL and video inputs 1 to 48 have suffixes '/Stream1' to '/Stream48' respectively.

For example:

rtsp://10.162.51.200:8554/Stream10

IP Address IP Port number video input 10 suffix

Stream IP Ports

An **IP Port** number is defined in the [System-Setup Control Screen, "Streamed Output" box](#), on page 20. For example, 8554. The IP Port number used for H.264 'input-copy' streams is *different between MV-8X0 and MV-8X1 devices*:

- **For MV-8X0 multiviewers** - The defined IP port number is used for all 48 streams. For example, 8554.
- **For MV-8X1 multiviewers** - The defined IP port number is used for the first 12 streams; for the next 12 streams, the IP Port number used is incremented by one; and so on. For example:

Streams	IP Port
1 - 12	8554
13 - 24	8555
25 - 36	8556
37 - 48	8557

Viewing H.264 Input-Copy Streams

Media Player Example

To view an H.264 'input-copy' stream in a media player:

Step 1: Prepare Multiviewer

- 1 License the MV-8X1 multiviewer device for H264 streaming.
- 2 Apply video inputs to the multiviewer unit.

In the multiviewer's **System-Setup** control screen, in the **Streamed Output** section:

- 3 Select the **Ethernet Interface** to use for the streams.

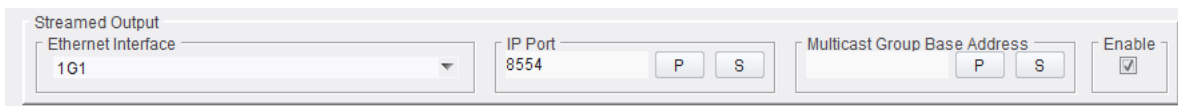


Fig. 4-2: Streamed Output Settings

- 4 Leave **IP Port** number at its default (8554), unless the port number needs to change for some reason.
- 5 Leave the **Multicast Group Base** address blank, unless a specific base address is required.
- 6 Select **Enable**.
All H.264 stream outputting is enabled.

Note:

H.264 'input-copy' streams are only sent when a device is receiving the RTSP stream.

All multiviewer RTSP H.264 'Input-Copy' streams are now ready to be sent out. A stream is only sent out when another device/application (for example, a media player) has opened the RTSP stream for viewing.

Step 2: View in a Media Player

- 1 Open the media player of choice. VLC is used in this example.
- 2 Open the RTSP media stream on the network.

Enter URL of stream.

For example,

RTSP://10.162.51.166:8554/Stream48

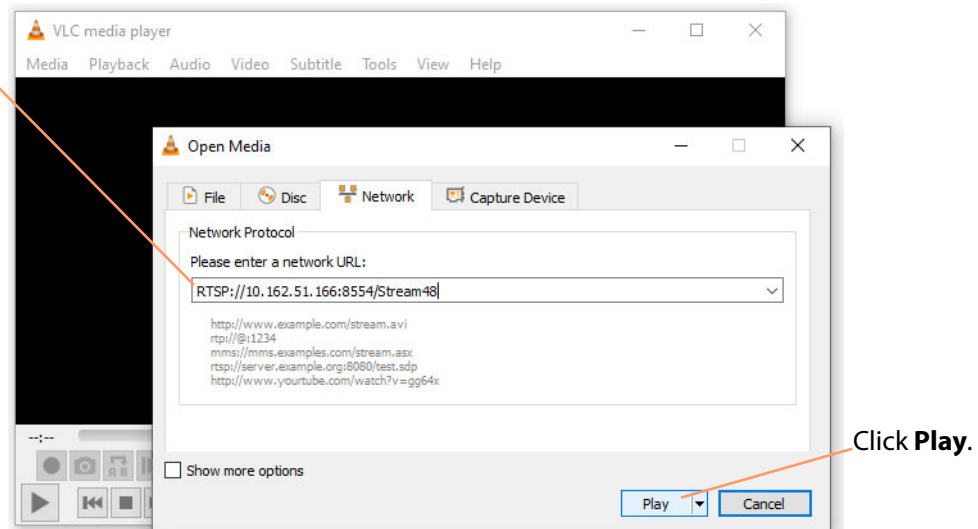


Fig. 4-3: Open Media Stream

3 Click **Play**.

The media is shown in the player window.

Core MV Input-Copy H.264 Streams
Media Player Example



Fig. 4-4: Playing H.264 'Input-Copy' Stream

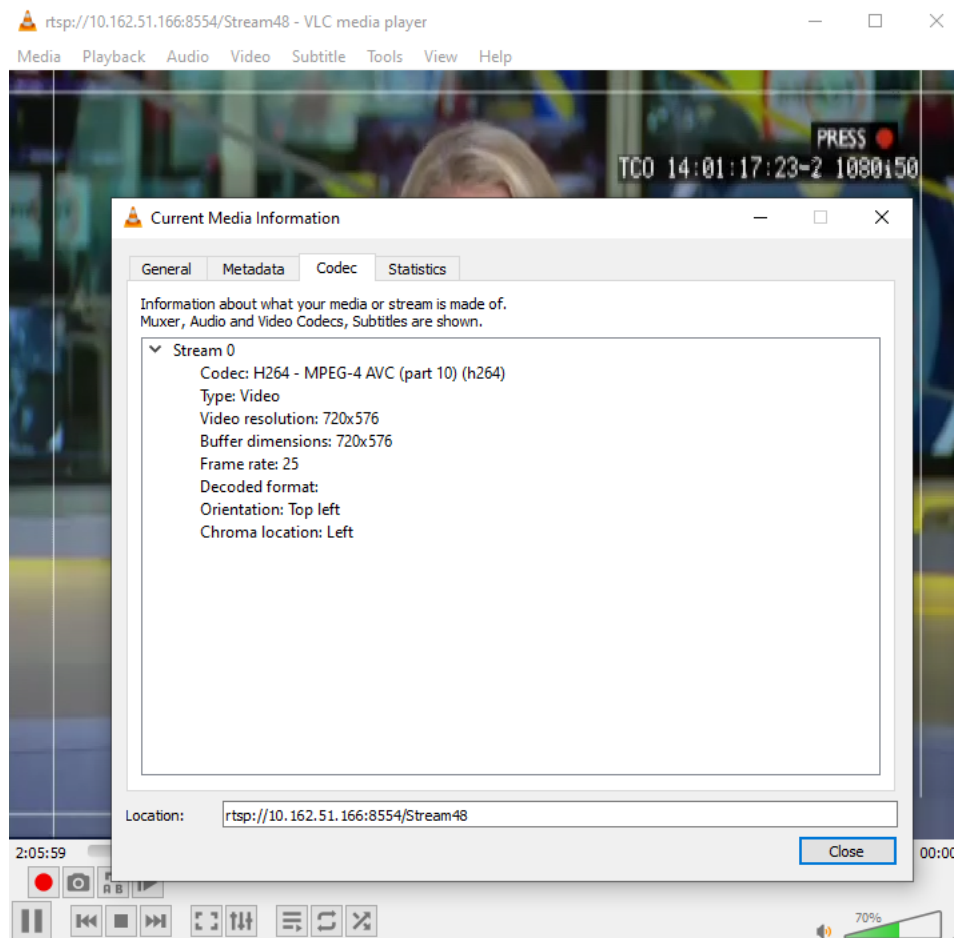


Fig. 4-5: Codec Information

GV Orbit Client Examples

To view an H.264 'input-copy' stream in a video tile in GV Orbit Client, a video tile on a GV Orbit screen needs setting up to show streamed video from some URL.

For this, the following must be known:

- IP address of the multiviewer.
- The IP port number(s) it is using for its H.264 'input-copy' streams.

The client PC being used must have network access to the RTSP stream source device.

Set up A Multiviewer

See [Step 1: Prepare Multiviewer](#), on page 72 to set up a multiviewer for 'Input-Copy' streaming.

GV Orbit Custom User Panel Example

This example will describe how to view an H.264 'Input-Copy' stream on a custom user panel. This is for a GV Orbit Professional or Enterprise user. To run a GV Orbit custom user panel, a GV Orbit system is required with a GV Orbit server:

- 1 Open GV Orbit Client.
- 2 Create a new 'C&M' project.
- 3 Create a new screen.

This will be the custom user panel.

Note: The GV Orbit Client should be in 'Design Mode' (see tool bar icon in Figure 4-6).

- 4 Click once on the **Video Stream** widget icon at the bottom of the screen, see Figure 4-6.

Then move the cursor to bring a **Video Stream** widget onto the custom user panel. Position the widget on the panel and click once to release it.

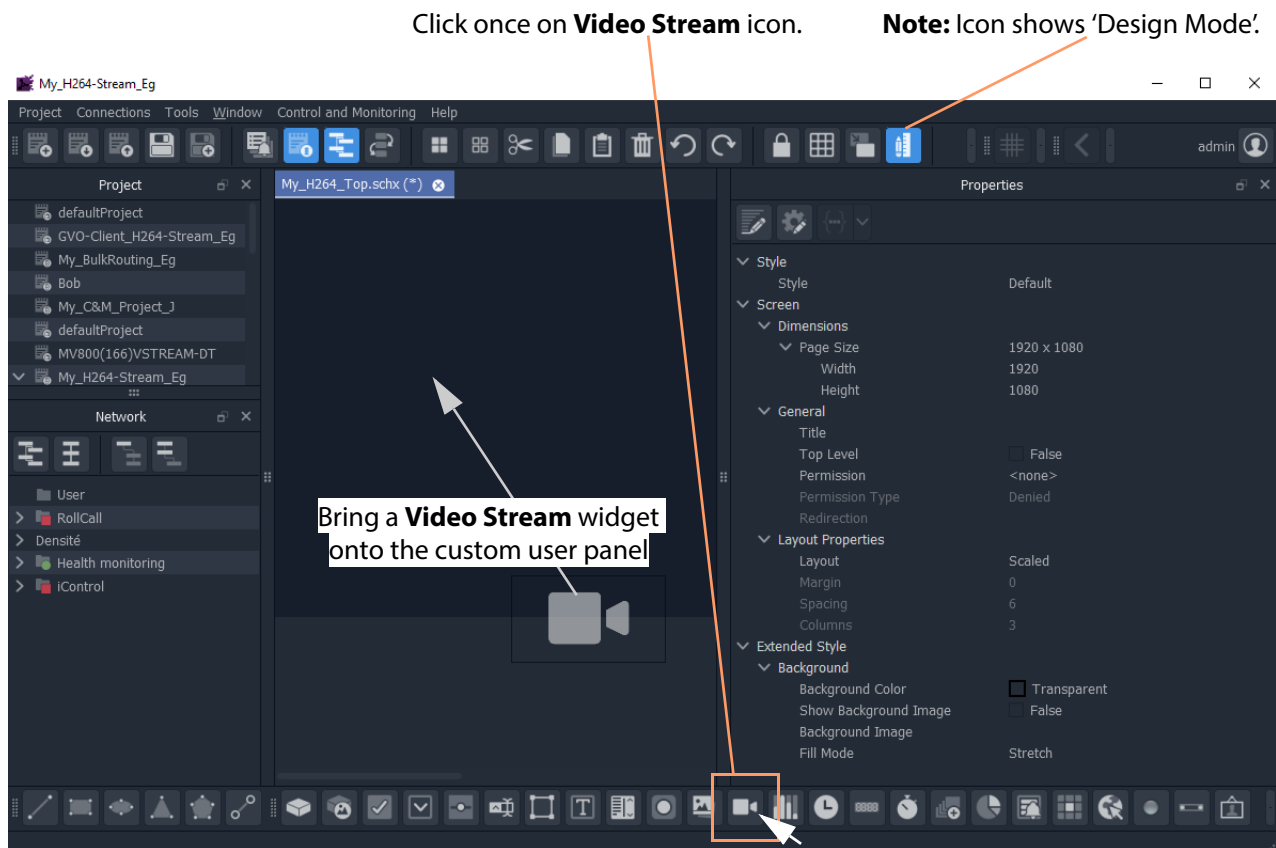


Fig. 4-6: Adding Video Stream Widget

- 5 Select the widget on the panel and edit the **Video > Source Path** widget property: Enter the RTSP stream URL. (See Figure 4-7.)

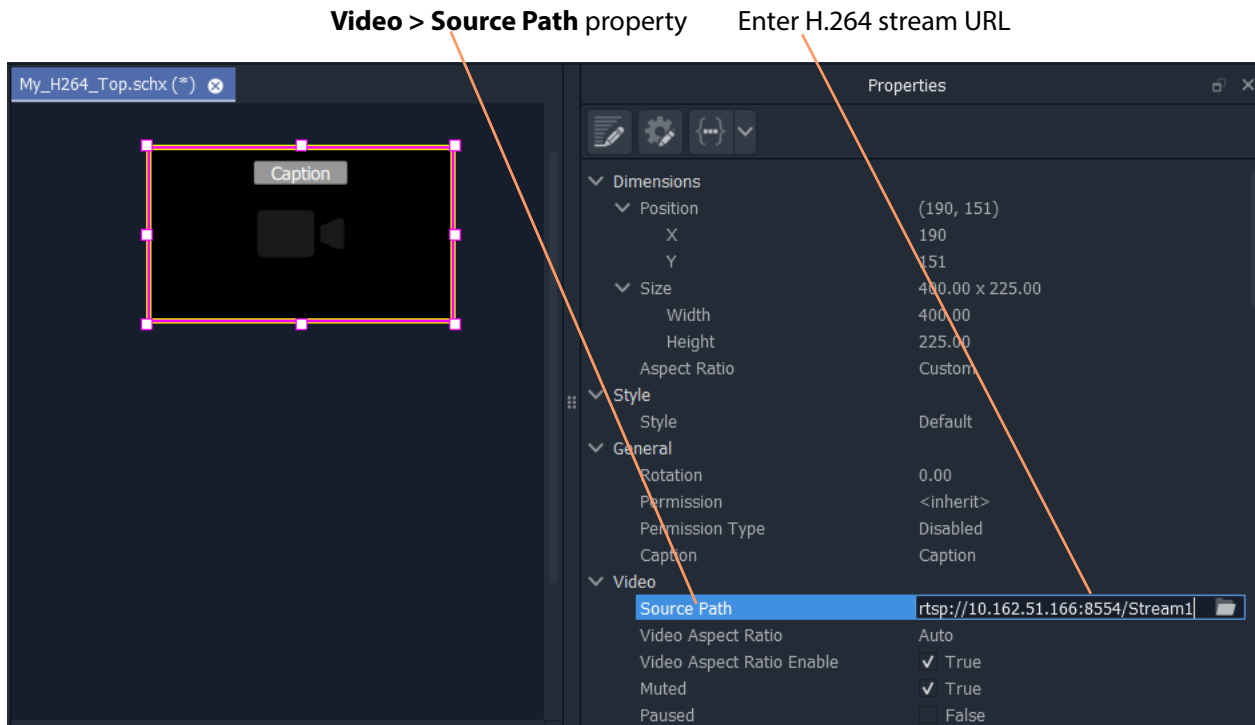


Fig. 4-7: Enter URL for **Video > Source Path** Property

- Click the 'Run Mode/Design Mode' tool bar icon. See Figure 4-8.
The custom user panel is run and video appears as a live thumbnail image in the widget. See Figure 4-8.

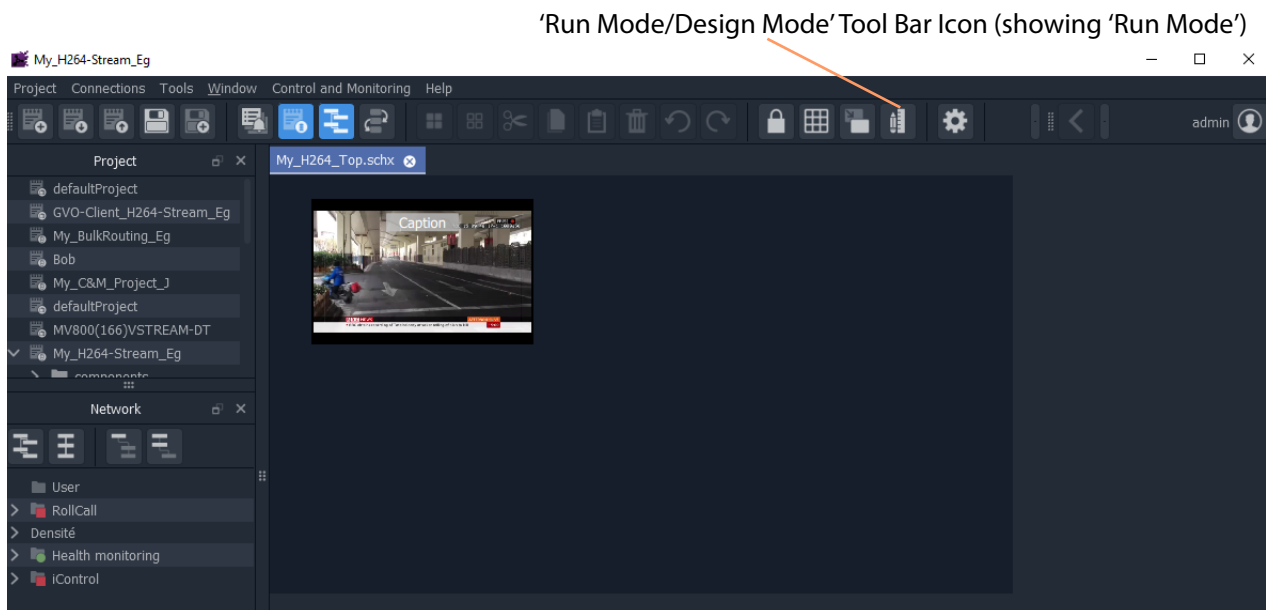


Fig. 4-8: Run Custom User Panel

GV Orbit Lite Example

For GV Orbit Lite product users, there is just the GV Orbit Client tool, no GV Orbit server nor C&M project. The example uses just the GV Orbit Client tool and is also applicable to the GV Orbit Professional and Enterprise products.

The example below will build a small desktop video wall and configure one tile to show an H.264 stream.

Step 1: A Simple Desktop Video Wall

- 1 Run GV Orbit Client and create a **New Project**, a multiviewer project.

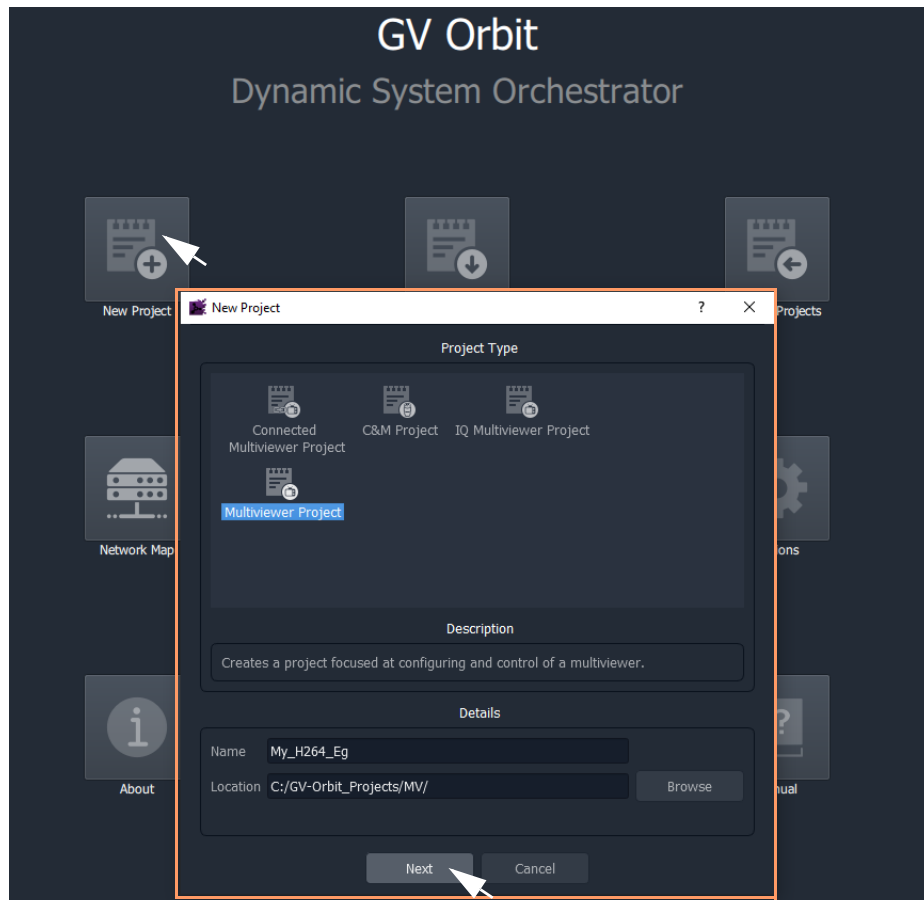


Fig. 4-9: Creating a New Multiviewer project

- 2 Click **Next**.

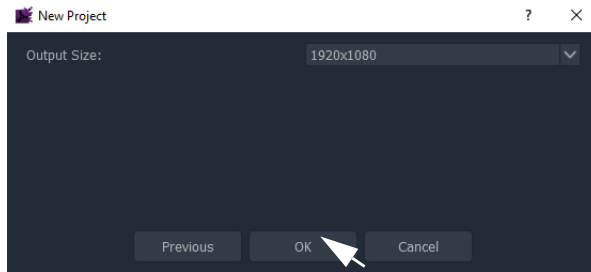


Fig. 4-10: Creating a New Multiviewer project

- 3 Select 'Output Size' 1920x1080.
And click **OK**.
- 4 Click the **Walls** icon and click **New Wall**. See Figure 4-11.

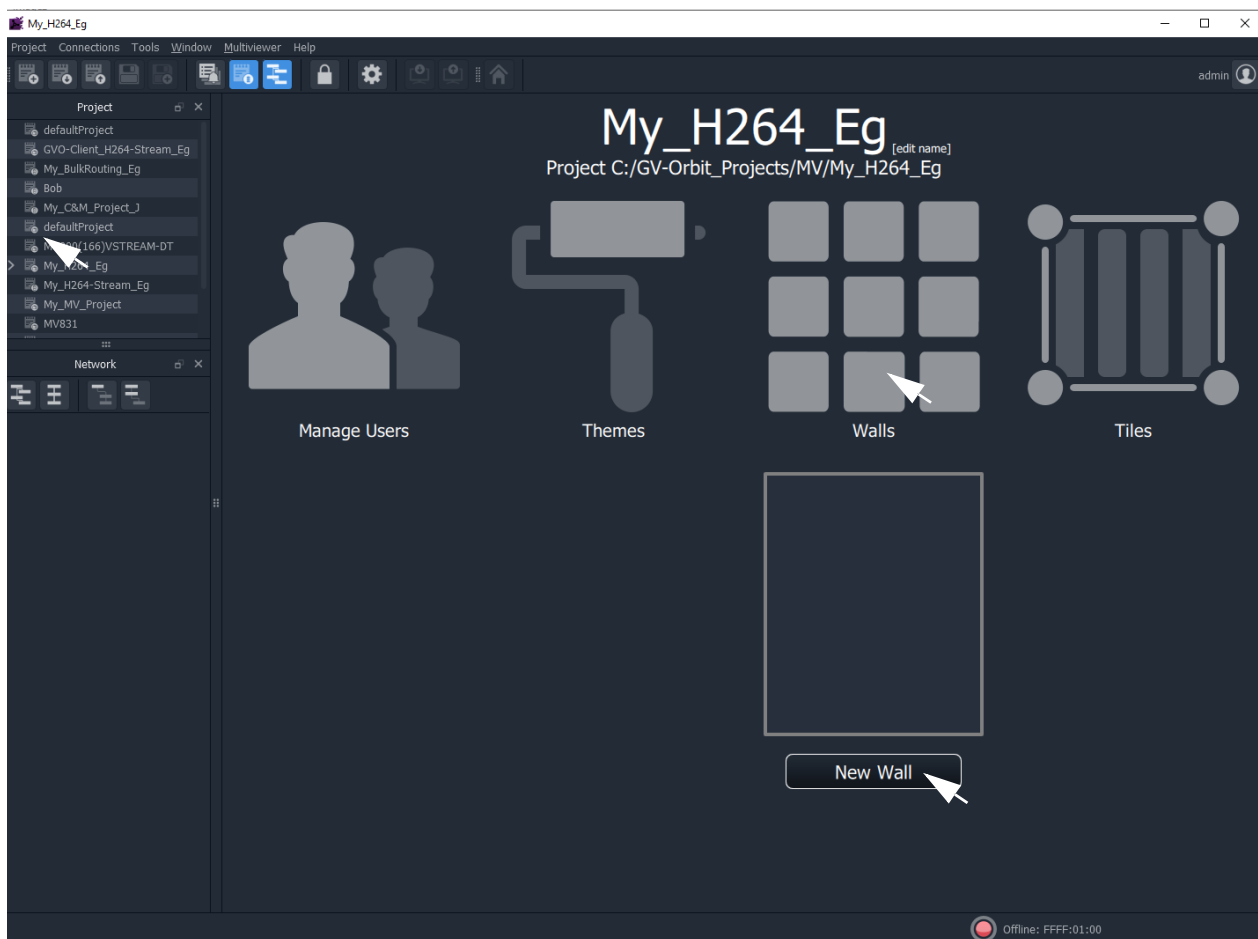


Fig. 4-11: Creating a New Wall

- 5 Enter a **Name** for the new wall.
Click **OK**.
A new video Wall is shown.

- 6 Click the **Run Mode/Design Mode** tool bar icon to set GV Orbit Client into 'Design Mode'. (**Note:** Clicking this icon toggles between the two modes.)
The new video wall is shown in the **Wall Editor**. See Figure 4-12.

Run Mode/Design Mode icon, showing GV Orbit Client in 'Design Mode'

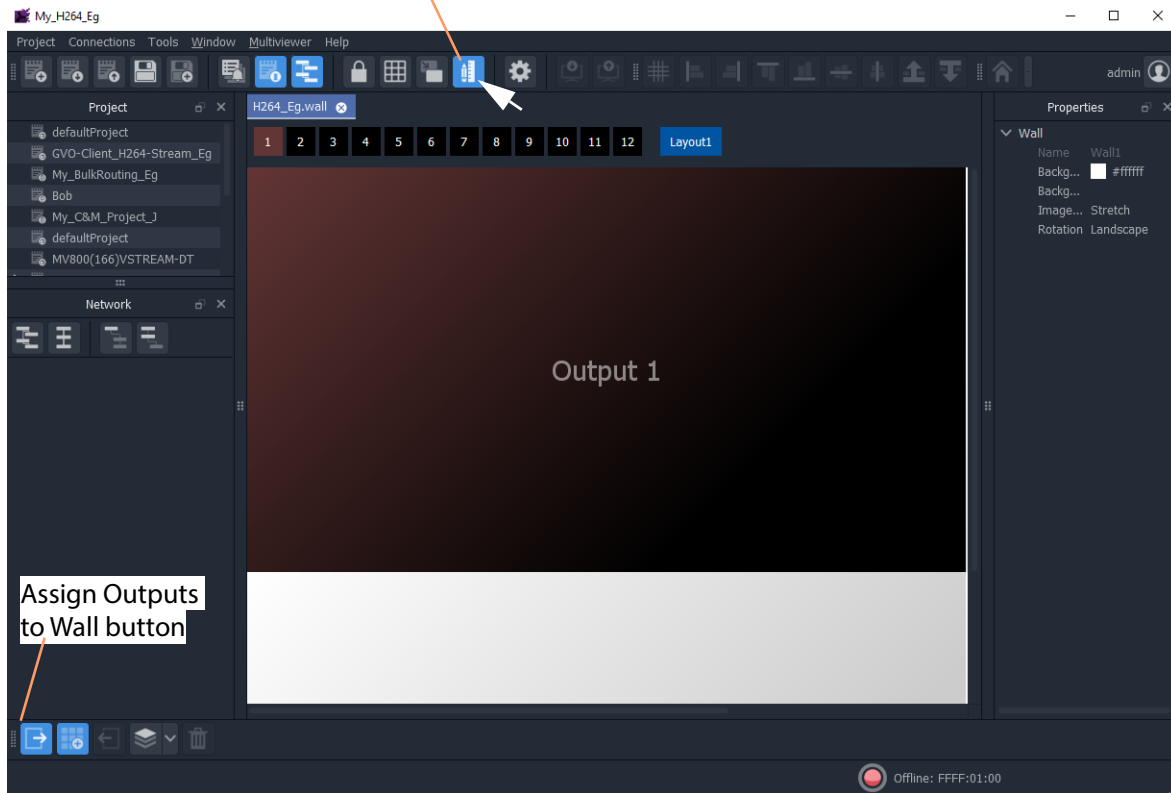


Fig. 4-12: New Wall in Wall Editor

- 7 Click the 'Assign Outputs to Wall' button () in the bottom right-hand corner.
- 8 Click on the 3x3 Grid to populate the new video wall with a 3x3 grid.

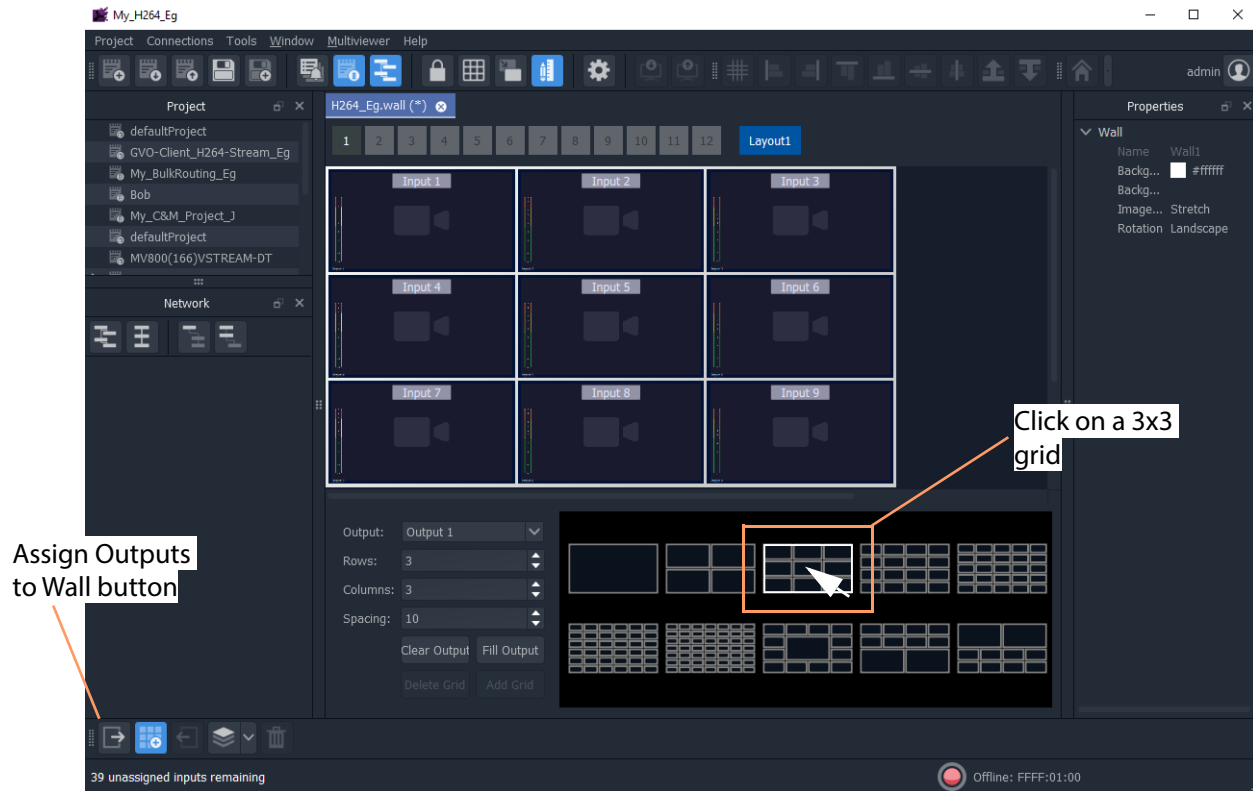


Fig. 4-13: Setting a 3x3 Grid in Wall Editor

- 9 Select a video tile on the **Wall**.
- 10 Find the **Streaming Video** property and set it to 'True'.

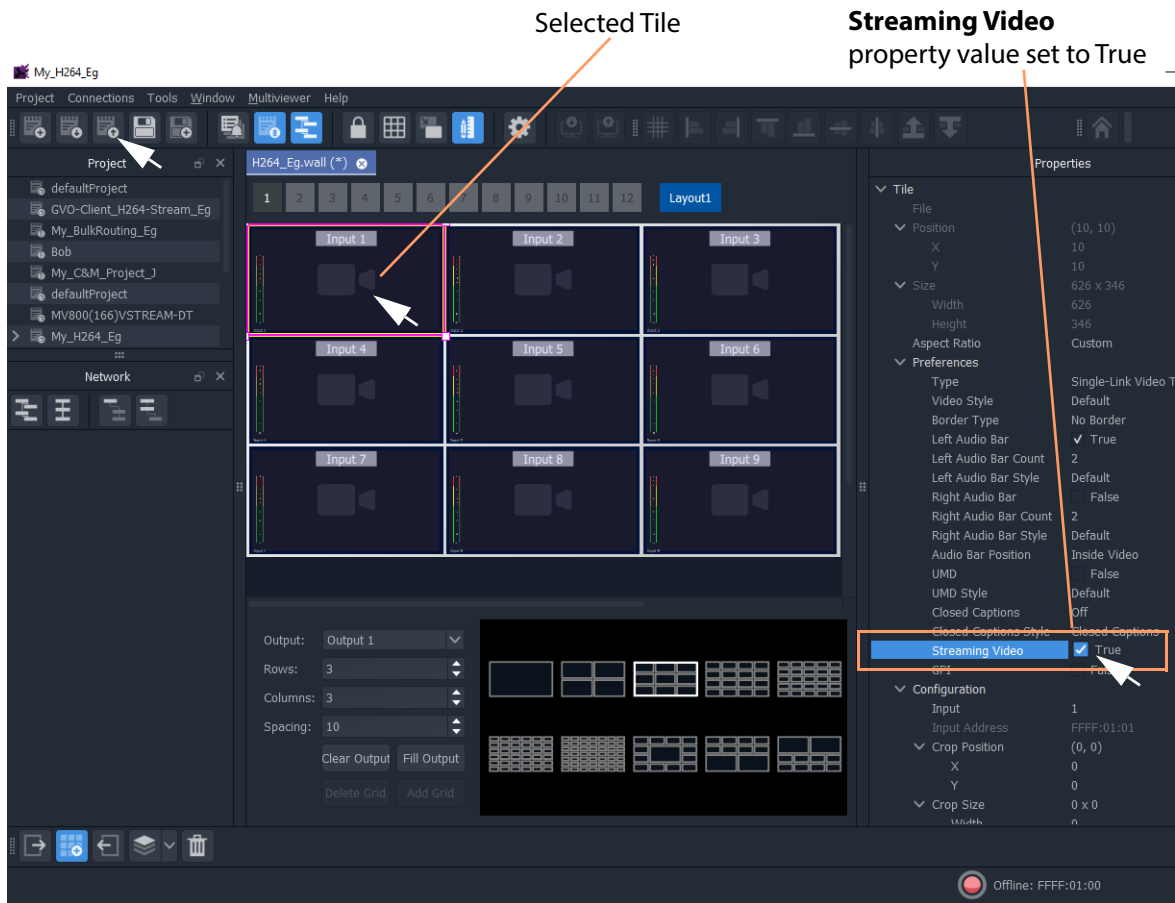


Fig. 4-14: Streaming Video True

11 Click the **Save Project** icon in the tool bar () to save the **Wall** design.

The basic preparation of a simple desktop video wall is done and is now saved. One video tile on the wall has been set up for displaying RTSP 'Input-Copy' video stream.

Step 2: Point GV Orbit Client at a Multiviewer

To point the GV Orbit Client multiviewer project at a multiviewer unit:

12 Click **Multiviewer -> Properties** in the main menu.

The **Properties** dialog is shown. See Figure 4-15.

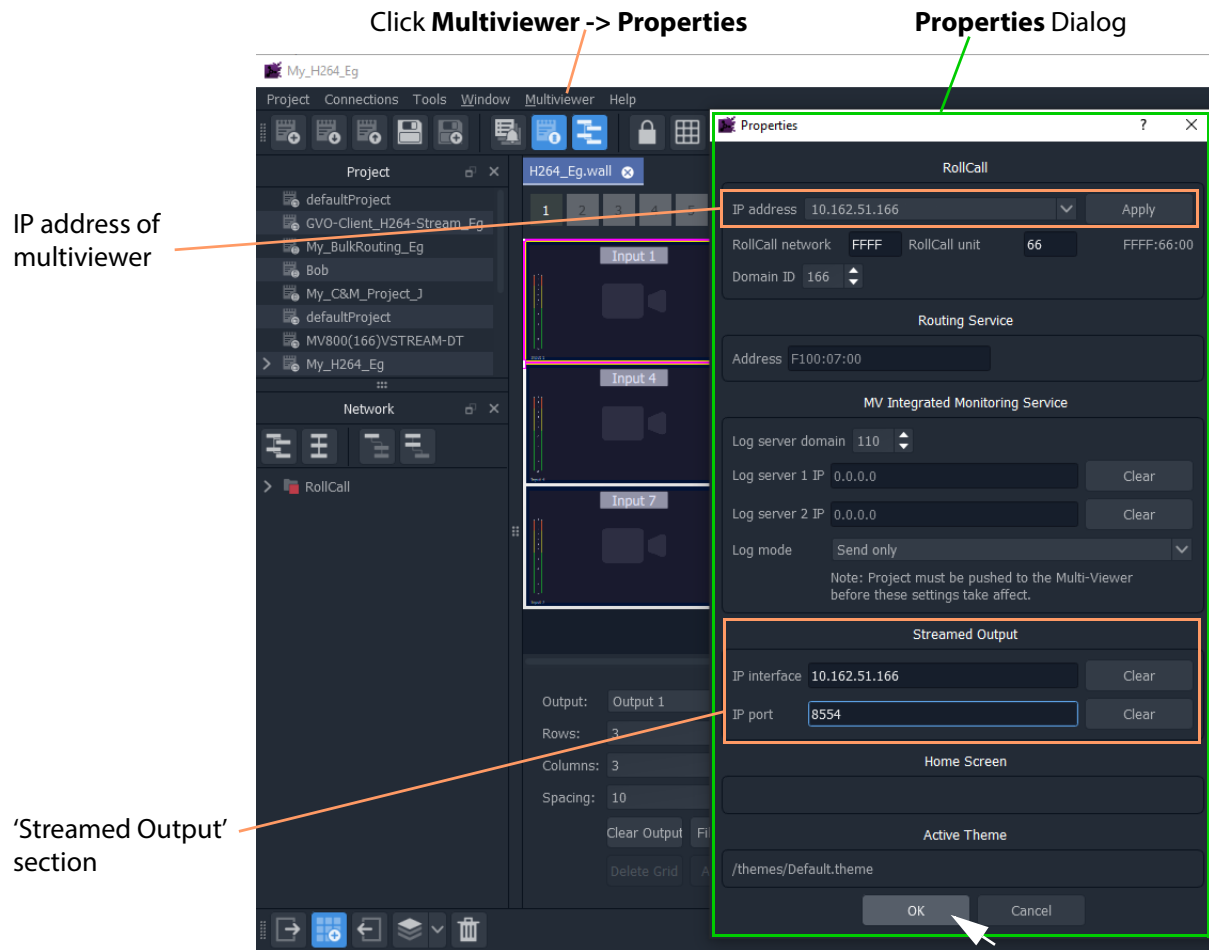


Fig. 4-15: Properties Dialog

In the **Properties** dialog:

- 13 Enter the IP address of a multiviewer sourcing H.264 'Input-Copy' streams.
- 14 Click **Apply**.

A connection is made to the multiviewer device and this is indicated at the bottom of the GV Orbit Client screen. See Figure 4-16.



Fig. 4-16: Properties Dialog

Some further multiviewer settings are then filled out automatically in the dialog. (E.g. RollCall Network, Domain ID and Routing Service address.)

- 15 In the 'Streamed Output' section of the **Properties** dialog (see Figure 4-15):
 - 1 Enter the IP address of the network interface used by the multiviewer for the H.264 Input-Copy streams.

- 2 Enter the IP port number used by the multiviewer for the H.264 Input-Copy streams.
- 16 Click **OK**.

A dialog pops up advising that the 'Streamed Output' changes mean the **Wall** editor will need to be closed (so any *unsaved* Wall design needs saving first).

Note: The **Wall** design has already been saved in the steps above. If it had not been, then the new **Wall** design would be lost.

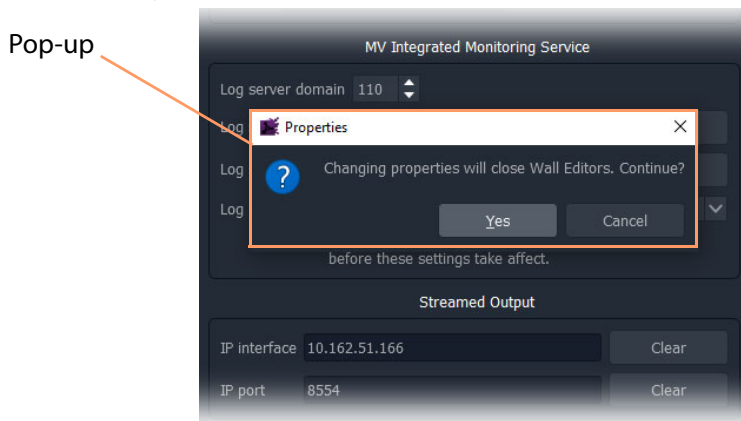


Fig. 4-17: Properties Dialog Pop-up

- 17 Click **Yes**.
- The **Wall Editor** is closed and the multiviewer property settings are applied to the GV Orbit project and the multiviewer 'Input-Copy' stream URLs are formed.

Step 3: View the Video Wall

Re-Open the Wall:

- 18 Click on the **Walls** icon and select the new wall design in the list.



Fig. 4-18: Re-Open Wall

The wall design is opened in 'Run Mode'. One video tile shows video from a RTSP video stream. See Figure 4-19.

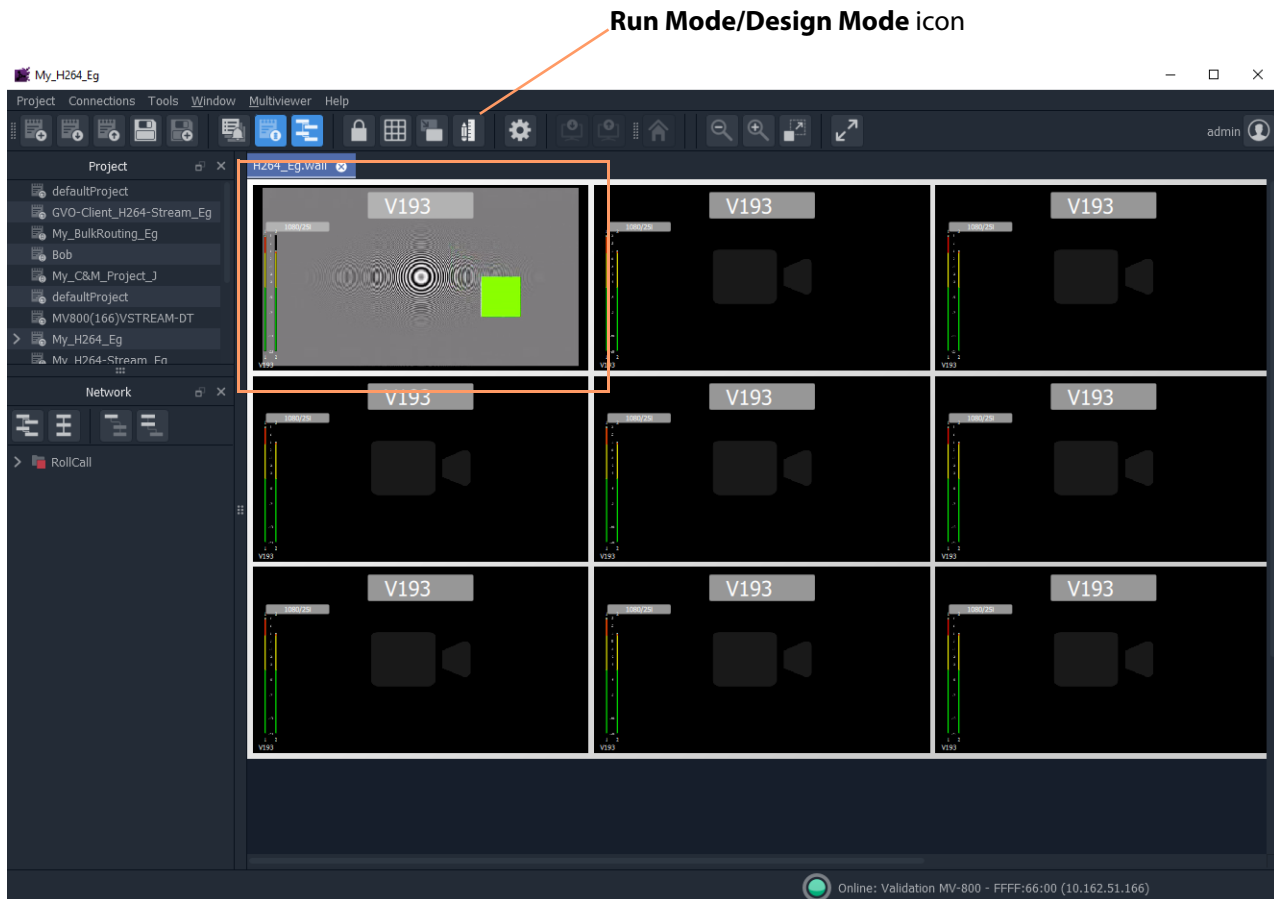
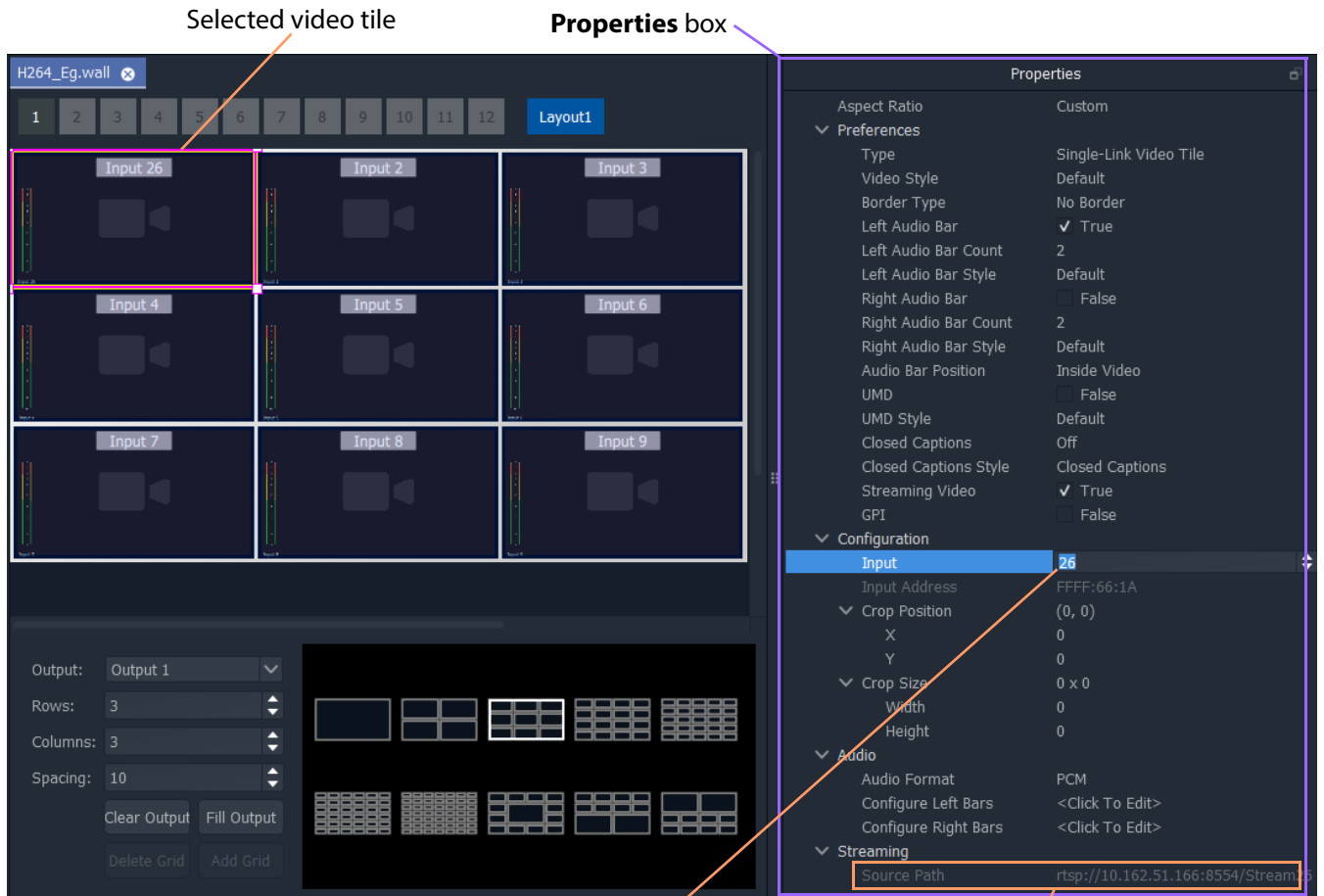


Fig. 4-19: Wall Running and Showing a Video Stream

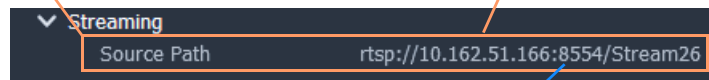
To change the video input being shown by the video tile:

- 19 Click the **Run Mode/Design Mode** icon to stop running the wall and show it in the **Wall Editor**.
- 20 Select the video tile.
- 21 Change the **Configuration** -> **Input** property in the **Properties** box to select another video input. See Figure 4-20a.

The resulting video stream path is filled out from the video input number selected and the IP address/IP port information. See Figure 4-20b.




- a) Select video input to show on video tile.
- b) Resulting RTSP video stream path.



Note: RTSP video stream path is shown for an MV-8X0 multiviewer. An MV-8X1 multiviewer uses one of four IP port numbers, depending on the multiviewer video input (see [Stream IP Ports](#), on page 71).

Fig. 4-20: Select a Video Input:

- a) Select video input to show on video tile.
- b) Resulting RTSP video stream path.

- 22 Click the **Save Project** icon in the tool bar () to save the **Wall** design.
- 23 Click the **Run Mode/Design Mode** icon to start running the wall. The newly-selected video is now shown on the screen. See Figure 4-21.

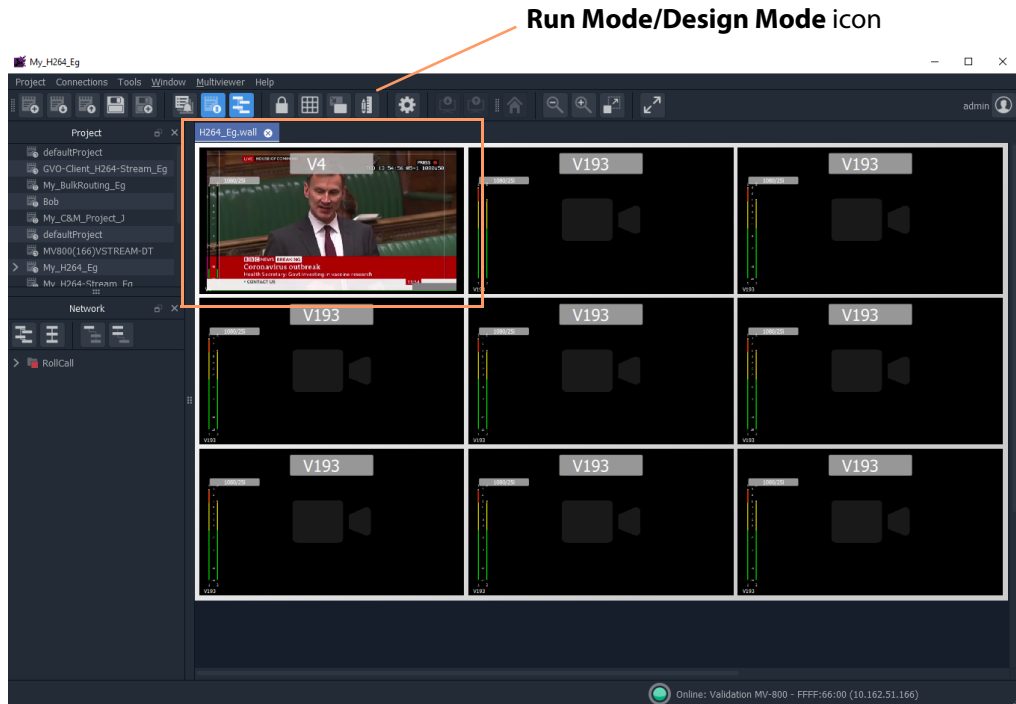


Fig. 4-21: Wall Running and Showing a New Video Stream

5

Other Supported Core MV Features

Chapter summary:

Other Supported Core MV Features

<i>Audio Meters</i>	page 90
<i>TSL Support</i>	page 92
<i>High Dynamic Range Video Support</i>	page 97
<i>Media Biometrics Support</i>	page 99
<i>Extended Data Services Support</i>	page 100
<i>Output Embedded Audio Support</i>	page 105
<i>Input Audio Loudness</i>	page 107
<i>Input Audio Phase</i>	page 110

Audio Meters

A multiviewer video wall is defined by the GV Orbit multiviewer project running on the multiviewer. Typically, this has video tiles which display audio levels via graphical 'Audio Bars' widgets.

Audio Meter Type

The 'Audio Bars' meter type is defined in one place in the GV Orbit multiviewer project. In GV Orbit Client with a multiviewer project open and in 'Design Mode', to set up the audio meter type:

- 1 Click on 'Multiviewer > Input Audio' in the main menu.
The 'Input Audio' dialog is shown.

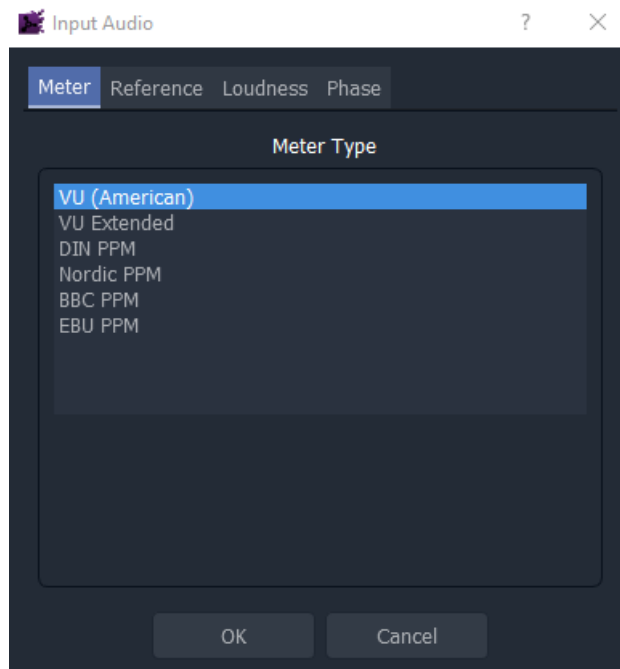


Fig. 5-1: Input Audio Dialog, Meter Tab

- 2 Select the 'Meter' tab and select the required meter type.
- 3 Click OK.

This sets the audio meter type globally for the multiviewer project. It also sets the meter ballistics for all audio meters.

Audio Meter Ballistics

The multiviewer has one audio meter ballistics setting and this is set by the [Audio Meter Type](#) setting. All audio data in the multiviewer will have this ballistics.

CAUTION Audio Meter Ballistics:

All audio data in a multiviewer will have the *same* ballistics.
(As set by the [Audio Meter Type](#) setting in a GV Orbit multiviewer project.)

A video wall can be designed and may use graphical Audio Bars widgets to display audio data. The widget's audio meter type can be changed locally on the wall on a video tile, but this only affects that widget's Audio Bars scale. It does **not** change the audio data ballistics.

TSL Support

TSL Protocol Tally Settings

TSL protocols are used widely throughout the industry for communication between a TSL Tally controller and Under Monitor Displays (UMDs). The protocol enables tally lamp control and text label data to be carried to each UMD device.

A TSL Tally controller handles the tally data in a video system and provides TSL Tally control information to each UMD. The MV-8 Series Multiviewer supports two TSL protocols: TSL 3.1 and TSL 5.0. Initial TSL support settings are described here.

Setting up the multiviewer to work with a TSL tally-based system involves the following steps:

- Specify how the multiviewer gets the TSL Tally message information.
See [Step 1: Specifying Multiviewer TSL Tally Mode](#), on page 92.
- Specify index parameters for each UMD on the video wall.
See [Step 2: Specifying Index Parameters for each UMD in GV Orbit](#), on page 93.

Step 1: Specifying Multiviewer TSL Tally Mode

The multiviewer may get its TSL Tally information in one of two modes:

- a) **Server Mode** - MV-8 Series Multiviewer listens for Tally messages.
Specify the MV-8X0/8X1 Multiviewer IP address and network port to receive Tally messages on.
- b) **Client Mode** - MV-8 Series Multiviewer reads Tally messages from a Tally controller.
Specify the IP address and network port number of the Tally controller.

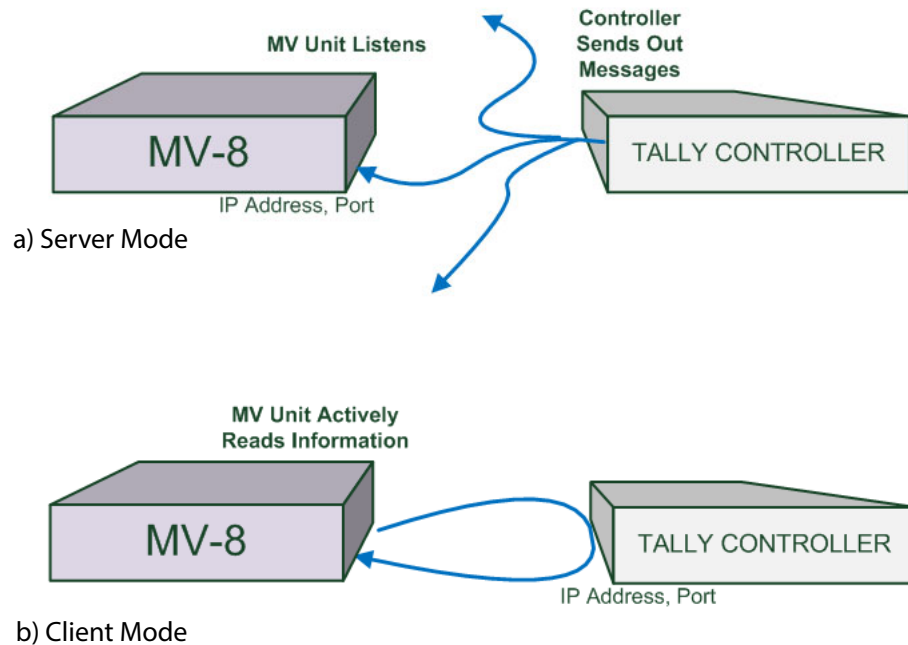


Fig. 5-2: TSL Protocol Operating Modes: a) Server Mode; b) Client Mode.

The Grass Valley RollCall Control Panel application is used to configure the settings for a MV-8 Series Multiviewer in the RollCall TSL control screen; see [TSL Control Screen](#), on page 33.

Step 2: Specifying Index Parameters for each UMD in GV Orbit

Use the GV Orbit Client application to set the properties of each UMD in a video tile on the video wall layout. The properties differ between TSL Protocol 3.1 and 5.0.

The style of the UMD widget can be selected with the **Preferences > UMD Style** property.

The index parameters used by each UMD are specifiable in the UMD properties. Values can be set manually or values can be automatically assigned as part of assigning inputs to video tiles. (Refer to GV Orbit documentation.)

GV Orbit UMD Properties - TSL Protocol Version 3.1

TSL Protocol 3.1 is the original TSL protocol for sending data over a serial comms connection or via Ethernet. The multiviewer supports an Ethernet connection. Each multiviewer monitor screen is addressed with a Display address. Each UMD widget is associated with a video tile in GV Orbit and must have its **3.1 Display Address** property set up.

1. Select **Video Tile** and the video tile properties are shown.

2. Set **Preferences > UMD** to 'True' and UMD properties are shown below. (Expand this property item if required.)

3. Set **UMD > UMD Protocol** to 'Version 3.1' and **UMD > 3.1 Display Address** property is shown.

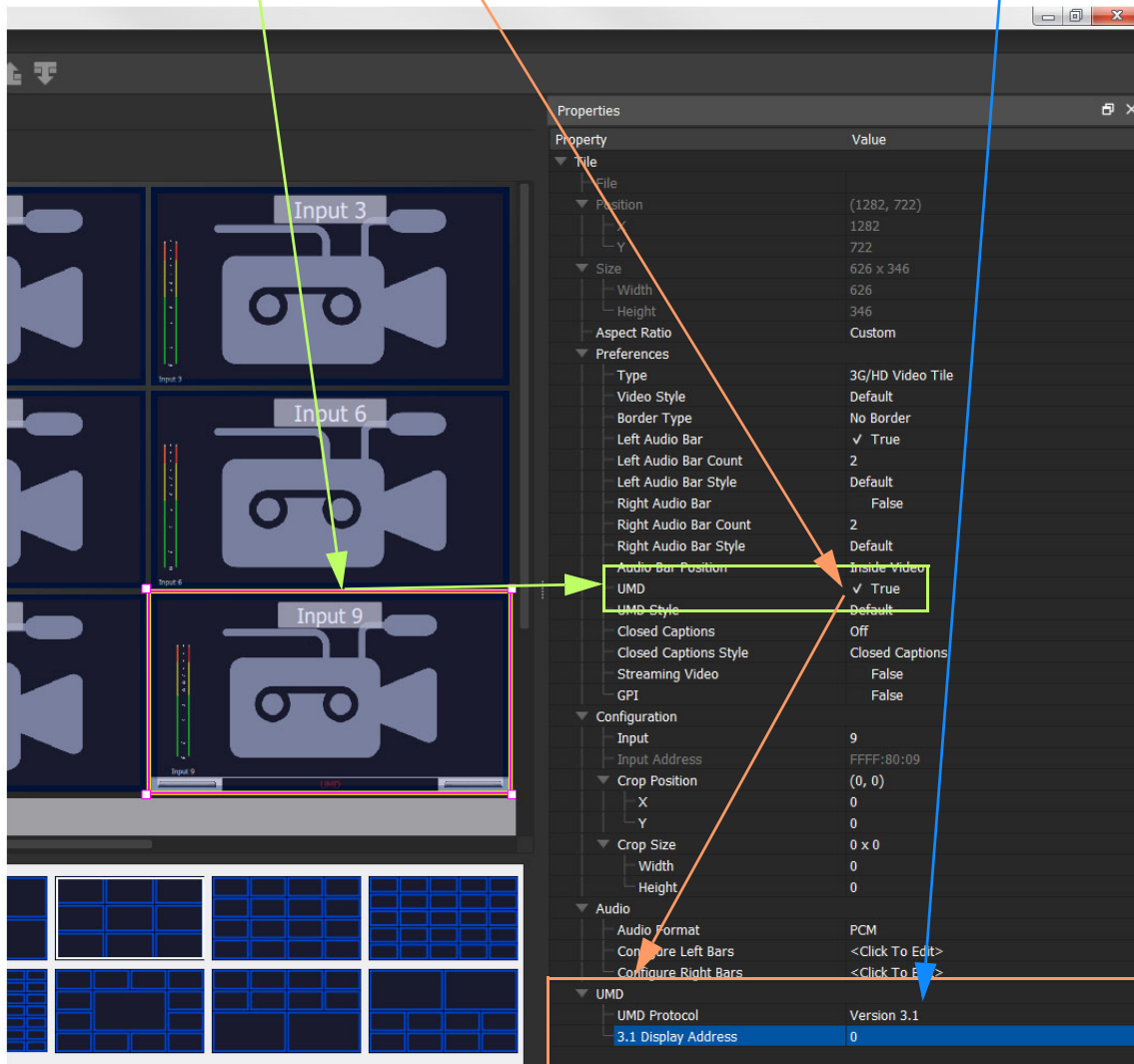


Fig. 5-3: GV Orbit Video Tile - UMD Widget TSL 3.1 Properties

GV Orbit UMD Properties - TSL Protocol Version 5.0

TSL Protocol 5.0 is a 16-bit protocol, introduced to handle multiviewer display devices over Ethernet. It supports ASCII or Unicode character sets, and data is sent as UDP or TCP/IP over Ethernet.

Each multiviewer monitor screen is addressed by a Screen Index and each UMD within it by a Display Index. Each UMD widget associated with a video tile must have two parameters set up:

- **5.0 Screen Index** - Index number (address) of each display monitor. (16-bit, \$FFFF reserved. 0 = not used.)
- **5.0 Display Index** - Index number for each UMD in a display. (16-bit, \$FFFF reserved. 0-based.)

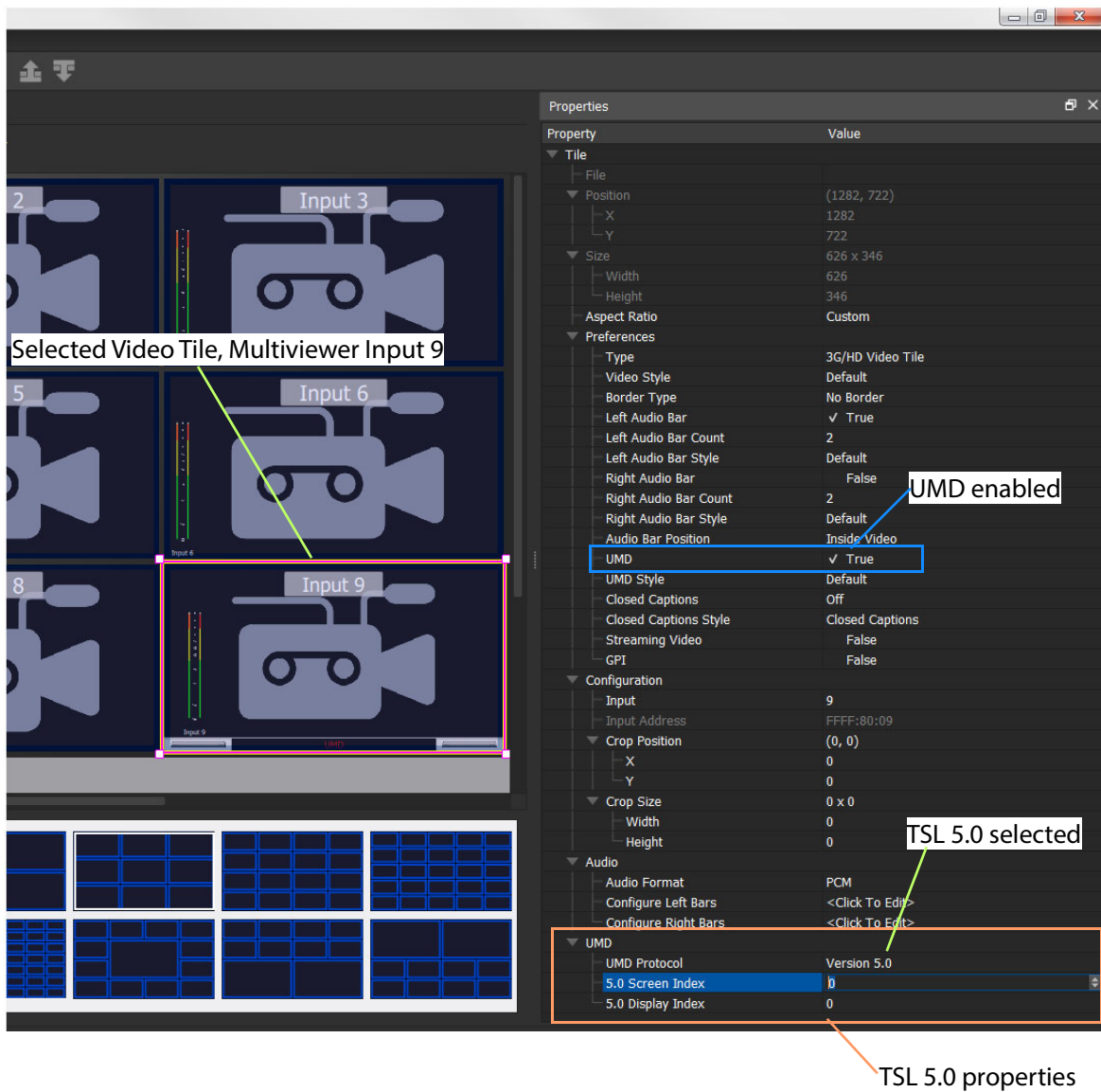


Fig. 5-4: GV Orbit Video Tile - UMD Widget TSL 5.0 Properties

Other Supported Core MV Features

Step 2: Specifying Index Parameters for each UMD in GV Orbit

High Dynamic Range Video Support

The HDR support at MV-8 Series Multiviewer inputs and outputs is described in this section.

Note: For information about high dynamic range video, refer to the 'HDR - A Guide to High Dynamic Range Operation for Live Broadcast Applications' white paper on the Grass Valley web site (search on 'HDR').

Introduction

An MV-8 Series multiviewer operates with standard dynamic range (SDR) signals internally and supports HDR at its video inputs and head display outputs.

Each multiviewer input supports HDR video input signals: Each input has a dynamic range converter which operates on the 10-bit luminance/chrominance values of the input video signal and converts from HDR to internal SDR values. The video signal is then re-sized and displayed by the multiviewer core etc.

Each multiviewer head display output supports HDR video output signals: Each output has a dynamic range converter which operates on the 10-bit luminance/chrominance values of the head display output video signal and converts from internal SDR to HDR values.

Note: The HDR conversions available on each input and output of the MV-8 Series multiviewer efficiently handle video images with an increased luminance range., enabling a multiviewer to operate in a mixed SDR and HDR environment.

Note: Use specialist test and measuring equipment to analyze and monitor the dynamic range, color gamut and color primaries of a source video signal.

Dynamic Range Conversions

Dynamic range conversions use a look-up table (LUT) approach to convert the internal SDR to/from the following HDR standards:

- Hybrid-Log-Gamma (HLG).
- Perceptual Quantizer (PQ), SMPTE ST2084.
- Sony Slog3.

As part of the HDR to/from SDR conversions, a user-controlled setting ([Nits](#)) determines either a) how much of the extra dynamic range in an HDR input signal is used in a corresponding internal SDR signal; or b) how much of the extra dynamic range in an HDR output signal is used for showing the (SDR) multiviewer head display output image.

Additionally, the processing can use the BT.709 color space (as used in SDR) or convert to/from the BT.2020 color space (typically used in HDR).

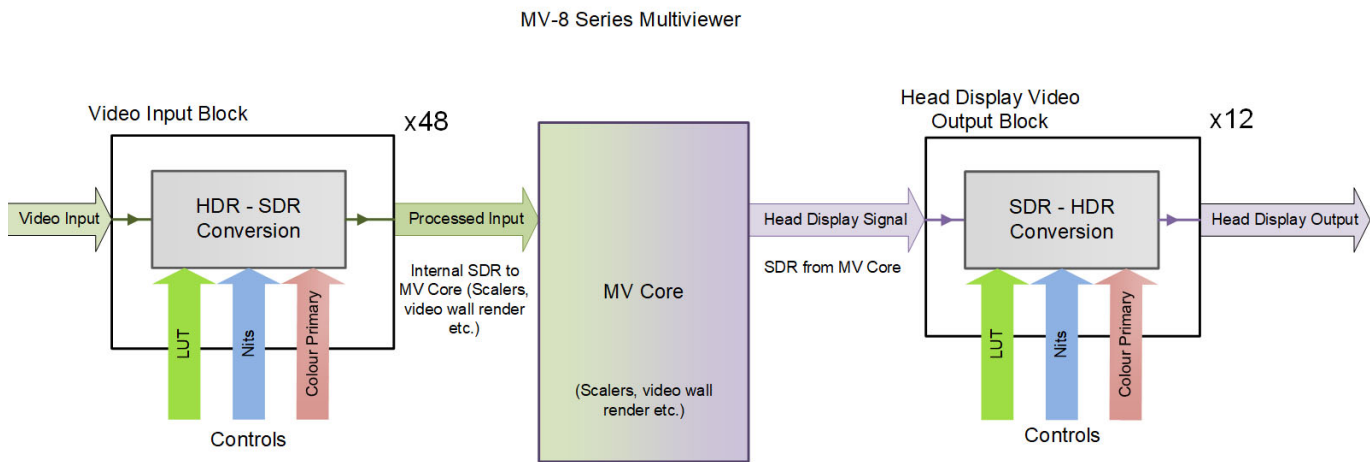


Fig. 5-5: Multiviewer Video Input HDR to SDR Processing

Note: **Video Input Alarms:**

The MV-8 Series Multiviewer contains various input alarms (configured with GV Orbit) which look at the video input. For a 'video black' alarm and an HDR input, for example, a 'video black' detector looks directly at the HDR video input data values (and *not* at any processed, SDR values).

All alarm configuration settings must be set accordingly.

Control Settings

HDR processing on each multiviewer video input or output is set up in the multiviewer's RollCall template (control screen). See [HDR Setup Control Screen](#), on page 42.

Nits

The **Nits** control sets how much of the extra dynamic range of an HDR input signal is used when it is converted to SDR internally for the MV-8 Series Multiviewer. And vice versa for the HDR conversion at the head display outputs.

- The nominal **Nits** value is 100 nits for a normal SDR monitor image.
- For the multiviewer video input HDR conversion:
 - Video values outside the **Nits** range are clipped to their limit in the RGB color space.
 - setting the **Nits** to a higher value results in a darker picture, which may be useful for a brighter monitor.

Media Biometrics Support

The integrated media biometrics support at multiviewer inputs is described in this section.

Note: For information about media biometrics, refer to the 'Media Biometrics - Analysis, Detection & Reporting Solution for Media Workflows' data sheet on the Grass Valley web site (search on 'media biometrics').

Each multiviewer input supports media biometrics with a media biometrics generator (MBG), which produces a low data-rate signature for the respective input video and audio. Up to 48 signatures can be generated.

Setting up of an MV-8 Series Multiviewer is done via the multiviewer unit's control screen (RollCall template), see [Biometrics Setup Control Screen](#), on page 40. Multiviewer inputs can have media biometrics generation enabled on a per input basis. Audio channels on each input can be individually selected for biometric signature generation. Each input's MBG can be individually named for subsequent easier signature identification.

Signature data for all enabled multiviewer inputs is transmitted onto a selected RollCall domain via a 'control' Ethernet interface of the MV-8X0/8X1 Multiviewer unit. The signature data is compatible with Grass Valley's SigMA media assurance solution and includes a NTP timestamp.

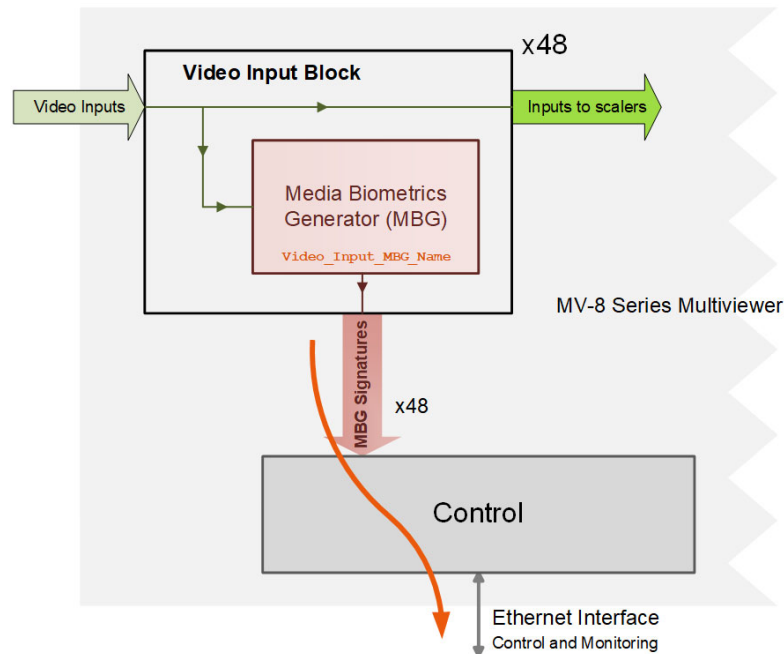


Fig. 5-6: Multiviewer Media Biometric Generators (MBGs)

Extended Data Services Support

The extended data services (XDS) support in the MV-8 Series Multiviewer is described in this section.

Note: For full information about all extended data services, refer to the CEA-608-B specification.

The MV-8 Series Multiviewer provides access to some of the XDS data on each of its video inputs.

XDS data is extracted from each input and is available externally via RollCall commands. Additionally, the data is available internally and XDS data can be used or displayed by the multiviewer's video wall(s).

XDS Data and RollCall Commands

Details of the XDS data types supported and the RollCall command numbers used are found in [XDS Data Types Supported](#), on page 177.

On-Screen Example

This example shows how to access some XDS data on a video input and then display it on a multiviewer video wall. This is done by editing the GV Orbit multiviewer project and cause it to read various RollCall commands.

(The complete list of RollCall commands numbers to access XDS data types is in appendix [XDS Data Types Supported](#), on page 177.)

Assumptions

- An MV-8X0/8X1 Multiviewer is running with a known GV Orbit multiviewer project in a house system.
- Multiviewer video input 1 carries XDS data.

Procedure

To display XDS data on the video wall:

- 1 Open the GV Orbit multiviewer project.
- 2 Create a new empty tile.
- 3 Add two **Label** widgets.

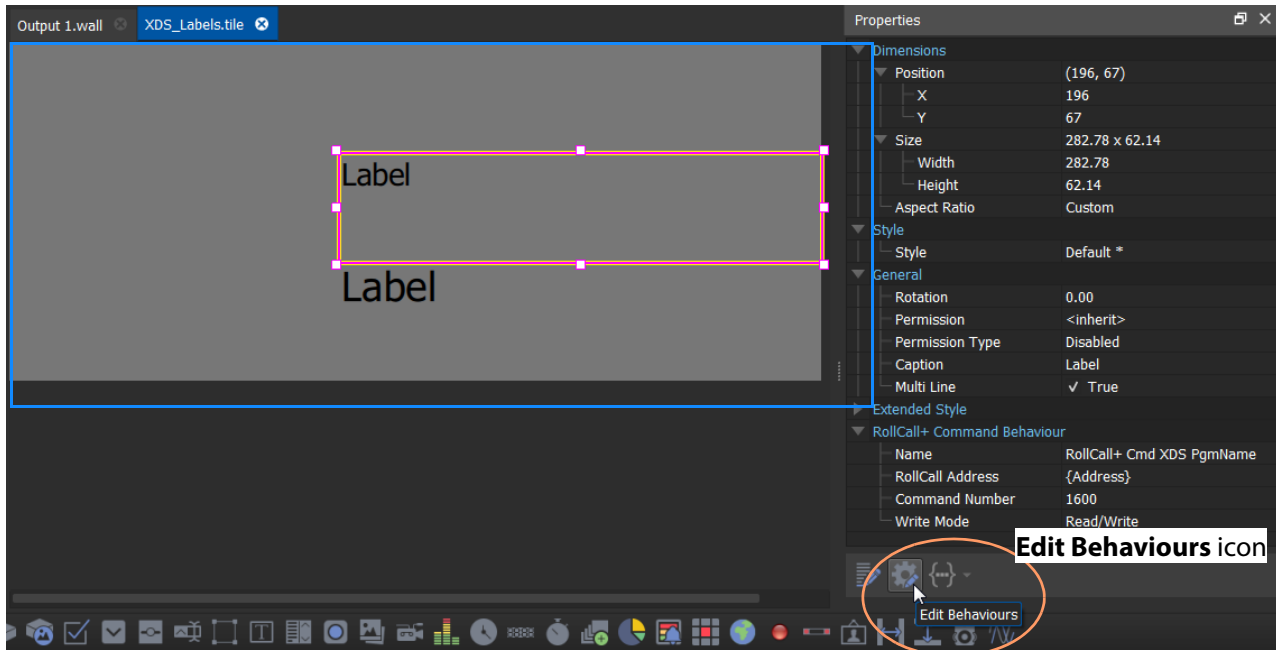


Fig. 5-7: 'XDS Labels' on New Tile

- 4 Select one **Label** and click the **Edit Behaviours** icon (see Figure 5-7) to open the 'Behaviours and Bindings' graphical editor.
- 5 Add a **RollCall+ Command** Behaviour to the editor. See Figure 5-8.

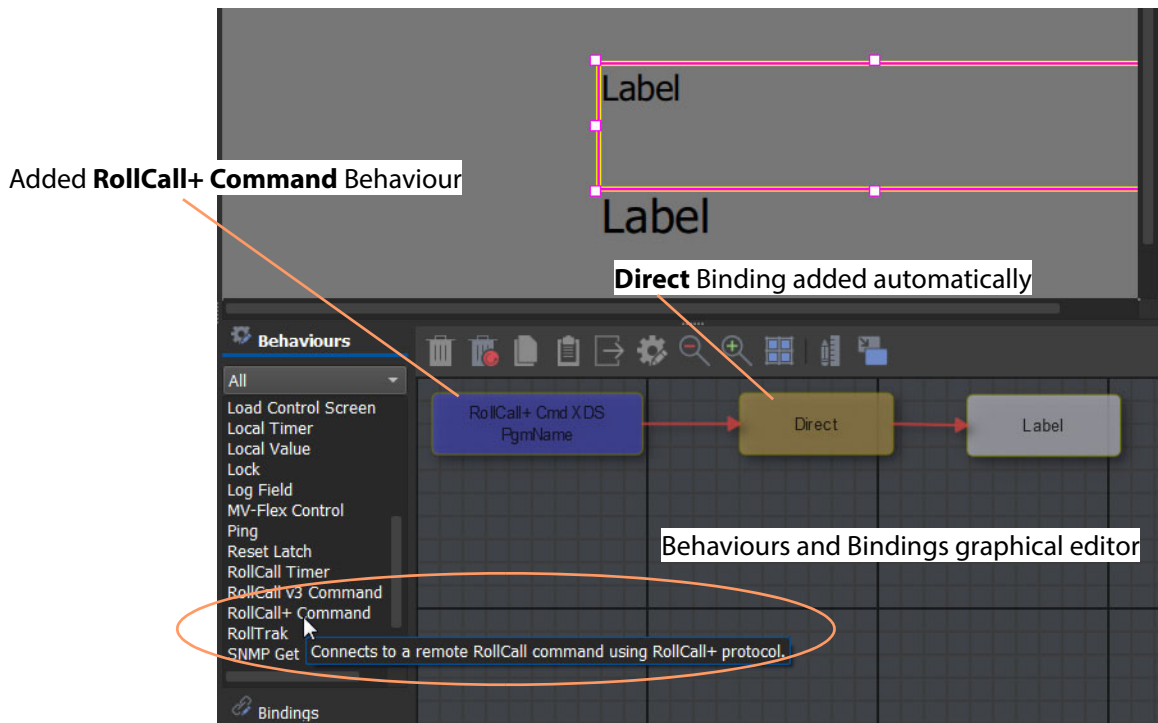


Fig. 5-8: Add a RollCall+ Command Behaviour

- 6 Double-click on the added RollCall+ Behaviour in the graphical editor to edit the Behaviour properties.
- 7 Set the **Command Number** property to '1600'.
(This is the V Chip Label, see to Appendix B [XDS Data Types Supported, Program Name \(Title\) \(V Chip Label\)](#), on page 178.)

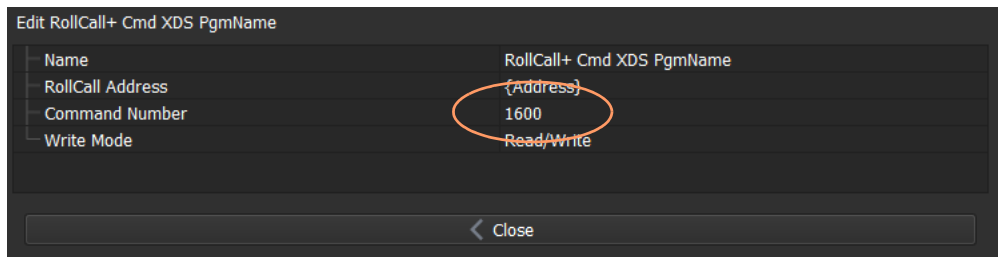


Fig. 5-9: Edit Behaviour Properties - Command Number

- 8 Click **Close**.
- 9 Repeat for the other **Label**, but set its **Command Number** to '1650'.
(This is the V Chip Rating, see to Appendix B [XDS Data Types Supported, Content Advisory \(V Chip Rating\)](#), on page 178.)
- 10 Click **Close**.

This has set up access to XDS 'Program Name' (V Chip Label) and XDS 'Content Advisory' (V Chip Rating) data values from multiviewer input 1 and set up two on-screen **Label** widgets for on-screen display of the values.

For clarity in this example:

- 11 Further comments may be added onto the tile using labels, as shown in Figure 5-10.

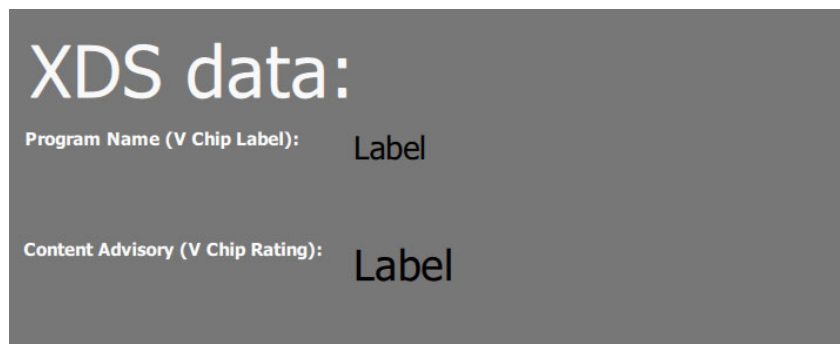


Fig. 5-10: Comment Labels Added to the Tile

- 12 Click **Save** in the main tool bar to save the tile changes.
- 13 Close the tile tab.
- 14 Open a **Wall** and drag on the new tile. See Figure 5-11.

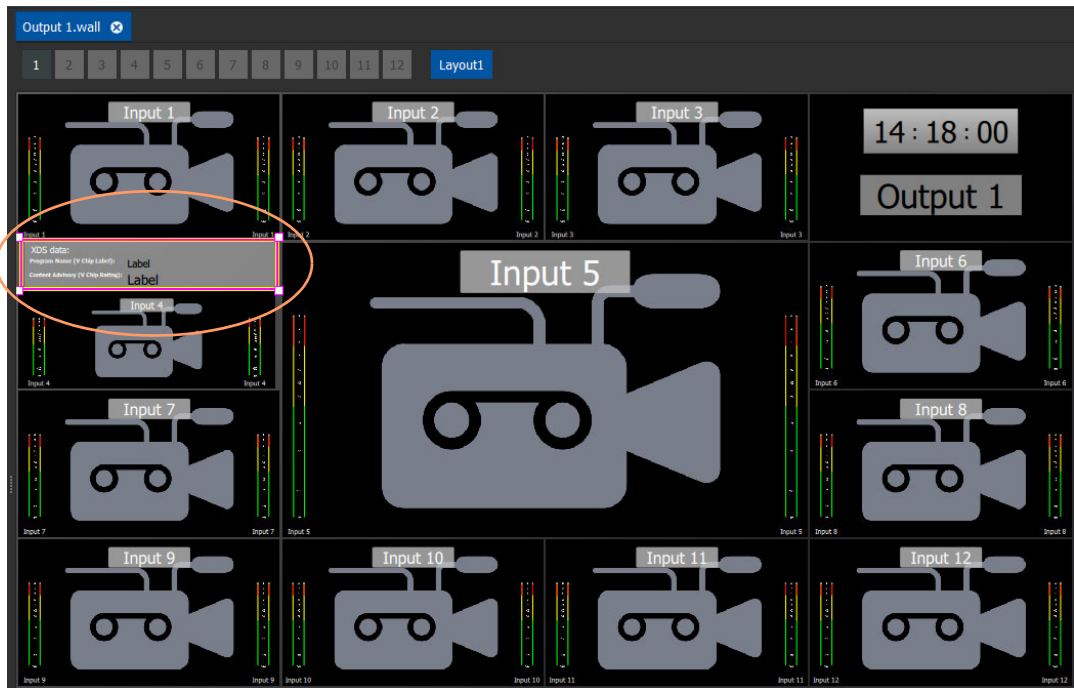


Fig. 5-11: XDS Labels Tile on Wall

- 15 Click **Save**.
- 16 Click **Save Project**.
- 17 Click the **Push** icon in the main tool bar to push the project to the MV-8X0/MV-8X1.

The multiviewer unit deploys the project and the XDS data on video input 1 is shown on-screen. See Figure 5-12.

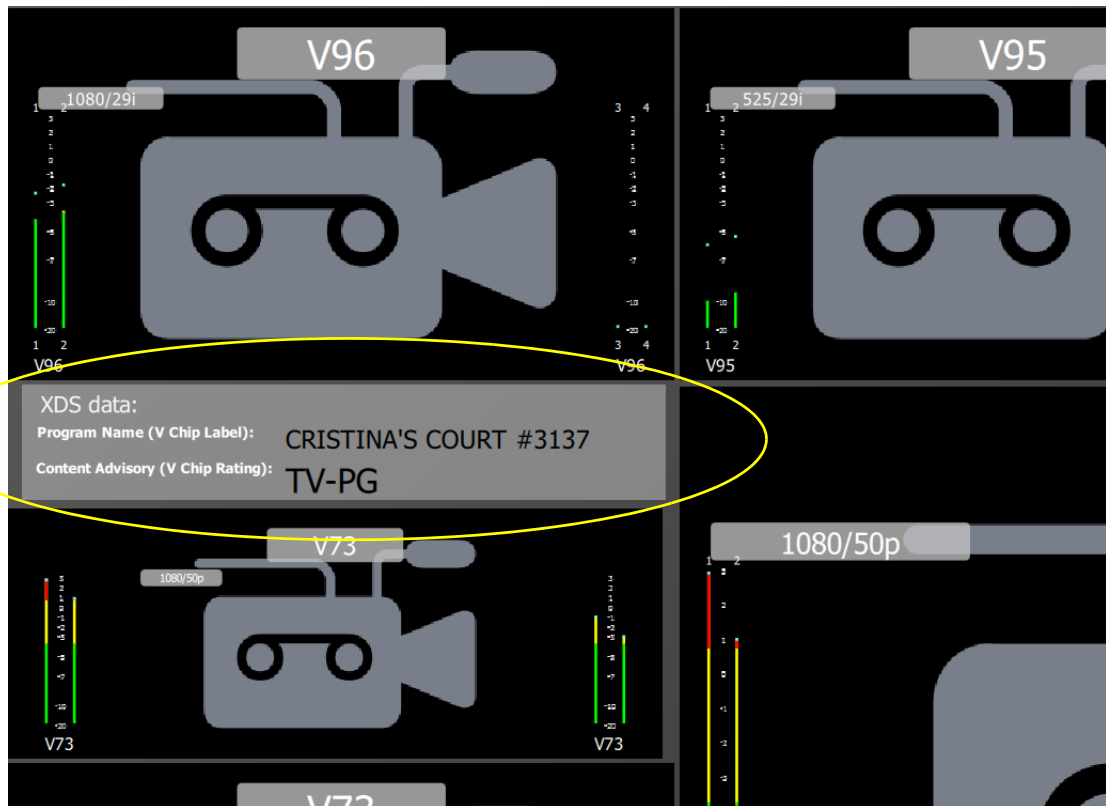


Fig. 5-12: Deployed XDS Labels Tile

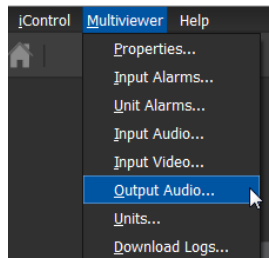
Output Embedded Audio Support

The MV-8 Series Multiviewer supports embedded audio on its head display outputs.

GV Orbit and Output Embedded Audio

The output embedded audio channels are configured in GV Orbit; stereo audio pairs from any multiviewer video input can be selected for each output:

- 1 Open an GV Orbit multiviewer project.
- 2 Click on **Multiviewer > Output Audio** in the main menu bar.



The **Output Audio** dialog is shown, see Figure 5-13.

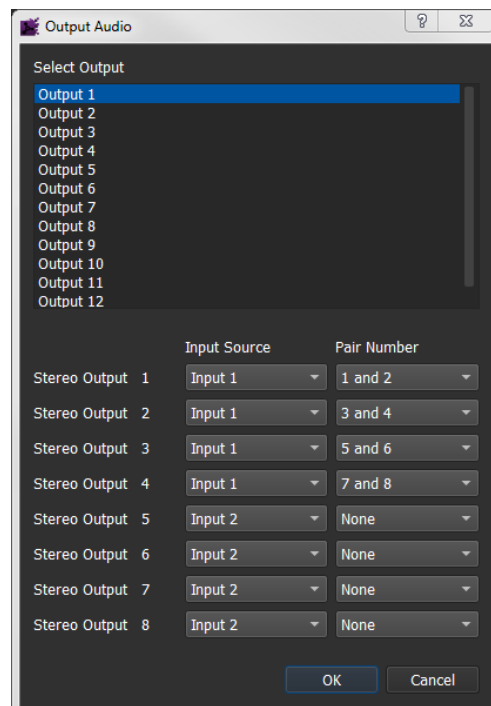
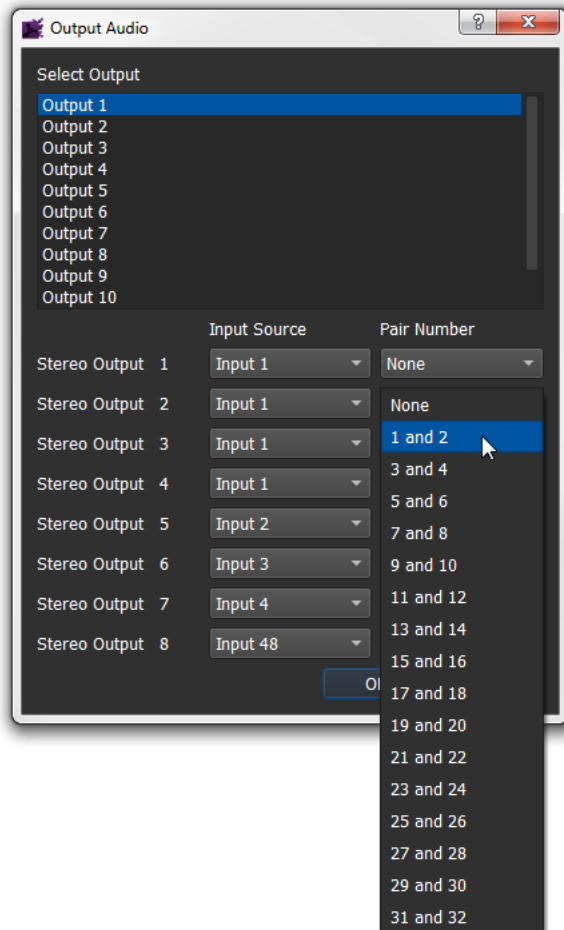


Fig. 5-13: Output Audio Dialog

- 3 Set up the audio stereo pair channels for embedding into each multiviewer head display output. See Table 5-1.

Table 5-1: Output Audio Dialog Settings

Setting	Description
Select Output	To select which multiviewer head display output to configure, click on an output name in the list (Output 1 to Output 12).
Stereo Output 1 to Stereo Output 8 Input Source	For each audio stereo pair (1 to 8), select the following: Drop-down box. Select the multiviewer video input (Input 1 to Input 48) required to source the audio for the selected output.
Pair Number	Drop-down box. Select which audio stereo pair to use from the input source.



- 4 When all embedded output audio stereo pairs are configured, click **OK**.
- 5 Click **Save Project**.
- 6 **Push** the project to the multiviewer unit for the output audio settings to take effect.

Input Audio Loudness

There are 48 audio loudness engines in an MV-8 Series core multiviewer. Audio loudness is a measure of subjective programme loudness. Loudness is measured in loudness units (LU) and are displayed relative to some maximum, full-scale amplitude (units LUFS).

Setting up Audio Loudness requires modifying a GV Orbit project for the multiviewer:

- 1 pull a GV Orbit from a multiviewer;
- 2 set up the multiviewer audio loudness engines (see [Audio Loudness Engine Setup](#), on page 107);
- 3 add graphical audio loudness widgets to the video wall and configure them (see [Audio Loudness Widget](#), on page 108); and then
- 4 push the modified video wall design to the multiviewer.

Audio Loudness Engine Setup

There are 48 audio loudness engines per MV-8 Series core multiviewer. In the multiviewer project:

- 1 Select '**Multiviewer > Input Audio**' in the main menu.
- 2 Select the **Loudness** tab.

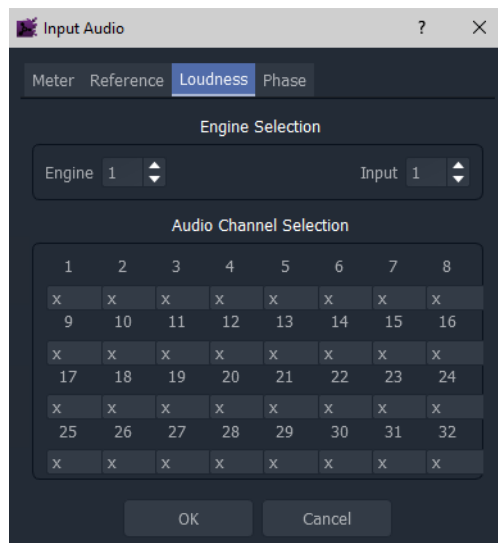


Fig. 5-14: Input Audio Dialog - Loudness Tab

For each engine:

- 3 Associate a 'loudness engine' with a multiviewer input by selecting an **Engine** and an **Input**.
- 4 Select the input audio channels to be processed. Select from the 32 audio channels of the associated input. **Audio Channel Selection** options:
 - **x** - Audio channel is not used.
 - **F** - Audio channel is used and treated as a 'Front-speaker' type audio channel.
 - **S** - Audio channel is used and treated as a 'Surround-speaker' type audio channel.

- **L** - Audio channel is used and treated as a 'Low frequency (sub)' type audio channel.

Repeat for each engine being configured.

5 Click **OK** when all done.

An engine's output can be shown on an Audio Loudness widget on a video wall.

Audio Loudness Widget

In this example, an Audio Loudness widget is added to a video tile.

With a GV Orbit multiviewer project open in GV Orbit Client in 'Design' mode:

- 1 Open a video tile of a video wall.
- 2 Drag an **Audio Loudness** widget onto the video tile. See Figure 5-18.

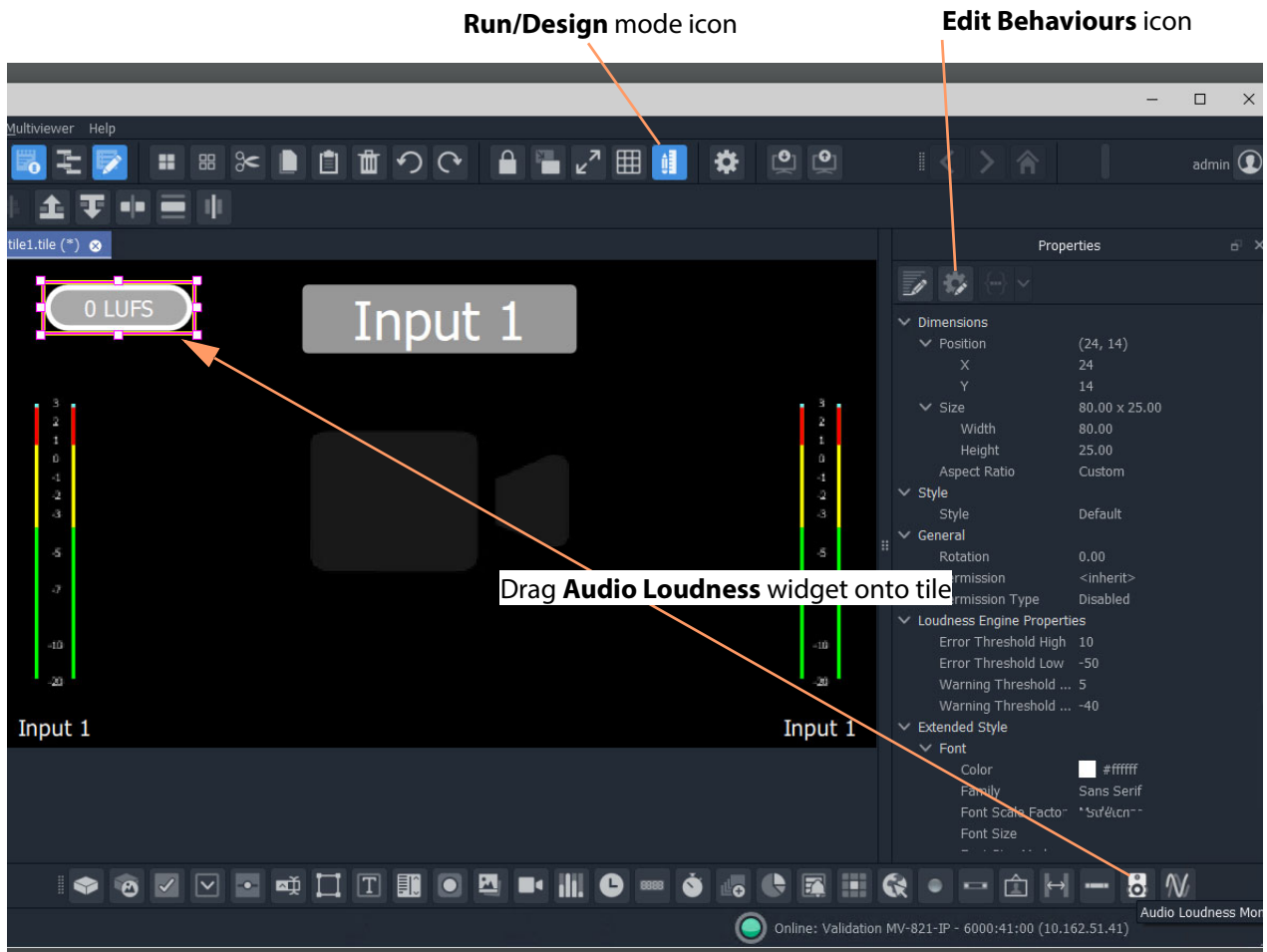
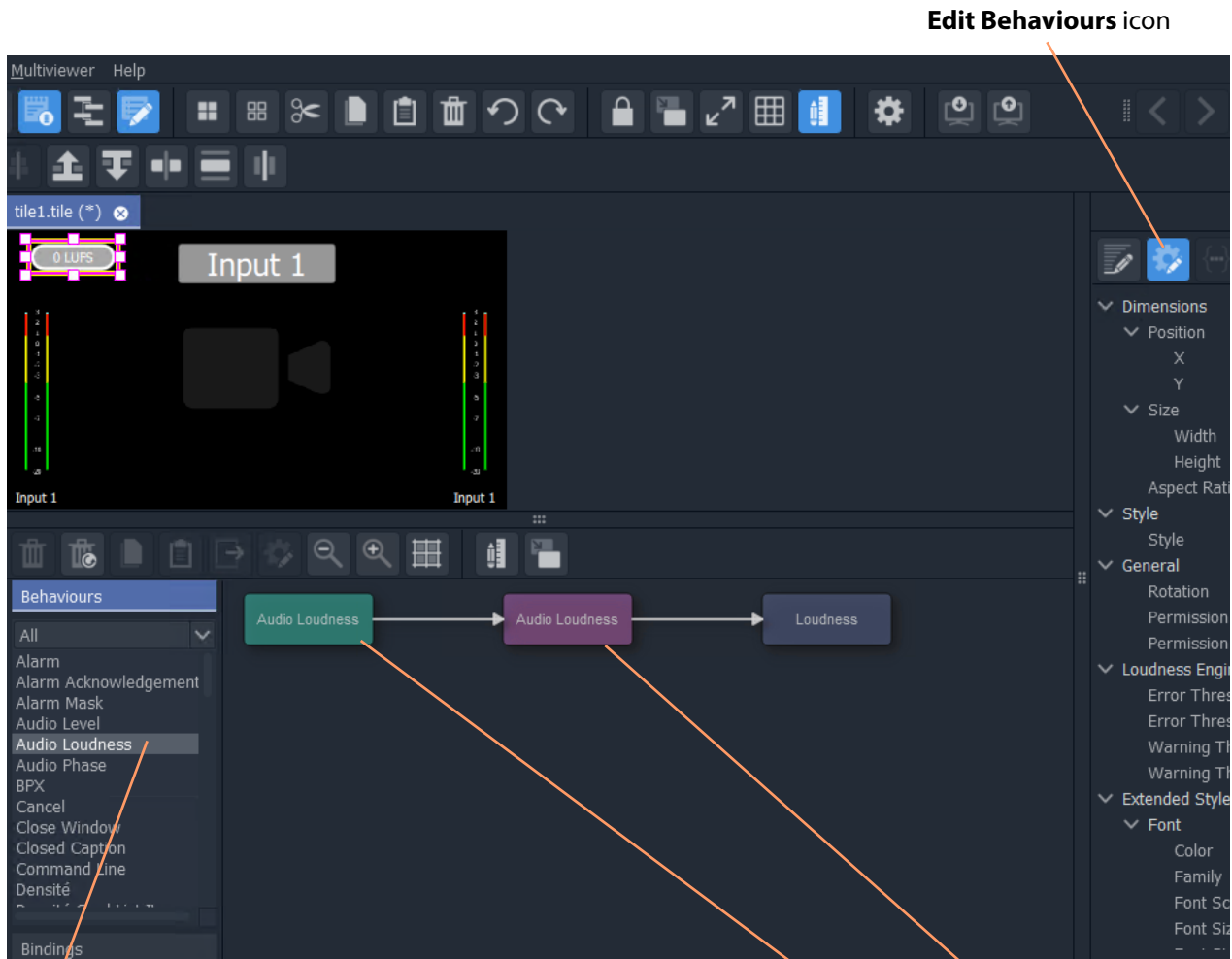


Fig. 5-15: Drag on an Audio Loudness Widget

- 3 With the widget still selected, click the **Edit Behaviours** icon.



Click on an **Audio Loudness** Behaviour to add an **Audio Loudness** Behaviour and Binding to the widget.

Fig. 5-16: Add an Audio Loudness Behaviour and Binding

- 4 Click on a **Audio Loudness** Behaviour.
An **Audio Loudness** Behaviour and a Binding to the widget.
- 5 Double-click on the added Behaviour and set up the multiviewer input number, **Input**.
This is the input number of the audio to be measured.
- 6 Click **Close**.
- 7 Double-click on the added Binding and set up the audio loudness engine number, **Engine**.
- 8 Click **Close**.
- 9 Click **Project > Save File** in the main menu to save the tile.

Save and Push

Save the project and push to the multiviewer. The audio loudness widgets should show the loudness measurement.

Input Audio Phase

There are 48 audio phase engines in an MV-8 Series core multiviewer. Audio phase is a measure of the similarity of an audio left-right stereo channel pair. It can be used to check for inversion of an audio channel. An audio phase engine has a response time of approximately one second.

Setting up Audio Phase requires modifying a GV Orbit project for the multiviewer:

- 1 pull a GV Orbit from a multiviewer;
- 2 set up the multiviewer audio phase engines (see [Audio Phase Engine Setup](#), on page 110);
- 3 add graphical audio phase widgets to the video wall and configure them (see [Audio Phase Widget](#), on page 111); and then
- 4 push the modified video wall design to the multiviewer.

Audio Phase Engine Setup

There are 48 audio phase engines. In the multiviewer project:

- 1 Select '**Multiviewer > Input Audio**' in the main menu.
- 2 Select the **Phase** tab.

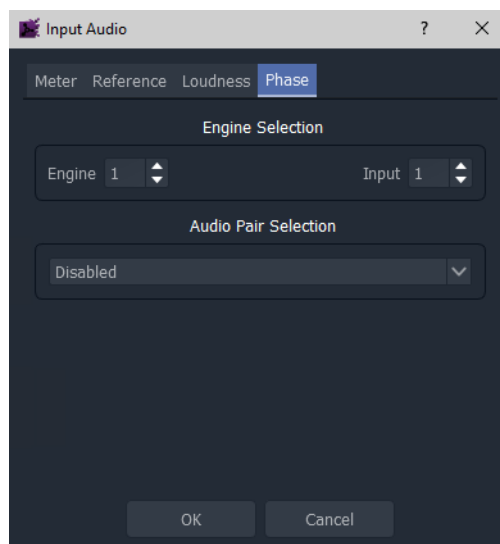


Fig. 5-17: Input Audio Dialog - Phase Tab

For each engine:

- 3 Associate a 'phase engine' with a multiviewer input by selecting an **Engine** and an **Input**.
- 4 Select the input audio pair to be phase-compared. **Audio Pair Selection** options:
 - **Disabled** - Audio Phase engine is disabled.
 - **Stereo Pair 1** - First stereo pair on the 32-channel input audio.
 - **Stereo Pair 2**.
 - ...

- **Stereo Pair 16.**

Repeat for each engine being configured.

5 Click **OK** when all done.

An engine's output can be shown on an Audio Phase widget on a video wall.

Audio Phase Widget

In this example, an Audio Phase widget is added to a video tile.

With a GV Orbit multiviewer project open in GV Orbit Client in 'Design' mode:

- 1 Open a video tile of a video wall.
- 2 Drag an **Audio Phase** widget onto the video tile. See Figure 5-18.

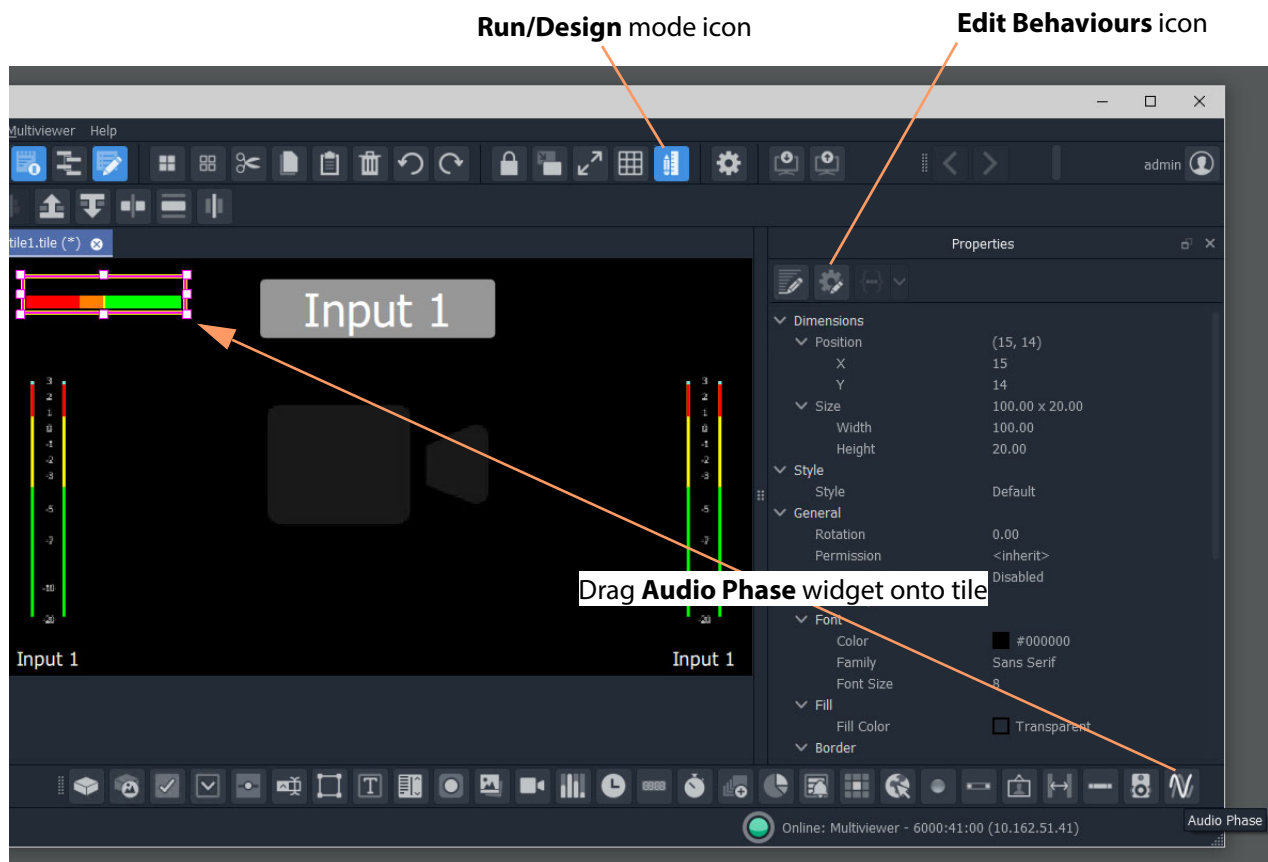
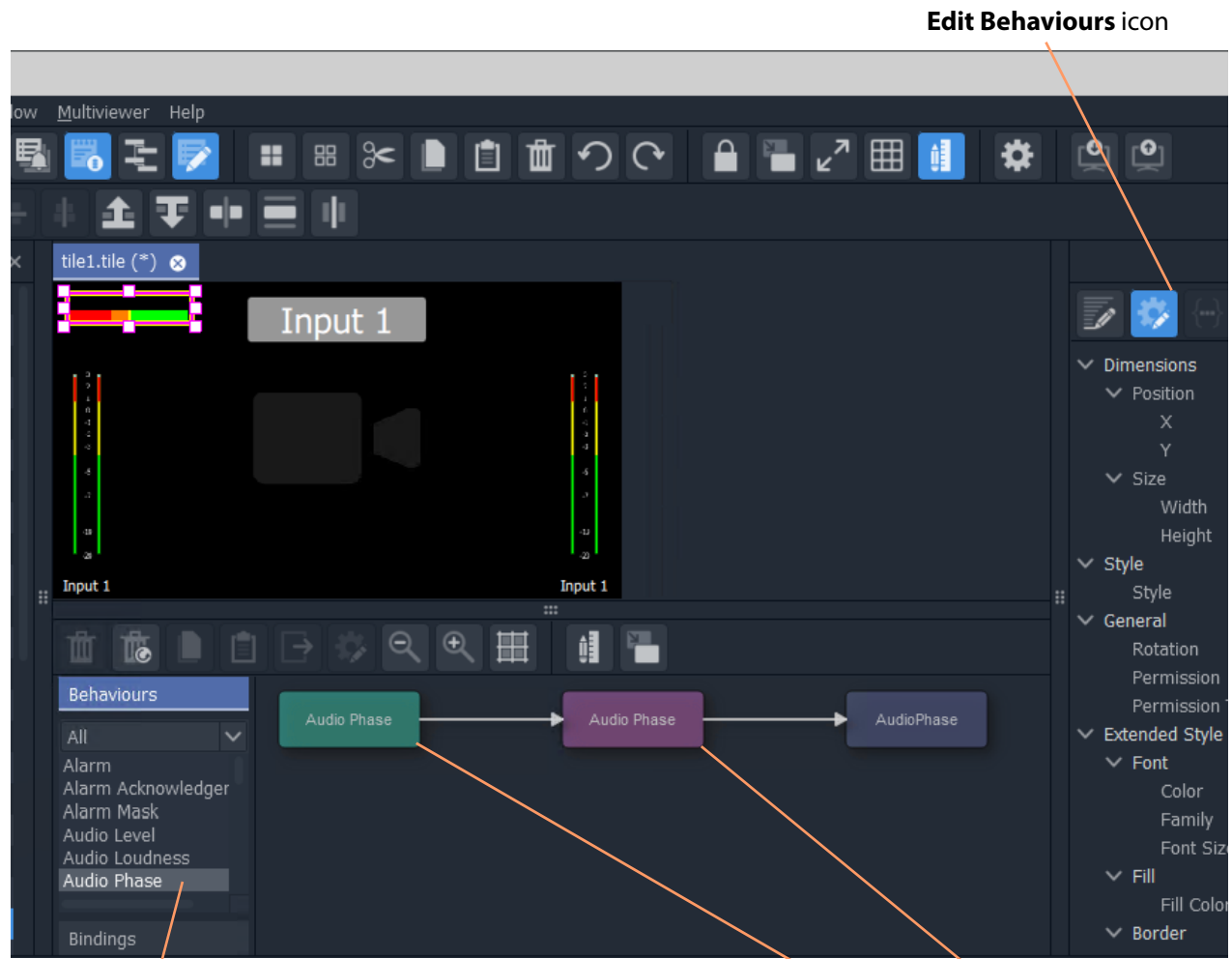


Fig. 5-18: Drag on an Audio Phase Widget

- 3 With the widget still selected, click the **Edit Behaviours** icon.



Click on an **Audio Phase** Behaviour to add an **Audio Phase** Behaviour and Binding to the widget.

Fig. 5-19: Add an Audio Phase Behaviour and Binding

- 4 Click on a **Audio Phase** Behaviour.
An **Audio Phase** Behaviour and a Binding to the widget.
- 5 Double-click on the added Behaviour and set up the multiviewer input number, **Input**.
This is the input number of the audio pair to be phase-measured.
- 6 Click **Close**.
- 7 Double-click on the added Binding and set up the audio phase engine number, **Engine Index**.
- 8 Click **Close**.
- 9 Click **Project > Save File** in the main menu to save the tile.

Save and Push

Save the project and push to the multiviewer. The audio phase widgets should show the phase of an audio pair:

- **Full green** - the pair is in-phase.
- **Full red** - the pair is in anti-phase (180 degrees).
- If an audio input is missing the meter will display a small yellow line in the center of the widget.

6 Core MV Getting Started

Core MV Getting Started

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<i>Default IP Addresses</i>	<i>page 116</i>
<i>Hardware Installation</i>	<i>page 116</i>
<i>Booting Up</i>	<i>page 116</i>
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<i>Step 1: Prepare Client Computer</i>	<i>page 119</i>
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<i>Step 3: Initial Multiviewer Unit Settings</i>	<i>page 123</i>
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This chapter describes getting started with your MV-8X0/8X1 Multiviewer product containing a core MV-8 Series Multiviewer, including the multiviewer start-up splash screen and configuring initial basic settings.

Introduction

MV-8 Series Multiviewer configuration is typically performed once after installation of the product and is done using Grass Valley's GV Orbit Client tool.

Note: GV Orbit Client:

GV Orbit Client is part of the GV Orbit configuration, control and monitoring system. The client tool may be run without the full GV Orbit system present and, in this case, the tool is termed 'GV Orbit Lite' and does not have access to the facilities of a GV Orbit system, but it can be used to view device control screens and to define MV-8 Series Multiviewer video walls on single MV-8 multiviewer devices.

Following an initial configuration step (see [Step 1: Prepare Client Computer](#), on page 119), the multiviewer's control screens (RollCall templates) may then be used to further configure and control various operational multiviewer items, including:

- selection of video wall layouts;
- monitoring alarm status;
- acknowledging alarms; and
- control of timer widgets on the video wall.

This section describes how to get started with an MV-8 Series Multiviewer. These instructions are applicable to all MV-8 Series Multiviewer devices.

Default IP Addresses

Typically, a new MV-8X0/8X1 Multiviewer product will be using default IP addresses on Ethernet interfaces, which includes one or more 'control and monitoring' interface.

Note: See the corresponding *MV-8X0/8X1 Multiviewer* product user manual for Ethernet interface descriptions and default IP addresses.

Hardware Installation

Note: Refer to the corresponding *MV-8X0/8X1 Multiviewer* user manual for details about unpacking the product, the unit's rear connections and hardware installation.

Booting Up

A core MV-8 Series Multiviewer within a MV-8X0/8X1 Multiviewer product shows a splash screen on its head display outputs while booting (starting up).

The MV-8 Series Multiviewer boots up after power is applied to the MV-8X0/MV-8X1 product unit or after a system reset (for example, a system reset instigated from RollCall Control Panel).

Booting takes about 1 to 2 minutes to complete. Approximately 1 minute after starting to boot up, each of the multiviewer's head display outputs presents a gray start-up splash screen, see Figure 6-1.

Note: Initially, the first few lines of text appear, followed by the remaining lines of text.

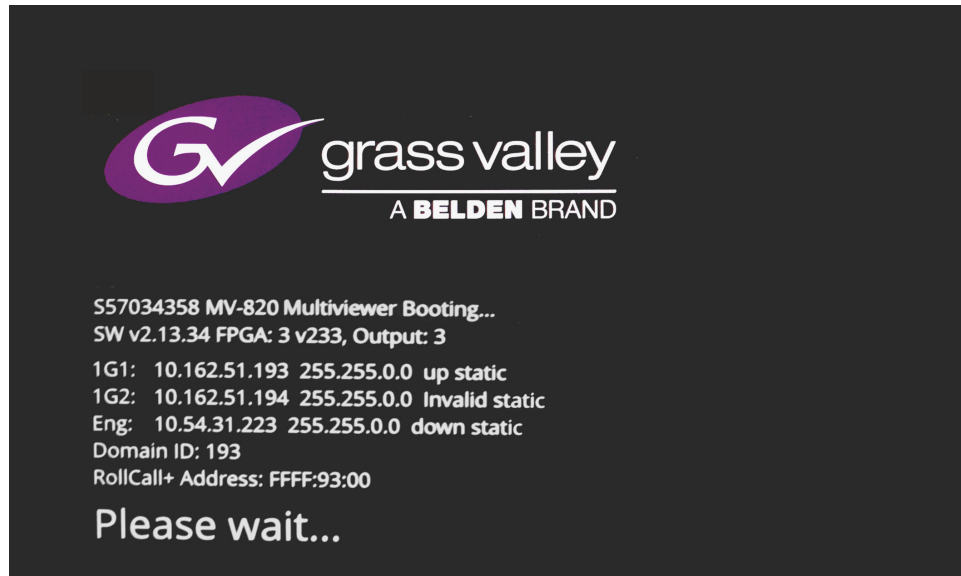


Fig. 6-1: MV-8 Series Multiviewer Gray Start-up Head Display Output Splash Screen (Example)

Table 6-1: Module Boot-up Time

Operation	Duration
Multiviewer Boot-up	Up to 2 minutes
Note: If the MV-8X0/MV-8X1 product's front main module does not have a flashing "CPU Heartbeat" LED when it has finished booting, contact Grass Valley Support.	

When the MV-8 Series Multiviewer has finished starting up, the start-up splash screen goes away (and the green CPU Heartbeat LED on the front main module begins to flash). The multiviewer has booted up and the head display outputs then show multiviewer video walls belonging to the GV Orbit (or Orbit) multiviewer project being used by the multiviewer.

The Core MV Start-up Head Display Splash Screen

The start-up splash screen on the multiviewer Head Display Outputs shows some MV-8 Series Multiviewer and MV-8X0/MV-8X1 product information about the multiviewer core, see Figure 6-2.

Note: Use the '1G1' multiviewer network interface when performing the initial unit configuration with Grass Valley RollCall Control Panel.

Note: The 'Eng' interface is a reserved internal IP network interface, do not use this IP address.

(1) Multiviewer core serial number
Note: The Unit Serial Number is different and is found on a label on the rear of the unit.

(2) Software version

(3) FPGA number supplying splash screen (Engineering use)

(4) Firmware version

(5) Display output showing the splash screen.

```
557034358 MV-820 Multiviewer Booting...
SW v2.13.34 FPGA: 3 v233 Output: 3
1G1: 10.162.51.193 255.255.0.0 up static
1G2: 10.162.51.194 255.255.0.0 Invalid static
Eng: 10.54.31.223 255.255.0.0 down static
Domain ID: 193
RollCall+ Address: FFFF:93:00

Please wait...
```

(6) Multiviewer Control Network Interfaces

(7) IP Address

(8) Sub-net Mask

(9) Network link status:

- **up** - network link working
- **down** - network link not working
- **invalid** - no network SFP fitted

(10) IP Address type:

- **static**
- **DHCP**

(11) RollCall+ Domain number

(12) Unit's RollCall+ address

Fig. 6-2: Example Start-up Splash Screen Information

Step 1: Prepare Client Computer

Items required:

- A laptop, or some computer, with an RJ45 Ethernet port and with Grass Valley GV Orbit Client installed.
- A 'CAT 5 Ethernet cable.

Initial connection to the core multiviewer of an MV-8 series multiviewer device should be carried out on a separate IT network, separate from any house IT network. Initial configuration sets up device IP addresses and communication settings.

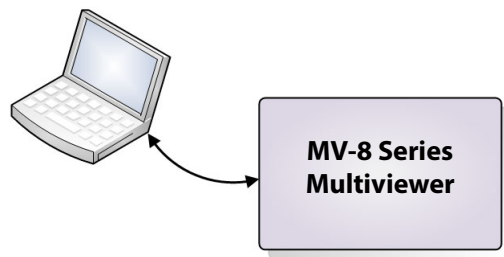


Fig. 6-3: Initial Configuration, separate from House System

Note: Default IP Address on Ethernet control interface:
Typically, a new MV-8X0/8X1 Multiviewer product has two multiviewer Ethernet control interfaces and will be using a default IP address, detailed in the respective MV-8X0/8X1 Multiviewer product user manual.

To prepare a computer for initial connection:

- 1 Select which computer Ethernet RJ45 port to use and set the port to a fixed IP address on the same network sub-net as the MV-8 Series Multiviewer.
(For example, use 10.54.31.200 for the computer port when connecting to a multiviewer default IP address of 10.54.31.221.
Note: Multiviewer default IP addresses are listed in the 'Specification' appendix of each MV-8X0/8X1 Multiviewer product user manual.)
- 2 Disable any WiFi connections on the computer. (Because these may interfere with the wired RJ45 port.)
- 3 Directly connect the computer RJ45 port to the chosen multiviewer control Ethernet port of the MV-8X0/8X1 Multiviewer product using the Ethernet cable. (A 'cross-over' cable may be required.)

Step 2: GV Orbit Client Connection

When connecting for the initial device configuration, the computer should be connected directly to the multiviewer. If connecting after an initial device IP address has been set up (e.g. for *further* unit configuration), then connect with your house system network.

Note: Refer to the corresponding product user manual for the MV-8X0/8X1 Multiviewer product for details of rear panel Ethernet connections.

To connect GV Orbit Client to the MV-8 Series Multiviewer:

- 1 With the computer connected to the 1G Ethernet port of the MV-8X0/8X1 Multiviewer, open the GV Orbit Client application.

The application starts and the initial screen is displayed.

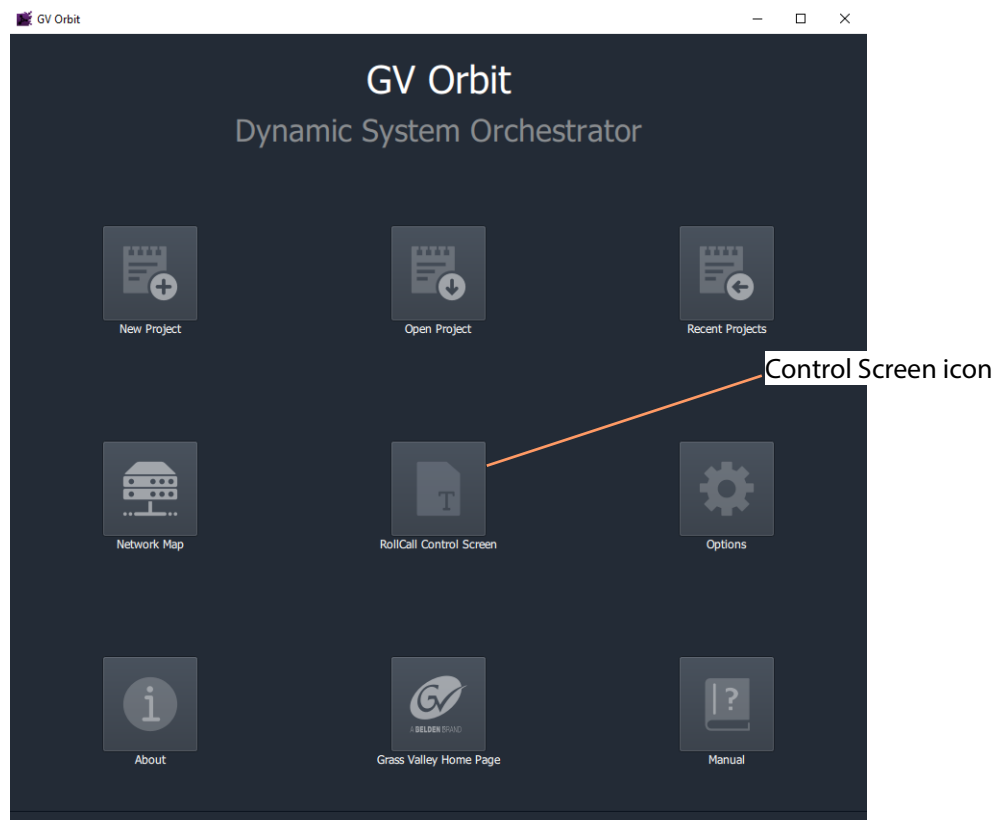
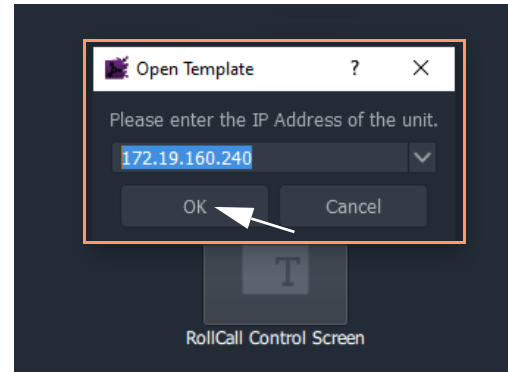


Fig. 6-4: GV Orbit Client Initial Screen

- 2 Click on the **Control Screen** icon.
The **Open Template** dialog is shown.
- 3 Enter the IP address of the multiviewer device.
Click **OK** to connect to the device.



The control screen for the MV-8 Series multiviewer core is shown in the main pane of the GV Orbit Client tool.

GV Orbit Client has now connected to the multiviewer unit.

Note: Default IP addresses for the network interface ports are detailed in the respective MV-8X0/8X1 Multiviewer user manual.

Note: The IP addresses of multiviewer 'control' Ethernet interfaces (used during initial multiviewer configuration) can be found by:

- Enabling the **Output Overlay** feature on head display outputs (see [Layout Control Screen](#), on page 29, and [Overlays](#), on page 31) to show IP address information briefly on the outputs.

Or

- Restart the multiviewer product by re-applying power, causing a MV-8 Series Multiviewer reboot. IP address information is shown in the monitor splash screen, [Booting and Splash Screen](#), on page 9 and its [Figure 2-1](#) on page 10.
-

The control screen comprises several pages. Figure 6-5 shows the first page of the control screens. Other pages are accessed via the highlighted **Selection Box** in the banner of the page. See [Core MV Control Screens](#), on page 9, for a full description of the control screens.

Core MV Getting Started
Step 2: GV Orbit Client Connection

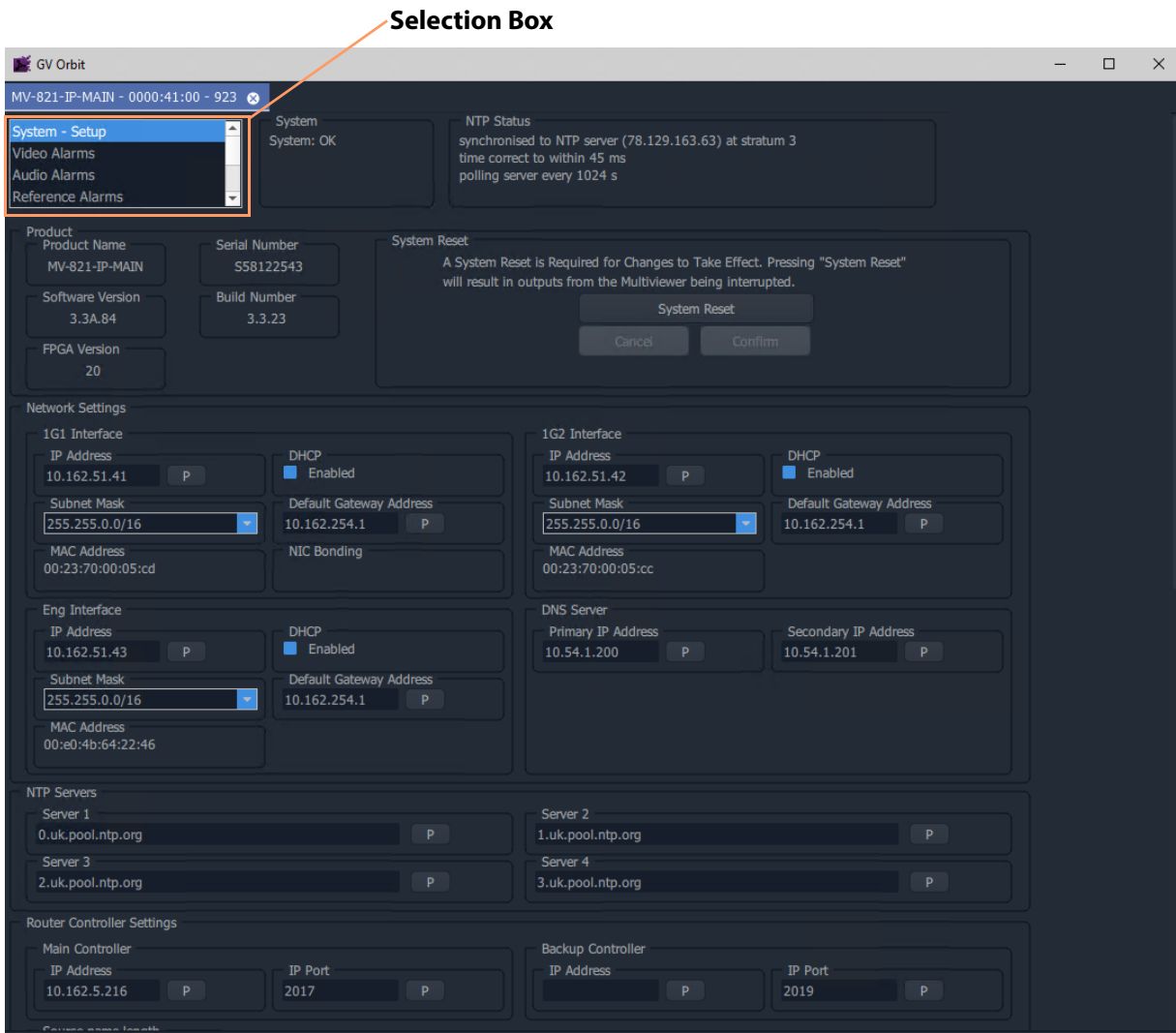


Fig. 6-5: MV-8 Series Multiviewer Control Screens

For initial configuration settings of the multiviewer unit, continue to [Step 3: Initial Multiviewer Unit Settings](#), on page 123.

Step 3: Initial Multiviewer Unit Settings

(Initial configuration should be carried out on a separate IT network, separate from any house IT network.)

This initial configuration sets up an MV-8X0/8X1 Multiviewer unit's IP addresses and communication settings:

- 1 Select the **System-Setup** control screen in the upper **Selection Box** of the control screen.

In the **System-Setup** control screen:

- 2 Under **Network Setting**, set up the Ethernet interface IP network settings relevant to your house network.
- 3 Under **RollCall Settings**, set up:
 - **Unit** number (must be unique for each unit); and
 - **Domain ID** the GV Orbit GVOP Domain number to use (typically the same for each unit).
- 4 Under **Output Format**, select the video format and frame rate for all the multiviewer's head display outputs (for example, '1080p50', or '720p59').
- 5 Under **Reference Input**, select the video reference input for the core multiviewer to use (for example, 'input A', or 'free run').

Once all setting changes in the **System-Setup** control screen have been done:

- 6 Click on the **System Reset** button at the top of the **System-Setup** control screen (see [System Box](#), on page 12, and [System Reset to Implement Settings Changes](#), on page 22).
Then click **Confirm** to perform a system reset.

IMPORTANT

A **System Reset** of the multiviewer is required before saved settings changes in the **System-Setup** control screen take effect.
Such a reset will affect all MV-8X0/8X1 Multiviewer connections, including the multiviewer head display outputs.

When the multiviewer unit has re-booted, the new settings will be adopted. The multiviewer can then be connected to your house IT network.

Step 4: Connecting into House System

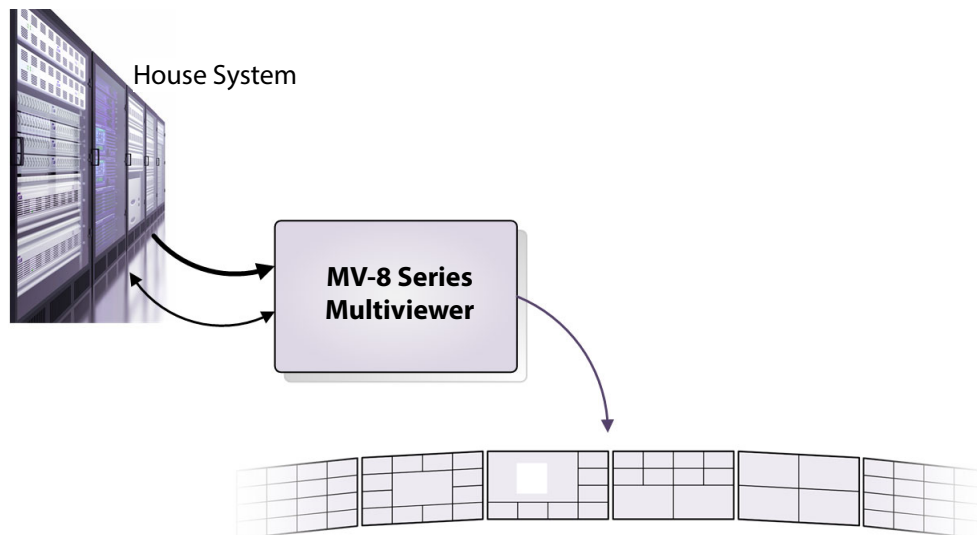


Fig. 6-6: Multiviewer Connected to House System

After setting up the initial settings, the MV-8X0/8X1 Multiviewer unit can then be connected to your house system, including IT network connections and video input/output connections.

Refer to the corresponding MV-8X0/8X1 Multiviewer user manual for details about unit connections and connecting up the unit.

IMPORTANT **Ethernet connection:**

Check the logical and physical connection of all 'control and monitoring' Ethernet ports on the MV-8X0/8X1 Multiviewer product's rear panel. This is required for optimum MV-8 Series Multiviewer performance.

Explanation:

An MV-8X0/8X1 Multiviewer product typically has more than one control Ethernet port - for example "1G1" and "1G2". However, if a port is disconnected, its IP address can still be "seen" through the other port. This means the MV-8 Series Multiviewer can still *appear* to be operating normally even with one or more unconnected control network ports. But there is a performance penalty for operating with such an unconnected network port.

Further configuration can be done via the multiviewer's control screens (RollCall templates), as required. Control screens for the MV-8 Series Multiviewer are describe in [Core MV Control Screens](#), on page 9.

Default Video Wall

By default, after booting up, a new MV-8 Series Multiviewer will display each of the 48 multiviewer video inputs on a default video wall layout. This done on four multiviewer head display outputs (Outputs 1 to 4), see Figure 6-7.

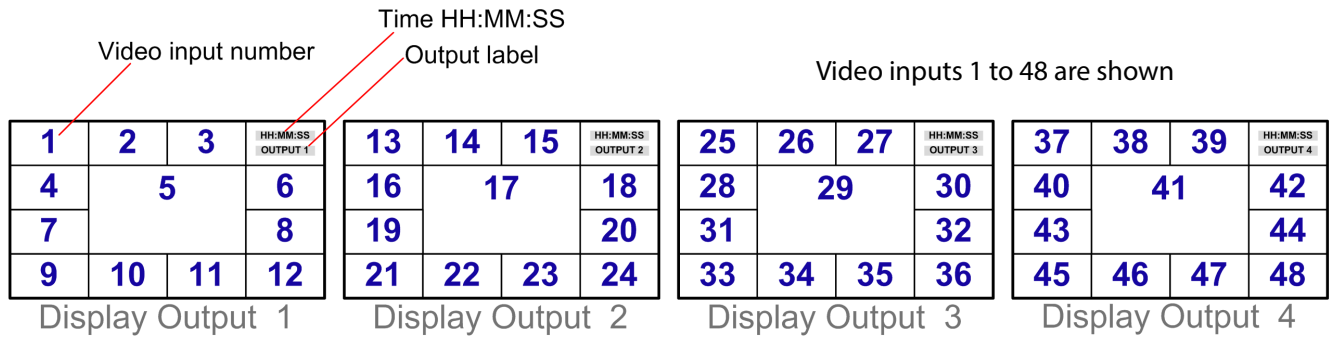


Fig. 6-7: MV-8 Series Multiviewer Default Video Wall on Multiviewer Head Display Outputs 1 to 4

Identifying Display Outputs and Video Inputs

To help with getting started and with unit system set up, the multiviewer can be configured to identify its inputs and outputs with an overlay on each multiviewer head display output. It can do this regardless of whether a video input is being supplied.

- 1 View the **Layout** control screen. (See [Layout Control Screen](#), on page 29.)
- 2 Use the controls to turn on/off the display of overlay information to identify:
 - multiviewer inputs; and/or
 - head display outputs.

See Figure 6-8.

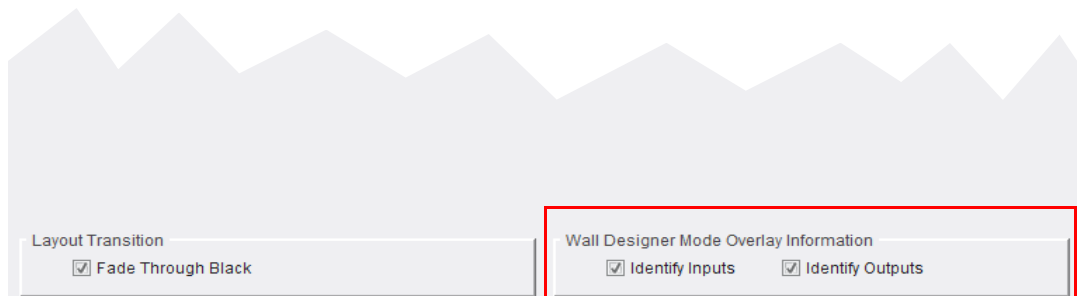


Fig. 6-8: Layout Control Screen - Multiviewer Display Output Overlays

Step 5: Further Unit Configuration

Further settings changes can be done at any time with GV Orbit Client either via the control screens or via the GV Orbit multiviewer project.

- Settings changes done in the **System-Setup** control screen *will* need a System Reset. See [Settings Changes and System Reset](#), on page 13.
- Changes to the multiviewer project will require the project being pulled from the multiviewer, edited and pushed back.

CAUTION

Some **System-Setup** control screen changes may affect the MV-8X0/8X1 Multiviewer unit's outputs and network operation.

IMPORTANT

A **System Reset** of the multiviewer is required after settings changes in the RollCall **System-Setup** control screen.

Such a reset will affect all MV-8X0/8X1 Multiviewer product's connections, including the multiviewer outputs. See [Settings Changes and System Reset](#), on page 13.

When the MV-8X0/8X1 Multiviewer has re-booted, the new settings will be adopted.

Note: **Configuring IP Inputs:**

- **MV-820-IP:** To configure the IP inputs of an MV-820-IP, refer to the *MV-820 Multiviewer* user manual. Specific IP input configuration instructions are found in the 'Getting Started' chapter.
 - **MV-821-IP:** To configure the IP inputs of an MV-821-IP, refer to the *MV-821 Multiviewer* user manual. Specific IP input configuration instructions are found in the 'Getting Started' chapter.
-

Setting up Input Alarms and Unit Alarms

Alarms on an MV-8 Series Multiviewer are defined in the GV Orbit multiviewer project, in the 'Multiviewer' main menu item. See [Core MV Input Alarms](#), on page 49, for a description of the GV Orbit settings and see [Getting Started with GV Orbit](#), on page 127, for an introduction to setting up alarms.

Setting up TSL Support

See [TSL Support](#), on page 92.



Getting Started with GV Orbit

Getting Started with GV Orbit

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<i>Save Project</i>	page 133
<i>Edit a Project Name</i>	page 133
<i>Set Up Input Alarms</i>	page 135
<i>Select One Input to Configure</i>	page 135
<i>Set up Video Lost Alarm</i>	page 136
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This chapter describes getting started with the multiviewer and a GV Orbit multiviewer project with GV Orbit Client. A video wall design is got from a multiviewer, alarm settings are described and simple video wall edits are carried out. The project is then pushed back to the multiviewer device.

Introduction

After the MV-8 Series Multiviewer unit is configured and ready to be added into the house network (see [Core MV Getting Started](#), on page 115), the default GV Orbit multiviewer project may be pulled from the unit, modified and pushed back to the unit.

This section will:

- Get the GV Orbit multiviewer project from the MV-8 Series multiviewer unit (i.e. the default MV-8 Series Multiviewer GV Orbit project for a new, factory unit).
- Set up multiviewer alarms in the project.
- Make a simple, visible changes to the video wall.
- Push the amended project back to the unit.

And finally, it describes how to:

- Pull a project from a MV-8 Series multiviewer unit.

This section assumes that:

- The MV-8X0/8X1 Multiviewer is running and is connected to a control Ethernet network.
- IP addresses of the MV-8X0/8X1 Multiviewer Ethernet interfaces are known.
- GV Orbit Client is installed on a client computer also connected to the control network. (**Note:** Access to a GV Orbit system is not required for basic GV Orbit Client multiviewer operation.)

Get Multiviewer Project from a Multiviewer Unit

The first time that a GV Orbit Client connects to a multiviewer, the client PC will not have a local copy of the multiviewer's GV Orbit multiviewer project. In this case, a local project needs to be created from the existing multiviewer. For subsequent edits to that multiviewer, the project on the multiviewer may simply be pulled from the unit into the local copy of the project on the client PC for editing in GV Orbit Client.

Pulling a project is described in [Pull a Project from a Multiviewer Unit](#), on page 155.

Here, we describe a first time connection and will create a new project from an existing MV-8X0/8X1 Multiviewer unit:

- 1 Run GV Orbit Client and click **New Project** on the initial screen.



Fig. 7-1: Click New Project

- 2 Select **Connected Multiviewer Project**.
- 3 Click **Browse** to browse *into* a new and empty folder, and click **Choose**.

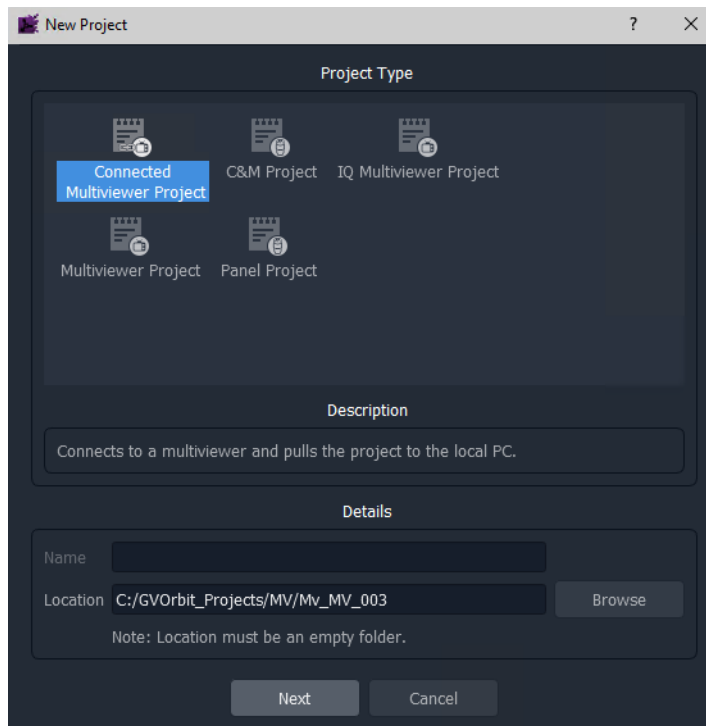


Fig. 7-2: New Project Dialog - Connected Multiviewer Project

4 Click **Next**.

All accessible multiviewer devices are auto-discovered and listed.

Note: Auto-discovery of multiviewer devices relies on GV Orbit 'GVOP' data packets being present on the network. Ensure these are supported by the house network system. Contact Grass Valley customer support for further information.

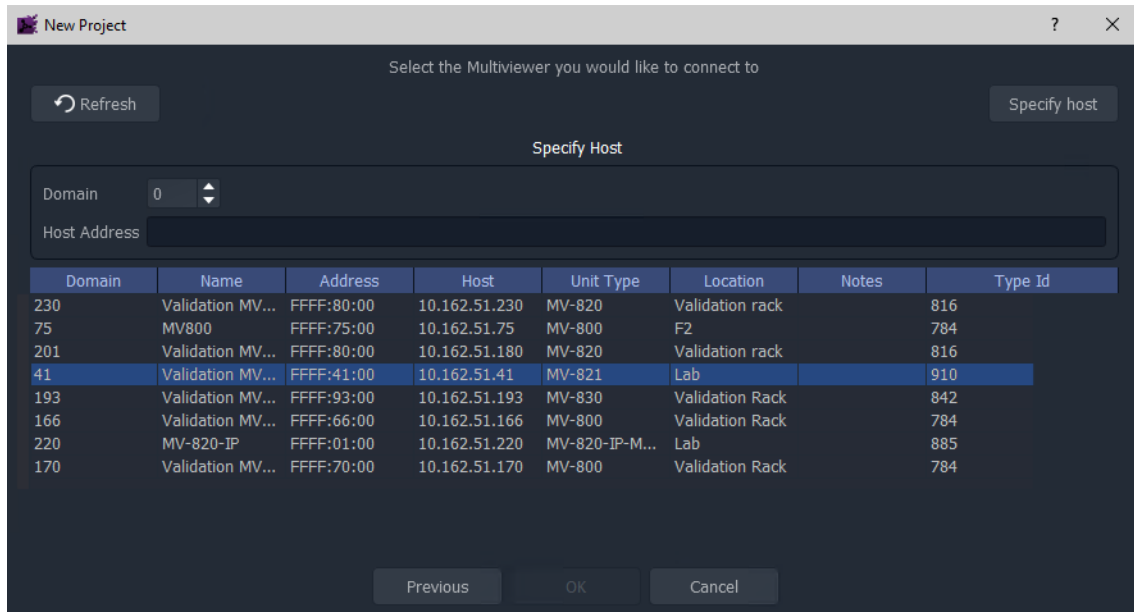


Fig. 7-3: New Project Dialog - Discovered Multiviewers List

If no devices are discovered automatically, then a device's IP address and GVOP Domain number may be specified manually.

To specify manually:

- 5 Click **Specify Host** and enter the device's GV Orbit GVOP **Domain** number and **IP address**.
- 6 Click **Refresh**.
- 7 The specific device should be listed.

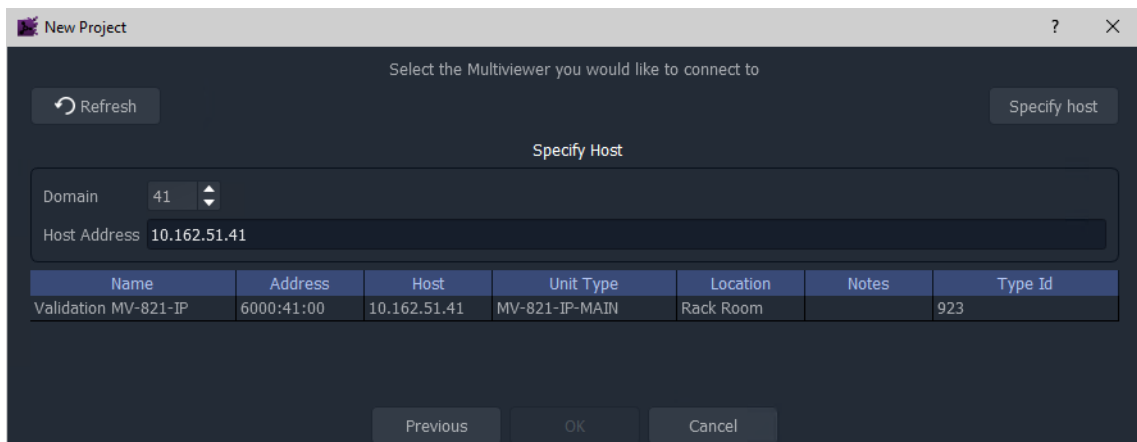


Fig. 7-4: New Project Dialog - Specified Multiviewer List

Then:

- 8 Select a device in the list and click **OK**.

GV Orbit Client connects to the device and pulls the GV Orbit multiviewer project from the device. (For a new multiviewer, this is the default project.)

- 9 At the login dialog, enter the appropriate project **User Name** and **Password**.
Note: For a default project on a new, factory unit, this is 'admin' and 'admin'.

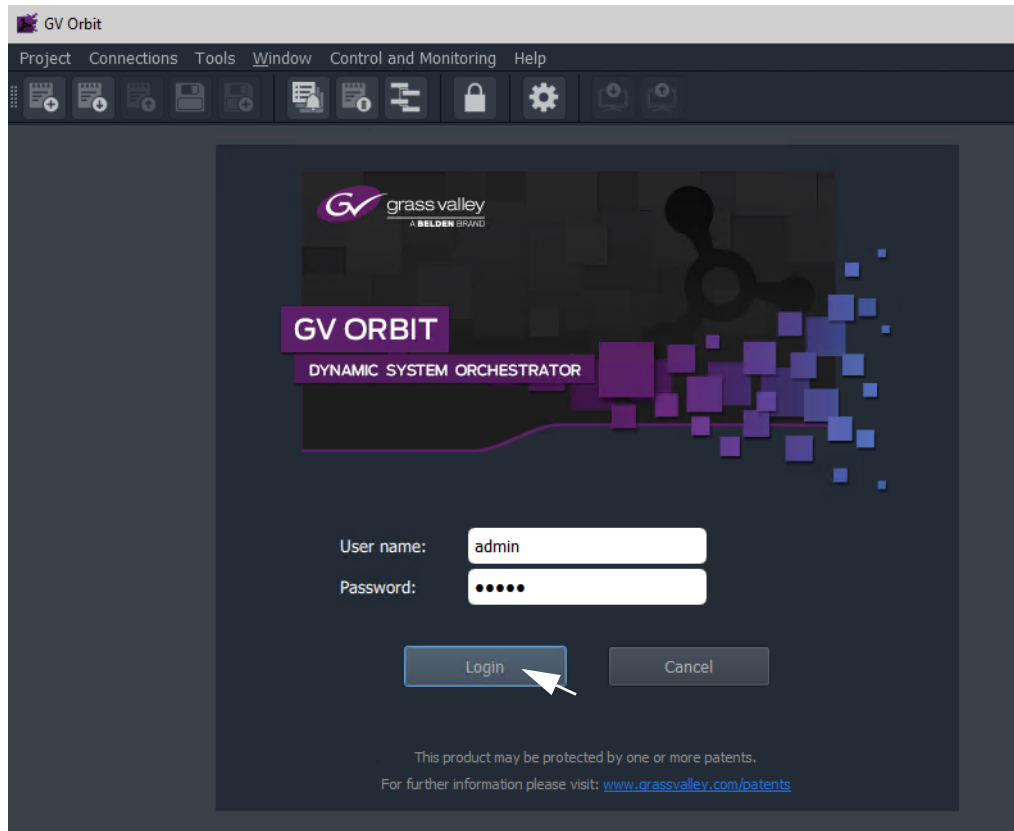


Fig. 7-5: Login Dialog

- 10 Click **Login**.

The project is opened and shown in GV Orbit Client.

A new GV Orbit project has been created from the connected multiviewer and opened in GV Orbit Client.

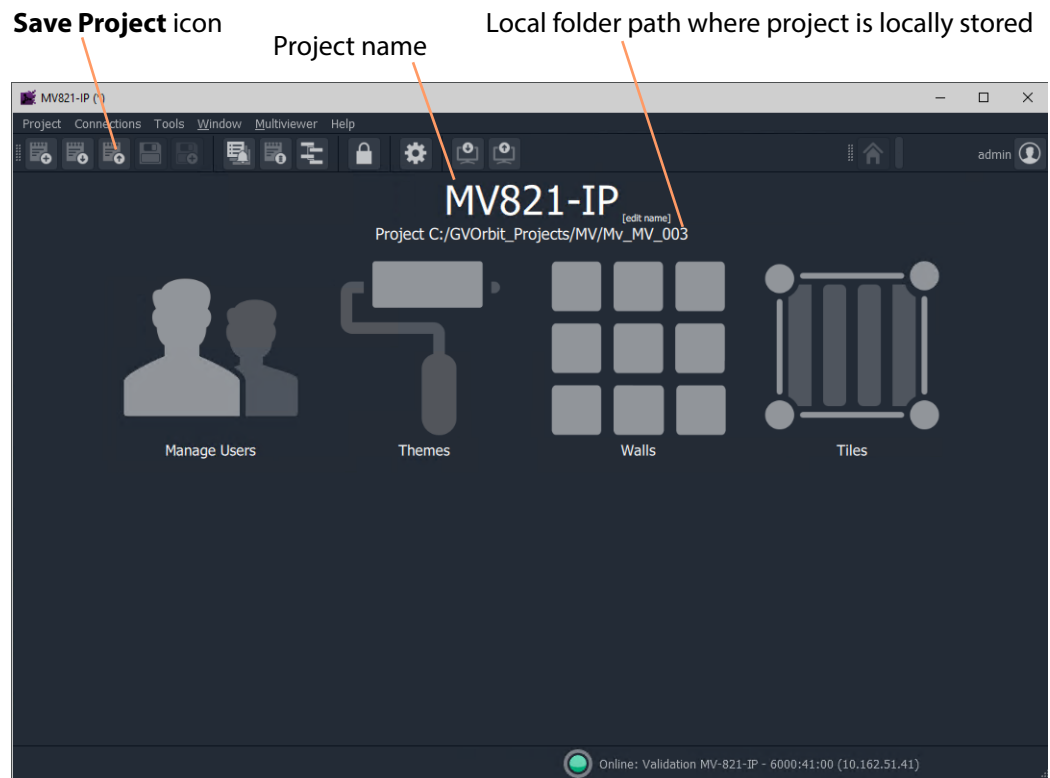


Fig. 7-6: Example Project Open in GV Orbit Client

Save Project

To save a project on the local computer in the previously-specified folder:

- 1 Click **Project > Save Project** in the main menu, or click the **Save Project** icon in the main tool bar.

Edit a Project Name

The GV Orbit Client home screen shows a 'Project Name', which is treated as an identifier by GV Orbit. The name may be changed with the 'Edit Name' control in the home screen.

Projects with the same name are considered to be the same and GV Orbit warns the user if there are any differences between a project in GV Orbit and the same-named project on a multiviewer device. Such differences must be resolved.

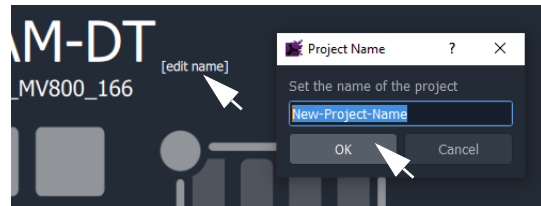
Note: Use a different and unique GV Orbit project name for each multiviewer.
Rename a default project that has been pulled from a multiviewer.

To edit a project name in GV Orbit Client:

- 1 Click **Edit Name**, on the project home screen to rename the project.
- 2 Enter a new project name and click **OK**.

(This will avoid over-writing the default project on the multiviewer later.)

- 3 Click **Project > Save Project** in the main menu, or click the **Save Project** icon in the main tool bar.



Set Up Input Alarms

Input alarms can be set up and enabled on each multiviewer input. These are definable in the GV Orbit multiviewer project.

In this 'Getting Started' example, a video alarm and an audio alarm are enabled on one input and then those input alarm settings are copied to all the inputs.

(See [Core MV Input Alarms](#), on page 49, for a description of the **Input Alarms** dialog and its tabs.)

With the multiviewer project open in GV Orbit Client:

Select One Input to Configure

- 1 Click on 'Multiviewer > Input Alarms' in the main menu.

The **Input Alarms** dialog is shown.

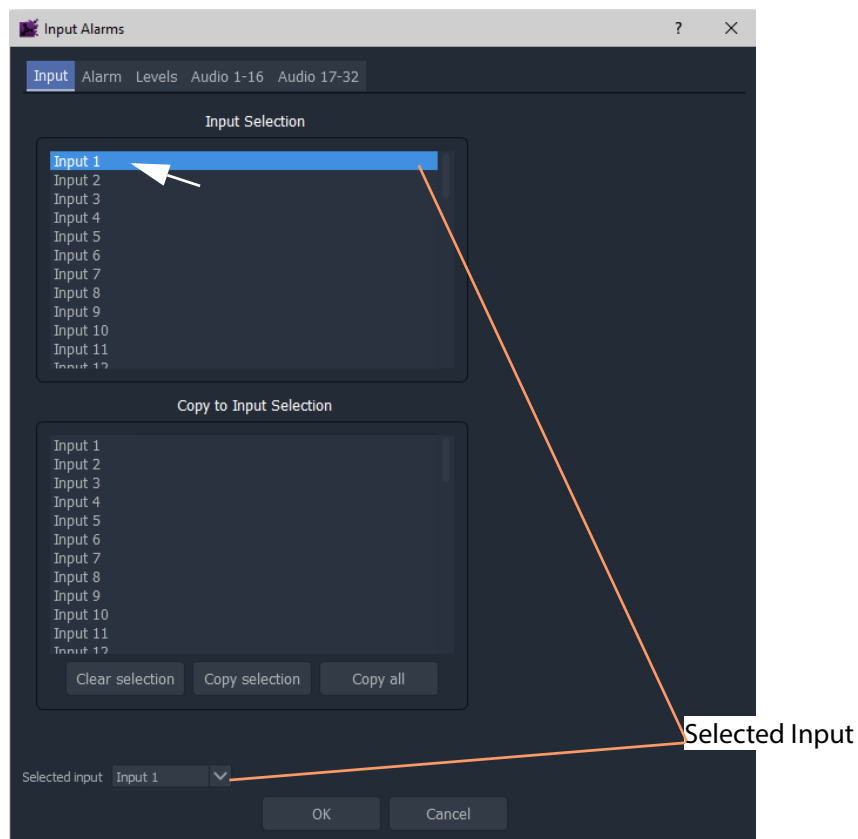


Fig. 7-7: Input Alarms Dialog

In the 'Input' tab.

- 2 Select 'Input 1' by either:
 - selecting 'Input 1' in the **Input Selection** list; or by
 - using the drop-down **Selected Input** list.

The selected input ('Input 1') is then shown in the **Selected Input** box which also appears on other tabs too.

CAUTION **Selected Input** appears on other tabs and it may be changed at any time.
Use caution to avoid inadvertently changing this.

Set up Video Lost Alarm

To enable the 'Video Input Lost' alarm:

- 1 Select the 'Alarm' tab.
- 2 Scroll down the list of alarms in the **Select Alarm** box and select '**Video Input Lost**'.
- 3 In the properties section, select **Alarm Enable**. See Figure 7-8.

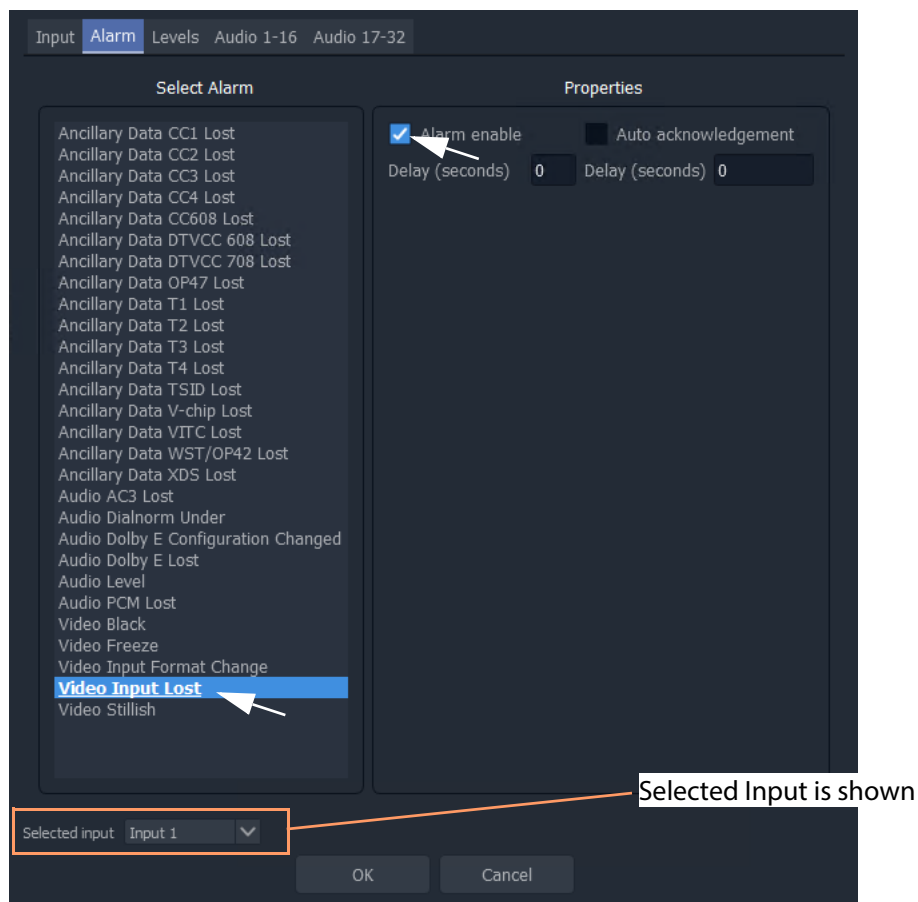


Fig. 7-8: Video Input Lost Alarm Enabled

Set Up Audio Levels Alarm

To enable the 'Audio Levels' alarm:

- 1 Select '**Audio Level**' in the list of alarms and then in the properties section, select **Alarm Enable**. See Figure 7-9.

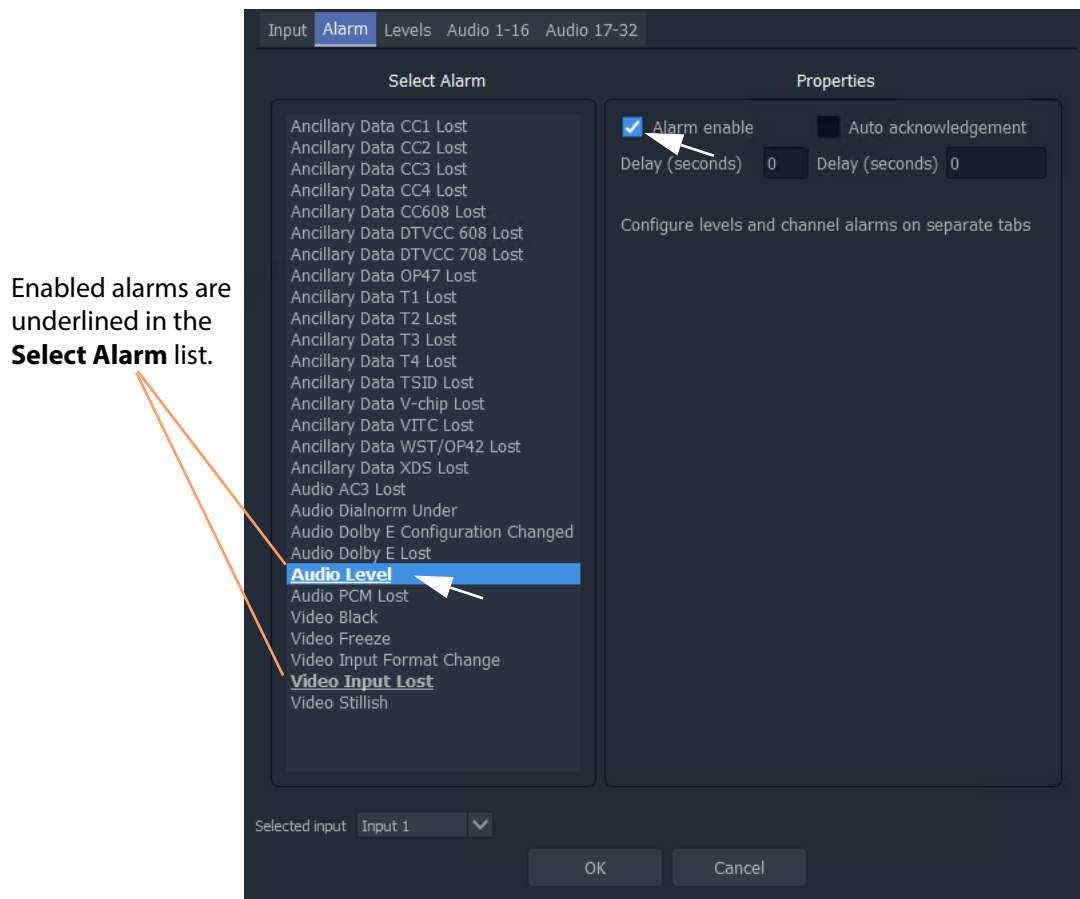


Fig. 7-9: Audio Levels Alarm Enabled

The Audio Level alarm needs further settings to be configured and this is done in the other tabs of the Input Alarms dialog:

- 2 Select the 'Levels' tab.

This shows the various audio levels that the **Audio Levels** alarm uses. These can be adjusted if required.

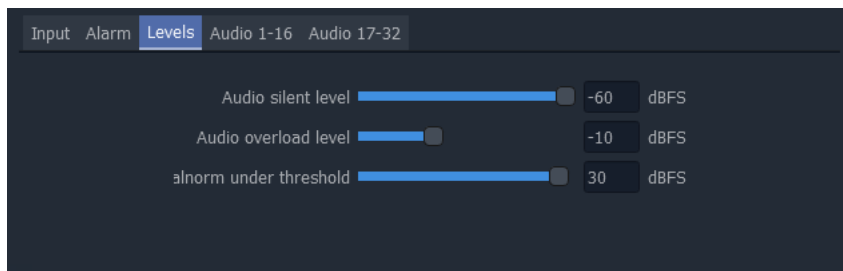


Fig. 7-10: Levels Tab

- 3 Select the 'Audio 1-16' tab and/or the 'Audio 17-32' tab.

This shows the audio channels that the various audio alarms monitors.

Note: Audio alarms that are not enabled are grayed-out in the tab.

These channels can be selected/deselected as required. See Figure 7-11.

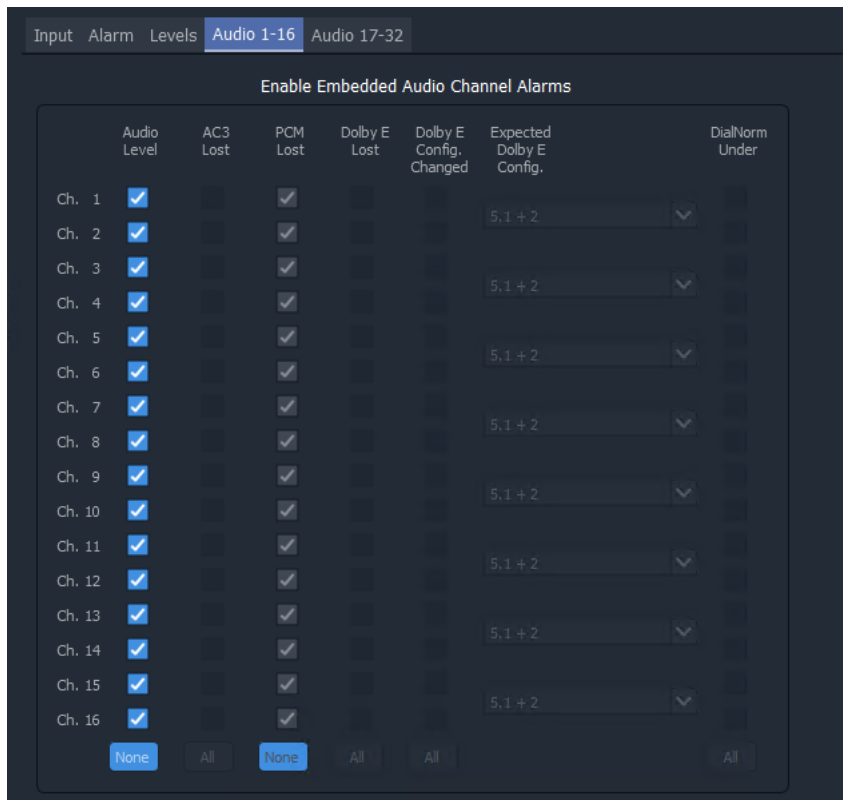


Fig. 7-11: Audio Channels 1-16 (17-32)

This has now set up the 'Video Lost' alarm and 'Audio Levels' alarm for multiviewer Input 1.

Copy Input Alarm Settings

To apply the same to all the other multiviewer inputs:

- 1 Select the 'Input' tab.

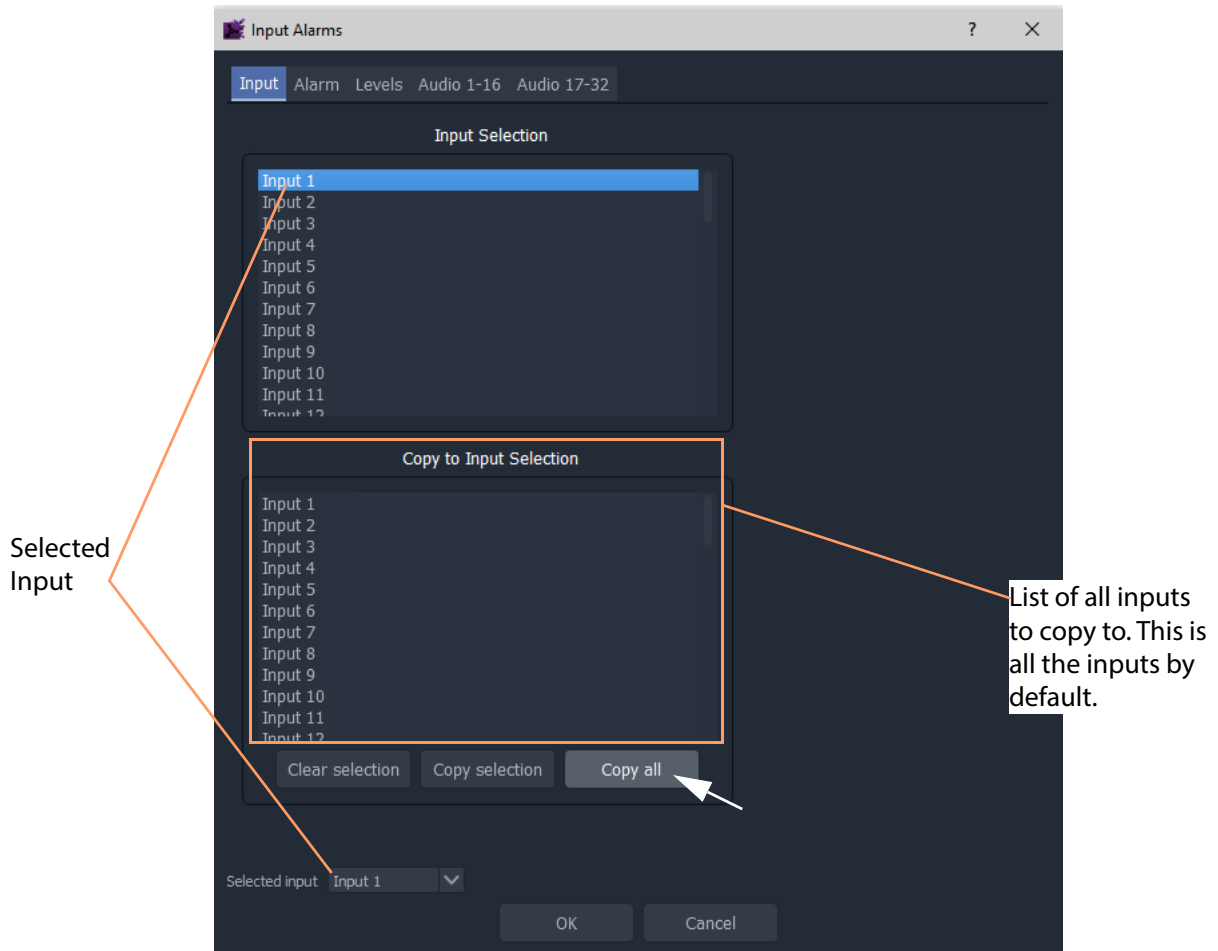


Fig. 7-12: Copy Alarm Settings from Input 1 to All Multiviewer Inputs

- 2 Click **Copy All**.

The alarm settings of the 'Selected Input' (Input 1) are copied to all the other Inputs.

- 3 Click **OK**.

- 4 Click **Project > Save Project**, to save the project settings changes.

The **Video Input Lost** alarm and **Audio Levels** alarm are enabled on all the multiviewer's 48-input multiviewer inputs.

Set Up Multiviewer Unit Alarms

The unit alarms that can be set up and enabled in the multiviewer project via the 'Multiviewer' main menu item.

Unit alarms are not related to any one multiviewer input. The configuration dialog is accessed in the following way in GV Orbit Client when a multiviewer project is open:

- 1 Click **Multiviewer > Unit Alarms** in the main menu.

A **Unit Alarms** dialog box, Figure 7-13, shows the possible unit alarms, see Table 7-1.

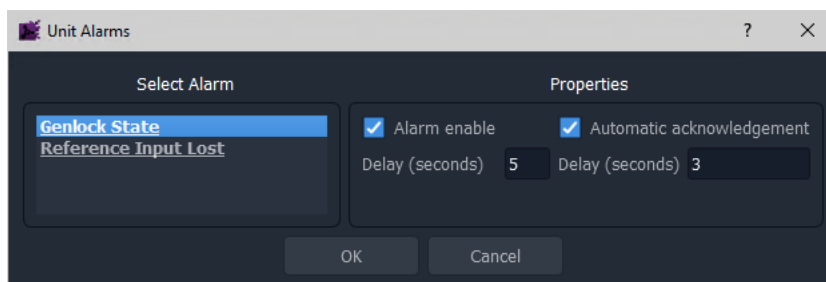


Fig. 7-13: Unit Alarms Dialog

Table 7-1: Unit Alarms

Alarm	Description
Genlock State	Detects unlocked multiviewer genlock.
Reference Input Lost	Detects a lost reference signal.

- 2 Click on an alarm name in the **Select Alarm** list.
The selected alarm's properties are shown.
- 3 Unit alarm properties are described in Table 7-2. Select as required for each alarm.

Table 7-2: Unit Alarms Properties

Alarm Property	Description
Alarm Enable	Check box. Select to enable the alarm.
Delay (seconds)	Text box. The time in seconds from when a fault is detected to when the alarm is displayed on the multiviewer video wall. Set a small delay to prevent transient alarms being displayed, filtering out transient alarms.
Automatic Acknowledgment	Check box. Select to enable automatic acknowledgment by the multiviewer system. Deselect to manually acknowledge the alarm. Alarms will have to be acknowledged by the user, to stop an alarm flashing.

Table 7-2: Unit Alarms Properties (continued)

Alarm Property	Description
Delay (seconds)	<p>text box.</p> <p>The time in seconds from when the alarm occurs to when it is automatically acknowledged by the multiviewer system.</p> <p>Set a delay here to allow an alarm to flash and be displayed for a short time before being automatically acknowledged.</p>

Note: Each alarm has its own 'Alarm Enable' and 'Automatic Acknowledge' properties.

- 4 Click **OK**.
- 5 Click **Save Project** icon in main tool bar.

Set Up Multiviewer Input Audio

Input audio settings are defined in the **Input Audio** dialog.

Audio Meter Type

A video wall's audio meter scale type and signal ballistics are set up for the metering in Audio Bars graphical widgets in this tab. (See [Audio Meters](#), on page 90 for more information.) All audio metering in the multiviewer will use the same setting.

- 1 Click **Multiviewer > Input Audio** in the main menu.

The **Input Audio** dialog box is shown. See Figure 7-14.

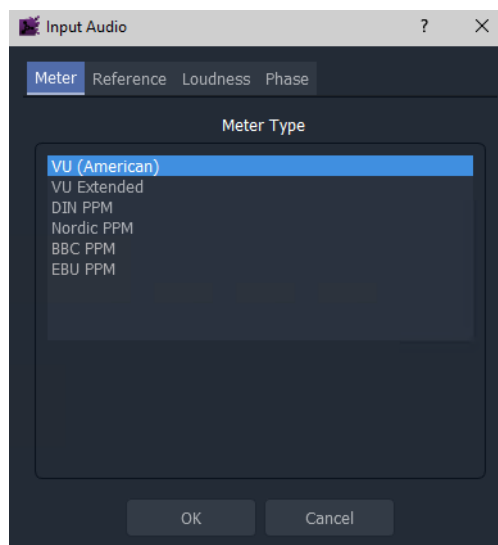


Fig. 7-14: Input Audio Dialog - Meter Tab

- 2 In the **Meter** tab, select the **Meter Type** to apply to *all audio channels of all multiviewer video inputs*.

CAUTION **Audio Meter Ballistics:**

Audio meter *ballistics* apply globally per multiviewer.

A GV Orbit multiviewer project user may change an Audio Bars widget audio meter *type* locally on a video wall tile/schematic, which only locally changes the meter *scale* on the tile/schematic.

IMPORTANT

However, *all* audio meter data from the same multiviewer will all have the same ballistics type, i.e. that of the **Meter Type** set up in the **Multiviewer > Input Audio** dialog.

Audio Reference

- 1 Select the **Reference** tab.

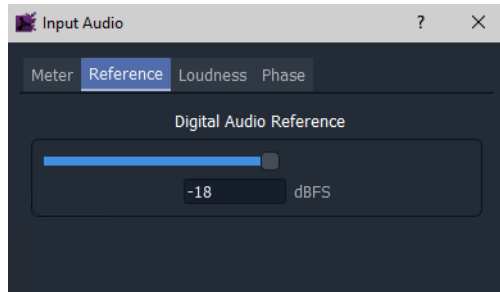


Fig. 7-15: Input Audio Dialog - Reference Tab

- 2 Select the **Digital Audio Reference** to apply to *all audio channels*.

Audio Loudness

There are 48 audio loudness engines. (See [Input Audio Loudness](#), on page 107, for more information.)

- 1 Select the **Loudness** tab.

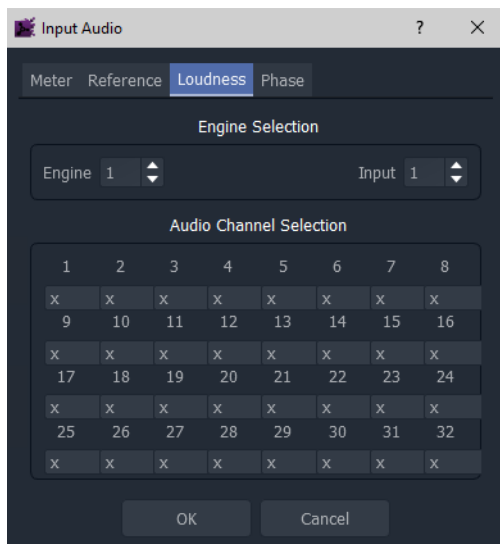


Fig. 7-16: Input Audio Dialog - Loudness Tab

Internal 'loudness engine' selection:

- 2 Associate a 'loudness engine' with a multiviewer input by selecting an **Engine** and an **Input**.

Audio channel selection and configuration:

- 3 Select the audio channels to be processed for each engine, where:
 - "x" channel not used;
 - "F" channel is a 'Front speaker' type;
 - "S" channel is a 'Surround speaker' type; and

- “L” channel is a ‘Low frequency (Sub)’ type.

Repeat for each engine being configured.

An engine’s output can be shown on an Audio Loudness widget on a video wall.

Audio Phase

There are 48 audio phase engines. (See [Input Audio Phase](#), on page 110.)

- 1 Select the **Phase** tab.

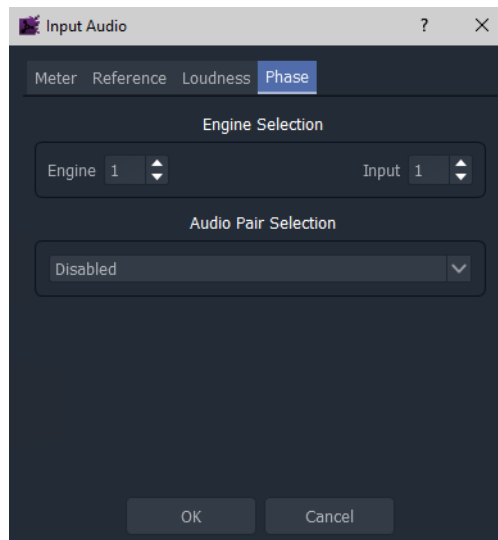


Fig. 7-17: Input Audio Dialog - Phase Tab

Internal ‘audio phase engine’ selection:

- 2 Associate a ‘phase engine’ with a multiviewer input by selecting an **Engine** and an **Input**.

Audio stereo pair selection:

- 3 Select the Audio Pair to be phase-compared.

Repeat for each engine being configured.

An engine’s output can be shown on an Audio Phase widget on a video wall.

Finally

When all the tabs are set up:

- 1 Click **OK** in the **Input Audio** dialog.
- 2 Click **Save Project** icon in main tool bar.

Set Up Multiviewer Output Audio

The **Output Audio** dialog is used to set up the audio sources for each of the audio channels in each of the multiviewer head display outputs. Up to eight stereo channels are embedded in each multiviewer head display output. (See [Output Embedded Audio Support](#), on page 105, for more information.)

Note: Dolby E audio on multiviewer inputs cannot be decoded for embedding onto the display output for monitoring.

- 1 Click **Multiviewer > Output Audio** in the main menu.
The **Output Audio** dialog box is shown. See Figure 7-18.

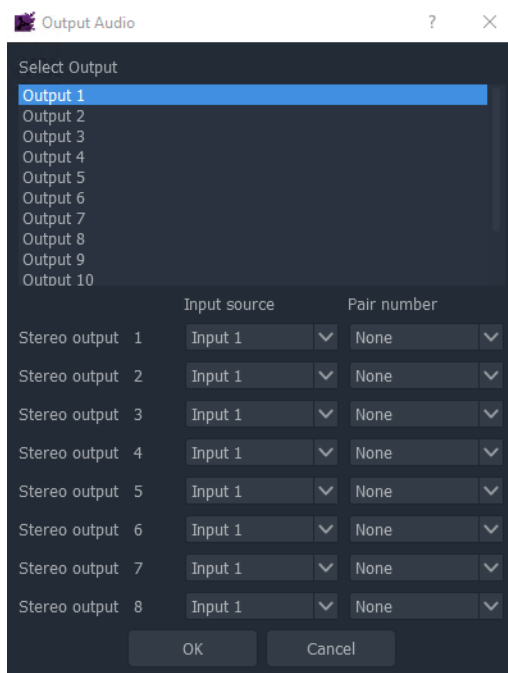


Fig. 7-18: Output Audio Dialog

- 2 In the **Select Output** list, select an output ('Output 1', 'Output 2', ... or 'Output 12').
This selects the multiviewer head display output to configure.
- 3 Select the source audio stereo pairs for the head display output. Up to 8 stereo pairs per head display output: For each output pair:
 - select the multiviewer input; and
 - select input stereo pair.

The selected audio sources are embedded in each multiviewer head display output. They can be monitored via a suitable display or audio de-multiplexer.

Repeat for each licensed head display output.

When all the head display outputs are set up:

- 4 Click **OK** in the **Input Audio** dialog.
- 5 Click **Save Project** icon in main tool bar.

Quick Edit of Video Wall

To make a quick and visible change to the video wall:

- 1 Click the large **Walls** icon and select a wall item in the list, for example, 'Output 1': See Figure 7-19.

The selected wall is opened in a Wall Editor in GV Orbit Client. See Figure 7-22.

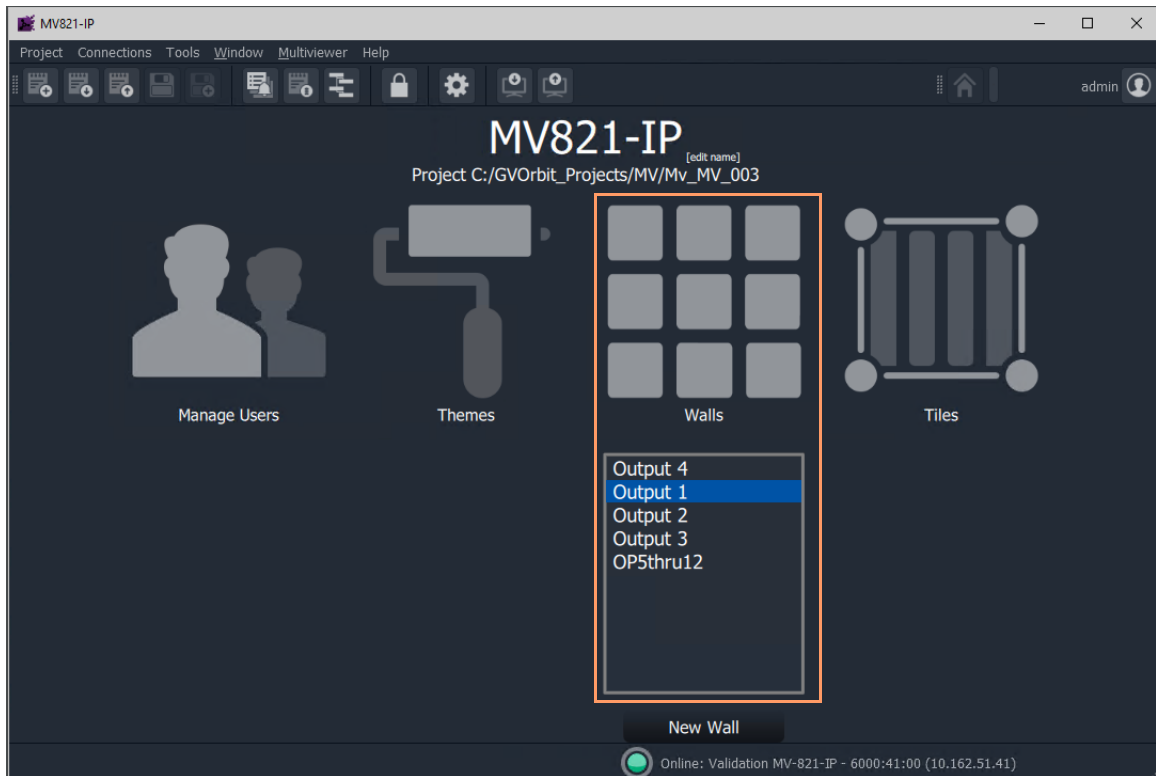


Fig. 7-19: Project Open in GV Orbit

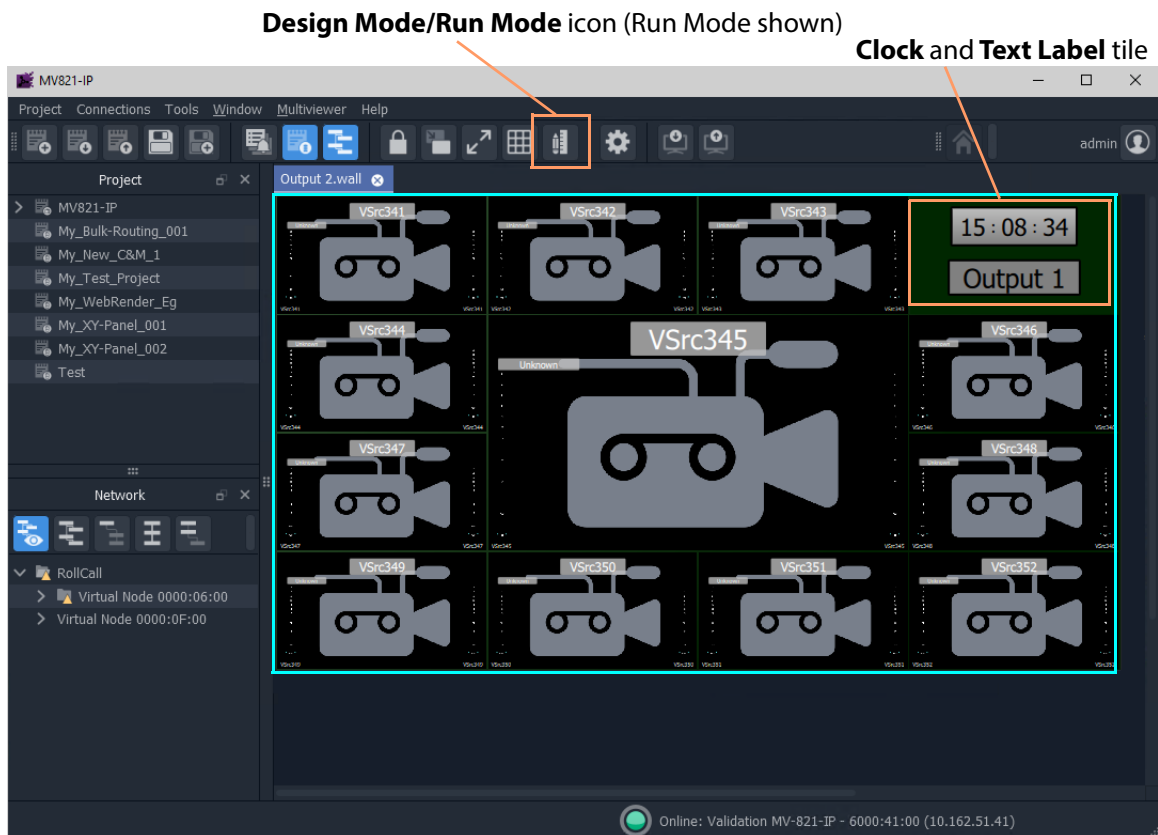


Fig. 7-20: Example Wall Open in Wall Editor in Run Mode

Figure 7-20 shows the GV Orbit **Wall Editor** in **Run Mode**. To perform edits to the multiviewer video wall, the **Wall Editor** must be in **Design Mode**.

To change from **Run Mode** to **Design Mode**:

- 2 Click the **Design Mode** icon in the main menu. (See Figure 7-20.)
GV Orbit enters **Design Mode**. See Figure 7-21.

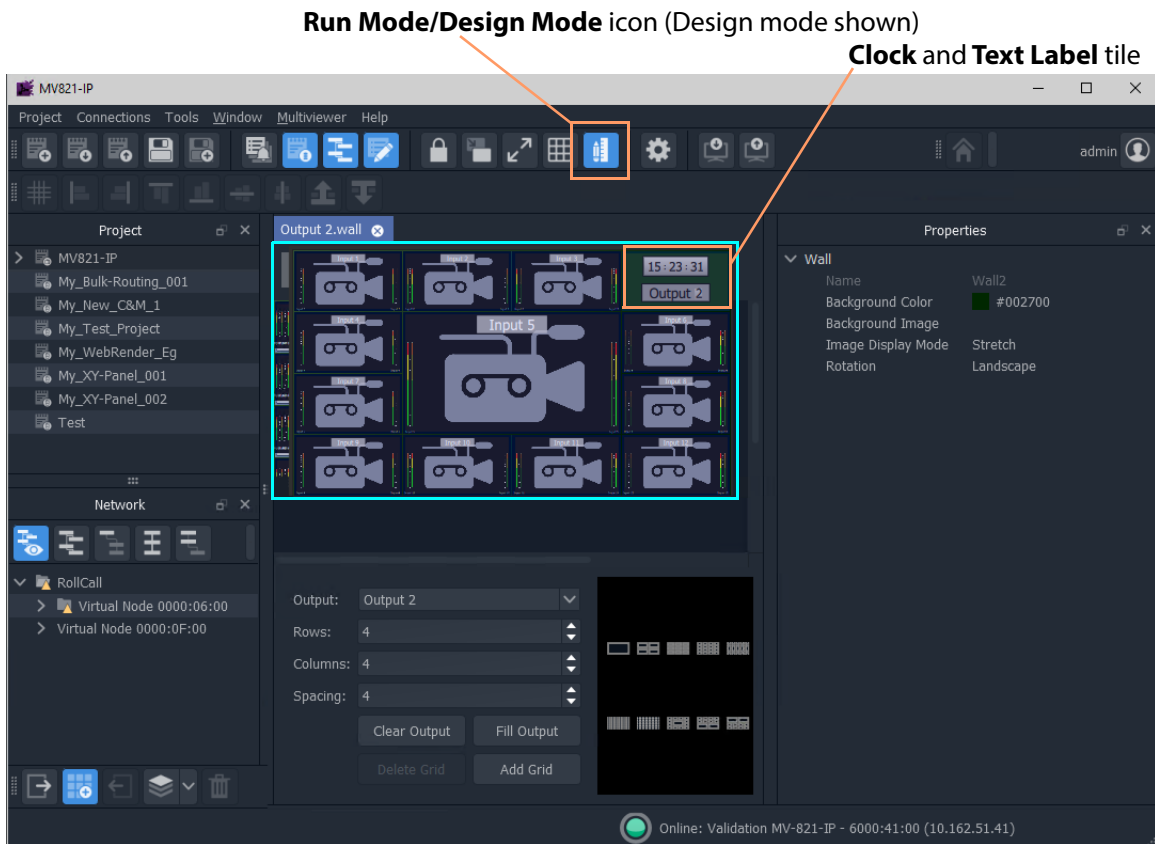


Fig. 7-21: Example: Wall Editor in Design Mode

Note: Clicking on the **Design Mode/ Run Mode** icon toggles between modes.

- 3 Double-click on the **Clock and Text Label** tile.
The tile is opened in the **Tile Editor**. See Figure 7-22.

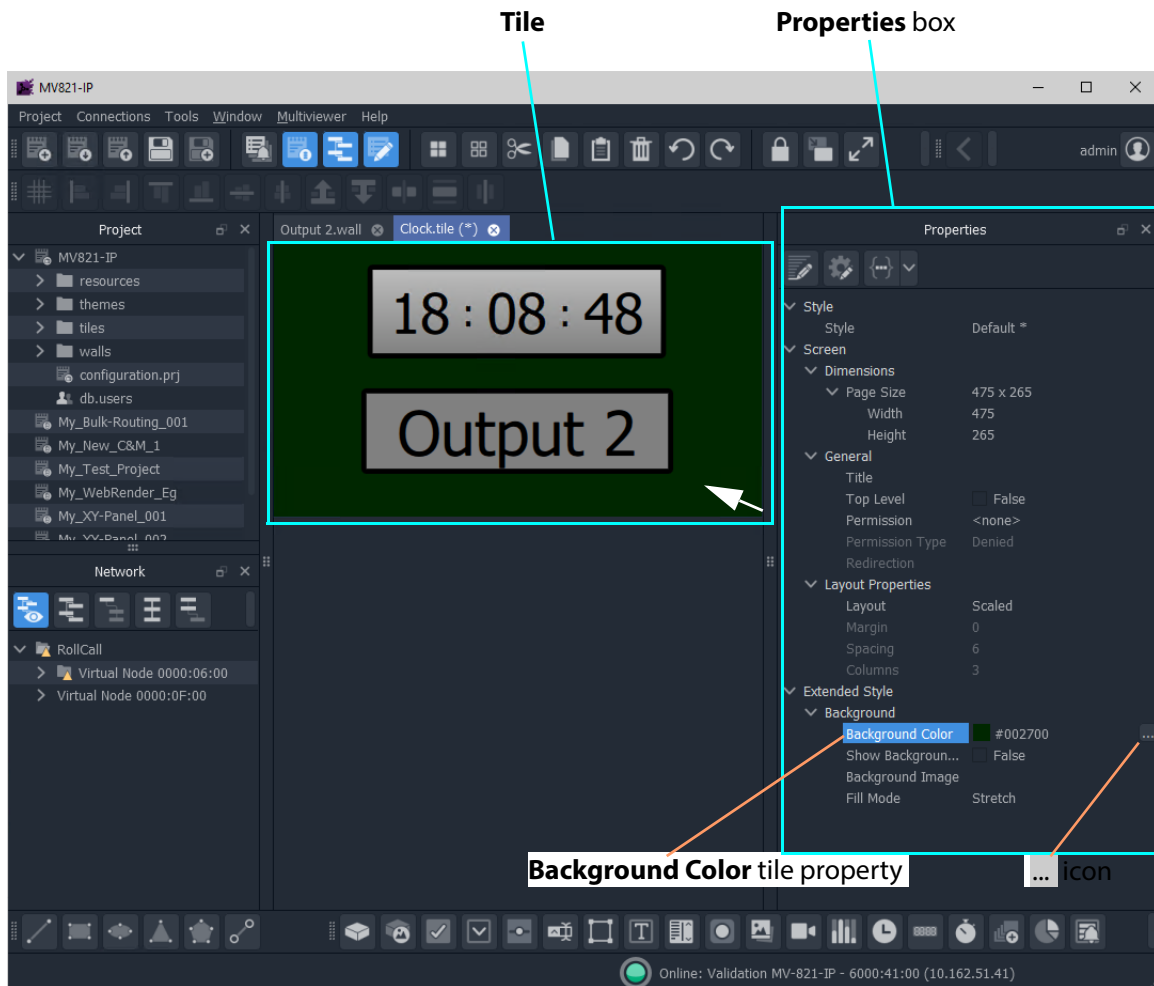


Fig. 7-22: Tile Editor

To make a change to the tile:

- 4 Click on the tile background.
- 5 In the **Properties** box, select the 'Extended Style > Background > Background Color' property.
- 6 Click on the **...** icon to show the **Background Color** color select dialog. See Figure 7-23.
- 7 Select a color and click **OK**.

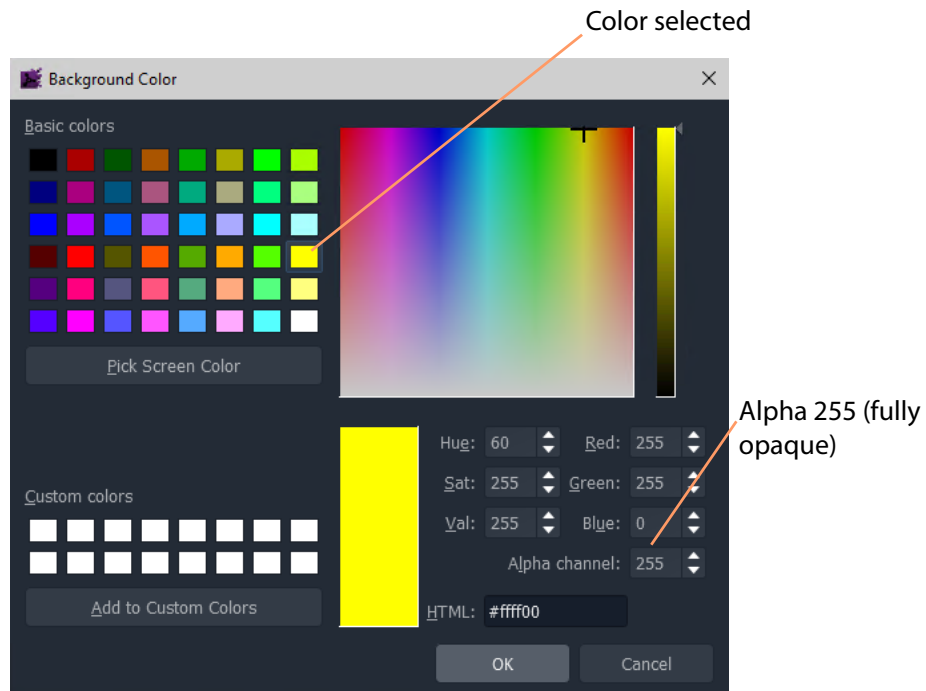


Fig. 7-23: Color Picked

- 8 Click the **Save File** icon in the main tool bar to save the tile change.

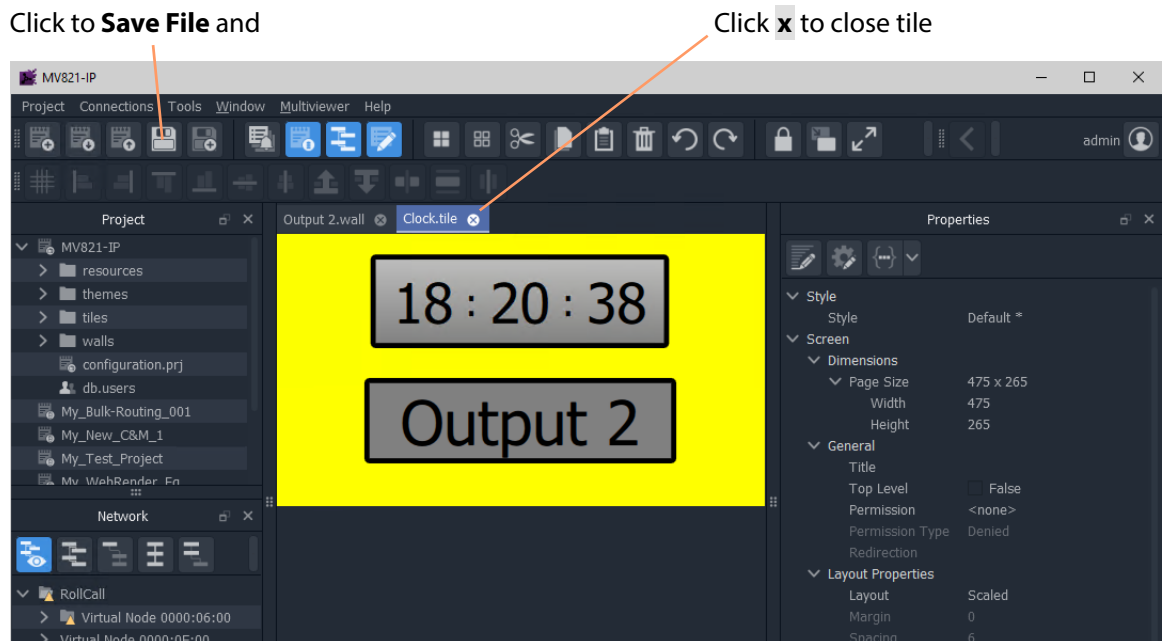


Fig. 7-24: Tile with New Background Color

- 9 Click on the **x** on the **Tile** tab to close the tile and on the **Wall** tab to close the wall.
- 10 Click on the **Save Project** icon in the main tool bar to save all changes in the project to the local PC storage.

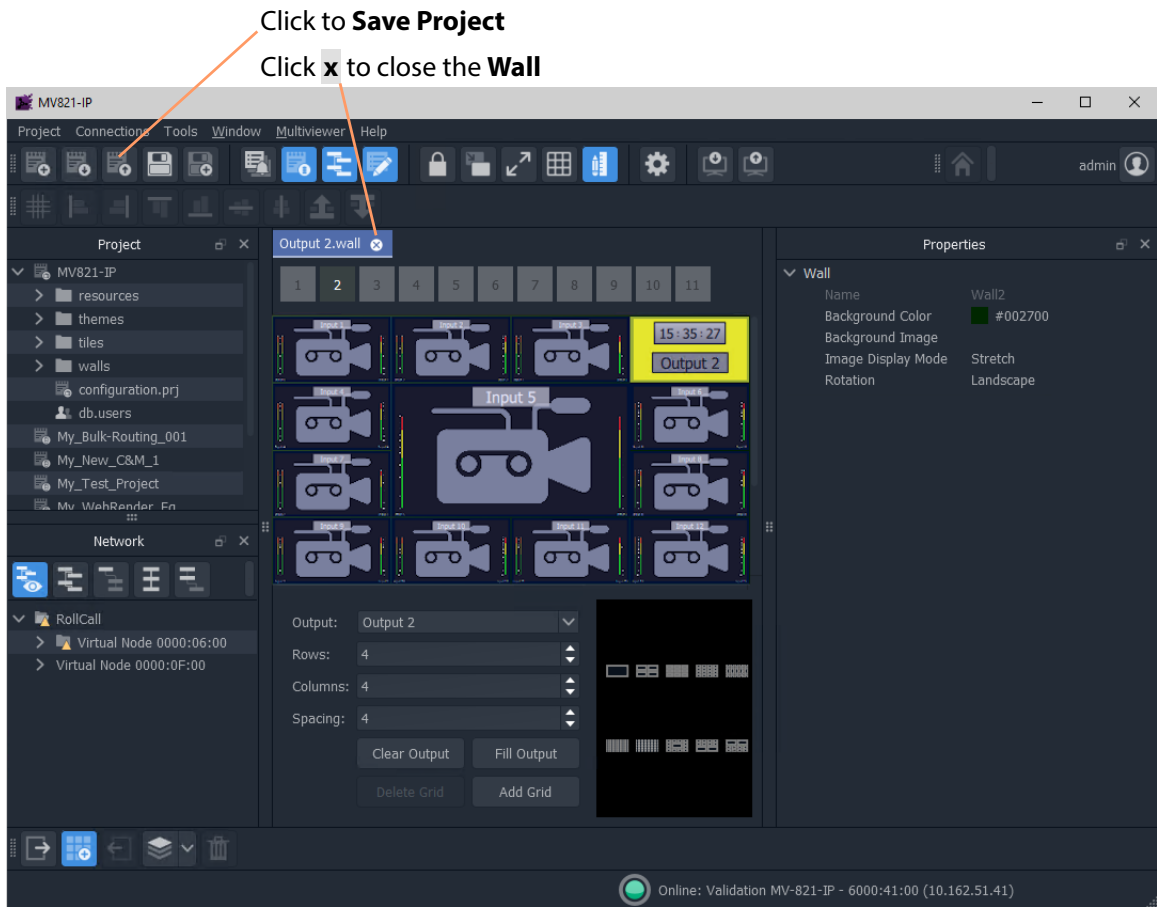


Fig. 7-25: Example Changed Wall

The project is saved on the PC. Once all changes are made, the next step is to push it back to the multiviewer.

Push a Project to a Multiviewer Device

To push a project from GV Orbit Client onto a multiviewer device:

- 1 Open the multiviewer project in GV Orbit Client and click **Multiviewer > Properties** in the main menu.

Some multiviewer details are shown in a **Properties** dialog. (A GV Orbit multiviewer project stores the name etc. of the multiviewer unit that it came from.)

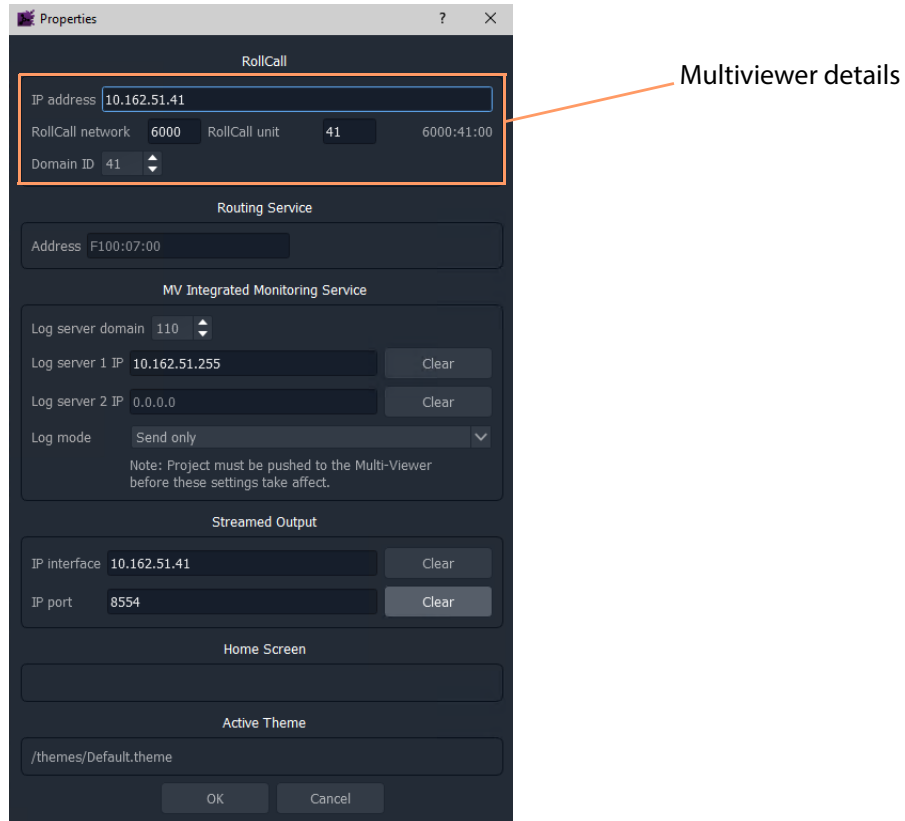


Fig. 7-26: Multiviewer Properties Dialog

- 2 Check the multiviewer details.
If the multiviewer details are correct, then proceed;
however, if the details require changing, enter the target device's:

- IP address;
- RollCall network number and unit number; and
- Domain ID.

Click **OK**.

To push a project to the multiviewer:

- 3 Click the **Push** icon in the main menu. See Figure 7-27.

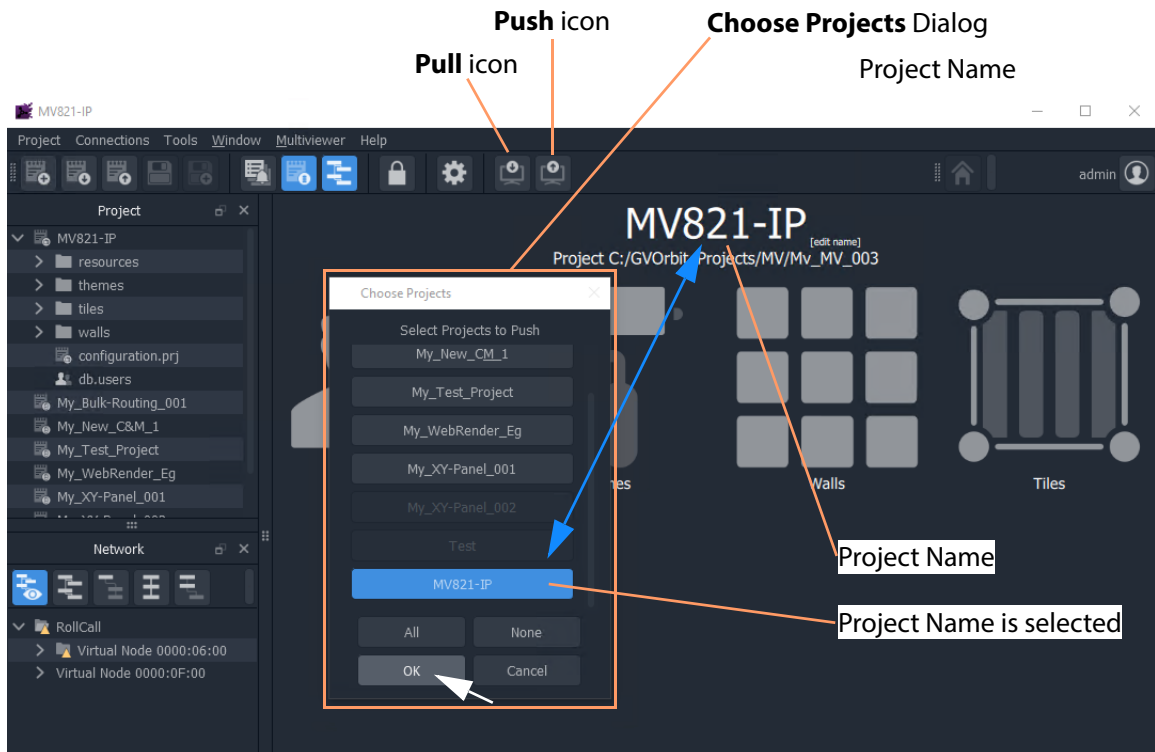
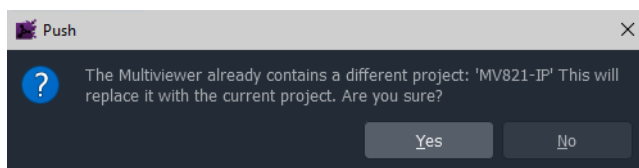


Fig. 7-27: Pull/Push Icons and Choose Projects Dialog

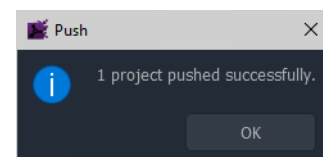
- 4 Select the project name in the **Choose Projects** dialog (scroll down the list of possible projects as required, they may already be selected). See Figure 7-27. and click **OK**.
The project is then pushed to the multiviewer.

Note: If the multiviewer already has a project of the same name, then a dialog is shown. Click 'Yes' to overwrite with the project from GV Orbit Client (see Figure 7-28).

- 5 When the push is complete a 'pushed successfully' message is shown. See Figure 7-28b. Click **OK**.



a) Push Message



b) Push OK.

Fig. 7-28: Push Messages

The project is now running on the target MV-8 Series Multiviewer. The edited tile background color is changed.

On-Screen Alarm Warnings

With the project running on the multiviewer, to provoke a 'Video Input Lost' alarm:

- 1 Disconnect a video signal going to the 48-input multiviewer (for example, to Input 25).
I.e. disconnect signal at the MV-8 Series Multiviewer's **Video Input** connector.

Video loss is detected at the 48-input multiviewer input.
A slow-flashing, **red rectangular border** appears around the corresponding video wall tile.



Alarms may also be seen in the GV Orbit Client's **Network** window and in the **Alarm Summary** window for the multiviewer:

- 2 In the **Network** window,
locate and expand the MV-8 Series Multiviewer item.
- 3 Right-click on a sub-item of the multiviewer item (for example, the **red Input 25** 'sub-item') and select **Alarms** in drop-down menu.

An **Alarm Summary** window shows the 48-input multiviewer's **Input 25** status. See Figure 7-29.

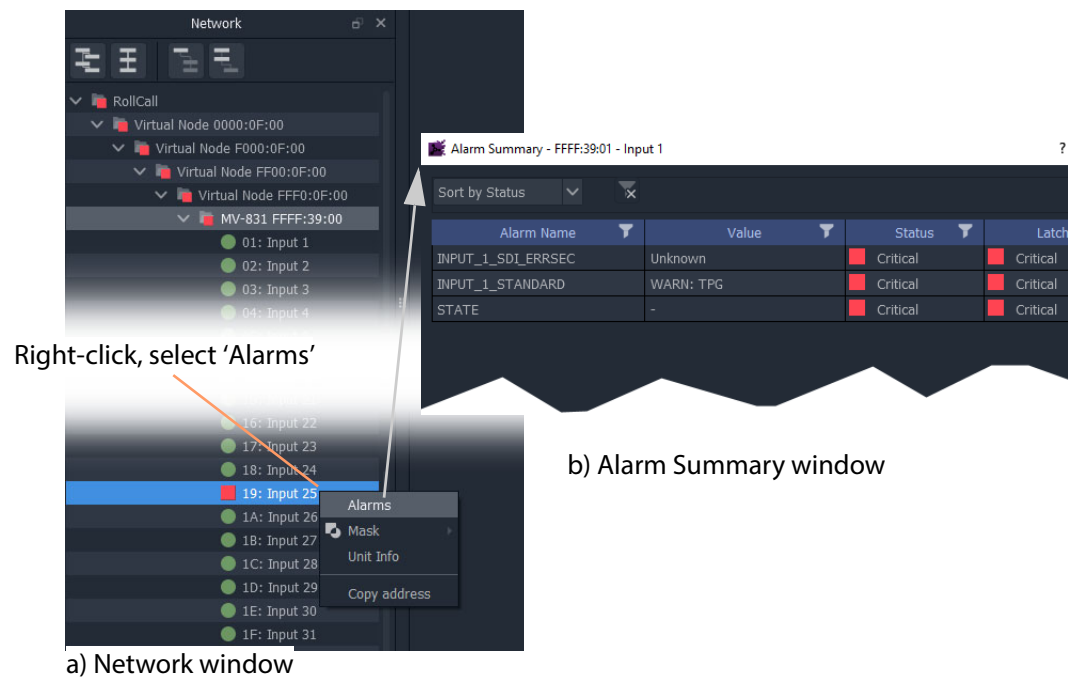


Fig. 7-29: Alarm Showing in:
a) Network Window.
b) Alarm Summary Window.

Pull a Project from a Multiviewer Unit

To pull a project into GV Orbit Client from a MV-8X0/8X1 Multiviewer unit:

- 1 Open a multiviewer project in GV Orbit Client and click **Multiviewer > Properties** in the main menu.

The Multiviewer **Properties** dialog is shown.

(This dialog is shown in [Figure 7-26](#) on page 152.)

- 2 Check that the multiviewer details are correct for the target multiviewer or, if the multiviewer details require changing, enter the target device's:

- IP address;
- RollCall network number and unit number; and
- Domain ID.

Click **OK**.

- 3 Click the **Pull** icon in the main menu.
(The **Pull** icon is shown in [Figure 7-27](#) on page 153.)

The **Choose Projects** dialog is shown. (The dialog is shown in [Figure 7-27](#) on page 153.)

- 4 Select the required project in the **Choose Projects** dialog (scroll through the project list is required).

And click **OK**.

The project is pulled from the device.

- 5 When the pull is complete a 'pulled successfully' message is shown. Click **OK**. See [Figure 7-30](#).

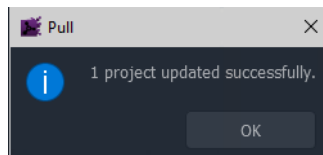


Fig. 7-30: Pull Message

The GV Orbit project of the same name in as the one pulled from the device has now been updated into GV Orbit Client. The project in GV Orbit Client is now the same as that on the multiviewer.



Core MV Maintenance

Core MV Maintenance

Licensing page 157
License Installation Procedure page 157
Software Upgrade Package page 161
Software Upgrade Procedure page 161
Download Log Files page 169

This section describes various software maintenance operations for the MV-8 Series Multiviewer. These operations are carried out via the control interface of the MV-8 Series Multiviewer. Refer to the respective MV-8X0/8X1 Multiviewer user manuals for details about the control Ethernet interface to use.

Information about an MV-8 Series Multiviewer’s software version, multiviewer core serial number etc. is displayed on the RollCall **System - Setup** control screen.

Licensing

Licenses give access to additional MV-8 Series Multiviewer features (for example, extra head display outputs for an MV-8 Series Multiviewer, or 12G video input capability for an MV-821 unit).

Note: For a ‘H.264 stream’ license on MV-821 multiviewers, factory-fitted codec modules are required.

License Files

The license files for the MV-8 Series Multiviewer are supplied upon purchasing a license from Grass Valley. They are small .zip files.

The license key within the file is tied to the multiviewer core serial number of the MV-8X0/8X1 Multiviewer unit, which is shown on a label on the splash screen (and is reported by RollCall).

License Installation Procedure

The process of adding a license to an MV-8 Series Multiviewer follows the standard process for a hardware module with licenses administered by Grass Valley RollCall.

For more details, please see the Grass Valley 'RollCall Control Panel User Manual' or the Grass Valley 'RollMechanic Operator's Manual'.

For RollCall Control Panel, MV-8 Series Multiviewer license installation is a two-stage process:


- [Stage 1: Add License to RollCall Control Panel](#), on page 158.
- [Stage 2: Install License on the MV-8 Series Multiviewer](#), on page 159.

These are described in the sub-sections below and are applicable to licensing an MV-8 Series Multiviewer (or to licensing an MV-820-IP/MV-821-IP product's video IP block).

Stage 1: Add License to RollCall Control Panel

The example below uses Grass Valley RollCall Control Panel. See [Software Versions](#), on page 176, for the minimum version of RollCall Control Panel to use for the multiviewer device being licensed.

- 1 Run the RollCall Control Panel software.
- 2 Connect to a MV-8 Series Multiviewer on a MV-8X0/8X1 Multiviewer product unit.

(Click the  icon and enter the IP address in the Build Network dialog. Click OK.)

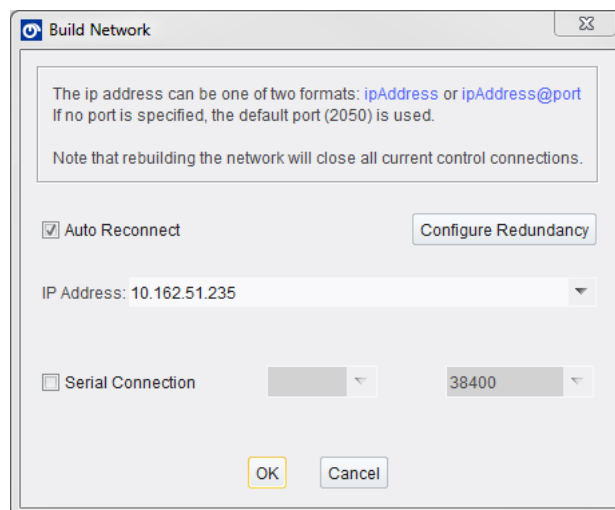



Fig. 8-1: Build Network Dialog in RollCall Control Panel Tool

- 3 Click the **Edit Licenses** icon  or click **Edit > Licenses**. The **License Viewer** window is displayed.
- 4 Click on the **Multiviewer Licenses** tab. Available licenses in your RollCall Control Panel tool are listed.

To import your license:

- 5 Click **Import Licenses**. Navigate to the license zip file and **select** the license file name. Click **OK**.

The license is imported into RollCall Control Panel and is added to the listed licenses. See Figure 8-6.

The license is now added to RollCall Control Panel.

List of available imported licenses shown in the tab

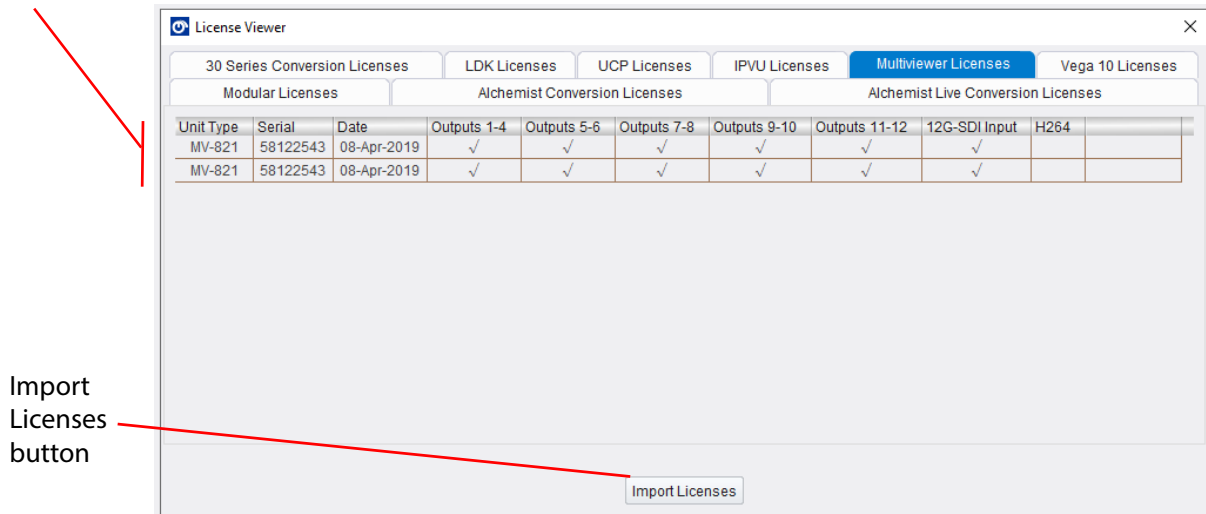


Fig. 8-2: Example License Viewer Dialog (An image for MV-821 is shown)

Stage 2: Install License on the MV-8 Series Multiviewer

Once the required license is imported into RollCall Control Panel, the next stage is to install the license on the device (MV-8 Series Multiviewer, or MV-8X0/8X1 Multiviewer video IP block etc.).

- 1 Right-click on the connected Multiviewer block in the left-hand pane of the RollCall Control Panel screen. Click **Unit License**.

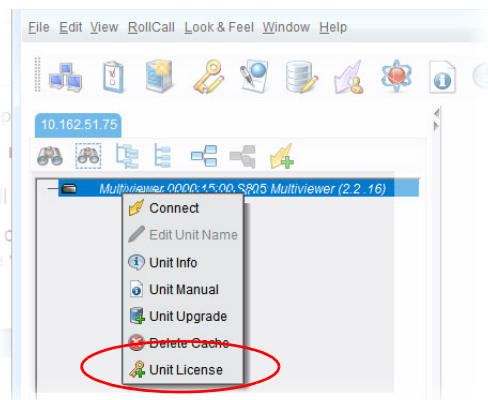


Fig. 8-3: Right-Click Menu - Unit License

- 2 The **Unit License** window shows current licenses and available licenses. See Figure 8-4.

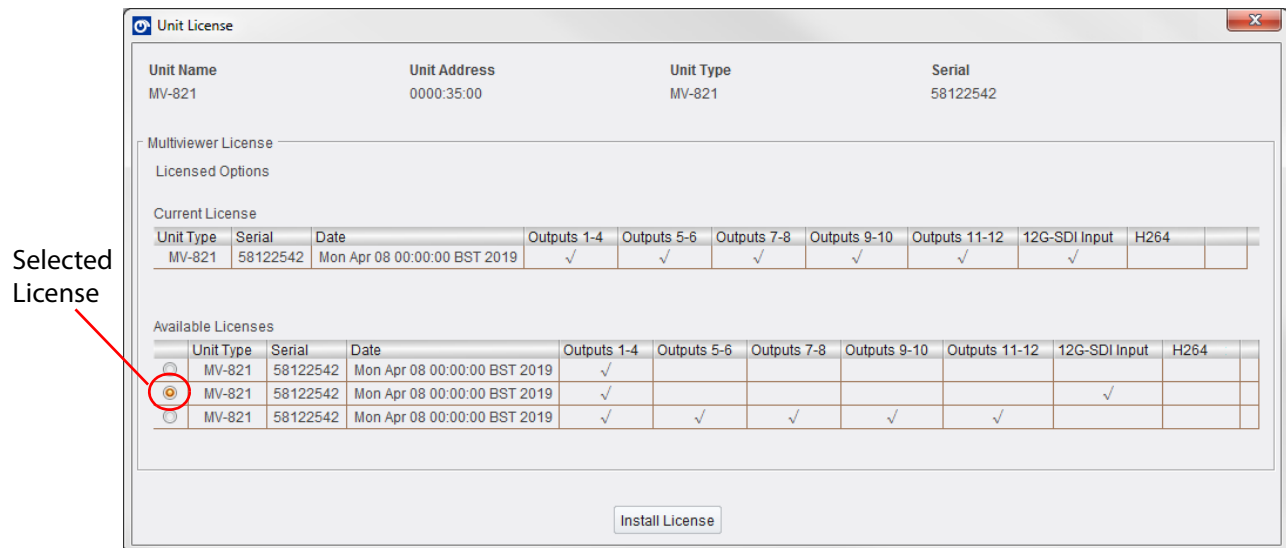


Fig. 8-4: Unit License Dialog - Selected License (An image for MV-821 is shown)

- 3 Select the available license to be installed.
- 4 Click the **Install License** button.
- 5 An **Install License** dialog appears, click **Yes** to install the license.
The license is installed on the multiviewer and the multiviewer restarts (reboots).
Click **OK**.
- 6 Rebooting takes approximately 4 minutes.
While the unit is rebooting, RollCall Control Panel will lose connection with it.
When the multiviewer finishes rebooting, it is operating with the newly-installed license.

Software Upgrade Package

IMPORTANT

Before carrying out an MV-8 Series Multiviewer software upgrade, please ask Grass Valley support for advice and inform Grass Valley support of the software versions you have for:

- MV-8 Series Multiviewer on your MV-8X0/8X1 Multiviewer product.
- Any other Grass Valley MV-8X0/8X1 Multiviewers.
- Orbit Client software application.
- GV Orbit Client software application.

A software upgrade package from Grass Valley is supplied by Grass Valley Support and comprises a set of data and installer files, typically approximately 500M bytes in size. The package is associated with a MV-8 Series Multiviewer software version number, for example, 3.1.4, and may contain a software upgrade for one or more devices.

Software Upgrade Procedure

The MV-8 Series Multiviewer (or for an MV-820-IP video IP block) software upgrading process follows the standard process for module upgrades with Grass Valley RollCall Control Panel.

For more details, please see the Grass Valley RollCall Control Panel User Manual or the Grass Valley RollMechanic Operator's Manual.

For RollCall Control panel, upgrade installation is a two-stage process:

- **Stage 1:** Add the upgrade package to RollCall Control Panel.
See [Stage 1: Add Upgrade Package to RollCall](#) on page 161.
- **Stage 2:** Install the upgrade on the MV-8 Series Multiviewer.
See [Stage 2: Install the Upgrade on the MV-8 Series Multiviewer](#) on page 163.

These are described in the sub-sections below.

Note: MV-8 Series Multiviewer software *downgrades* may also be carried out with the same procedure.

Stage 1: Add Upgrade Package to RollCall

This stage is applicable to upgrading an MV-8 Series Multiviewer (or to upgrading an MV-820-IP/MV-821-IP product's video IP block).

The example below uses Grass Valley RollCall Control Panel. See [Software Versions](#), on page 176, for the minimum version of RollCall Control Panel to use for the multiviewer device being licensed.

- 1 Run the RollCall Control Panel software.
- 2 Connect to the multiviewer block as required.

- 3 Click the **Import New Upgrade** icon, see Figure 8-5.
The **RollCall Upgrade Packages** window is displayed.

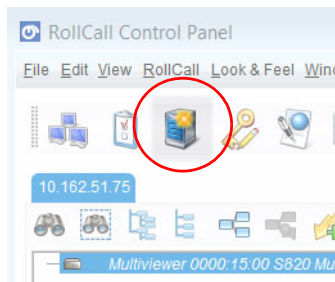


Fig. 8-5: Import New Upgrade Icon

- 4 Click the **Import Upgrade Package** button.
- 5 Navigate into the folder containing the upgrade package.
Click on the .zip file name (see Figure 8-6).
Click **OK**.

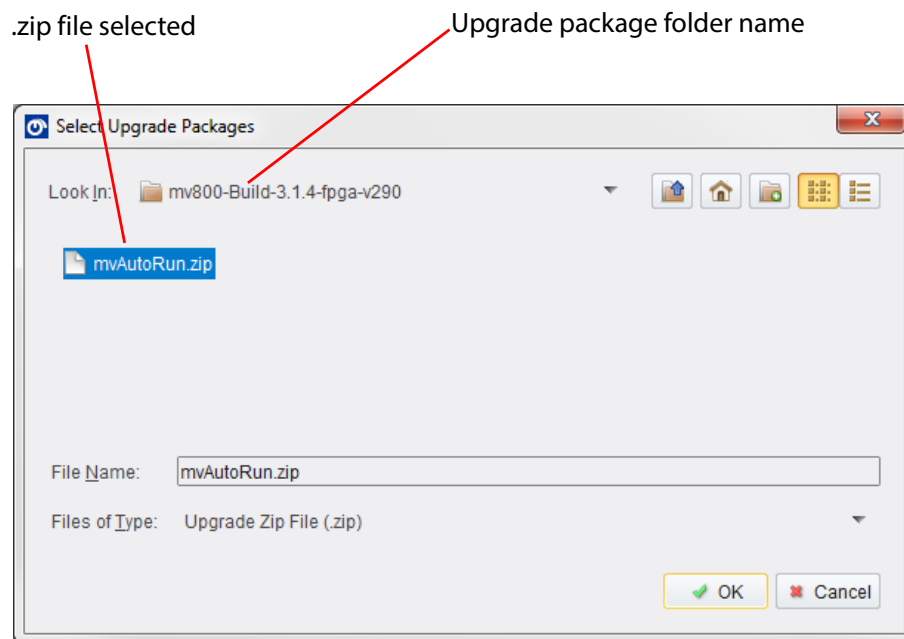


Fig. 8-6: Select Upgrade Package Window

- 6 A progress bar at the bottom of the **RollCall Upgrade Packages** window shows the upgrade package import progress. Import completion is reported in the **Import Log** pane. See Figure 8-7.

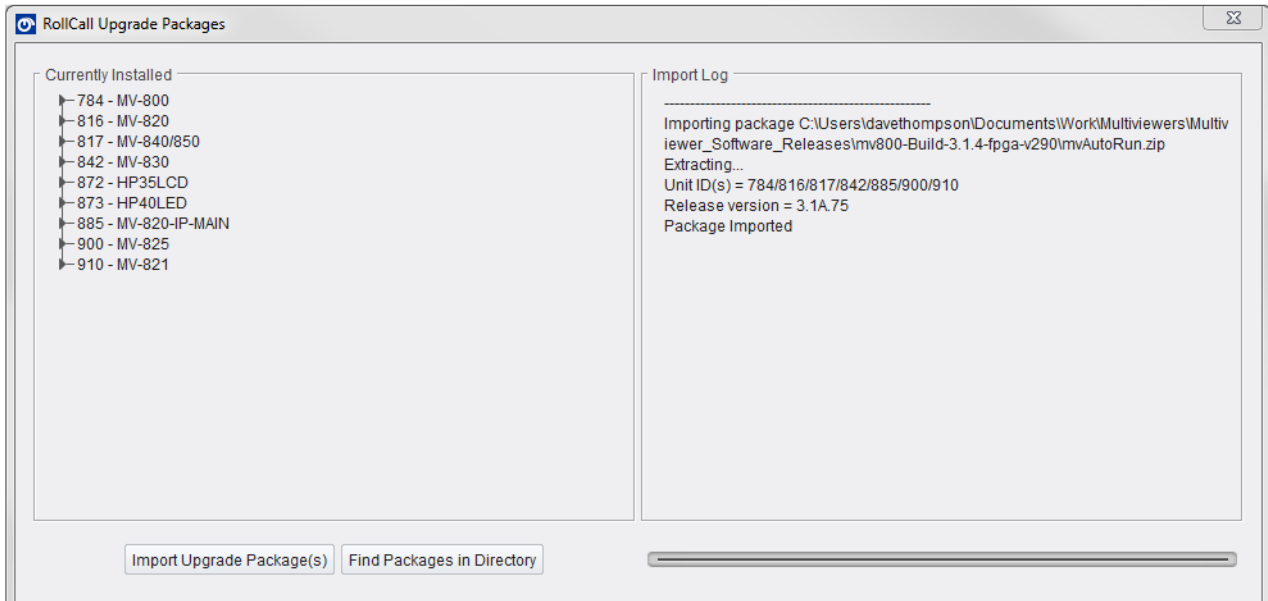


Fig. 8-7: Example RollCall Upgrade Packages Window - Import Log and Currently Installed Panes

The upgrade package has been added to RollCall Control Panel. Any new licenses imported with the package are shown in the 'Currently Installed' panel of the **RollCall Update Packages** window.

- 7 Close the dialog.

Stage 2: Install the Upgrade on the MV-8 Series Multiviewer

This stage is applicable to an MV-8 Series Multiviewer in an MV-8 Series Multiviewer unit (or to an MV-820-IP's video IP block).

The instructions below describe the upgrade procedure with RollCall Control Panel. When set going below, the upgrade sequence of events on the unit is:

- File(s) downloaded to the multiviewer unit.
- Software upgraded and the unit restarts itself.
- Programmable logic (FPGA firmware) upgraded (*if required by the upgrade package used*).
- Upgrade complete.

Instructions

To upgrade:

- 1 Right-click on the connected unit name in the RollCall Control Panel window. See Figure 8-8.

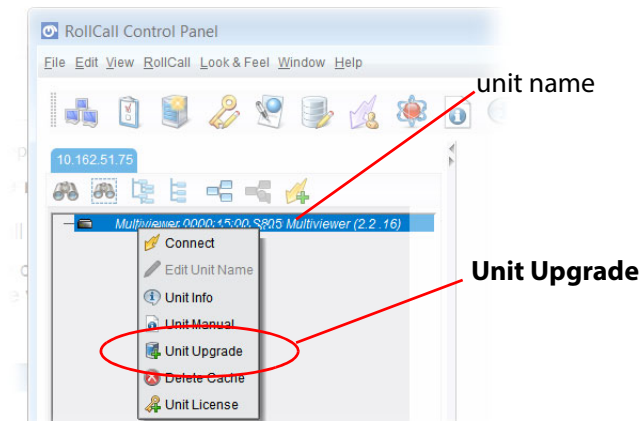


Fig. 8-8: Right-Click Menu

- 2 Click **Unit Upgrade** in the drop-down menu. RollCall's **Unit Upgrade** window is displayed.

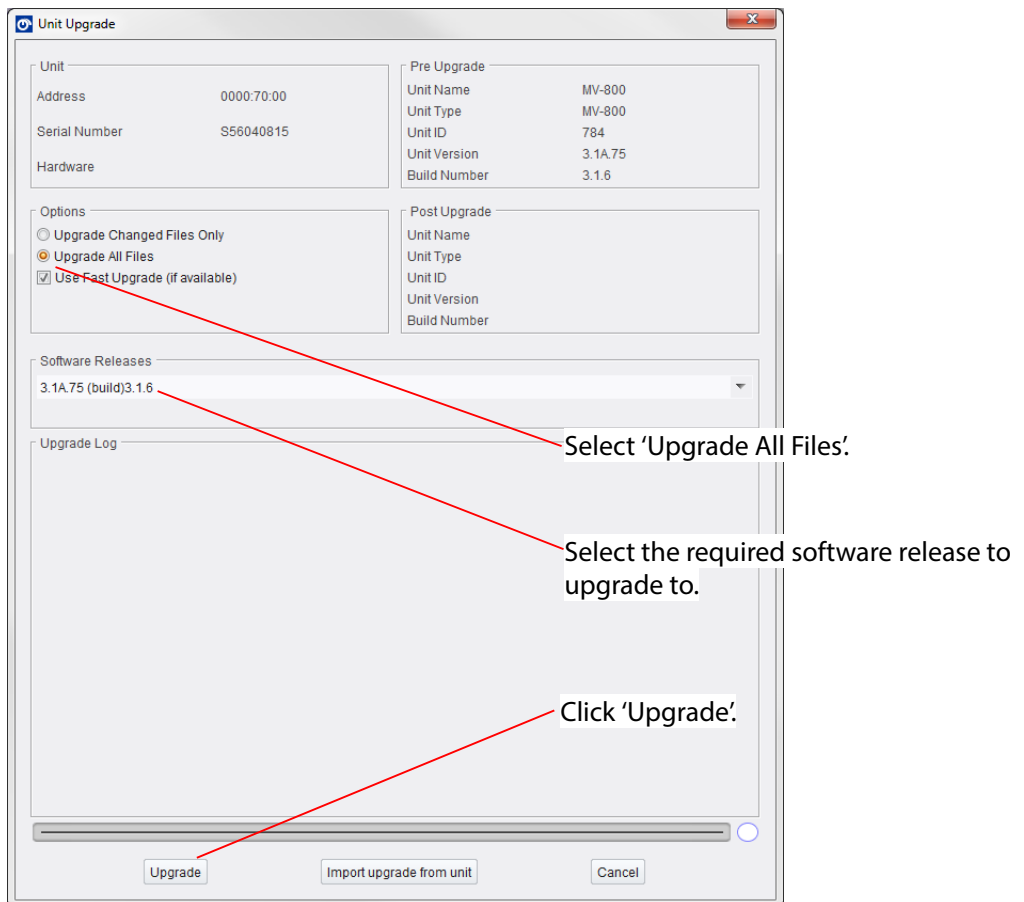


Fig. 8-9: Unit Upgrade Window

- 3 Select the **Upgrade All Files** radio button.

- 4 In the **Software Releases** pull-down menu, select the **Software Release** required to upgrade to.
- 5 Click **Upgrade**.
- 6 Click **OK** to upgrade.
A **Unit Upgrade** dialog is shown.

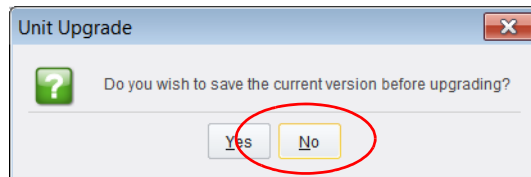


Fig. 8-10: Unit Upgrade Dialog - Click NO

- 7 Click **No** in response to the question in the dialog (Figure 8-10).

Note: (Figure 8-10) "Do you wish to save the current version before upgrading?"
The MV-8 Series Multiviewer does not support saving of current software version.
Click **No** in response to the message box shown in Figure 8-10.

The upgrading begins...

- 8 The upgrade file is then automatically sent to the MV-8 Series Multiviewer. The MV-8 Series Multiviewer unit then starts to install the upgrade package onto itself.
Note: Unit software and potentially the unit's programmable logic circuitry is upgraded. This depends on the upgrade package.
- 9 During the upgrade installation, the unit may restart one or more times and disconnect itself from RollCall Control Panel.

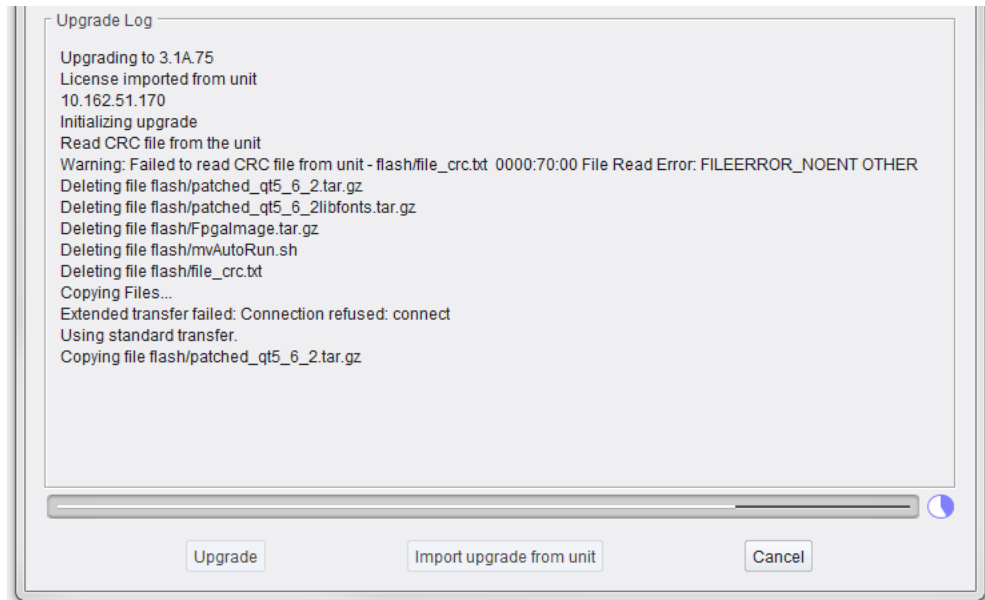


Fig. 8-11: Upgrade Log Messages - Upgrade In Progress

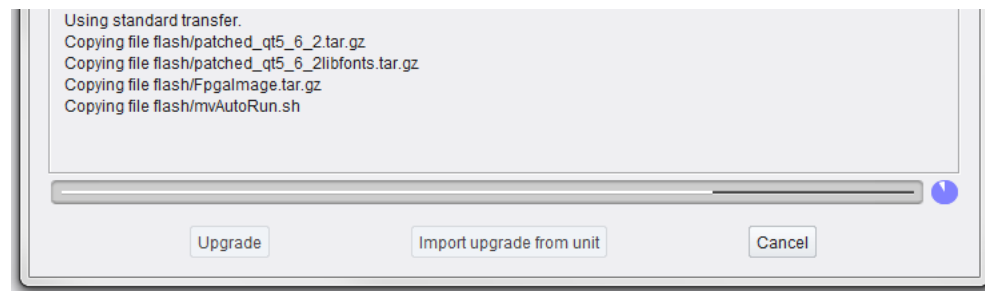


Fig. 8-12: Upgrade Log Messages - Upgrade In Progress

During the unit upgrade process, the multiviewer output screens may sometimes be blank or may briefly show some unit information similar to the start up splash screens. Information messages shown on such screens includes:

- **Upgrading to vM.M.M** (for example, "Upgrading to V3.1.6")
Please wait...
- **MV-8XX Multiviewer Booting...** (for example, "Upgrading to V3.1.6")
Please wait...
- **Programming FPGAs. From FPGA vMMM to vNNN.** (for example, "v280 to v290")
"Please wait 16 minutes..."
- **Snnnnnnnn MV-8xx Multiviewer booting...** (see [Booting and Splash Screen](#), on page 9, Figure 2-1)

- 10 While the software upgrade is finalizing (see Figure 8-13), if the MV-8 Series Multiviewer's programmable logic (FPGA) requires upgrading as part of this upgrade package, then this FPGA upgrade is done. It approximately takes a *further* 16 minutes to complete an FPGA upgrade.

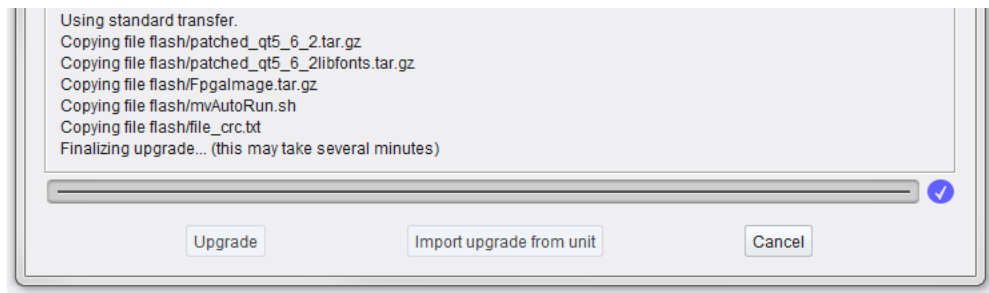


Fig. 8-13: Upgrade Log Messages - In Progress (“Finalizing upgrade” message: Wait)

IMPORTANT

Wait for the MV-8X0/8X1 Multiviewer unit to fully finish installing the upgrade file:

The unit can take approximately 15 to 20 minutes to install its upgrade package, depending of whether any of the unit’s programmable logic also needs upgrading as part of the upgrade package.

IMPORTANT

Wait. The unit is only fully ready for use:

- after software upgrade; and
- after any FPGA upgrade; and
- after it has restarted (i.e. after a reboot, see [Booting and Splash Screen](#), on page 9) and is showing its head display outputs as a video wall layout.

- 11 An ‘Upgrade Complete’ message finally appears in the Update Log pane of RollCall Control Panel when the upgrade is done. See Figure 8-14 for typical **Update Log** messages.

IMPORTANT

For MV-8 Series Multiviewer software versions earlier than 2.8.17:

Wait for the unit being upgraded to be ready for use.
And ignore “Upgrade Complete” messages in RollCall Control Panel’s **Unit Upgrade** window (the message **does not** indicate that the unit’s upgrade is complete).

For MV-8 Series Multiviewer software versions 2.8.17 onwards:

The “Upgrade Complete” message in RollCall Control Panel’s **Unit Upgrade** window does indicate that the unit has been upgraded.

Click **OK**.

IMPORTANT:

For early Multiviewer software versions **before 2.8.17**, ignore any "Upgrade Complete" messages in RollCall Control Panel's **Unit Upgrade** window and await unit full start-up.

Upgrade Complete

Click OK

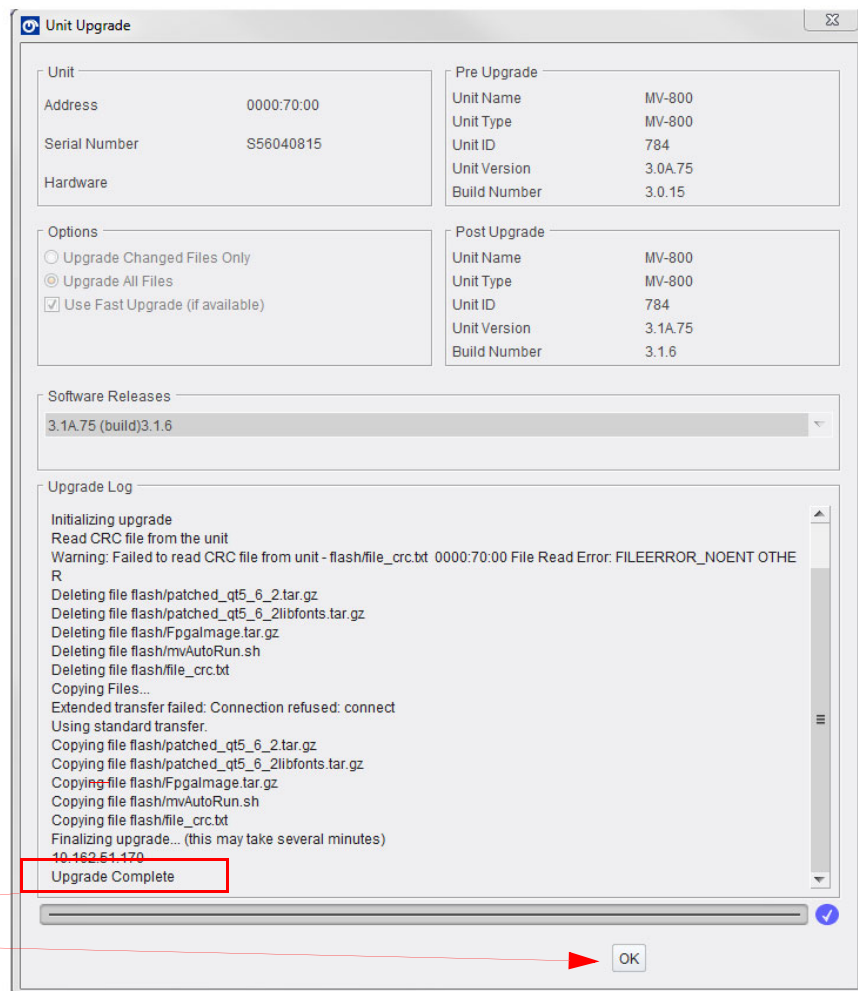


Fig. 8-14: Typical Upgrade Log Messages - Upgrade Complete

When the MV-8 Series Multiviewer has rebooted:

- 12 The unit's multiviewer head display outputs re-show a video wall layout.
- 13 Grass Valley RollCall Control Panel may be reconnected to the unit. The control screen for the MV-8 Series Multiviewer shows the upgraded software version.
- 14 Check that the MV-8X0/8X1 Multiviewer product's front module has a flashing green CPU Heartbeat LED. (Refer to the corresponding MV-8X0/8X1 Multiviewer user manual for LED information.) This means the multiviewer unit restarted and is running. If this is not the case, contact Grass Valley Support.

Download Log Files

MV-8 Series Multiviewer unit log files can be downloaded using GV Orbit Client:

- 1 Open the GV Orbit multiviewer project on the multiviewer with GV Orbit Client.
(See [Get Multiviewer Project from a Multiviewer Unit](#), on page 129, or [Pull a Project from a Multiviewer Unit](#), on page 155.)
- 2 Select '**Multiviewer > Download Logs**' in the main menu.

The **Download Logs** dialog is shown.

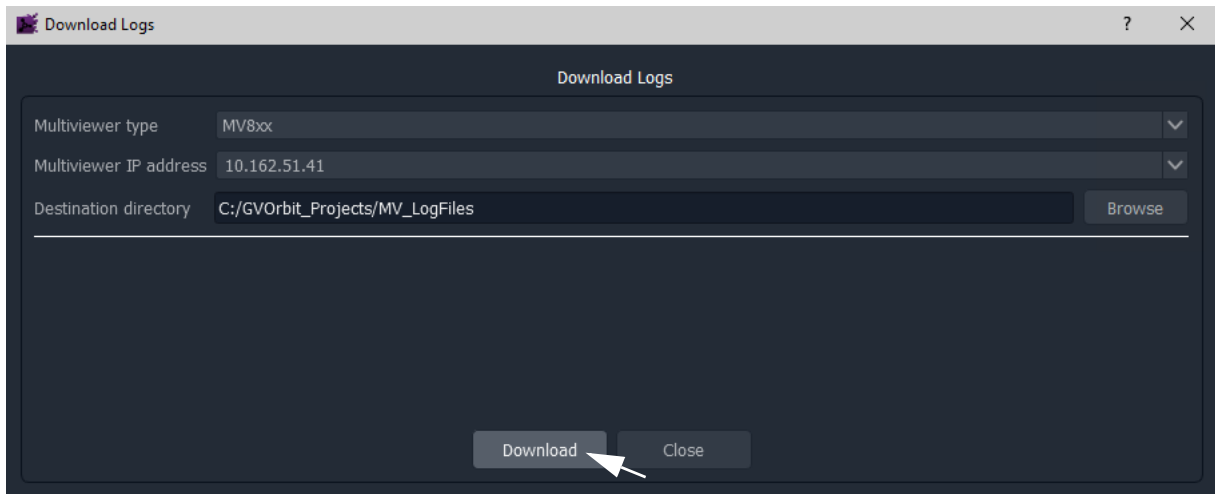


Fig. 8-15: Download Logs Dialog

- 3 Select a **Destination Directory**.
- 4 Click **Download**.

The log file is downloaded.

MV-8 Series Multiviewer Specification



MV-8 Series Multiviewer Specification

<i>Video Inputs</i>	page 171
<i>Outputs</i>	page 172
<i>Multiviewer Monitoring and Alarms</i>	page 173
<i>Video Wall Screen Display</i>	page 174
<i>Software Versions</i>	page 176

Video Inputs

Video Inputs	
Inputs	48-off 'up-to-12G' SDI, dependent on product and license applied. Up to 32 embedded audio channels per input. Note: ASI inputs are <i>not</i> supported by MV-8 Series Multiviewers. 'Loss of signal' is reported for ASI inputs.
High Dynamic Range Inputs	
HDR	Optional HDR to SDR conversion. Opto-electrical Transfer Functions (OETFs) supported: <ul style="list-style-type: none"> • PQ to SDR • HLG to SDR • Slog3 to SDR • None (SDR-to-SDR)
Color Space	Conversion to color spaces for inputs. Conversion: <ul style="list-style-type: none"> • From BT.2020 color space to BT.709. • None.
Media Biometrics	Media biometric generator per input, analyzing input video and audio.

Outputs

Head Display Outputs	
Head Display Outputs	<p>4 to 12 enabled video outputs.</p> <ul style="list-style-type: none"> • Outputs 1 to 4 on enabled as standard on MV-8 Series Multiviewer. • Outputs 5 to 12 enabled with MV-8 Series Multiviewer output licenses.
Embedded Audio	16 channels of embedded audio per output. Audio channel pairs selectable from multiviewer input embedded audio.
Reference	<p>Head Display Outputs locked to:</p> <ul style="list-style-type: none"> • External Reference; or • Internal Reference (i.e. free running).
Video Standard	<p>Video Standard on head display outputs:</p> <ul style="list-style-type: none"> • 3G 1080p, or HD 720p • 50, 59.94 & 60 frames/s.
Delay	<p>Latency:</p> <ul style="list-style-type: none"> • Interlaced inputs: 1 input field + 1 to 3 output frames. • Progressive inputs: 1 input frame + 1 to 3 output frames.
H.264 Streaming Out of Video Inputs	
Output Streams	<p>Up to 48-off H.264 streams, scaled copies of the multiviewer inputs.</p> <p>(On MV-821 multiviewers, this is a 'H.264 stream' licensed feature, also requiring factory-fitted hardware codec modules.)</p> <p>Each multiviewer input is H.264 encoded to create streamed copies of the 48 inputs.</p> <p>Note: The H.264 streams do not function for the following slower-frame-rate HD standards:</p> <ul style="list-style-type: none"> • 1080p30 (and slower frame rates); and • 720p30 (and slower frame rates).
Ethernet Port	<p>Streamed out over multiviewer's control and monitoring Ethernet port. Refer to respective MV-8X0/8X1 Multiviewer product user manual for Ethernet interface details.</p> <p>(These H.264 streams can be viewed on desktop PCs using GV Orbit Client, or via the Orbit client with the Orbit MV-800-DT license option if using the Orbit client).</p> <p>User applications include: confidence monitoring, compliance monitoring.)</p>

Multiviewer Monitoring and Alarms

Monitoring and Alarms	
Video:	
Input:	<p>Monitoring of multiviewer video input:</p> <ul style="list-style-type: none"> • Media Biometrics. • XDS. <p>Support for HDR inputs.</p>
On-Screen Monitoring:	<p>Fully flexible layouts:</p> <ul style="list-style-type: none"> • Any object can be any size, in any position. • Adjustable layering and transparency of objects over video or other objects or background. • Display up to 48 video tiles on a single screen. • Any router input can be assigned to any screen. • WSS/AFD flags.
Alarms:	<ul style="list-style-type: none"> • Video Input signal loss • Video black • Picture freeze or still • Video Input format change.
Audio:	
On-Screen Monitoring:	<ul style="list-style-type: none"> • Metering of AES embedded audio: <ul style="list-style-type: none"> • VU, extended VU, DIN, BBC, and Nordic scales • Up to 32 audio channels per video signal • Bars outside or overlaid on picture • Audio meter scales on/off • Programmable color & alarm thresholds
Alarms:	<ul style="list-style-type: none"> • Loss of: <ul style="list-style-type: none"> • AC3 encoded audio data, • Dolby E encoded audio data. • DialNorm under preset threshold. • Dolby E configuration change. • Audio Level: <ul style="list-style-type: none"> • Loss of audio. • Audio level low/high.

Monitoring and Alarms	
Metadata and Control Monitoring:	
On-Screen Monitoring:	<ul style="list-style-type: none"> • Closed Caption & Subtitle detection • V chip detection • Display UMD router source names via General Remote protocol SW-P-08 over IP
Alarms:	Loss of: <ul style="list-style-type: none"> • Teletext. • Closed Caption (CC). • TS ID. • V-chip. • VITC. • Extended Data Services (XDS).
Alarm Control:	Controls and features for: <ul style="list-style-type: none"> • Configurable alarms trigger delays • Alarm acknowledge/clear/previous fault indication (border color or tally alarm box) • Alarm acknowledge from hardware or soft panels via Rollcall interface • Layout recalls from hardware or soft panels, on-screen message boxes via Rollcall • Alarm auto-clear after configurable period of time.

Video Wall Screen Display

Screen Display	
Screen Design	Facilities: <ul style="list-style-type: none"> • Drag and drop objects on screen • Configurable grid • Snap to grid • Object grouping and re-sizing • Fixed/adjustable video tile aspect ratios

Screen Display	
Closed Captions	<p>Support for displaying closed caption information. OP42/OP47 Presentation Levels 1 and 1.5 are supported, which includes character sets for the following languages: English, German, Swedish/Finnish/Hungarian, Italian, French, Portuguese/Spanish, Czech/Slovak.</p> <p>In a GV Orbit multiviewer video wall design, use a GV Orbit 'Closed Caption' Behaviour to access closed caption information from MV-8 multiviewer video inputs. 'Closed captions' are supported for EIA-608 "line 21" and for EIA-708 in compatibility-byte mode. Page numbers to use:</p> <ul style="list-style-type: none"> • CC1 - page 101 • CC2 - page 102 • CC3 - page 103 • CC4 - page 104 • WST - page 888 • OP42 - page 801 (typically) • OP47 - page 801 (typically) <p>Note: For SD video input sources, the vertical blanking interval (VBI) is used:</p> <p>For 625/25:</p> <ul style="list-style-type: none"> • VITC is detected on line 19; • OP42/WST on line 21; and • WSS on line 23. <p>For 525/29:</p> <ul style="list-style-type: none"> • VITC is detected on line 14; and • Rec. 608 on line 21. <p>For HD/3G video input sources, the ancillary data (ANC) is used and there is no line number restriction.</p>
Time code	<p>Time code:</p> <ul style="list-style-type: none"> • Display time code extracted from video and from multiviewer time code input
Time	<p>Time:</p> <ul style="list-style-type: none"> • Multiple clock display – lock to NTP, VITC or LTC, with time zone offsets • Generate real-time clocks and timers with count up/down capability

Screen Display	
Miscellaneous	Control direct from mouse on screen. TSL tally display. Graphics / Images: <ul style="list-style-type: none">• Add graphics files to display labels and channel logos, etc• Programmable background color or image

Software Versions

Tool	Version
RollCall Control Panel	4.20.5 or later
Orbit Client	3.1.15 or later
GV Orbit	1.0.0 or later
GV Orbit Client	4.0.0 or later
MV-8 Series Multiviewer	3.2.22 or later

Note: For future releases:
Please refer to software release notes for compatibility
information.



XDS Data Types Supported

XDS Data Types Supported

Program Identification Number (Scheduled Start Time) page 177
Length / Time-in-Show page 178
Program Name (Title) (V Chip Label) page 178
Program Type page 178
Content Advisory (V Chip Rating) page 178
Program Description page 179
Network Name (Affiliation) page 179
Call Letters (Station ID) and Native Channel page 179
Time of Day page 179
Local Time Zone page 179

Table B-1: XDS Data Types Supported

XDS Type	XDS Class		Data Description	RollCall Command Number
		(Hexa decimal)		

Program Identification Number (Scheduled Start Time)

Current	01	MM/DD hh:mm Where: MM = Month (1 - 12) DD = Date (1 - 31) hh = Hours (0 - 23) mm = Minutes (0 - 59)	1800 - 1847
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Table B-1: XDS Data Types Supported (continued)

XDS Type	XDS Class		Data Description	RollCall Command Number
		(Hexa decimal)		

Length / Time-in-Show

	Current	02	<p>This carries two items of relevant data:</p> <p>Program length: hh:mm</p> <p>Where:</p> <p>hh = Hours (0 - 63)</p> <p>mm = Minutes (0 - 59)</p> <p>Elapsed time: hh:mm:ss</p> <p>Where:</p> <p>hh = Hours (0 - 63)</p> <p>mm = Minutes (0 - 59)</p> <p>ss = Seconds (0 - 59)</p>	<p>1850 - 1897</p> <p>1900 - 1947</p>
--	---------	----	---	--

Program Name (Title) (V Chip Label)

	Current	03	A character string, up to 32 characters in length.	1600 - 1647
--	---------	----	--	-------------

Program Type

	Current	04	<p>A list of up to 32 character strings.</p> <p>Each string represents a descriptive name for the program content.</p> <p>For example,</p> <p>“Education”, “Comedy”, “Travel” etc.</p> <p>For a list of names see the CEA-608-B specification.</p>	2000 - 2047
--	---------	----	--	-------------

Content Advisory (V Chip Rating)

	Current	05	<p>A short indication of the program rating. The string produced for each category depends on the region/rating system used.</p> <p>For full information, see the CEA-608-B specification.</p>	1650 - 1697
--	---------	----	--	-------------

Table B-1: XDS Data Types Supported (continued)

XDS Type	XDS Class (Hexa decimal)		Data Description	RollCall Command Number
Program Description				
	Current	10 - 17	A list of 8 strings separated by new lines.	1750 - 1797
Network Name (Affiliation)				
	Channel Information	01	A string of up to 32 characters.	1950 - 1997
Call Letters (Station ID) and Native Channel				
	Channel Information	02	This carries two items of relevant data: Station ID. Consists of a 4 character string. Native channel. Consists of a 2 character string.	2100 - 2147 2150 - 2197
Time of Day				
	Miscellaneous	01	WWW DD/MM/YYYY hh:mm Where: WWW = Day of the week (Sunday to Saturday) DD = Date (1 - 31) MM = Month (1 - 12) YYYY = Year (1990 - 2053) hh = Hours (0 - 23) mm = Minutes (0 - 59)	2050 - 2097
Local Time Zone				
	Miscellaneous	04	Two-character string: hh Where: hh = Hours (0 - 23)	2200 - 2247



SNMP Support

SNMP Support

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mvStatus	page 183
mvAlarms	page 184
mvControl	page 185
mvEvents	page 186

Introduction

The MV-8 Series Multiviewer supports Simple Network Management Protocol (SNMP). The MV-8 Series Multiviewer Management Information.

The MV-8 Series Multiviewer System-Setup control screen has some SNMP settings. (See [System-Setup Control Screen](#), on page 14, [SNMP Managers box](#), on page 22, and [SNMP Community Strings box](#), on page 22.)

Up to 8 SNMP managers can be configured to receive trap messages from the MV-8 Series Multiviewer. Once configured, a trap message will be sent to each manager whenever there is a change of alarm state.

MIB Files

Management Information Base (MIB) files provide a graphical representation of the SNMP device to the user via a MIB browser tool. The following MIB files are required by an SNMP browser:

- PROBEL-COMMON.mib
- Multiviewer.mib

Note: Contact Grass Valley Customer Support for the MIB files.
<https://www.grassvalley.com/contact/support/>

MV-8 Series Multiviewer MIB

The MV-8 Series Multiviewer MIB is 'Multiviewer.mib', which has four main sections, see Figure C-1.

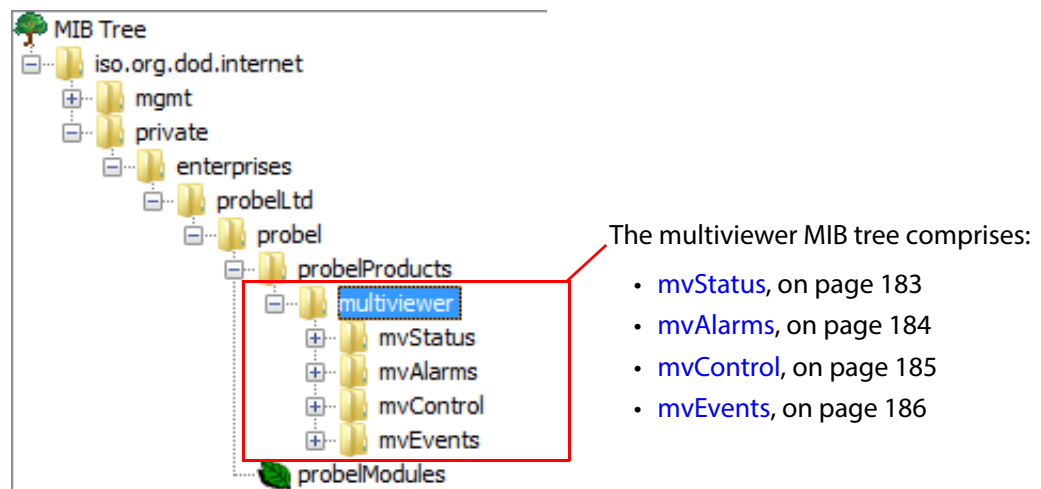


Fig. C-1: MV-8 Series Multiviewer MIB Tree

mvStatus

The **mvStatus** section displays the overall status of the MV-8 Series Multiviewer, providing the similar information to that accessible in GV Orbit by right-clicking on the multiviewer name in the Network View and selecting 'Details'. See Figure C-2.

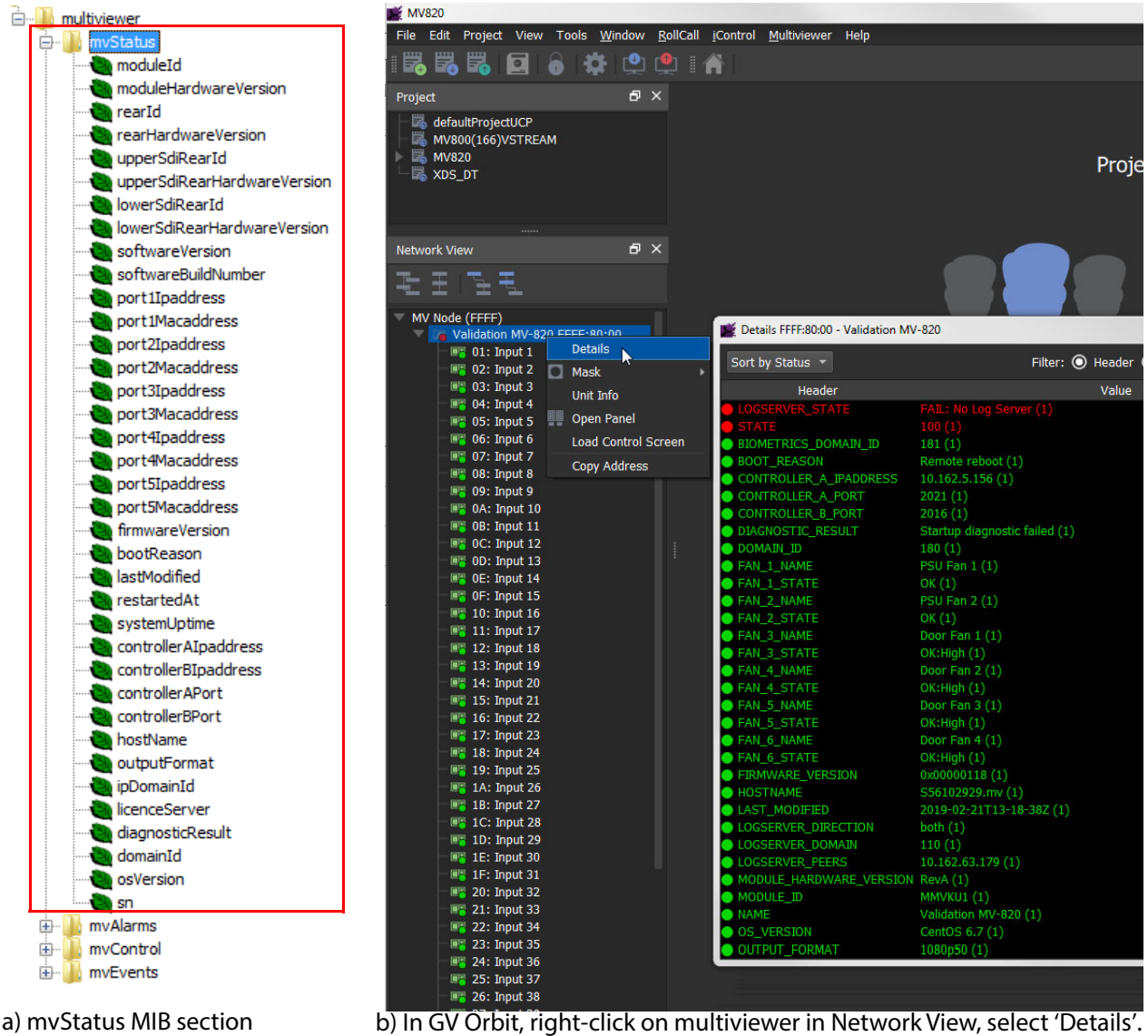


Fig. C-2: mvStatus MIB Tree

mvAlarms

The **mvAlarms** section comprises two sub-sections: **unitAlarms** and **inputAlarms**. It displays the alarm states of the MV-8 Series Multiviewer. See Figure C-3.

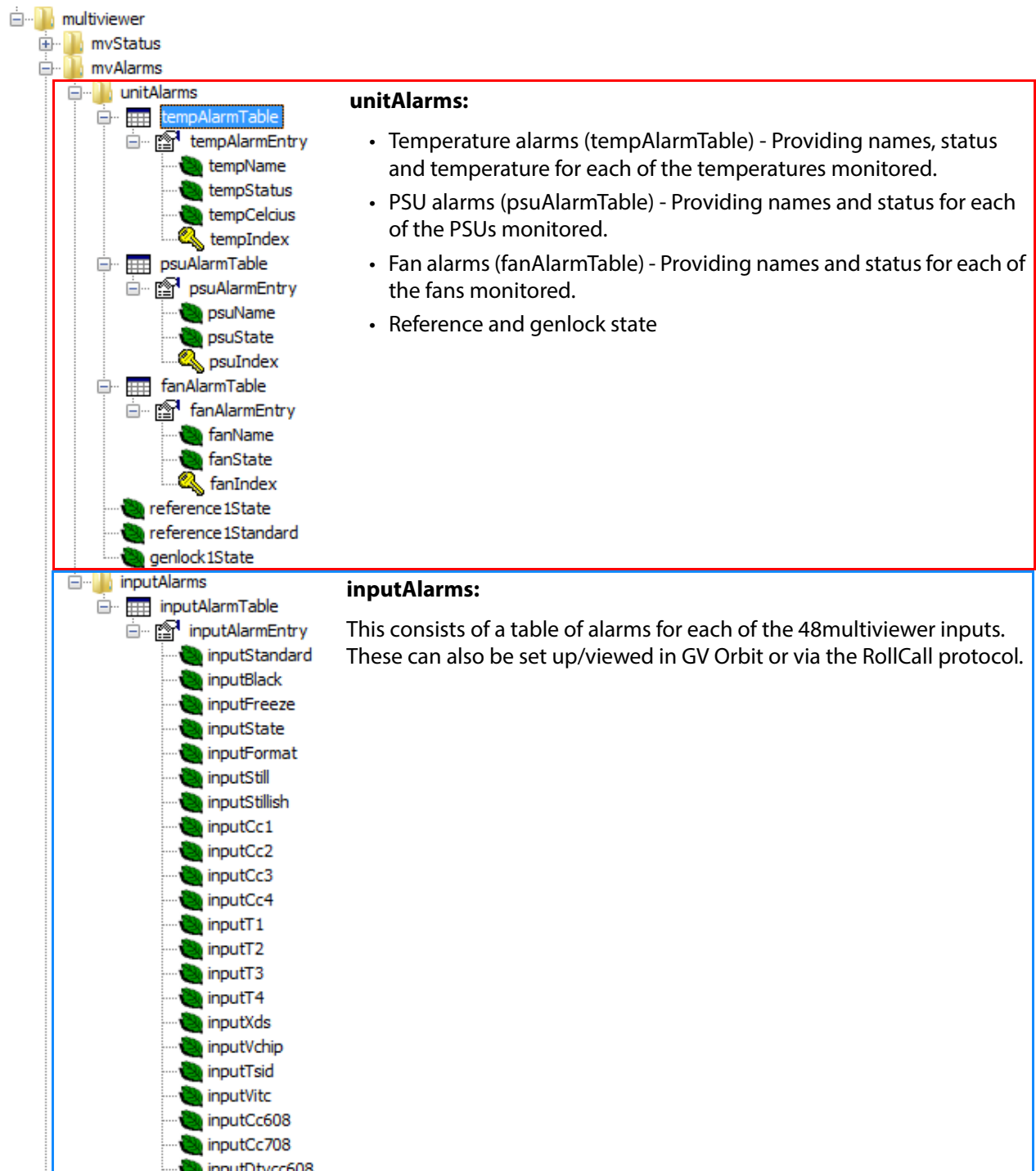


Fig. C-3: mvAlarms MIB Tree

mvControl

The **mvControl** section contains a 'wallLayoutTable', which allows control and interrogation of the video wall layout currently selected for each video wall. It allows the currently-selected layout to be changed on each of the walls. See Figure C-4.

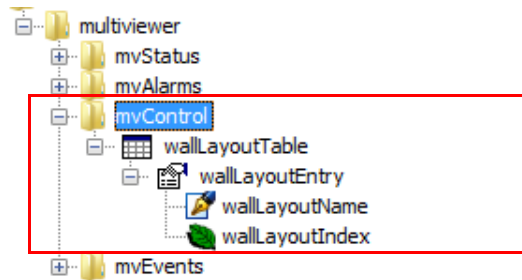


Fig. C-4: mvControl MIB Tree

mvEvents

The **mvEvents** section lists the available SNMP traps that may be sent. See Figure C-5.

Multiviewer Terminology

This section describes some of the multiviewer terminology used in the manual and should be read alongside the example dual-screen video wall illustration shown in [Figure D-1](#) on page 190.

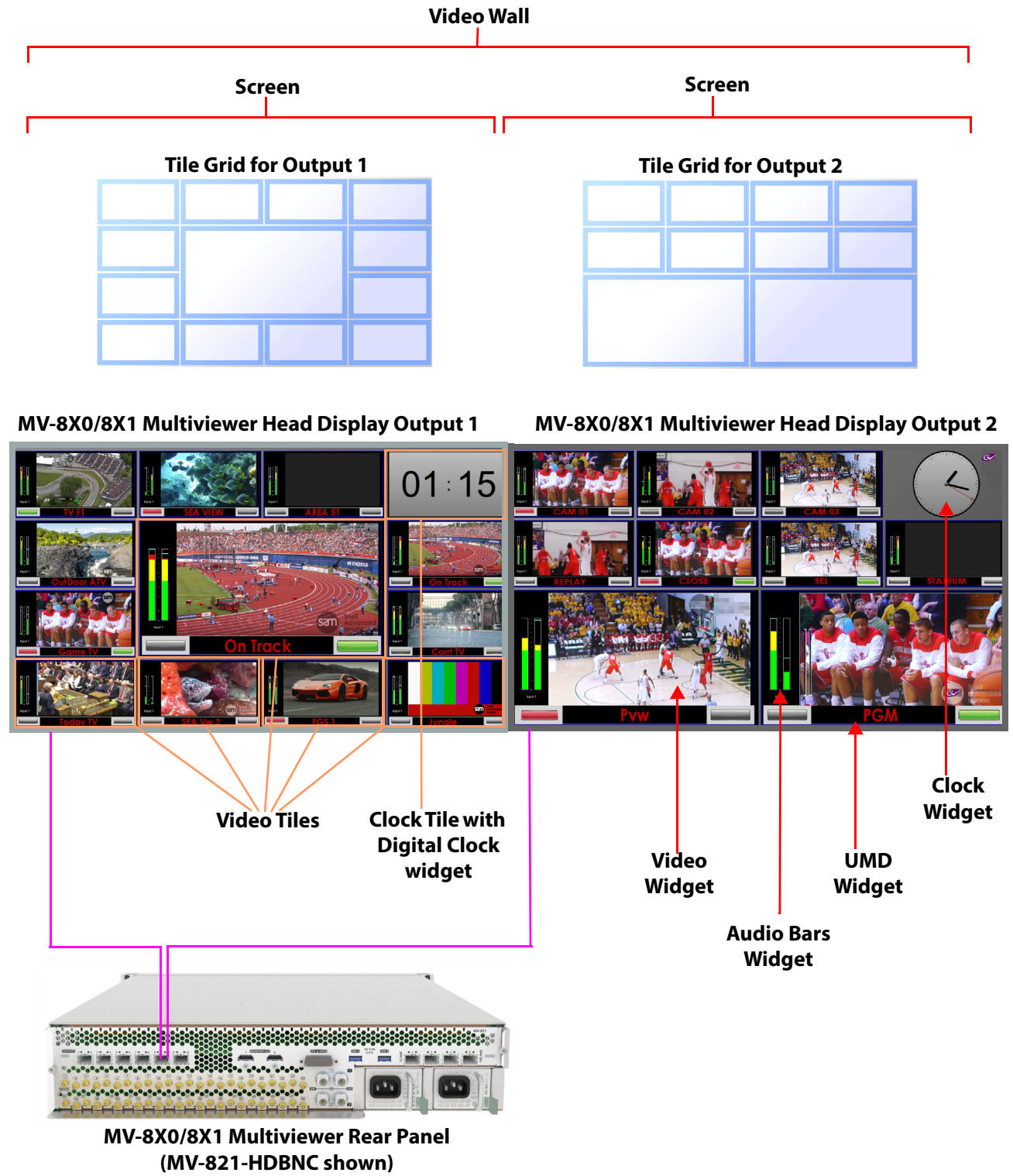


Fig. D-1: Example Video Wall of Two Monitor Display Screens

Table D-1: Definition of Terms

Term	Definition
Wall, Video Wall	One or more monitor display screens configured to form one large screen.
Screen	Display area of one individual monitor/display device.
Theme	<p>The style and appearance of the video wall and its screen elements.</p> <p>A Theme is a set of widget styles which can be applied to a project. Each widget may have one or more specific styles.</p> <p>Using themes, a video wall may be tailored to conform to a house style.</p>
Style	Each Widget can have several appearances, styles. Styles are changes to a widget's appearance and do not affect its function. Styles can be grouped under themes.
Tile	<p>A rectangular area on a video wall screen, usually displaying video inputs and other supporting information.</p> <p>For example, a tile may display a video picture with audio level and other related status information.</p> <p>Other information may be displayed in tiles, for example, time, images, labels and/or text.</p>
Tile Grid	<p>A multiviewer video wall screen is divided up into rectangular areas; various sizes and arrangements are possible.</p> <p>A tile grid can be used in the Grass Valley Orbit tool for quick-positioning of tile arrangements on a wall.</p>
Fine Grid	A fine grid on a Grass Valley Orbit screen is used for the fine-positioning of graphical elements. For example, for positioning Tiles on a wall or Widgets on a tile.
Widget	<p>On-screen graphical elements used to display information on tiles. There are one or more widgets on a tile. Displayed information includes: Audio sound level, Time, Text labels.</p> <p>Widget types include: Audio bars, Clocks, Images, Labels, Lines, Tally LEDs, Timers, UMD's, Video and Web sources.</p>
Head Display Output	<p>A 1080P or 720P output from the MV-8 Series Multiviewer. There are up to 12 head display outputs.</p> <p>On the MV-8X0/8X1 Multiviewer product, this can be SDI (Coax or Fiber) or HDMI, or video-over-IP depending on the product version.</p> <p>Each head display output is then typically connected to a monitor display that forms all or part of a multiviewer video wall.</p>
Video Input	One of 48 video inputs to the MV-8 Series Multiviewer in the MV-8X0/8X1 Multiviewer product.

User Notes:

Contact Us

Grass Valley Technical Support

For details of our Regional Customer Support Offices please visit the Grass Valley web site and navigate to Support/Customer Support Contacts.

<https://www.grassvalley.com/contact/support/>

Customers with a support contract should call their personalized number, which can be found in their contract, and be ready to provide their contract number and details.

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