MV-8 SERIES MULTIVIEWER

FOR MV-8X0/8X1 MULTIVIEWERS

User Manual

RMY3 MV8-UM

2019 July 23, 11:52

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Title	MV-8 Series Multiviewer User Manual
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About this Manual

Thank you for purchasing a Grass Valley multiviewer product which contains an MV-8 Series Multiviewer. This user manual describes how to configure and operate the MV-8 Series Multiviewer within an MV-8X0/8X1 Multiviewer product.

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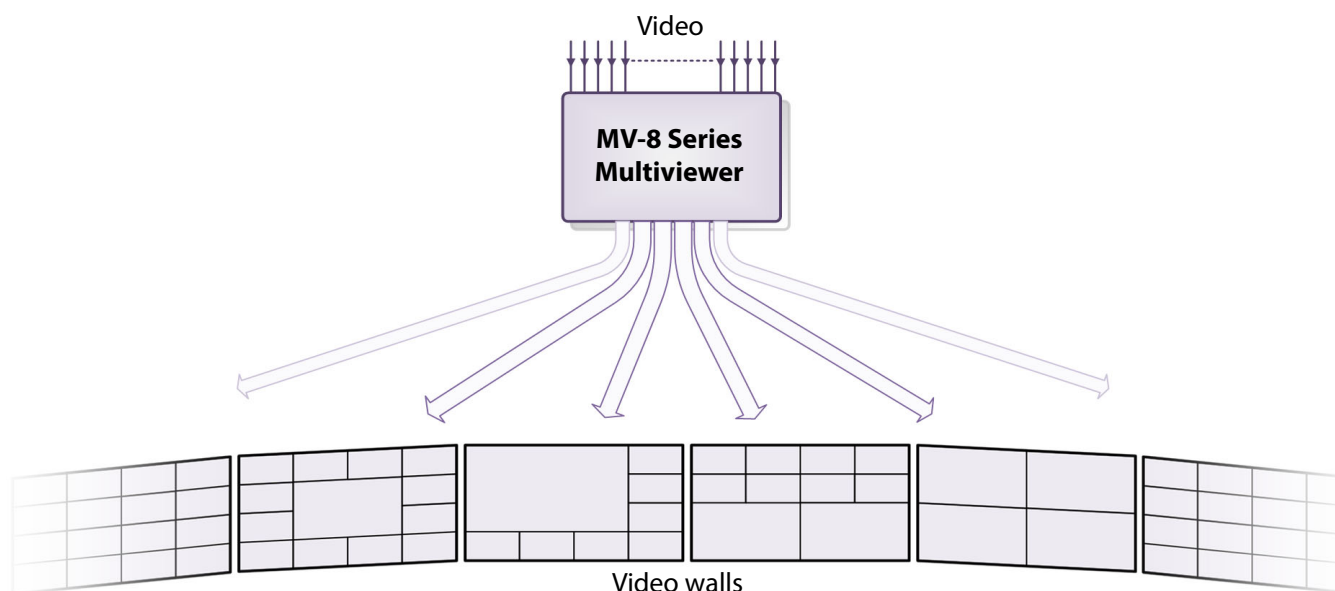
Related Documents

The following Grass Valley manuals are related documents:

Related Document		Description
User Manual:	Orbit - Introduction	A general introduction to Grass Valley Orbit and its applications.
User Manual:	Orbit for Multiviewers	Describes multiviewer-specific details of Orbit.
User Manuals:	MV-800 Multiviewer, MV-820 Multiviewer, MV-821 Multiviewer, MV-830 Multiviewer, MV-840/850 Multiviewer.	Describes physical and format-specific details of MV-8X0/8X1 Multiviewer products.
User Manual:	RollCall V4 Suite & RollCall Lite	Describes RollCall Suite of software control and monitoring tools.
User Manual:	RollCall Control Panel	Describes RollCall Control Panel software.

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Product Overview

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

This user manual describes the MV-8X0/MV-8X1 Multiviewer product range's common core multiviewer features and includes the features of V3.0 MV-8 Series Multiviewer software. (For descriptions of each specific MV-8X0/MV-8X1 Multiviewer product, please refer to its corresponding user manual.)

Fig. 1-1: MV-8 Series Multiviewer

An MV-8 Series Multiviewer 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

An MV-8 Series Multiviewer is found in MV-8X0/MV-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.
- 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 Grass Valley's Orbit 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 inputs:

- Extend and expand monitoring with this licensed option.
- MV-8 Series Multiviewer inputs may be 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 Orbit software and MV-800-DT license.

New in MV-8 Series Multiviewer Software V3.0

New features in software V3.0 include:

★ High dynamic range (HDR) input support.   (See HDR Support, on page 41.)

★ Media Biometrics Generators on a per input basis.   (See Media Biometrics Support, on page 47.)

★ CC.608 extended data services (XDS) support.   (See Extended Data Services Support, on page 49.)

★ User-defined names for multiviewer video walls/layouts.   (See Layout Template, on page 29.)

★ Embedded audio on multiviewer head display outputs.   (See Output Embedded Audio Support, on page 53.)

★ SNMP Community Strings user-definable.   (See SNMP Community Strings box, on page 23.)

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.
‡ See the corresponding MV-8X0/MV-8X1 Multiviewer product user manual for the respective output license name.	

Software Compatibility

Table 1-2: Software Compatibility

Software	Version
MV-8 Series Multiviewer	3.0.13 or later
RollCall Control Panel	4.19.0 or later
Orbit	3.0.10 or later

MV-8 Series Multiviewer Architecture

The MV-8 Series Multiviewer is found in the MV-8X0/MV-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/MV-8X1 Multiviewer functional block diagrams.

a) MV-800

b) MV-820/821

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

c) MV-830

d) MV-840/MV-850
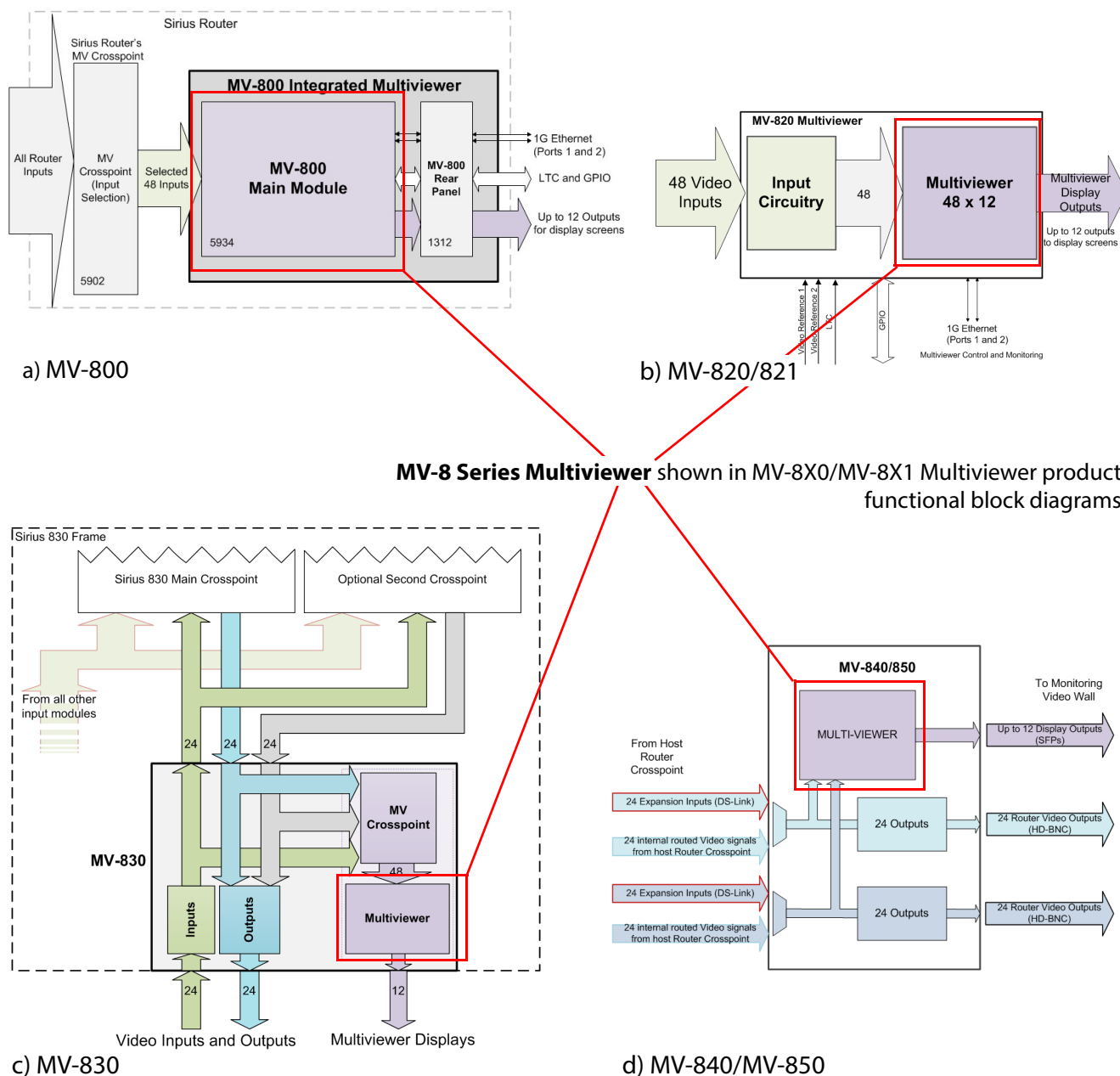
Fig. 1-2: MV-8 Series Multiviewers in MV-8X0/MV-8X1 Multiviewer Products:
a) MV-800.
b) MV-820/821.
c) MV-830.
d) MV-840/850.

5
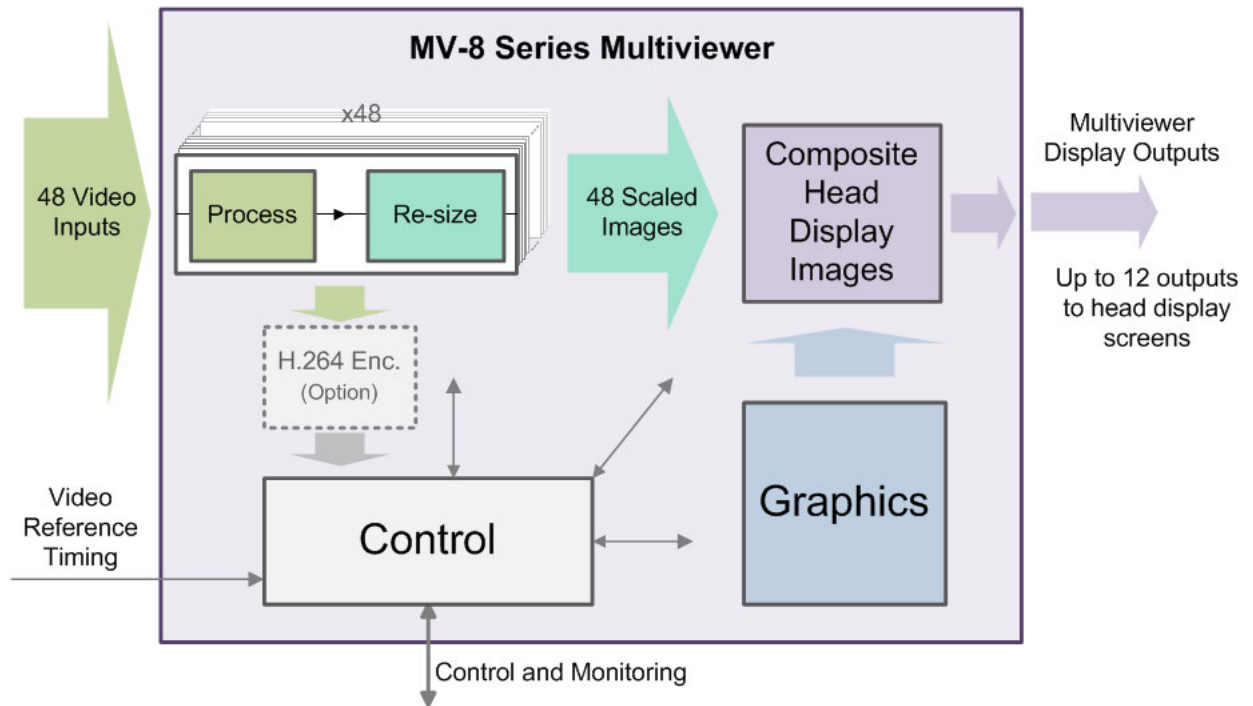
Fig. 1-3: Block Diagram of MV-8 Series Multiviewer

Figure 1-3 shows a simplified block diagram of the MV-8 Series 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: 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 41.)

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 47.)

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 (Orbit multiviewer projects).

MV-8 Series Multiviewer Set up

Getting Started

For getting started instructions for MV-8 Series Multiviewers, see Getting Started, on page 55.

Hardware Installation:

Hardware installation is described in the user manual for the respective MV-8X0/MV-8X1 product.

Multiviewer:

Initial multiviewer configuration and set up is done via Grass Valley's RollCall Control Panel application and the multiviewer's RollCall templates (see RollCall Templates, on page 13).

Video Wall:

Video wall design and management is done via the Grass Valley Orbit application software using an Orbit multiviewer project.

Video Wall Design with Orbit

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

There are two operating modes for the Orbit software when used for multiviewer projects:

- **Design Mode** - Grass Valley Orbit is free to use in Design Mode, enabling wall designs to be generated and pushed to each multiviewer.
- **Run Mode** - Run Mode is a licensable option using the MV-800-DT license, which is purchasable from the Grass Valley store. Live video may be viewed and alarms can be monitored on a PC. This turns Grass Valley Orbit into a PC-based, H.264 streamed video monitoring wall.
  (**Note:** Such streaming from an MV-8X1 unit requires a 'H.264 stream' license.)

> Note: MV-800-DT is a license for the Grass Valley Orbit software tool and it enables the 'Orbit for Multiviewers' software to be used as a PC-based H.264 streamed video monitoring wall.
> For information on MV-800-DT, see MV-800-DT Option, on page 115.

> Note: For information on Grass Valley Orbit software when used for multiviewer applications, please refer to the
> 'Orbit Introduction' and 'Orbit for Multiviewers' user manuals.

Orbit Projects

The Grass Valley Orbit project home screen shows a 'Project Name', which is treated as an identifier by 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 Orbit warns the user if there are any differences between a project in Orbit and the same-named project on a multiviewer device. Such differences must be resolved.

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

Orbit MV-800-DT Desktop Multiviewer Option

The desktop multiviewer is formed with the Grass Valley Orbit software and a MV-800-DT license. Live information on an MV-800-DT video wall is displayed from one or more MV-8X0/MV-8X1 units and can include video, audio levels and alarms.
(**Note:** MV-8X1 units require a 'H.264 stream' license to be able to stream out scaled, H.264-encoded copies of each multiviewer input.)

The same layout video wall can be shown as is produced on an MV-8X0/MV-8X1 unit or a different video wall layout can be used.

For information about the Orbit MV-800-DT option, see MV-800-DT Option, on page 115 and License Installation for Orbit, on page 137.

Terminology

See Multiviewer Terminology, on page 147 for some multiviewer terminology and its meaning.

Booting and Splash Screen

Booting and Splash Screen

An MV-8 Series Multiviewer shows a splash screen on its outputs while booting (starting up).

Booting Up

The MV-8 Series Multiviewer boots up after power is applied to the MV-8X0/MV-8X1 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 2-1.

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

Fig. 2-1: MV-8 Series Multiviewer Multiviewer Gray Start-up Splash Screen Example

Table 2-1: 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.

The Start-up Splash Screen

The start-up splash screen shows some MV-8 Series Multiviewer and MV-8X0/MV-8X1 product information about the multiviewer unit, see Figure 2-2.

(1) Multiviewer unit serial number

(2) Software version

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

(4) Firmware version

(5) Display output showing the splash screen.

(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. 2-2: Example Start-up Splash Screen Information

| 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. |

RollCall Templates

RollCall Templates

This section describes the RollCall templates of the MV-8 Series Multiviewer.

Following initial configuration of the multiviewer, the RollCall templates 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.

MV-8 Series Multiviewer Templates Banner

When RollCall has connected to the multiviewer, several multiviewer templates are available. The upper banner section of each template is the same, see Figure 3-1.

Template Selection box   **System** box   **NTP Status** box
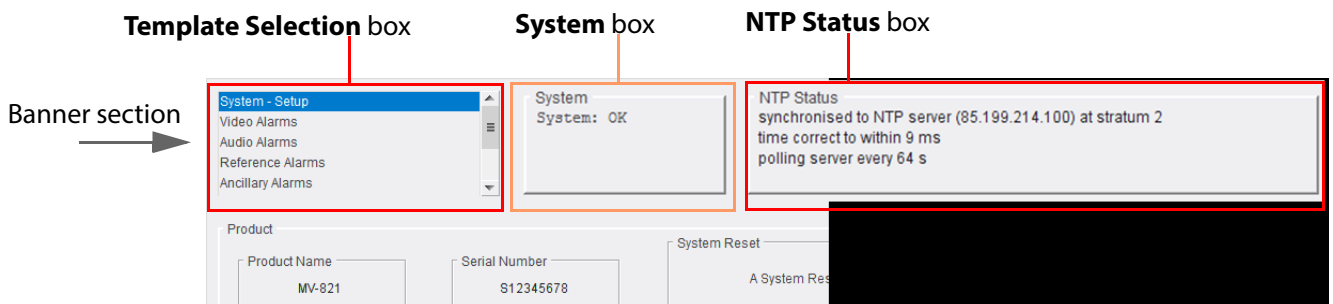
Banner section →

Fig. 3-1: RollCall Template Upper Banner Section

Template Selection

MV-8 Series Multiviewer templates may be selected from the **Template Selection** box in any template:

•	System - Setup:	See System-Setup Template on page 16
•	Video Alarms:	See Video Alarms Template on page 24
•	Audio Alarms:	See Audio Alarms Template on page 25
•	Reference Alarms:	See Reference Alarms Template on page 27
•	Ancillary Alarms:	See Ancillary Alarms Template on page 28
•	Layout:	See Layout Template on page 29
•	TSL:	See TSL Template on page 33
•	GPIO:	See GPIO Template on page 34
•	LTC:	See LTC Template on page 35
•	Timer Control:	See Timer Control Template on page 37
•	Timer Request Protocol:	See Timer Request Protocol Template on page 38
•	Media Biometrics:	See Biometrics Setup Template on page 39

The templates may also be accessed quickly by right-clicking anywhere in a template and then clicking on a template name in the full list that appears.
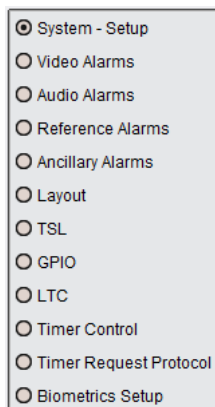
Right-click on a template to see this list; then click on a template name to access the template.

Fig. 3-2: Full List of Templates

System Box

A template's **System box** (see Figure 3-1) displays the multiviewer system status at the top of each template:

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

NTP Status Box

A template's **NTP Status box** (see Figure 3-1) displays the status of the multiviewer's network time (network time protocol, NTP) at the top of each template.

Settings Changes and System Reset

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

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

- **Video alarms** - See Video Alarms Template on page 24
- **Audio alarms** - See Audio Alarms Template on page 25
- **Reference alarms** - See Ancillary Alarms Template on page 28
- **Ancillary data alarms** - See Ancillary Alarms Template on page 28
- **Layout settings** - See Layout Template on page 29
- **TSL settings** - See TSL Template on page 33
- **GPIO settings** - See GPIO Template on page 34
- **LTC settings** - See LTC Template on page 35
- **Video wall timer control** - See Timer Control Template on page 37
- **Timer Request Protocol** - See Timer Request Protocol Template on page 38
- **Media Biometrics** - See Biometrics Setup Template on page 39

> CAUTION
>
> Some **System-Setup** template changes may affect the MV-8X0/MV-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** template.
>
> Such a reset will affect all MV-8X0/MV-8X1 Multiviewer product's connections, including the multiviewer outputs. See "System Reset" box, on page 18.
>
> When the MV-8 Series Multiviewer has re-booted, the new settings will be adopted.

System-Setup Template

> Note: The multiviewer must be **System Reset** for any saved setting changes to take effect, "System Reset" box, on page 18.

The **System-Setup** template (see Figure 3-3) 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 | Serial Number | System Reset |
| MV-800 | S56040815 | A System Reset is Required for Changes to Take Effect. Pressing "System Reset" will result in outputs from the Multiviewer being interrupted. |

Software Version: 3.0A.72
Build Number: 3.0.10
FPGA Version: 280

System Reset

Cancel   Confirm

Network Settings

1G1 Interface

IP Address: 10.162.51.170   P   S
DHCP: ☐ Enabled
Subnet Mask: 255.255.0.0/16
Default Gateway Address: 10.162.254.1   P   S
MAC Address: 00:23:70:00:05:81
NIC Bonding

1G2 Interface

IP Address: 10.162.51.171   P   S
DHCP: ☐ Enabled
Subnet Mask: 255.255.0.0/16
Default Gateway Address   P   S
MAC Address: 00:23:70:00:05:80

Eng Interface

IP Address: 10.162.51.172   P   S
DHCP: ☐ Enabled
Subnet Mask: 255.255.0.0/16
Default Gateway Address   P   S
MAC Address: 00:e0:4b:52:04:26

DNS Server

Primary IP Address: 10.54.1.200   P   S
Secondary IP Address: 10.54.1.201   P   S

NTP Servers

Server 1: 1.uk.pool.ntp.org   P   S
Server 2: 2.uk.pool.ntp.org   P   S
Server 3: 3.uk.pool.ntp.org   P   S
Server 4: 0.uk.pool.ntp.org   P   S

Router Controller Settings

Main Controller

IP Address: 10.162.5.46   P   S
IP Port: 2019   P   S
Source name length: 8

Backup Controller

IP Address: 10.162.5.47   P   S
IP Port: 2019   P   S

RollCall Settings

RollCall Network: FFFF   P   S
RollCall Unit: 70   P   S
RollCall Port: 00
RollCall IP Port: 2050   P   S
Domain ID: 170   P   S
Ethernet Interface: 1G1

Output Format

Format Selection: 1080p50

Reference Input

Reference Selection: Reference IP 1
Video Output Phase Adjust: 0   P   S

Streamed Output

Ethernet Interface: 1G1
IP Port: 8554   P   S
Multicast Group Base Address   P   S
Enable: ☑

Information

Name: Validation MV-800   P   S
Location: Validation Rack   P   S
Notes: DDS=170, RollCall=70   P   S

SNMP Managers

IP Address 1: 10.162.64.90   P   S
IP Address 2:   P   S
IP Address 3:   P   S
IP Address 4:   P   S
IP Address 5:   P   S
IP Address 6:   P   S
IP Address 7:   P   S
IP Address 8:   P   S

SNMP Community Strings

Get: public   P   S
Set: private   P   S
Trap: trap   P   S

Fig. 3-3: Multiviewer System-Setup template

Product box
see "Product" box,
on page 19

System Reset box
see "System Reset" box, on page 18

Network Settings box see "Network Settings" box, on page 19

NTP Servers box see "NTP Servers" box, on page 20

Router Controller Settings
see "Router Controller Settings" box, on page 20

RollCall Settings box
see "RollCall Settings" box, on page 20

Output Format box
see "Output Format" box, on page 21

Reference Input box
see "Reference Input" box, on page 21

Streamed Output box
see "Streamed Output" box, on page 22

Information box
see "Information" box, on page 23

SNMP panes

SNMP Managers box
see SNMP Managers box, on page 23

SNMP Community Strings box
see SNMP Community Strings box, on page 23

Fig. 3-4: System-Setup Template 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** template 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** template 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 11, for more information on module booting.

"Product" box

Displays multiviewer details:

- **Product** - The name of the MV-8X0/MV-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** template 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/MV-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 template 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 Grass Valley Orbit software applications to control the MV-8 Series 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 Orbit software when connecting to an MV-8 Series 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, an 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 inputs. (This is a licensable hardware codec option on MV-8X1 multiviewer units, requiring the 'H.264 stream' license option.)

Multiviewer video inputs are scaled-down (to standard definition size) and streamed out as multicast H.264-compressed copies of each input, one 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** template.
- **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 22 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 stream per multiviewer 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 RollCall template 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 template 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 RollCall template 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** template settings changes have been made, an MV-8 Series Multiviewer System Reset is required. See "System Reset" box, on page 18.

Video Alarms Template

The **Video Alarms** template 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 template.

Multiviewer alarms are set up with the Grass Valley Orbit software application.

The MV-8 Series Multiviewer input video number is selected by the **Video Input Selection** drop-down menu box. See Figure 3-5.
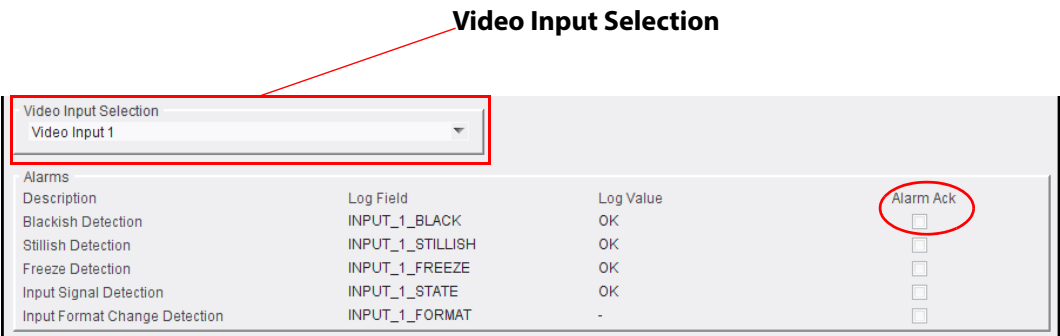

Fig. 3-5: Video Alarms Template

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

Table 3-1: 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 Template

The **Audio Alarms** template 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 template.

Multiviewer alarms are set up with the Grass Valley Orbit software application.

---

shows the **Audio Alarms** template.

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 template.

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

Table 3-2: 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.

Fig. 3-6: Audio Alarms Template

Reference Alarms Template

The **Reference Alarms** template 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 template.
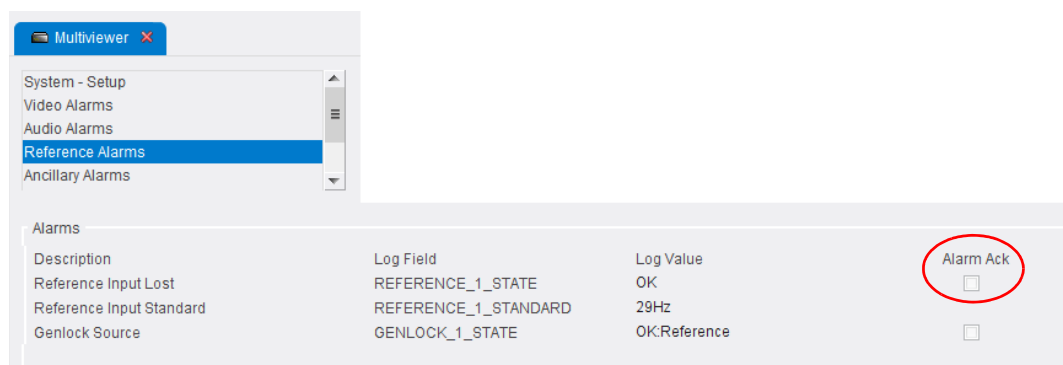

Fig. 3-7: Reference Alarms Template

Note:	Alarms can be viewed and acknowledged on this template.
	Multiviewer alarms are set up with the Grass Valley Orbit 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** RollCall template, the corresponding 'Unit Alarms' in the Orbit multiviewer project running on the multiviewer must be enabled.
	Otherwise, the alarms' states are shown as: '-'

Ancillary Alarms Template

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

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 template.

Fig. 3-8: Ancillary Alarms Template

Table 3-3: 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.
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 template.

Multiviewer alarms are set up with the Grass Valley Orbit software application.

Layout Template

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

The **Layout** template 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 an Orbit multiviewer project which is pushed to the multiviewer unit.

The template 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.
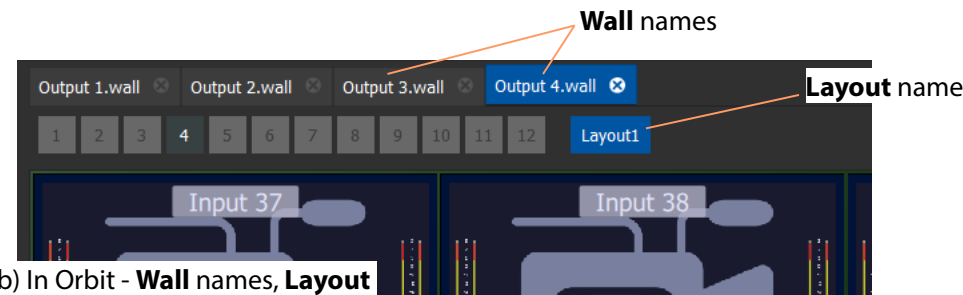
In an Orbit multiviewer project:

- Each video wall has a name property in Orbit, set to "Wall 1", "Wall 2" etc. by default. The wall name may be edited in Orbit by the user. It is shown on the **Layout** template.

- Each wall layout has a name property in Orbit, set to "Layout1", "Layout2" etc. by default. This layout name is editable in Orbit by the user. It is also reflected on the **Layout** template.

Note:	These names are case-sensitive.

On the **Layout** template, there is a **Wall** pane per video wall defined in the Orbit project. See Figure 3-9.
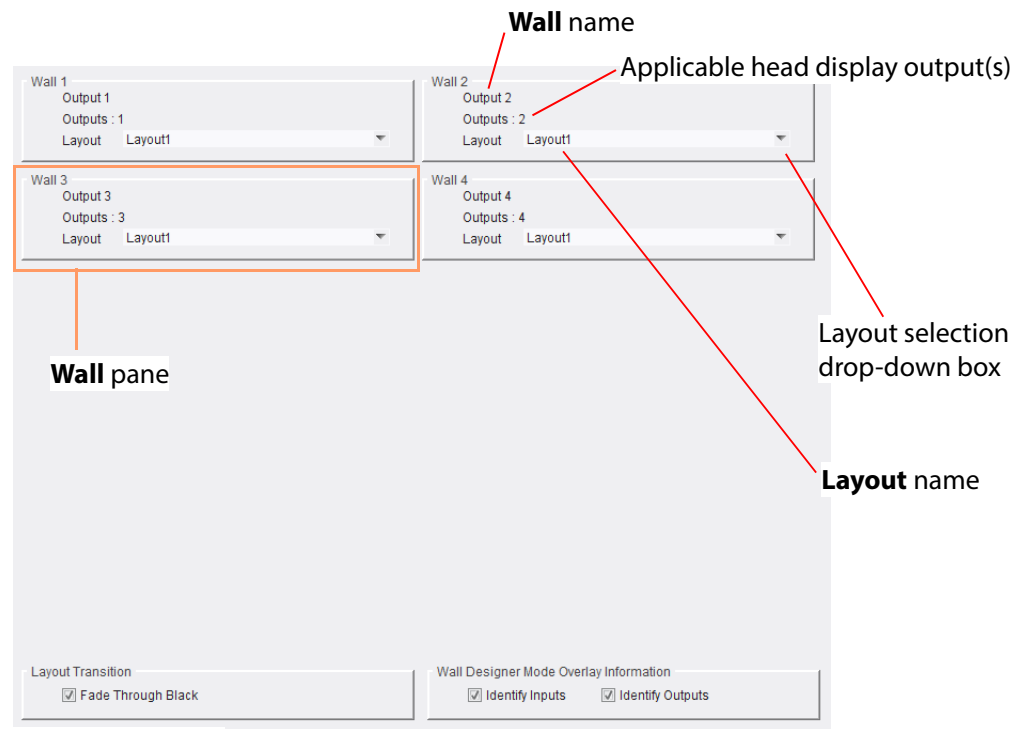
a) **Layout** Template

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

Fig. 3-9: Layout Template: a) Layout Template; b) In Orbit.

Table 3-4: Wall Pane Settings

Wall 1 ... up to Wall 12	Description
Wall N:	Wall number, as defined in the Orbit multiviewer project. (1 ... up to 12.)
Wall name	Wall name, as defined in the 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 3-5: Layout Transition Settings

Setting	Description
Layout Transition:	

Table 3-5: Layout Transition Settings (continued)

Setting	Description
Fade Through Black	Check box. Controls the type of on-screen transition seen when changing between wall layouts. • 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/MV-8X1 Multiviewer.

Table 3-6: Overlay Settings

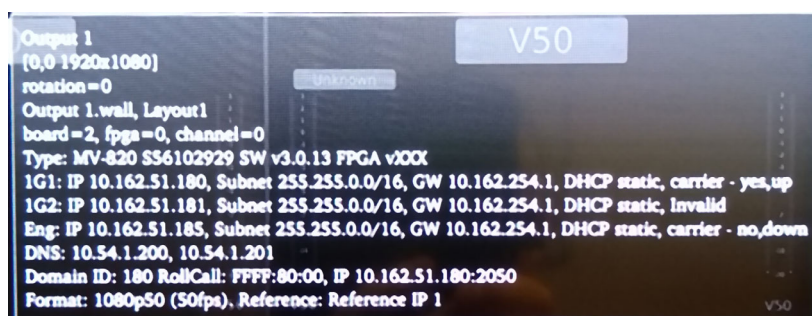| Setting	Description
Wall Designer Mode Overlay Information:	
	Controls the display of overlay information on each multiviewer head display output. See Figure 3-10. (Multiviewer software 2.16.16 or later.)
Identify Inputs	Check box. Select to display overlay information which identifies each video input on each video tile on the head display output screen.
Identify Outputs	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. • Immediately after this **Identify Output** feature is enabled, the overlay information shown about the outputs is extensive.

Table 3-6: Overlay Settings (continued)

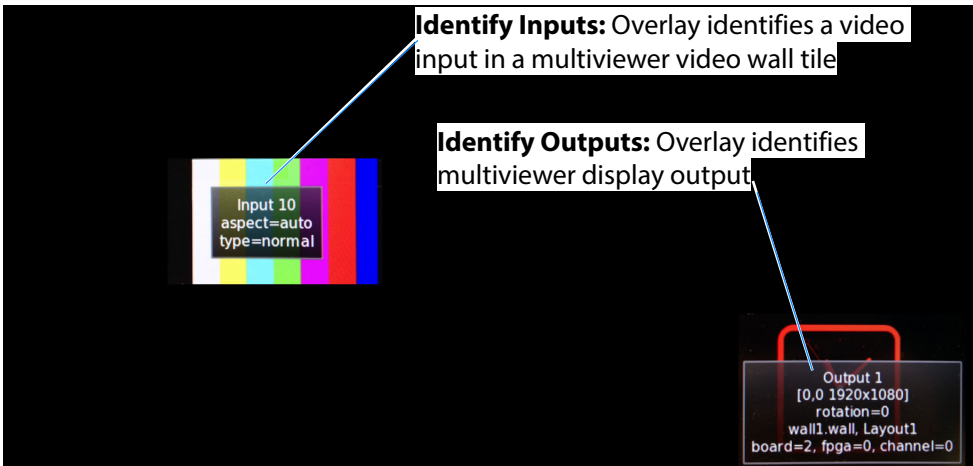| Setting	Description
	• After 20 seconds, the overlay then reverts to showing only brief output information, as shown in Figure 3-10. Output 1 [0,0 1920x1080] rotation=0 Output 1.wall, Layout1

Fig. 3-10: Multiviewer Head Display Output with Example Input and Output Overlays

TSL Template

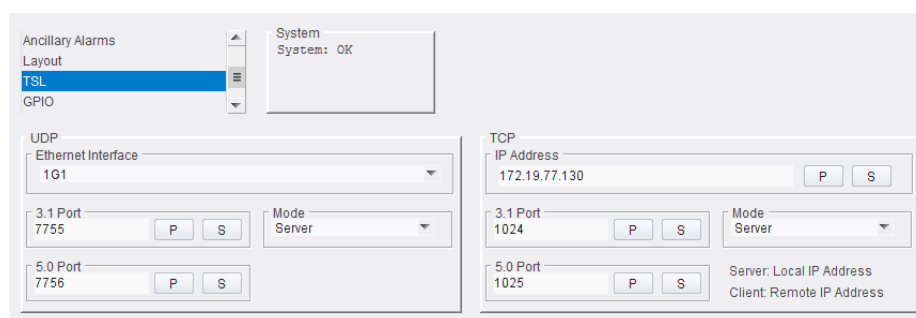The **TSL** template allows the user to select settings related to MV-8 Series Multiviewer support of the TSL protocol.

Fig. 3-11: TSL template

TSL protocol is supported in TSL Server Mode or TSL Client Mode, see Multiviewer Video Wall, on page 77, Figure 9-5 on page 83.

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

Table 3-7: 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 Template

The **GPIO** template 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/MV-8X1 Multiviewer product. For connector pinouts, see the respective MV-8X0/MV-8X1 product user manual.
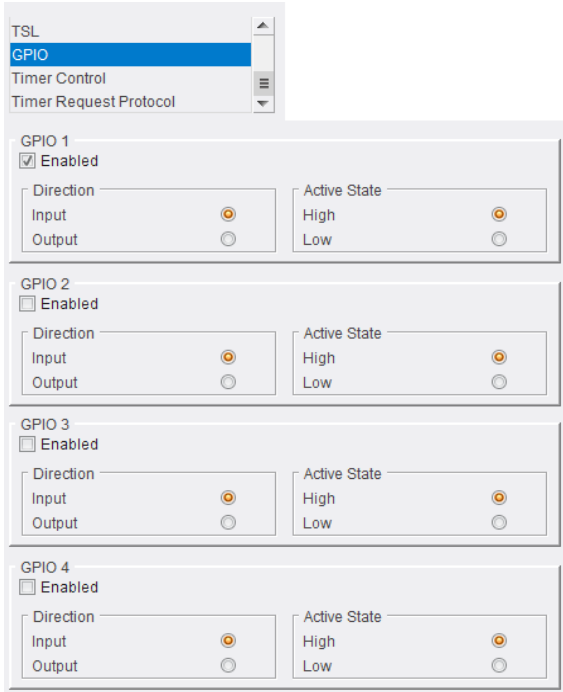

Fig. 3-12: GPIO template

Table 3-8: 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 Template

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

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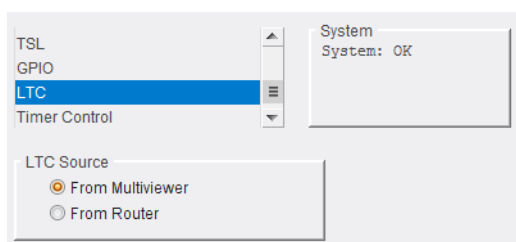

Fig. 3-13: LTC Template

The following LTC sources may be selected:

- From Multiviewer.
- From Router.

See Table 3-9.

Table 3-9: LTC Source Radio Button Options

| Setting	Description
LTC Source	Radio buttons to select source of LTC for MV-8 Series 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 3-14.

(WorkBench tool screenshot)
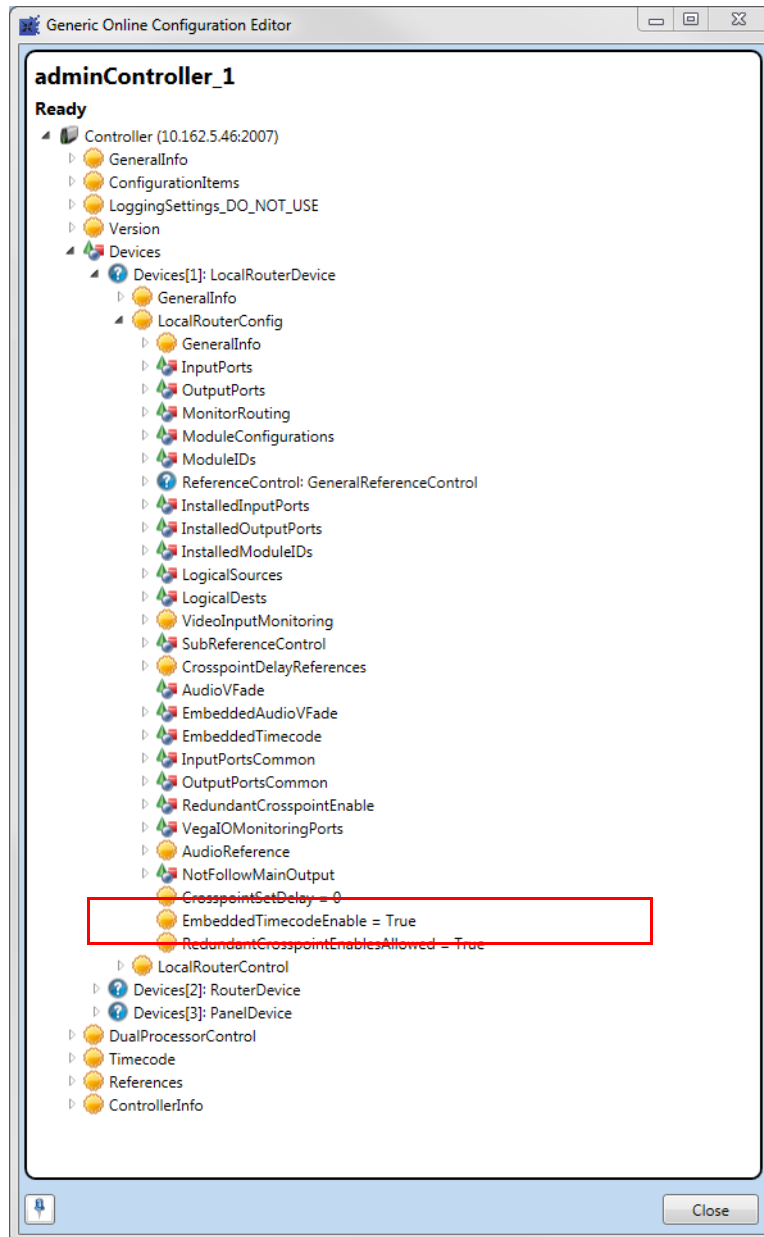
Fig. 3-14: EmbeddedTimecodeEnable Router Controller LTC Source Configuration Item

Timer Control Template

The **Timer Control** template 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 Grass Valley Orbit application.

Fig. 3-15: Timer Control Template

Table 3-10: 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.
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 Template

The **Timer Request Protocol** template 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^{TM} timer request protocol.
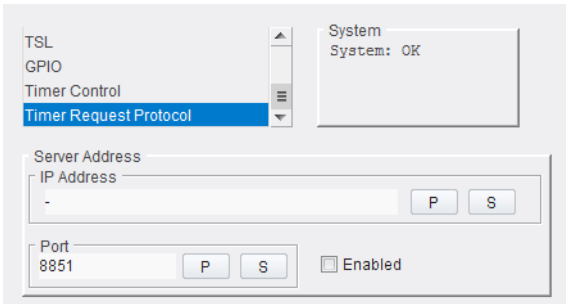

Fig. 3-16: Timer Request Protocol Template

Table 3-11:   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 Grass Valley Orbit application. It can be configured to be connected to an eTimer service.

Biometrics Setup Template

The **Biometrics Setup** template 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. 3-17: Media Biometrics Template

Table 3-12: 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 *different* **Domain ID** value from the **RollCall Settings** domain ID, set up in the **System-Setup** Template. (See "RollCall Settings" box on page 20.)
Generator Setup	
Active Video	Displays which video inputs have media biometrics generators (MBGs) enabled.
Video Input Select	Check box. Select the video input to configure.

Table 3-12: Media Biometrics Settings (continued)

Setting	Description
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 Support

The HDR support at MV-8 Series Multiviewer inputs 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

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 etc.

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

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

Conversion is carried out to standard dynamic range (SDR), which the multiviewer uses internally.

As part of the HDR to SDR conversion, how much of the extra dynamic range in the HDR signal is used in the resulting internal SDR signal and how much is not used can be set.

Additionally, the processing can use the BT.709 color space (as used in SDR) or convert from the BT.2020 color space (typically used in HDR).
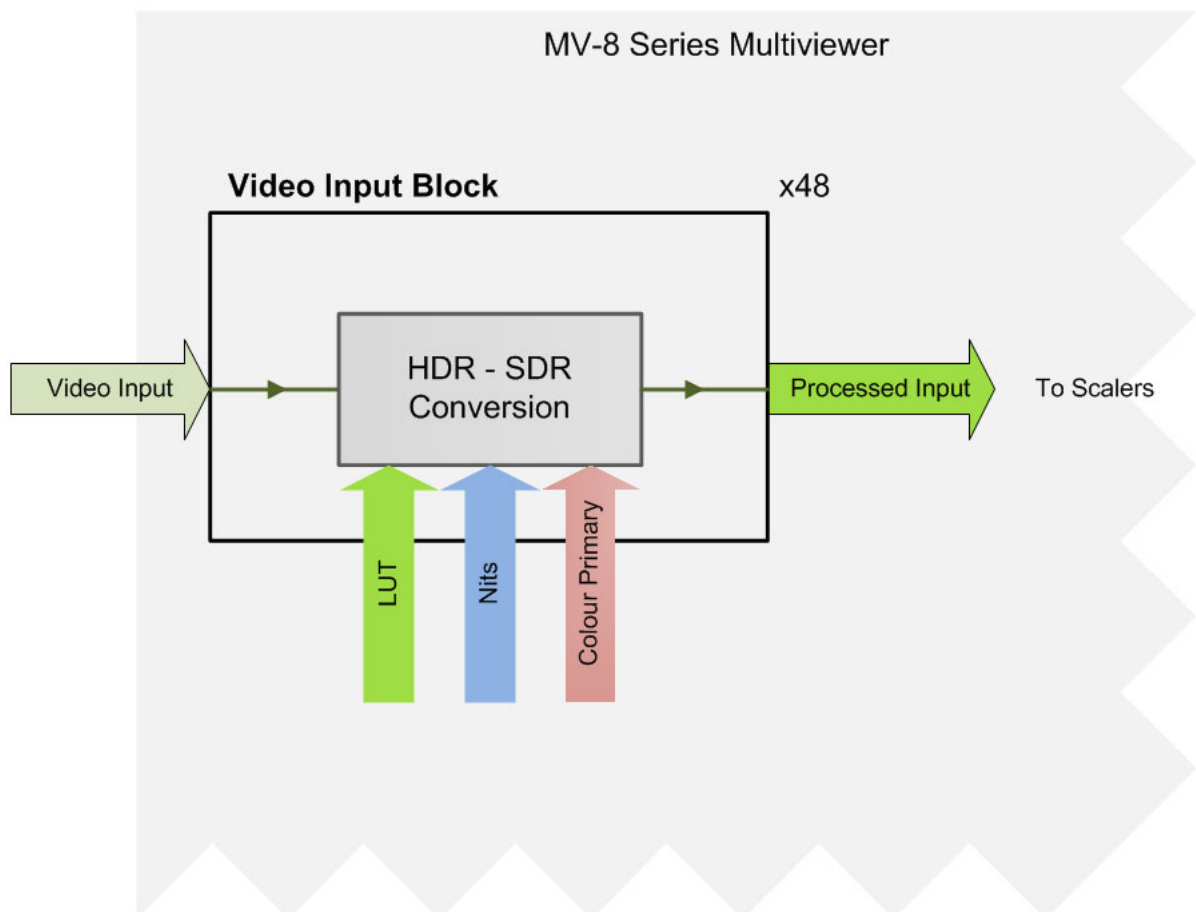
Fig. 4-1: Multiviewer Video Input HDR to SDR Processing

Controls

HDR processing on each multiviewer video input is set up in Grass Valley Orbit. It is set up in an Orbit multiviewer project that is pushed to the MV-8 Series Multiviewer.

The video input HDR settings are found in the **Input Video** dialog (**Multiviewer > Input Video** in the main menu), shown in Figure 4-2. Controls in the dialog are described in Table 4-1. Setting up the HDR support on video inputs is outlined in Setting Up HDR Support for Video Inputs, on page 45.
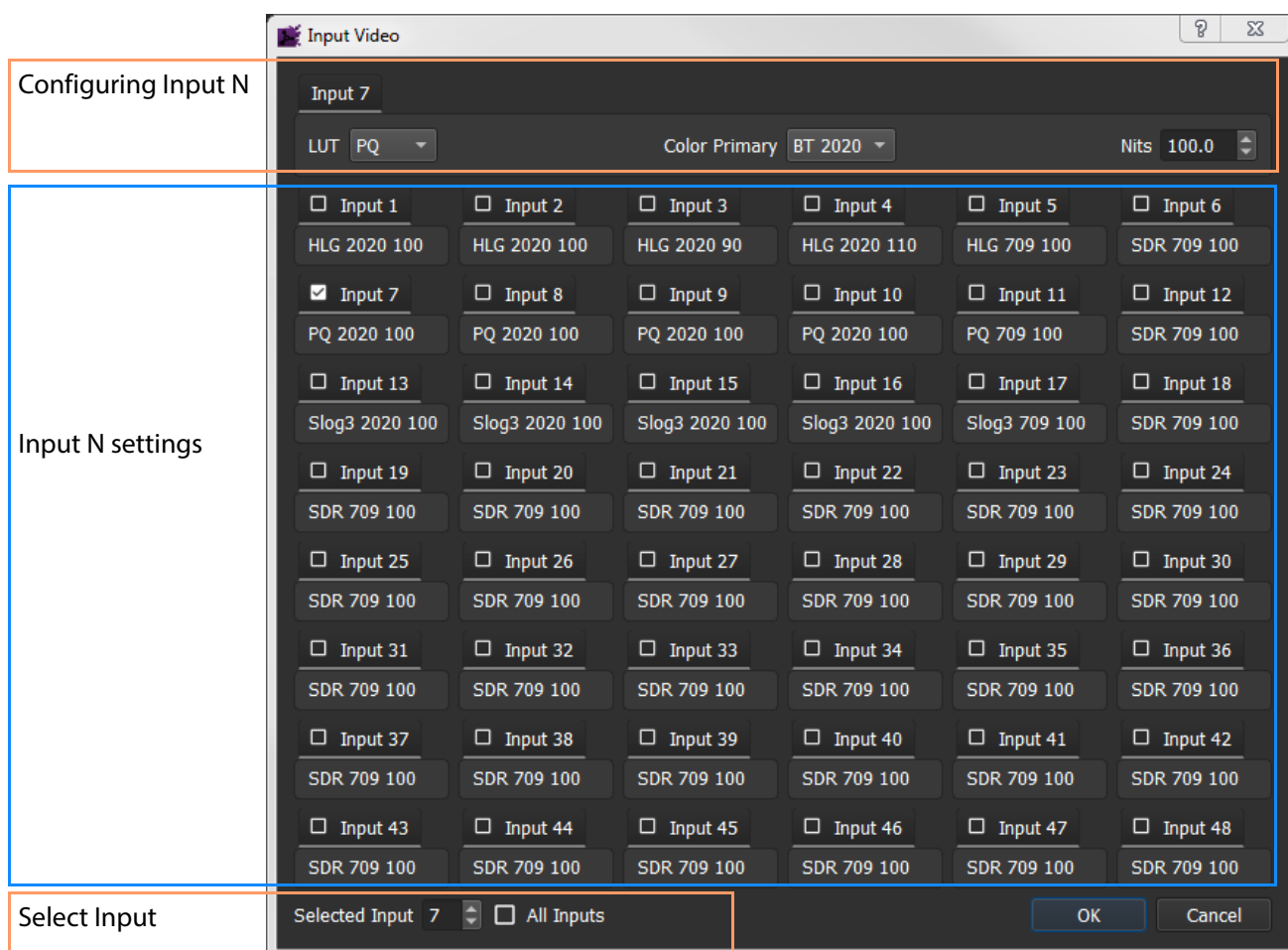
Fig. 4-2: Input Video Dialog ('Multiviewer > Input Video' in Orbit main menu)

Table 4-1: Input Video Dialog Settings
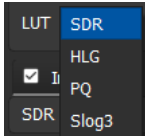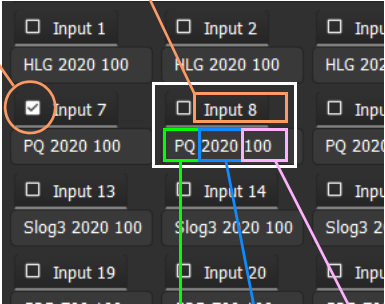
Wall 1 up to Wall 12	Description
Configuring Input N:	Configure settings for each input here.
Input	Displays the name of the selected video input to be configured, e.g. 'Input 1', 'Input 2' etc.
LUT	Drop-down box. Select dynamic range of video input.

Table 4-1: Input Video Dialog Settings (continued)

Wall 1 up to Wall 12	Description
Color Primary	Drop-down box. Select the color space of the video input. Color Primary BT 709 BT 2020
Nits	Text box. Enter the Nits value for the HDR to SDR conversion. See Nits, on page 44, for information about this setting.
Input N Settings:	Displays the settings for each video input - shown in a 6x8 grid. Selected input Input name Nits setting Color primary setting LUT setting
Select Input:	Select video input to configure.
Selected Input	Text box. Enter the video input number (1 to 48) of the input to be configured.
All Inputs	Check box. Select to select all input for configuring altogether.

Nits

The **Nits** control in the **Input Video** dialog, Figure 4-2 on page 43, 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.

- The nominal **Nits** value is 100 nits for a normal SDR monitor image.
- Setting the **Nits** value to higher value results in a darker picture and includes some of the extra, bright dynamic range - which may be useful for a brighter monitor.
- Setting the **Nits** value to a lower value results in a brighter picture and omits some of the standard dynamic range in the image.
- Video values outside the **Nits** range are clipped to their limit in the RGB color space.

Setting Up HDR Support for Video Inputs

HDR processing on each multiviewer video input is set up in the Grass Valley Orbit multiviewer project that is pushed to the MV-8 Series Multiviewer.

With an Orbit multiviewer project open:

1   Click on **Multiviewer > Input Video** in the main menu
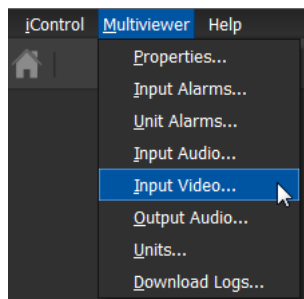
and the **Input Video** dialog is shown. See Figure 4-2 on page 43.

For each multiviewer input, to set up HDR support:

2   Select an input by:

- clicking on the input in the 'Input N Settings' area of the dialog, see Figure 4-2 on page 43; or
- entering the input number in the **Selected Input** box.

Or select all inputs by selecting the **All Inputs** box.

3   Select the HDR standard of the video input with the **LUT** drop-down box.

4   Select the color space of the video input with the **Color Primary** drop-down box.

5   Enter the **Nits** value required for the HDR to SDR conversion.

Repeat this for each input requiring HDR conversion.

When all multiviewer input HDR settings are set up:

6   Click **OK** to close the **Input Video** dialog.

7   Click **Save Project** in the main tool bar (or **File > Save Project** main menu) to save the Orbit multiviewer project.

To finally push a saved Orbit multiviewer project to the multiviewer unit:

8   Click the **Push** icon in the main tool bar, or click **Project > Push** in the main menu.

9   Select which Orbit project to push in the **Choose Projects** dialog. Click **OK**.

When the project has been pushed to the multiviewer, the new project takes effect and any HDR settings on inputs are activated.

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 a RollCall template (see Biometrics Setup Template, on page 39). 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/MV-8X1 Multiviewer unit. The signature data is compatible with Grass Valley's SigMA media assurance solution.
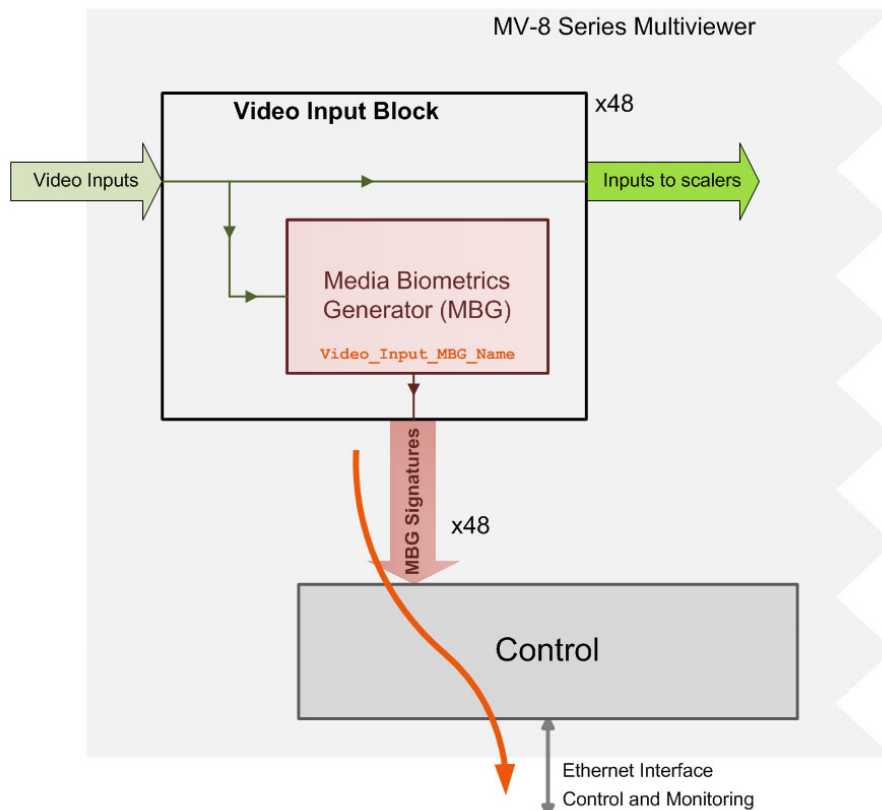
Fig. 5-1: Multiviewer Media Biometric Generators (MBGs)

6 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

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 Orbit multiviewer project and cause it to read various RollCall commands.

Assumptions

- An MV-8X0/MV-8X1 Multiviewer is running with a known 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 Orbit multiviewer project.

2 Create a new empty tile.

3 Add two **Label** widgets.
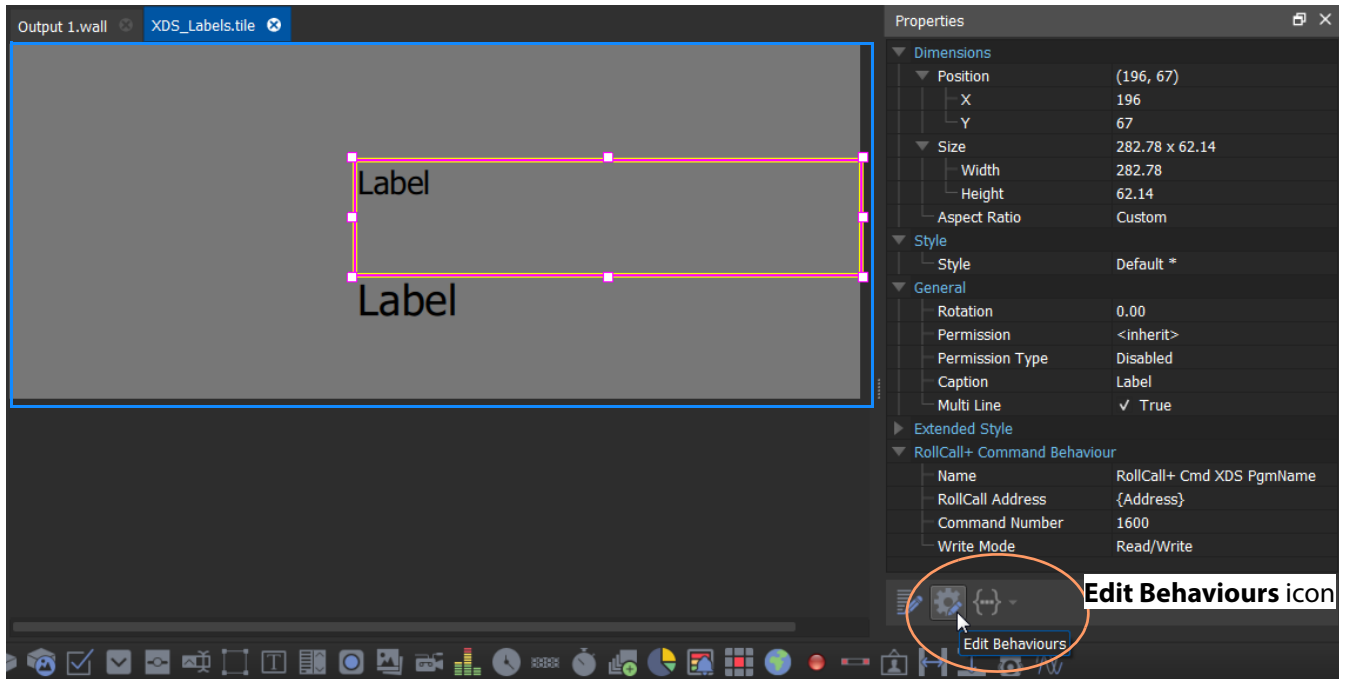
Fig. 6-1: 'XDS Labels' on New Tile

4 Select one **Label** and click the **Edit Behaviours** icon (see Figure 6-1) to open the 'Behaviours and Bindings' graphical editor.

5 Add a **RollCall+ Command** Behaviour to the editor. See Figure 6-2.
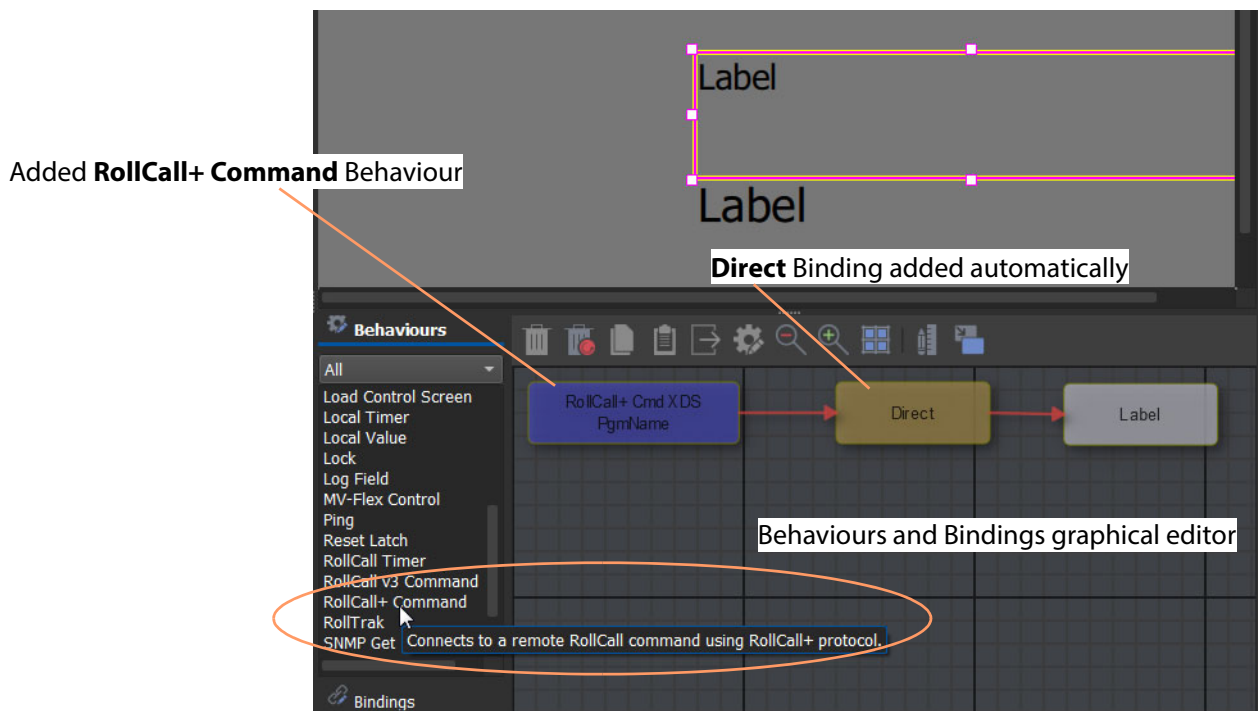
Fig. 6-2: Add a RollCall+ Command Behaviour

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 106.)
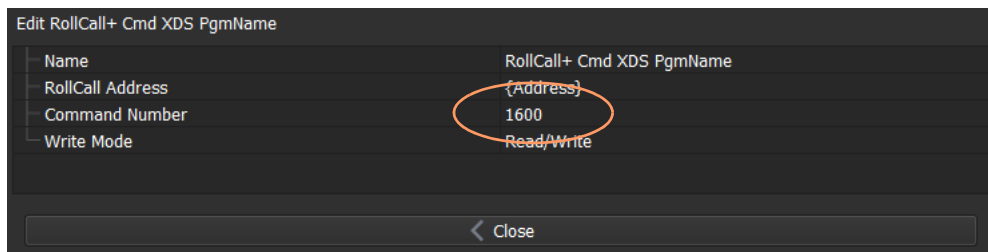
Fig. 6-3: Edit Behaviour Properties - Command Number

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 106.)

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 6-4.
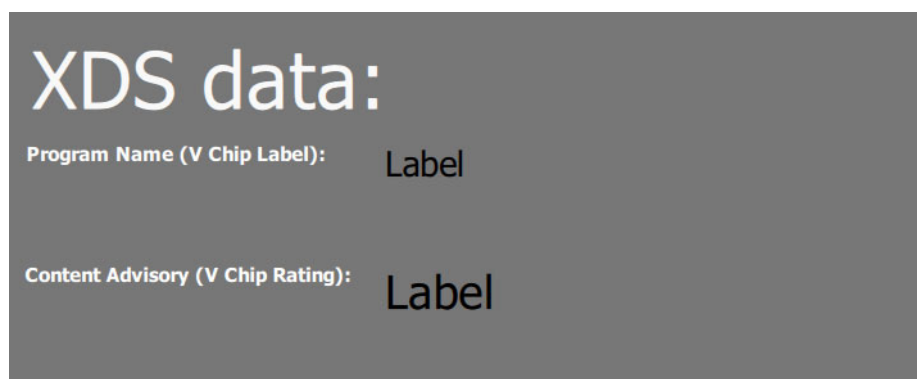
Fig. 6-4: Comment Labels Added to the Tile

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 6-5.
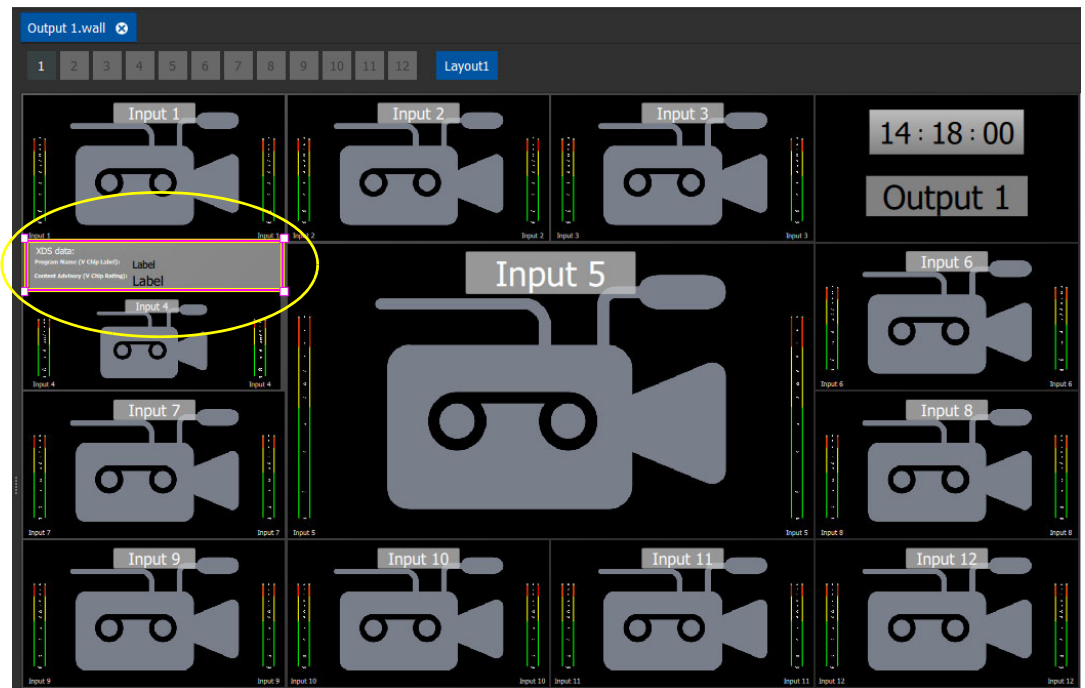
Fig. 6-5: XDS Labels Tile on Wall

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 6-6.
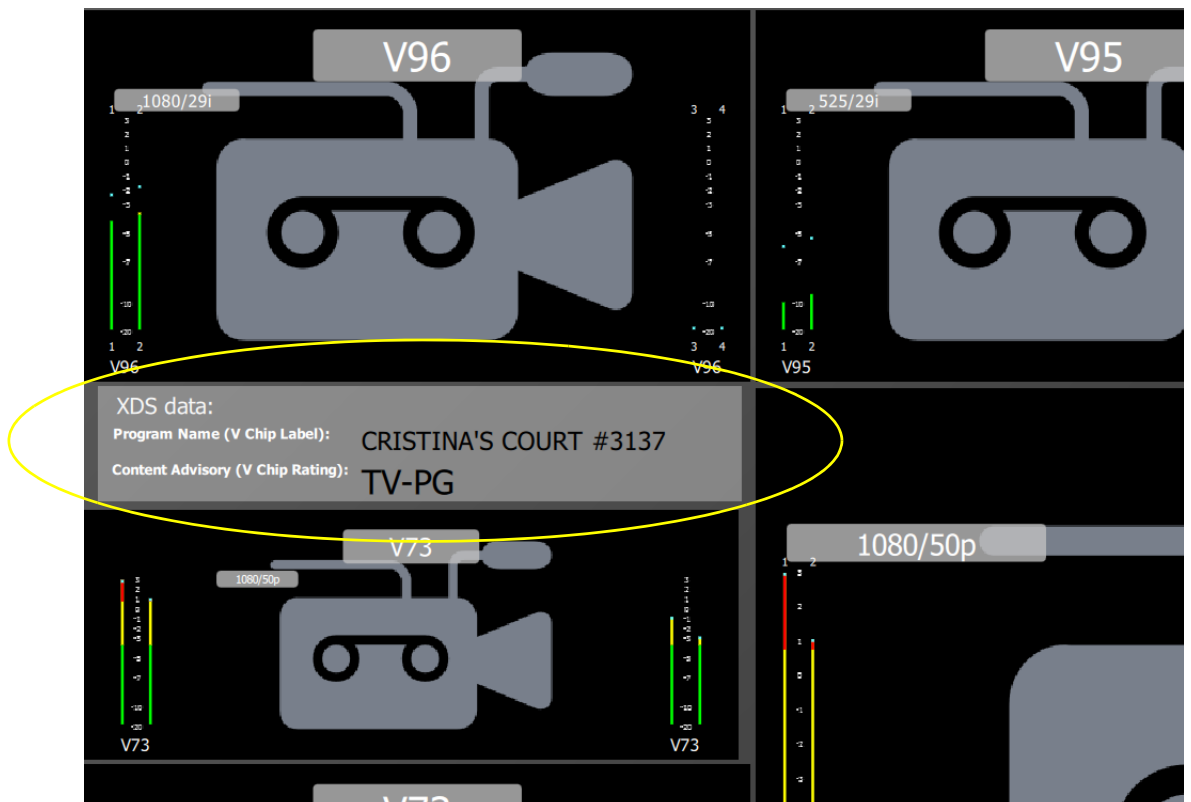
Fig. 6-6: Deployed XDS Labels Tile

Output Embedded Audio Support

7

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

Orbit and Output Embedded Audio

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

1 Open an Orbit multiviewer project.

2 Click on **Multiviewer > Output Audio** in the main menu bar.
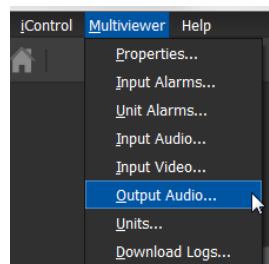
The **Output Audio** dialog is shown, see Figure 7-1.
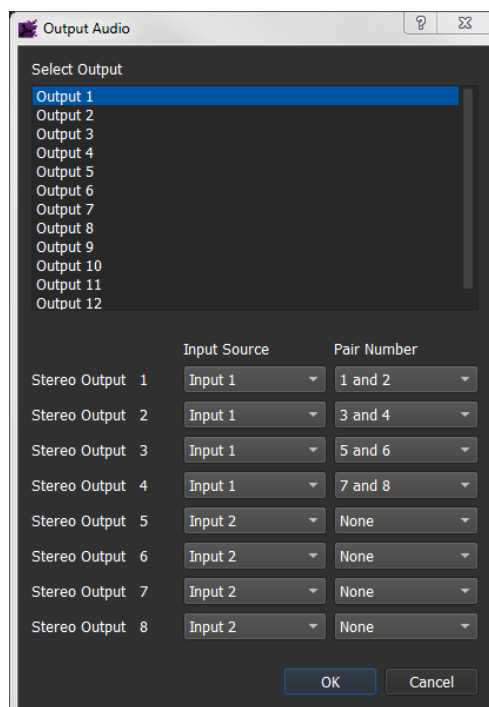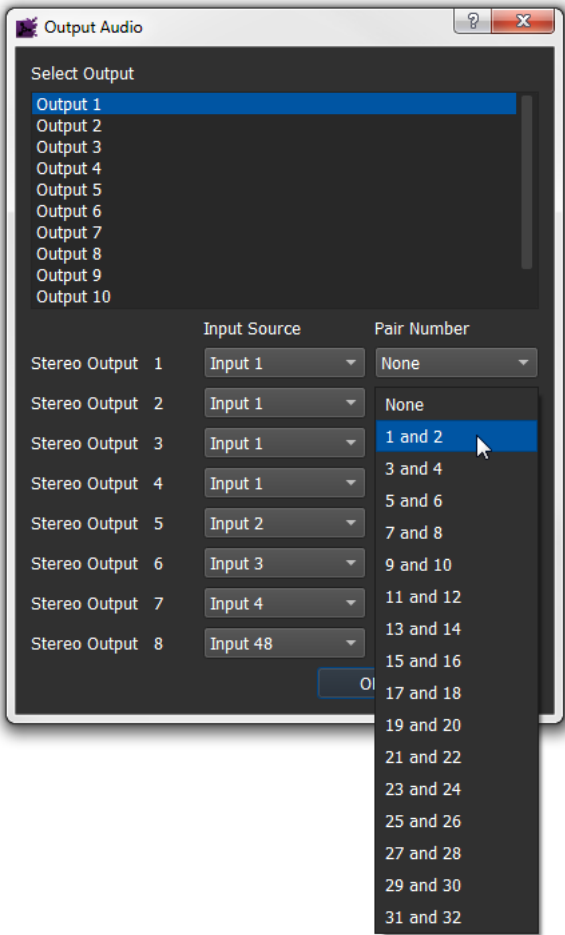
Fig. 7-1: Output Audio Dialog

3 Set up the audio stereo pair channels for embedding into each multiviewer head display output. See Table 7-1.

Table 7-1: 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**	For each audio stereo pair (1 to 8), select the following:
Input Source	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.

Getting Started

Getting Started

This chapter describes configuring basic system information for an MV-8 Series Multiviewer in and MV-8X0/MV-8X1 Multiviewer product.

Introduction

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

Note:	RollCall Control Panel:
	The RollCall Control Panel tool is part of the RollCall Suite. (For installation instructions, see the "RollCall V4 Suite & RollCall Lite" manual.)
	Install the RollCall Control Panel software on your computer. See the 'RollCall Control Panel User Manual' and contact Grass Valley Support for information. Use RollCall Control Panel software version listed in Software Versions, on page 104.

Following an initial configuration step with RollCall Control Panel, the 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 multiviewer. These instructions are applicable to all MV-8 Series Multiviewers.

Default IP Addresses

Typically, a new MV-8X0/MV-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/MV-8X1 Multiviewer product user manual for Ethernet interface descriptions and default IP addresses.

Hardware Installation

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

Step 1: Initial RollCall Control Panel Connection and Unit Configuration

Items required:

- A laptop, or some computer, with an RJ45 Ethernet port and with Grass Valley RollCall Control Panel installed.
- A 'direct' CAT 5 Ethernet cable.
  (**Note:** Depending on the computer's network interface, a normal cable may suffice.)

Initial MV-8X0/MV-8X1 Multiviewer connection and configuration should be carried out on a separate IT network, separate from any house IT network. The initial configuration sets up MV-8X0/MV-8X1 Multiviewer product IP addresses and communication settings.
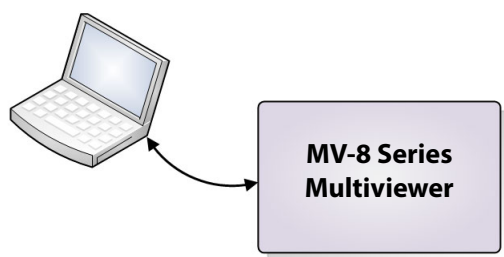
Fig. 8-1: Initial Configuration, separate from House System

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

Step 1.1: Prepare Computer

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/MV-8X1 Multiviewer product user manual.)

2. Disable any WiFi connections on the computer.
   (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/MV-8X1 Multiviewer product using the 'direct' Ethernet cable.

Step 1.2: RollCall Control Panel Connection

When connecting RollCall Control Panel for the first initial MV-8 Series Multiviewer configuration, the computer should be connected directly to the MV-8X0/MV-8X1 Multiviewer.

If connecting RollCall Control Panel for *further* unit configuration, connect to the unit in your house system network.

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

To connect RollCall Control Panel to the MV-8 Series Multiviewer:

1 With the computer connected to the 1G Ethernet port of the MV-8X0/MV-8X1 Multiviewer, open the RollCall Control Panel application from:

`Start > All Programs > SAM > RollCall > Control Panel`

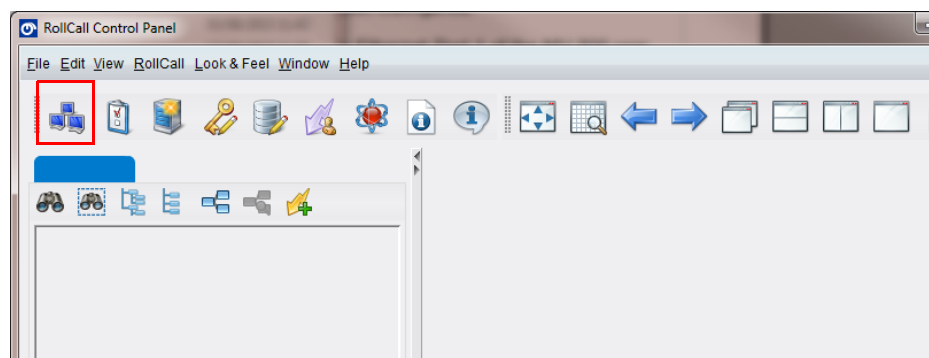The RollCall application starts and the initial RollCall Control Panel template is displayed.

Fig. 8-2: RollCall Control Panel Initial Screen

2 Click on the **Build Network** icon in the RollCall tool bar to display the **Build Network** dialog. See Figure 8-3.
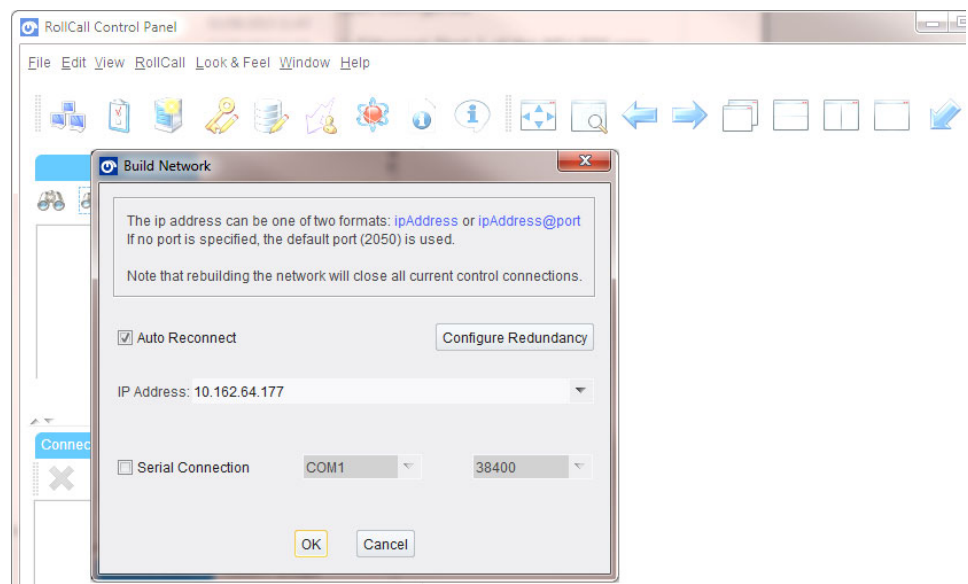
Fig. 8-3: Build Network Dialog

3 Enter your MV-8X0/MV-8X1 Multiviewer 'MV control' IP address into the 'IP Address' text box

and click **OK** to connect to the MV-8X0/MV-8X1 Multiviewer product.

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

| Note: | The IP addresses of MV-8 Series Multiviewer control Ethernet interfaces (used during initial multiviewer configuration) can be found by: |

- Enabling the **Output Overlay** feature on head display outputs (see Layout Template, 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 11 and its Figure 2-1 on page 11.

4 After a short period displaying the message "Connecting", RollCall Control Panel will connect to the MV-8X0/MV-8X1 Multiviewer.
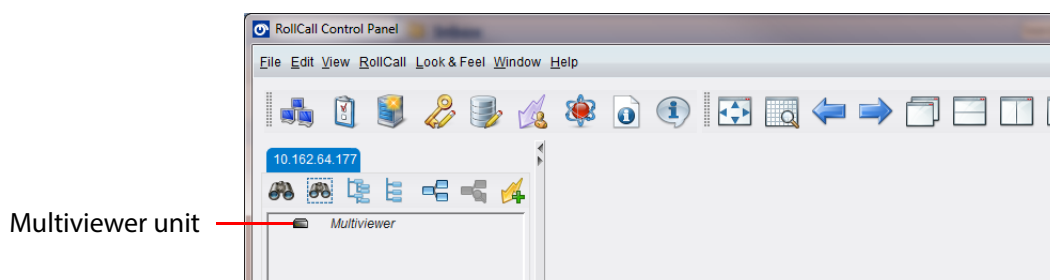
Multiviewer unit

Fig. 8-4: Connected to MV-8X0/MV-8X1 Multiviewer

5 In RollCall Control Panel, double-click on an MV-8X0/MV-8X1 Multiviewer product icon or name in the left-hand pane.
(**Note:** The MV-820-IP shows one multiviewer block and four Video IP blocks in the left-hand pane. Connect to the multiviewer block in this case.)
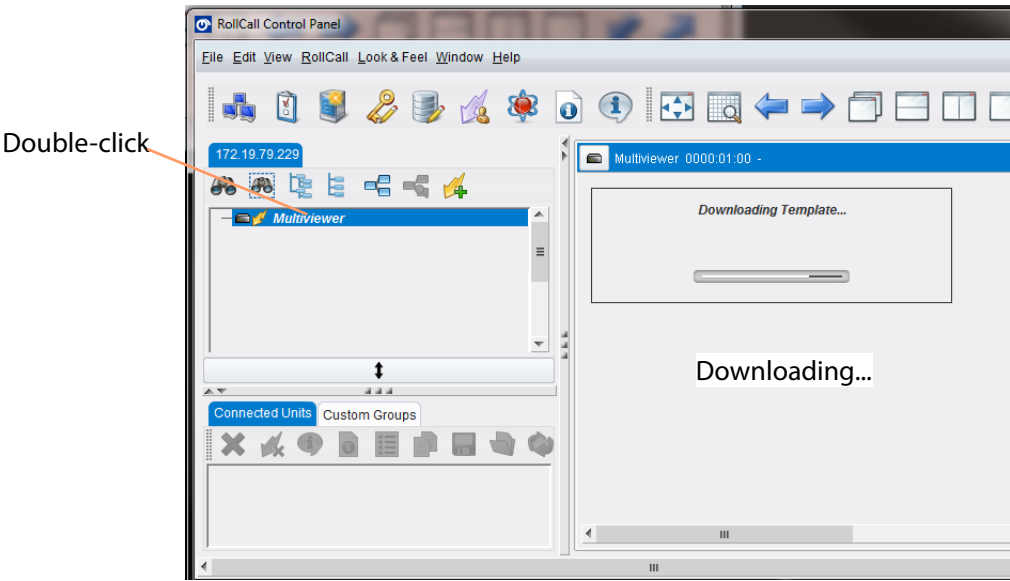
Template settings are downloaded.

Fig. 8-5: RollCall Template Downloading

6 The MV-8 Series Multiviewer Rollcall templates are automatically downloaded and then displayed in the pane on the right. See Figure 8-6.
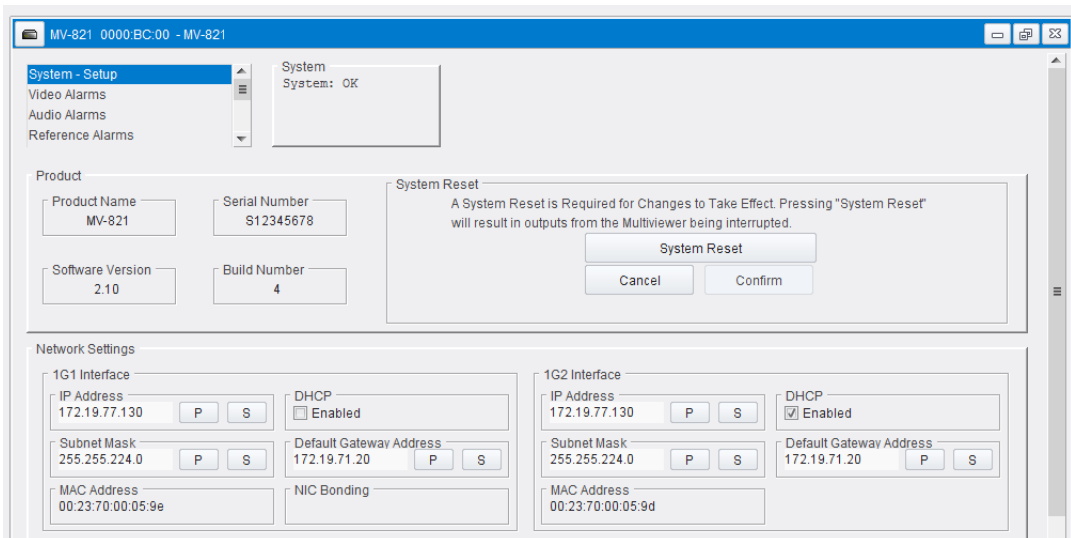

Fig. 8-6: MV-8 Series Multiviewer RollCall Templates

RollCall Control Panel has now connected to the unit.

For initial configuration, see Step 1.3: Initial Multiviewer Unit Configuration, on page 61.

Step 1.3: Initial Multiviewer Unit Configuration

(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/MV-8X1 Multiviewer unit's IP addresses and communication settings:

1 Select the **System-Setup** template in the upper template selection box.

2 Change the settings in the **System-Setup** template.

   a) Under **Network Setting**,
      set up the Ethernet interface IP network settings relevant to your house network.

   b) Under **RollCall Settings**, set up:
      Unit number (must be unique for each unit). and
      Domain ID (typically the same for each unit).

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

3 Click on the **System Reset** button at the top of the **System-Setup** template
   (see "System Reset" box, on page 18).
   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** template take effect.
>
> Such a reset will affect all MV-8X0/MV-8X1 Multiviewer connections, including the multiviewer monitor outputs. See "System Reset" box, on page 18.

When the MV-8X0/MV-8X1 Multiviewer unit has re-booted, the new settings will be adopted. The MV-8X0/MV-8X1 Multiviewer can then be connected to your house IT network.
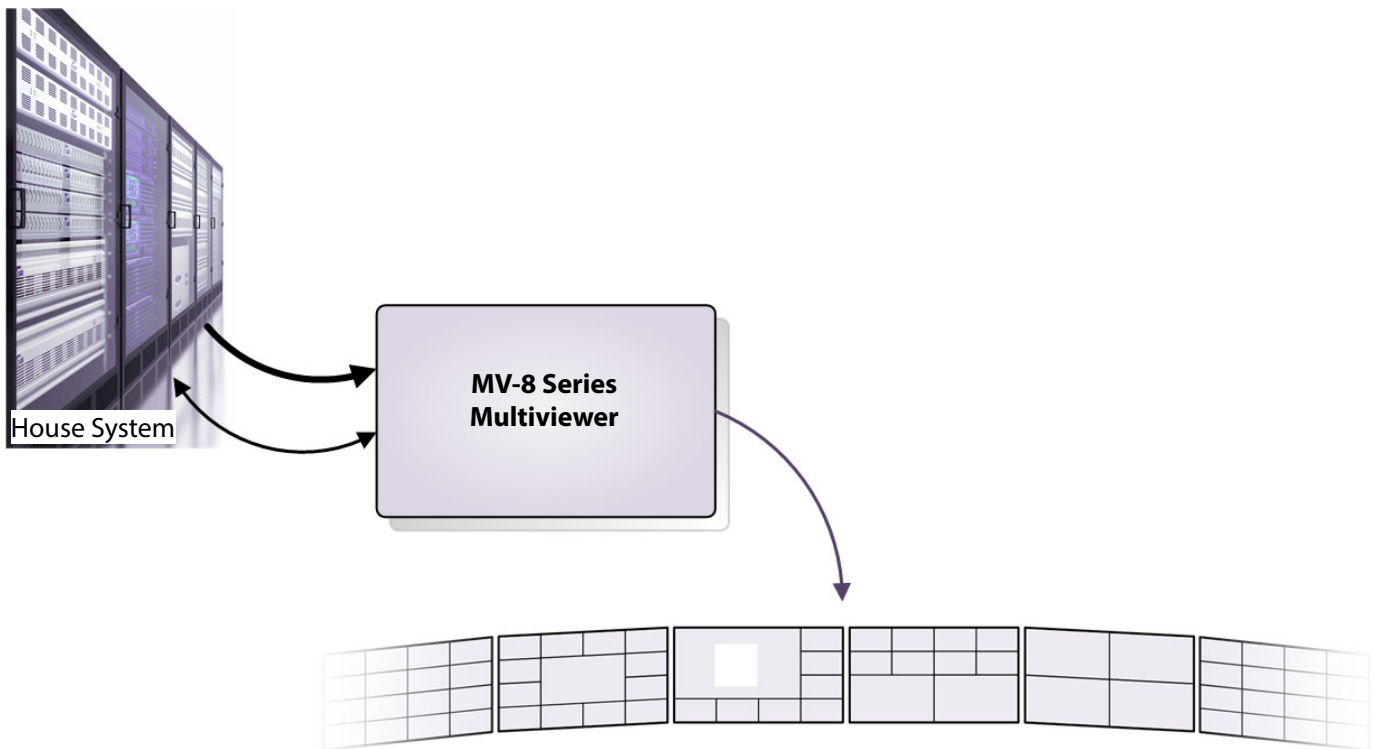
Step 2: Further Unit Configuration

Fig. 8-7: Further Configuration - Multiviewer Connected to House System

Step 2.1: Connecting into House System

Following initial configuration, the MV-8X0/MV-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/MV-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/MV-8X1 Multiviewer product's rear panel. This is required for optimum MV-8 Series Multiviewer performance.
>
> Explanation:
>
> > An MV-8X0/MV-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 RollCall templates, as required. RollCall templates for the MV-8 Series Multiviewer are describe in RollCall Templates, on page 13.

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 (Output 1 to 4), see Figure 8-8.
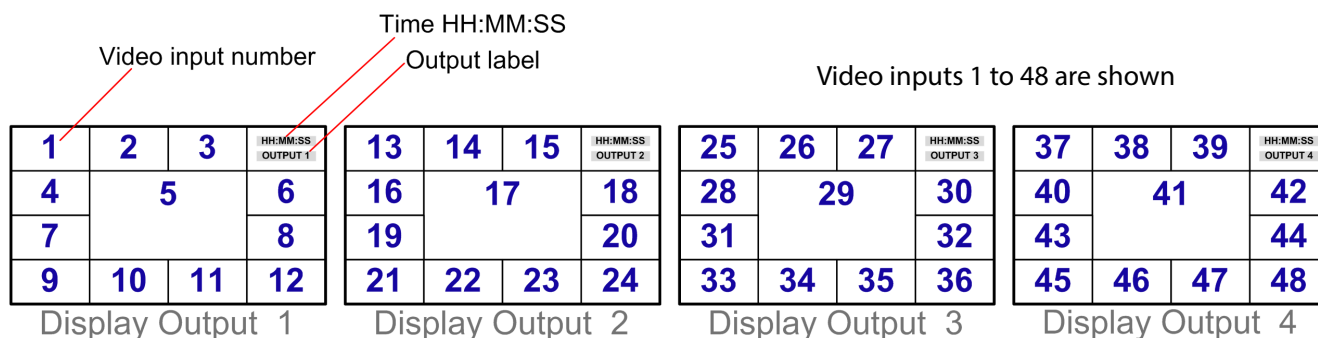

Fig. 8-8: MV-8 Series Multiviewer Default Video Wall on Multiviewer Head Display Outputs 1 to 4

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** template. (See Layout Template, 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 8-9.
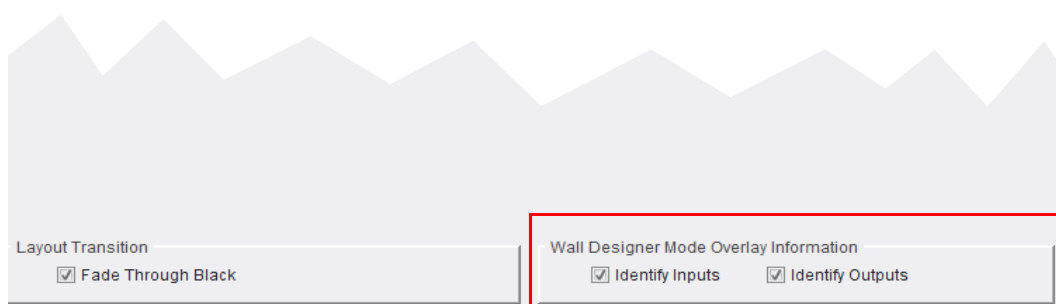
Fig. 8-9: Layout Template - Multiviewer Display Output Overlays

Step 2.2: Further Unit Configuration

Further settings changes can be done at any time. All further MV-8 Series Multiviewer configuration settings can then be set up with RollCall Control Panel. However, settings changes done in the **System-Setup** template *will* need a System Reset. See Settings Changes and System Reset, on page 15.

CAUTION

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

IMPORTANT

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

Such a reset will affect all MV-8X0/MV-8X1 Multiviewer product's connections, including the multiviewer outputs. See "System Reset" box, on page 18.

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

Note: **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.

Note: **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.

Step 3: Orbit Multiviewer Project

After the MV-8 Series Multiviewer unit is configured, the default Orbit multiviewer project may be pulled from the unit, modified and pushed back to the unit. This section demonstrates how to make a simple and visible change to the video wall.

Note:	For full instruction on creating video walls etc., please refer to Orbit documentation.

The section contains:

Introduction

This section will:
- Get the Orbit multiviewer project from the MV-8X0/MV-8X1 Multiviewer unit (= the default MV-8 Series Multiviewer Orbit project for a new, factory unit).
- Make a simple, visible change to the video wall.
- Push the amended project back to the unit.
- See changed project working on-screen.

And finally, it describes how to:
- Pull a project from a MV-8X0/MV-8X1 Multiviewer unit.

Assumptions

This section assumes that:
- The MV-8X0/MV-8X1 Multiviewer is:
  - running;
  - connected to a control Ethernet network; and
  - receiving/sending video IP streams.
- IP addresses of the MV-8X0/MV-8X1 Multiviewer Ethernet interfaces are known.
- Grass Valley Orbit is installed on a client computer connected to the control network. (**Note:** Access to an Orbit license is not required for basic Orbit operation.)

STEP 3.1: Pull the Orbit Multiviewer Project from the Unit

To get the MV-8X0/MV-8X1 Multiviewer unit's Orbit multiviewer project:
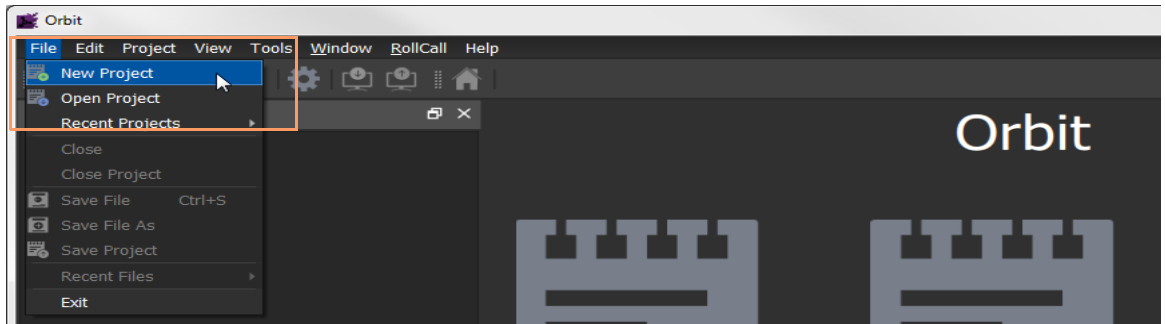
1 Run Orbit and click **File > New project**,

Fig. 8-10: Orbit File > New Project

2 Select **Connected Multiviewer Project**.

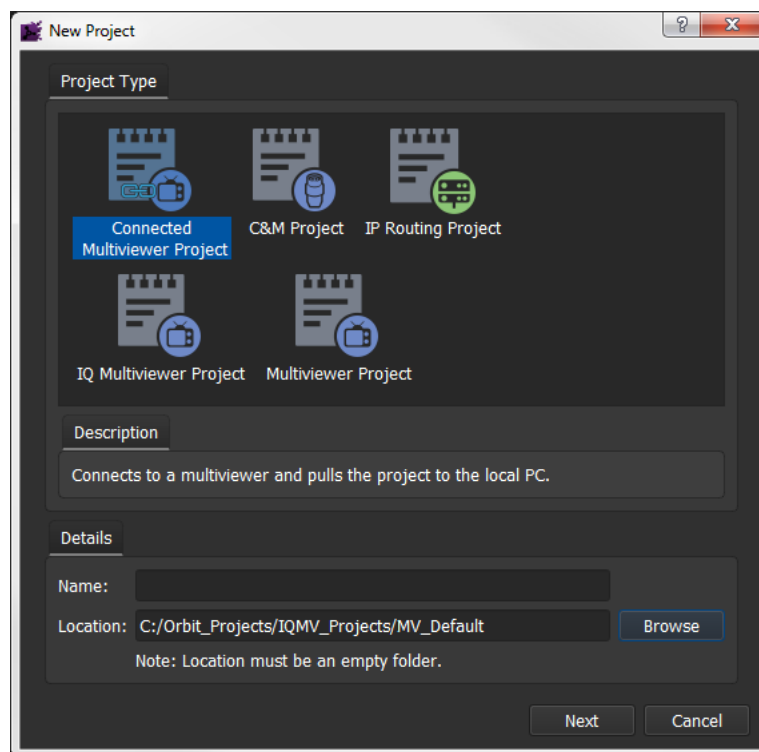3 Browse *into* a new, empty folder and click **Choose**.

Fig. 8-11: 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 RollCall+ data packets being present on the network. Ensure these are supported by the house network system. Contact Grass Valley customer support for further information.
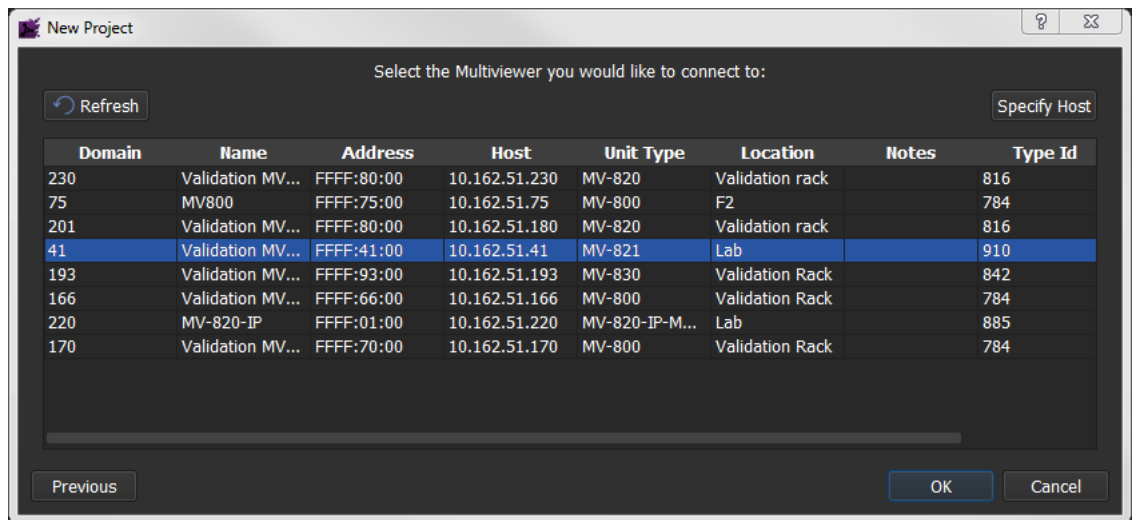
Fig. 8-12: New Project Dialog - Multiviewer List

5   Select a device in the list and click **OK**.

To enter device details manually, if a device is not listed, then:

6   Click **Specify Host** and enter the device's RollCall **domain** number and **IP address**.

7   Click **Refresh**.

8   Select the device in the new list and click **OK**.
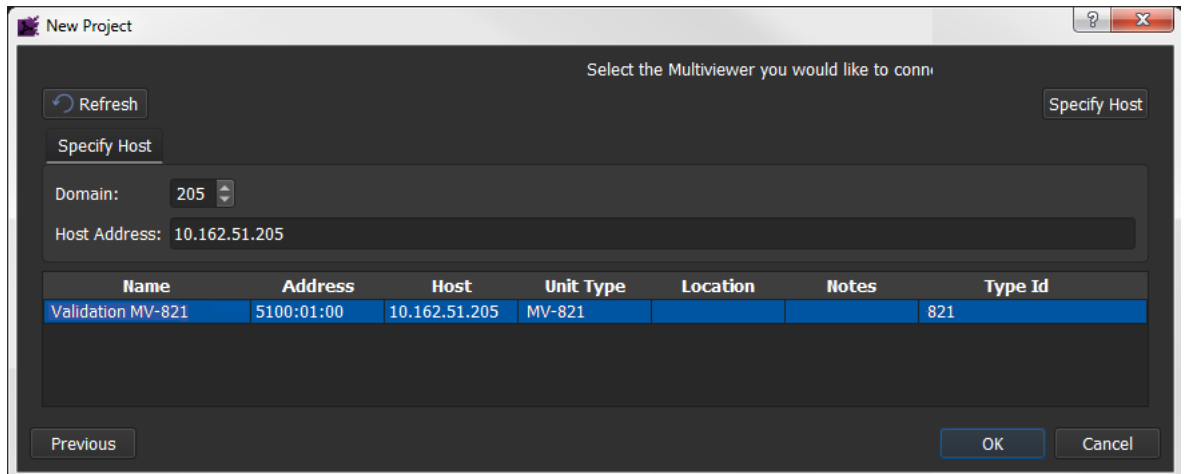
Fig. 8-13: New Project Dialog - Multiviewer List

Orbit connects to the device and pulls the Orbit multiviewer list from the device.

9   At the login dialog, enter the appropriate project **Username** and **Password**.
    Note: For a default project on a new, factory unit, this is 'admin' and 'admin'.
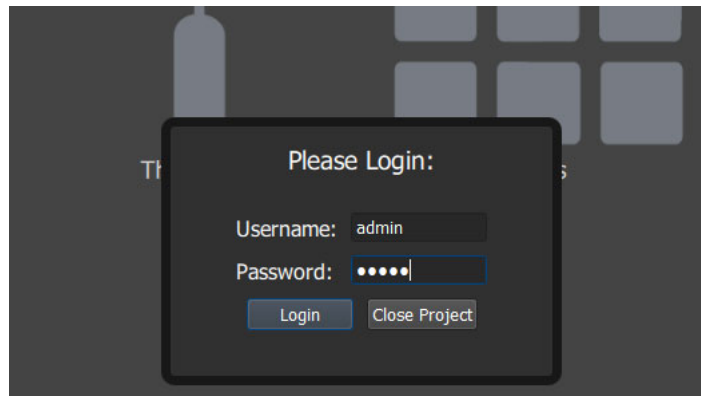
Fig. 8-14: Login Dialog

10 Click **Login**.

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

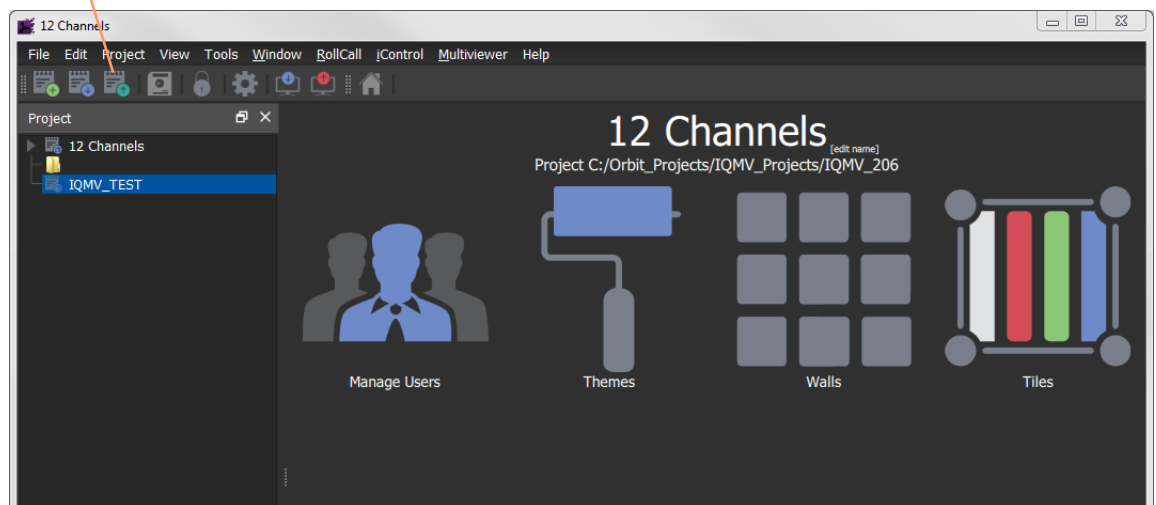|	
Note:	For information about setting up and changing passwords for an Orbit project and also about managing Orbit users, see the 'Orbit Introduction' user manual, 'Manage Users' section.

Save Project icon

Fig. 8-15: Example Project Open in Orbit

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

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

STEP 3.2: Quick Edit of Project

To make a visible change to the project:

1 Click the large **Walls** icon and select a wall item in the list, for example, 'Output 1'. See Figure 8-18.

The selected wall is opened in a Wall Editor. See Figure 8-19.
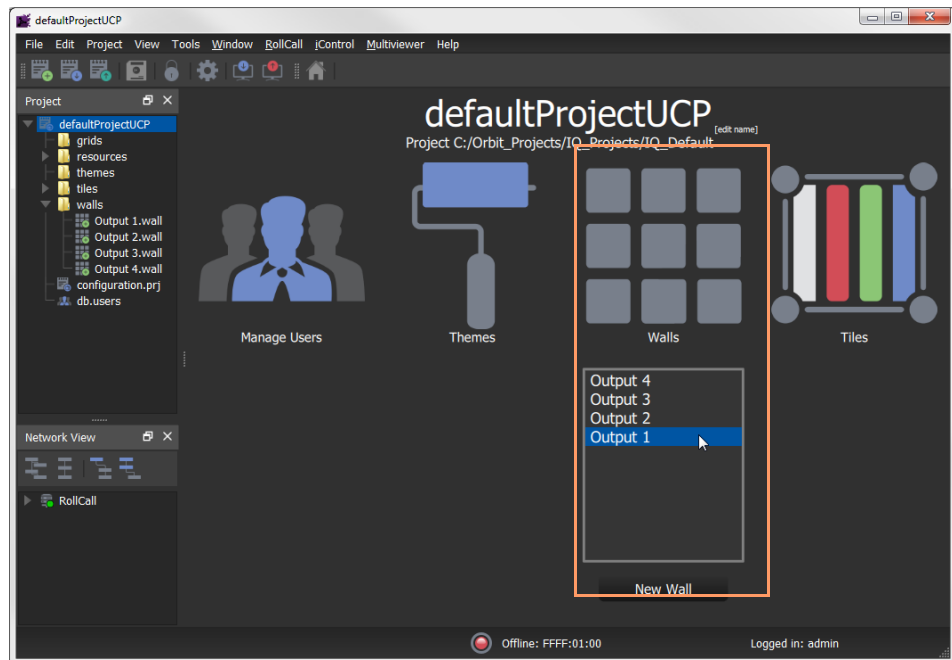
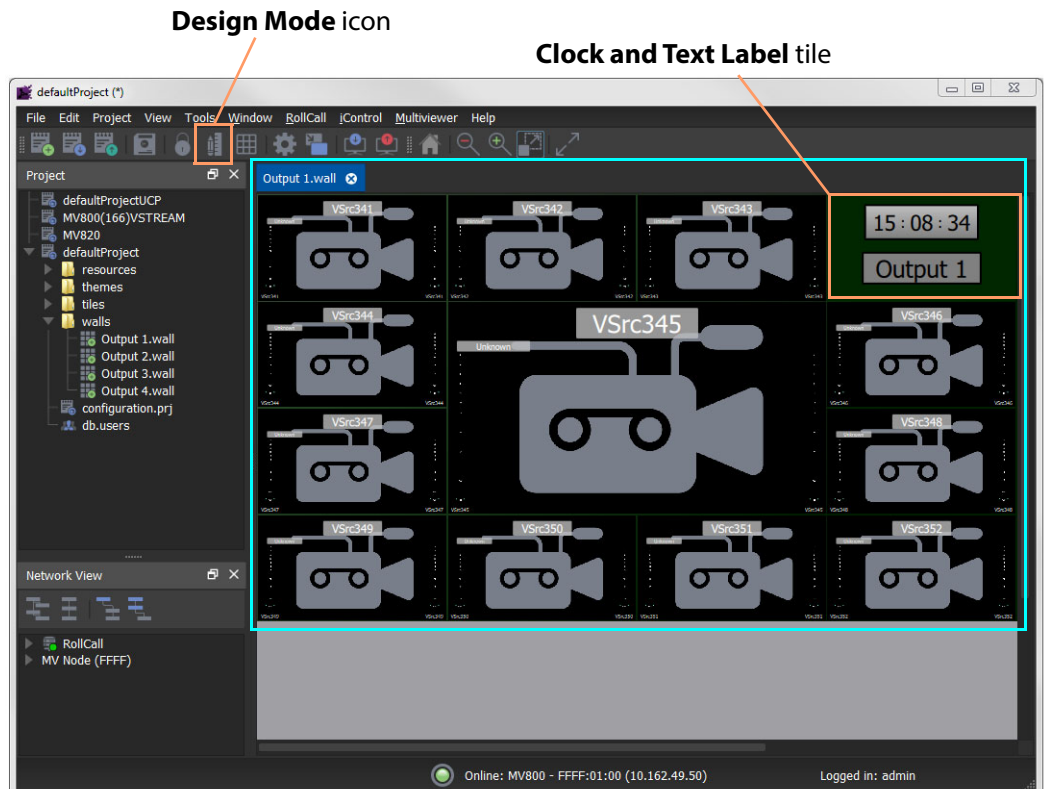*Fig. 8-16: Project Open in Orbit*

Design Mode icon

Clock and Text Label tile

Fig. 8-17: Wall Editor in Run Mode

Figure 8-17 shows the 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 8-17.)
   Orbit enters **Design Mode**. See Figure 8-18.
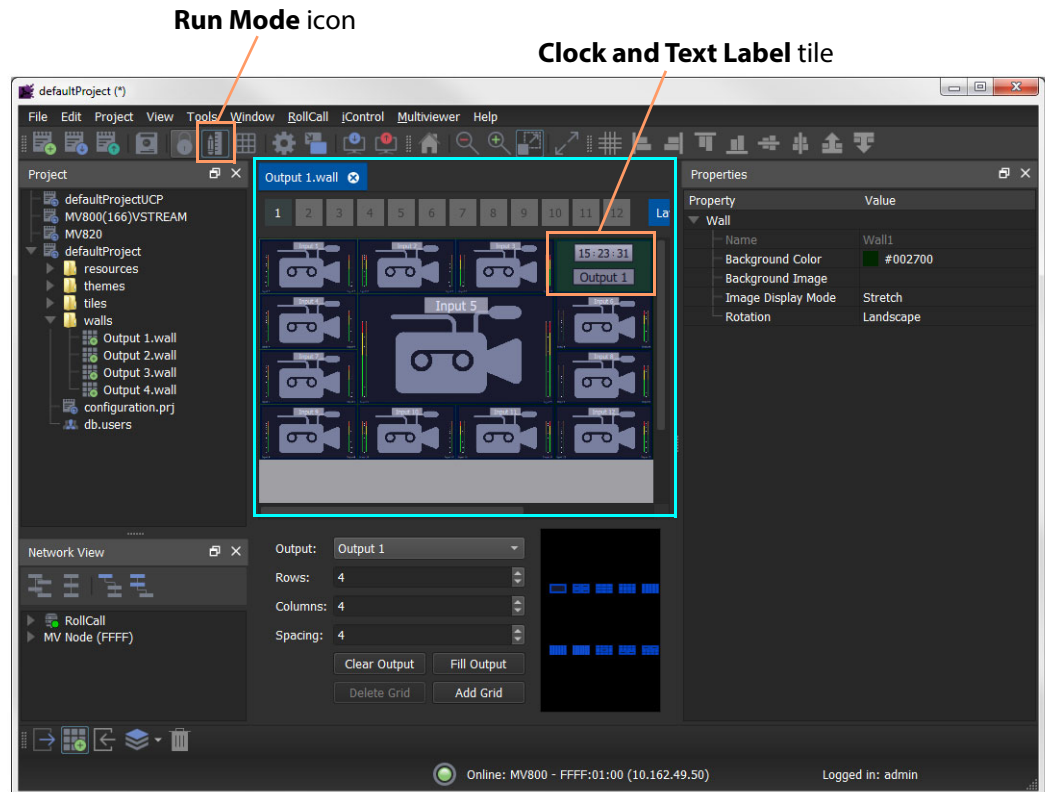
Fig. 8-18: Wall Editor in Design Mode

> 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 8-19.

Background Color tile property   ... icon
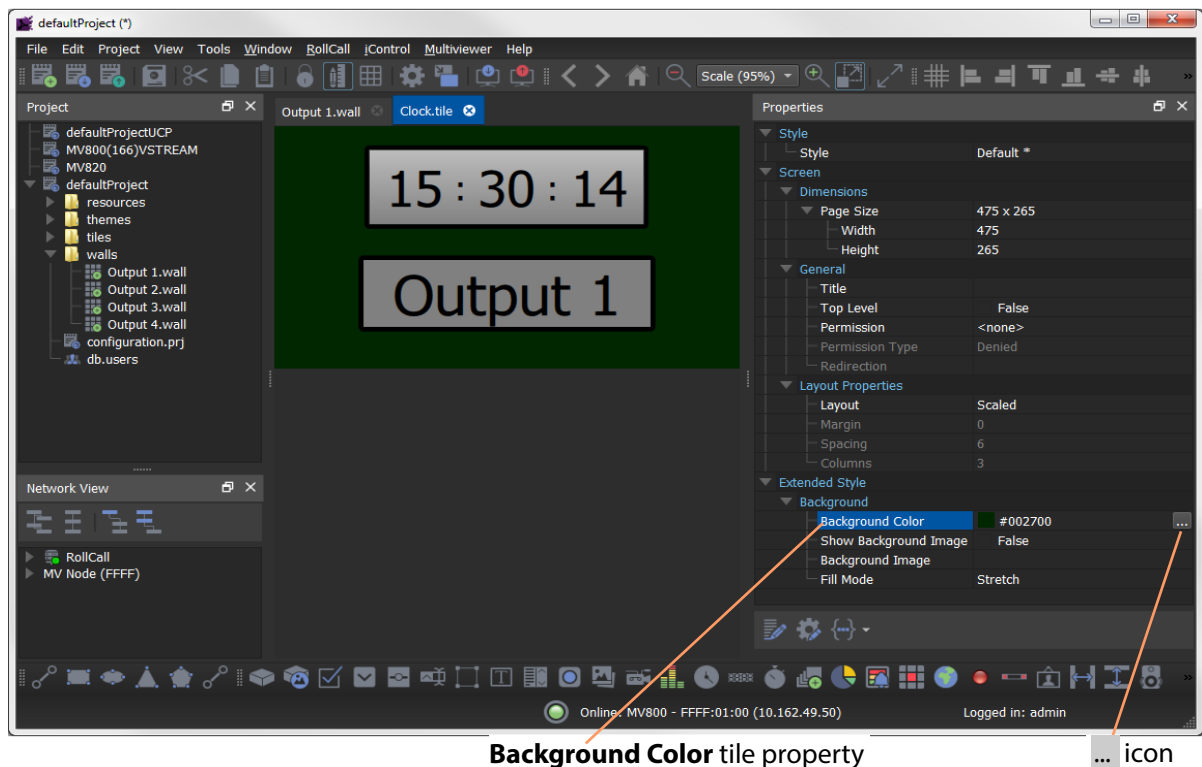
Fig. 8-19: Tile Editor

To make a change to the tile:

4 Click on the tile background.

5 In the **Properties** box, select the 'Extended Style > Background Color' property.

6 Click on the ... icon to show the **Background Color** dialog. See Figure 8-20 on page 71.
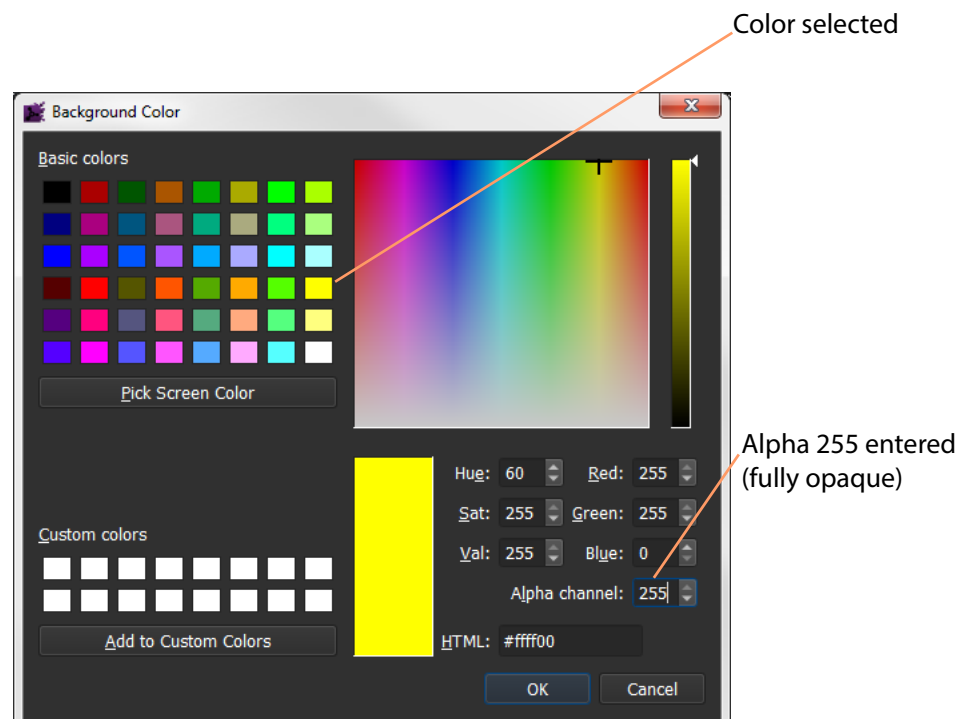
7 Select a color and click **OK**.

Color selected

Alpha 255 entered
(fully opaque)

Fig. 8-20: Color Picked

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

Click to **Save File**

Click to **Save Project**

Click **x** to close tile
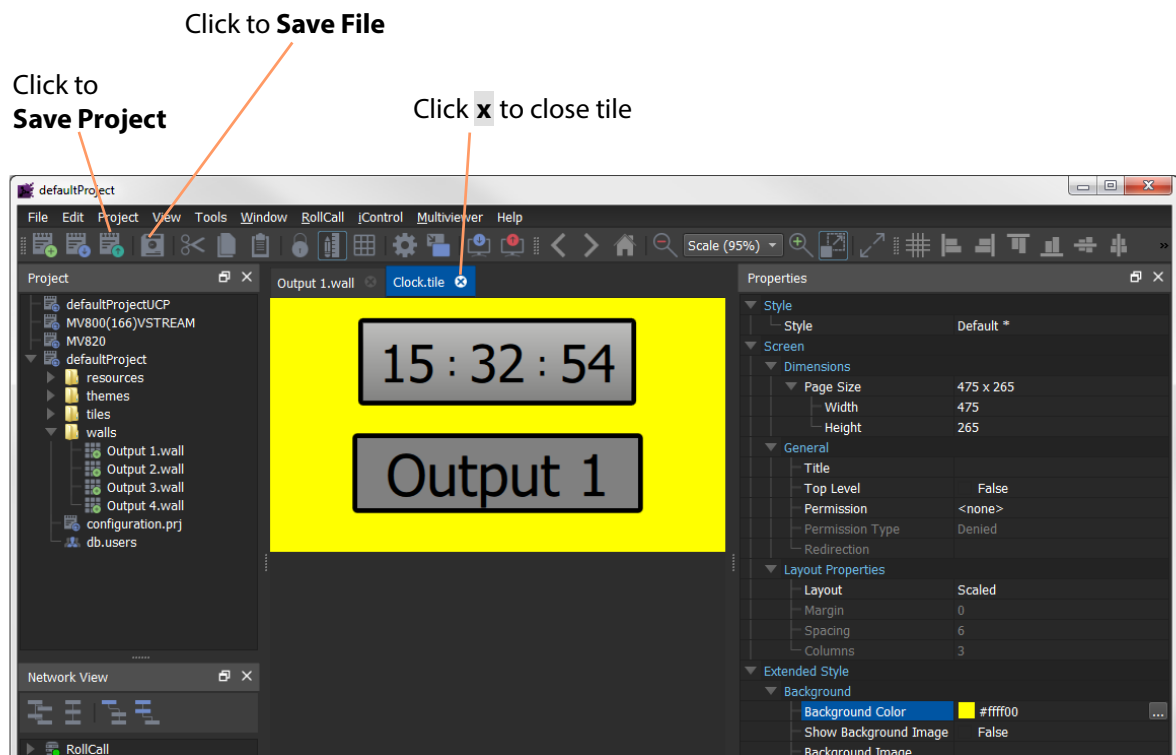
Fig. 8-21: Tile with New Background Color

9 Click on the **x** on the tile tab to close the tile.

10 Click on the **Save Project** icon in the main tool bar to save all changes.
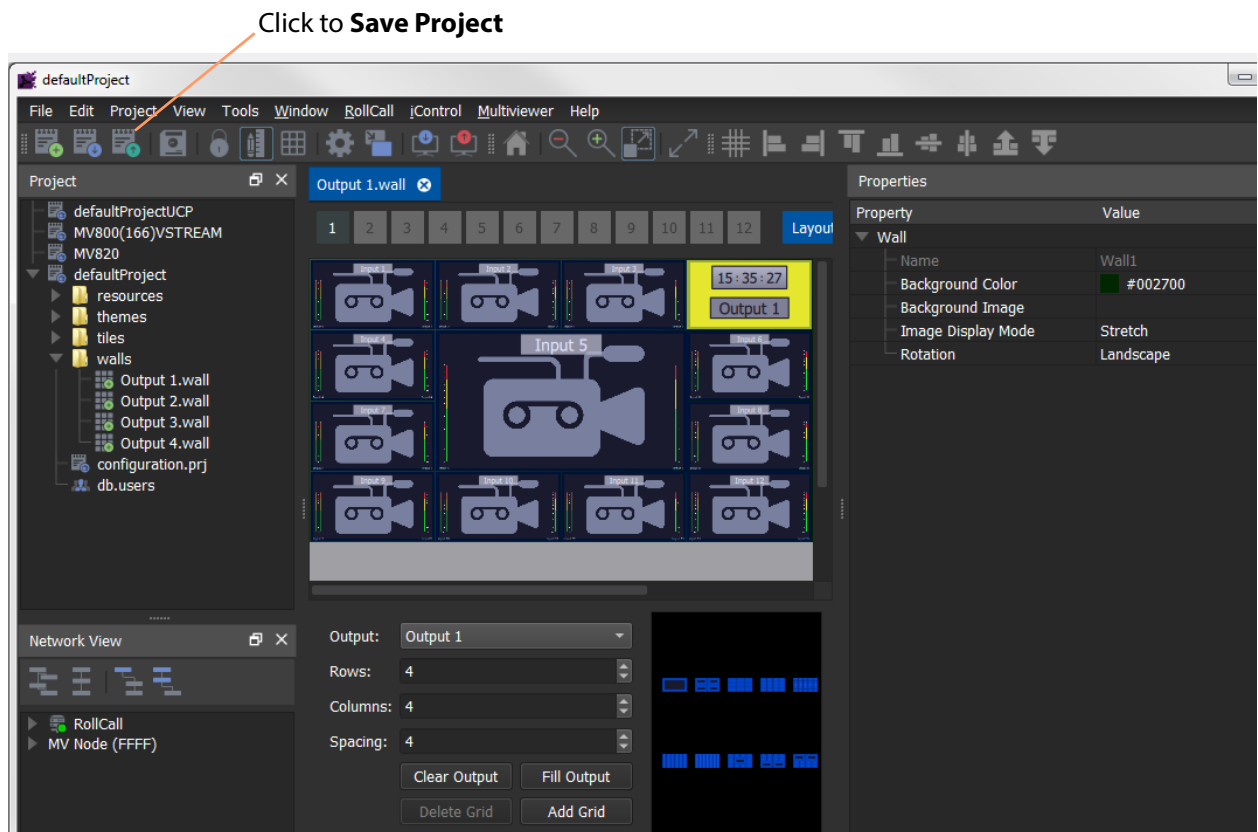
Click to **Save Project**

Fig. 8-22: Changed Wall 1

STEP 3.3: Push a Project from Orbit to a Unit

To push a project from Orbit onto a multiviewer:

1 Open a project in Orbit and click **Multiviewer > Properties**.

2 Orbit projects store which multiviewer unit they came from.
If the multiviewer details are correct, then proceed;
however, if the details require changing, enter the target device's:

  · IP address;

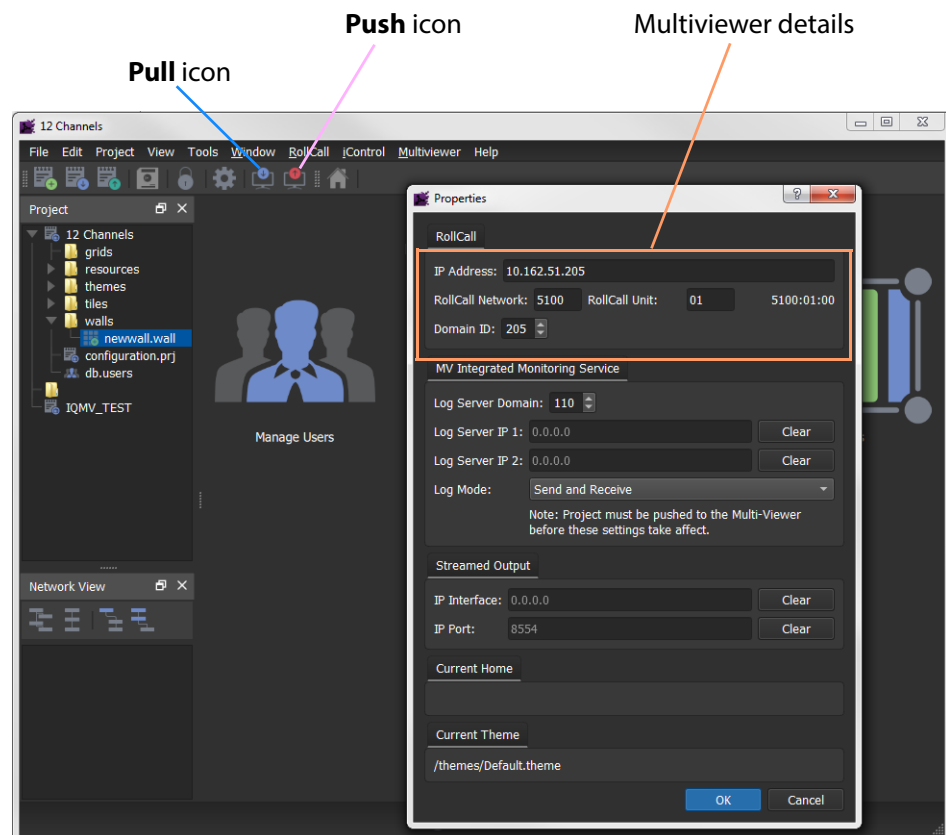 · RollCall network number and unit number; and

  · Domain ID.

Click **OK**.

Fig. 8-23: Pull/Push Icons and Multiviewer > Properties Dialog

To push a project from Orbit to the device:

3 Click the **Push** icon in the main menu.

4 Select the project in the **Choose Projects** dialog (see Figure 8-24)
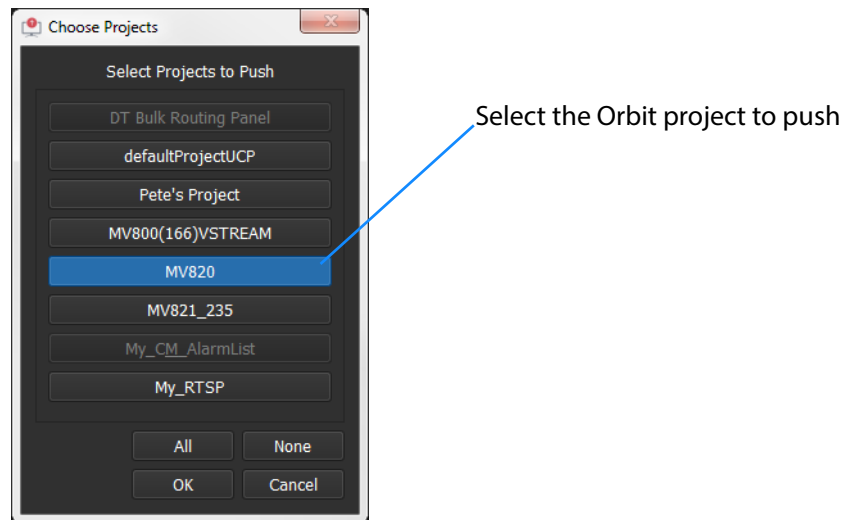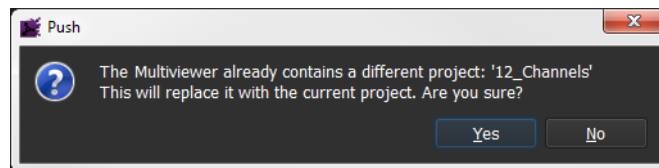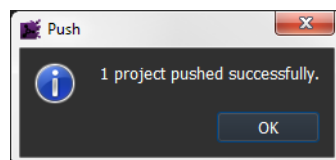and click **OK**.
The project is pushed to the device.

Fig. 8-24: Choose Projects Dialog

If the MV-8X0/MV-8X1 Multiviewer unit already has a project of the same name, then a dialog is shown (see Figure 8-25a). Click 'Yes' to overwrite with the project from Orbit.

When the push is complete a 'pushed successfully' message is shown. See Figure 8-25b.

a) Push Message

b) Push OK.

Fig. 8-25: Push Messages

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

Pull a Project into Orbit from a Unit

This may be useful when 'getting started': To pull a project into Orbit from a MV-8X0/MV-8X1 Multiviewer unit:

1 Open a multiviewer project in Orbit and click **Multiviewer > Properties**.

2 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.

4 Select the project in the **Choose Projects** dialog (see Figure 8-26) and click **OK**.
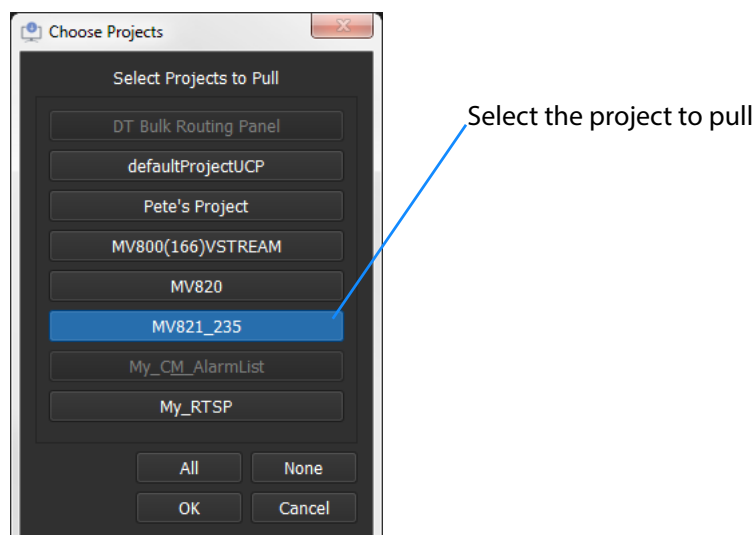The project is pulled from the device.

Select the project to pull

Fig. 8-26: Choose Projects Dialog

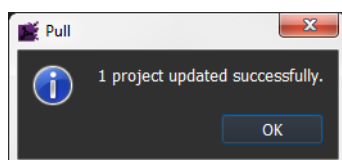5 When the pull is complete a 'pulled successfully' message is shown. See Figure 8-27.

Fig. 8-27: Pull Message

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

Multiviewer Video Wall

9

Multiviewer video wall layouts are designed and managed with the Grass Valley Orbit application.

Please refer to the published Orbit documentation for instruction about how to use Orbit in multiviewer applications.

This manual assumes the reader is familiar with the Orbit software and only outline information is given.

Basic Video Wall

Multiviewer video wall layouts are designed with the Grass Valley Orbit application and are called 'Orbit projects'. These multiviewer projects can be pushed to a multiviewer to be deployed and the video wall can be viewed on monitor displays.

The form and appearance of a video wall design on a multiviewer device may be changed through layouts and themes.

Procedure:

The procedure for video wall design and deployment is similar for Grass Valley's MV-8 Series of multiviewers. For Orbit instruction and details on using Orbit for multiviewer wall layouts, see the published "Orbit - Introduction" and "Orbit for Multiviewers" user manuals. A 'basic video wall' is described in the Orbit documentation and includes:

•	**Initial Screen**	Orbit Initial screen.
•	**New Project**	Creating a new project:
		Multiviewer Project
		Connected Multiviewer Project
•	**Existing Project**	Opening an existing project.
•	**Recent Projects**	Opening a recent Orbit project.
•	**Project Home Screen**	The Orbit project home screen.
•	**Basic Wall**	Using Orbit to create a basic video wall layout for an MV-8 Series Multiviewer.
•	**Wall Layouts**	Demonstration of different wall layouts within the same Orbit multiviewer project.
•	**Wall Themes**	Demonstration of applying different themes to the same wall layout.

Configuring Alarms

Alarms can be configured on multiviewer inputs and for the multiviewer unit itself. Alarms are set up using the Grass Valley Orbit software. When a multiviewer project is open in Orbit, Alarms can be set up via the Multiviewer menu bar item.

Unit Alarms

Unit alarms are not related to any one multiviewer input. The configuration dialog is accessed in the following way:

1. Click **Multiviewer > Unit Alarms**.
   A dialog box, Figure 9-1, shows the possible unit alarms, see Table 9-1:.

2. Click on an alarm name in the **Select Alarm** box, to select an alarm.
   The corresponding properties are shown.
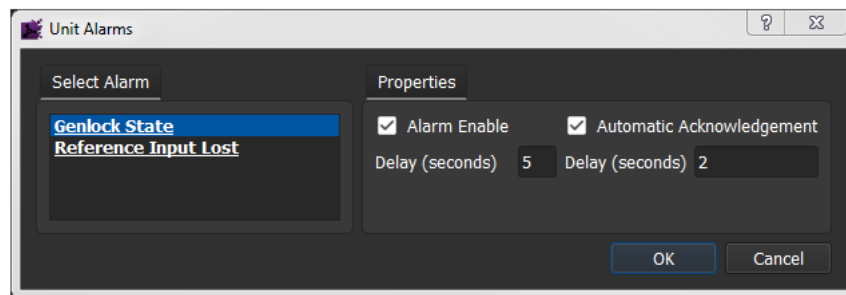
3. Unit alarm properties are described in Table 9-2:.

Fig. 9-1: Grass Valley Orbit - Multiviewer Units Alarms

Table 9-1: Unit Alarms

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

Table 9-2: 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.
Delay (seconds)	text box. The time in seconds from when the alarm occurs to when it is automatically acknowledged by the multiviewer system. Set a delay here to allow an alarm to flash and be displayed for a short time before being automatically acknowledged.

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

Input Alarms

Various alarms can be set up for each multiviewer input. It is possible to set up alarms on one
input and then to copy those alarm settings to other inputs.

Setting Up Alarms on One Input

1   Click **Multiviewer > Input Alarms**.
The **Alarms** window is shown.

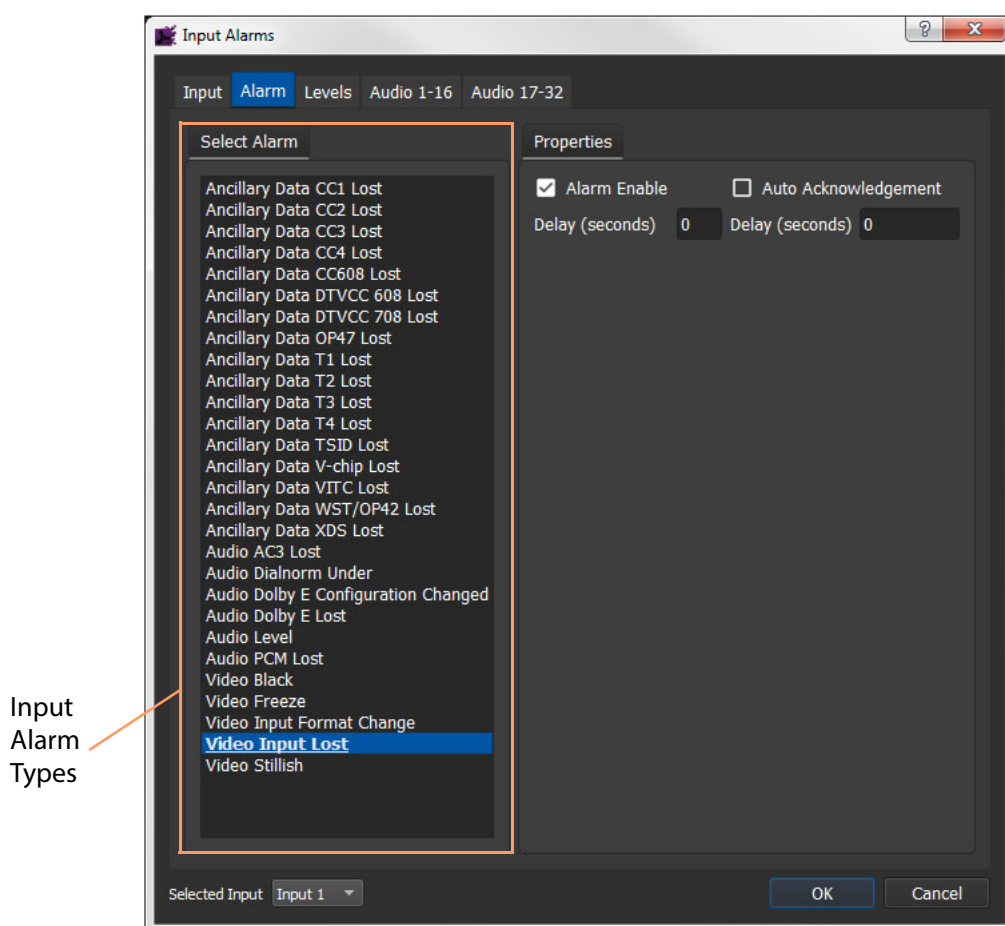2   Set **Selected Input** to 'Input 1'.
Select the **Alarm** tab.

Fig. 9-2: Grass Valley Orbit - Multiviewer Alarms window, Alarm tab.

Figure 9-2 lists the input alarm types.

3   Click on the **Video Input Lost** alarm name to select it.
The alarm properties appear in the Properties box.

4   Select **Alarm Enable**.
The alarm name (Video Input Lost) is shown <u>**underlined and bold**</u> in the list of alarm types,
indicating the alarm is enabled on the selected input.

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

Note:	Some alarms have further settings and parameters; this is indicated by text in the properties box.
	For example, for the Audio Level alarm, the properties box text indicates that configuring of levels and channel alarms is done in separate tabs.

5 Select the **Audio Level** alarm.
Select **Alarm Enable**.

6 Click on the **Levels** tab.
The Levels tab allows setting up of some audio levels. See Figure 9-3.
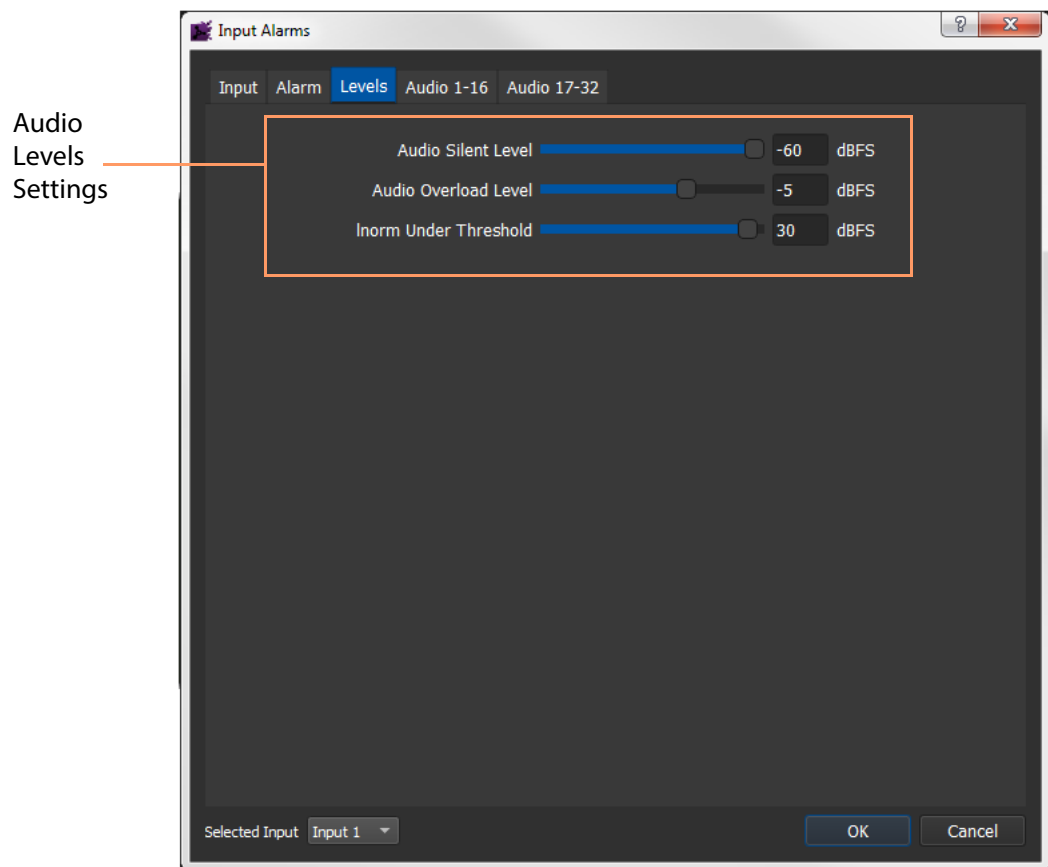
Fig. 9-3: Orbit - Multiviewer Input Alarms window, Levels tab.

7 Click on the **Audio 1-16** tab or the **Audio 17-32** tab.
The **Audio Channels** tabs (**Audio 1-16** and **Audio 17-32**) allow various audio alarms to be enabled on individual audio channels (audio channels 1 to 32 inclusive) relating to the multiviewer video input selected. See Figure 9-4.
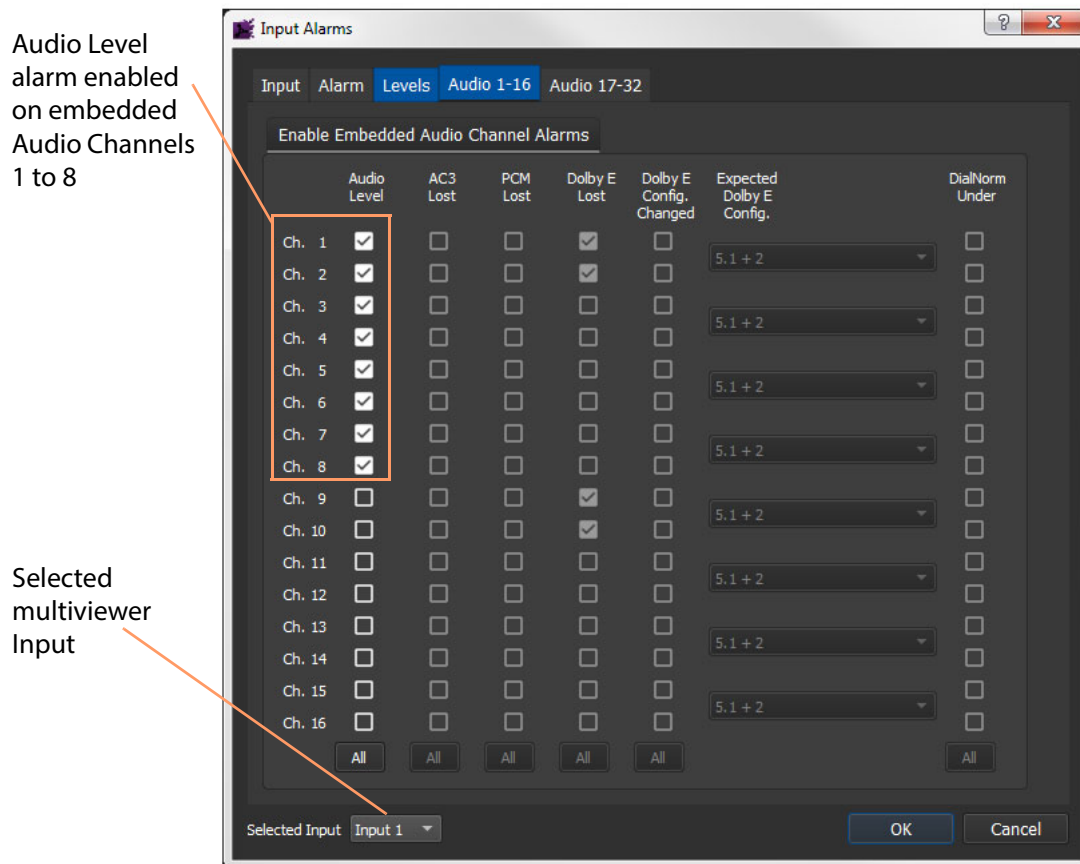
Audio Level
alarm enabled
on embedded
Audio Channels
1 to 8

Selected
multiviewer
Input

Fig. 9-4: Orbit - Multiviewer Alarms window, 'Audio 1 - 16' tab.

Alarms have now been set up for Multiviewer Input 1 (the **Selected Input**).

Copying Alarms Settings from Selected Input to All Inputs

To copy the alarm settings of the **Selected Input** to all other channels:

1 Click on the **Input** tab.
   The **Input** tab screen is shown.
2 Click **Copy All**.
   The alarm settings of Input 1 have been applied to all multiviewer inputs.
3 Click **OK**.
   The **Alarm**s window closes.
4 Click the **File > Save Project**, to save the Orbit project so far.

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 (UMD's). 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 83.
- Specify index parameters for each UMD on the video wall.
    See Step 2: Specifying Index Parameters for each UMD in Orbit, on page 84.

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/MV-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.
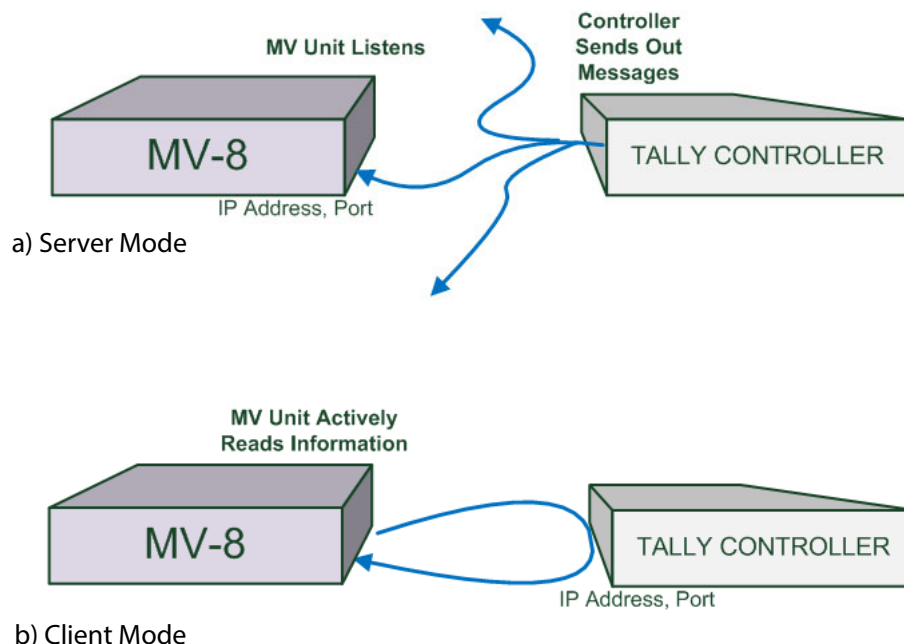   Specify the IP address and network port number of the Tally controller.

Fig. 9-5: 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 template; see TSL Template, on page 33.

Step 2: Specifying Index Parameters for each UMD in Orbit

Use the Grass Valley Orbit 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 Orbit documentation.)

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 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.
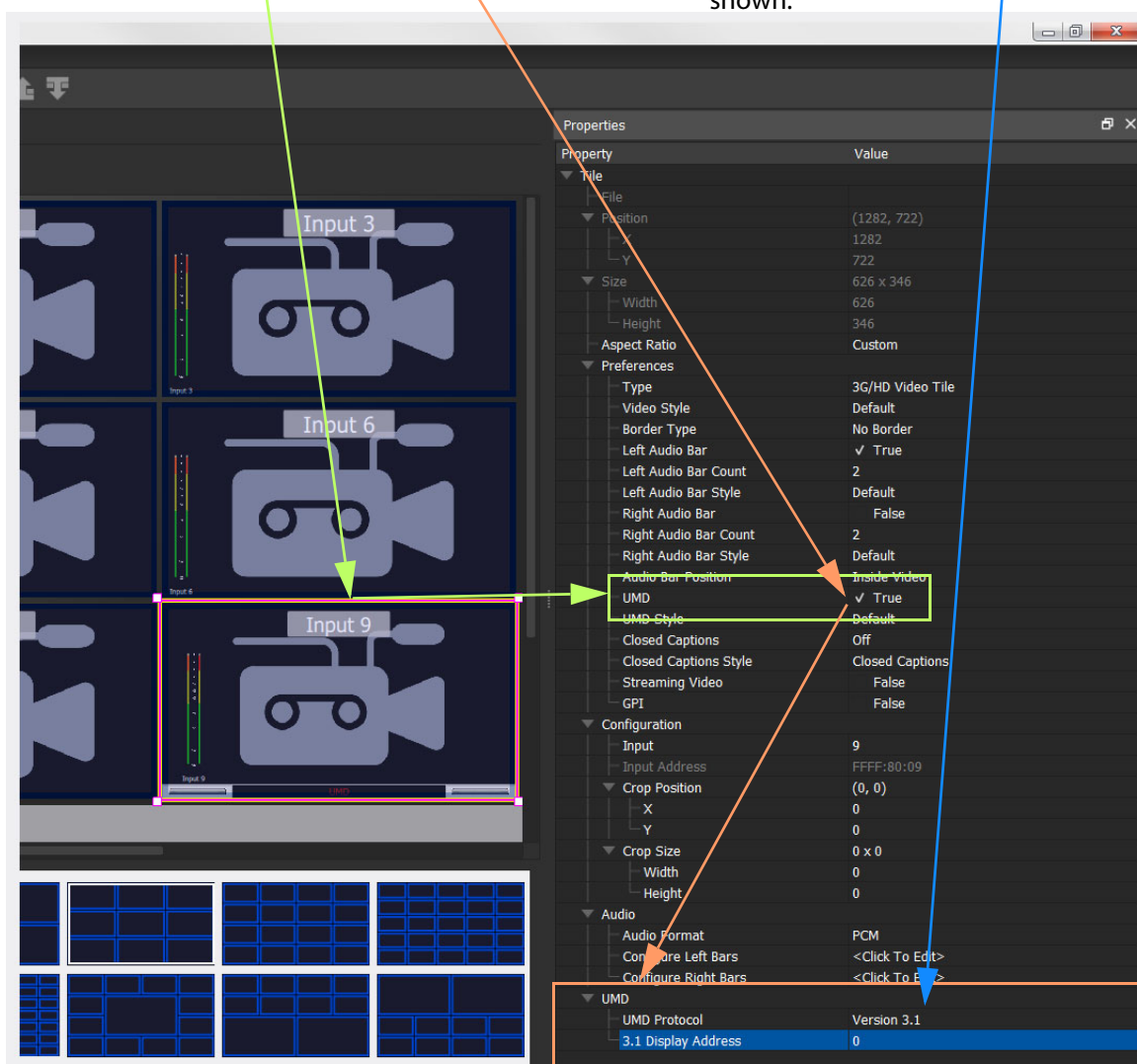

Fig. 9-6: Orbit Video Tile - UMD Widget TSL 3.1 Properties

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.)
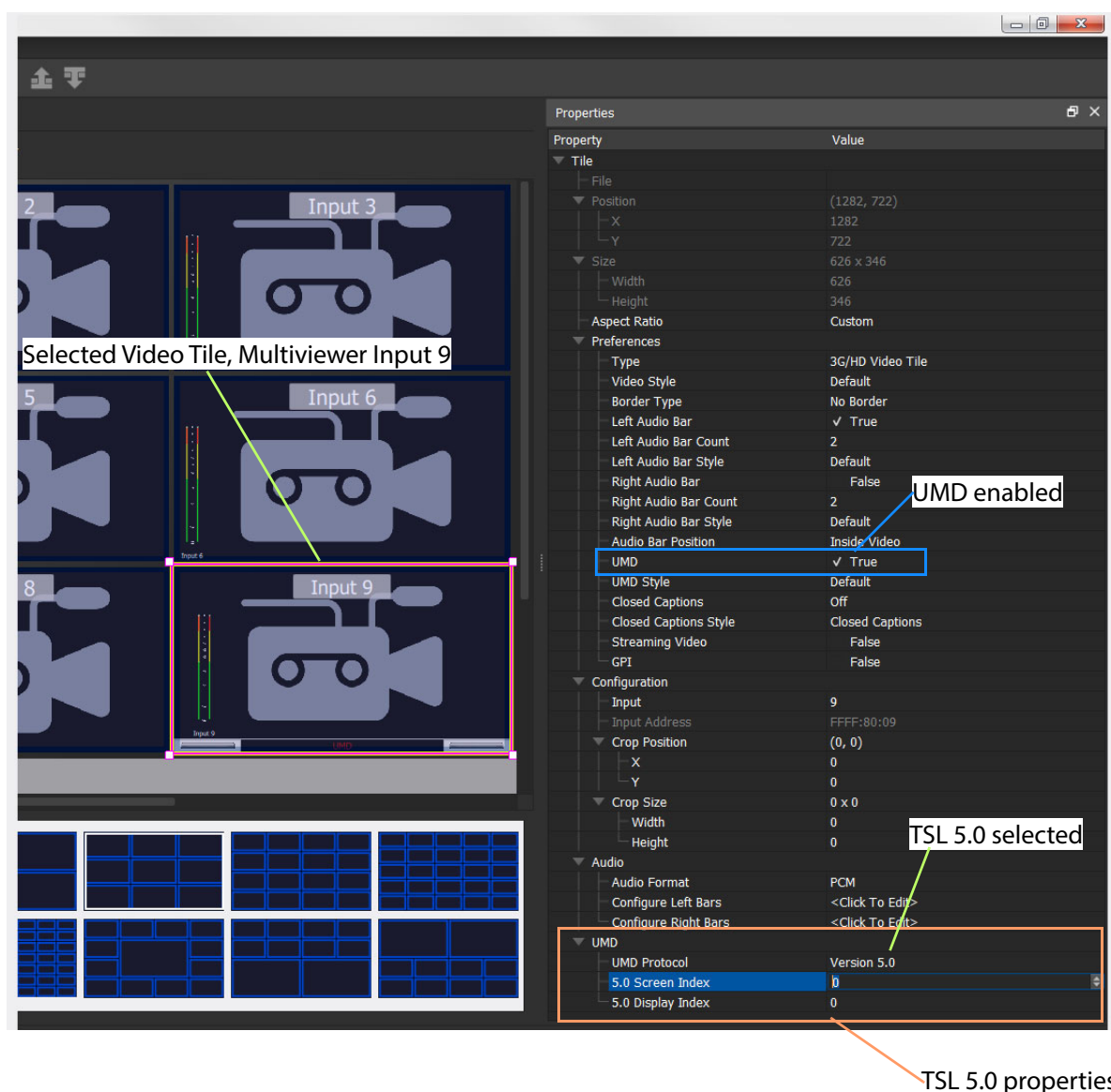
Fig. 9-7: Orbit Video Tile - UMD Widget TSL 5.0 Properties

10 Maintenance

Maintenance

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/MV-8X1 Multiviewer user manuals for details about the control Ethernet interface to use.

Information about an MV-8 Series Multiviewer's software version, serial number etc. is displayed on the RollCall **System - Setup** template.

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 **Serial Number** of a the main card in an MV-8X0/MV-8X1 Multiviewer unit, as 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 88.
- Stage 2: Install License on the MV-8 Series Multiviewer, on page 89.

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 104, 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/MV-8X1 Multiviewer product unit.

(Click the [icon] icon and enter the IP address in the Build Network dialog. Click OK.)
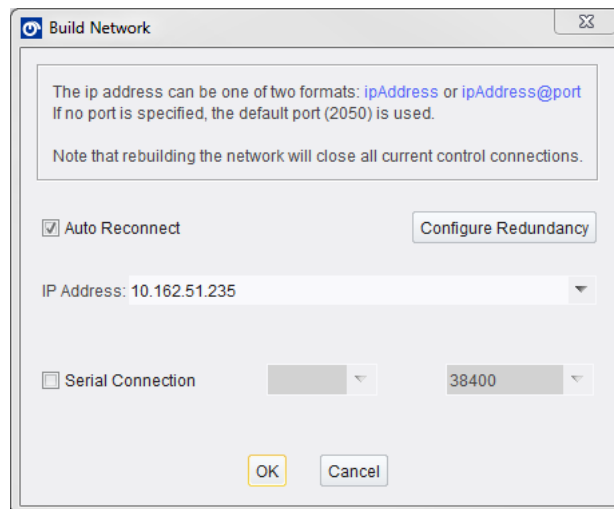
Fig. 10-1: Build Network Dialog in RollCall Control Panel Tool

3 Click the **Edit Licenses** icon [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 10-6.

The license is now added to RollCall Control Panel.

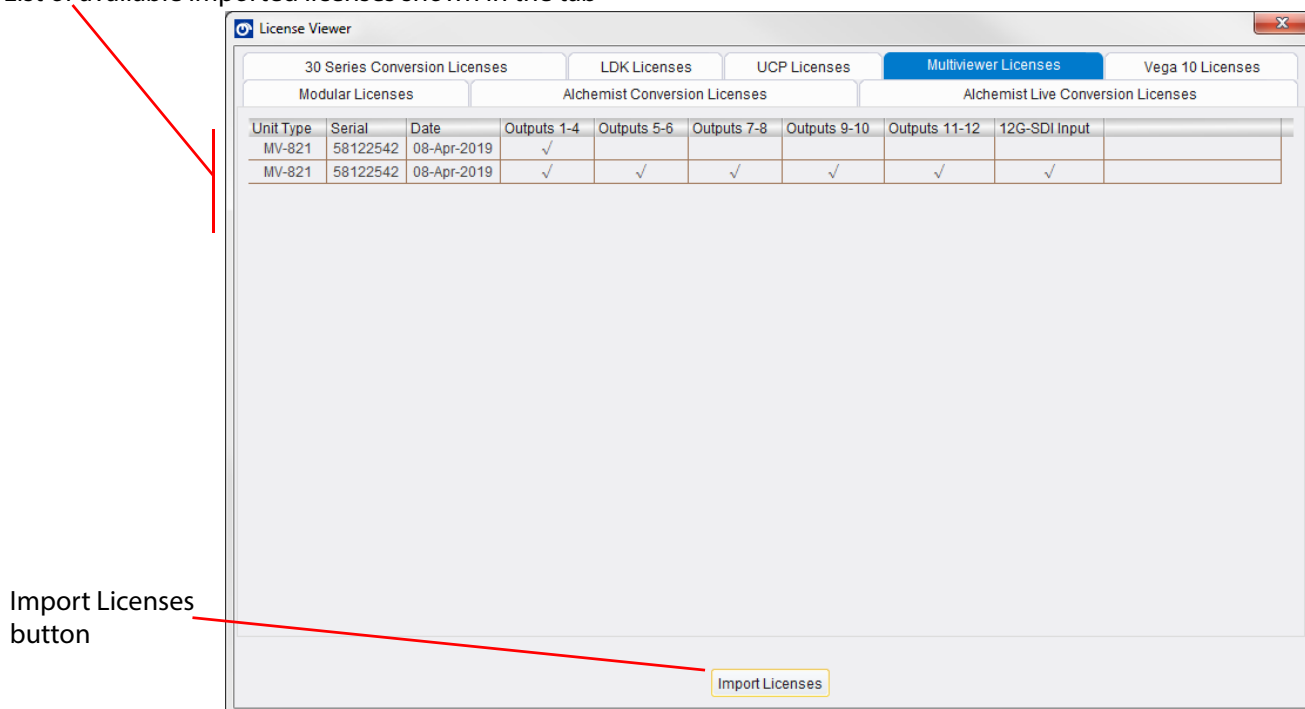List of available imported licenses shown in the tab

Import Licenses button

Fig. 10-2: 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/MV-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**.
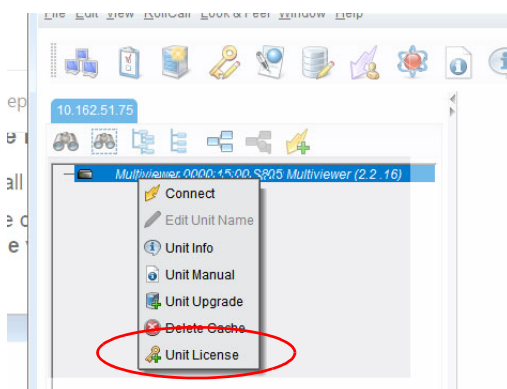
Fig. 10-3: Right-Click Menu - Unit License

2 The **Unit License** window shows current licenses and available licenses. See Figure 10-4.
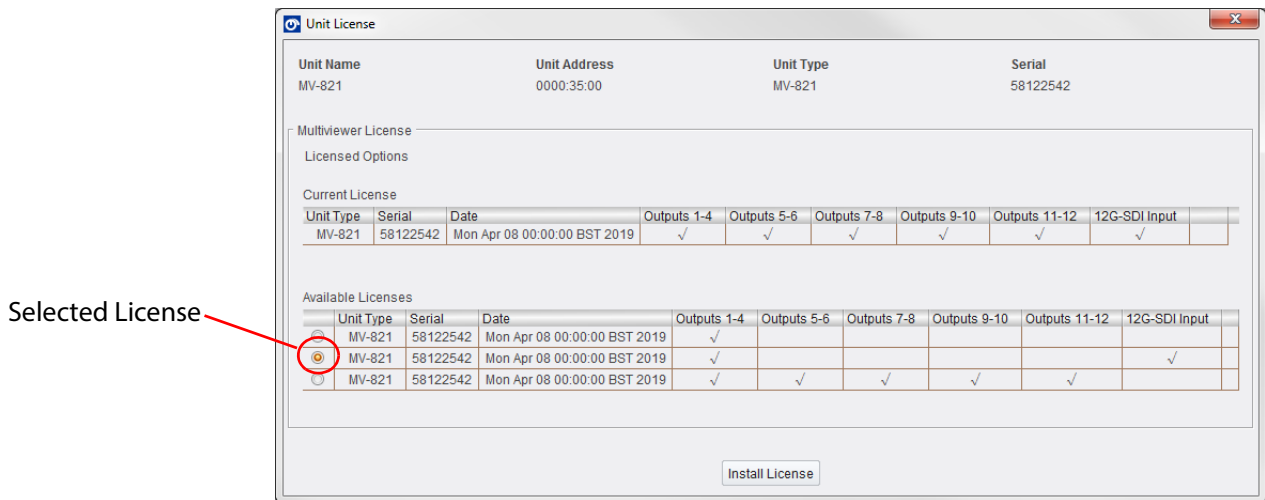
Fig. 10-4: Unit License Dialog - Selected License (An image for MV-821 is shown)

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/MV-8X1 Multiviewer product.
> - Any other Grass Valley MV-8X0/MV-8X1 Multiviewers.
> - Grass Valley Orbit 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 2:** Install the upgrade on the MV-8 Series Multiviewer.
  See

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 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 10-5.
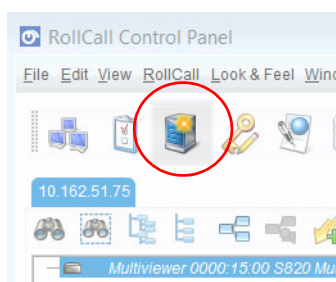 The **RollCall Upgrade Packages** window is displayed.

Fig. 10-5: Import New Upgrade Icon

4   Click the **Import Upgrade Package** button.

5   Navigate into the folder containing the upgrade package.
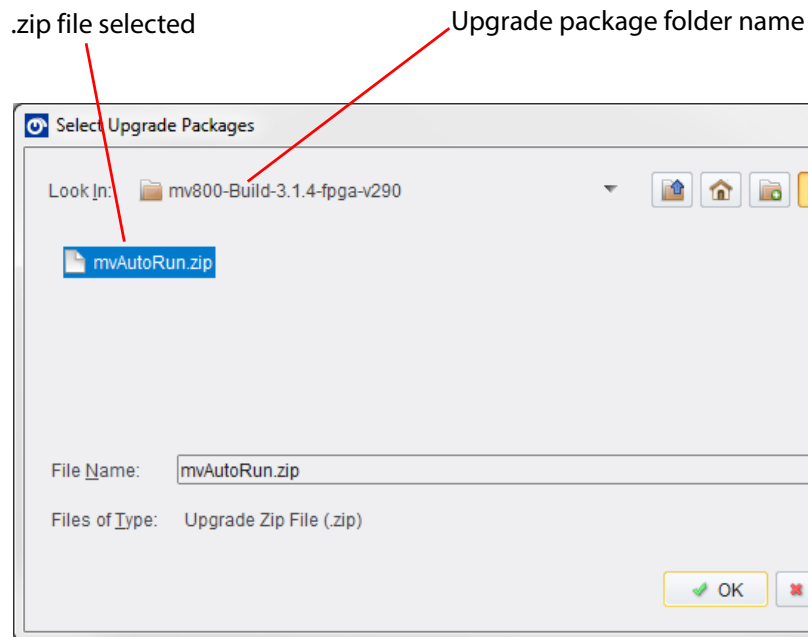   Click on the .zip file name (see Figure 10-6).
    Click **OK**.

.zip file selected   Upgrade package folder name

Fig. 10-6: Select Upgrade Package Window

6   A progress bar at the bottom of the **RollCall Upgrade Packages** window shows the
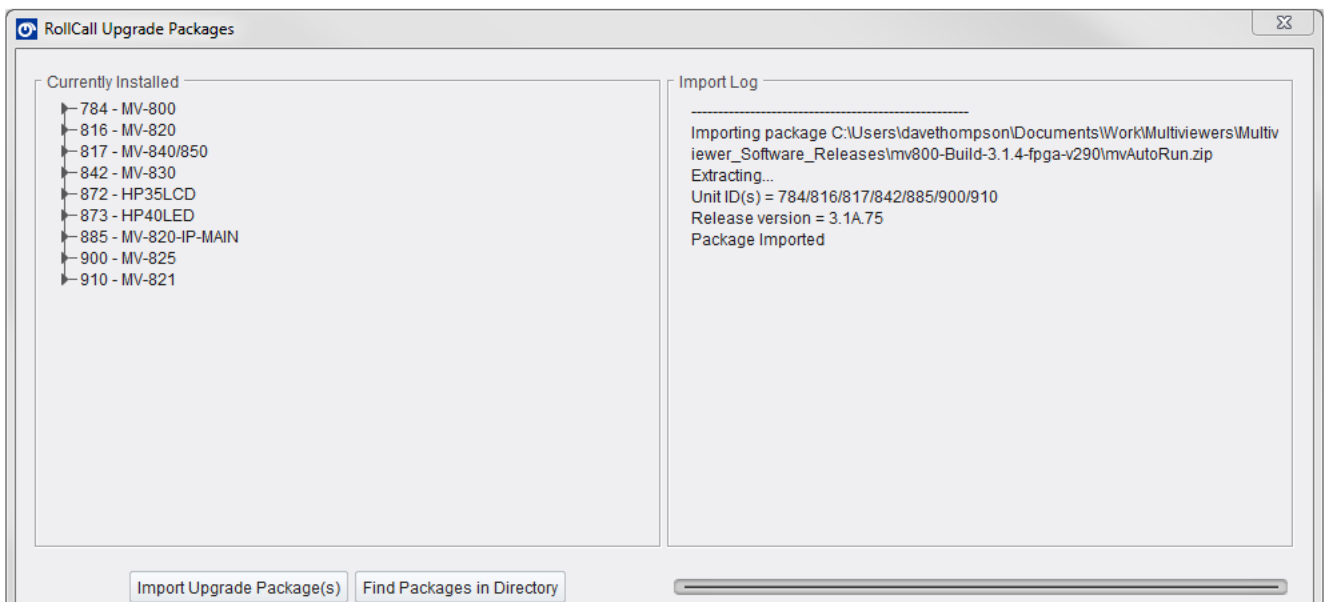   upgrade package import progress.
    Import completion is reported in the **Import Log** pane. See Figure 10-7.

Fig. 10-7: 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 10-8.
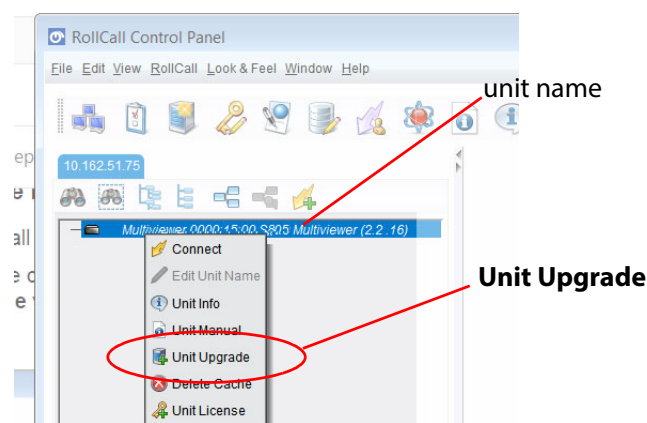
Fig. 10-8: Right-Click Menu

2 Click **Unit Upgrade** in the drop-down menu.
RollCall's **Unit Upgrade** window is displayed.
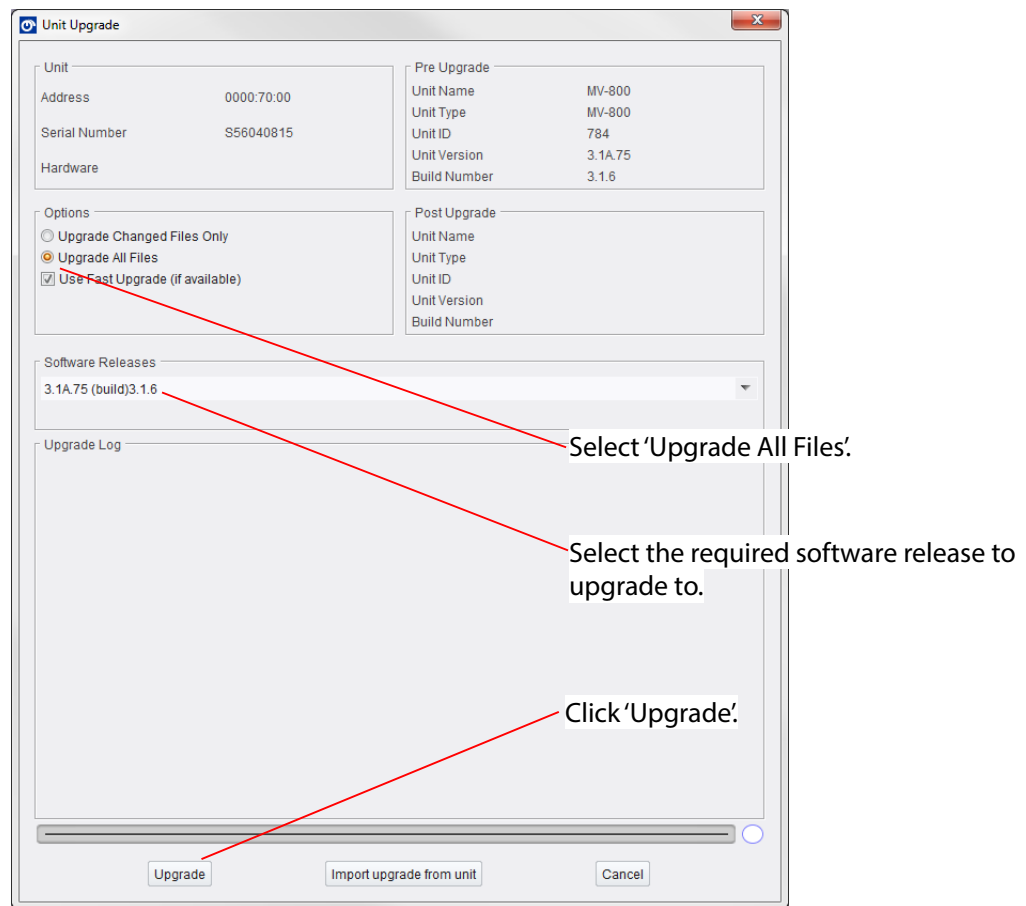
Fig. 10-9: Unit Upgrade Widow

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**.

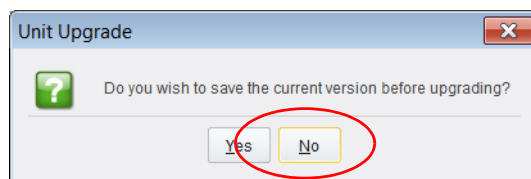6 Click **OK** to upgrade.
   A **Unit Upgrade** dialog is shown.

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

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

Note: (Figure 10-10) "*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 10-10.

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
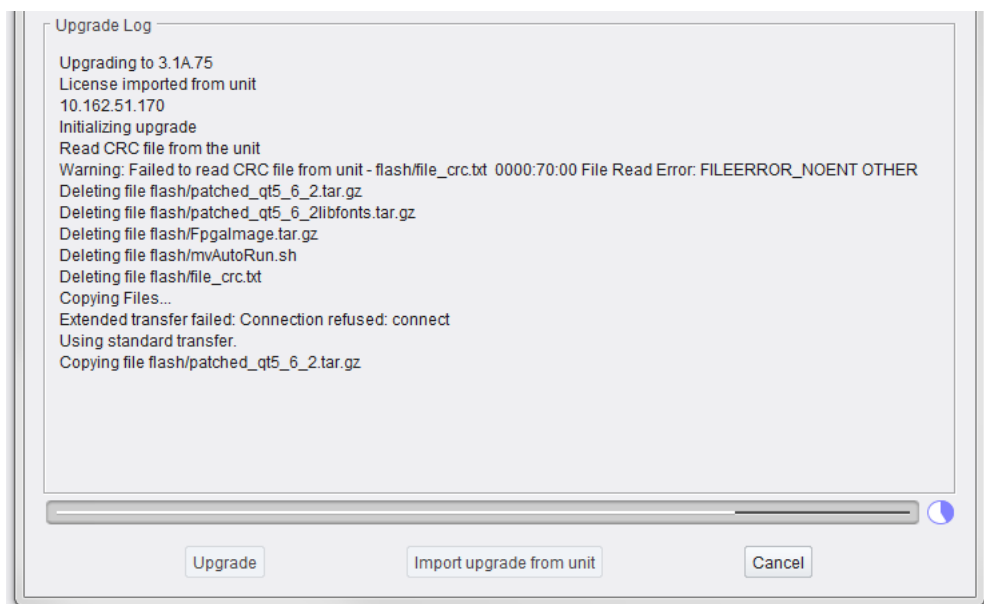itself from RollCall Control Panel.
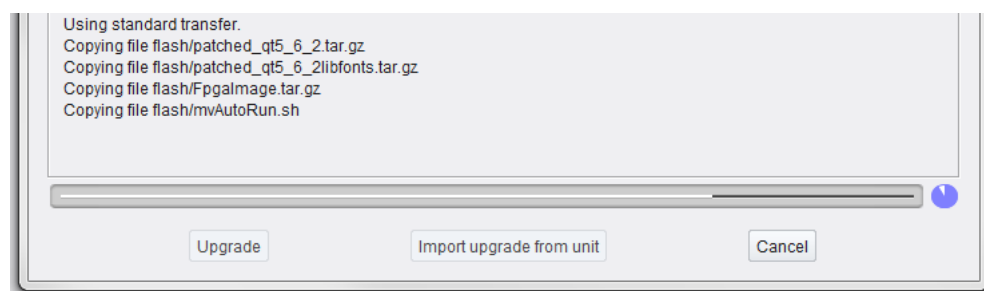

Fig. 10-11: Upgrade Log Messages - Upgrade In Progress

Fig. 10-12: 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 11, Figure 2-1)

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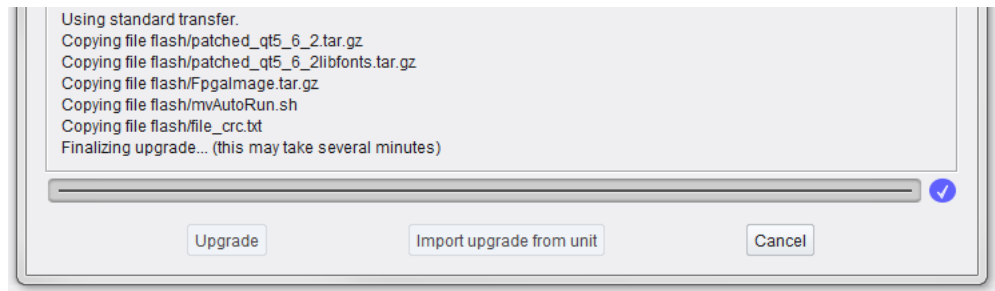It approximately takes a *further* 16 minutes to complete an FPGA upgrade.

Fig. 10-13: Upgrade Log Messages - In Progress ("Finalizing upgrade" message: Wait)

IMPORTANT
Wait for the MV-8X0/MV-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 11) 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 10-14 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.
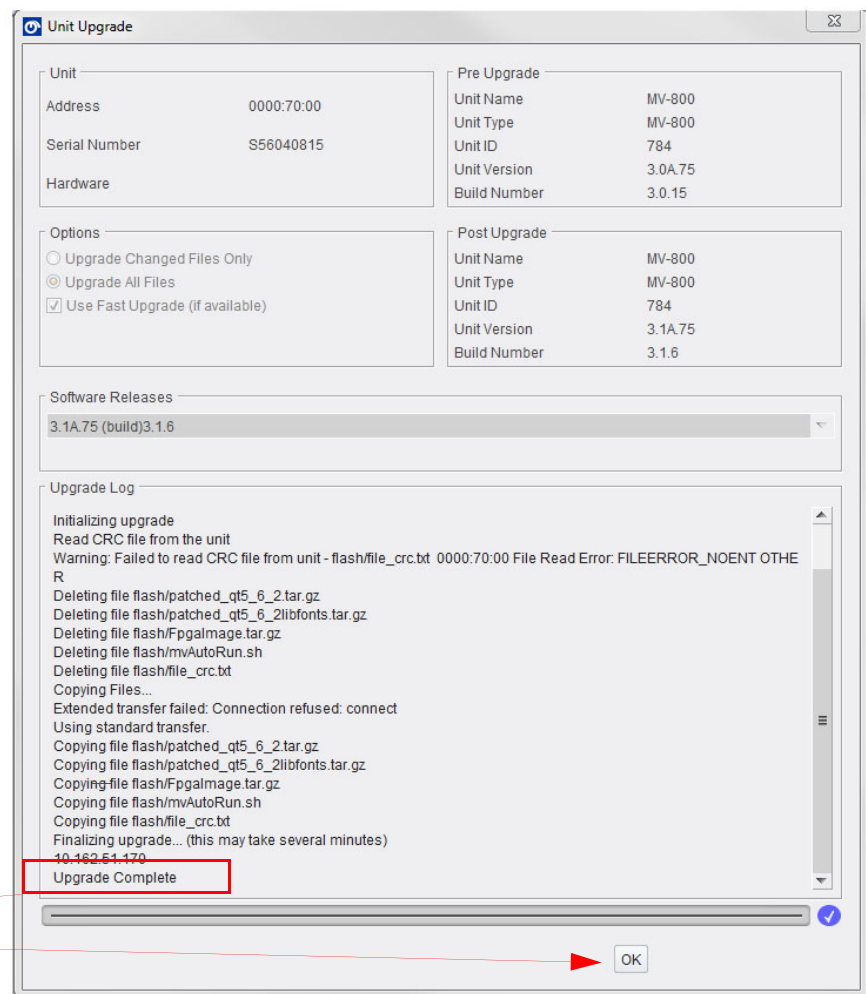
Upgrade Complete

Click OK

Fig. 10-14: 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 RollCall template for the MV-8 Series Multiviewer shows the upgraded software version.

14 Check that the MV-8X0/MV-8X1 Multiviewer product's front module has a flashing green CPU Heartbeat LED. (Refer to the corresponding MV-8X0/MV-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.

MV-8 Series Multiviewer Specification

MV-8 Series Multiviewer Specification

Video Inputs

Video Inputs	
Inputs	48-off up to 12G SDI, dependent on product and license applied. **Note:** ASI inputs are *not* 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: • PQ to SDR • HLG to SDR • Slog3 to SDR • None (SDR-to-SDR)
Color Space	Conversion to color spaces for inputs. Conversion from: • BT.2020 color space. • BT.709 color space.
Media Biometrics	Media biometric generator per input, analyzing input video and audio.

Outputs

Head Display Outputs	
Head Display Outputs	4 to 12 enabled video outputs. • 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	Head Display Outputs locked to: • External Reference; or • Internal Reference (i.e. free running).
Video Standard	Video Standard on head display outputs: • 3G 1080p, or HD 720p • 50, 59.94 & 60 frames/s.
Delay	Latency: • 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	Up to 48-off H.264 streams, scaled copies of the multiviewer inputs. (On MV-821 multiviewers, this is a 'H.264 stream' licensed feature, also requiring factory-fitted hardware codec modules.) Each multiviewer input is H.264 encoded to create streamed copies of the 48 inputs. **Note:** The H.264 streams do not function for the following slower-frame-rate HD standards: • 1080p30 (and slower frame rates); and • 720p30 (and slower frame rates).
Ethernet Port	Streamed out over multiviewer's control and monitoring Ethernet port. Refer to respective MV-8X0/MV-8X1 Multiviewer product user manual for Ethernet interface details. (These H.264 streams can be viewed on desktop PCs via the Grass Valley Orbit MV-800-DT option. Applications include: confidence monitoring, compliance monitoring.)

Multiviewer Monitoring and Alarms

Monitoring and Alarms	
Video:	
Input:	Monitoring of multiviewer video input: • Media Biometrics. • XDS. Support for HDR inputs.
On-Screen Monitoring:	Fully flexible layouts: • 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:	• Video Input signal loss • Video black • Picture freeze or still • Video Input format change.
Audio:	
On-Screen Monitoring:	• Metering of AES embedded audio: • 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:	• Loss of:
	   • AC3 encoded audio data,
	   • Dolby E encoded audio data.
	• DialNorm under preset threshold.
	• Dolby E configuration change.
	• Audio Level:
	   • Loss of audio.
	   • Audio level low/high.

Metadata and Control Monitoring:	
On-Screen Monitoring:	• Closed Caption & Subtitle detection • V chip detection • Display UMD router source names via General Remote protocol SW-P-08 over IP

Monitoring and Alarms	
Alarms:	Loss of: • Teletext. • Closed Caption (CC). • TS ID. • V-chip. • VITC. • Extended Data Services (XDS).
Alarm Control:	Controls and features for: • 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: • 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	Support for displaying closed caption information.
	In an Orbit multiviewer video wall design, use an 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:
	• CC1 - page 101
	• CC2 - page 102
	• CC3 - page 103
	• CC4 - page 104
	• WST - page 888 (wide-screen signaling, aspect ratio)
	• OP42 - page 801 (typically)
	• OP47 - page 801 (typically)
	Note: For SD video input sources, the vertical blanking interval (VBI) is used:
	For 625/25:
	• VITC is detected on line 19;
	• OP42/WST on line 21; and
	• WSS on line 23.
	For 525/29:
	• VITC is detected on line 14; and
	• Rec. 608 on line 21.
	For HD/3G video input sources, the ancillary data (ANC) is used and there is no line number restriction.
Time code	Time code:
	• Display time code extracted from video and from multiviewer time code input
Time	Time:
	• Multiple clock display – lock to NTP, VITC or LTC, with time zone offsets
	• Generate real-time clocks and timers with count up/down capability
Miscellaneous	Control direct from mouse on screen.
	TSL tally display.
	Graphics / Images:
	• Add graphics files to display labels and channel logos, etc
	• Programmable background color or image

Software Versions

Tool	Version	
RollCall Control Panel	4.18.17 or later	
	4.19 or later	For MV-821
Grass Valley Orbit	3.0.10 or later	
MV-8 Series Multiviewer	3.0.13 or later	
	3.1.6 or later	For MV-821

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

XDS Data Types Supported

XDS Data Types Supported

Table B-1: XDS Data Types Supported

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

Program Identification Number (Scheduled Start Time)

	XDS Type	XDS Class	Data Description	RollCall Command Number

	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

Length / Time-in-Show

	XDS Type	XDS Class	Data Description	RollCall Command Number

	Current	02	This carries two items of relevant data:
			Program length: hh:mm
			  Where:
			    hh = Hours (0 - 63)
			    mm = Minutes (0 - 59)
				1850 - 1897

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

XDS Type	XDS Class	(Hexa decimal)	Data Description	RollCall Command Number
			Elapsed time: hh:mm:ss 　Where: 　　hh = Hours (0 - 63) 　　mm = Minutes (0 - 59) 　　ss = Seconds (0 - 59)	1900 - 1947

Program Name (Title) (V Chip Label)

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

Program Type

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

Content Advisory (V Chip Rating)

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

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

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

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

Time of Day

	Miscellaneous	01	WWW DD/MM/YYYY hh:mm	2050 - 2097
			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)	

Local Time Zone

	Miscellaneous	04	Two-character string: hh	2200 - 2247
			Where:	
			hh = Hours (0 - 23)	

SNMP Support

Introduction

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

The MV-8 Series Multiviewer RollCall System-Setup template, see System-Setup Template, on page 16, has some SNMP settings. (See SNMP Managers box, on page 23, and SNMP Community Strings box, on page 23.)

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.

The multiviewer MIB tree comprises:

- mvStatus, on page 111
- mvAlarms, on page 112
- mvControl, on page 113
- mvEvents, on page 114
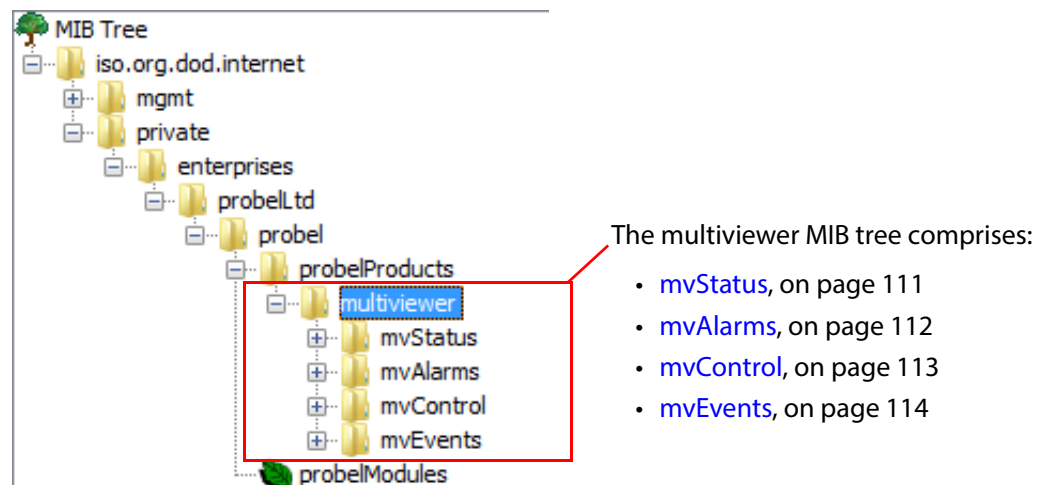
Fig. C-1: MV-8 Series Multiviewer MIB Tree

mvStatus

The **mvStatus** section displays the overall status of the MV-8 Series Multiviewer, providing the similar information to that accessible in Orbit by right-clicking on the multiviewer name in the Network View and selecting 'Details'. See Figure C-2.
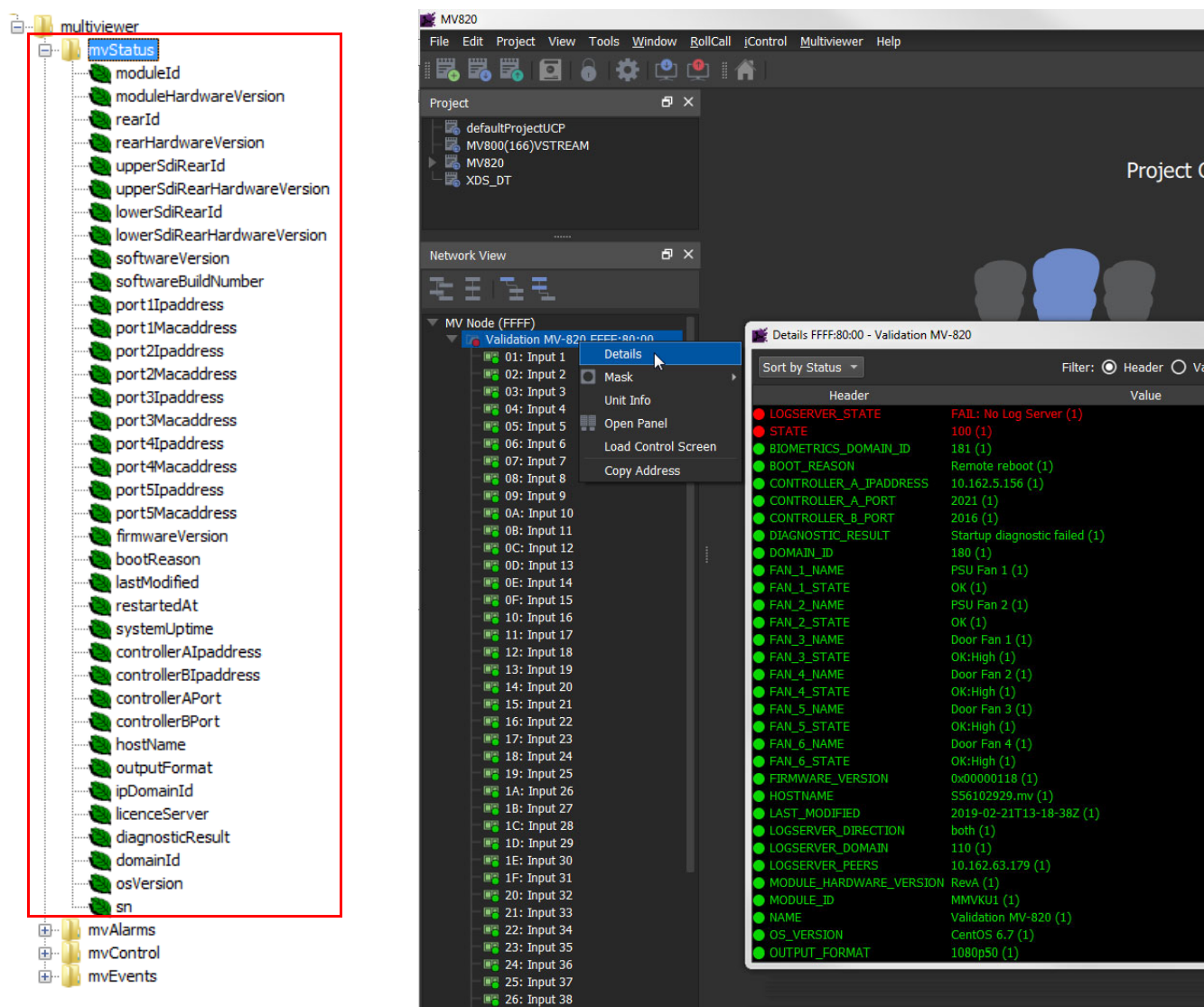
a) mvStatus MIB section   b) In Orbit, right-click on multiviewer in Network View, select 'Details'.

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.

unitAlarms:

- Temperature alarms (tempAlarmTable) - Providing names, status and temperature for each of the temperatures monitored.
- PSU alarms (psuAlarmTable) - Providing names and status for each of the PSUs monitored.
- Fan alarms (fanAlarmTable) - Providing names and status for each of the fans monitored.
- Reference and genlock state

inputAlarms:

This consists of a table of alarms for each of the 48multiviewer inputs. These can also be set up/viewed in Orbit or via the RollCall protocol.

-

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.
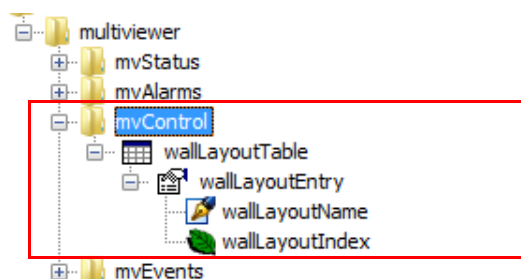
Fig. C-4: mvControl MIB Tree

mvEvents

The **mvEvents** section lists the available SNMP traps that may be sent. See Figure C-5.

Fig. C-5: mvEvents MIB Tree

D

MV-800-DT Option

This section describes the MV-800-DT license option used with the Grass Valley Orbit software tool.

Overview of MV-800-DT Orbit Option

The MV-800-DT desktop multiviewer provides live video wall capabilities to a PC, extending the capabilities of an MV-8X0/MV-8X1 Multiviewer. It can be used with the Grass Valley Orbit software. The MV-800-DT is a licensed feature of Orbit and is issued by a license server software application, typically running on a separate PC.

An MV-8X0/MV-8X1 Multiviewer can produce H.264, scaled streamed versions of each of its 48 multiviewer inputs. The input video is scaled to SD video size, H.264-compressed, streamed and multicast from a designated MV-8X0 network port.

Note:	For some multiviewer units, H.264 streaming needs a multiviewer 'H.264 stream' license.
Note:	MV-821 multiviewer units require factory-fitted codec hardware modules.

These H.264 streams can be viewed on an Orbit MV-800-DT video wall on a PC. These can be displayed with the same or with a different video wall layout as the MV-8X0/MV-8X1 unit. Streams from one or more MV-8X0/MV-8X1 units can be viewed. Live information on an MV-800-DT video wall includes video, audio levels and alarms.

MV-8X0/MV-8X1 Unit:

For example, Sirius 800 Router with MV-800 fitted

H.264 IP Streaming

MV-800-DT Video Wall
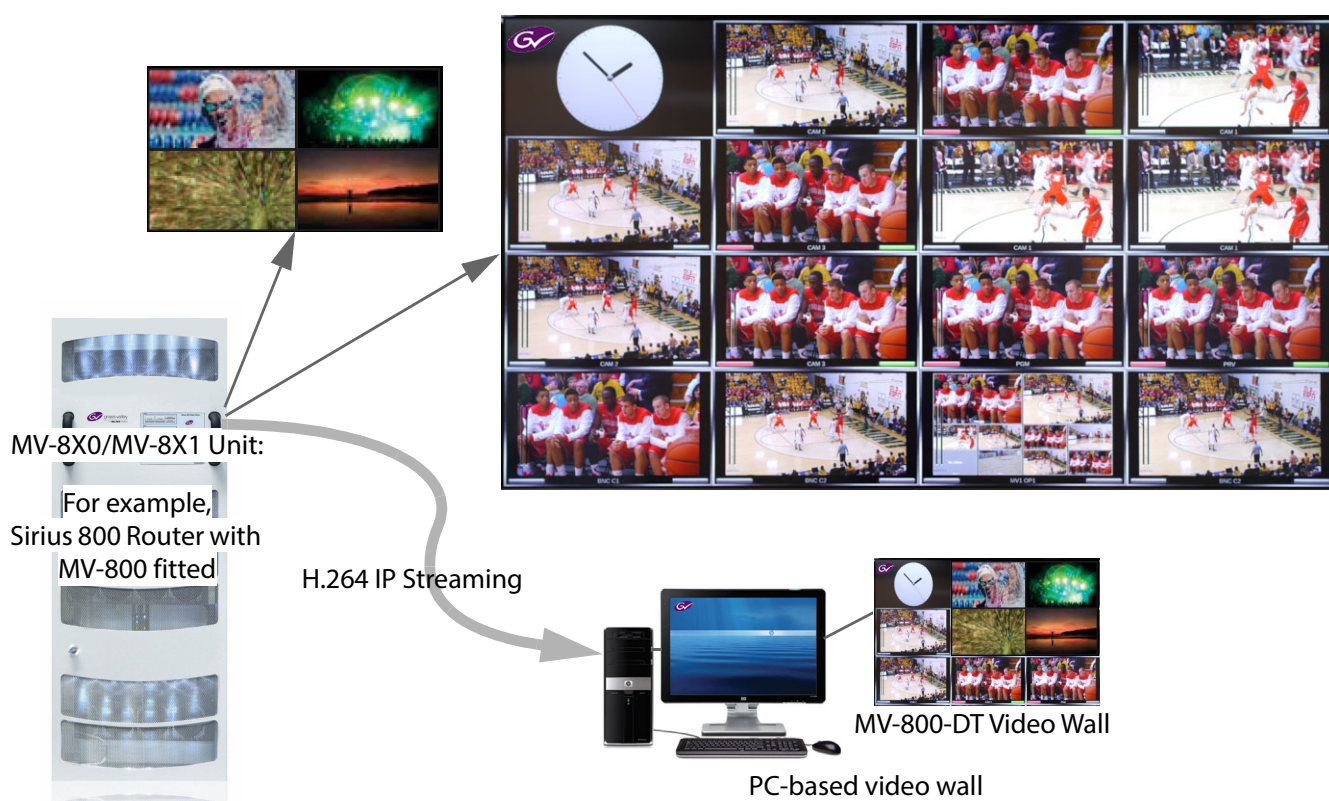
PC-based video wall

Fig. D-6: MV-800-DT Multiviewer PC-based Video Wall

One or more MV-8X0/MV-8X1 Multiviewer can provide H.264 streams to one or more MV-800-DT video wall. "One-to-Many" and "Many-to-One" video wall topologies are possible, see Figure D-7, and Figure D-8 shows other flexible MV-800-DT possibilities.

MV-800-DT Video Wall

MV-8X0/MV-8X1 Video Walls

MV-800

H.264 IP Streaming

MV-800-DT Video Wall

Sirius 800 Router
with MV-800 fitted
(example)

a) "One-to-Many"

MV-8X0/MV-8X1 Video Walls

MV-800

H.264 IP Streaming

MV-800-DT Video Wall

MV-8X0/MV-8X1 Video

MV-800

H.264 IP Streaming
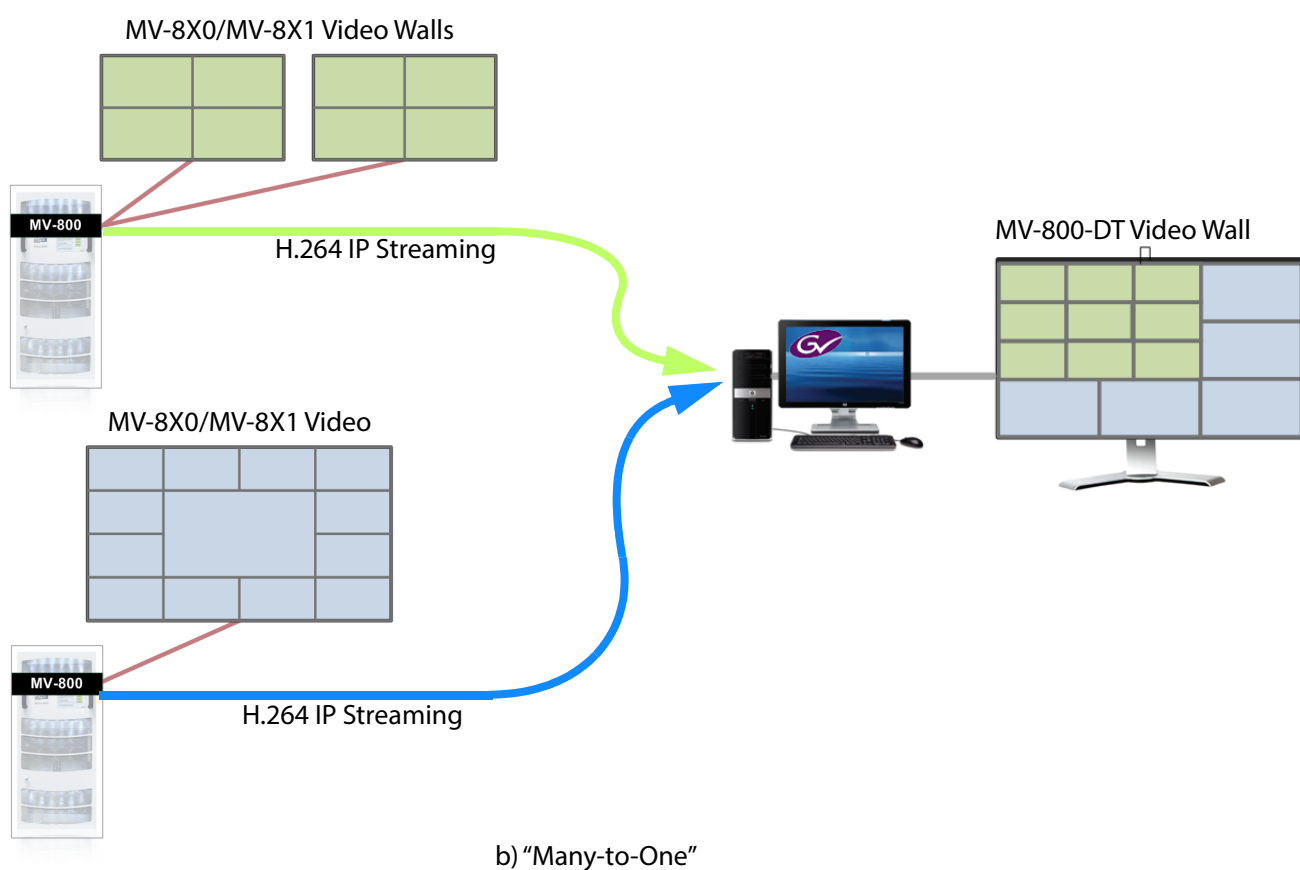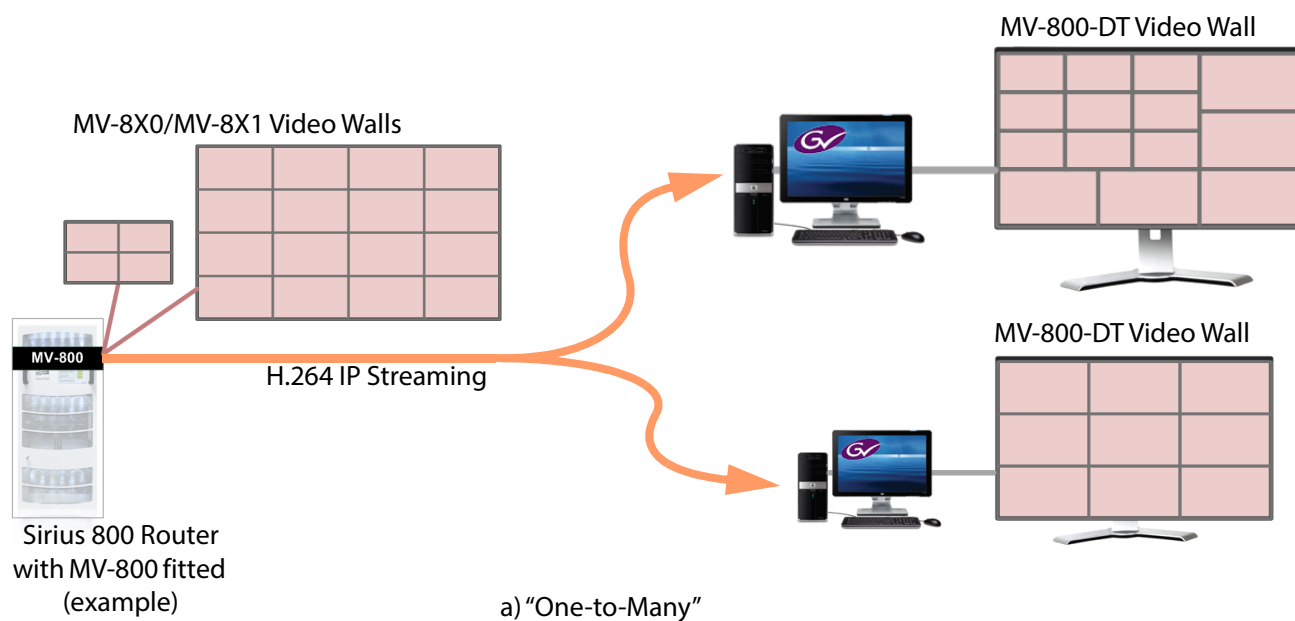
b) "Many-to-One"

Fig. D-7: MV-800-DT Multiviewer Video Wall Topologies, a) "One-to-Many"; b) "Many-to-One"

MV-8X0/MV-8X1 Video Walls

H.264 IP Streaming

H.264 IP Streaming

H.264 IP Streaming

MV-800-DT Video Wall

MV-800-DT Video Wall

H.264 IP Streams
from other sources
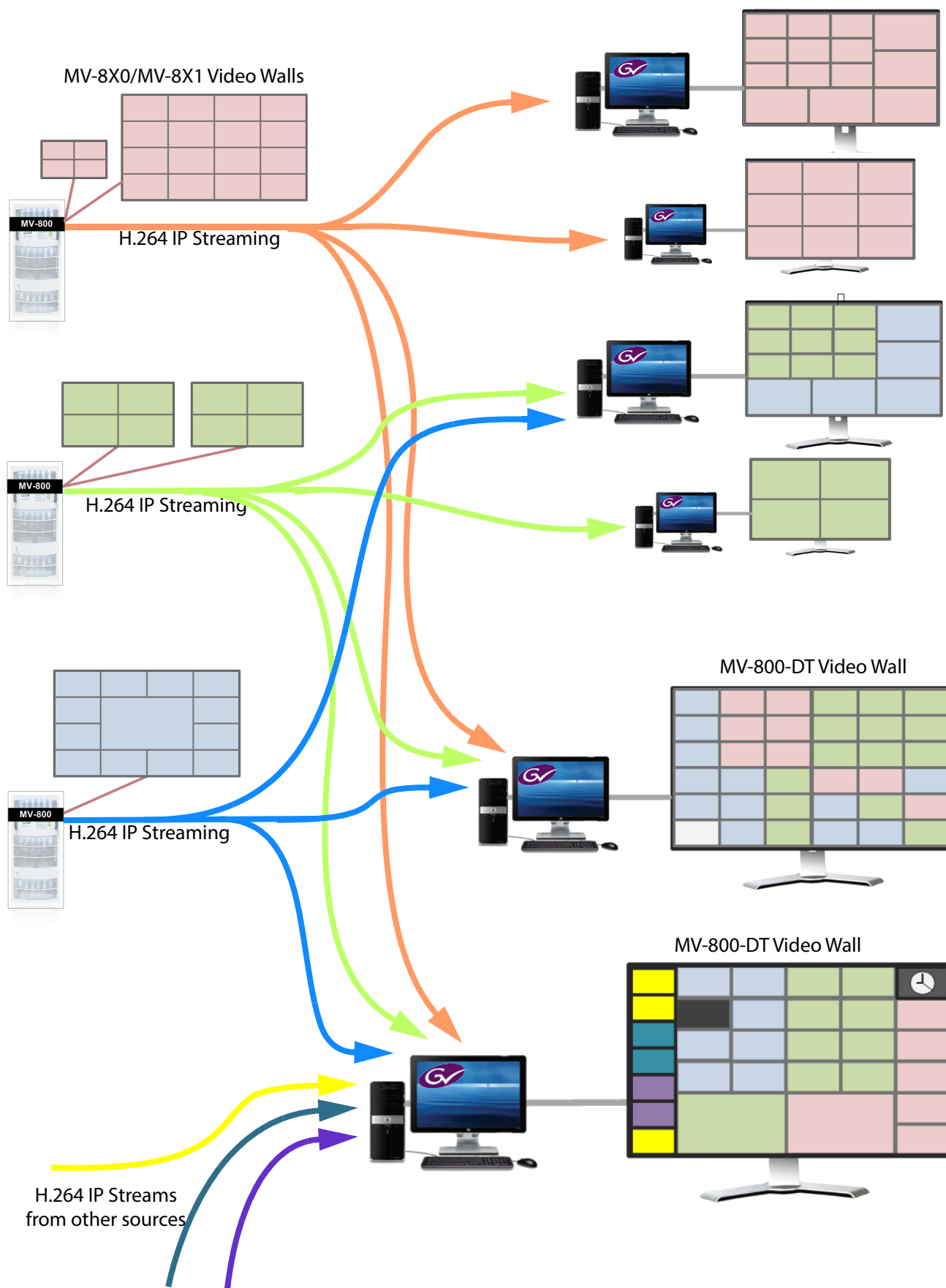
Fig. D-8: MV-800-DT Multiviewer Video Wall Topology Possibilities

Orbit Software Installation for Multiviewer Applications

One Grass Valley Orbit software application is for multiviewer video wall configuration. The Orbit software is installed on a PC in order to:

- Configure Orbit-enabled Grass Valley products.
  For example, configuring video wall layouts for an MV-8X0/MV-8X1 Multiviewer.

- Display H.264 IP streams on a PC-based video wall with an MV-800-DT license.
  For example, displaying H.264 IP streams from an MV-8X0/MV-8X1 Multiviewer.

For full information about installing and using Orbit for multiviewer applications, please see the published Orbit manuals:

- 'Orbit Introduction' user manual; and

- 'Orbit for Multiviewers' user manual.

System Requirements

Assuming that an MV-8X0/MV-8X1 Multiviewer unit is already configured and up-and-running, the MV-800-DT system typically uses three PC's performing different roles, although just one PC could be used for all roles:

1 A **Wall Design PC** - used to design video walls with Orbit software.

2 A **Video Wall PC** - used for the PC-based video wall with Orbit software using the MV-800-DT license.

3 A **License Host PC** - used to act as a license server.

Fig. D-9: MV-800-DT Multiviewer Video Wall

Video Wall PC:

The system requirements for the Video Wall PC are given in Table D-1:.

Table D-1: Minimum System Requirements for a MV-800-DT system PC
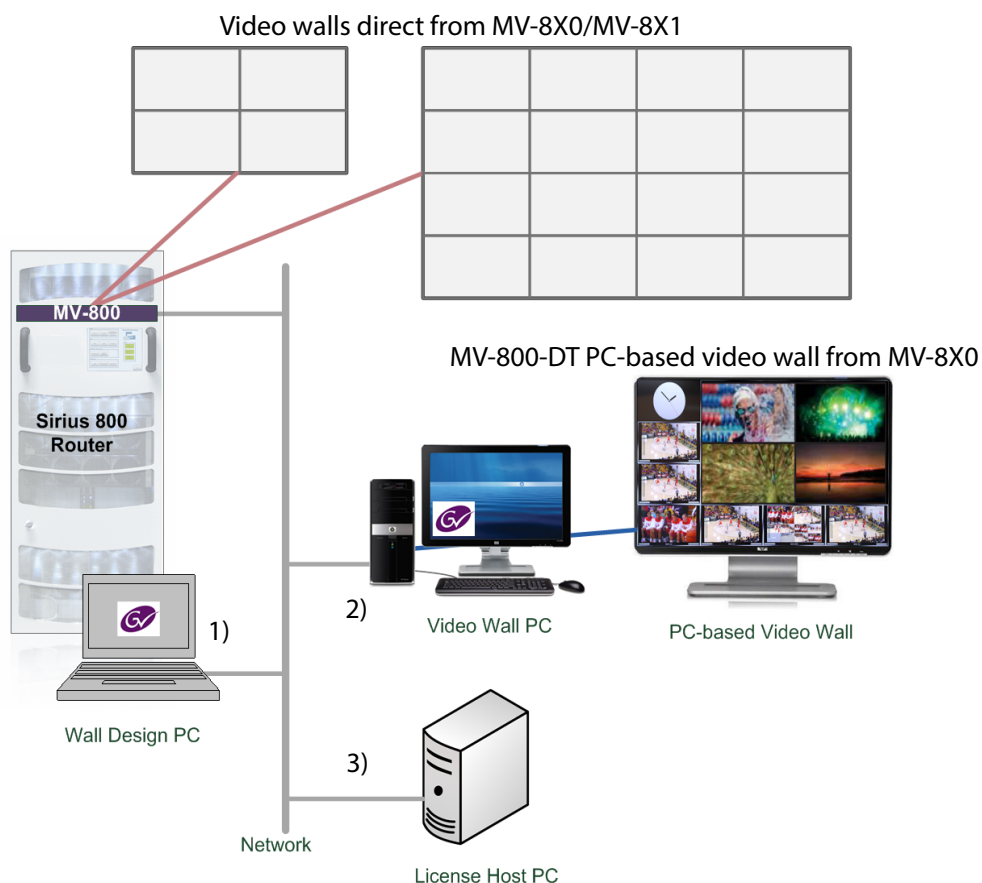
System Component	Requirement
CPU	Intel i7
RAM	32GB
Graphics Card	Nvidia K620 GPU
Network Interface	1G Ethernet
OS	64 bit, Windows 7

Installation

These instructions will get the MV-800-DT option up-and-running. There are several stages to getting a MV-800-DT option working and these stages are listed below and are described in the indicated sub-sections.

License Server Preparation

Prepare the license server on the License Host PC:

1.	**License Server**	Install license server tools on a host PC. See License Installation for Orbit, *Install License Server* on page 137.
2.	**Lock Code**	Get a **Lock Code** for the license host PC. See License Installation for Orbit, *Lock Code for License Host PC* on page 140.
3.	**Procure Option**	Procure an MV-800-DT option from Grass Valley via a purchase order. Note: The option license supplied by Grass Valley is a small text file, which may contain one or more MV-800-DT licenses. Store file in a safe place.
4.	**Install License**	Add the MV-800-DT option license file to the license server running on the license host PC. See License Installation for Orbit, *Add Orbit License to License Server* on page 142.

The license server is now prepared.

Configuration Stages

Configure the MV-8 Series Multiviewer:

| 5. | **Configure MV-8X0** | Configure a MV-8X0/MV-8X1 Multiviewer unit with Grass Valley RollCall Control Panel. |
| | | See *Configure Multiviewer for MV-800-DT* on page 123. |

> Note: An MV-8X0/MV-8X1 Multiviewer is configured to use the same Ethernet port for streaming out H.264-encoded multiviewer inputs and for general RollCall control and status messages.

Now set up the Video Wall PC:

6.	(**H.264 Stream video player - for *early* Orbit versions only)**
		Only install a H.264 streaming video player if using Orbit versions *earlier than* Orbit v2.5.16. (Later Orbit versions include such a video player.)
		To install the VLC streaming video player on the Video Wall PC:
		See *VLC Video Stream Player Installation* on page 145.

| 7. | **Orbit** | Install Orbit Client software on the Video Wall PC. |
| | | See *Orbit Software Installation for Multiviewer Applications* on page 119. |

8.	**Multiviewer Project**	Modify an Orbit multiviewer video wall project for running on the Video Wall PC.
		See *Configure Orbit Project for MV-800-DT* on page 125.
		And:
		See *Video Wall and Video Sources* on page 130.

This completes the installation and preparation.

PC Video Wall

To see the PC-based video wall:

| 9. | **Desktop Video Wall** | Run the Orbit Client on the Video Wall PC. |
| | | See *Launching Orbit Video Wall* on page 134. |

Configure Multiviewer for MV-800-DT

This sub-section describes the configuration of a multiviewer product for the MV-800-DT option.

Note:	Refer to *Getting Started* on page 55, for information about connecting to a unit and its initial configuring.

Note:	Configuration in this sub-section is done via the multiviewer product's RollCall templates (control screens).
	This sub-section uses the Grass Valley **RollCall Control Panel** tool to view and edit these control screens. However, **Orbit Client 3.0** onwards may also be used to view and edit control screens.

Run the Grass Valley RollCall Control Panel application on a PC:

1 Connect to a MV-8 Series Multiviewer to view RollCall templates.
Go to the **System-Setup** screen and locate the **Streamed Output** box. See Fig. D-10:.

Fig. D-10: System-Setup - Streamed Output box

In the **Streamed Output** box:

2 Set **Ethernet Interface** to be the same as 'Ethernet Interface' in the RollCall Settings box, above in the same window.

3 Enable H.264 streaming output by selecting the **Enable** check box.

4 Leave the **IP Port** setting alone.
   (It is a predefined port number and is used for the RTSP control protocol used for the streaming out of the H.264-encoded multiviewer inputs.)

5 Leave the **Multicast Group Base Address** box blank.
   The H.264 streamed outputs will then use a set of IP multicast addresses using a suitable randomly-chosen base address from the 232/8 address block. (See *Multicast Group Addresses* on page 22 for details.)

Note: If a particular multicast address range is required for the H.264 streamed outputs, then enter a **Multicast Group Base Address** in the box and click "S" to save this new setting. This may be the case if more than one multiviewer device is on the network.

The MV-8 Series Multiviewer network interface port setting is now set up for H.264 multicast IP streaming out of multiviewer inputs (i.e. H.264-encoded).

All changes in the **System-Setup** screen should have now been made.

A system reset is required for the multiviewer:

6 Click on the **System Reset** button at the top of the System-Setup screen.
   Then click on the **Confirm** button to perform a system reset.
   The MV-8 Series Multiviewer unit is restarted and the new settings will be adopted.

LAN System Set Up

In the LAN system network configuration:

1 Ensure that the following are enabled on the LAN between the multiviewer device and MV-800-DT video wall PC.

   • The RTSP port on the multiviewer's IP address.

   • The multicast address range.

Note: **Multicast IP Port Numbers:**

Each multiviewer input is H.264-encoded and streamed out on its own multicast IP address with the RTP protocol, video data and control data (e.g. quality, statistics) use different IP port numbers on the respective IP address.

IP port numbers used on the respective multicast IP addresses for multiviewer inputs are:

   • Input 1: video data=18888; RTP control data = 18889.

   • Input 2: video data=18890; RTP = 18891.

   • Input 3: video data=18892; RTP = 18893.

   • ...

   • Input 48: video data=18982; RTP = 18983.

Configure Orbit Project for MV-800-DT

In this section, an Orbit multiviewer project is modified to use an MV-800-DT option. This project will be run with Orbit on the Video Wall PC. Carry out these steps on the Video Wall PC.

A project can be modified from an existing MV-8 Series Multiviewer Orbit project, or it can be a new and separate project. Modifying an existing project enables video walls from an existing MV-8 Series Multiviewer to be shown on the Video Wall PC

Using a new and separate project (or a heavily modified existing project) means that selected video inputs can be shown on the Video Wall PC. By selecting fewer displayed video inputs, larger video tiles are possible on the Video Wall PC. Additionally, a separate project can show H.264 streams from more than one MV-8 Series Multiviewer source, or from some other source.

Orbit Project

1 Pull a multiviewer project from an MV-8 Series Multiviewer
or create a new Orbit project.

Modifications to a Orbit project:

2 Open the project in Orbit.

3 Click **Multiviewer > Properties**.
The **Multiviewer Properties** window is displayed, see Figure D-11.
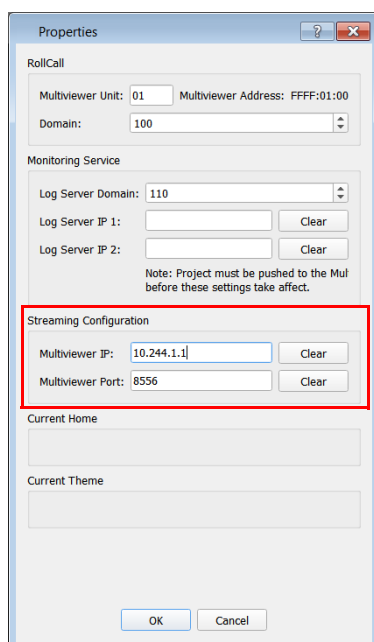
Fig. D-11: Multiviewer Properties window - Streaming Configuration box

4 Set the **Streaming Configuration** box **Multiviewer IP** and **Multiviewer Port** to be the same as the RollCall Settings in the System-Setup screen of RollCall Control Panel for the MV-8 Series Multiviewer that will be sourcing the H.264 IP streams.
Click **OK**.

Note: The **Multiviewer IP** and **Multiviewer Port** values are used by Orbit to form the video source URL's for video wall 'auto-tiles'.

If a different URL is required on an auto tile, it may be converted to a custom tile.
And the video H.264 streaming URL of a Custom Tile may be specified.

Orbit License Option Settings

1 Click **Tools > Options**.
The **Options** window is displayed.

2 Select the **Licen...** tab. (**Tools > Options > Licen...**)
The **License** tab is displayed, see Figure D-12.
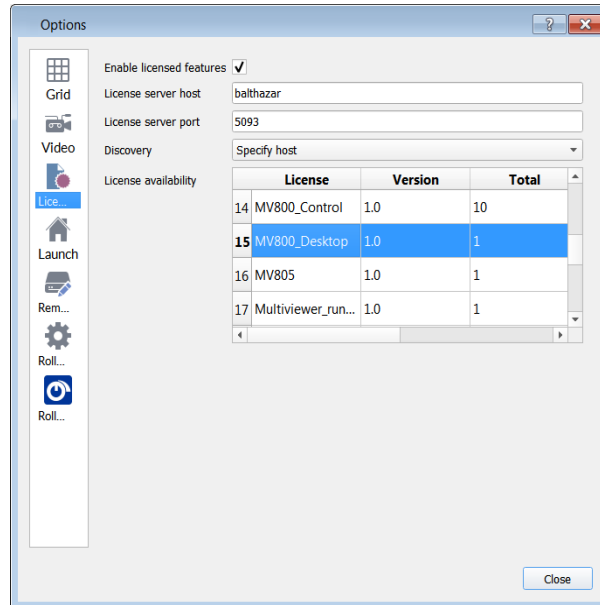
Fig. D-12: Tools > Options, License tab

3 Select **Enable licensed features**.

4 Enter the name of the license host PC in the **License server host** text box.

5 Do not change the **License server port** setting.

6 Click **Close**.

7 Click **File > Save Project**.
Click **File > Exit** to close Orbit.

Restart Orbit with these new License server settings.

8 Restart Orbit.
Re-open the same project to continue modifying the Orbit project for MV-800-DT.

Orbit Video Option Settings

1 Click **Tools > Options**.
The Options window is displayed.

2 Select the **Video** tab. (**Tools > Options > Video**)
The **Video** tab is displayed, see Figure D-13.
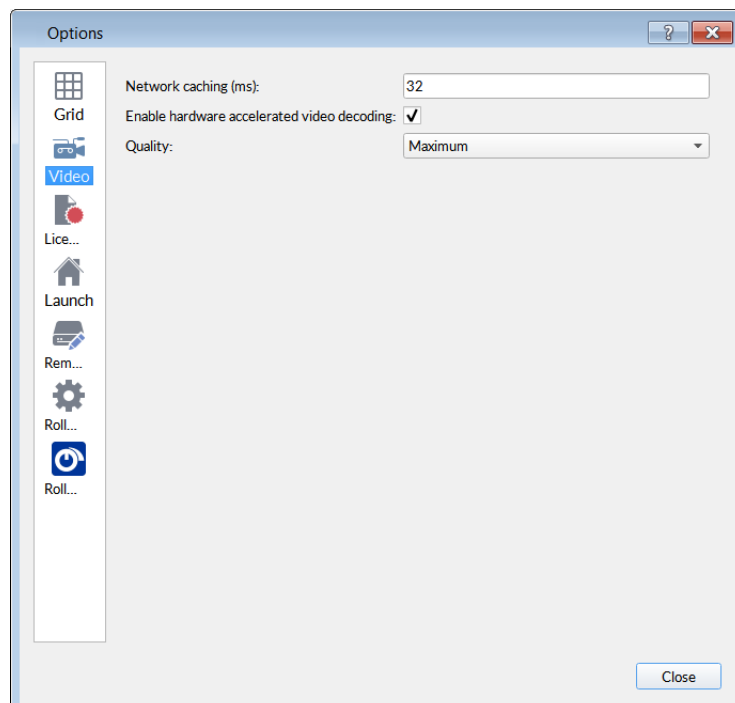
Fig. D-13: Video tab

3 Set **Network caching** (ms) to a value between 32 and 1000.

Note: **Network caching** is the time delay until video rendering begins (i.e. the amount of network data to buffer up).

The value depends on the number of video tiles being rendered on the PC-based video wall and the IT network used by the video H.264 streaming.

Increase this value if the network cannot sustain data delivery to the Orbit Client.

4 Select **Enable hardware accelerated video decoding**.
This enables Orbit to use the Video Wall PC's graphics card (GPU) to accelerate video rendering.

Note: Use of hardware acceleration is recommended.

5 Set **Quality** to 'Maximum'.
Other settings ('High', 'Low') will act to reduce the PC loading on the Video Wall PC - the quality of the rendered video on the Video Wall will be reduced.

Note: The **Quality** setting offers a rendered video quality trade-off to the user. PC loading can be reduced at the expense of reduced video quality on the PC-based video wall.

Orbit Launch Option Settings

1 Select the **Launch** tab. (**Tools > Options > Launch**)
The **Launch** tab is displayed, see Figure D-14.

Launch Project information

Launch Options
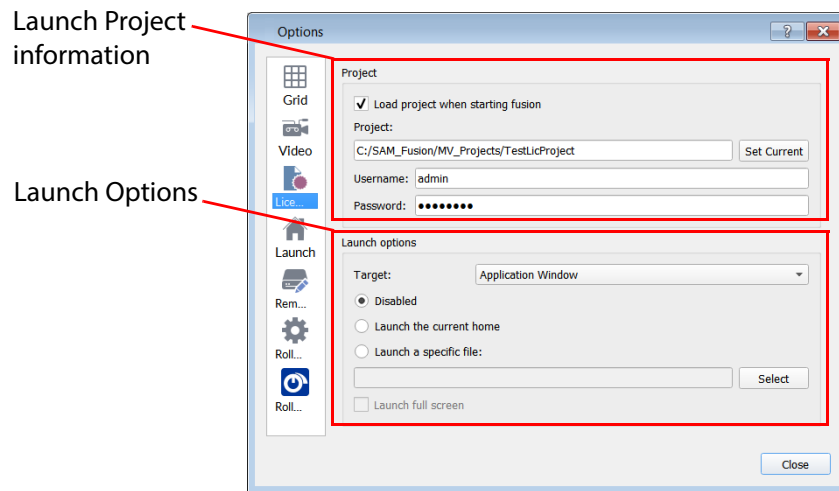
Fig. D-14: Launch tab

2 Select **Load project when starting Orbit**.

> Note: With **Load project when starting Orbit** check box de-selected, the Orbit application starts normally with no project open.

3 Set the **Project** text box to path to the required project. (Click **Set Current** to set it to the current project.)

4 Fill out the user name and password to use to login at launch for this project.

5 In the **Target** drop-down box, select the target screen on which to view the video wall.

> Note: **Target** drop-down box options for where to view the live video wall at launch are:
>
> •   **Application window** - The Orbit application window.
>
> •   **Screen 1** - PC monitor screen 1 *.
>
> •   **Screen 2** - PC monitor screen 2 *.
>
> * Upon selecting either **Screen 1** or **Screen 2**, a helpful screen-identifying flash-message is overlaid on the corresponding screen for a second, 'Screen 1' or 'Screen 2'. See Figure D-15.
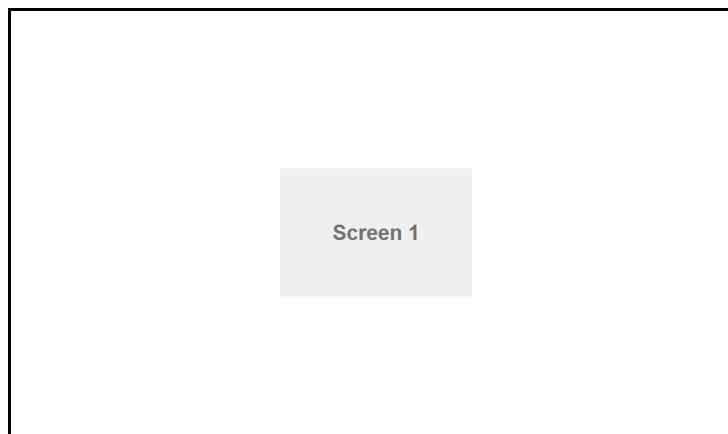
Screen 1

Fig. D-15: Target Screen Identifying Flash-Message

6   In the **Target** radio buttons,
     click **Launch a specific file**.
     In the drop-down box, select the required (project) file to be displayed at launch. This will
     typically be a video wall, i.e. a '.wall' file from the Project Pane.

> Note: **Target** radio buttons are:
>
>   •   **Disabled** - No launch.
>
>   •   Launch the current home - A defined page is shown at launch
>   (defined by clicking Project > Set Home.)
>
>   •   **Launch a specific file** - a file is specified, usually this is a Orbit
>   project's '.wall' file, the video wall required.

7   Click **Close**.

8   Click **File > Save Project**.

To set up an Orbit video wall to display video H.264 streams, see *Video Wall and Video Sources*
on page 130.

Video Wall and Video Sources

In this section, a Orbit multiviewer project's video wall is modified for showing streamed multiviewer inputs on a Video Wall PC.

A URL of each video H.264 stream must be defined for each video tile showing (H.264) streaming video. The mechanism for doing this depends on whether the tile is a video auto-tile or custom tile; this is covered below:

Auto-Tile

1   Open the project with Orbit.
2   Open the required video wall and **single-click** on a video auto-tile.
    The video tile is selected and its properties are shown in the Properties box, on the right-hand side, see Figure D-16.

Selected Video Auto-Tile   Properties Box

Tile > Streaming > Source Path property

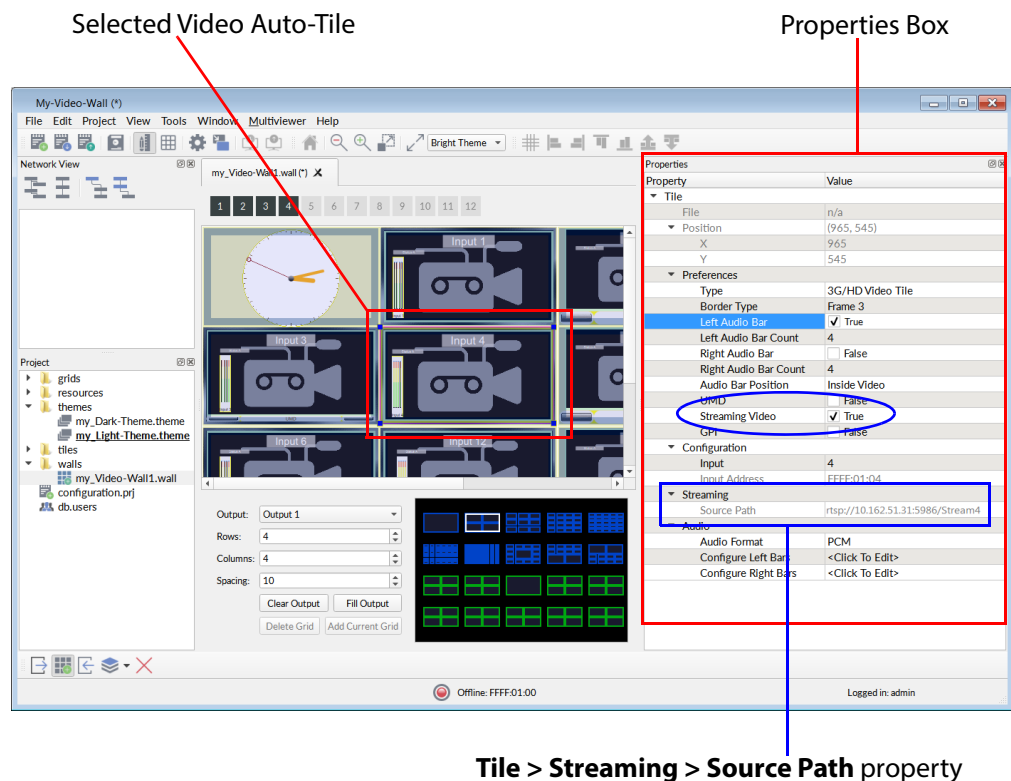*Fig. D-16: Selected Video Auto-Tile Properties*

3   Select the **Tile > Preferences > Streaming Video** property.

The **Tile > Streaming > Source Path** property is then shown in the Properties box, see Figure D-16.

Note: The displayed source path is automatically generated by Orbit from information in the **Multiviewer > Properties** window, see Figure D-17.
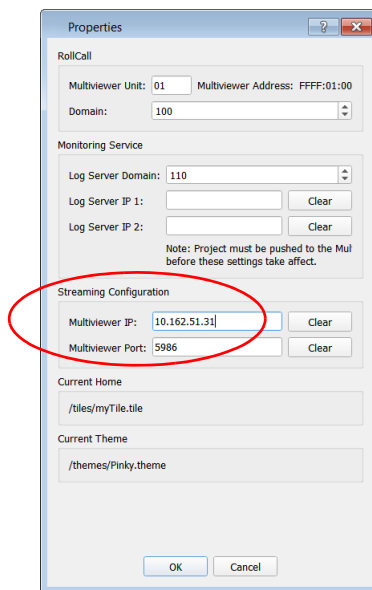
Fig. D-17: Multiviewer > Properties, Streaming Configuration

Note: Source path example,
          Tile > Streaming > Source Path property:

          rtsp://10.162.51.31:5986/Stream48

Where:

- **rtsp:** - Real time streaming protocol prefix. Protocol is used for establishing and controlling media sessions between two network ports.

- **10.162.51.31** - IP address of unit sending the video stream, **Multiviewer IP**.

- **5986** - IP port number of the unit sending the video stream, **Multiviewer Port**.

- **Stream48** - Video H.264 stream name, formed from the Multiviewer input feeding the video tile, **Input 48**.

The **Source Path** property is a URL formed automatically by Orbit for a video **Auto-Tile**.

If the URL needs to be customized:

- A user variable may be set up for the IP address of the sourcing multiviewer device.
- A video **Custom Tile** needs forming from a video **Auto-Tile** and its tile properties edited.

Create a User Variable

The tile's **Source Path** property value may be set to use a user variable in Orbit:

1 Select **Project > Edit Variables** in the main menu.

   The Properties dialog is shown.

2 Create a new variable, for example 'MV IP', and set its value to be the IP address of the multiviewer sourcing the H.264 IP streams. See Figure D-18.
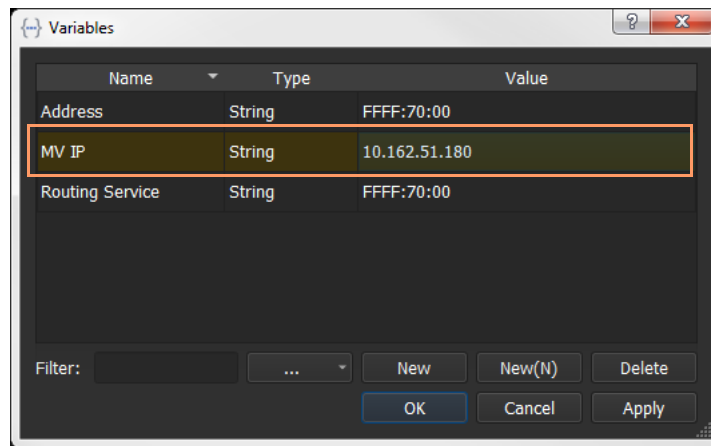
Fig. D-18: Properties Dialog with New Variable Defined

3 Click **OK**.

The variable name may be used throughout the Orbit project, including in Source Path property values.

Custom Tile

1 Open the project with Orbit.
2 Open the required video wall and double-click on a video custom tile or on a video auto-tile.
   The tile is opened in the **Tile Editor**, see Figure D-19.
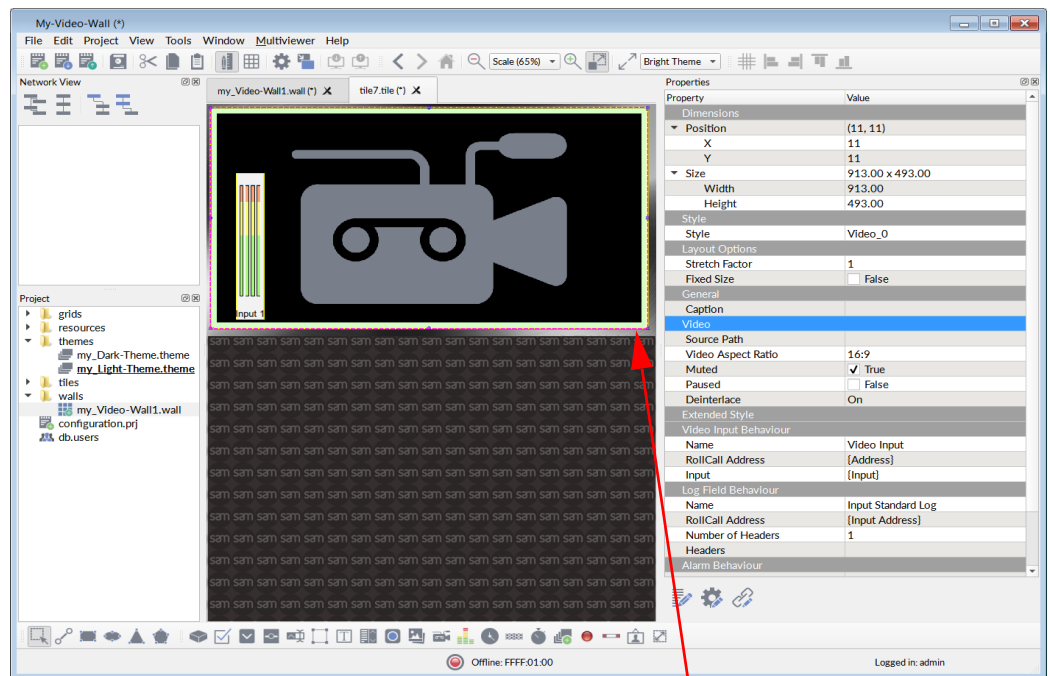
Video Widget selected

Fig. D-19: Tile Editor - Video Widget Properties

IMPORTANT
Any **Auto-Tile** edited in the **Tile Editor** becomes a **Custom Tile**.

3 Click on the video widget to select it.
   The video widget properties are shown on the right-hand side. See Figure D-19.

4 The **Video > Source Path** property shows the URL of the video H.264 stream.
   This text box is editable.

'MV IP' user variable (set to IP address of a sourcing multiviewer device)

RTSP IP port number

▼ Video
   | Source Path | rtsp://{MV IP}:8554/Stream{Input} |

'Input' is an Orbit system variable, managed by Orbit and set to an integer 1 to 48, multiviewer video input number.
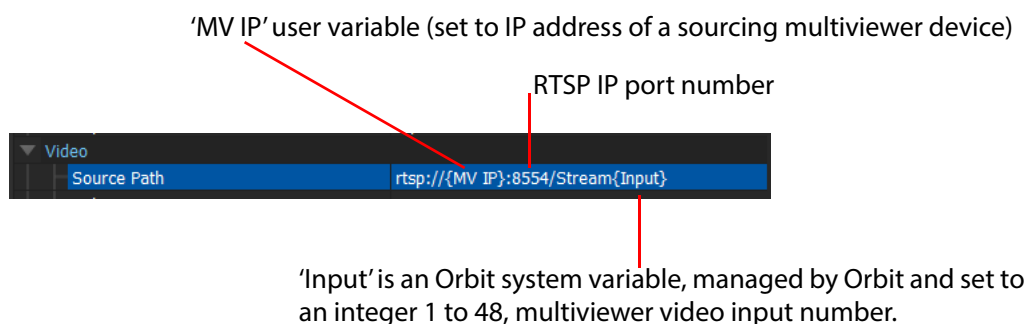
Fig. D-20: Video > Source Path Property URL Value

Note: A variable is used by enclosing the variable name in curly braces, {VarName}. The variable's value is substituted by Orbit when the project runs.

   • **{MV IP}** - The user variable value is substituted by Orbit - in this case, the sourcing multiviewer's IP address.

   • **{Input}** - A video input number is assigned by Orbit when the custom tile is placed into a wall and the project run. More than one such tile may be placed. Orbit then assigns video input numbers to all instances of the 'Input' system variable.

Note: The system variable 'Input' is enumerated and expanded by Orbit. Any tile or widget properties containing the '{Input}' construct will be auto-numbered from 1 to 48.

   Thus, "Stream{Input}" will be expanded to be:
   "Stream1", "Stream2", ... "Stream48".

5 Click **File > Save** to save changes.

Other tile properties:

6 Select the **Video > Muted** property.

Note: Audio is muted in the video H.264 streams.

7 If the source video is progressive, then set the **Video > Deinterlace** property to 'off'.

8 Click **File > Save** to save changes.

9 Click **File > Save Project**.
   Click **File > Exit** to close Orbit.

The project will be used by Orbit on the Video Wall PC to show a live video wall on the PC monitor screen.

To launch Orbit, see *Launching Orbit Video Wall* on page 134.

Launching Orbit Video Wall

All steps in the installation and preparation should now be done (described in *Installation* on page 121) and Orbit is now configured to open a project and display a live video wall at launch (start-up). (Orbit launch options are described in *Orbit Launch Option Settings* on page 128.)

Running Orbit

Run Orbit on the Video Wall PC.

The Orbit application then:

- Starts up.

- Opens the preset Orbit project and logs in.

- Gets an MV-800-DT license from the license server.

- Displays a video wall on the PC monitor screen.

> Note: The normal 'user name' and 'password' login steps when opening a Orbit project are not presented at Orbit launch. These have already been set up within Orbit.

> Note: The Video Wall PC running Orbit requires to access the MV-800-DT license from the License Host PC. The Video Wall PC and the License Host PC must be able to see each other on the network.
>
> If communication with the license host PC fails, a license check message appears.
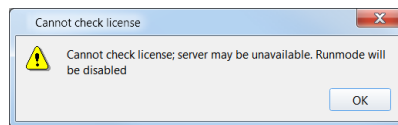

Figure D-21 shows a full-screen video wall seen on one of the Video Wall PC's monitors.

Fig. D-21: Full-screen Live Video Wall (Layout 1)

Figure D-22 shows a live video wall (in this case a second wall layout, Layout 2) being shown in a tab screen within the Orbit application window. Figure D-23 shows the same video wall undocked.

Fig. D-22: Full-screen Live Video Wall - Layout 2, docked in the Orbit Application window

Fig. D-23: Full-screen Live Video Wall - Layout 2, in an undocked window

Orbit Window Controls

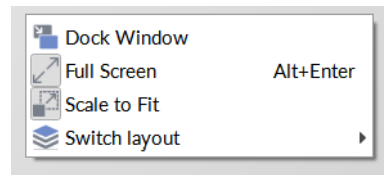Right-clicking in the live video wall area produces a context menu, see Fig. D-24:.

Fig. D-24: Right-Click in Live Video Wall - Context Menu

Table D-2: Right-Click Live Video Wall - Context Menu Items

Alarm	Description
Dock Window	Restores a video wall window to a tab screen in the Orbit window.
Full Screen	Toggles between viewing a wall full-screen and in docked or undocked window (a separate window or as a Orbit tab screen). **Alt+Enter** Pressing the 'Alt' key with the 'Enter' key does the same
Scale to Fit	Scale a video wall image to fit the Orbit window. Not used when full-screen.
Switch Layout	Change between wall layouts.

Switching into Design Mode

Orbit has been configured to launch in 'Run-Mode' for displaying live video walls with the MV-800-DT license.

Click the **Run-Mode/Design-Mode** icon in the Orbit main tool bar, see Fig. D-25:, to change into 'Design Mode'. Wall editing may be done in 'Design Mode'.
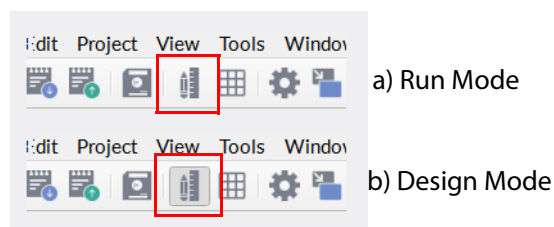

a) Run Mode

b) Design Mode

Fig. D-25: Run-Mode/Design-Mode icon

Clicking the icon toggles between the two modes of Orbit operation.

License Installation for Orbit

Appendix contains:
License Installation for Orbit

This section describes installation of some software applications etc. required for an Orbit license. For example, to get the MV-800-DT option working for the Grass Valley Orbit Client software tool. The installation and preparation steps covered are:

- License server installation.

- Lock Code generation.

- Adding the license.

Install License Server

The license server application should be installed on a license server host PC. The PC must be on the same network as the PC generating the PC-based video wall and any MV-8X0/MV-8X1 Multiviewer units producing live video input streams and data.

The license server application used is the same as that used for some other Grass Valley products, for example Alchemist XF. If such a license server already exists on the network, then no further action is needed to install one. Otherwise, a license server application must be installed by following the steps below.

To get the licensing tool installer files onto the license host PC, either:

- Copy across part of a Orbit installation folder from another PC onto the license host PC, C:\Program Files\...\Orbit\LicensingTools.

or, alternatively,

- Install Orbit on the license host PC,
  see "Add Orbit License to License Server" on page 142.

Then:

1. On the license host PC, go to the
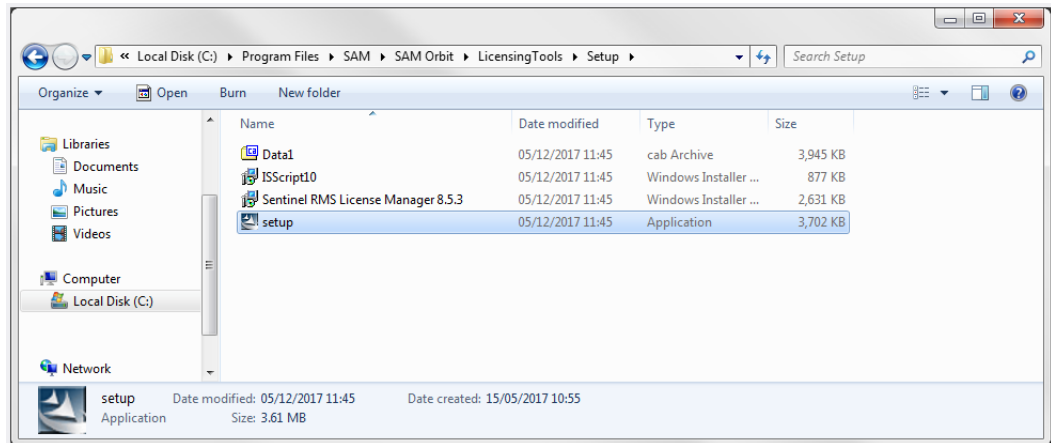   C:\Program Files\...\Orbit\LicensingTools\Setup sub-folder.

Fig. E-26: Licensing Tools 'setup.exe'

2. Run **setup.exe**.
   The licensing tools installation begins and an initial screen is shown.

Fig. E-27: Licensing Tools Setup Initial Screen

3. Click **Next** at the initial screen.

4. Read and accept the License Agreement.
   Click **Next**.

5. At the Customer Information screen, enter the information.
   Click **Next**.

6. At the Destination Folder screen, select the default installation folder.
   Click **Next**.

7. At the Setup type screen, select the **Complete** setup type.
   Click **Next**.

8. At the System Firewall Settings screen, select the text box for "Unblock the system firewall for the Sentinel RMS License Manager".
Click **Next**.
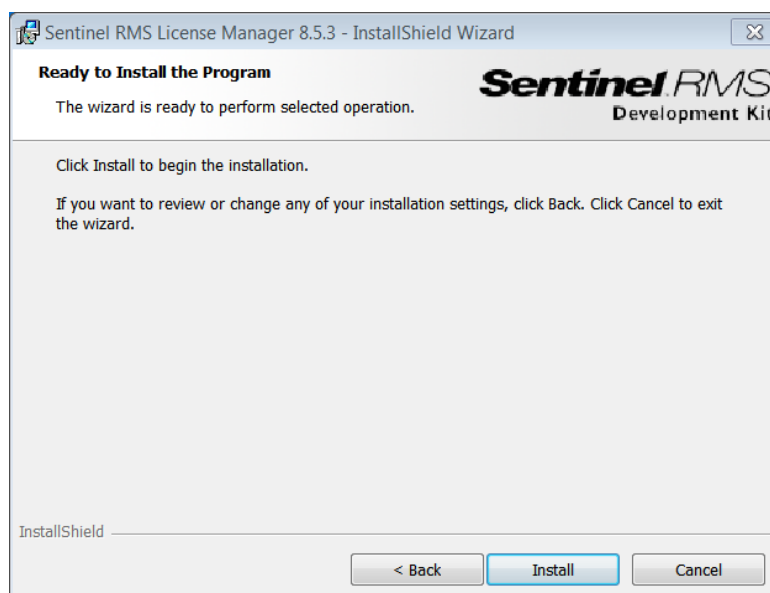The 'Ready to Install the Program' screen appears, see Figure E-28.

Fig. E-28: Licensing Tools - Ready screen

9. Click **Install**.
Installation begins and a progress bar is shown.
The install complete screen is shown when installation is done.

Fig. E-29: Licensing Tools - Complete screen

10. Click **Finish**.
Licensing Tools installation is now finished.

11. Restart the license host PC.

The licensing tools are installed on the license host PC. The licensing tools are run as a service when the license host PC is restarted.

Lock Code for License Host PC

A Lock Code is required to be generated from your license host PC. This is a kind of fingerprint of your machine, which ensures your license will be served by the license server.

The Lock Code must be supplied to Grass Valley when ordering an Orbit license, for example for the MV-800-DT option.

The Lock Code generation is described in this sub-section.

> Note: The Lock Code is case-sensitive and must be supplied to Grass Valley exactly as it appears after these Lock Code generation steps.

The Lock Code generating utility is found in a Orbit installation folder. To get the utility onto the license server PC, either:

- Install Orbit on the license host PC.

or

- Copy across the Orbit installation folder from another PC.
  C:\Program Files\SAM\Orbit...

Then:

1. On the license server PC,
   go to C:\Program Files\...\Orbit\LicensingTools.

2. Run the file 'wechoid.exe'.
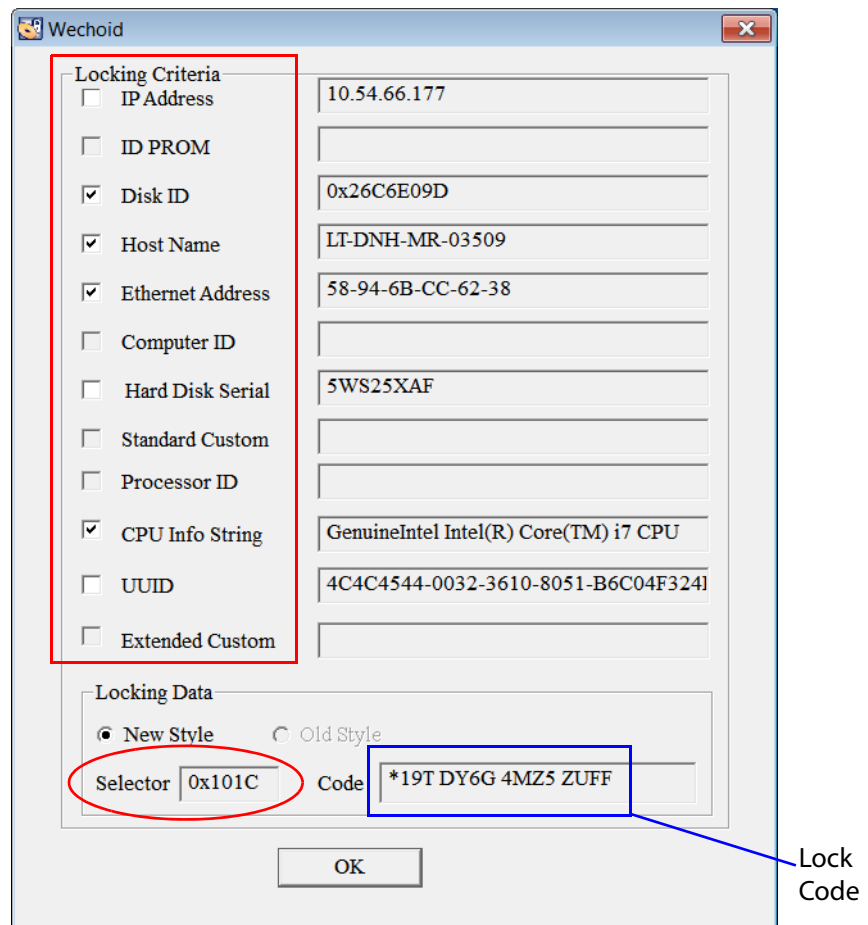   A Lock Code generation window appears entitled 'Wechoid'. See Figure E-30.

Fig. E-30: Lock Code 'Wechoid' window

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3.   Select and deselect the various left-hand side **Locking Criteria** check boxes so that they are the same as in Figure E-30.

4.   Check that the value in the **Selector** text box is the same as that in Figure E-30.

5.   The value in the **Code** text box is the **Lock Code** for your host PC.
Record the **Lock Code** for sending to Grass Valley.

> Note: The **Lock Code** is case-sensitive and must be supplied to Grass Valley *exactly* as it appears in your Wechoid window on the license host PC.
>
> Take a screen shot of your Wechoid window with the Windows snipping tool or similar.

6.   Keep the record of your **Lock Code** safe.
Close the Wechoid window.

Supply the **Lock Code** to Grass Valley with your Orbit option purchase order.

Add Orbit License to License Server

This section deals with adding the license file to the license server.

On the license host PC:

1. Go to
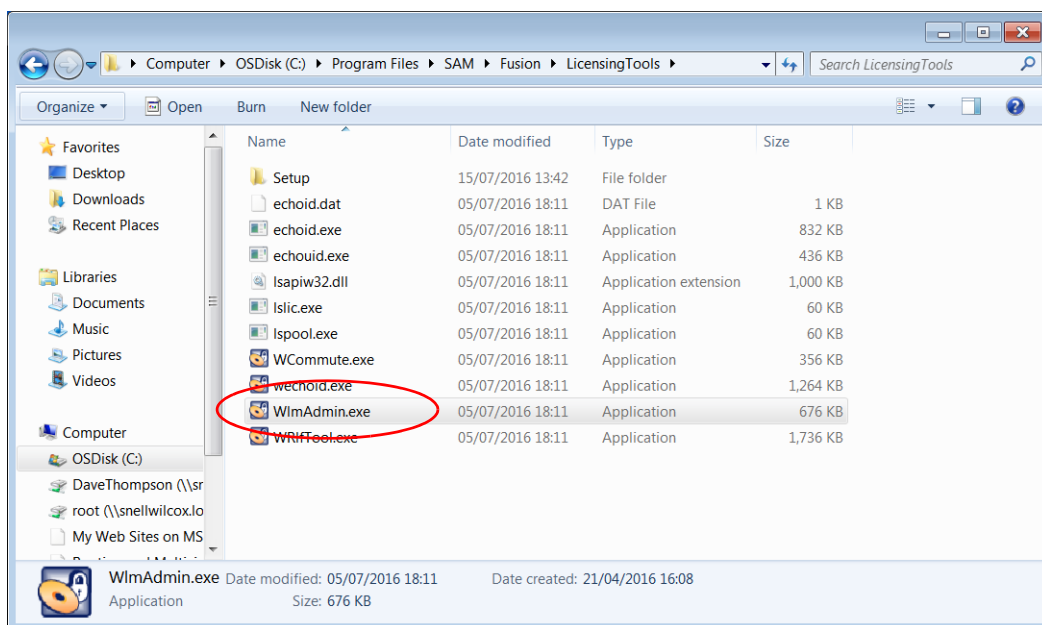   C:\Program Files\SAM\Orbit\LicensingTools.

Fig. E-31: Run 'WlmAdmin.exe'

2. Run 'WlmAdmin.exe', the license administration tools.
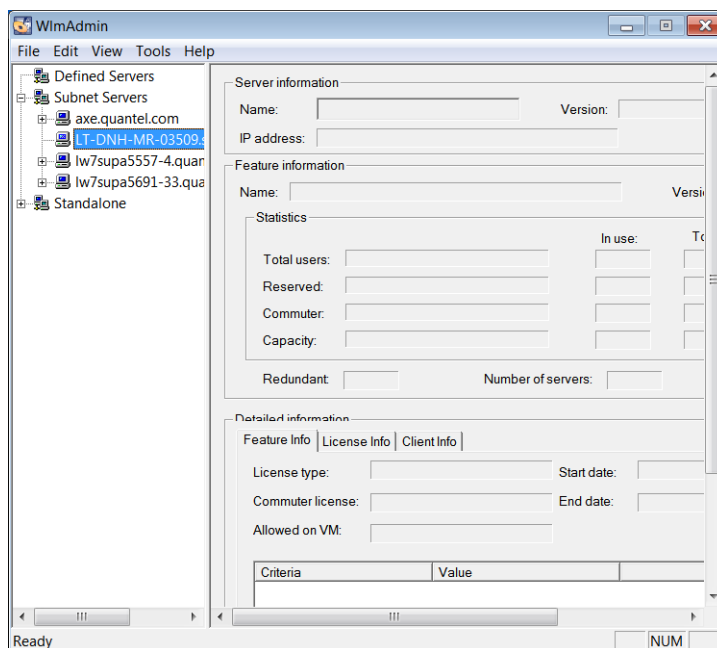   The WlmAdmin window appears, see Figure E-32.

Fig. E-32: WlmAdmin Window

3. Expand the 'Subnet Servers' tree view item and locate the license host PC.

4. Right-click on the license host PC item
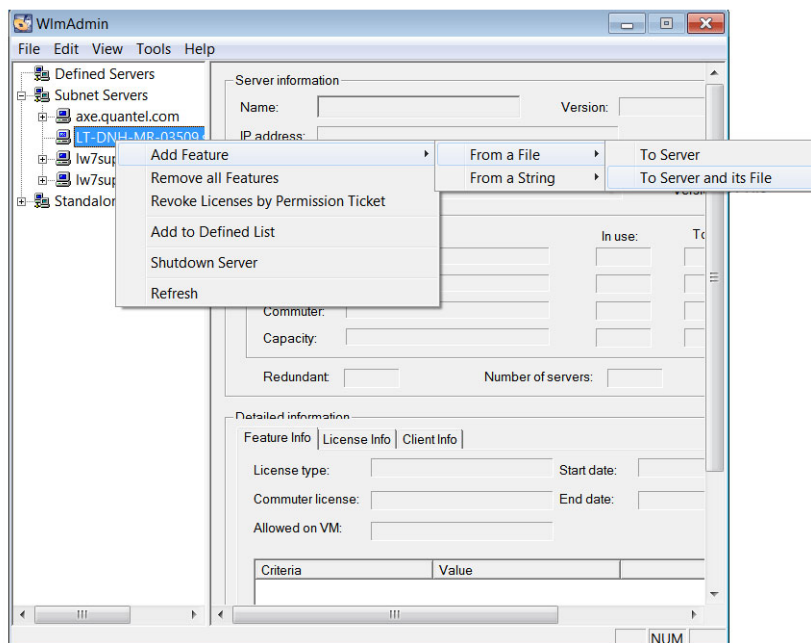and click on **Add Feature > From a File > To Server and its File**, see Figure E-33.

Fig. E-33: Add Feature

5. Browse to your license file and click **Open**.
The license file is read and the licensed feature is added to the license server.
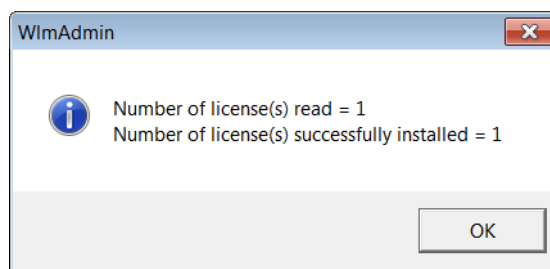An acknowledging message is displayed, see Figure E-34.

Fig. E-34: WlmAdmin License Read message

6. Click **OK**.
The license file contents have been read and the licensed feature has been added.

The Orbit license has now been added to the license server.

In the WlmAdmin window, license feature information may be seen by expanding the license host PC in the tree view. Beneath the license server PC name, the newly-added license name appears; for example, see Figure E-35.

Close the license tools window, WlmAdmin, when done; the license service continues to run.
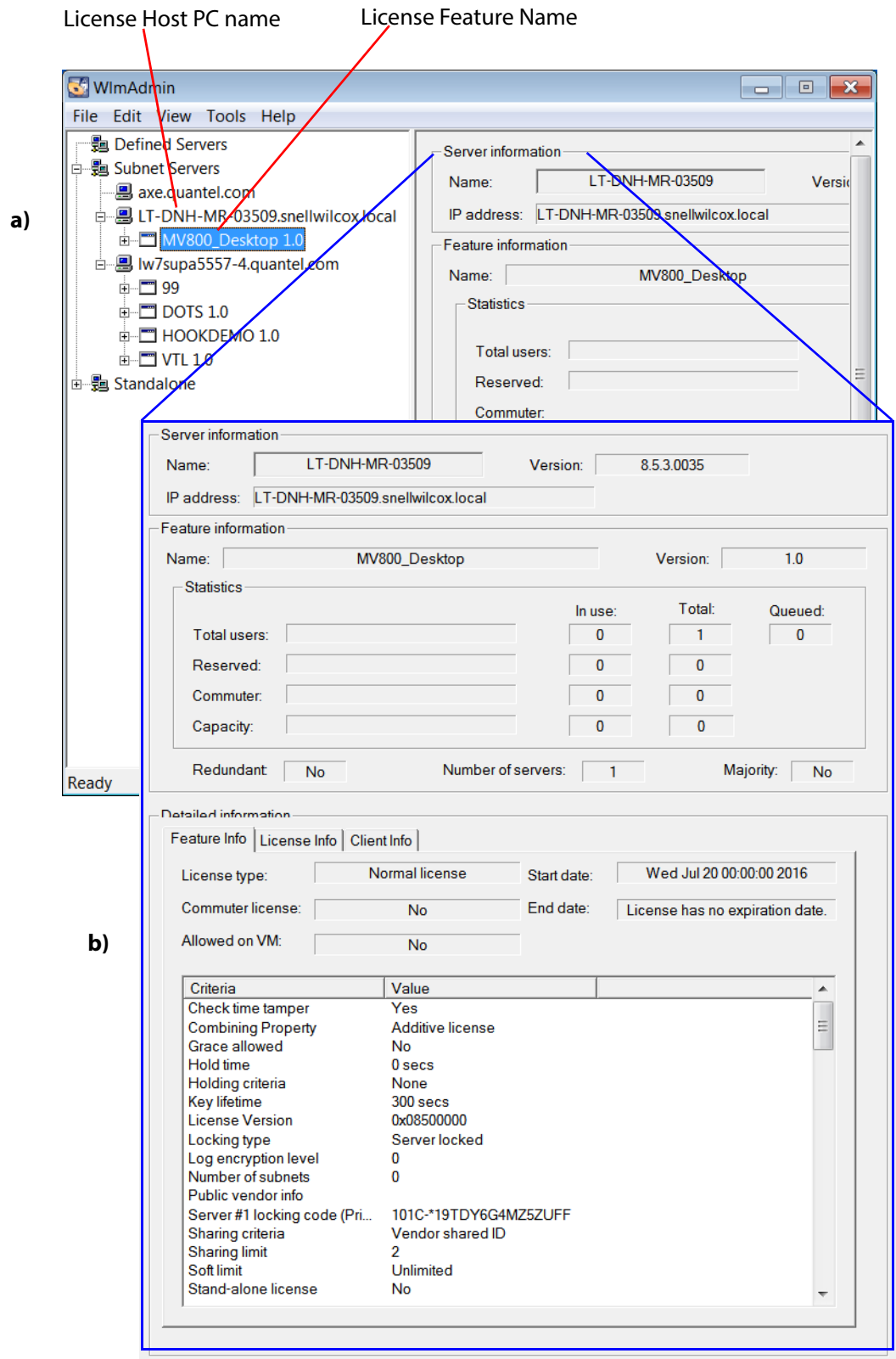
License Host PC name   License Feature Name

Fig. E-35: WlmAdmin License Information
a) License Feature Name in expanded tree view.
b) License Server and Feature Information in right-hand pane.

VLC Video Stream Player Installation

This section describes installation of the VLC video stream player used to view the H.264 video streams on the 'video wall' PC from MV-8 Series Multiviewers with early versions of the Grass Valley Orbit software tool (earlier than Orbit v2.5.16).

Later Orbit versions include a streaming video player and do not require any separate installation of the VLC player.

Introduction

For early Orbit versions, a VLC streaming video player is required to be running on the Video Wall PC. VLC is a free and open source cross-platform multimedia player from VideoLAN, which plays various streaming protocols and is compatible with the H.264 streamed multiviewer inputs from an MV-8X0/MV-8X1 Multiviewer.

System Component	Requirement
VLC streaming video player	64-bit

Install

The video stream player used is the 64-bit VLC player from VideoLAN (*www.videolan.org*).

1. Download the 64-bit VLC installer from
   http://www.videolan.org/vlc/download-windows.html

   Note: Download and install the 64-bit installer for Windows, *not the 32-bit installer*.
   The correct downloaded installer file name will have the form
   '**vlc-N.N.N-win64.exe**', where N.N.N is the vlc software version number.
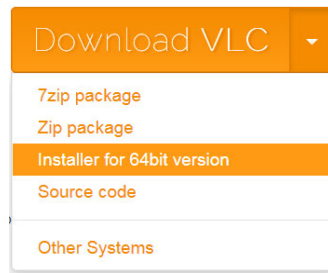
Fig. F-36: VLC Installer 64-bit Download

2. Run the VLC 64-bit installer.
    The VLC media player Setup Wizard begins.

3. Read the license agreement and click **Next**.

4. Click **Next** on the following screen.

5. You are invited to choose an Install Location. Use the default location on your PC. Click **Install.**
    Installation begins and a progress bar is shown.

Note:	It is possible to specify your own VLC install location instead of the default. In this case, *after installation*, create a system environment variable VLC_PLUGIN_PATH and set this to the install folder path. (Example: VLC_PLUGIN_PATH C:\Program Files\VideoLAN\VLC)

6. A completion screen is shown when VLC is installed. See Fig. F-37:.
    Click **Finish**.
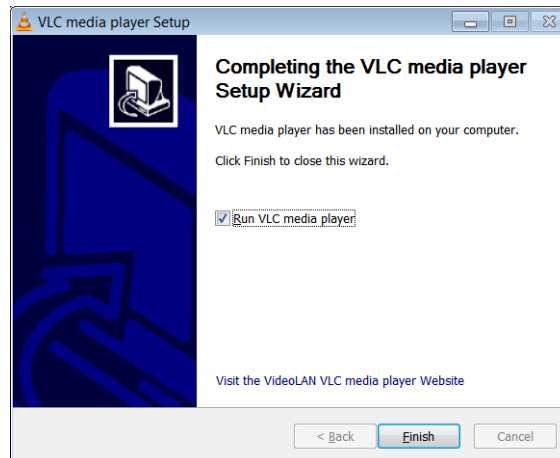   The VLC player starts up. Click **Continue** at the splash screen.

Fig. F-37: MV-800-DT Multiviewer Video Wall

7. Close the VLC player.
    The VLC player is installed.

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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 G-1 on page 148.
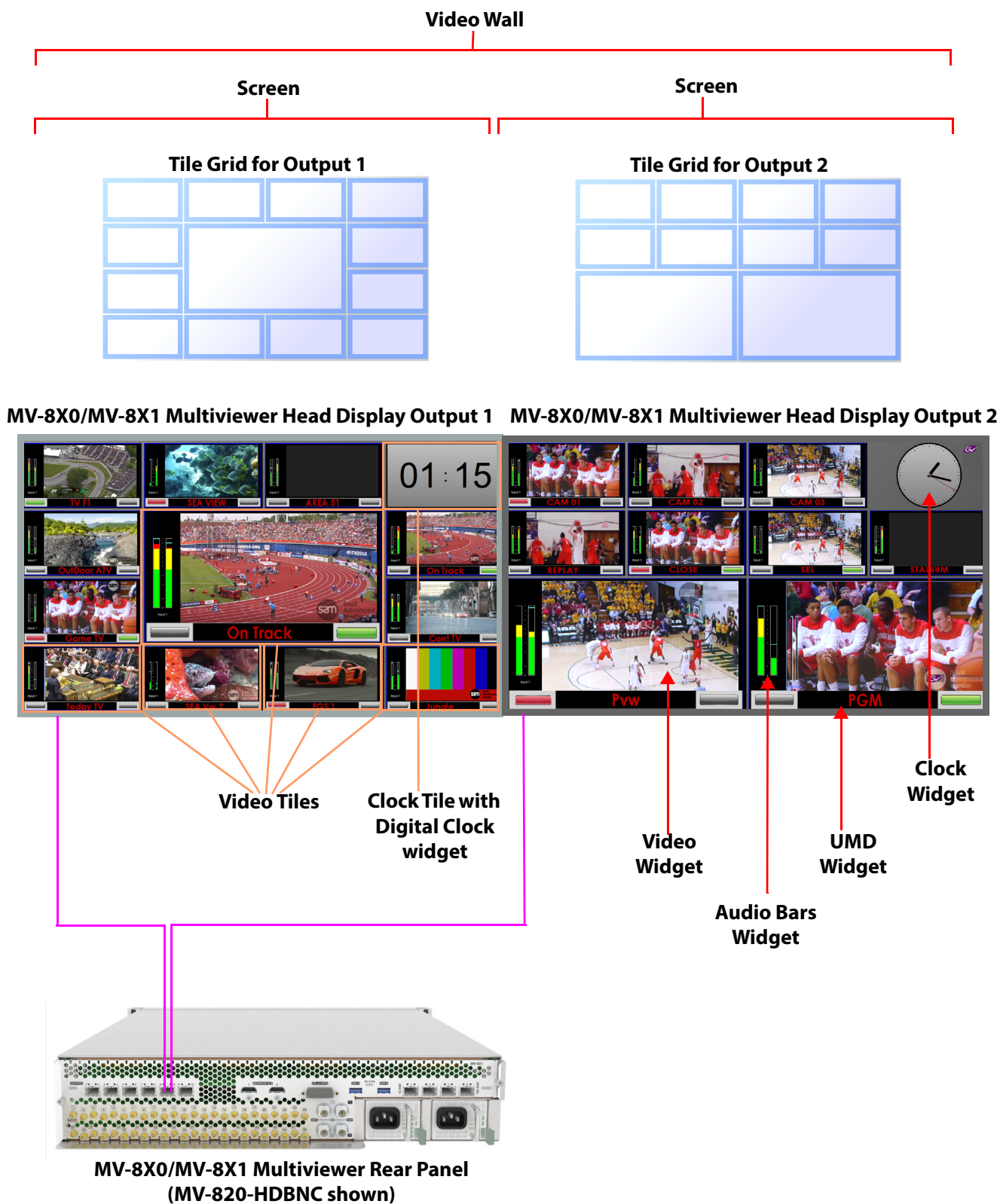
Fig. G-1: Example Video Wall of Two Monitor Display Screens

Table G-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	The style and appearance of the video wall and its screen elements.
	A Theme is a set of widget styles which can be applied to a project. Each widget may have one or more specific styles.
	Using themes, a video wall may be tailored to conform to a house style.
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	A rectangular area on a video wall screen, usually displaying video inputs and other supporting information.
	For example, a tile may display a video picture with audio level and other related status information.
	Other information may be displayed in tiles, for example, time, images, labels and/or text.
Tile Grid	A multiviewer video wall screen is divided up into rectangular areas; various sizes and arrangements are possible. A tile grid can be used in the Grass Valley Orbit tool for quick-positioning of tile arrangements on a wall.
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	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.
	Widget types include: Audio bars, Clocks, Images, Labels, Lines, Tally LEDs, Timers, UMD's, Video and Web sources.
Head Display Output	A 1080P or 720P output from the MV-8 Series Multiviewer. There are up to 12 head display outputs.
	On the MV-8X0/MV-8X1 Multiviewer product, this can be SDI (Coax or Fiber) or HDMI, or video-over-IP depending on the product version.
	Each head display output is then typically connected to a monitor display that forms all or part of a multiviewer video wall.
Video Input	One of 48 video inputs to the MV-8 Series Multiviewer in the MV-8X0/MV-8X1 Multiviewer product.

User Notes:

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