GV ORBIT

Version 1.2.0

Admin Guide

13-03082-090 AC

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www.grassvalley.com

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Introduction

Welcome to GV Orbit! This Administration Guide is designed to help you get your GV Orbit Server up and running. The following chapters will guide you through the installation, networking, and server admin configuration of a GV Orbit system. This chapter provides a brief GV Orbit overview. The purpose of this guide is to provide a brief introduction to GV Orbit Admin interface and its features.

Related Documentation

Use the following related documentation to configure GV Orbit and to better understand the available features. You can obtain the latest product documentation from the Documentation Library section of Grass Valley's website (www.grassvalley.com/docs/gvorbit).

Part Number	Document Title
GVB-2-0860A-EN-DS	GV Orbit Datasheet
13-03082-010	GV Orbit Release Notes
13-03082-020	GV Orbit Welcome
13-03082-030	GV Orbit Client Quick Start Guide
13-03082-090	GV Orbit Admin Guide (this document)
13-03082-130	GV Orbit Routing Panel User Guide
Dell 09K9WX	Dell EMC PowerEdge XR2 Getting Started Guide
–	Dell EMC PowerEdge XR2 Installation and Service Manual
–	Dell Integrated Dell Remote Access Controller 9 User's Guide (iDRAC)

For Dell documentation, use your server's service tag to access the documentation on Dell's website.

Document Applicability

This document does not apply to GV Orbit Lite product users.

Software Updates

For the latest features, bug fixes, and stability enhancements, make sure this product has the latest software version installed before putting it into active service. You can obtain the latest GV Orbit software from Grass Valley Technical Support. See Grass Valley Technical Support, on page 248.

About GV Orbit

GV Orbit is a single, consolidated, overarching configuration, control and monitoring package specifically designed for the dynamic orchestration of broadcast media networks, whether they be SDI, hybrid or pure IP. Its underlying architecture, however, is targeted at open standard-based IP systems with many features and functions specifically crafted to make IP easy.

Overview of the GV Orbit System
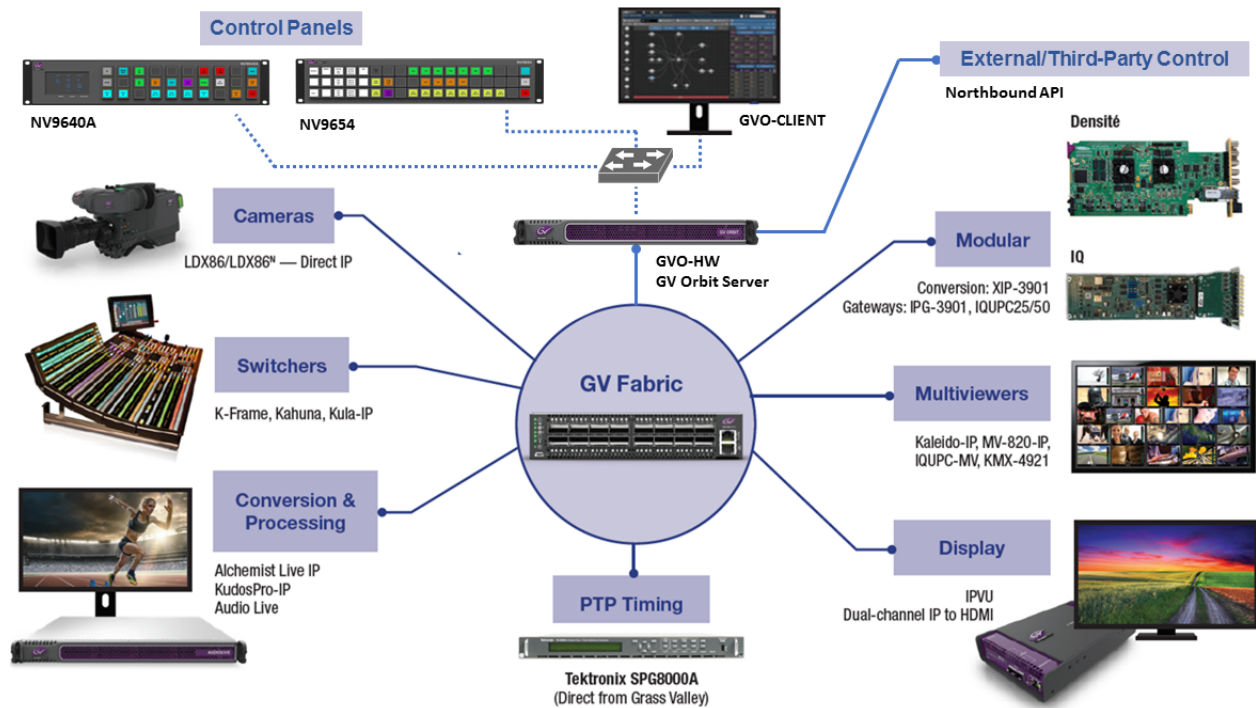
GV Orbit Server Installation

Introduction

This chapter provides information about system requirements, items shipped with your GV Orbit Server and it will guide you through GV Orbit Server installation.

Getting Organized / Unpacking

Required Materials

Your GV Orbit Server package includes the following:

- One GV Orbit Server
- Installation hardware and rails
- Accessory tray containing:
    - Dell PowerEdge documentation
    - 2 × Power cords
- GV Orbit documentation folder containing:
    - Welcome letter, with setup and configuration checklist.

In addition to the above, you will need the following (not supplied):

- One 1GBase-T Ethernet switch having enough ports for the primary management network:
    - The primary management port for each GV Orbit Server **GB1** port. See Port Identification, on page 21.
    - The server's Enterprise (iDRAC) port for each GV Orbit Server if you have made a BIOS setting change on the GV Orbit Server. See Bridging iDRAC onto a LAN on Motherboard (LOM) Port to Save Cabling, on page 26.
    - Client PCs.
    - Panel devices.
    - Production equipment that uses a management port for configuration and control (the equipment uses out of band signaling).
    - Connection to all high-bit rate media network switches, to the optional iDRAC network switch, and to the optional secondary management network switch.

    Note: The use of multiple network switches is preferred. The theory is that should a network fail, then this will only degrade system availability and avoid a full system failure.

- [Optional] One 1GBase-T Ethernet switch having enough ports for the secondary (redundant) management network:
    - The secondary management port for each GV Orbit Server **GB2** port. See Port Identification, on page 21.
    - Panel devices equipped with a second management port.
    - Production equipment equipped with a second management port for configuration and control (the equipment uses out of band signaling).
    - Connection to all high-bit rate media switches and to the primary management network.
    - Connection to all high-bit rate media network switches and to the primary management network switch.
- Up to four 10GB Ethernet switches for high-bit rate media streams with enough ports to connect to all production equipment fitted with high-speed media ports.
- [Optional] One 1000Base-T (or 100Base-T) Ethernet switch having enough ports for the Enterprise iDRAC network. See also Bridging iDRAC onto a LAN on Motherboard (LOM) Port to Save Cabling, on page 26 to eliminate the need for this switch and its related cabling.
    - For each GV Orbit Server's Enterprise iDRAC port found on each GV Orbit Server if you are using the default iDRAC BIOS settings.
    - Connection to the primary management network switch and to the secondary management network switch, if available.
- Client PC (refer to the *GV Orbit Release Notes* for client PC requirements; see Related Documentation, on page 11).
- Cables to make Ethernet network connections between:
    - All equipment (GV Orbit Servers, client PCs, panel devices, production equipment, and so on) and their network switch.
    - Network switches.

Cable type	Purpose
CAT-5e or CAT-6a	For Ethernet connectivity for the server's Enterprise (iDRAC) Network
CAT-5e or CAT-6a	For Ethernet connectivity for the Management Network
Fiber or CAT-6a	For Ethernet connectivity for high-bit rate media networks

- Standard 19-inch rack.

You also will need for the first-time startup configuration (not supplied):

For the first-time startup, you need to connect to the GV Orbit Server's console by temporarily connecting the following equipment to the GV Orbit Server:

- Monitor which supports one of the following resolutions and is equipped with a 15-pin VGA connector.
- USB keyboard.
- USB mouse (optional).

GV Orbit Server Physical Interface

When the front cover is removed, the following connectors, controls, and indicators are available.

Item	Description
[1] LEDs	Status LED indicators
[2] VGA[i]	VGA Connector (×1)
[3] eSATA	Connection for external storage
[4] Hard Drives	×2
[5] Power On/Off	Press to initiate GV Orbit Server startup. Once running, press again to initiate server shutdown.
[6] USB	USB 2.0 port
[7] Enterprise port	iDRAC (Micro USB 2.0 port)
[8] Information Tag	Service Tag, NIC, MAC address
[9] CAC	Common Access Card / Smart Card Reader

i. 1.The rear VGA port overrides the front VGA port when both VGA ports are connected.

On the rear panel, the following connections are available.

Item	Description
[11] COM	Serial port
[12] Enterprise port	iDRAC (RJ45 1GBase-T port (×1))
[13] LAN	RJ45 1GBase-T port (×2)
[14] NIC PCIe 3.0 Slots	RJ45 10GBase-T port (×4) or Intel X710 Quad Port 10Gb SFP+
[15] VGA	VGA Connector (×1)

Item	Description
[16] USB	USB 3.0 port (×2)
[17,18] Power connector	IEC (×2)

For more information about the frame's connections, controls, indicators, and maintenance operations, refer to the *Dell EMC PowerEdge XR2 Installation and Service Manual*. See Related Documentation, on page 11.

Mechanical Installation

Setting up the GV Orbit Server Hardware

To set up the GV Orbit Server hardware

1   Refer to the *Dell EMC PowerEdge XR2 Installation and Service Manual* (see Related Documentation, on page 11) shipped with your GV Orbit Server, and mount the unit in a standard 19-inch rack. Make sure that the unit will have adequate ventilation.

2   Configure the GV Orbit Server for first time use. See First-Time Start-up Configuration, on page 26.

GV Orbit Server Cabling

Introduction

This chapter shows how to interconnect the GV Orbit Server with its associated networks.

Cabling Diagram

Aside from the iDRAC port, Ethernet ports on the GV Orbit Server are not application or service specific. That is, any port can be used for any use or protocol by GV Orbit.

The diagrams below show the typical network connections for the GV Orbit Server.

> Note: The management network(s) are interconnected with the high-bit rate media networks through the Relay service. See Relay Service, on page 200.

Typical cabling diagram

GV Orbit Server 1

iDRAC

MANAGEMENT × 2

HIGH-SPEED PORTS × 4

1st Power Supply
Module

2nd Power Supply
Module

Media Network
RED

Media Network
BLUE

Network

Network

Production
Equipment
with a
Management
Port

Management
Network

PC with GV Orbit Client

iDRAC

MANAGEMENT × 2

HIGH-SPEED PORTS × 4

1st Power Supply
Module

2nd Power Supply
Module
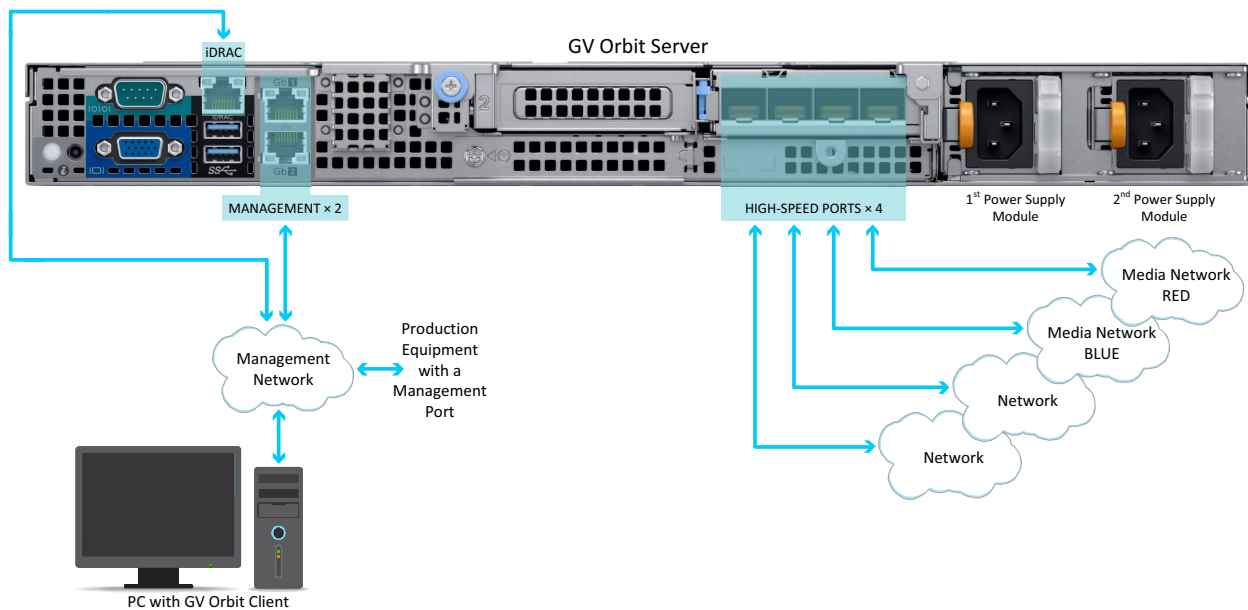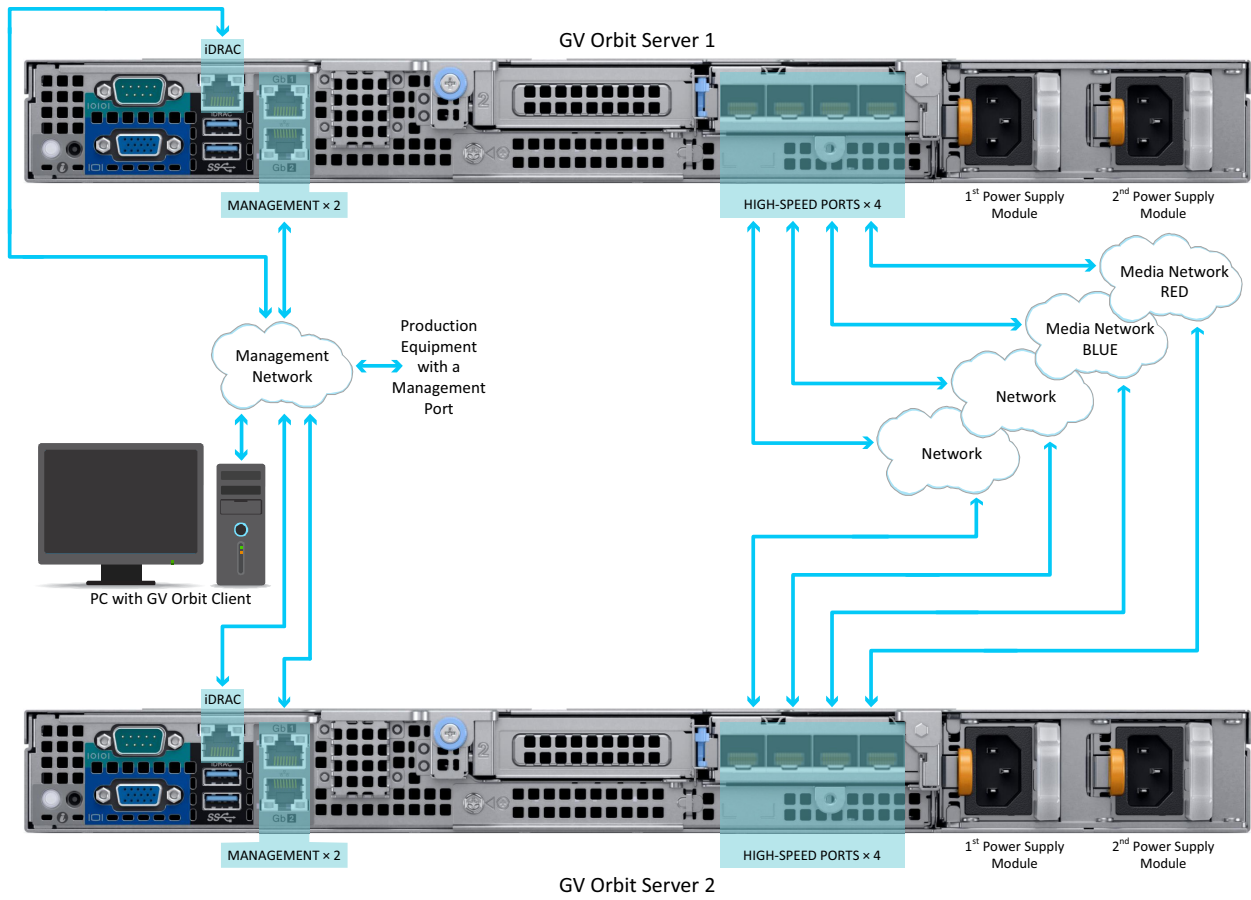
GV Orbit Server 2

Typical cabling diagram for a cluster

Port Identification

How Ethernet ports are identified in the GV Orbit Admin Interface depends on the type of network card interface installed in your GV Orbit Server.

Ethernet Port Identification with an SFP (fiber) Network Card
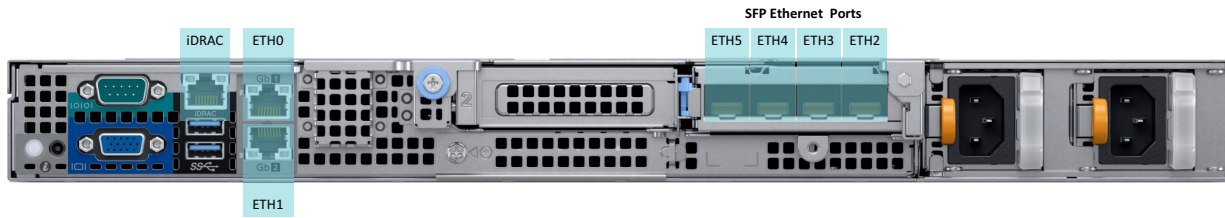
*Ethernet port identification used in the GV Orbit Admin interface with a GV Orbit Server equipped with an **SFP (fiber)** network card*

Port Identification:			
Marked on the Server Chassis	**In the BIOS**	**In GV Orbit and OS**	**Connection Type and Data Bandwidth**
iDRAC	iDRAC	-	RJ-45 / 1GB
GB1[i]	LOM0	eth0	RJ-45 / 1GB
GB2[ii]	LOM1	eth1	RJ-45 / 1GB
–	–	eth2	SFP / 10GB
–	–	eth3	SFP / 10GB
–	–	eth4	SFP / 10GB
–	–	eth5	SFP / 10GB

i. This interface port must be used as the primary management network.

ii. If required, use this interface port for a secondary management network to support equipment that has a second management port (for redundancy). Otherwise it can be used for any other application.

Ethernet Port Identification with an RJ-45 (copper) Network Card
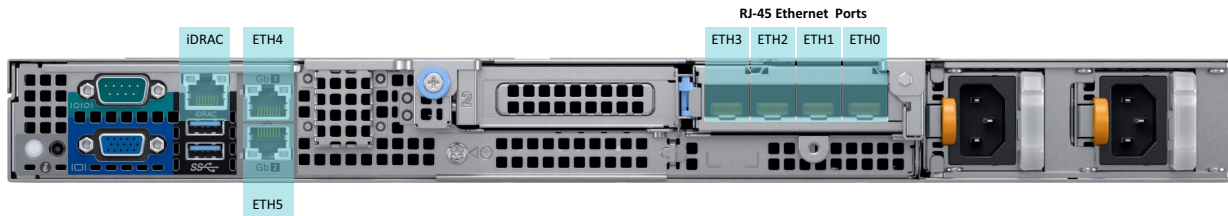
*Ethernet port identification used in the GV Orbit Admin interface with a GV Orbit Server equipped with an **RJ-45 (copper)** network card*

Port Identification:			
Marked on the Server Chassis	**In the BIOS**	**In GV Orbit and OS**	**Connection Type and Data Bandwidth**
iDRAC	iDRAC	-	RJ-45 / 1GB
GB1[i]	LOM0	eth4	RJ-45 / 1GB
GB2[ii]	LOM1	eth5	RJ-45 / 1GB
–	–	eth3	RJ-45 / 10GB
–	–	eth2	RJ-45 / 10GB
–	–	eth1	RJ-45 / 10GB
–	–	eth0	RJ-45 / 10GB

i. This interface port must be used as the primary management network.

ii. If required, use this interface port for a secondary management network to support equipment that has a second management port (for redundancy). Otherwise it can be used for any other application.

Cabling and Configuring the GV Orbit Server to support SMPTE ST 2022-7 Redundancy

To make streaming more reliable over an IP network, the implementation of SMPTE ST 2022-7 seamless protection switching depends on stream redundancy. This protection scheme transmits two identical SMPTE ST 2110-20 packet streams over physically separate network routes (shown as Red LAN / A Network and Blue LAN / B Network in the figure below), so that if one network goes down, the second network takes over. This process is seamless because switching between the streams is instantaneous and does not impact content.

The following figure shows two GV Orbit Servers in a cluster configuration where **GV Orbit Server A** and **GV Orbit Server B** provide failover protection for each other. See also Cluster Task, on page 42.
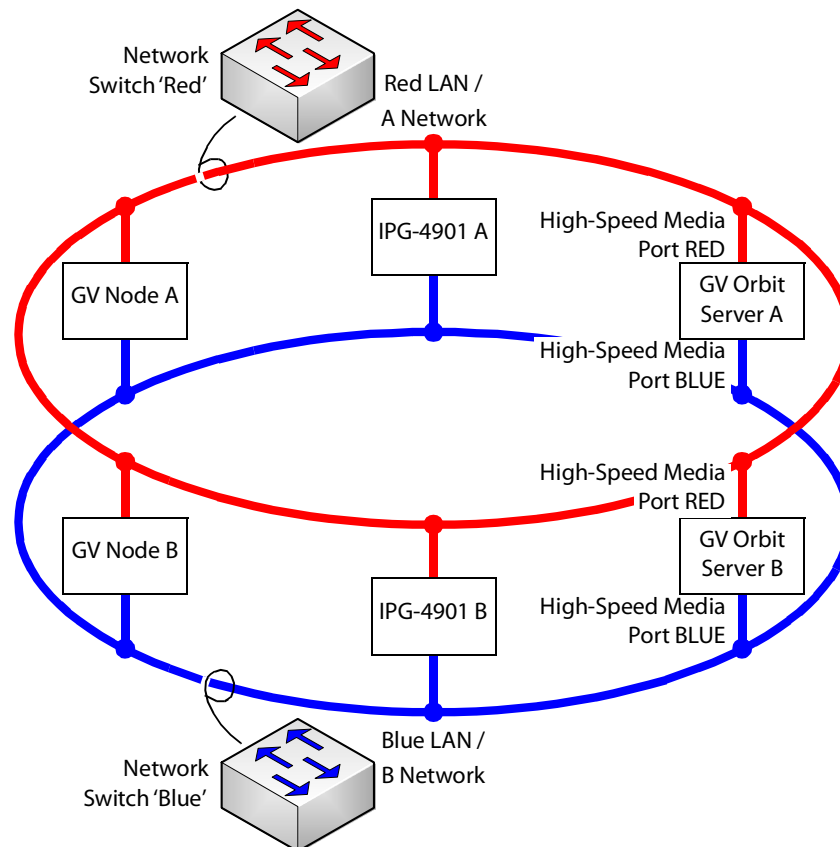
PREREQUISITES:

- At least two network switches must be used for this application. Contact Grass Valley for more information about switch compatibility. See Grass Valley Technical Support, on page 248. These switches must be configured to be used with SMPTE ST 2022-7. See the fabric configuration documentation supplied with the switch. For example, at minimum, subnets and IP address ranges must be set.
- The connected network must have a PTP grandmaster server clock on its domain.

Example of how to cable a GV Orbit Server for SMPTE ST 2022-7

1 As shown in the figure above, connect the GV Orbit Server's RED High-Speed Media Port to the A Network shown in red. See the Cabling Diagram, on page 19 to locate the High-Speed Media Ports.

2 Connect the GV Orbit Server's BLUE High-Speed Media Port to the B Network shown in blue.

3 Connect all other equipment to the network switches that provide sources and / or are destinations.

4 The network switches need to be configured. See the switch's user documentation for more information.

Getting Started 4

Introduction

This chapter shows how to get the GV Orbit Server up and running for the first time.

Configuring the GV Orbit Server's BIOS and Management Network IP Settings

The first time you power up the GV Orbit Server, you must configure the GV Orbit Server's management network settings. This allows you to connect to the GV Orbit Server's admin interface. Once you have access to the GV Orbit Server's admin interface, you then configure the remaining network interfaces as necessary.

GV Orbit Server is shipped with no default IP Address. Set the IP address through the server's console menu. This is accessed by connecting a keyboard and monitor directly to the GV Orbit Server.

About the Server Enterprise Network iDRAC

The Server Enterprise Network **iDRAC** is used to connect to the server's motherboard management interface. Using this connection reduces the need for physical access to the GV Orbit Server. iDRAC alerts administrators about server hardware level issues and enables them to perform remote system management. For more information about iDRAC, refer to the *Dell EMC PowerEdge XR2 Installation and Service Manual*; see Related Documentation, on page 11. See First-Time Start-up Configuration, on page 26 to enable it.

Should you choose to not connect the iDRAC port to your network, you must be prepared to connect a keyboard, mouse, and monitor directly to the server for emergency maintenance procedures, should this be necessary, under the supervision of Grass Valley Technical Support.

Bridging iDRAC onto a LAN on Motherboard (LOM) Port to Save Cabling

In the server's BIOS, there is the **NIC Selection** iDRAC setting to select which port is to be used for the iDRAC service.

iDRAC NIC Selection setting	Description
Dedicated	Uses the server's **iDRAC** network Ethernet port for the iDRAC service. The server's **iDRAC** network Ethernet port must then be connected to the Server Enterprise Network.
LOM0 LOM1	Uses one of the server's built-in Ethernet ports **LOM0** (GB1) or **LOM1** (GB2) to access the iDRAC service through the management network. Setting this option will avoid the extra cabling necessary to connect to the iDRAC port to a switch.

Furthermore, in the server's BIOS, there is the **Failover Network** iDRAC setting to select which port is to be used should the above network fail.

For more information about iDRAC, refer to the Dell Integrated Dell Remote Access Controller 9 User's Guide; see Related Documentation, on page 11.

First-Time Start-up Configuration

The first time you start-up the GV Orbit Server, you need to configure the Management Ethernet port interface. At this time it is recommended to enable iDRAC to allow remote server maintenance. Once this is complete, the remaining Ethernet ports can be configured through the GV Orbit Server admin's interface.

Proceed as follows.

1 Install the GV Orbit Server frame in its designated rack position.

2 Connect a monitor, keyboard, and optionally a mouse to the GV Orbit Server (front or rear panel connectors can be used).
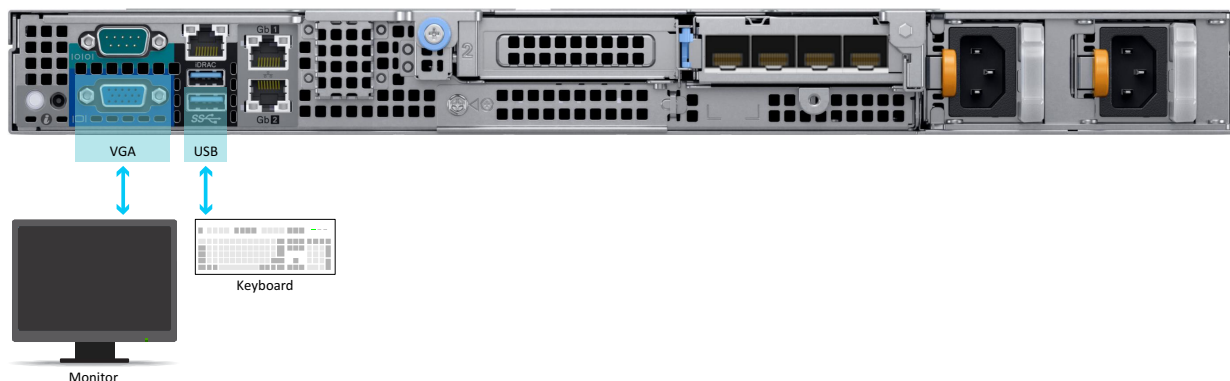
3 Connect the power cords to the GV Orbit Server frame, and then turn the power on. The power switch is located on the front panel.

The GV Orbit Server starts up. As the GV Orbit Server's power on tests verify the server's hardware, an option to configure the BIOS appears.

4 Press **F2** on the keyboard.
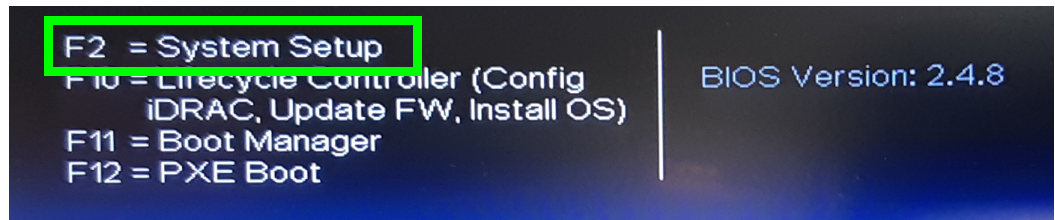
> Note: Though the description for F10 mentions iDRAC, do not use this option as it is not functional.

5 With the keyboard's down arrow key, select **iDRAC Settings**.
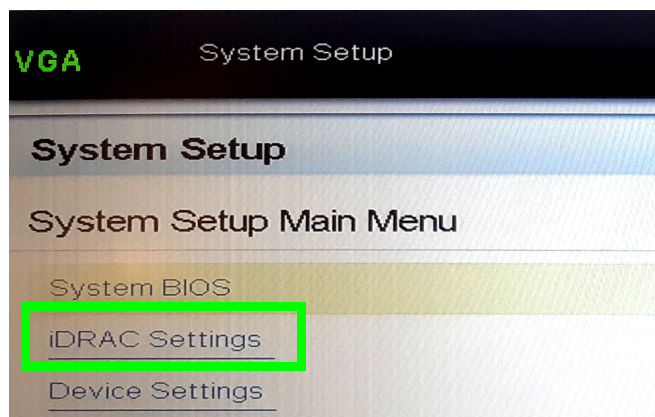
6 With the keyboard's down arrow key, select **Network**.

7 Set **Enable NIC** to **Enabled**.

8 Set **NIC Selection** and **Failover Network** according to Bridging iDRAC onto a LAN on Motherboard (LOM) Port to Save Cabling, on page 26.
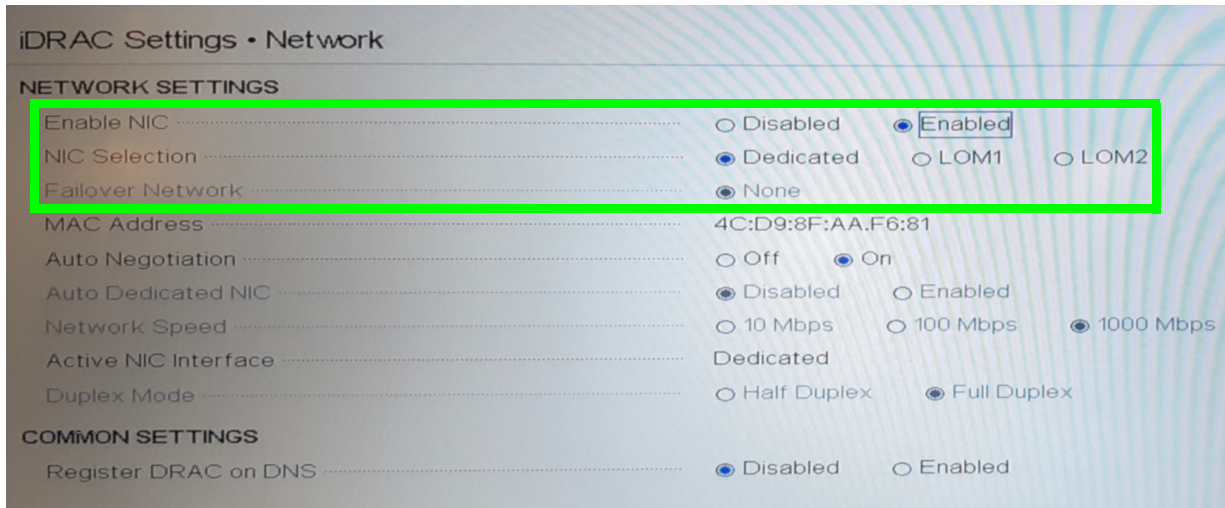
9 Set the network configuration for the iDRAC interface under **IPV4 Settings**.

10 Select **Back**.

11 Select **Reboot**.

Allow the GV Orbit Server to reboot and wait for the console menu to appear.

```
GV Orbit OS version X.X.X build XXX. Running from: DISK OS1 (/dev/sda2)
```
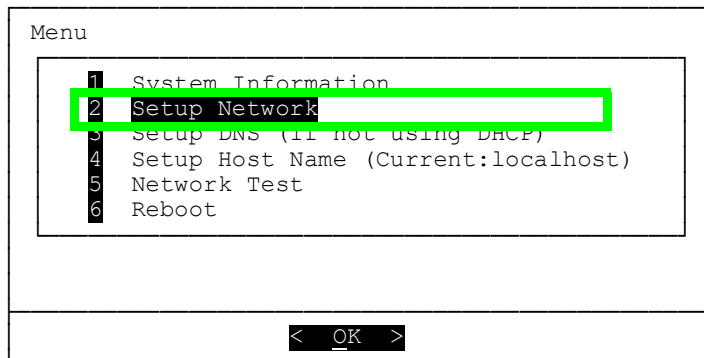

12 With the keyboard's down arrow key, select **Setup Network**.

13 Configure the GV Orbit Server's Management Ethernet network interface according to Port Identification, on page 21.

The following is an example of how to set the IP address of the GV Orbit Server's eth0 network interface to 10.0.3.5. Text shown in bold are values you enter and must be adapted to your network requirements.

```
GV Orbit OS version X.X.X build XXX. Running from: DISK OS1 (/dev/sda2)
───────────────────────────────────────────────────────────────────────
Available interfaces are: eth0 eth1 eth2 eth3 eth4 eth5.
Enter "?" for help on bridges, bonding and vlans.
Which one do you want to initialize? (or '?' or 'done') [eth0] eth0
Ip address for eth0? (or 'dhcp', 'none', '?') [dhcp] 10.0.3.5
Netmask? [255.0.0.0] 255.255.240.0
Gateway? (or 'none') [none] 10.0.3.1
Configuration for eth0:
type=static
address=10.0.3.5
netmask=255.255.240.0
gateway=10.0.3.1
broadcast=10.0.15.255
Available interfaces are: eth1 eth2 eth3 eth4 eth5.
Enter "?" for help on bridges, bonding and vlans.
Which one do you want to initialize? (or '?' or 'done') [eth0] done
Do you want to do any manual network configuration? [no] no
```

Once the GV Orbit Server management network interface has been configured, the remaining network configuration will be done within the GV Orbit Server's admin interface (see IP Configuration Task, on page 58). However, you can configure the remaining network interfaces, the DNS, and the GV Orbit Server's host name now by selecting the option from the menu, if you so choose.

14 Reboot the GV Orbit Server; select **Reboot**.

```
Menu

    ┌─────────────────────────────────────────────────────┐
    │  1    System Information                             │
    │  2    Setup Network                                  │
    │  3    Setup DNS (If not using DHCP)                  │
    │  4    Setup Host Name (Current:localhost)            │
    │  5    Network Test                                   │
    │  6    Reboot                                         │
    └─────────────────────────────────────────────────────┘



                    <   OK   >
```
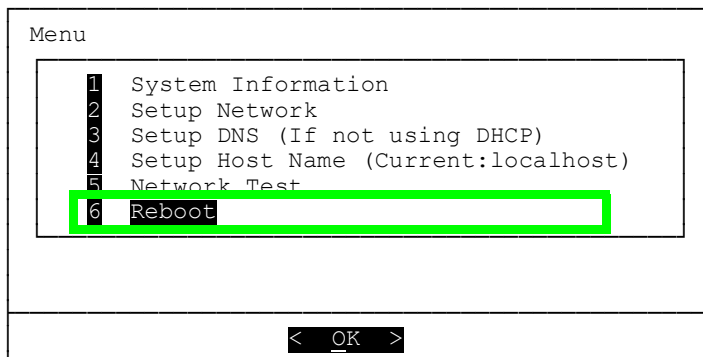
Allow the GV Orbit Server to reboot and wait for the console menu to appear.

15 Disconnect the monitor and keyboard from the GV Orbit Server.

16 Connect your GV Orbit Server's Ethernet ports to two or more Ethernet switches, according to the Cabling Diagram, on page 19:
   - One *Management Network* connected to **GB1** or **GB2**.
   - One or more *Media Networks* connected to other Ethernet ports.

17 Connect a client PC to the network that has connectivity with the *Management Network*. See the *GV Orbit Release Notes* for the client PC's requirement; see Related Documentation, on page 11

Commissioning the GV Orbit Server

Commission the GV Orbit Server as follows.

1 The configuration of the GV Orbit Server is through its web interface. See Launching and Logging in to GV Orbit Admin Interface, on page 31 for more information.

2 Navigate to the **IP Configuration** Task and configure the remaining GV Orbit Server's IP settings according to your network requirements. See IP Configuration Task, on page 58 and Cabling Diagram, on page 19.

3 Ping each piece of production equipment from the GV Orbit Server's network ports to verify network connectivity to all networked equipment. See PING Screen, on page 58.

4 Configure the GV Orbit Server according to your needs. See GV Orbit Server Configuration Tasks, on page 35.

5 Install the GV Orbit Client software applications on one or more client PCs that are going to be used to configure GV Orbit. See GV Orbit Client Software Application Downloads, on page 35.

6 Configure GV Orbit, refer to the *GV Orbit Client Quick Start Guide*; see Related Documentation, on page 11.

Launching and Logging in to GV Orbit Admin Interface

From a Browser

Access the GV Orbit Admin interface as follows:

1 With the client PC, enter the GV Orbit server's management IP address into the address bar of the web browser (Google Chrome). In the example, First-Time Start-up Configuration, on page 26, this is shown as *10.0.3.5*.

The GV Orbit Admin login screen appears. If not, click **Home** and the **log in**.
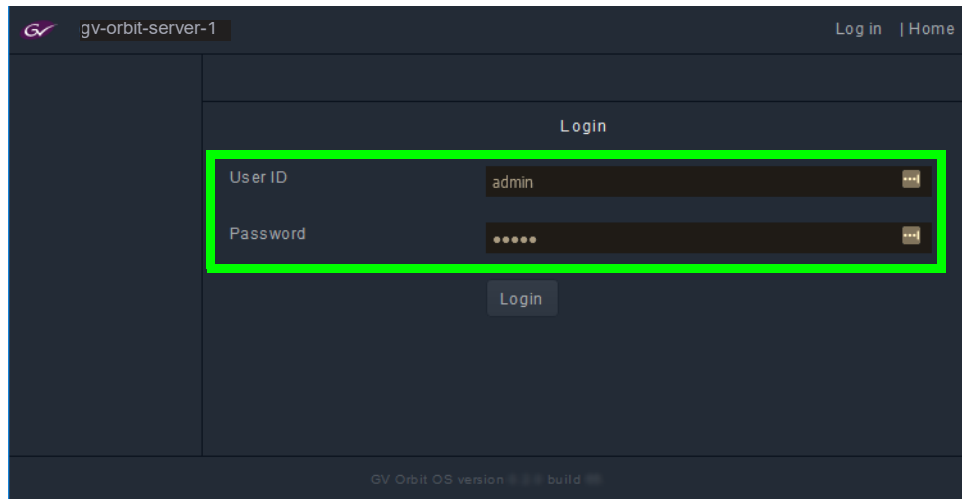
2 Enter your login credentials. The default login is *admin / admin*.

GV Orbit Admin Home Stage interface opens.
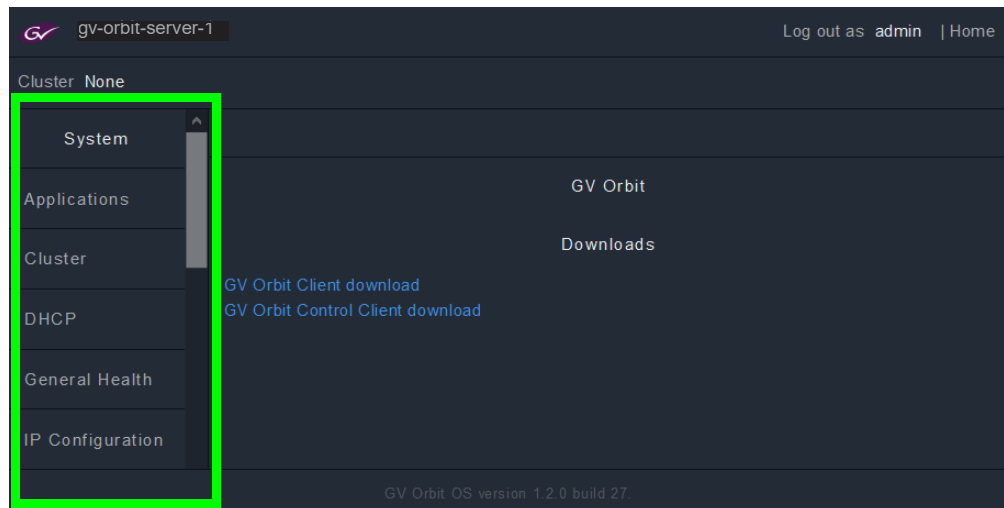
Note: Some options shown above are not available to users with a non-administrator role. For more informations, see Users Task, on page 69.

The left hand side of the screen has a menu of the available configuration screens. For **System** tasks, see GV Orbit Server Configuration Tasks, on page 35. For Services tasks, see GV Orbit Services, on page 73.

3   Change the admin password to secure access to the server. See Password Change
    Screen, on page 71.

From GV Orbit Client

With a GV Orbit C&M project open in GV Orbit Client, in the **Workflow** window:

1   Click on a 'Server' icon in the graphical workflow stage.
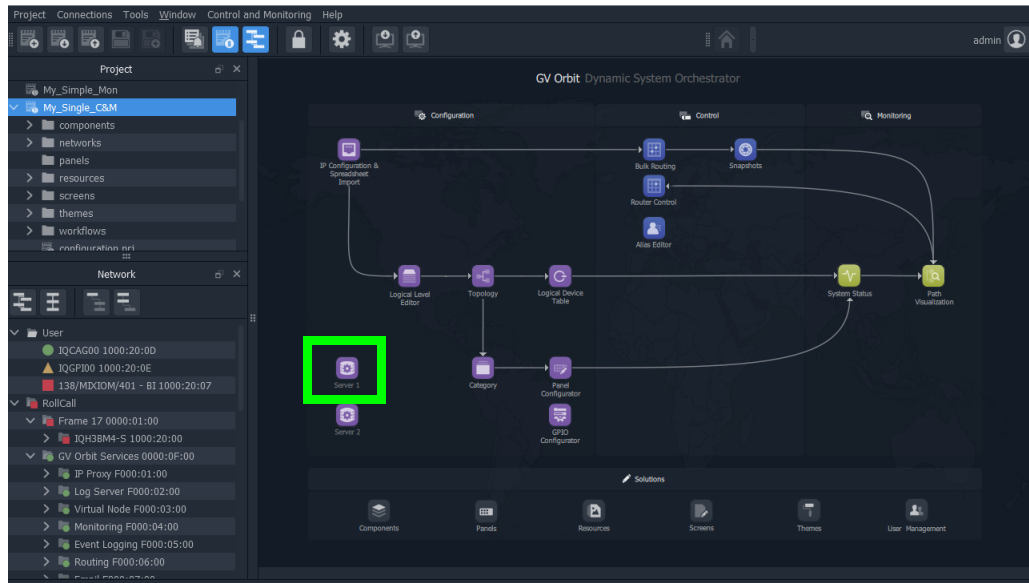
Fig. 4-1: C&M Project Workflow Stage and Server Icon

The GV Orbit server's **Admin Login** screen is opened.

Navigating Back to GV Orbit Home / Downloads Stage

At any time, you can navigate back to the Home stage by clicking **Home**.

To navigate back to GV Orbit Home Stage

1   Click **Home** in the upper right corner.
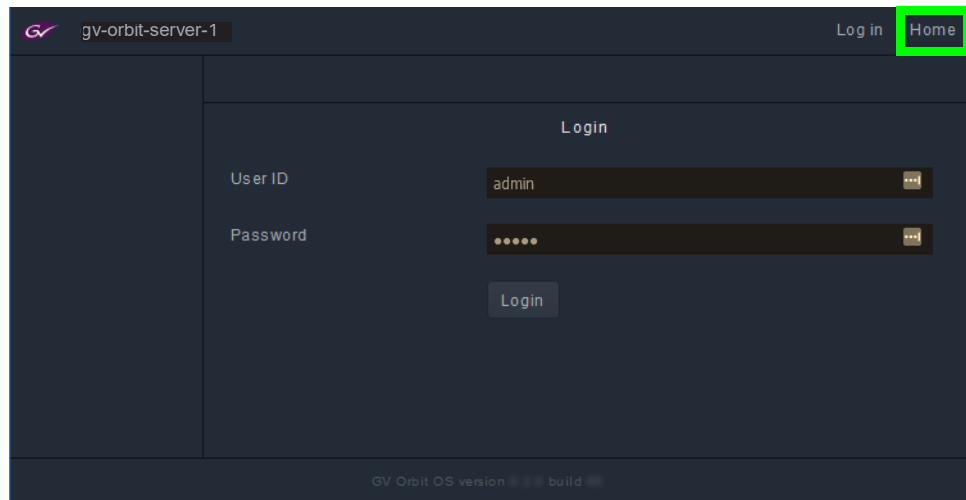
The GV Orbit Downloads task is shown.

To download the GV Orbit client software application, see GV Orbit Client Software Application Downloads, on page 35.

Switching User Profiles

From any open task, you can switch to another user profile. First, one or more user profiles must have been created; see Create User Screen, on page 70.

To switch to another user profile

1 Click on the user profile name at the top right of GV Orbit Admin.
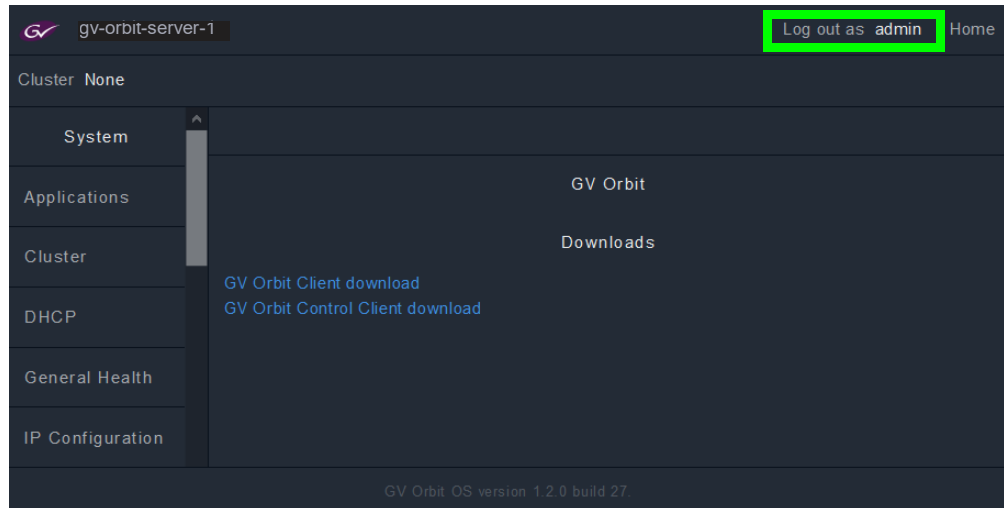
The Login screen appears.
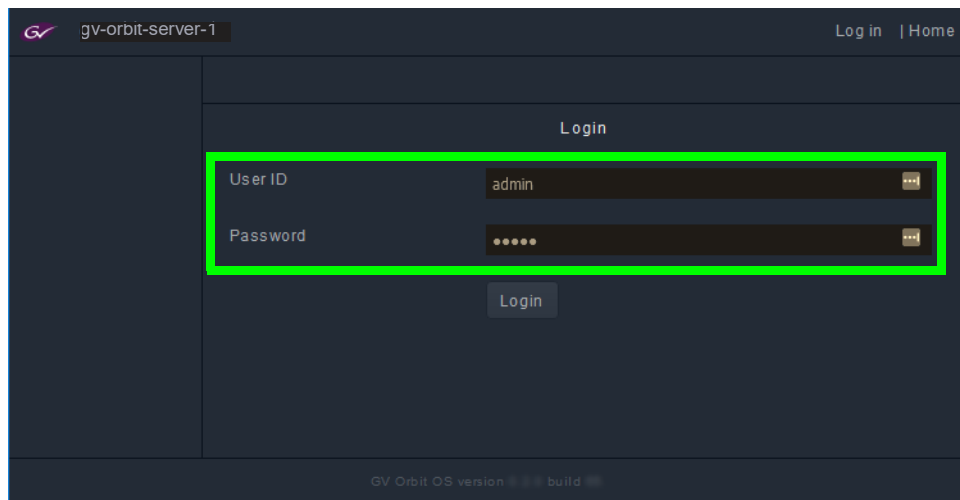
2 Enter the login credentials for the user profile, in the **User ID** and **Password** fields.

3 Click **Log in**.

GV Orbit Admin Home Stage interface opens.

GV Orbit Server Configuration Tasks

Home Stage

In the Home stage you download the GV Orbit client software applications. If you have updated the GV Orbit Server, you will need to re-download and install the GV Orbit client software applications on your PC in order to maintain compatibility.

GV Orbit Client Software Application Downloads

The GV Orbit client software is how users access the GV Orbit application in order to configure and use GV Orbit. GV Orbit clients run on a PC and connect through the network to the GV Orbit server.

GV Orbit Client software Application	Description
GV Orbit Control Client	Video and audio routing system client software application.
GV Orbit Client	Configuration, monitoring and logging client software application.

To access the native client software installer

1 From the PC on which you want to install the GV Orbit software application, log in to GV Orbit Admin. See Launching and Logging in to GV Orbit Admin Interface, on page 31.

2 In the default Home stage, click a software application download link.
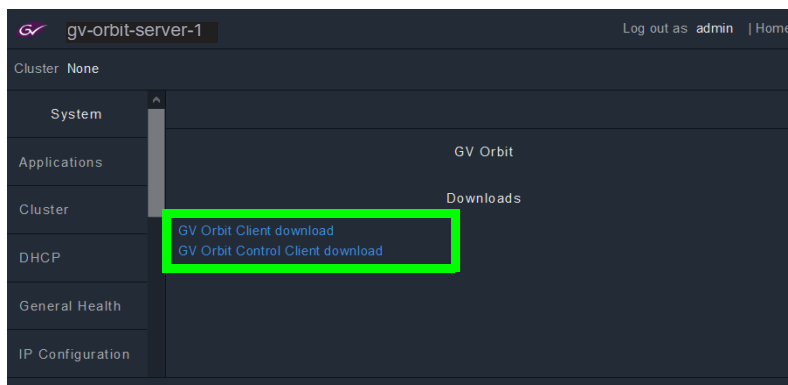
Your browser will ask to save a file.

3 Click **Save File**.

4 Once the download is complete, double-click the file to run it.

5 Follow the software installer instructions to complete the installation.

6 From the PC's Start menu, run the GV Orbit Control Client / GV Orbit Client software application.

For more information about installing and using the client software applications, refer to the *GV Orbit Client Quick Start Guide*; see Related Documentation, on page 11.

System

In the system tasks, you configure and perform maintenance on the GV Orbit server. The following tasks are available.

- Applications Task, on page 37
- Cluster Task, on page 42
- DHCP Task, on page 49
- General Health Task, on page 54
- IP Configuration Task, on page 58
- Log Files Task, on page 63
- Upgrade Task, on page 65
- Users Task, on page 69

Applications Task

You must be an administrator user to access this task. See Users Task, on page 69 for more information. The GV Orbit server runs a number of software applications, that work in concert to provide the necessary system applications to support all GV Orbit activity. The **Status** screen allows you to:

- Backup and restore most software application databases on the GV Orbit server. It is important to backup the GV Orbit server once you have configured it. Should anything happen with the server, you can then restore the configuration and quickly recover normal operation. See Global Backup, on page 37.
- Control the individual GV Orbit system applications:
  - View the status of the individual GV Orbit system applications
  - Control the individual GV Orbit system applications to:
    - Start, stop, and restart an application individually
    - Remove and restore the application's installation
    - Perform backup and restore operations

  See Installed Applications, on page 39.
- View the tail of the *gvos* log file to see the server's health, specifically to see an upgrade's success. See Log File / Tail Log File Details, on page 65.

Command Result

This is shown when there is an error or information message to be shown. For example, the creation status of a backup.

Global Backup

Global Backup allows you to backup all GV Orbit Server's databases and settings as a file that is saved locally on the server and to restore all GV Orbit Server's databases and settings from a file saved locally on the server. Any backup can be downloaded as a file to your PC to

be later uploaded to the GV Orbit Server when needed for disaster recovery or to transfer the settings to a new GV Orbit Server.
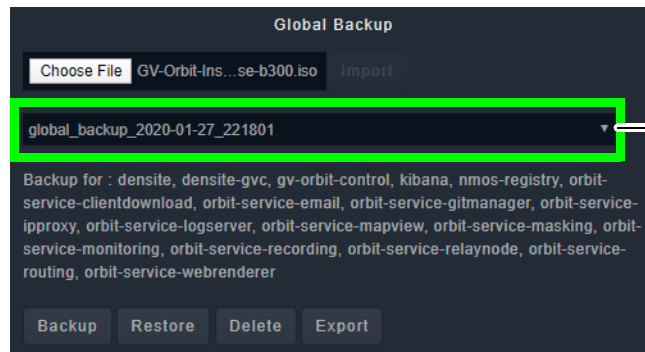
Pulldown list of the Global Backups available locally on the GV Orbit Server

Parameter	Description
Choose File Import	To upload a previously-created Global Backup file to the GV Orbit Server from your PC. 1 Click **Choose File** to identify the backup file on our PC. 2 Click **Import** to upload the backup file onto the GV Orbit Server. When complete, the Global Backup will be available in the pulldown list.
Pulldown list	Selects one of the Global Backups currently available locally on the GV Orbit Server. Global Backups are labeled with the date and time the backup was created.
Backup	Create a backup of most[a] GV Orbit Server's databases and settings as a file that is saved locally on the server. Once created, the backup becomes available in the **Global Backup** pulldown list and also the pulldown lists of each individual application that was included in this global backup.
Backup for	When a backup is selected from the pulldown list, this lists the applications that are part of the selected backup. The individual applications shown in this list can be restored by that application using this backup: See the application's pulldown list and the **Restore** feature in Application Maintenance, on page 40.
Restore	Restore the Global Backup to the GV Orbit Server's configuration that was selected from the pulldown list. Schedule this maintenance operation during off hours when the system is not in use.
Delete	Remove the Global Backup that was selected from the **Global Backup** pulldown list from the GV Orbit Server. For each individual application that was included in this Global Backup, this backup is also removed from the application's pulldown list.
Export	Save the Global Backup that was selected from the pulldown list as a file to your PC. After making changes to GV Orbit, save your work for disaster recovery: 1 Click **Backup**. 2 Select the just created Global Backup from the pulldown list. 3 Click **Export**. 4 Select a destination for the file on your PC.

a. Certain applications such as Elastic are not backed up.

Installed Applications

The Installed Applications shows you the status of each application and when an application is selected, you can perform maintenance actions on the selected application.

GV Orbit Applications Status

The Installed Applications table shows the operating status of each GV Orbit application.

Installed Applications					
Application	Status	CPU	Memory	Version	Installation Date
> Client Download	⏻	0.00%	0.03%	4.0.0 - build:20	Tue Dec 17 16:20:32 UTC 2019
> Densite	⏻	1.47%	5.45%	1.0.0 - build:201	Tue Dec 17 16:17:04 UTC 2019
> Densite GVC	⏻	10.72%	7.95%	1.0.0 - build:49	Tue Dec 17 16:17:59 UTC 2019
> Elastic	⏻	0.18%	8.53%	1.0.0 - build:42	Tue Dec 17 16:18:22 UTC 2019
> Email	⏻	0.26%	0.29%	4.0.0 - build:16	Tue Dec 17 16:21:03 UTC 2019
> Event Logging	⏻	1.23%	0.82%	4.0.0 - build:16	Tue Dec 17 16:22:27 UTC 2019
> GV Orbit Control	⏻	1.91%	8.86%	2.2.0 - build:263	Tue Dec 17 16:18:55 UTC 2019
> IP Proxy	⏻	0.39%	0.31%	4.0.0 - build:16	Tue Dec 17 16:21:34 UTC 2019

Click an application's row to perform maintenance actions

Parameter	Description
Application	Shows the application's name. Click an application's row to perform maintenance actions on the application. See Application Maintenance, on page 40. The services of certain applications also have configuration properties in **Services**. For more information about each service, see GV Orbit Services, on page 73.
Status	Shows if the application is running or not. ⏻: the application is running. ⧅: the application is stopped. ?: the application is being upgraded, is not correctly installed, or it is being removed. Note: In a cluster, if you have stopped a application and there is a failover (manually forced or otherwise), the application will be also stopped on the failover server, as the application has intentionally been stopped.
CPU	Shows the application's CPU usage.
Memory	Shows the application's memory (RAM) usage.
Version	Shows the application's revision (version) number.
Installation Date	Shows the date when the application was installed.

Application Maintenance

Each installed application has a number of maintenance actions that can be taken.
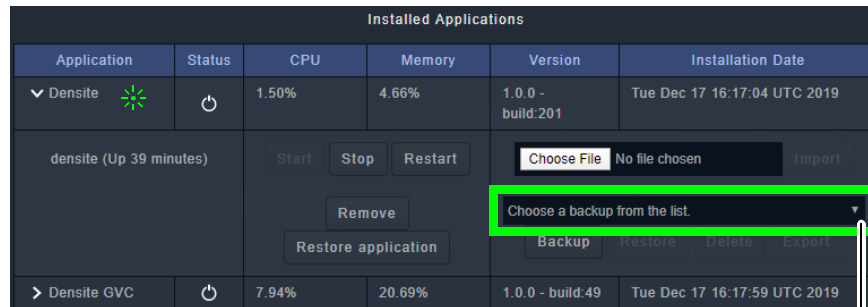
Pulldown list of the backups available locally on the GV Orbit Server

Parameter	Description
Application info	Shows how long the application has been running for.
Start	Starts the application.
Stop	Stops the application. Schedule this maintenance operation during off hours when the system is not in use. Note: In a cluster, if you have stopped a application and there is a failover (manually forced or otherwise), the application will also be stopped after the failover, as the application has intentionally been stopped.
Restart	Stops and then starts the application. Schedule this maintenance operation during off hours when the system is not in use.
Remove	Removes the application from the GV Orbit Server. Schedule this maintenance operation during off hours when the system is not in use.
Restore application	Reverts to the previously installed version of an application. For example, if for a given application you have version 2.1.0 installed, then you upgrade the application to version 2.2.0, then **Restore application** becomes available. Clicking **Restore application** will revert to the previous version 2.1.0 install. If there is no previous install to revert to, then **Restore application** is not available.
Choose File Import	Uploads a previously-created Application Backup file to the GV Orbit Server from your PC. Global Backups cannot be uploaded. 1 Click **Choose File** to identify the backup file on your PC. 2 Click **Import** to upload the backup file onto the GV Orbit Server. When complete, the Application Backup will be available in the pulldown list.
pulldown list	Selects one of the Backups currently available locally on the GV Orbit Server. In this list, you will see the Application Backups for this application and you will also see the Global Backups that include this application. Backup are labeled with the date and time the backup was created.
Backup	Creates a backup of the application's databases and settings as a file that is saved locally on the server. Once created, the backup becomes available in the pulldown list.

| Parameter	Description
Restore	Restores the Application Backup to the GV Orbit Server's configuration that was selected from the pulldown list. Schedule this maintenance operation during off hours when the system is not in use.
Delete	Removes the Application Backup from the GV Orbit Server that was selected from the pulldown list. Global Backups cannot be removed.
Export	Saves the Application Backup that was selected from the pulldown list as a file to your PC. After making changes to GV Orbit, save your work for disaster recovery: 1 Click **Backup**. 2 Select the just created Application Backup from the pulldown list. 3 Click **Export**. 4 Select a destination for the file on your PC.

Tail Log File

View the tail of the *gvos* log file to see the server's health, to see the status of ongoing actions on the applications. See Log File / Tail Log File Details, on page 65.

Cluster Task

You must be an administrator user to configure this task. Non-administrator users have view-only access to the cluster's IP addresses. See Users Task, on page 69 for more information.

A cluster provides continued operation (failover protection) should a GV Orbit Server fail. The failover method varies according to whether the *GV Orbit Control* Application is installed and running. See GV Orbit Applications Status, on page 39 to know the GV Orbit Control application's operating status.

GV Orbit Control Application	Failover Operational Method
Installed and running	If a problem occurs with the currently active GV Orbit Server, such as network loss or connectivity issues, the inactive GV Orbit Server becomes the active GV Orbit Server (it then supports all GV Orbit applications) automatically. The GV Orbit Server that was formerly active reboots in an attempt to recover from the failure and then remains in standby mode.
Not installed or is not running	GV Orbit Server cluster will not automatically fail over. You have to log into either: • the inactive cluster member and click **Force Active**. • the active cluster member and click **Force Failover**.

Cluster configuration.

Current (active)   10.37.81.65

Remote (standby)

Virtual IP Address

Reference IP Address

Update

Tail Logfile

File name   /var/log/cluster.log

File size   60260

```
2019-11-22 16:50:45 UTC gv-orbit-control is added to the list of applications stopped by the user.
2019-11-22 16:50:45 UTC System is not in a cluster.
2019-11-22 16:50:46 UTC gv-orbit-control is added to the list of applications stopped by the user.
2019-11-22 16:50:46 UTC System is not in a cluster.
2019-11-22 16:50:47 UTC gv-orbit-control is removed from the list of applications stopped by the user.
2019-11-22 16:50:47 UTC System is not in a cluster.
2019-11-22 16:50:53 UTC Script become-active-standby.sh (true) is running...
2019-11-22 16:50:53 UTC become-active-standby - Cluster mode unchanged, skipping updating applications.
2019-11-22 16:50:53 UTC Unset management interface eth0 virtual IP
2019-11-22 16:59:49 UTC gv-orbit-control is added to the list of applications stopped by the user.
2019-11-22 16:59:49 UTC System is not in a cluster.
2019-11-22 16:59:52 UTC gv-orbit-control is added to the list of applications stopped by the user.
2019-11-22 16:59:52 UTC System is not in a cluster.
2019-11-22 16:59:53 UTC gv-orbit-control is removed from the list of applications stopped by the user.
2019-11-22 16:59:53 UTC System is not in a cluster.
2019-11-22 16:59:57 UTC Script become-active-standby.sh (true) is running...
2019-11-22 16:59:57 UTC become-active-standby - Cluster mode unchanged, skipping updating applications.
2019-11-22 16:59:57 UTC Unset management interface eth0 virtual IP
2019-11-22 17:13:45 UTC gv-orbit-control is added to the list of applications stopped by the user.
2019-11-22 17:13:45 UTC System is not in a cluster.
2019-11-22 17:13:46 UTC gv-orbit-control is added to the list of applications stopped by the user.
```

Parameter	Description
Cluster Configuration	A server cluster provides 1:1 failover protection where the primary server is protected by the redundant server.
Current (active / standby)	This is the IP address of the current GV Orbit Server. For example, this is the IP address used in your browser's address bar to connect to this GV Orbit Server.
Remote (active / standby)	Once a cluster has been formed, this shows the IP address of the other GV Orbit Server cluster member. To create a cluster, see Creating a GV Orbit Server Cluster, on page 44.
(active) (standby)	If two GV Orbit Servers are configured in a redundant configuration as a cluster, then during the normal course of operations, this shows the operating status of the two GV Orbit Servers: Which GV Orbit Server is active and which GV Orbit Server is in hot standby mode (inactive). When GV Orbit Control Application (Densité GVOC) is installed and running: If a problem occurs with the currently active GV Orbit Server, such as network loss or connectivity issues, the standby GV Orbit Server becomes the active GV Orbit Server (it undertakes the processing load for all GV Orbit applications). The GV Orbit Server that was formerly active reboots in an attempt to recover from the failure and then remains in standby mode.
Virtual IP Address	When a cluster has been formed, this is the virtual IP address (known to the OS as *vethgvos*) to communicate with the active server in a GV Orbit server cluster. If a GV Orbit server cluster is not being used, you can use the GV Orbit server administration IP address or this virtual IP address for controlled devices. For example, in a cluster configuration, a soft panel should be configured to point to this virtual IP address. When a failover happens, the control is maintained as the panel uses this virtual IP address. In the IP Configuration, the status for this interface is shown as *vethgvos*. See Interfaces Status Screen, on page 58.

Parameter	Description
Reference IP Address	Set the IP address of a high-availability (reliable) device on the same network as the GV Orbit servers. It can be the IP address of the network's PTP clock for example. When a cluster has been formed, the two GV Orbit servers in the cluster ping each other to know if the other server is alive. Should one GV Orbit server not receive the ping back from the other GV Orbit server, the cluster may provoke an automatic failover by using connectivity to the reference IP device as a tie-breaker: • When a GV Orbit server as member of a cluster loses connectivity with both the other GV Orbit server and with the reference IP device, it will become inactive as it makes the determination that it is no longer network connected. • When a GV Orbit server as member of a cluster loses connectivity with the other GV Orbit server, however it still has connectivity with the reference IP device, this GV Orbit server will make the determination that is still has network connectivity and therefore it becomes active, if it was not already active.
Update	Click to apply any changes you have made to any of the above IP addresses.
Force Failover Force Active	When a cluster has been formed, these options becomes available. Click: • **Force Failover** to force the active GV Orbit Server into standby mode so that it ceases operation. • **Force Active** to activate the standby GV Orbit Server to now support all GV Orbit applications. Schedule this maintenance operation during off hours when the system is not in use.
Tail Log file	This outputs the last few lines of the GV Orbit server's log. As new logs are added to the log file, they are shown in real time.
File name	The log file's current file name used to identify it on the GV Orbit server's filesystem.
File size	The log file's current file size.

Creating a GV Orbit Server Cluster

A GV Orbit Server cluster consists of two GV Orbit Servers:

• Both GV Orbit Servers have identical databases. Changes to the database in one GV Orbit Server are mirrored in the other GV Orbit Server's database.

• Only one GV Orbit Server is active at any one time. The other GV Orbit Server is in hot standby. A failover mechanism detects when the active GV Orbit Server has failed, and transfers operation to the standby GV Orbit Server.

• A virtual IP address is used to make the GV Orbit Server cluster always reachable, as it always points to the currently active member of the GV Orbit Server cluster.

PREREQUISITES:

• Schedule this maintenance operation during off hours when the system is not in use.

• Two GV Orbit Servers, both:

- Connected to the same network. See Cabling Diagram, on page 19 for a cluster.
- Have the same GV Orbit software revision.
- Have their network configuration set. See IP Configuration Task, on page 58.
- Are operational. With a browser, you are able to navigate through the administration interface of both GV Orbit Servers.
- Have the same applications installed with the same software revision.
- When GV Orbit Server is to support DHCP (to be used with NV Panels for example), special configuration requirements must also be followed for this. See DHCP Task, on page 49 and specifically DHCP with a GV Orbit Server Cluster, on page 53.

To create a GV Orbit Server Cluster

To configure a cluster of two GV Orbit Servers to form a redundant configuration, proceed as follows:

1 With a browser, connect to the GV Orbit Server whose configuration you want to protect; typically this is the GV Orbit Server that has been configured the most. For this procedure, this is GV Orbit Server 1. When a cluster is formed, the remote GV Orbit Server's database will be overwritten and all configuration data will be lost on that server. For this procedure, the remote GV Orbit Server is GV Orbit Server 2.

2 In GV Orbit Server 1's Cluster task, set the:

   - GV Orbit Server 2's IP address in **Remote (standby)**.
   - Virtual IP address in **Virtual IP address**.
   - Reference IP address in **Reference IP address**.

3 Click **Update**.

   When you click **Update**, the database from GV Orbit Server 1 is copied to GV Orbit Server 2. GV Orbit Server 2 joins the cluster group automatically as the standby server. Failover is now available.

Dissolving a Cluster

Schedule this maintenance operation during off hours when the system is under reduced demand.

The following procedure is an example that presumes:

- The first of the two servers is called GV Orbit Server 1 with IP address = 172.19.79.143 and is currently active.
- The second the two servers is called GV Orbit Server 2 with IP address = 172.19.79.144 and is in hot standby.

- The virtual IP address for the cluster is 172.19.79.145.

To dissolve a cluster

Proceed as follows.

1 With a browser tab, connect to the GV Orbit Server 1 (active, IP address = 172.19.79.143) and navigate to the Cluster task.

2 Record the values for the following properties:

- GV Orbit Server 2's IP address in **Remote (standby)**.
- Virtual IP address to be used in **Virtual IP address**.
- Reference IP address in **Reference IP address**.

3 Clear the values for the following properties:

- GV Orbit Server 2's IP address in **Remote (standby)**.

The **Virtual IP address** parameter is left untouched for now.

4 Click **Update**.

The cluster has now been dissolved.

- GV Orbit Server 1 is now a standalone server, is online, its topology is activated in the GV Orbit Control application, and it has the virtual IP address. All third party devices/systems, using the virtual IP address, will have access to the active server (GV Orbit Server 1).
- GV Orbit Server 2 is now a standalone server, is online, its topology is de-activated, and it has no virtual IP address. All third party devices/systems will not communicate with this server as the virtual IP address is not configured.
- Failover is unavailable, as each server is acting as a standalone server.

Upgrading a Cluster

To upgrade a cluster, you must first break the cluster and then upgrade the two GV Orbit Servers individually. Schedule this maintenance operation during off hours when the system is under reduced demand.

The following upgrade procedure is an example that presumes:

- The first of the two servers is called GV Orbit Server 1 with IP address = 172.19.79.143 and is currently active.
- The second of the two servers is called GV Orbit Server 2 with IP address = 172.19.79.144 and is in hot standby.

• The virtual IP address for the cluster is 172.19.79.145.

```
Configuration
                            Cluster Configuration

Current (active)         172.19.79.143

Remote (standby)         172.19.79.144

Virtual IP address       172.19.79.145

Reference IP address

                         Update
```

To upgrade a cluster

Proceed as follows.

1 Dissolve the cluster. See Dissolving a Cluster, on page 45.

2 Upgrade the software on GV Orbit Server 2 (standby). See Upgrade Task, on page 65.

3 Once the upgrade of GV Orbit Server 2 is completed, in two separate browser tabs, connect to the:

• GV Orbit Server 1 (active, IP address = 172.19.79.143) and navigate to the Cluster task.

• GV Orbit Server 2 (standby, IP address = 172.19.79.144) and navigate to the Cluster task.

Note: The delay to carry out the following 4 steps is between 2 to 5 seconds. During this time, third party devices/controllers will not be able to perform any control actions.

---

4 For GV Orbit Server 1, clear the value for the virtual IP address in **Virtual IP address**.

5 Click **Update**.

6 For GV Orbit Server 2, set the value for the virtual IP address in **Virtual IP address**.

7 Click **Update**.

8 Deactivate the topology in the GV Orbit Control application on GV Orbit Server 1 and activate it on GV Orbit Server 2.

Now:

• GV Orbit Server 1 is now a standalone server, is online, its topology is de-activated in the GV Orbit Control application, and it has no virtual IP address. All third party devices/systems will not communicate with this server as the virtual IP address is not configured.

• GV Orbit Server 2 is now a standalone server, is online, its topology is activated, and it has the virtual IP address. All third party devices/systems, using the virtual IP address, will have access to the active server (GV Orbit Server 2).

• Failover is unavailable, as each server is acting as a standalone server.

9 Upgrade the software on GV Orbit Server 1.

10 Once the upgrade of GV Orbit Server 1 is completed, connect to the GV Orbit Server 2 (IP address = 172.19.79.144).

11 In GV Orbit Server 2's Cluster task, set GV Orbit Server 1's IP address in **Remote (standby)**.

12 Click **Update**.

When you click **Update**, the database from GV Orbit Server 2 is copied to GV Orbit Server 1. GV Orbit Server 1 joins the cluster group automatically as the standby server. Failover is now available.
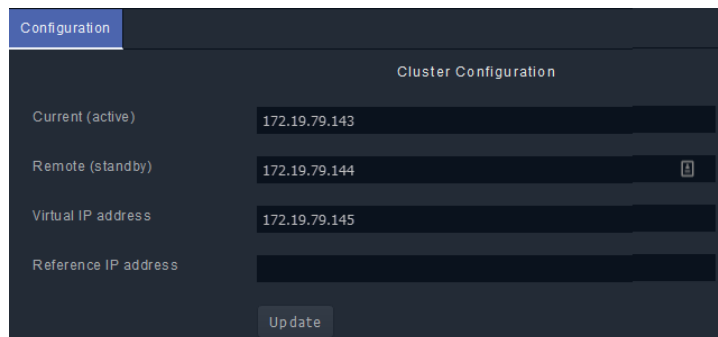
Test the Standby GV Orbit Server

Schedule this maintenance operation during off hours when the system is not in use. Forcing a failover can be used as a method to test if the standby GV Orbit Server is healthy and available. For this procedure, the active GV Orbit Server is identified as GV Orbit Server 1 and the standby GV Orbit Server server is identified as GV Orbit Server 2. See Identifying which server in a Cluster is Active or Standby, on page 49.

1 With a browser tab, connect to the active GV Orbit Server (GV Orbit Server 1) and navigate to the Cluster task.

2 Click **Force Failover**.

The GV Orbit Server 1 becomes the standby server and the standby server (GV Orbit Server 2) becomes active.

3 Test your GV Orbit installation: Run the GV Orbit Client and make signal routing takes between sources and destinations for example. Confirm that GV Orbit Server 2 is running as expected by loading it with normal activity for your installation.

If any issue is noticed, then:

a Click **Force Active** on GV Orbit Server 1 to switch processing activity back to GV Orbit Server 1 (which is known to work), to restore operation.

b Call Grass Valley Technical Support. See Grass Valley Technical Support, on page 248. **Do not proceed any further with this upgrade procedure.**

Identifying which server in a Cluster is Active or Standby

The current cluster's status is shown in the top left corner of every screen.
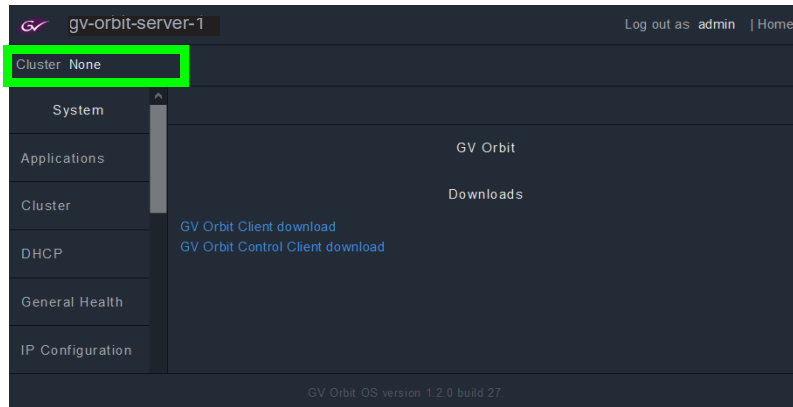
Cluster Parameter	Description
None	The server you have connected to is currently not part of a cluster.
Active server	The server you have connected to is currently the active member of a cluster.
Standby server	The server you have connected to is currently the standby (inactive) member of a cluster.

DHCP Task

The DHCP task configures DHCP support for NV Panels on enabled network interfaces. When a NV panel is connected to the network switch, GV Orbit issues an IP address to the panel. Assigned IP addresses are persisted and survive any reboot or upgrade actions. The following tabs are documented below.

- Config Screen, on page 51
- Leases Screen, on page 52

Once the GV Orbit Server has been configured, see Connecting the NV Panel, on page 53.

PREREQUISITES

- One or more Ethernet interfaces must have been configured on the GV Orbit Server. See IP Configuration Task, on page 58. If the network interface itself is not available/enabled, DHCP cannot be enabled on that interface.
- One or more of these Ethernet interfaces has network connectivity to one or more NV panels. See Cabling Diagram, on page 19.
- When two GV Orbit Servers are going to form a cluster:
  - DHCP cannot be enabled / disabled once a cluster has been formed. First break the cluster to proceed. See Dissolving a Cluster, on page 45.
  - Before creating a cluster, both GV Orbit Servers must have an identical DHCP configuration: both servers must have interfaces enabled with the same configuration which includes the same subnet and the same scope, even if the enabled interfaces are not the same on both servers. If the DHCP configuration differs on both servers, then the cluster cannot be created.

- DHCP is a time-sensitive protocol. When GV Orbit Server is in a cluster and DHCP is enabled on at least one interface, it is important that both server's clocks are closely synchronized. It is recommended that when in a cluster, an NTP server is configured (see NTP Screen, on page 59) on both servers in the cluster. If an NTP server is not available, it is recommended that the clocks of the two servers are manually synchronized to be as close as possible.

- Once the cluster has been created (see Creating a GV Orbit Server Cluster, on page 44), you cannot enable/disable interfaces on either member of the cluster.

Config Screen

Under the Config tab, all available GV Orbit Server Ethernet interfaces are listed, showing if DHCP is enabled on each one or not. You can select one or more interfaces and then enable/disable DHCP on those interfaces.

Click an Ethernet interface to select it

Parameter	Description
Program status	Shows if the service is running or not. **Started:** the service is running. **Stopped:** the service is stopped. **Restarting:** the service is being restarted, as you have made a change to an interface that DHCP is enabled on. Note: The DHCP service is automatically started if DHCP is enabled on one or more GV Orbit Server Ethernet interfaces, and is stopped if DHCP is disabled on all Ethernet interfaces.
Program version	Shows the currently supported DHCP version.
Restart DHCP service	Click to manually restart the DHCP service. Note that GV Orbit automatically restarts the service after any configuration change.

Parameter	Description
Manage DHCP Interfaces	This table shows: • All current GV Orbit Server Ethernet interfaces. See IP Configuration Task, on page 58 and Cabling Diagram, on page 19. • On which interfaces the DHCP service has been enabled or not. • ✓: DHCP is enabled on this interface. • ✕: DHCP is disabled on this interface.
Select all Deselect all	Click to select / deselect all available GV Orbit Server Ethernet interfaces in the **Manage DHCP Interfaces** table.
Enable DHCP Disable DHCP	Click to enable / disable DHCP on the selected GV Orbit Server Ethernet interfaces. See To enable or disable DHCP on a given interface, on page 52. With a cluster, these options are unavailable. See DHCP with a GV Orbit Server Cluster, on page 53.
Subnet Declarations	If DHCP is enabled on one or more interface(s), a subnet declaration will be created with a range, based on the gateway and the mask information. These subnet declarations are persisted and survive any reboot or upgrade actions. The lease range is automatically created and not configurable. When DHCP is disabled on a specific interface, the subnet declaration for it is removed. See also About the DHCP Addressing Range and Static Devices, on page 54. When creating a cluster, the Subnet Declarations must be the same on both GV Orbit Servers before the cluster can be created. See DHCP with a GV Orbit Server Cluster, on page 53.

To enable or disable DHCP on a given interface

To enable or disable DHCP on a given Ethernet interface or set of Ethernet interfaces, in the **Manage DHCP Interfaces** table, select Ethernet interface row(s) and then click **Enable DHCP** or **Disable DHCP**. See also About the DHCP Addressing Range and Static Devices, on page 54.

You will not be allowed to enable DHCP if the Ethernet interface has not been configured. For example, the IP address has not been set for the Ethernet port.

Leases Screen

This screen shows the **dhcpd.leases** file of the DHCP service. This file contains a series of lease declarations. Every time the DHCP service acquires, renews, or releases a lease, its new value is recorded at the end of the lease file. If more than one declaration appears for a given lease, the last one in the file is the current one. The DHCP service periodically cleans up this file to prevent it from growing indefinitely.

Purge unreachable leases

Unreachable leases can be purged by clicking **Purge**. This will ping the IP address of each lease and then remove the leases that are unreachable, making such IP addresses available for the DHCP server to issue to panels that will be connected.

When GV Orbit Server is running in a cluster, the purge will be performed on both lease files.

GV Orbit
Admin Guide

GV Orbit Server Configuration Tasks
DHCP Task

Tail Log File

This section shows the relevant logs for the DHCP service. For a description of log file details, see Log File / Tail Log File Details, on page 65.

As DHCP is enabled/disabled or applications that have a custom DHCP configuration are installed/removed, some log message will be added to **gvos.log**, and these entries will have the tag **#DHCP**.

The full log file for the DHCP service **/var/log/dhcp.log** is available under **System**. See Log Files Task, on page 63.

DHCP with a GV Orbit Server Cluster

When two GV Orbit Server nodes are in a cluster, the DHCP service runs on both the active and standby servers, to provide failover protection. When a panel requests an IP address, either the active or standby servers may respond with an IP address, and the new lease is then automatically synchronized between the two servers. If one server goes down, the other node can continue to issue IP addresses, and when the stopped server returns online, it will automatically synchronize itself with the active node, and its lease file will be updated, and the two nodes continue to work in parallel.

When two DHCP services run in failover mode, their configuration (that is the list of subnet declarations) must be identical. Therefore, when two GV Orbit Server nodes enter a cluster, the DHCP configuration on both of the nodes must have the same list of subnet declarations, or else GV Orbit Server will not allow the cluster to be created. Note that the interfaces on which DHCP is enabled on each server does not necessarily have to match, but the resulting list of subnet declarations must match. For example:

- GV Orbit Server1 has DHCP enabled on *eth2* (10.37.72.50). This will result in one subnet declaration of 10.37.72.0.
- GV Orbit Server2 has DHCP enabled on *eth0* (10.37.72.52). This will result in one subnet declaration of 10.37.72.0.
- Since the resulting subnet declarations match, a cluster can be created between these two servers.

When GV Orbit Server is in a cluster, you will not be allowed to change which interfaces DHCP is enabled on. To do so, you must first break the cluster. See Dissolving a Cluster, on page 45.

Connecting the NV Panel

Once DHCP has been configured on the GV Orbit Server(s), connect the NV Panel as follows.

1 Ensure DCHP is enabled on one or more GV Orbit Server's Ethernet interface(s) with IP address in the form of x.x.x.y.

2 Disconnect the panel from the network.

3 Reboot the panel.

4 Connect the panel to the same network switch that is attached to the GV Orbit Server's Ethernet interface that has DHCP enabled. See Cabling Diagram, on page 19.

The Panel requests an IP address. GV Orbit Server (or cluster) issues an available IP address to the panel in the range x.x.x.51 - x.x.x.200. The lease is added to the

53

dhcpd.leases file (for a cluster, the lease is added on both servers), and the events are logged in the **dhcp.log** file(s). See Leases Screen, on page 52.

5 In the panel's configuration, set the Panel ID and the GV Orbit Server's IP address or Virtual IP Address. See the panel's user guide to set these parameters. See Cluster Task, on page 42 to identify the GV Orbit Server's IP address.

6 To configure the panel for use with GV Orbit, refer to *Panel Configurator Tasks* in the **GV Orbit Control User Guide**. See Related Documentation, on page 11.

About the DHCP Addressing Range and Static Devices

When DHCP is enabled on an Ethernet interface whose IP address is in the form of x.x.x.y, GV Orbit Server (or cluster) issues an IP address to panels in the range of x.x.x.51 - x.x.x.200 (this is shown in the **Subnet Declarations**, see the Config Screen, on page 51). Note that the IP addresses in this range are not blocked off exclusively for DHCP usage. GV Orbit Server's DHCP service first pings an IP address to confirm it is unused (the IP address is unresponsive to a ping) before assigning the IP address to a panel (or DHCP client). When non-DHCP devices (that is devices with a static IP address) are connected to the network in the range of x.x.x.51 - x.x.x.200, ensure that these devices are online before connecting a panel for the first time to the network to avoid the possibility of creating an IP addressing conflict.

How to Clear a DHCP Addressing Conflict with Devices that use a Static IP Address

If an IP address conflict occurs in the range of x.x.x.51 - x.x.x.200, proceed as follows.

1 Ensure DCHP is enabled on one or more GV Orbit Server's Ethernet interface(s) with IP address in the form of x.x.x.y.

2 Disconnect the panel from the network.

3 Connect all devices using a static IP address in the range of x.x.x.51 - x.x.x.200 to the GV Orbit Server's Ethernet interface that has DHCP enabled. See Cabling Diagram, on page 19.

4 Ping each and every device using a static IP address in the range of x.x.x.51 - x.x.x.200 to ensure these devices have network connectivity with the GV Orbit Server(s). See PING Screen, on page 58.

5 Click **Purge** to clear unreachable leases. See Purge unreachable leases, on page 52.

6 Reboot the panel.

7 Connect the panel to the same network switch that is attached to the GV Orbit Server's Ethernet interface that has DHCP enabled.

The Panel requests an IP address. GV Orbit Server (or cluster) issues an available IP address to the panel in the range x.x.x.51 - x.x.x.200. The lease is added to the **dhcpd.leases** file (for a cluster, the lease is added on both servers), and the events are logged in the **dhcp.log** file(s). See Leases Screen, on page 52.

General Health Task

The General Health task shows the GV Orbit server's health parameters. The following tabs are documented below.

- System Screen, on page 55
- Hardware Screen, on page 55

System Screen

The System screen provides a health overview for the GV Orbit server.

Parameter	Description
Versions and names	Shows the operating system's version, and installation details.
Uptime	Shows the time since the last reboot. This also shows the average CPU load during this time.
Time/Time Zone	Shows the server's current time and date.
Memory	Shows the server's current memory usage breakdown.

Hardware Screen

The Hardware screen provides CPU profile details and information about memory usage for the GV Orbit server.

Storage Screen

The Storage screen provides information about disk storage capacity and disk partitions for the GV Orbit server.

Hard Drive Partition	Description
sda1	EFI boot partition.
sda2	Operating System 1 (OS1).
sda3	Operating System 2 (OS2).
sda4	Swap space.
sda5	Applications and application data. This contains all persisted information: system configuration (IP addresses, hostname, and so on), applications, and application data / databases.

Network Screen

The Network screen provides information about network (Ethernet) interfaces, IP routing, and tunneling that have been configured for the GV Orbit server. See also Port Identification, on page 21.

Network Activity Screen

The Network Activity screen provides information about the inbound and outbound network traffic bandwidth usage for the GV Orbit server.

Parameter	Description
Interface	Lists the current network interfaces.
IP Address	Lists the network interface IP addresses.
RX	Enable / disable the network traffic graphing for inbound connections.
TX	Enable / disable the network traffic graphing for outbound connections.
Start / Stop	Pause and restart the network traffic graph.

IP Configuration Task

You must be an administrator user to configure this task. See Users Task, on page 69 for more information.

In the IP Configuration task you set the GV Orbit server's network connection parameters and you can view network health parameters. The following tabs are documented below.

- Interfaces Status Screen, on page 58
- Host Name Screen, on page 58
- DNS Screen, on page 58
- PING Screen, on page 58
- NTP Screen, on page 59
- Interfaces Configuration Screen, on page 59
- Expert Screen, on page 62

Interfaces Status Screen

The Interfaces Status screen provides network interface details of each interface for the GV Orbit server. See also Port Identification, on page 21.

Host Name Screen

The Host Name screen allows you to set the GV Orbit server's network host name. The host name is the network name that uniquely identifies this GV Orbit server.

DNS Screen

The DNS screen allows you to set the GV Orbit server's DNS servers it will use.

Parameter	Description
DNS default search domain	Set the network domain name.
DNS name servers	Set the IP address for one or more Domain Name System (DNS) servers separated by spaces.

PING Screen

The PING screen allows you to test the reachability of a remote host on an IP network and to determine the time it takes test packets to be returned from the remote host. For example, the response time for a panel is sluggish or non-responsive. Use the panel's IP address with

ping to find out the network delay with the panel. If network delay is the root cause, ping can be used to evaluate the success of mitigation strategies.

Parameter	Description
Host name	Set the host name or IP address of the network-connected device you want to test connectivity with.
Source interface	Select the GV Orbit server's network interface to use for this test. See Port Identification, on page 21. *Unspecified* allows the server's operating system to automatically choose the best-suited network interface to connect to the specified device for this test.
Ping	Once the above fields are set, click to start the test. • **Reply from** shows that the remote server at the IP address replied to the ping. • **time=** shows the round trip time for each packet. • **Sent = 4, Received = 4** shows that all ping packets were successfully returned. • **Approximate round trip times** shows the average trip time for the 4 ping packets.

NTP Screen

A GV Orbit server can use the Network Time Protocol (NTP) to keep its internal clock on time. The NTP service uses one or more Internet clocks to set the GV Orbit server's date and time. This service can be disabled: in this case you have to manually set the server's time and date every few months to keep the server's internal clock on time.

Interfaces Configuration Screen

The GV Orbit server has one or more network interfaces (Ethernet) that it uses to communicate with other IP devices on the network.

To change the network interface configuration for a cluster, you must first dissolve the cluster and change the network parameters of the two GV Orbit servers separately. See Dissolving a Cluster, on page 45. Once the network parameters have been changed, you then create the cluster again. See Creating a GV Orbit Server Cluster, on page 44.

To configure a network interface

Schedule this maintenance operation during off hours when the system is not in use. For each network interface, you can choose to use a static IP configuration or, if the connected network for the network interface has a working DHCP server, the IP configuration parameters are assigned by the network's DHCP server.

Configure an interface as follows.

1 Click **Edit**.

2 Set the following parameters.

Parameter	Description
Interface Name	The name from the server's hosts file for this network interface. See also Port Identification, on page 21.
Method	Set the method by which this network interface will use to connect to the network: **Static:** you must set the network connection parameters; see the parameters below. **DHCP:** the network connection parameters are assigned by the network's DHCP server.
Address	With the Static Method only: Set the network interface's address that uniquely identifies this port to the network.
Netmask	With the Static Method only: Set the subnetwork mask for the connected network that defines the range of local IP addresses.
Default gateway	With the Static Method only: Set the IP address of the connected switch or router.
Groups	Sets the network use, for example the application or data type of a given network. See Network Groups Explained, on page 61 for more information.

3 Click **Save**.

4 Click **Restart** for the changes to take effect.

If you changed the IP address for the Management Network, you will have to enter the new GV Orbit server's management IP address into the address bar of your web browser.

To configure a static route

You can create one or more static routes; this can improve network efficiency by forcing traffic on this interface to a specific destination network or host.

This feature should only be used to handle special networking use-cases. In general, it is preferable to use dynamic routing provided by network switches. See your network switch's documentation for more information about when and how you should use static routes.

Configure a static route as follows.

1 Click **Edit** for the network interface you want to add a static route.

2 Click **Create**.

3 Set the following parameters.

Parameter	Description
IP Address	The destination IP address.
Netmask	The subnetwork mask for the connected network that defines the range of local IP addresses.
Gateway	The next hop IP address.

4 Click **Create**.

5 Click **Save**.

6 Click **Restart** for the changes to take effect.

Network Groups Explained

The following describes the **Groups** parameter in the **Interfaces Configuration** screen (see Interfaces Configuration Screen, on page 59).

Each network interface is dedicated to be used for a specific application or data type. These three network types should each form a separate network (have dedicated network switches for physical segmentation), to which this network interface is accordingly connected. The reasoning for this is to:
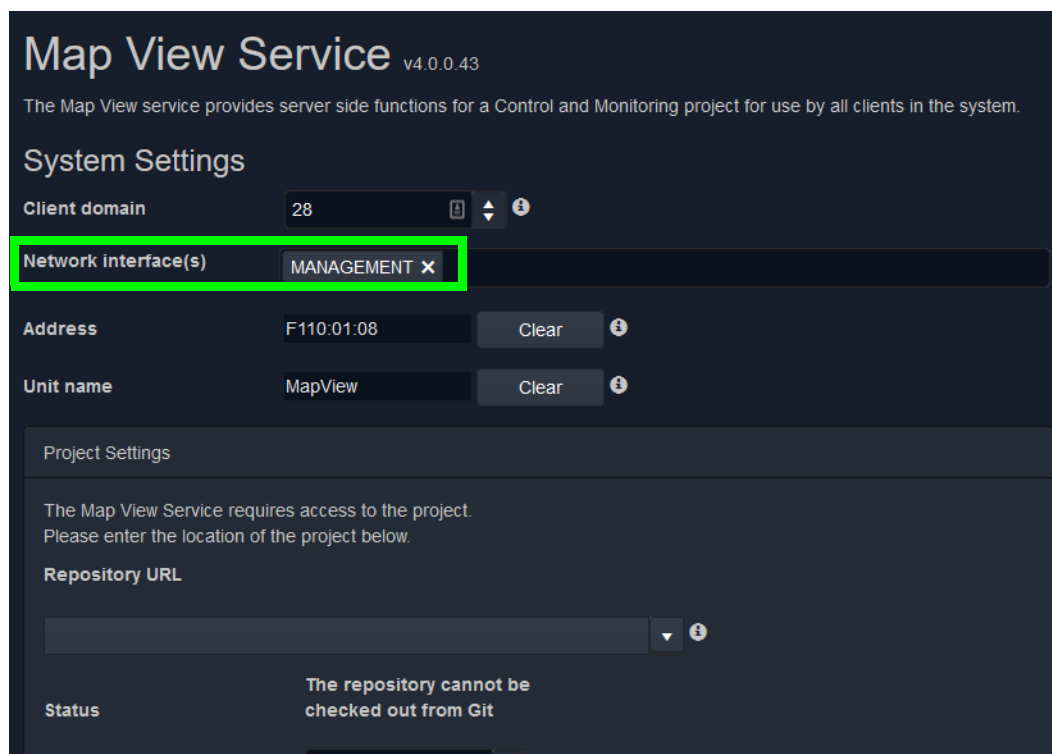
- Isolate a network failure to one network thereby limiting the impact of such a failure so that it is not system-wide (if one network goes down, all is not lost).
- Increase security by keeping production equipment isolated from networks that have Internet access and are used for general business computing.

The following values are available for the **Groups** parameter.

Groups Value	Description
CORPORATE	This network interface is connected to the regular IT network backbone for general business computing. For example, this network supports services such as Internet, email, FTP, file servers, and VOIP. In the context of GV Orbit, the corporate network is used for anything but for video production purposes.
MANAGMENT	This network interface is connected to a network dedicated to connectivity with the management port of all video production equipment. This network is used to: • Exchange control signals (for example, NMOS, GV Orbit, and so on) between video production equipment. • Access video production equipment's configuration interface.
MEDIA	This network interface is connected to a high-speed network dedicated for connectivity with the media ports of all video production equipment. This network is used to transmit media content between video production equipment.

The Groups value is used by the **Network interface(s)** parameter in a service to identify which network(s) the service is to use for communications.

For example, the Map View Service shown below will only communicate on network interface(s) that have been assigned to the MANAGEMENT Group.

Map View Service v4.0.0.43

The Map View service provides server side functions for a Control and Monitoring project for use by all clients in the system.

System Settings

Client domain	28	
Network interface(s)	MANAGEMENT ✕	
Address	F110:01:08	Clear
Unit name	MapView	Clear

Project Settings

The Map View Service requires access to the project.
Please enter the location of the project below.

Repository URL

Status — The repository cannot be checked out from Git

> **Note**: Certain production equipment is not equipped with a Management Ethernet port as such equipment uses its media Ethernet ports to also communicate management and control information along with the media streams. To support this class of equipment, you will need to add the MEDIA group to the **Network interface(s)** parameter for services that are used to manage such production equipment.
>
> Alternately, you can use the Relay service to replicate management and control information between networks. See Relay Service, on page 200.

For more information about each service, see GV Orbit Services, on page 73.

Expert Screen

Schedule this maintenance operation during off hours when the system is not in use. This allows you to edit the GV Orbit server's ipconfig file. Under normal circumstances, you should not modify the contents shown in this screen. This is for use by a network administrator who has experience editing an ipconfig file to create custom network configurations such as port bonding. There is no undo for this screen and an error could result in a loss of connectivity to the GV Orbit server and a general GV Orbit system outage.

Recovery may require access to the server's console through the iDRAC interface. See About the Server Enterprise Network iDRAC, on page 25.

To change the network interface configuration for a cluster, you must first dissolve the cluster and change the network parameters of the two GV Orbit servers separately. See Dissolving a Cluster, on page 45. Once the network parameters have been changed, you then create the cluster again. See Creating a GV Orbit Server Cluster, on page 44.
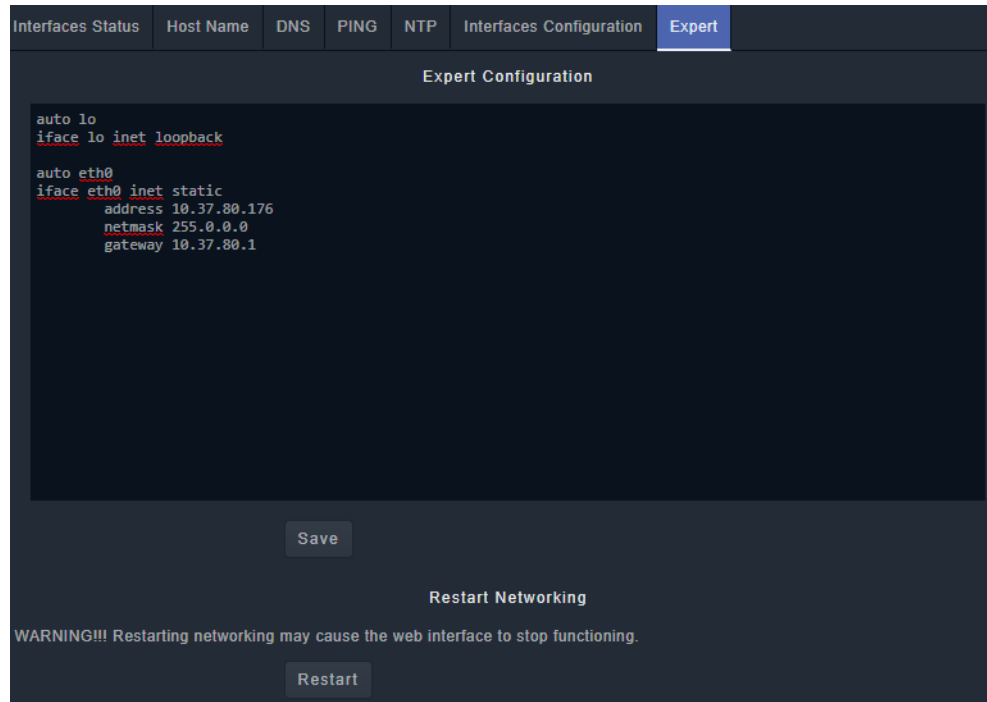
Parameter	Description
Save	Save the changes you have made to the ipconfig file.
Restart	Restart the IP stack to apply the changes you have made to the ipconfig file.

Log Files Task

Grass Valley Technical Support may ask that you send them a log file to help with system diagnostics.

View the log files for the following GV Orbit applications.

- Densité GVOC
- Densité
- GV Orbit Control
- NMOS Registry
- Email
- Repository Manager
- IP Proxy
- Log Server
- Map View

- Masking
- Monitoring
- Event Logging
- Relay
- Routing
- Web Renderer
- System
- GV Orbit

For more information about the GV Orbit applications, see GV Orbit Services, on page 73.

Parameter	Description
View	Click to see the entire service's log file in your browser. However, if the file is too big, you will need to download it. See also Log File / Tail Log File Details, on page 65.
Tail	Click to see the tail of the service's log. See also Log File / Tail Log File Details, on page 65.
Download	Click to download a log file.
Size	Shows the log file's file size.

Parameter	Description
Last Modified	Shows the last time the server updated the log file.
File	Shows the log file's location (path and filename) on the GV Orbit server.
Download all	Click to download a compressed archive of all the GV Orbit server's log files.

Log File / Tail Log File Details

The following information and options are available when a log or tail log is shown.

Parameter	Description
File name	Show the log file's location (path and filename) on the GV Orbit server.
Size	Shows the log file's file size in bytes.
Filter	Narrow down the displayed items to only show entries that contain the text you have entered. For example, set: • **error** as a filter to only see log entries with the word *error* in them. • **cluster** as a filter to only see log entries related to cluster operation. • **install** as a filter to only see log entries related to software installation.
Debug	Set to show debug log file entries along with the rest of the logs. By default, debug logs are not displayed. De-select this option to view errors only.
Word wrap	Set to wrap long lines of text around to the following line so that you do not have to scroll to the right to see the end of the line of text. Word wrap confines all the log file text to the space available in the Log File window.

Upgrade Task

You must be an administrator user to configure this task. See Users Task, on page 69 for more information. The Upgrade Task allows you to:

- Upload the latest software onto the GV Orbit server and to then install it.
- Upgrade the individual applications running on the GV Orbit server to the latest available version when the software upload has application updates.
- View the tail of the *gvos* log file to see the server's health, specifically to see an upgrade's success. See Log File / Tail Log File Details, on page 65.

For a cluster, a special upgrade procedure must be followed. See Upgrading a Cluster, on page 46.

Software File Upload and Operating System Upgrade

Schedule this maintenance operation during off hours when the system is not in use. A GV Orbit upgrade installs the latest software and operating system on the GV Orbit server. The upgrade file is an .iso or .gvos file that you obtain by contacting Technical Support. See Grass Valley Technical Support, on page 248.

- An .iso file installs:
  - the server's Operating System (OS) only.

- the server's Operating System (OS) and GV Orbit's packages for its applications.
- A .gvos file is an upgrade file for a single application.

Parameter	Description
Choose File	To upload an upgrade file to the GV Orbit Server from your PC.
Upload	1 Click **Choose File** to identify the upgrade file on our PC. 2 Click **Upload** to upload the upgrade file onto the GV Orbit Server. When complete, the upgrade will be available in **Available upgrade** and the **Tail Log File** will report if the file upload is successful. See Upgrade Tail Log File, on page 69.
Current file	Shows the last uploaded file on the GV Orbit Server.
OS 1 version (active)	The GV Orbit Server has two partitions labeled as **OS 1** and **OS 2**. This shows the current software version installed on each partition.
OS 2 version (active)	**(active)** indicates the partition currently being used by the GV Orbit Server.
Available upgrade	Once an upgrade file has been uploaded to the GV Orbit Server from your PC (see **Choose File** and **Upload** above), this shows the software version available to upgrade the **OS 1** and **OS 2** partitions.
Upgrade	Schedule this maintenance operation during off hours when the system is not in use. This becomes available once an upgrade file has been uploaded to the GV Orbit Server from your PC. This installs the **Available upgrade** operating system files to the non-active partition.
Reboot	Schedule this maintenance operation during off hours when the system is not in use. This reboots the GV Orbit server. If a software upgrade has been applied, the server must be rebooted to complete the install process and reboot on the updated partition.

Application Upgrade

The GV Orbit server runs a number of applications. If you have uploaded a software file upgrade that contains GV Orbit's packages for its applications that are more recent than the application packages currently installed (see Software File Upload and Operating System Upgrade, on page 65), then you can upgrade those applications. Applications that can be upgraded are shown with a blue background.

Application Upgrade				
Application	Uploaded version	Installed version	Status	Message
Client Download	4.0.0 - build:20	-	Ready to install	-
Densite	1.0.0 - build:205	1.0.0 - build:201	Ready to install	-
Densite GVC	1.0.0 - build:49	1.0.0 - build:49	Installed	-
Elastic	1.0.0 - build:42	1.0.0 - build:42	Installed	-
Email	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Event Logging	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
GV Orbit Control	2.2.0 - build:263	2.2.0 - build:263	Installed	-
IP Proxy	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Kibana	1.0.0 - build:15	1.0.0 - build:15	Installed	-
Log Server	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Map View	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Masking	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Monitoring	4.0.0 - build:16	4.0.0 - build:16	Installed	-
NMOS Registry	1.2.3 - build:32	1.2.3 - build:32	Installed	-
Relay	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Repository Manager	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Routing	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-
Web Renderer	4.0.0 - build:24	4.0.0 - build:16	Ready to install	-

Select all   Deselect a   Upgrade

Click an application's row to select it to be upgraded, or click it again to de-select it

Parameter	Description
Application	Shows the application's name. For more information about the GV Orbit services, see GV Orbit Services, on page 73.
Uploaded version	Shows the application version available. The upgrade software version comes from having uploaded a file with File Upload. See Software File Upload and Operating System Upgrade, on page 65.
Installed version	Shows the application's current version.
Status	Shows if an application has an update that is ready to install or not. **Ready to install:** the available **Uploaded version** is more recent than the **Installed version**. **Waiting to install:** this application was selected when you clicked **Upgrade**. **Installing:** the application is being installed/updated. **Installed:** the **Uploaded version** is the same as the **Installed version**. See also Upgrading GV Orbit Server Applications, on page 68.
Message	Shows the current progress of a task in your browser's lower left corner.
Select all	Select all applications shown in the table.

Parameter	Description
Deselect all	Deselect all applications shown in the table.
Upgrade	When one or more application rows are selected (the background is blue), this upgrades the selected applications with the application version shown in **Uploaded version**. Wait for the upgrade of the applications to complete before carrying out other operations such as a reboot. See also Upgrading GV Orbit Server Applications, on page 68.

Upgrading GV Orbit Server Applications

Schedule this maintenance operation during off hours when the system is not in use. Use the following procedure to upgrade the software of a GV Orbit Server.

For a cluster, this procedure will have to be repeated twice: once for each GV Orbit Server. To do this, see Upgrading a Cluster, on page 46.

To upgrade a GV Orbit server

1 Obtain an .iso or .gvos file from Grass Valley Technical Support. See Grass Valley Technical Support, on page 248.

2 In the Upgrade task, click **Choose File**.

3 Select the .iso or .gvos file on your PC's filesystem.

4 Click **Upload**.

   A progress message is shown in your browser's lower left corner. When complete, the **Available upgrade** shows the version of the upgrade file.

   When the software upload has application updates, one or more applications under **Application Upgrade** may have a blue background indicating that a more recent software version is available.

5 Under **Operating System Upgrade**, click **Upgrade** to upgrade the inactive partition.

   A progress message is shown in your browser's lower left corner.

6 Wait for the *Upgrade complete. Please reboot to apply change.* message to appear.

7 Click **Reboot**.

   This reboots the GV Orbit server and alternates the **Active** partition. A progress message is shown in your browser's lower left corner. When complete, the inactive partition that has just been upgraded has now become active.

8 Under **Application Upgrade**, click **Upgrade** to upgrade the applications.

   A progress message is shown in your browser's lower left corner. When complete, all the applications under **Application Upgrade** have a gray background and are up to date.

9 Test your GV Orbit installation: Run the GV Orbit Client and make takes between sources and destinations for example. Confirm that the upgrade has been successful and that GV Orbit is running as expected.

Only one partition should be upgraded per upgrade cycle. The idea is to have the alternate partition remain at the previous software version. If a blocking issue is noticed in the latest version, you can revert to the previous software version on the alternate partition as an

emergency remedy. To do so, call Grass Valley Technical Support. See Grass Valley Technical Support, on page 248.

Upgrade Tail Log File

The *gvos.log* log file shows the progress of the installation of an update and any related errors. See also Log File / Tail Log File Details, on page 65 for more information.

Users Task

In the Users task, you create, edit, and delete user profiles. A user profile should be created for each GV Orbit user. The following tabs are documented below.

- Administration Screen, on page 69
- Create User Screen, on page 70
- Password Change Screen, on page 71

The *admin* user is a special profile that is used by clients to connect to the GV Orbit Server and it applications. For example, it is used by the Densité Manager.

Note: Some GV Orbit configuration options are not available to users with a non-administrator role. All users have access to:
- The cluster status (view only).
- General Health (all screens, view only).
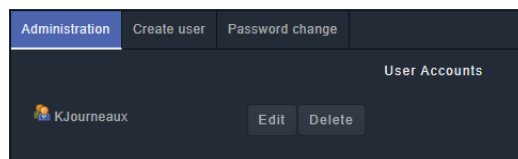- Log files.
- Change their own password.

Administration Screen

Once one or more users have been created (see Create User Screen, on page 70), their profiles are shown here.

Note: To access the Administration screen, you must be an administrator. Otherwise, the Administration screen is not visible.

In addition, you can perform the following actions in the **Administration** screen:

Parameter	Description
Edit	Click to modify the user's credentials (user ID / password).
Delete	Click to remove the user account.

Create User Screen

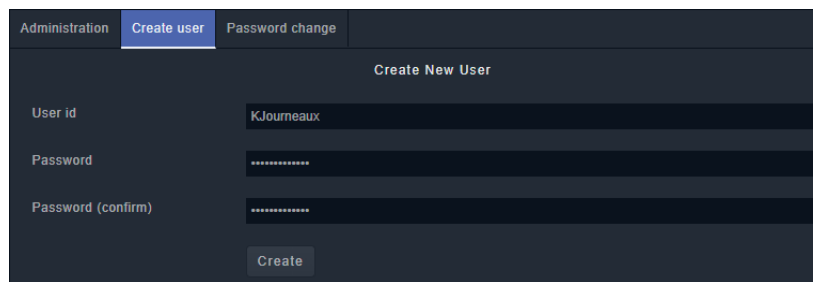The first step is to create a user profile for each GV Orbit user.

> **Note**: To access the Create User screen, you must be an administrator.
> Otherwise, the Create User screen is not visible.
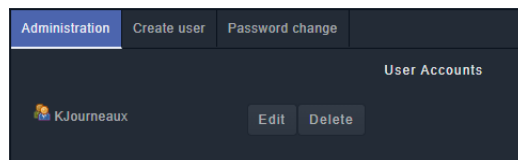
To create a new user account:

1 Launch GV Orbit Admin.

2 Log in as an administrator.

3 Select **Users** > **Create user**.

The Create New User window appears.

4 Enter the required information in the **User id**, **Password**, and **Password (confirm)** fields.

5 Click **Create**.

A new tile representing the new user account appears in the **Administration** screen.

In addition, you can perform the following actions in the **Users** section:
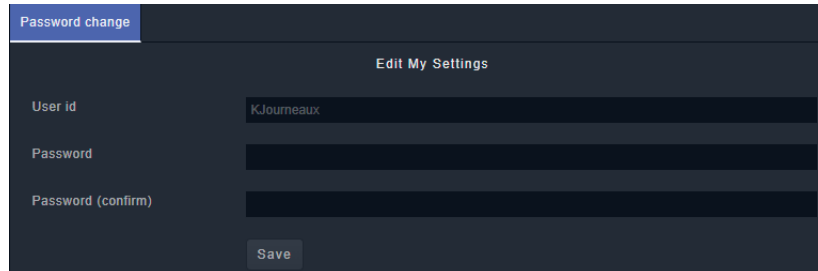
Parameter	Description
Edit	Click to modify the user's credentials (user ID / password).
Delete	Click to remove the user account.

See also

Password Change Screen

This screen changes the password of the currently logged in user. Non-administrator users will only have access to the **Password Change** screen as shown below.

1 Enter the required information in the **User id**, **Password**, and **Password (confirm)** fields.

2 Click **Save**.

6

GV Orbit Services

Introduction

You must be an administrator user to access GV Orbit Services. See Users Task, on page 69 for more information. GV Orbit Services relies on a number of services to integrate diverse equipment, and provide advanced features. This chapter explains what GV Orbit Services are, how they fit into a GV Orbit system and their configuration. This chapter provides a brief overview of GV Orbit and introduces the services.

GV Orbit is system configuration, control and monitoring solution from Grass Valley for Grass Valley's audio/video/IP products and third-party devices.
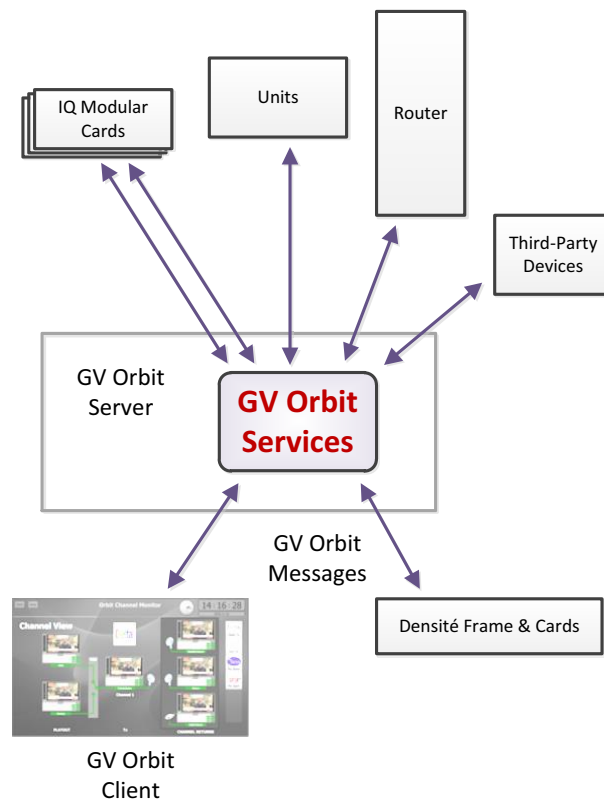

Fig. 6-1: GV Orbit Services

A GV Orbit system utilizes GV Orbit Services running on a GV Orbit server to provide services for the configuration, control and monitoring, and routing of audio/video system devices through the GV Orbit Client user interface. For a list of services, see Services Overview, on page 78.

System Overview (Services)

GV Orbit Services are run on one or more GV Orbit servers. Two servers can form a cluster for a clustered system. See Cluster Task, on page 42 for more information.

A GV Orbit Client custom, graphical operator panel can form a soft user panel to control/monitor various status items from many system devices, and/or route signals between devices. Messages in a system are aggregated by services. They are used by soft user panels, event logging, control and routing, and by various GV Orbit Services. Figure 6-2 shows a general view of a GV Orbit Services ecosystem.
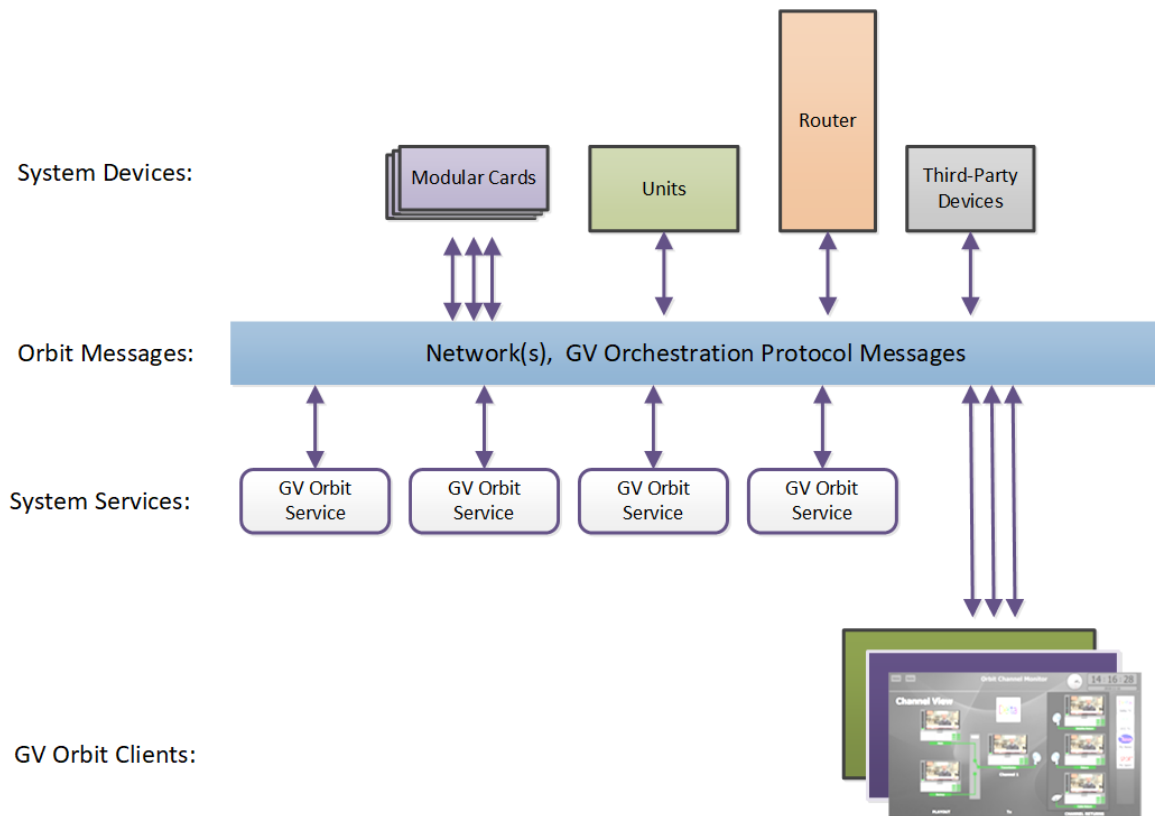

Fig. 6-2: GV Orbit General Diagram

GV Orbit Services facilitate the display of device status messages, processing of alarms, and the configuration and control of routing in a system. Alarms originate from a Monitoring service which processes log messages from Grass Valley devices (for example, Densité, IQ, and MV-8 Series devices) or from third-party devices. The GV Orbit Services provide system functionality, such as alarm aggregation, masking, and routing control.

GV Orbit Services can also off-load some processing from GV Orbit clients. For example, for permanent processing of logic on a custom user panel, or for raising alarms through email. Additionally, a Web Renderer service enables existing GV Orbit custom operator panels to be displayed in a web browser.

Services System Diagram

Figure 6-3 shows a functional diagram of a GV Orbit Services ecosystem, showing system devices, services, and the GV Orbit message communication 'Domains'.
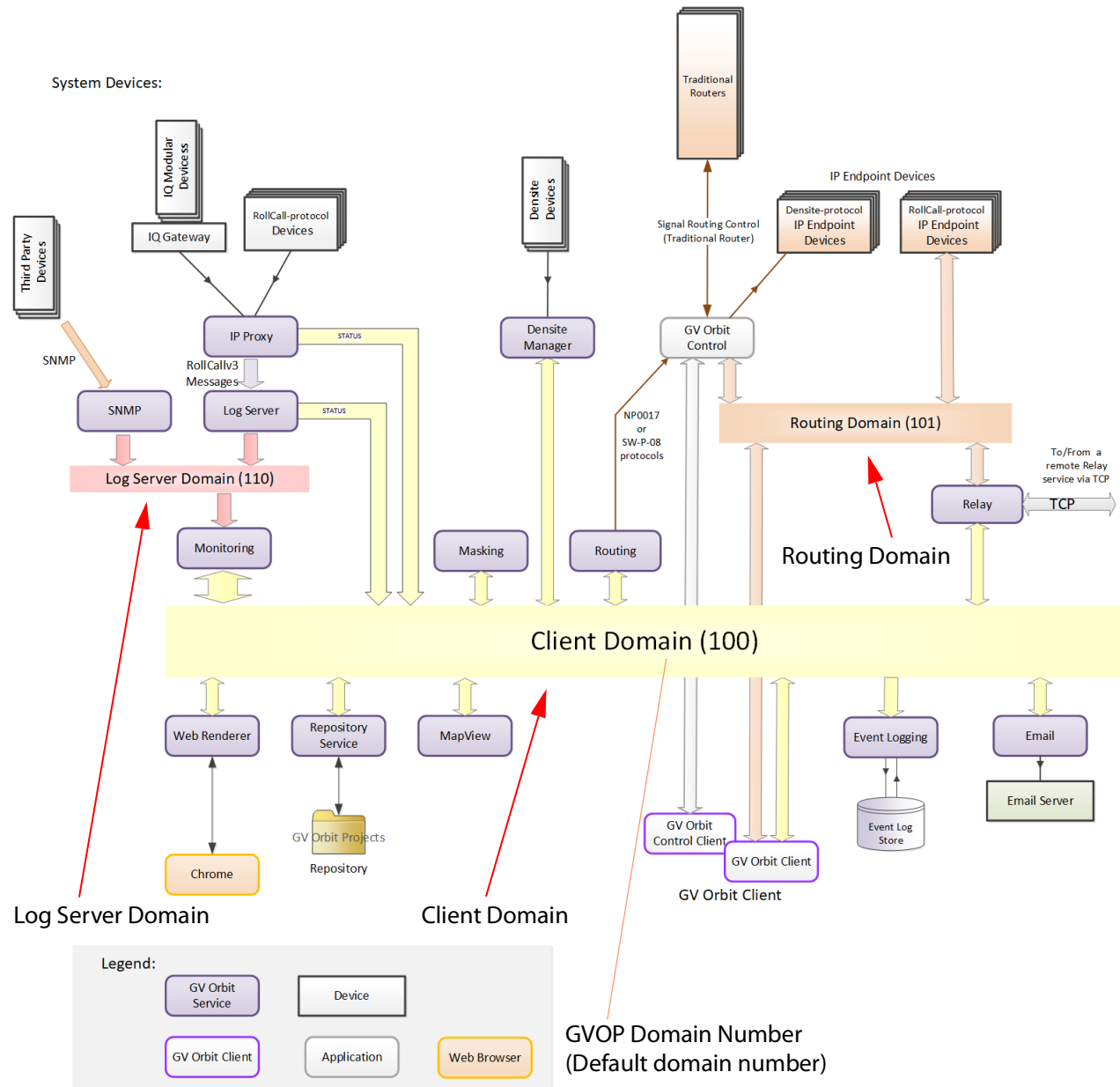

Fig. 6-3: GV Orbit Services Ecosystem Diagram with Domains

System devices send out log data and status messages. For RollCall-protocol devices, messages are aggregated by a Log Server service onto a **Log Server Domain** and are monitored by a Monitoring service to yield a suite of alarms on the **Client Domain**. For Densité-protocol devices, messages are aggregated by a Densité Manager service, to also yield alarm messages on the **Client Domain**.

Alarm messages may be viewed on some custom control and monitoring user panel in the GV Orbit Client tool, or in a Chrome web-browser window. The messages are also logged and may be viewed and searched with the Event Logging service.

IP endpoint control determines signal routing in an IP routing system. It is usually performed with in-band control on separate high-speed media network(s). Routing uses a separate domain, the **Routing Domain,** and the GV Orbit Control application, which is also running on the GV Orbit server. Routing can be done within a mixed IP and traditional signal routing environment.

GV Orchestration Protocol (GVOP)

The various GV Orbit services and devices communicate with one another and with GV Orbit Client applications. The messaging uses the GV Orchestration Protocol (GVOP).

Domains to Segregate Messages

The GV Orchestration Protocol communications may be segregated by using GVOP Domains. Typically in a GV Orbit system there is a Client domain, a Log Server domain, and a Routing domain. (See Figure 6-3 on page 75.) Each Domain is defined with a Domain ID number.

Services Availability by Product Option

The GV Orbit **Professional** and **Enterprise** products use GV Orbit Services running on one or more GV Orbit servers. The table below indicates which services are particularly used for each GV Orbit product option code.

GV Orbit Service	GV Orbit Product Option Code			
	GVO-CFG-PRO	GVO-MON-PRO	GVO-CTL-PRO	GVO-CTL-ENT
Densité Manager	●			
Densité GVOC Service			●	●
Elastic Service		●		
Email	●	●	●	●
Event Logging		●		
GV Orbit Client Service	●	●	●	●
GV Orbit Control Service			●	●
IP Proxy	●	●	●	●
Kibana Service		●		
Log Server	●	●	●	●
Map View		●		
Masking	●	●	●	●
Monitoring	●	●	●	●
NMOS Service	●		●	●
Relay	●	●	●	●
Repository Manager		●		
Routing			●	●
Web Renderer		●		
SNMP		●		

Services Overview

Densité Manager Service

The GV Orbit **Densité Manager** service collects and collates logging information from Densité-protocol devices and distributes it to subscribing clients, for example to the GV Orbit **Monitoring** service. The service is the entry point into the system for log data from Densité-protocol devices.

For more information, see Densité Manager Service, on page 93.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Densité GVOC Service

The GV Orbit **Densité GVOC** service supports Densité-protocol devices so that they are available and can be controlled by the **GV Orbit Control** service.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Elastic Service

The GV Orbit **Elastic** service provides search functions for GV Orbit clients. This service works in conjuction with the **Kibana** service, which is the front-end to this service.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Email Service

The GV Orbit **Email** service sends emails on behalf of GV Orbit through a configured SMTP server.

For more information, see Email Service, on page 97.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Event Logging Service

The GV Orbit **Event Logging** service captures and stores status messages and alarms within a system. The service can be configured to store one or more log data-sets into an event log store. A complete history of events may be stored for a device, or for a sub-set of devices, or for the system as a whole. Additionally, smaller, filtered log files can record a smaller subset of data within the system. Historical events can then be viewed and investigated. Log data can be sent to advanced search and visualization engines.

For more information, see Event Logging Service, on page 101.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

GV Fabric File Server Service

The GV Orbit **GV Fabric File Server** service supports any GV Fabric switch that is used by GV Orbit Control.

There is no admin configuration interface for this service.

GV Orbit Client Service

The **GV Orbit Client** service supports connections to the GV Orbit Server made by users with the GV Orbit client software running on their local PC. This service must be installed and running on the GV Orbit Server for users to connect with the GV Orbit client software.

There is no admin configuration interface for this service.

GV Orbit Control Service

The **GV Orbit Control** service supports connections to the GV Orbit Server made by users with the GV Orbit Control software running on their local PC. his service must be installed and running on the GV Orbit Server for users to connect with the GV Orbit Control software.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

There is no admin configuration interface for this service.

IP Friendly Name Service

The **IP Friendly Name** service pushes certain configuration parameters made in GV Orbit Client to the same discovered RollCall protocol device in GV Orbit Control in real time. Changes to configuration parameters can result from having used the spreadsheet import feature in GV Orbit Client.

For more information about this feature, refer to *Synchronization of Discovered RollCall Protocol Device Names made in GV Orbit Client* in the GV Orbit Control User Guide. See Related Documentation, on page 11.

There is no admin configuration interface for this service.

The **IP Friendly Name** service uses 101 as the Default Client Domain ID Number. This value can be updated if necessary. The user should make a request to our Services & Support department to change this value should this be necessary.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Troubleshooting

If a device's friendly name disappears in both GV Orbit and GV Orbit Control, verify that the IP Friendly Name Service is running. See Application Maintenance, on page 40.

IP Proxy Service

The GV Orbit **IP Proxy** service is used with Grass Valley IQ devices and RollCall-protocol devices to aggregate RollCall connections from several devices.

For more information, see IP Proxy Service, on page 125.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Kibana Service

The **Kibana** service provides a rich graphical front-end to the Elastic search service to provide search and data visualization.

Precondition: The Elastic Service must be installed and running.

There is no admin configuration interface for this service.

Log Server Service

The GV Orbit **Log Server** service collects and collates logging information from devices on a RollCall network and distribute it to subscribing clients, for example, to the GV Orbit Monitoring service.

The service is the entry point into a system for RollCall log data from RollCall-protocol devices (for example from IQ Modular devices or from MV-8 series Multiviewers). The service also supports inbound data from Grass Valley's RollSNMP application tool and third-party IP endpoint applications.

Multiple **Log Server** services can work together to provide redundancy, such that if either one is shutdown then the other will take its place seamlessly with no loss of data to the client.

For more information, see Log Server Service, on page 133.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Map View Service

The GV Orbit **Map View** service serves a GV Orbit control and monitoring (C&M) project. The service executes part of a GV Orbit C&M project in parallel with a GV Orbit Client when the project is run. The service evaluates the alarm state of *all* C&M project custom panel screens and then publishes overall project 'state' information to the project running on a client computer.

The service also executes any server-side logic contained in any special files within the C&M project (for example, logic in GV Orbit 'global files', files with the .globalx extension) and manages the state of 'User Folders' in the project.

For more information, see Map View Service, on page 146.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Masking Service

The GV Orbit **Masking** service manages masked alarms within the system. The service publishes information about what alarms should be masked. Alarm producers (for example, the GV Orbit **Monitoring** service) subscribe to this information; they use it when calculating the actual state of alarms that they will publish.

> Note: The **Masking** service is not responsible for actually masking alarms. Instead, it informs other services about alarms to be masked.

For more information, see Masking Service, on page 158.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Monitoring Service

The primary purpose for the GV Orbit **Monitoring** service is to calculate key alarm state information in a system from log data, either directly from units/devices/cards/frames or indirectly from a **Log Server** service.

The incoming log data indicates the state of system devices. The **Monitoring** service then assesses this to produce alarm state information. A numeric 'state' is used to represent 'alarm state' and indicate where each current log data value (or combination of values) is 'good', 'bad', or is a 'warning' (for example, 'OK', 'Error', or 'Warning' respectively).

The service then publishes the calculated alarm state data in alarm messages to subscribers. A services and GV Orbit Client(s) can subscribe to these alarm messages and, for example, alarm state information can be used on a GV Orbit custom soft panel with GV Orbit 'Alarm Behaviours'.

A GV Orbit Client may also write out log data and this will be processed by the **Monitoring** service.

For more information, see Monitoring Service, on page 166.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

NMOS Service

GV Orbit Control supports Networked Media Open Specifications (NMOS) AMWA IS-04 for device discovery and registration and IS-05 for connection management. Furthermore, it supports AMWA BCP-002-01 for the natural grouping of NMOS resources. The NMOS service in GV Orbit Control supports the built-in NMOS registry that is used to register NMOS devices.

If an external NMOS registry is used, then this service does not need to be installed on the GV Orbit Server.

For more information about how to configure an NMOS device, see *Adding NMOS Devices to a Topology* in the **GV Orbit Control User Guide**. See Related Documentation, on page 11.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Relay Service

The GV Orbit **Relay** service runs on a GV Orbit server and enables GV Orbit messages to pass between GVOP Domains. This is useful in certain system configurations.

For more information, see Relay Service, on page 200.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Repository Manager Service

The GV Orbit **Repository Manager** service runs on a GV Orbit server and provides access to a repository of GV Orbit projects for the GV Orbit system and for GV Orbit Clients.

For more information, see Repository Manager Service, on page 209.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Routing Service

The GV Orbit **Routing** service interfaces between GV Orbit soft control panels and a router controller device using NP0017 or SW-P-08 protocols.

For more information, see Routing Service, on page 218.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

SNMP Service

The GV Orbit **SNMP** service interfaces between GV Orbit and SNMP devices, including the GV Fabric IP switch.

For more information, see SNMP Service, on page 226.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Web Renderer Service

The GV Orbit **Web Renderer** service runs on a GV Orbit server and enables users to view and use a GV Orbit C&M project graphical custom panel in a web browser.

For more information, see Web Renderer Service, on page 232.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 63.

Configuring GV Orbit Services

Certain GV Orbit Services are configured through their configuration screens that are accessible from the GV Orbit server admin interface. See Launching and Logging in to GV Orbit Admin Interface, on page 31.

The services adopt default RollCall addresses in a new GV Orbit system.

Managing Services

Each of the various GV Orbit Services is configured through a web configuration screen which is hosted on a GV Orbit server. These configuration screens are accessed from the GV Orbit server, or through the GV Orbit Client.

GV Orbit Service Configuration Screens

Configuration screens for active GV Orbit Services are accessible through the GV Orbit server. See Launching and Logging in to GV Orbit Admin Interface, on page 31.

> Note: In a cluster, all GV Orbit Services are run as 'Active-Standby'. A service's configuration screen is only accessible on the active GV Orbit server.

Accessing a Service Configuration Screen

To access a service's configuration screen

1 Access the GV Orbit server **Home** stage (see Launching and Logging in to GV Orbit Admin Interface, on page 31).

2 Scroll down the left-hand side of the screen to the **Services** side-tabs. Below this are the side-tabs for each GV Orbit Service installed on the GV Orbit Server.

3 Click on one of the services to access it.

The configuration screen for the service is shown.

> **Note:** An 'Active-Standby' service's configuration screen is only accessible on the *active* GV Orbit server.
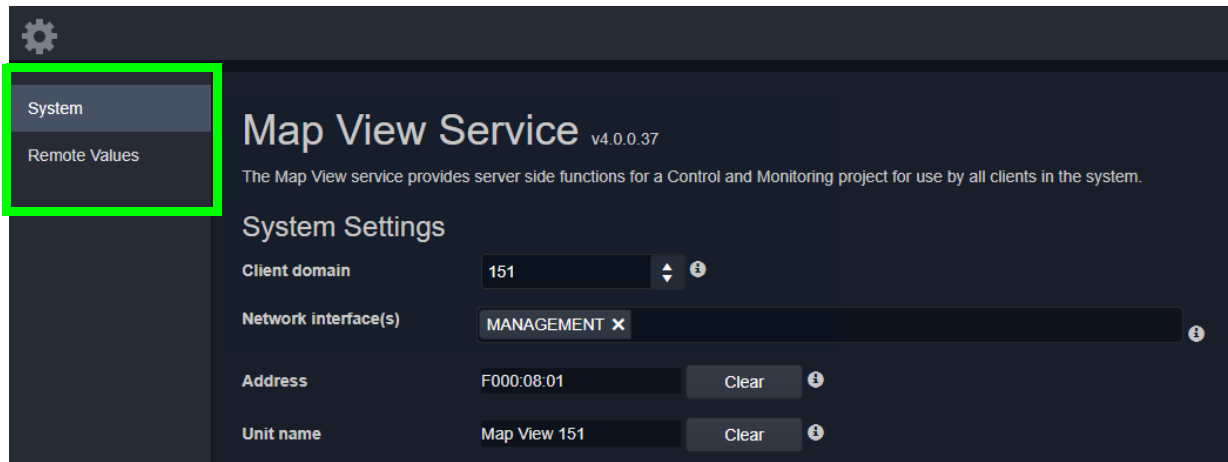
Fig. 7-1: Typical GV Orbit Service Configuration Screen

Each service configuration screen may have one or more side-tabs.

4 Select a side-tab.

Service settings can be modified. The configuration screens for all GV Orbit Services are described in this document. See Service System Settings, on page 87.

To change settings

Settings changes can be made on a configuration screen and need to be saved on each screen. (See To save settings changes, on page 86.)

To save settings changes

When one or more settings changes have been entered into a service configuration settings screen or tab-screen, the changes need to be saved on the screen or on each tab-screen.

A screen may have a 'Save changes' or 'Save' button and/or a yellow 'Unsaved changes' banner message may appear at the bottom of the screen/tab-screen.
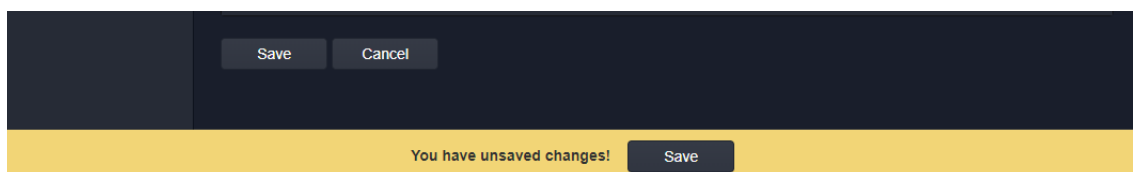
Fig. 7-2: Unsaved Changes Banner

Apply changes made to items on the service's configuration screen or tab-screen as follows:

1 Click **Save** in an 'Unsaved Changes' banner,
   or
   click the **Save Changes** or **Save** button on the configuration tab-screen.

2 Then click **OK** on any 'Save Complete' dialog.

Alternatively, to discard changes:

• Press the **Cancel** to return to the GV Orbit Server **Home** Stage.

Finally, once all settings for a service have been made and saved:

3 Click the ⚙ icon to return to the GV Orbit server **Home** stage. Or, if in a web browser, click the browser's **Back** The GV Orbit server **Home** stage is shown.

4 From the GV Orbit server's **Home** stage, select another service to configure, as required.

Service System Settings

Each GV Orbit service has a configuration screen with one or more tabs with various service settings. There are some setting types that services have in common, which are listed on the service's 'System' configuration screen.
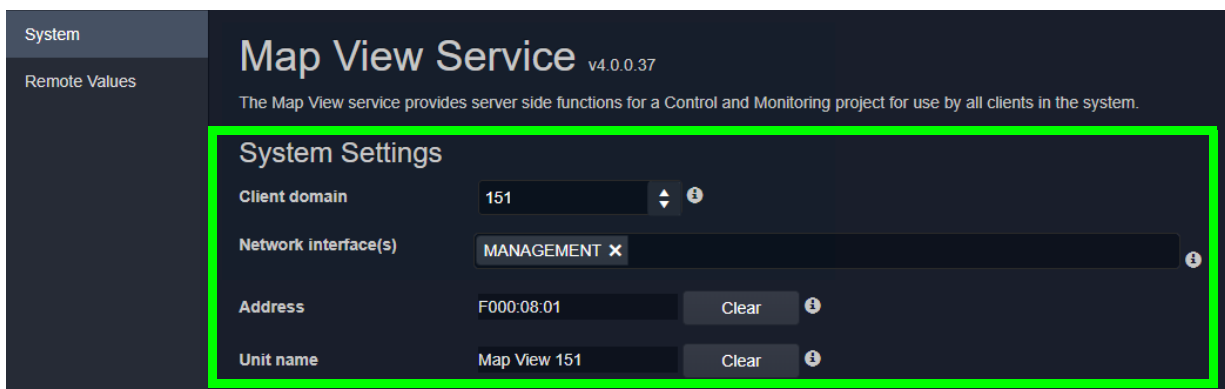
Fig. 7-3: Example Common Setting Types (Map View Service Shown)

Client Domain Setting

Each service uses a GVOP Domain to communicate within a GV Orbit system. This setting is made on the service's **System** configuration screen. The default client domain value should work for most installations. If necessary, this should be set to match the Client Domain used by the rest of the GV Orbit system.

See Figure 6-3, GV Orbit Services Ecosystem Diagram with Domains, on page 75 in Chapter 6 for an example system diagram showing Domains.
See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on GVOP Domains.

> Note: GV Orbit Client(s) and GV Orbit Service(s) must be on the same Domain to be able to work (to communicate and exchange data with each other).

The valid range for the Client Domain is 1 to 232.

Default Client Domain ID Numbers

A new GV Orbit system uses the following default Client Domain IDs.

GV Orbit Services Domain	Default Client Domain ID	Comment
System	0	Used for system auto-discovery.
Client	100	Monitoring traffic.
Routing	101	For control of IP Endpoints for signal routing.
Routing Topology	105	For future GV Orbit releases.
Log Server	110	Used by the Log Server service for RollCall-protocol devices.

Network Interface(s) Setting

The various GV Orbit services running on the GV Orbit server which has one or more network interface connections to IP networks used by the system.

Each GV Orbit service can be individually configured to use one or more connections to the IP network(s) available to the GV Orbit server. This should be used to limit GV Orbit traffic sent over the different networks so as to preserve bandwidth on media networks that require low latency. Use the service's **Network Interface(s)** configuration parameter to restrict a services' network usage.

For example, if a server is connected to IP Media networks and there is no requirement for a GV Orbit service to send/receive data over these high speed networks, then network interface selection can be made to exclude these interfaces from use by the service.

See Port Identification, on page 21 and IP Configuration Task, on page 58 for more information about the networks connected to the GV Orbit Server.

> Note: By default, the **Network Interface(s)** cell is empty; in this case, *all* network interfaces of the server will be used by the service.
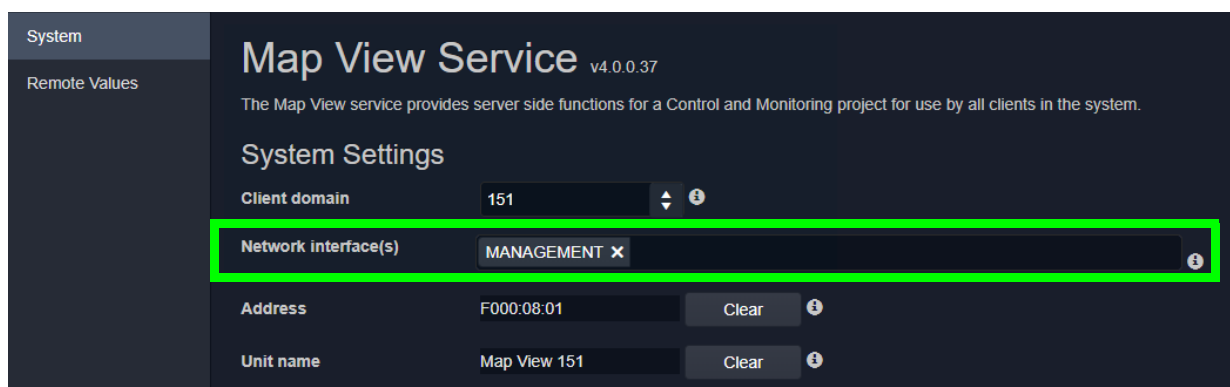
**To select the network interface(s) to be used by a service**

To select one or more **Network Interface(s)**:

1 Click in the **Network Interface(s)** text box or cell.

A drop-down list of available network interfaces is shown.
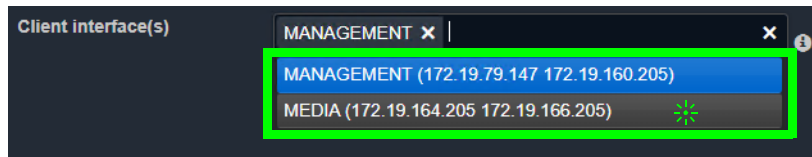
2 Select a server network interface the service is allowed to use from the drop-down list. Repeat to add more than one interface.

When one or more interfaces have been selected the service will use only those interfaces listed.
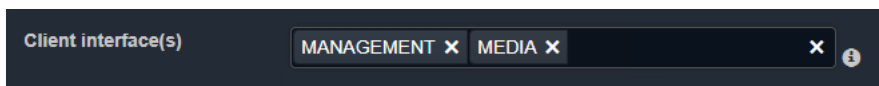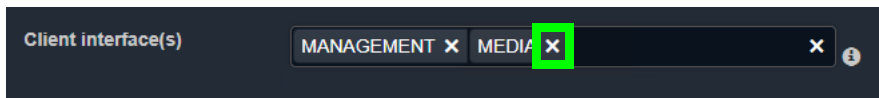

Note: When selecting **Network Interface(s)** to use for services, ensure the selected interface(s) are the ones being used by the corresponding GV Orbit Client(s) and production equipment for the service.

To delete a network interface item

To delete an item from the list of selected interfaces:

1 Click on its adjacent **x**.

RollCall Address Setting

Assigning of RollCall addresses for each service is done at system design and installation. Addresses must be unique within a system for each different service.

From each service's configuration screen, the service's RollCall address may be changed, if required. For example, in a second, complete GV Orbit system, different addresses must be used.

See RollCall Address Setting, on page 89, and RollCall Address, on page 243, for information about RollCall address.

Click the **Clear** button beside the **Address** text box to restore a service's default address.
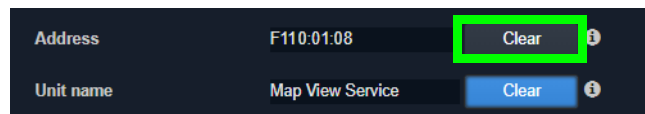
Fig. 7-4: Address and Unit Name Clear Buttons

Unit Name Setting

Each **Service** is given a 'friendly' name to help identify it in log files and in the GV Orbit Client **Network** window etc.

From each service's configuration screen, click the **Clear** button beside the **Unit Name** text box to restore a service's default unit name.

Service Settings

Default Settings

On a new GV Orbit server, the GV Orbit Services, where possible, have default settings. These defaults are designed to quickly get a GV Orbit system running. For example:
- RollCall addresses are assigned to each service;
- a default log file configuration is set up;
- default IP port numbers are used; and
- many alarm monitoring settings are pre-configured.

Default Service RollCall Addresses and Unit Names

Service Default Unit Name	Default RollCall Address
Densité Service	Not applicable
Densité GVOC Service	Not applicable
Elastic Service	Not applicable
Email Service	F110:01:07
Event Logging Service	F110:01:05
GV Orbit Client Service	Not applicable
GV Orbit Control Service	Not applicable
IP Proxy Service	F110:01:01
Kibana Service	Not applicable
Log Server Service	F110:01:02
Map View Service	F110:01:08
Masking Service	F110:01:03
Monitoring Service	F110:01:04
NMOS Service	Not applicable
Relay Service	F110:01:0A
Repository Manager Service	F110:01:0B
Routing Service	F110:01:06
Web Renderer Service	F110:01:09
SNMP Service	F110:01:10

RollCall addresses are used by other services to identify the alarms they produce. Services marked as *Not applicable* do not support alarms. The RollCall address defines the position the services are shown in the *Network View* in the GV Orbit Client.

System-Specific Settings

Some settings are specific to an installation and these do require custom settings. These settings include:

- Connections to existing Grass Valley Densité- and RollCall-protocol devices/frames etc. (**Densite Manager** service, **IP Proxy** service and **Log Server** service.)
- The user's email server settings. (**Email** service.)
- Setting up a GV Orbit C&M project for the **Map View** service or for the **Web Renderer** service.

These are noted as 'system-specific' configuration items in this user guide. See RollCall Address Setting, on page 89, and RollCall Address, on page 243, for information about RollCall addresses.

Service Alarms

Each GV Orbit service itself generates one or more alarms which can be viewed in an **Alarm List** window through the GV Orbit Client.

> Note: The **Monitoring** service must be running for alarms to be present in the GV Orbit system; this includes alarms for GV Orbit Services themselves. See GV Orbit Applications Status, on page 39.

To view the Alarm List window

1. Open a GV Orbit Client C&M project with the GV Orbit Client. Refer to the *GV Orbit Client Quick Start Guide*. See Related Documentation, on page 11.

2. In the GV Orbit **Client Network** window, expand it to show **GV Orbit Services** items, then right-click on the corresponding service item and select **Alarm List**.
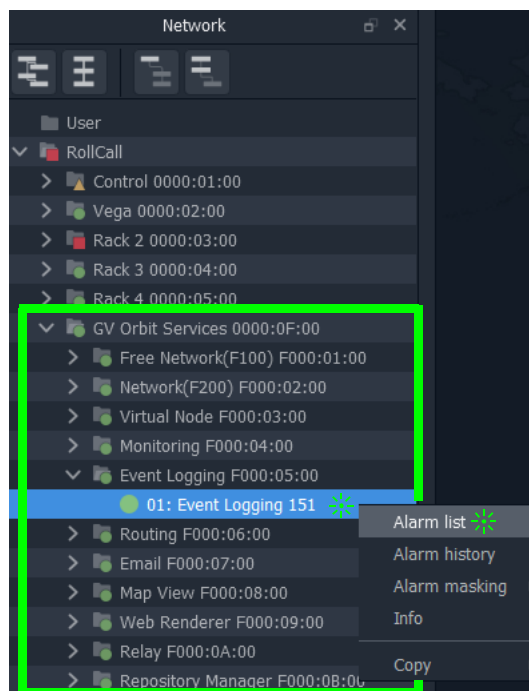
The **Alarm List** summary for the service is shown.

Densité Manager Service

Introduction

The GV Orbit **Densité Manager** service manages Densité frames and their cards for GV Orbit. It allows two-way communication from GV Orbit to these frames and cards, converting status and alarm messages from these devices into a GV Orbit format. It allows Densité cards to be discoverable by the GV Orbit system and for them to appear listed in the GV Orbit Client application's **Network** window.

The service is the entry point into a GV Orbit system for log data from Densité-protocol devices (for example, from a Grass Valley IPG-3901 IP Gateway card). The service collects logging information from devices and distributes it to subscribing clients, for example, to the **Monitoring** Service.

System Screen

The **Densité Manager** service **System** configuration screen is shown.

Setting	Description
Service Status	Indicates the status of the service: **Running** or **Not running**.
System Settings > Client Domain	Enter a new Domain number for the service to use. See Client Domain Setting, on page 87.
System Settings > Change Domain	Click to save the new Domain number to be used by the service. A pop up box confirms that the new number has been updated: Restart the **Densité Manager** service for the service to use the new domain number.
Managed Densité Frames	See also Adding a Densité Frame.
Densité Frame IP	Enter the IP address of the Densité frame controller to be added.
Densité Name	Enter a name for the frame, to be used in the **Network** window of GV Orbit Client.
Add Frame	Click to add a new frame to the service.
Frames List:	A list of the currently added frames that are managed by this service.
Column heading > IP	The IP address of the Densité frame's controller card.
Column heading > Name	Name of frame in the **Network** window of GV Orbit Client.
Column heading> Status	Frame status: **Online** or **Offline**.
Column heading > Actions	Click on an item to perform an action: • **Standby:** to set the service into Standby mode. • **Online:** to set the service into Active mode. • **Remove:** to remove the frame from being managed by this service.
Cards List:	A list of all the cards visible to the service and added to the service.
Column heading > Name	Card's model type.
Column heading > Frame	Name of the frame housing the card.
Column heading > Slot	Slot number in which the card is located in the frame.
Column heading > Version	Card's software/firmware version.

Adding a Densité Frame

Every Densité frame must be added to the Densité Manager service for the frame and the cards in it to be used in a GV Orbit system.

To add a Densité frame to be managed by the **Densité Manager** service:

1 In the **Densité Frame IP** text box, enter the IP address of the Densité frame controller.

2 In **Densité Name** text box, enter a human-readable name for the frame, to be used in the GV Orbit **Network** window.

3 Click the **Add Frame** The frame is added to the **Frames List**. The Densité frames also become visible in the GV Orbit Client's **Network** Window.

4 If a Densité card is not discovered in the GV Orbit Client's **Network** Window's tree view, right-click any card in the Densité frame (for example, the frame's controller) and select *Open upgrade* screen. This opens the Densité Upgrade Manager, where all cards in the frame can be seen. See the card's documentation for how to obtain the card's software package. Then upgrade the Densité-protocol device through the **Densité Upgrade Manager** window. Refer to *Upgrade Densité-protocol Devices* in the **GV Orbit Client Quick Start Guide**. See Related Documentation, on page 11.

The Densité card becomes available in the GV Orbit Client's Network Window's tree view.

Email Service

Introduction

The **Email** service sends emails on the behalf of GV Orbit through a configured SMTP server. For a running GV Orbit C&M project, when an Email Behaviour is triggered it sends a message to the **Email** service, which causes an email message to be sent.

> **Note: About a Email Behaviour:**
> In GV Orbit, an *Email Behaviour* implements some *behind the scenes* logic on a custom graphical operator panel. The logic may be triggered by some monitored external event, or by the user.
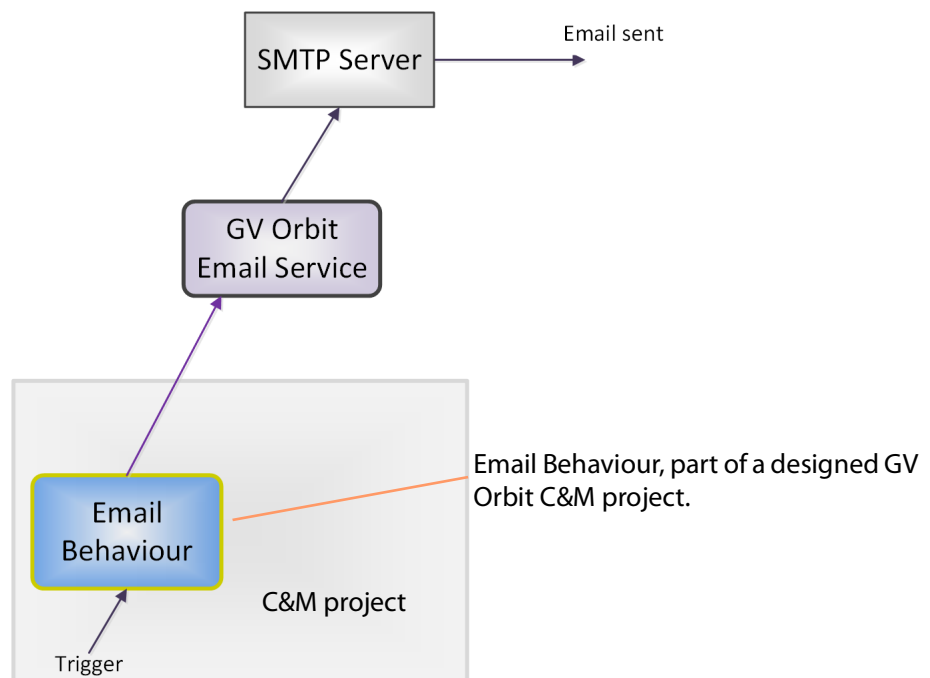

Email sent

SMTP Server

GV Orbit
Email Service

Email Behaviour, part of a designed GV Orbit C&M project.

Email
Behaviour

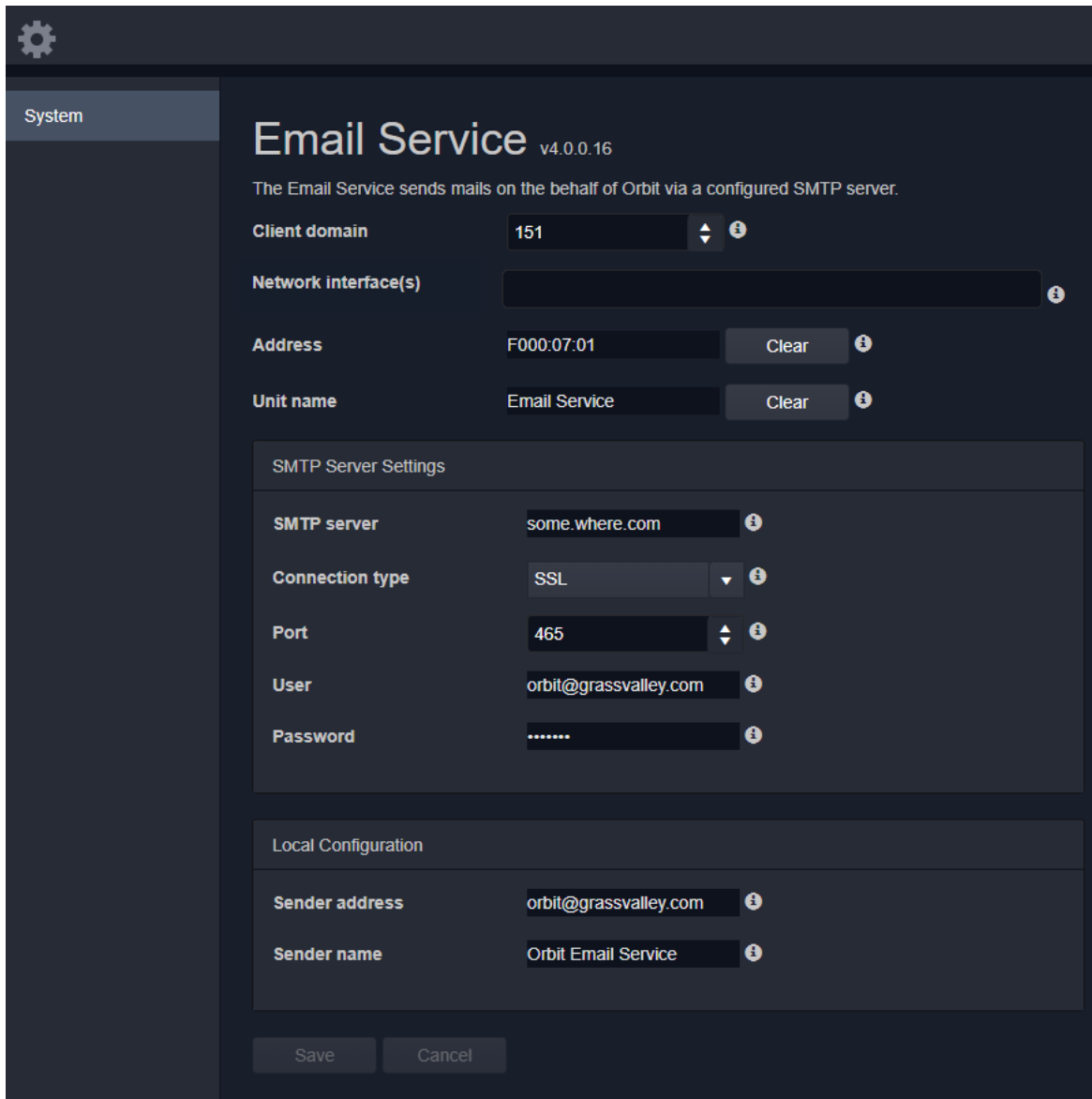C&M project

Trigger

Fig. 9-1: GV Orbit Email Service

> **Note: Using a Global file:**
> Typically when designing a GV Orbit C&M project, use a GV Orbit 'Global file' to hold the *Email Behaviour* and any triggering logic for it. This type of file runs on the GV Orbit Server and not on the GV Orbit client, which allows the functionality to persist even when the client PC is disconnected.
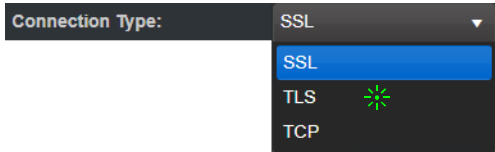
System Screen

The system settings for the **Email** service configuration screen.

Setting	Description
System Settings	See also Service System Settings, on page 87.
System Settings > Client Domain	Enter a GVOP domain number that the service will use (usually the 'Client' domain). For more information, see Default Client Domain ID Numbers, on page 88. **Note:** This setting should be set to match the Domain used by a GV Orbit Project in a GV Orbit Client. If the GV Orbit Client and **Email** service are on different domains they cannot exchange data with each other.
System Settings > Network Interface(s)	Set the GV Orbit Server's network interfaces that this service is to use to communicate with remote devices and GV Orbit Client(s). See Network Interface(s) Setting, on page 88.
System Settings > Address	Enter RollCall address to use for the **Email** service. This will uniquely identify the service in the GV Orbit system. This will be used when the service publishes its own log data. See RollCall Address Setting, on page 89, and RollCall Address, on page 243, for information about RollCall address. The user is free to define the RollCall addresses for a system.
System Settings > Clear	Click to restore default RollCall address for the service. Default: F110:01:07
System Settings > Unit Name	Enter a name for the **Email** service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
System Settings > Clear	Click to restore default name for the service.
SMTP Server Settings	**Note:** These are system-specific settings according to the connection type setting.
SMTP Server	Enter the web address (IP network domain name) of the SMTP server. For example, 'my.mailserver.com'.
Connection Type	Select the protocol for communicating with the SMTP server.
Port	Enter the IP port number to use to communicate with the SMTP server.
User	Enter a valid user name to log into the SMTP server with.
Password	Enter the corresponding user password to log into the SMTP server.
Local Configuration:	**Note:** These are system-specific settings.
Sender Address	Enter a default sender email address to use for emails sent by the GV Orbit system. For example, 'GVOrbit@My_Company.com'.

Setting	Description
Sender Name	Enter a default sender name to use for emails sent by the GV Orbit system. For example, 'The GV Orbit Email Service'.
Save	Applies the changes you have made to the above settings. See To save settings changes, on page 86.
Cancel	Discards your changes made to the above settings.

Event Logging Service

Introduction

The **Event Logging** service captures alarms and device status messages in an event log which may be monitored live or referred to later. (For example, the history of alarm changes, value changes, mask applications, alarm acknowledgments and any other status changes can be viewed.)

The service acts as a listener, snooping on the various GVOP messages in a GV Orbit system. The service can store a copy of all or some of the event log information by applying a filter to messages it listens to and writes into an event log store.

The service offers the facility to search for and browse logged event information. Additionally, the service can expose a data connection for each event log store, allowing the logged data to be displayed inside a GV Orbit client custom soft panel using the purpose-made 'Alarm List' graphical widget.
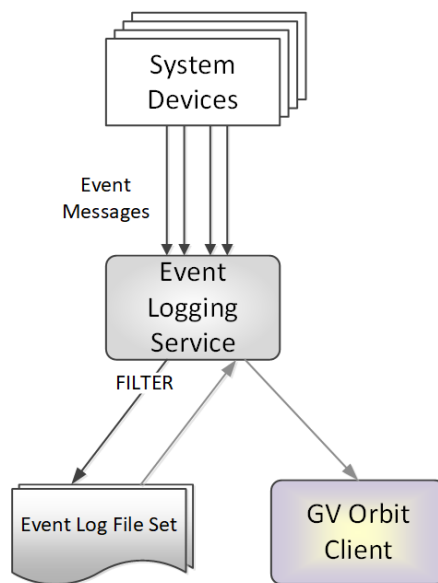

Fig. 10-1: GV Orbit Event Logging Service

System Screen

Setting	Description
System Settings	See also Service System Settings, on page 87.
System Settings > Client Domain	Enter a GVOP domain number that the **Event Logging** service will monitor (usually the system's 'Client' domain). Messages published onto this domain will be logged. For more information, see Default Client Domain ID Numbers, on page 88. **Note:** If the GV Orbit Client and **Event Logging** service are on different GVOP domains they cannot exchange data with each other.
System Settings > Network Interface(s)	Set the GV Orbit Server's network interfaces that this service is to use to communicate with remote devices and GV Orbit Client(s). See To select the network interface(s) to be used by a service, on page 88.
System Settings > Address	Enter RollCall address to use for the **Event Logging** service. This will uniquely identify the service in the GV Orbit system. This will be used when the service publishes its own log data. See RollCall Address Setting, on page 89, and RollCall Address, on page 243, for information about RollCall address. The user is free to define the RollCall addresses for a system.

Setting	Description
System Settings > Clear	Click to restore default RollCall address for the service. Default: F110:01:05
System Settings > Unit Name	Enter a name for the **Event Logging** service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
System Settings > Clear	Click to restore default name for the service.
Elastic Search Settings > URL	Enter the IP address of a server running the **Elastic** service to be used for the processing of event logs, for the **Event Logging** service to connect to. This is composed of an IP address and an IP port number. Loop-back URL addresses should be used when the Elastic search service is co-located on the GV Orbit Server, which is typically the case. For example: • `http://127.0.0.1:9200` for a loop-back URL (the default value). • `http://172.20.79.143:9200` for the URL of another GV Orbit Server.
Elastic Search Settings > Batch delay (milliseconds)	Enter the maximum wait time (in milliseconds) before sending a batch of event log data to the search engine as it is more efficient to send data in batches. The default is 100 ms.
Elastic Search Settings > Batch max documents	Enter the maximum number of documents in a batch to send to the search engine. The Default is 100.
Save	Applies the changes you have made to the above settings.
Cancel	Discards your changes made to the above settings.

Event Log Setup Screen

Elastic Search Setup

The Event Logging service can be configured to push alarm data into an Elastic search database.

You have the ability to push different filtered sets of alarm data into different indexes.

Current Index Configurations ⓘ

Indexes   tc_2   ▼ ⓘ

[New]   [Delete]

See Current Event Log File Configurations, on page 105

Configuration ⓘ

Enable this index   ✓ ⓘ

Index name   tc_2   ⓘ

Default Index   ✕ ⓘ

See Event Log File Configuration, on page 107

Filter

Add the alarms that should be captured in this index. You may enter an alarm address with no header to capture everything from that address, or a header with no address to capture those headers from all units. You may also prefix the address or header with a - character to exclude those entries from any capture.

- F000:01:00 - Records everything for this address. Other addresses are omitted.
- F000:02:00 with MSG - Records the MSG field for this address only. Other log fields and other addresses not specified are omitted.
- F000:02:00 with -MSG - Captures all alarms except MSG for this address. Other addresses not specified are omitted.
- MSG with no address - Only captures the MSG field for all addresses.
- LOG_* - Captures LOG_1, LOG_2 etc.
- -LOG_* - Excludes LOG_1, LOG_2 etc.
- -F000:02:00 - Captures all addresses but this one.
- F000:00:00-F000:01:00 - Captures all log fields for all units within this range.
- -F000:00:00-F000:01:00 - Captures all log fields for all units outside of this range.

[+ New]

Address	Header	

Delete data after (days)   7   ⓘ

Note: The above settings need to be saved before data is written to Elastic Search as the old settings will be used until rollover has occurred.

Recording mode   Alarms Only   ▼ ⓘ

Publish to Alarm widget   ✕ ⓘ

[Save]   [Cancel]

Fig. 10-2: Event Log Setup Screen

Current Event Log File Configurations

This section of the **Event Log Setup** screen allows you to add and configure a new event log or to select an existing event log for editing or deleting.

The **Event Logging** service stores data within plain text log files, which may be configured to either store all data or just filtered data. This enables data to be logged for, for example, just alarms from devices for one channel. Different event log file configurations can be set up individually.

Event log file configuration settings also allow time periods (days) to be set before automatically clearing log file data.
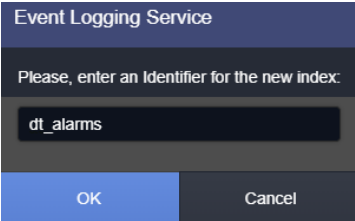
Default Log File Configuration

A GV Orbit system has a default log file configuration already set up (named '**default**') which is set to be the default one shown in the **Alarm History** window in GV Orbit Client.

> **Note:** Do not delete the '**default**' log file configuration.

Setting	Description
Indexes	Shows the selected event log configuration (index). This drop-down lists all of the currently configured event log configurations within the system. **Select an Index to be configured:** To select an event log configuration: 1 Click on the **Indexes** drop-down. A drop-down list of all the indexes are shown. 2 Select an index that you want to configure. The selected event log configuration's settings are editable in the **Configuration** panel below, see Event Log File Configuration, on page 107.

Setting	Description
Indexes > New	To create a new event log configuration:
	1 Click **New**.
	A dialog is shown.
	Event Logging Service
	Please, enter an Identifier for the new index:
	dt_alarms
	OK Cancel
	2 Enter a name for the new index. See Identifier and Event Log File Name, on page 106 for information on how the identifier is used.
	Note: The event log naming rules are:
	• Lowercase only
	• Cannot include \, /, *, ?, ", <,>, |, ` ` (space character), „ #
	• Cannot start with -, _, +
	• Cannot be . or ..
	• Cannot be longer than 255 characters
	3 Click **OK**.
	A new, empty event log configuration is created and is ready to be configured in the **Configuration** panel below. See Event Log File Configuration, on page 107.
Indexes > Delete	Deletes the selected index from the **Indexes** drop-down.

Identifier and Event Log File Name

Each event log file configuration (index) has an **identifier**, a text string which will be used to form the names of the event log files produced.

Event Log File Name Format

The following log file name format is used:

IDENT-YYYY-MM-DD-N.log

Where:

- IDENT is the identifier text string, for example: CHAN001
- YYYY is the year, for example: 2019
- MM is the 2-digit decimal month number, for example: 02 for February.
- DD is 2-decimal-digit day number, for example: 05
- N is log file index suffix, a decimal integer 1 to 9 for the different log files in the set of log files of an event log file configuration.

For example, for CHAN001 identifier, a log file set comprises:

- `CHAN001-2019-04-18-1.log`

- `CHAN001-2019-04-18-2.log`
- `CHAN001-2019-04-18-3.log`
- `CHAN001-2019-04-18-4.log`
- `CHAN001-2019-04-18-5.log etc.`

Event Log File Configuration

Select an index to configure in the **Configuration** panel by selecting an index found under **Current Index Configurations**, **Indexes** drop-down.

The selected index's name is then shown in the **Index Name** field.

In the Configuration panel, you can set op a filter for only specific alarm messages to be logged.

Configuration ⓘ

Enable this index ✓ ⓘ

Index name tc_2 ⓘ

Default Index ✕ ⓘ

Filter

Add the alarms that should be captured in this index. You may enter an alarm address with no header to capture every from that address, or a header with no address to capture those headers from all units. You may also prefix the address header with a - character to exclude those entries from any capture.

- F000:01:00 - Records everything for this address. Other addresses are omitted.
- F000:02:00 with MSG - Records the MSG field for this address only. Other log fields and other addresses not specified are omitted.
- F000:02:00 with -MSG - Captures all alarms except MSG for this address. Other addresses not specified are or
- MSG with no address - Only captures the MSG field for all addresses.
- LOG_* - Captures LOG_1, LOG_2 etc.
- -LOG_* - Excludes LOG_1, LOG_2 etc.
- -F000:02:00 - Captures all addresses but this one.
- F000:00:00-F000:01:00 - Captures all log fields for all units within this range.
- -F000:00:00-F000:01:00 - Captures all log fields for all units outside of this range.

+ New

Address	Header	

Delete data after (days) 7 ⓘ

Note: The above settings need to be saved before data is written to Elastic Search as the old settings will be used until r has occurred.

Recording mode Alarms Only ⓘ

Publish to Alarm widget ✕ ⓘ

Save **Cancel**

Fig. 10-3: Event Log Setup Settings - Configuration Panel

Setting	Description
Enable this index	Select an option: • **Enabled:** enables logging to the selected Elastic search database for this index. • **Disabled:** disable logging to Elastic search.
Index name	Shows the selected Elastic search database index's name (read-only). To configure another index, select another index through the **Current Index Configurations**, **Indexes** drop-down.
Default index	Select an option: • **Enabled:** this index is shown by default in the **Alarm History** window in the GV Orbit Client. • in the **Alarm History** window in GV Orbit Client or in the **Event Log Viewer** screen. • **Disabled:** another index is shown by default in the **Alarm History** window in GV Orbit Client. **Note:** Only one index configuration can be set to be the **Default Index**.
Filter	Filter rules list: Set up log message filtering rules in this panel. Rules can be set up to allow or block various messages from certain devices or from a range of devices. See Filter List, on page 110 for more information about entering filter rules and some example filter list items.
Delete Data After (days)	Enter the maximum duration to keep the logged data in Elastic search for this index.
Recording Mode	Select the recording mode: • Everything. • Alarms Only. **Note:** Regardless of this setting, user interactions, such as alarm acknowledgments, will be logged.
Publish to Alarm Widget	Select an option: • **Enabled:** the **Event Logging** service exposes the last 200 log entries to the system. This enables the messages to be displayed in purpose-built 'Alarm List' widget (inside a C&M project screen running in a GV Orbit Client, or on a multiviewer video wall). • **Disabled:** this feature is disabled.
Save	Applies the changes you have made to the above settings. **Note:** Settings need to be saved before they take effect and new log data is logged (processed, viewed, and searched).
Cancel	Discards your changes made to the above settings.

Filter List

The filtering for event log file configurations applies to alarm messages, log messages and status messages. The filtering affects what is logged from the point when the filtering is applied to a log file configuration (saved). Any messages already logged are not affected.

> For example, if an **Event Logging** service has been logging all messages in a system and then a single address is added to the filtering, then only messages from that one address will then be logged. Messages already logged are not affected.

Filter List Controls

Controls for generating a list of filter rules are shown in Table 10-1.

Table 10-1: Log Configuration - Filter List Controls

Filter Control	Description
+New	Click to add a new filter rule. Requires Address/Header items.
Address Column heading.	Enter a RollCall address item as part of filter rule.
Header Column heading.	Enter a log header message type as part of filter rule.
Delete	Click to delete the address/header filter item.

Filtering Rules

Filtering rules can be set up, which can then act to reduce the amount of data that is logged in an event log file:

- Initially, the list is empty and all messages are logged.
- One or more filter rules can be set up to allow or to block various messages from certain devices or from a range of devices.
- Filter rules are combined by being logically 'OR'ed together.

> **Note:** There is no inter-dependency between filter rules.

A filter list of RollCall addresses and event log message Headers can be set up which define the messages be captured in the event log file. The list can be scrolled though. See Figure 10-4.

Fig. 10-4: Example Filter Rules List

Note: Save changes:
A red triangle appears in the top-left of each filter table entry after is has been edited to indicate that a 'Save' must be performed for the change to take effect.

Note:
The set of devices accessible by the **Event Logging** service, and hence the events stored in the event log file, is defined by the GVOP Domain number.

Filter Rules List Items

Example rules are listed in the table below. Wild-card characters can be used to specify headers (e.g. LOG_*). An empty rules list will capture all messages.

Rule	Filter Rule Item Example		Description
	RollCall Address	**Header**	
<Empty>			A completely-empty list captures all messages in the GVOP Domain.
Address only:	F000:01:00		Captures all messages/data for this device address.
Address range:	F000:00:00-F000:01:00		Captures all messages/data all device addresses in this range.
Exclude address:	-F000:02:00		Excludes all messages/data for this device address.
Exclude address range:	-F000:00:00-F000:01:00		Excludes all messages/data for device addresses in this range.
Header only:		MSG	Captures MSG messages for all device addresses (in the GVOP domain).
Headers:		LOG_*	Captures messages with log headers: LOG_1, LOG_2, LOG_3, etc.
Exclude headers:		-LOG_*	Excludes messages with log headers: LOG_1, LOG_2 etc.
Address and header:	F000:02:00	MSG	Captures the MSG log field header message for this device address only.
Exclude header from address:	F000:02:00	-MSG	Captures all messages for this device address, except MSG messages.

Event Log File Format

The event log file entries are in JavaScript Object Notation (JSON) format with a single entry per line. See Figure 10-5.

```
10  {"address":"6151:20:0E","header":"INPUT_1_C_BIT_DEPTH","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false,"a
11  {"address":"7131:03:05","header":"INPUT_2_SDI_ERRCNT","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false,"ac
12  {"address":"7131:03:05","header":"INPUT_3_SDI_ERRCNT","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false,"ac
13  {"address":"7131:03:05","header":"INPUT_4_SDI_ERRCNT","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false,"ac
14  {"address":"3271:0B:04","header":"INPUT_1_APL","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false,"acked_by"
15  {"address":"3271:0B:04","header":"INPUT_1_C_BIT_DEPTH","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false,"a
16  {"address":"3271:0B:04","header":"INPUT_1_EMBED_AUDIO_3_1_BIT_DEPTH","is_inverted":false,"is_masked":false,"latched_errors":[{"a
17  {"address":"3271:0B:04","header":"INPUT_1_EMBED_AUDIO_3_2_BIT_DEPTH","is_inverted":false,"is_masked":false,"latched_errors":[{"a
18  {"address":"3271:0B:04","header":"INPUT_1_EMBED_AUDIO_4_1_BIT_DEPTH","is_inverted":false,"is_masked":false,"latched_errors":[{"a
19  {"address":"3271:0B:04","header":"INPUT_1_EMBED_AUDIO_4_2_BIT_DEPTH","is_inverted":false,"is_masked":false,"latched_errors":[{"a
20  {"address":"3271:0B:0A","header":"LAN_PORT_1_CPU_TRAF_OUT_STATE","is_inverted":false,"is_masked":false,"latched_errors":[{"acked
21  {"address":"3271:0B:0A","header":"LAN_PORT_2_CPU_TRAF_OUT_STATE","is_inverted":false,"is_masked":false,"latched_errors":[{"acked
22  {"address":"6141:0B:0F","header":"FEC_1_CORRECTED_ERRORS","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false
23  {"address":"6141:0B:0F","header":"FEC_1_UNCORRECTED_ERRORS","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":fal
24  {"address":"6141:0B:11","header":"FEC_2_CORRECTED_ERRORS","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false
25  {"address":"6141:0B:11","header":"FEC_2_UNCORRECTED_ERRORS","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":fal
26  {"address":"7131:03:0A","header":"HYP_INPUT","is_inverted":false,"is_masked":false,"latched_errors":[{"acked":false,"acked_by":"
```

Fig. 10-5: Sample Event Log File Extract

Entries are human-readable but are not easy to browse. GV Orbit offers a log file viewer for easier viewing of log files. See Event Log Viewer, on page 113.

State Value

> **Note: State Value**:
>
> The status of devices and device parameters (headers) are assigned a 'State' value in log messages, where:
> - 0 = Masked.
> - 1 = OK.
> - 49 = Acknowledged warning.
> - 50 = Warning.
> - 99 = Acknowledged error.
> - 100 = Error.

Event Log Message Examples

Example: Event Log Message (type=log)

(The event log file extract example below is presented to make it easier to read in this document.)

A message is logged for each log field value or alarm change.

> **Note:**
> The **Event Logging** service log file configuration's 'Recording Mode', determines if all value changes or just alarms were logged in a log file.

Alarms are signified by a 'State' value greater than 1.

```
{
    "address":"E000:02:00",
    "header":"COMMS",
    "is_inverted":false,
    "is_masked":false,
    "latched_errors":[
        {
            "acked":true,
            "acked_by":"admin",
            "acked_timestamp":"2018-11-27T09:29:15Z",
            "duration":4294967295,
            "state":100,
            "timestamp":"2018-11-27T08:18:26",
            "value":"FAIL"
        }
    ],
    "latched_state":100,
    "state":99,
    "timestamp":"2018-11-27T09:29:15Z",
    "type":"log",
    "unmasked_state":99,
    "value":"FAIL"
}
```

Ack Message (type=ack)

This message is logged when a user physically acknowledges an alarm within the system or they reset an alarm's 'latched state' to its current state value.

Header Mask (type=cellmask)

This message is logged when a user applies any type of log message mask in GV Orbit.

An individual log field message from a device can be masked. When masked, it does not contribute to any overall state value calculated for a device.

Unit Mask (type=unitmask)

This message is logged when a user applies any unit alarm mask in GV Orbit.

All messages from an individual device (unit) can be masked.

Event Log Viewer

The **Event Logging** service provides an event viewer facility that allows events to be displayed and queried in an **Alarm History** window.

Alarm History

To access the **Alarm History** in a web browser:

- Click on the **Event Log Viewer** side-tab.

  An **Alarm History** is opened in a *new* web browser tab.

  Note: If the **Event Logging** service's configuration page is viewed from within GV Orbit Client, then clicking on the **Event Log Viewer** side-tab will *not* open a new tab and no events are shown. In this case, open an **Alarm History** window by clicking on the **Alarm History** button in the main tool bar of GV Orbit Client.
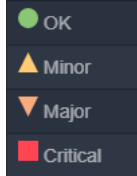
Alarms that are masked are shown 'grayed-out' (duller) in the list.

| Icon	Description
Clear all filters	This clears all column filters that have been applied. See Clear Column Filters, on page 120.
Hide show columns	To reduce the number of logged parameters that are shown, you can hide/show columns. See Hide/Show Columns, on page 118.
Search parameters	Show the **Search Parameters** dialog and select the time period to view. See Search Parameters Dialog, on page 115.
Refresh data	Update the screen with the latest available event log data.
Column filter	Set a column filter. See Filter Columns, on page 119.

Column Heading	Description
Time stamp	The time-stamp of the event log message. Time stamp format: DD/MM/YY @ hh:mm:ss For example, 25/12/19 @ 9:25:01 Note: Alarm message can be filtered by time stamps. See To select date and time period to view, on page 116.
Current state	The current log state: State icons: • OK • Minor Warning • Major Warning • Critical Error/Failure
Current value	The current value of the log state. For example: • 9 • 3.34V • FAIL:Low • +0.1us • 1.32dBm • 6.0kBytes/sec • 39C
Previous state	The previous log state.
Previous value	The previous log state value.
Alarm	The name of the event log message type. For example: • INPUT_8_SDI_ERRCNT • LAN_PORT_1_IN_TRAFFIC • TEMP_2_CELSIUS
Address	The device's RollCall address/identifier. For example: • 3291:20:0A • F110:01:07

The displayed results may be further filtered:

- To search through the event log data to focus to a source and/or date range. See Search Parameters Dialog, on page 115.
- To filter columns on specific criteria (see Filter Columns, on page 119).
- To reduce the number of logged parameters that are shown, you can hide/show columns. See Hide/Show Columns, on page 118.

Search Parameters Dialog

Logged data to be displayed can be selected with the **Search Parameters** dialog to reduce the number of log messages shown.

To select log data to view

To view captured messages/data in an Elastic index, in the **Alarm History** window in GV Orbit Client or the **Event Log Viewer** browser tab:

1   Click on the **Search Parameters** icon (🔍).

    The **Search Parameters** dialog is shown.
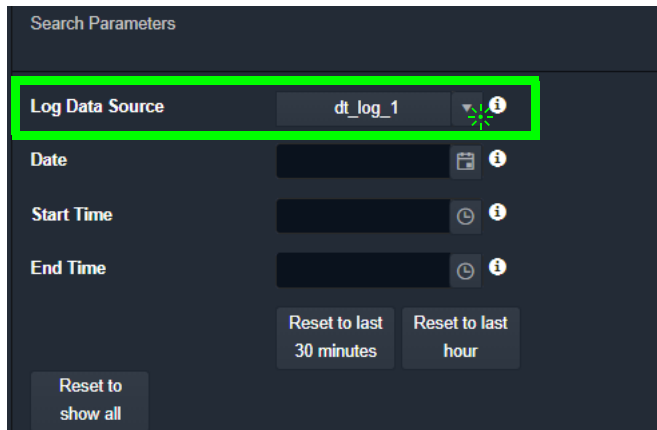
2   Select an event index configuration in the **Log Data Source** drop-down list.

    Once selected, index's event log data message list is updated.

To select date and time period to view

Messages can be filtered by their time-stamp in the **Search Parameters** dialog by date or for a time period.

1   Click on the **Search Parameters** icon (🔍).

    The **Search Parameters** dialog is shown.
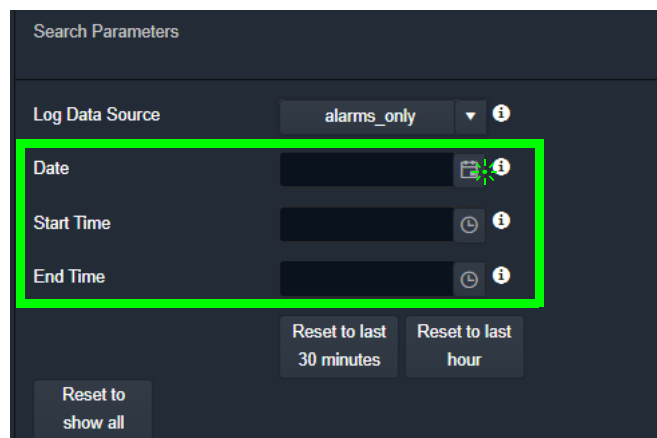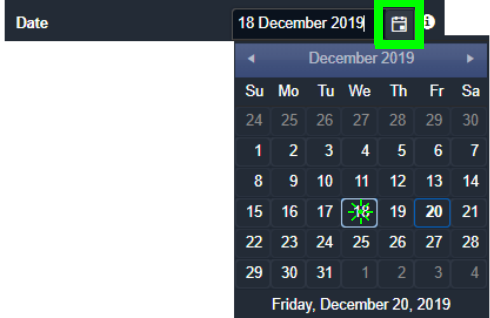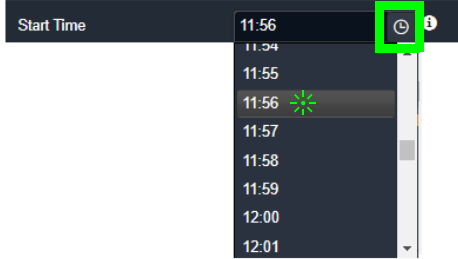
Fig. 10-6: Search Parameters Dialog+

The date and time selection controls are described below.

Control	Description
Date	Click on the **Date** icon and set the (start) date from which to view event logs.
Start Time	Click the clock **Time** icon to set a start time, from which to view the event logs. **Note:** The time is shown in 24-hour format: 00:00 is midnight. 02:50 is ten minutes to three at night. 12:00 is mid-day 14:50 is ten minutes to three in the afternoon. 19:30 is half past seven in the evening. 23:59 is one minute to midnight.
End Time	Click on the clock **Time** icon and set an end time. Event log messages up to this end time will be viewed. **Note:** It is possible to set an end time which is earlier than the start time. In this case, the end time is interpreted as being in the *next day*.
Reset to last 30 minutes	Click to view event messages that occurred in the last 30 minutes.
Reset to last Hour	Click to view event messages that occurred in the last hour.

Note:

The search engine is limited to returning a maximum of 10000 items and as such, any search carried out will be limited to show this maximum number of results.

Once selected, index's event log data message list is updated.

To view the Search Results

The **Alarm History** window in GV Orbit Client or the **Event Log Viewer** browser tab displays the resulting event log messages from the event log and time period set up in the **Search Parameters** dialog. If more than 20 results are returned, then the results are presented in screens and paging buttons are provided to navigate the results.

Fig. 10-7: Event Log Viewer - Search Results

Hide/Show Columns

- Click the **Hide/Show Columns** icon ( ) and select the columns to hide or to show.
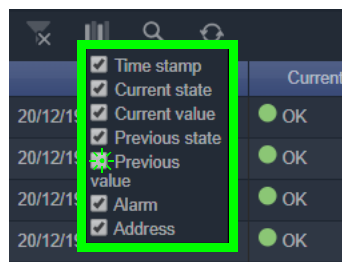

Fig. 10-8: Select Columns - Hide/Show

Filter Columns

Row filters can be applied to each column by setting a filter at the top of a column to filter the list according to a column's content. This is available for all columns except 'Time Stamp'. This may be used to help find specific messages (for example, only 'errors', or only 'entries from a specific device'). Filtering limits what is shown in the viewer.
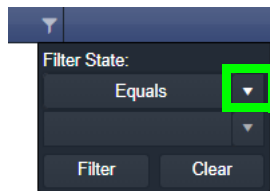
Filtering of entries can be done on one or more columns. Filtering can show items whose column value is 'equal to' or, alternatively, 'not equal to' a value:

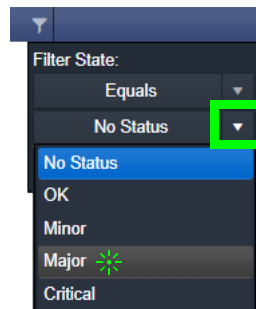1   Click on a **Filter Column** icon in a column heading:
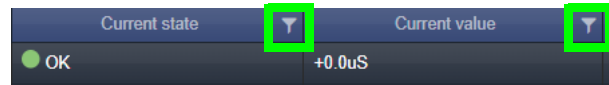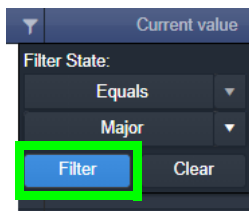
The **Filter Column** dialog is shown.

2   Select the column filter condition in the first drop-down menu ('Equals' or 'Not Equals'). For example 'Equals'.

3   Select the column filter value. (Values presented in the drop-down list depend on the column being filtered.) For example, 'Major'.

4   Click **Filter** to apply the column filter.

The column filter is applied and the log data shown is restricted accordingly.
In this example, only current 'Major' warnings are picked out by the filter and shown.

When a column filter is set, the filter column icon is shown with a 'gray background',

indicating a filter is in effect.

Further Filtering

To further limit the displayed data, filter on other columns.

Clear Column Filters

To clear all column filters, click the **Clear all filters** icon ( ).

Non-RollCall Devices

The **Event Logging** service natively supports RollCall addresses and hence RollCall-protocol devices. Log event messages from iControl or Densité devices may still be logged by the service by using a **User** folder in a C&M project's **Network** window in GV Orbit Client.

With a GV Orbit C&M project open in GV Orbit Client:

1 Show the **Network** window.

2 Right-click on the top-level user folder ('**User**') and select 'Create Folder':

    The **Create Folder** dialog is shown.

3 Enter a name for the new user (sub-)folder (such as 'Densité Dev Group') and click **OK**.

    A new sub-folder under **User** is created.

4 Right-click on the new sub-folder and select 'Assign Address'.

    The **Assign Address** dialog is shown.

5 Enter a RollCall address for the sub-folder and click **OK**.

New **User** sub-folder

Assigned RollCall address
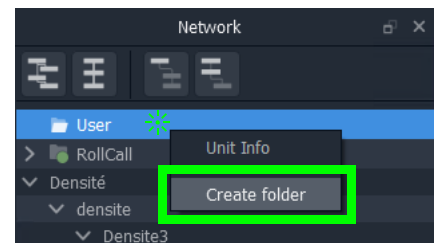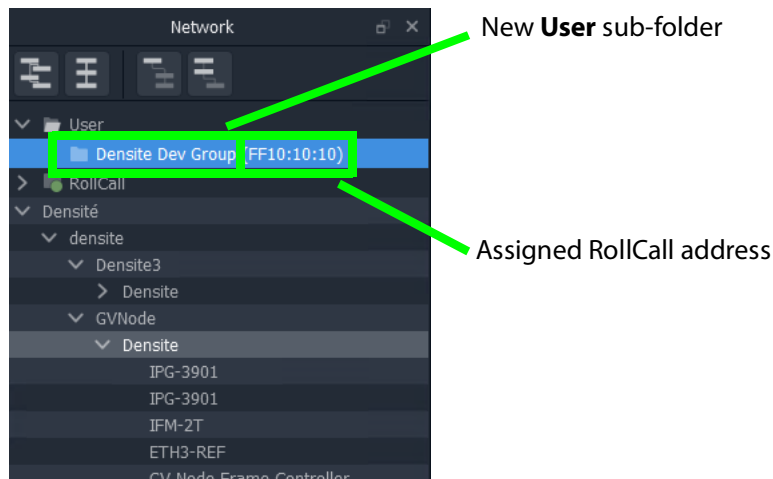
6 Expand the **Network** window tree-view to see Densité devices.

7 Drag one or more Densité devices of interest in the **Network** window into the new **User** sub-folder.

New **User** sub-folder

Fig. 10-9: Drag Densité Device into New User Sub-Folder

The dragged devices are now shown beneath the **User** sub-folder.

Fig. 10-10: Resulting New User Sub-Folder (Shown Expanded)

8 Click **Project -> Save Project** in the main menu to locally save the GV Orbit project.

9 Click **Project -> Push** to push the project to the repository on the GV Orbit server.

> **Note:**
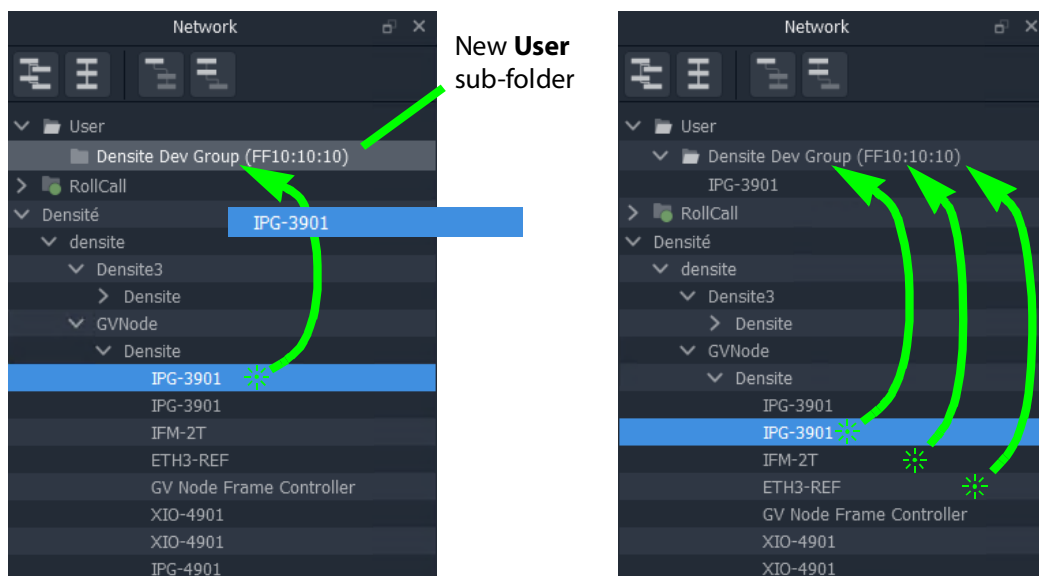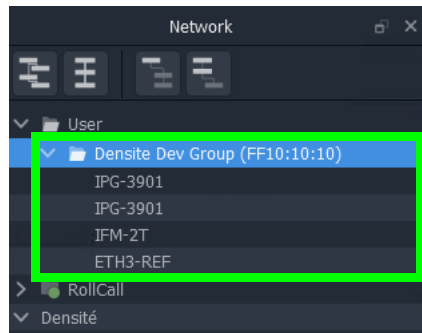> It is necessary to push the project to the GV Orbit server so it may be deployed in the GV Orbit system for the **Event Logging** service (and other services) to access.

The GV Orbit services will aggregate the devices in the new **User** sub-folder under the assigned RollCall address, and log messages can be logged and hence viewed by an **Alarm List** widget on a GV Orbit C&M project screen, or by the **Event Log Viewer/ Alarm History** window.

Alarm List Widget and Event Logging Service

The alarm messages can be viewed on a GV Orbit C&M project custom user panel. The **Alarm List** widget is available to design a custom panel with in GV Orbit Client.

The **Alarm List** widget can be placed onto a custom user panel when using the GV Orbit Client in 'Design Mode'. It can be configured to display event log message information:

• "live" data from the GV Orbit **Monitoring** service; or

• historical data from one of the **Event Logging** service's event logs.

When the C&M project is saved and pushed to the GV Orbit server it can be run. Log messages are shown, color-coded, and scroll up the widget.

Fig. 10-11: Alarm List Widget Shown Running on a C&M Project Custom User Panel

---

Note:

The **Publish to Alarm Widget** setting must be enabled within the Event Log File configuration of the **Event Logging** service before the **Alarm List** widget can correctly connect to the service and log messages.

Event Logging Service Alarms

The **Event Logging** service itself generates alarms which can be viewed in an **Alarm Summary** window.

Event Log	Description
ELASTIC_SEARCH	Status of the Elastic search engine connected to.
ELASTIC_TOTAL_DISK_USE	Total disk space on GV Orbit server that is used by the Elastic search engine. 100 GBytes is reserved on the server for this. Alarm state on this is: • Warning above 75 GBytes; and • Error above 100 GBytes. The service stops writing above 120 GBytes until some of the reserved space is freed (for example, by reducing the 'Delete Data After' setting - see Event Log File Configuration, on page 107).

IP Proxy Service

Introduction

The GV Orbit **IP Proxy** service aggregates RollCall control and monitoring connections to multiple RollCall-protocol devices/frames with RollCall addresses. The service presents messages from these devices to the GV Orbit **Log Server** service. The service supports a main connection to a device/frame and up to 2 further, redundant connections.

Devices/frames include:

- IQMIX and IQUCP modular cards;
- IQ frame controllers (Gateways);
- MV-8 Series multiviewers;
- Kahuna production switchers; and
- Hardware and soft control panels.
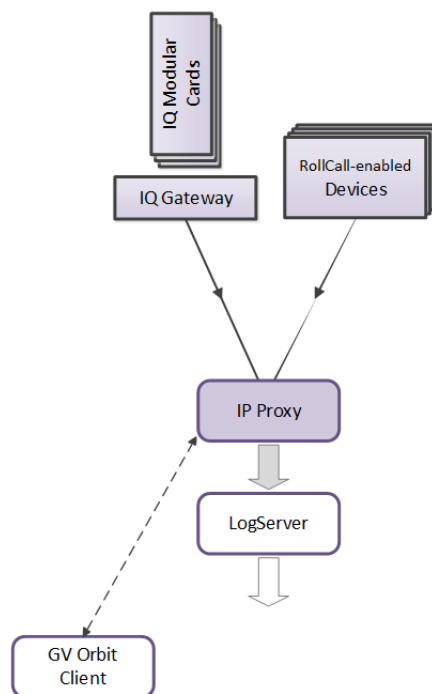
Fig. 11-1: GV Orbit IP Proxy Service

The aggregated connections are presented in a tree structure in the **Network** window of a GV Orbit Client; the client connects to an **IP Proxy** service to form the tree view.

System Screen

Fig. 11-2: IP Proxy Service System Screens

Table 11-1 below describes the 'System' screen setting of the IP Proxy configuration screen.

Table 11-1: GV Orbit IP Proxy Service - System Settings

Setting	Description
System Settings:	
Client Domain	Text box. Enter a GVOP Domain number that the GV Orbit clients are running on (i.e. 'Client' domain). The valid range is 1 to 232. (See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains.) Device 'State' information (log messages) is obtained via the GVOP protocol over the **Client Domain**. A device's RollCall template configuration screen is opened via the RollCallv3 protocol through the **IP Proxy** service. **Note:** The **Client Domain** should be set to match the domain used by a GV Orbit project in a GV Orbit Client. If the GV Orbit Client and **IP Proxy** service are on different domains they cannot see each other's data.

Table 11-1: GV Orbit IP Proxy Service - System Settings (continued)

Setting	Description
Network Interfaces	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Address	Text box. Enter RollCall address to use for the service to write its own state messages with. This uniquely identifies the service in the GV Orbit system and is used when the service publishes its own log data. (See RollCall Address, on page 243 for information about RollCall address.) The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore the default RollCall address for the service. Default: F110:01:01
Unit Name	Text box. Enter a name for the service. This is a human-readable identifier for the **IP Proxy** service to use. This name appears in the GV Orbit Client's **Network** window for the service; it is the name of the service itself, with the specified RollCall address.
Clear	Button. Click to restore the default name for the service.
IP Proxy Settings:	**Note:** Any changes in this section will require an **IP Proxy** service stop/start.
IP Proxy Name	Text box. Enter a name. This is a human-readable identifier for the **IP Proxy** service connections to use. This name is shown in the GV Orbit Client's **Network** window for connections the **IP Proxy** service makes to RollCall-protocol devices. For example, IQ modules in an IQ modular frame slots: a **Network** window shows the IQ frame controller and the modules. Under each module, connections to the RollCall-protocol device are shown. **Note:** This name may be either the same as or different to the service's **Unit Name**.
Clear	Button. Click to restore the default name to use.

Table 11-1: GV Orbit IP Proxy Service - System Settings (continued)

Setting	Description
Incoming TCP Port	Text box. Enter IP port number to use for RollCall connections from connected devices to the **IP Proxy** service. Default = 2050
Log Server TCP Port	Text box. Enter IP port number to use for connections to the Log Server service. **Note:** This should *not* be the same as **Incoming TCP Port** setting. Default = 2051

Connections Screen

> **Note:** Connections to devices/frames are system-specific items.

The **Connections** screen allows the user to manage the connections from the **IP Proxy** service to RollCall-protocol devices. The screen contains a list of devices for the **IP Proxy** service. List items can be added, edited and deleted. Each list item is either a RollCall-protocol device or a 'virtual tree node'. The status of the connection to each device is shown. Any change saved will be applied and will only temporarily interrupt the operation of the service. An **IP Proxy** service stop/start is *not* required.

The resulting connected RollCall network is viewed as a tree structure in the GV Orbit Client application **Network** window.

Click to **Import** a spreadsheet of list items

Click to **Export** a spreadsheet of list items
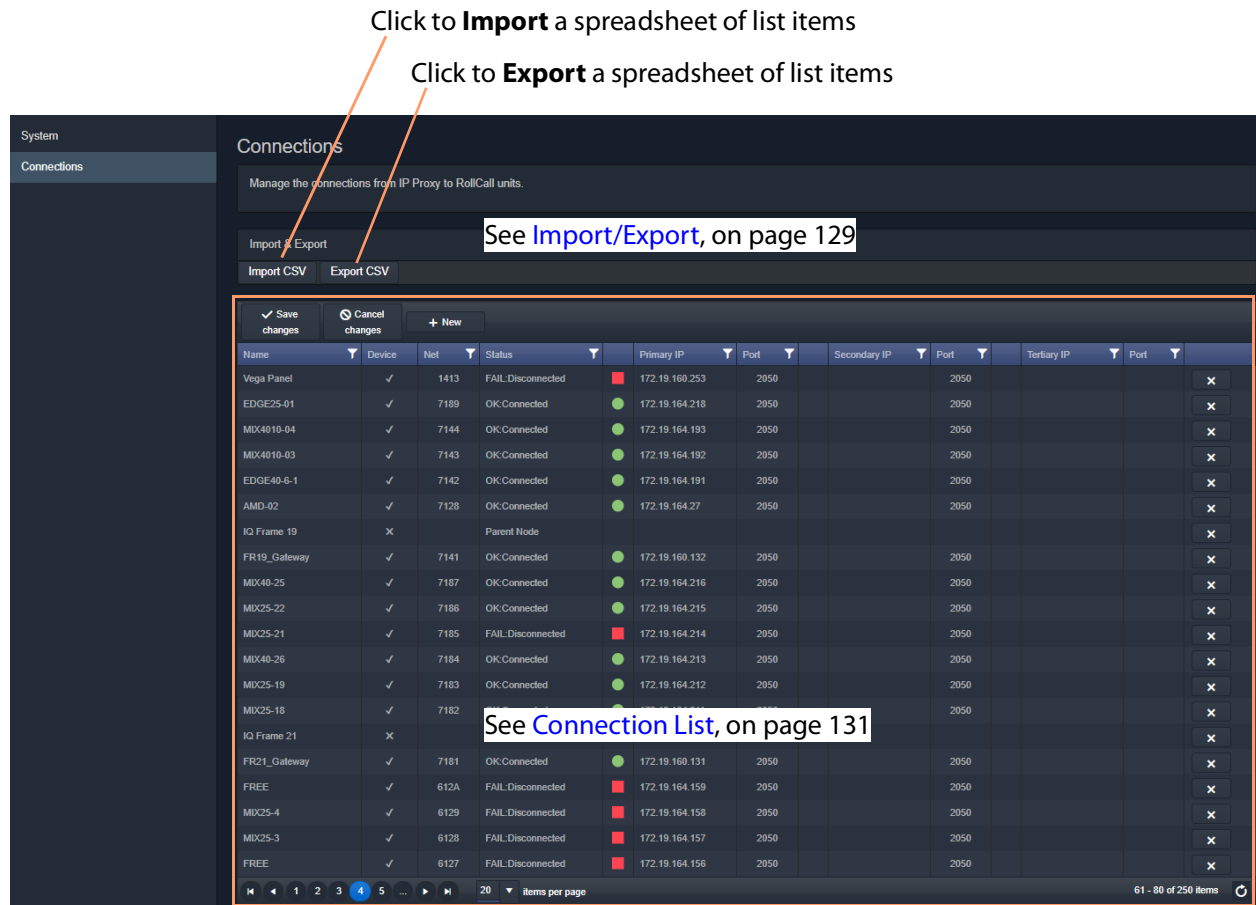
Fig. 11-3: IP Proxy Service - Connections Screen

Import/Export

Table 11-2: Connections Screen - Import and Export Controls

Control	Description
Import CSV	Button. Click to import a spreadsheet (CSV format) of connections. • Select a CSV file. • Click **Open**.
Export CSV	Button. Click to export a spreadsheet (CSV) of connections. (See Exported CSV Connections, on page 130.)
Save	Button. Click to save local changes to the **IP Proxy** service.
Cancel	Button. Click to cancel local changes.

Table 11-2: Connections Screen - Import and Export Controls (continued)

Control	Description
+New	Button. Click to add a new, empty row to the list. See **Note 1**.
Note 1:	A new row item needs explicitly saving with **Save**.

Exported CSV Connections

An exported spreadsheet file is in comma-separated variables (CSV) format. (See Figure 11-4.)

```
Name,Device,Network,Primary IP,Primary Port,Secondary IP,Secondary Port,Tertiary IP,Tertiary Port
Network(1160),false,1160,,null,,null,,null
FR01_Gateway,false,1111,,null,,null,,null
Engineering Frames,false,1100,,null,,null,,null
FR03_Gateway,false,1211,,null,,null,,null
IQ Frame 03,false,1210,,null,,null,,null
FR0C_3,false,12A4,,null,,null,,null
BCE Frames,false,1200,,null,,null,,null
IQMIX4010-2,false,1273,,null,,null,,null
IQEDGE 02,false,F2D2,,null,,null,,null
FR01_Gateway,true,7111,172.19.160.111,2050,,2050,,null
IQ Frame 01,false,7110,,null,,null,,null
Network(7100),false,7100,,null,,null,,null
Rack 6,false,7000,,null,,null,,null
MIX-01,true,7112,172.19.164.11,2050,172.19.166.11,2050,,null
MIX-02,true,7113,172.19.164.12,2050,172.19.166.12,2050,,null
MIX-03,true,7114,172.19.164.13,2050,172.19.166.13,2050,,null
MIX-04,true,7115,172.19.164.14,2050,172.19.166.14,2050,,null
MIX-05,true,7116,172.19.164.15,2050,172.19.166.15,2050,,null
MIX-06,true,7117,172.19.164.16,2050,172.19.166.16,2050,,null
FR02_Gateway,true,7121,172.19.160.112,2050,,2050,,null
IQ Frame 02,false,7120,,null,,null,,null
MIX-07,true,7122,172.19.164.21,2050,172.19.166.21,2050,,null
MIX-08,true,7123,172.19.164.22,2050,172.19.166.22,2050,,null
```

a) CSV file in Text Editor

	A	B	C	D	E	F	G	H	I
1	Name	Device	Network	Primary IP	Primary Port	Secondary IP	Secondary Port	Tertiary IP	Tertiary Port
2	Network(1160)	FALSE	1160		null		null		null
3	FR01_Gateway	FALSE	1111		null		null		null
4	Engineering Frames	FALSE	1100		null		null		null
5	FR03_Gateway	FALSE	1211		null		null		null
6	IQ Frame 03	FALSE	1210		null		null		null
7	FR0C_3	FALSE	12A4		null		null		null
8	BCE Frames	FALSE	1200		null		null		null
9	IQMIX4010-2	FALSE	1273		null		null		null
10	IQEDGE 02	FALSE	F2D2		null		null		null
11	FR01_Gateway	TRUE	7111	172.19.160.111	2050		2050		null
12	IQ Frame 01	FALSE	7110		null		null		null
13	Network(7100)	FALSE	7100		null		null		null
14	Rack 6	FALSE	7000		null		null		null
15	MIX-01	TRUE	7112	172.19.164.11	2050	172.19.166.11	2050		null
16	MIX-02	TRUE	7113	172.19.164.12	2050	172.19.166.12	2050		null
17	MIX-03	TRUE	7114	172.19.164.13	2050	172.19.166.13	2050		null
18	MIX-04	TRUE	7115	172.19.164.14	2050	172.19.166.14	2050		null
19	MIX-05	TRUE	7116	172.19.164.15	2050	172.19.166.15	2050		null
20	MIX-06	TRUE	7117	172.19.164.16	2050	172.19.166.16	2050		null
21	FR02_Gateway	TRUE	7121	172.19.160.112	2050		2050		null
22	IQ Frame 02	FALSE	7120		null		null		null
23	MIX-07	TRUE	7122	172.19.164.21	2050	172.19.166.21	2050		null
24	MIX-08	TRUE	7123	172.19.164.22	2050	172.19.166.22	2050		null

b) CSV file in a spreadsheet tool

Fig. 11-4: Example CSV Export File:
a) CSV File in Text Editor.
b) CSV File in Spreadsheet Tool.

Converter Utility for Old IP Proxy Files

The GV Orbit Client installation folder on a client PC contains a command line utility for converting older IP Proxy files into the CSV format required for importing into GV Orbit. This is found in the 'tools' sub-folder. Example path:

```
C:\Program Files\Grass Valley\GV Orbit\tools\IpProxyConfigConverter.exe
```

Usage: `C:>IpProxyConfigConverter.exe <source_file> <out_file>`

Connection List

Click to **Save Changes** made on this screen.

Click to **Cancel Changes** made on this screen.

Click **+New** to create a row item.

Click to **Delete** a row item

See Table 11-3 for a description of the column headings.

Name	Device	Net	Status		Primary IP	Port	Secondary IP	Port	Tertiary IP	Port	
Vega Panel	✓	1413	FAIL:Disconnected	🟥	172.19.160.253	2050		2050			✕
EDGE25-01	✓	7189	OK:Connected	🟢	172.19.164.218	2050		2050			✕
MIX4010-04	✓	7144	OK:Connected	🟢	172.19.164.193	2050		2050			✕
MIX4010-03	✓	7143	OK:Connected	🟢	172.19.164.192	2050		2050			✕
EDGE40-6-1	✓	7142	OK:Connected	🟢	172.19.164.191	2050		2050			✕
AMD-02	✓	7128	OK:Connected	🟢	172.19.164.27	2050		2050			✕
IQ Frame 19	✕		Parent Node								✕
FR19_Gateway	✓	7141	OK:Connected	🟢	172.19.160.132	2050		2050			✕
MIX40-25	✓	7187	OK:Connected	🟢	172.19.164.216	2050		2050			✕
MIX25-22	✓	7186	OK:Connected	🟢	172.19.164.215	2050		2050			✕
MIX25-21	✓	7185	FAIL:Disconnected	🟥	172.19.164.214	2050		2050			✕
MIX40-26	✓	7184	OK:Connected	🟢	172.19.164.213	2050		2050			✕
MIX25-19	✓	7183	OK:Connected	🟢	172.19.164.212	2050		2050			✕
MIX25-18	✓	7182	OK:Connected	🟢	172.19.164.211	2050		2050			✕
IQ Frame 21	✕		Parent Node								✕
FR21_Gateway	✓	7181	OK:Connected	🟢	172.19.160.131	2050		2050			✕
FREE	✓	612A	FAIL:Disconnected	🟥	172.19.164.159	2050		2050			✕
MIX25-4	✓	6129	FAIL:Disconnected	🟥	172.19.164.158	2050		2050			✕
MIX25-3	✓	6128	FAIL:Disconnected	🟥	172.19.164.157	2050		2050			✕
FREE	✓	6127	FAIL:Disconnected	🟥	172.19.164.156	2050		2050			✕

|◀ ◀ 1 2 3 **4** 5 ... ▶ ▶| 20 ▼ items per page   61 - 80 of 250 items ↻

Page navigation bar

Indicates a change has been made, but not yet saved.

Click to refresh list.

Fig. 11-5: IP Proxy Service - Connections

Table 11-3: Connections Screen - Column Headings

Column Heading	Description
Name	Text box. Enter a name for the device, or frame, or virtual tree node.
Device	Check box. • Select for a device, or frame, or unit with a RollCall connection. • Deselect for a virtual tree node.
Net	Text box. Enter the 4-hex-digit RollCall address network number. I.e. the four most significant digits of the RollCall address. For example, 4300.
Status	Information only. Displays the status of the IP Proxy connection to the device/frame/unit. A red/green 'LED' status indication is also shown. For a virtual tree node, 'Parent Node' is displayed.
Primary IP	Text box. Primary IP address of device/frame/unit.
Port	Text box. IP port number for primary IP address.
Secondary IP	Text box. Secondary IP address of device/frame/unit.
Port	Text box. IP port number for secondary IP address.
Tertiary IP	Text box. Tertiary IP address of device/frame/unit.
Port	Text box. IP port number for tertiary IP address.

Log Server Service

Introduction

The GV Orbit **Log Server** service collects logging information from devices on a RollCall network and distributes it to subscribing clients, for example, to the GV Orbit **Monitoring** service.

The **Log Server** service is the entry point into a system for RollCall log data from RollCall-protocol devices (for example, from Grass Valley IQ Modular devices or MV-8 Series Multiviewers). The service also supports in-bound data from Grass Valley's RollSNMP application tool and third-party IP endpoint applications.

Multiple **Log Server** services can work together to provide redundancy, such that if either one is shutdown then the other will take its place seamlessly with no loss of data to the client.
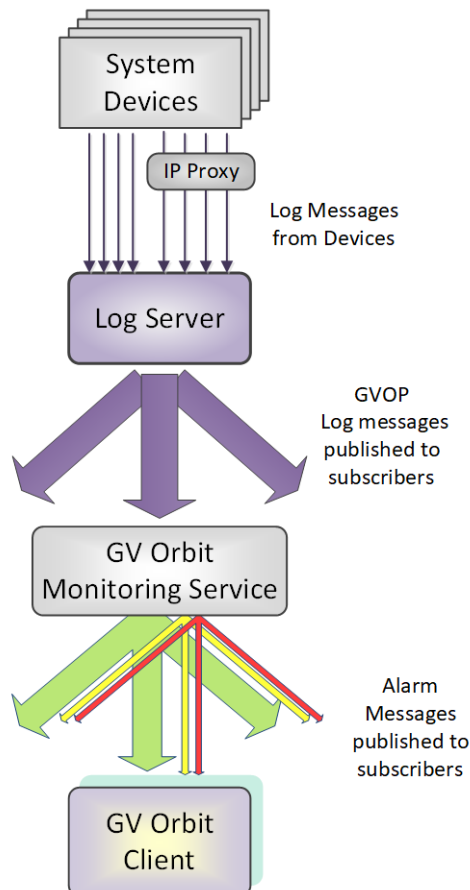

Fig. 12-1: GV Orbit Log Server Service

Typical System Architecture

A typical control and monitoring system that uses the **Log Server** service is shown in Figure 12-2. The example is for a dual-redundant implementation; single **Log Server** service implementations are possible.
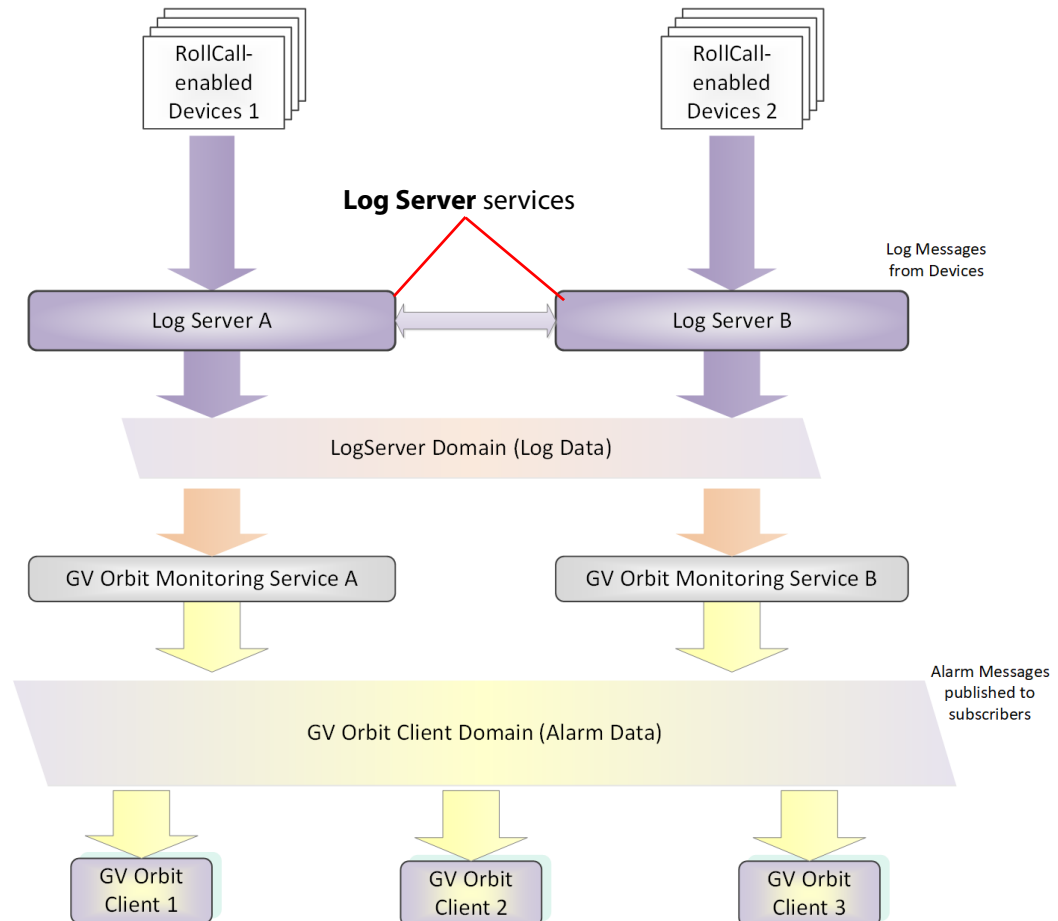

Fig. 12-2: GV Orbit Log Server System

Log Server services A and B in Figure 12-2 operate in a dual-redundant manner. The services manage the synchronization of all data between them. If service A or B were to go down, then the other service is ready to take over.

Each **Log Server** service sees RollCall-protocol devices and connects to the via RollCall protocol over TCP (default port 2050). **Log Servers** receive device log messages, poll devices and gather some device information (name, id, version etc.).

> **Note:**
> In redundant system, a private link between **Log Servers** is only used with IQ Gateways for IQ devices. Data from other devices or services must be sent to *both* **Log Server** Services.

The **Log Server** service exposes gathered log data to subscribing GV Orbit **Monitoring** services in a 'raw' form (i.e. without 'OK', 'Warning', or 'Error' state).

Example 'raw' log information:

Supply voltage = 5.25 V
Data rate = 1024 packets/second
Temperature = 55 °C

A **Monitoring** service then typically uses this 'raw' data, assigns 'state', and generates alarms within the Grass Valley common alarm model.

Example alarm 'state' information:

Supply voltage OK
Data rate OK
Temperature Warning
Device Error

System Screen

Table 12-1 describes the system settings screen tab of the **Log Server** 'System' configuration screen, see Figure 12-3.
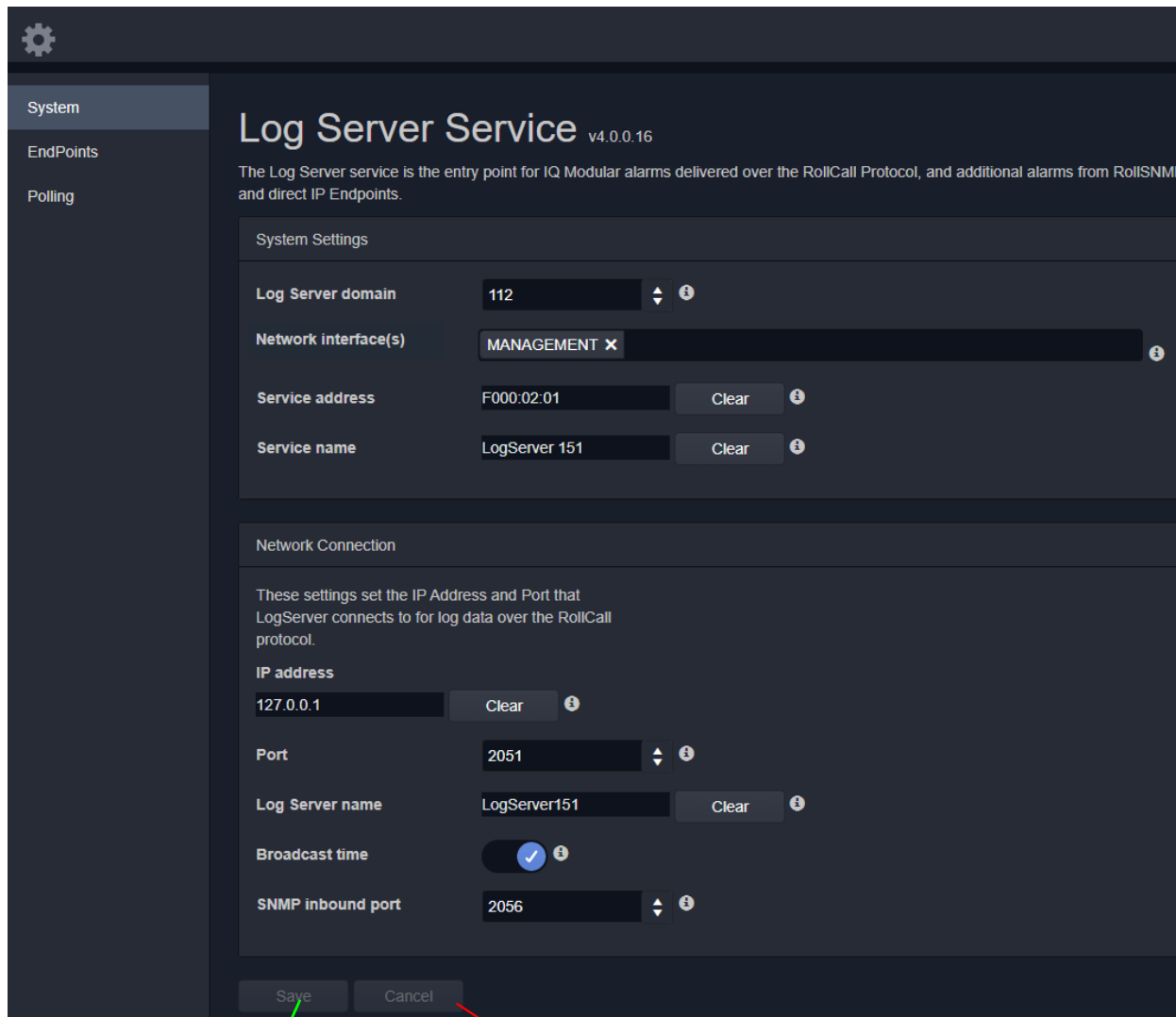
Press **Cancel** to discard changes to settings.

Press **Save** to apply changes made to setting items on the configuration screen.

Fig. 12-3: Log Server Service - System Screen

Table 12-1: Log Server Service - System Settings

Setting	Description
System Settings:	
Log Server Domain	Text box. Enter a GVOP domain number that the service will publish its 'raw' log data onto. The valid range is 1 to 232. (See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains.)

Table 12-1: Log Server Service - System Settings (continued)

Setting	Description
Network Interface(s)	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting interface(s), ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Service Address	Text box. Enter RollCall address for the service to use when publishing 'raw' log data. This will uniquely identify the service in the GV Orbit system. (See RollCall Address, on page 243 for information about a RollCall address.) The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore default RollCall address for the service. Default: F110:01:02
Service Name	Text box. Enter a unique name for the service. This is a human-readable identifier for the **Log Server** service to use. This name will be used when publishing the 'raw' log data and used in the **Network** window in a GV Orbit Client. **Service Name** should be unique, including for redundant configurations. For example, 'Log Server A' and 'Log Server B'.
Clear	Button. Click to restore default name for the service.
Network Connection:	A **Log Server** service may connect to an IP share server device to get IQ/RollCall-protocol device data. Connection is usually made to an **IP Proxy** service using the RollCall protocol, but it may also be to an IQ Gateway.
IP Address	Text box. Enter the IP address of a server running a RollCall IP share service for the **Log Server** service to connect to. Typically, this is the **IP Proxy** service running on the GV Orbit server in the system. (In some systems, this may be set up by the GV Orbit system administrator to be some other device. E.g. IQ Gateway.) **Note:** The loop-back host IP address 127.0.0.1 is valid to use for the GV Orbit server.
Clear	Button. Click to set **IP Address** to the loop-back address, 127.0.0.1.

Table 12-1: Log Server Service - System Settings (continued)

Setting	Description
Port	Text box. Enter the IP port number to use for the RollCall protocol messages targeting the RollCall IP share device. Default is 2050.
Log Server Name	Text box. Enter a user-defined name to identify the **Log Server** service with. **Note:** When running multiple, redundant **Log Server** services, both must use the same **Log Server Name**. For IQ Gateways, their 'Name Log Server' setting should use this name. (See IQ Gateway Setup, on page 139 for information about setting up IQ gateways.)
Clear	Button. Click to restore default name to use.
Broadcast Time	Check box. • Selected - the **Log Server** service will send out 'Time' data packets to IQ Gateways, to provide them with a system time. • Deselected - no 'Time' data packets are sent. This time is used to time-stamp all data back from the IQ Gateway. This will be the time-stamp of corresponding alarms viewed in the GV Orbit client. **Note:** In redundant **Log Server** configurations, 'Broadcast Time' can be deselected on one of the **Log Servers** if their clocks are not perfectly synchronized. This avoids an IQ Gateway receiving different times and any resulting alarm time-stamp irregularities. **Recommended:** It is recommended that only one of a pair of redundant **Log Server** services should be sending time packets.
SNMP Inbound Port	Text box. Enter IP port number to use to listen for in-bound SNMP data from Grass Valley's RollSNMP.

Monitoring Redundancy

Dual-redundancy can be achieved by running two **Log Server** services, each connected to its own single **Monitoring** service. Further resilience can be achieved if both **Monitoring** services are connected to both **Log Servers**; however, this configuration does result in extra data on the domain.

IQ Gateway Setup

A Grass Valley IQ Gateway device can be configured to log data to any **Log Server** service, or to a specifically named **Log Server** service. It is the network connection **Log Server Name**, described in Table 12-1, that is used to identify **Log Servers** to devices.

Figure 12-4 shows the relevant IQ Gateway configuration screen, openable in GV Orbit Client (or via the Grass Valley RollCall Control Panel tool).
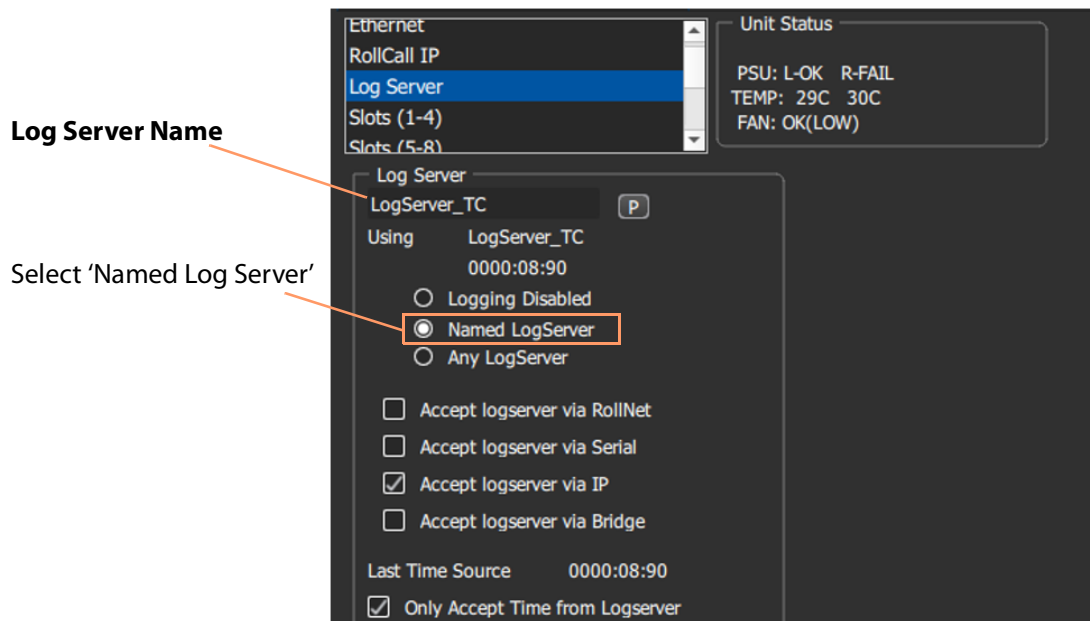

Fig. 12-4: IQ Gateway Configuration Screen Extract

Named Log Server Setting on IQ Gateway

Each IQ Gateway should normally be configured with the 'Named Log Server 'option selected and with the same name as provided as the **Log Server Name** setting. The **Log Server Name** setting of each **Log Server** must be also set to the same name.

Note:
In dual-redundant mode, both **Log Server** services should have the:
- *Same* **Log Server Name** setting. I.e. 'Network Connection' **Log Server Name** on the **Log Server** service **System** screen.
  (IQ Gateways can then send log data to either **Log Server** service.)
- *Different* **Service Name** setting. I.e. 'System Setting' **Service Name** on the **Log Server** service **System** screen.
  Each **Log Server** service can then be uniquely identified in the 'raw' data logs it sends out.

EndPoints Screen

Note: These 'Endpoints' settings are system-specific items.

The **EndPoints** screen tab can be used to configure a **Log Server** service with a collection of IP addresses to connect to for obtaining log data. This enables third-parties to inject log data into the Grass Valley GV Orbit monitoring system using the RollCall SDC-02 protocol. The **Log Server** service will connect to the listed IP addresses and get logging data from the IP endpoint devices.

Note: SDC-02:

SDC-02 defines a simple protocol for use by third-party IP endpoint devices to allow them to provide telemetry/status monitoring to the Grass Valley control and monitoring system. The IP endpoint device IP addresses and IP ports that they are listening on should be configured within this screen.

SDC-02 is available under a non-disclosure agreement (NDA) from Grass Valley. For more information, contact Grass Valley customer support.

The **EndPoints** screen contains a list (initially empty) of IP addresses etc. See Figure 12-5.

Click to **Save Changes** made on this screen.

Click to **Cancel Changes** made on this screen.

Click **+New** to create a row item.   Click to **Delete** a row item

See Table 12-2 for a description of the column headings.

Indicates a change has been made, but not yet saved.

Fig. 12-5: Log Server Service - EndPoints Screen

Table 12-2: Log Server Service - Endpoints Column Headings

Column Heading	Description
Host Address	Enter either the host's: • device name; or • IP address. For example, 168.10.51.12, or SVR-AB-04461
Port	Enter the IP port number to send/receive messages to/from this host.
Fix Address	Enter the RollCall address to map RollCall messages to/from the host. For example, CE00:00:00 See RollCall Address Mapping, on page 141 for more information on address mapping.
Address Mask	Enter a RollCall address mask to be used in mapping of addresses. For example, FFFF:00:00. See RollCall Address Mapping, on page 141 for more information on address mapping.

RollCall Address Mapping

Third-party log information (received via the SDC-02 protocol) will have its own RollCall address range. This may require some address mapping to fit into the receiving GV Orbit system - because of some addressing clash or some addressing convention. The **Log Server** service maps the third-party addresses into a new target address range.

> **Note:**
> RollCall address format: NNNN:UU:PP,
> where:
> NNNN = Network number;
> UU = Unit/device number; and
> PP = RollCall Port number.
> (see GV Orbit Addresses and Protocols, on page 243).

• **Fix Address** is the target address 'stem'. Typically this would be the 'network number' part of the RollCall address, e.g. FE00:00:00.

• **Address Mask** then defines which part of the **Fix Address** address to use. Address digit positions marked with 'F' will come from the **Fix Address**.

For example, for third-party devices for:

• RollCall addresses B300:03:01, B300:03:02 and B300:03:03; and

• for a target GV Orbit system which needs to

• map these to addresses FE00:03:01, FE00:03:02 and FE00:03:03 respectively.

Set:

• **Fix Address** to FE00:00:00; and

• **Address Mask** to FFFF:00:00. (Thus masking all four digits NNNN.)

In a resulting mapped address, the 'NNNN' part will come from the **Fix Address** and the 'UU:PP' part from the device address.

Polling Screen

Note: The 'Polling' configuration comprises system-specific items.

The **Polling** screen contains a list of devices/units/frames to be polled by the **Log Server** service. The service will regularly poll these units using the RollCall 'GETID' message.

Polling is used to determine if devices/units/frames are 'alive' or not:

- If a unit/device/frame is switched off, then poll messages will start to fail.
- Log data for that device, and for any of its ports, will be cleared down and removed from the system.
- A **Monitoring** service detects any removal of the data and will:
  - indicate this with a Grey/Unknown alarm state; and will
  - set any MSG field to 'FAIL: Unit Lost'.

The **Log Server** service will regularly poll these units using the RollCall 'GETID' message, once per 'Unit Poll Rate' – see polling options.

Polling Configuration Screen

The **Polling Configuration** screen holds an editable list of RollCall addresses of units/devices/frames to be polled and some polling-rate settings. See Figure 12-6 and Table 12-4.
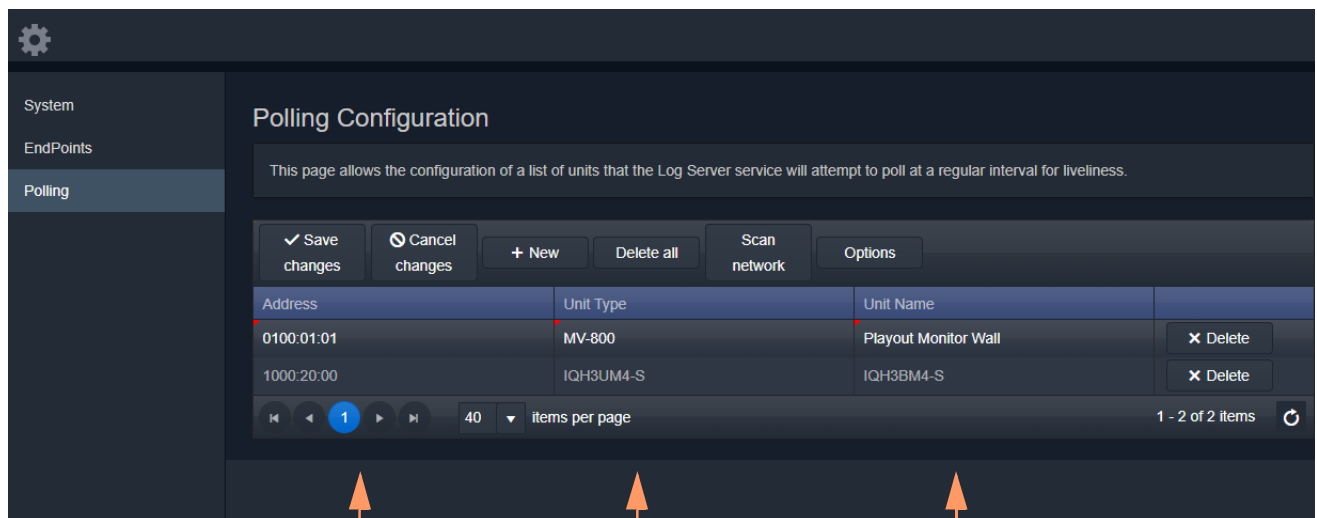
Columns: **Address**:   **Unit Type**:   **Unit Name**:
RollCall address   Unit/Device/Frame type (informative only)   Unit/Device/Frame name (informatively only)
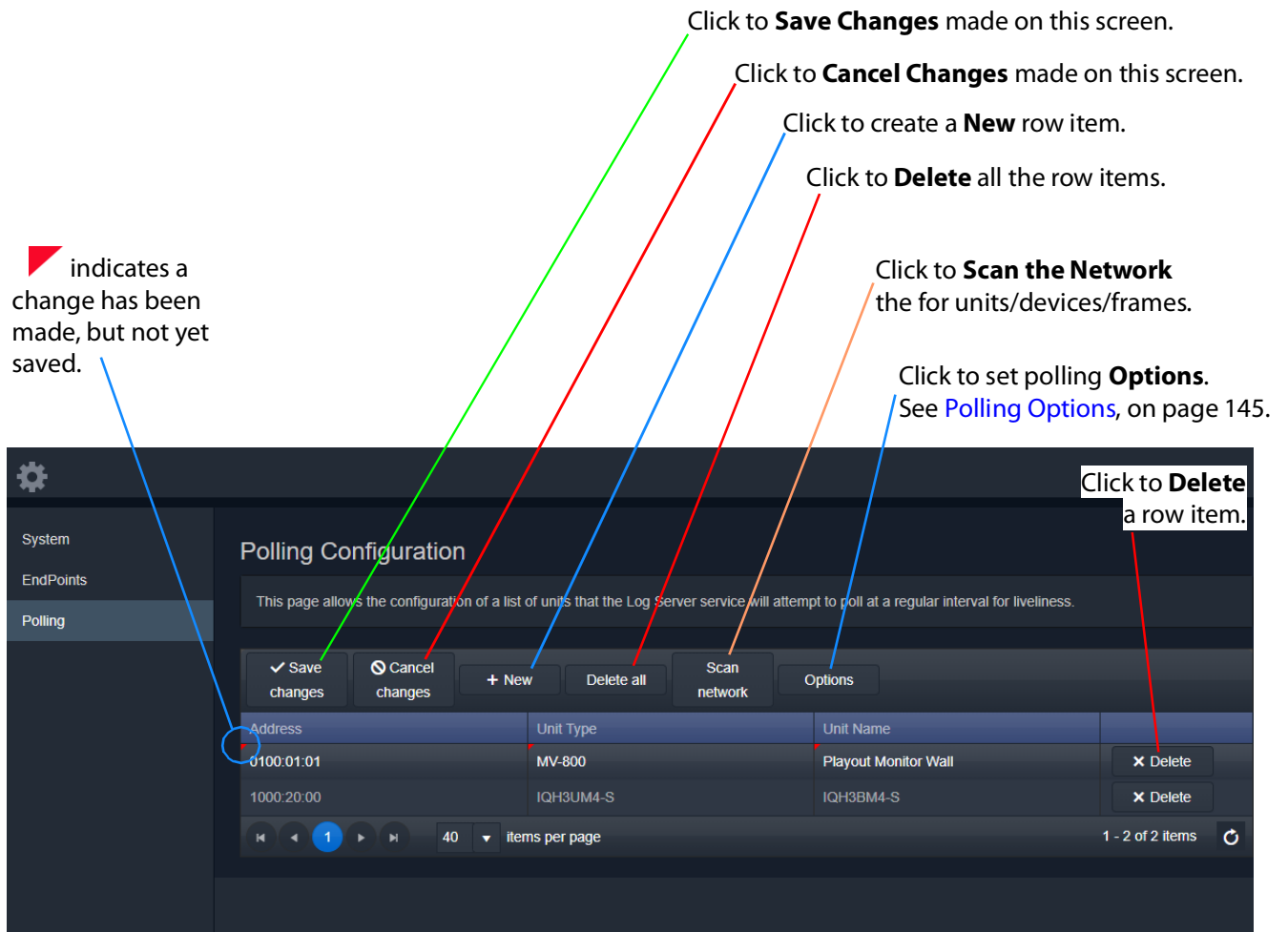
Fig. 12-6: Log Server Service - Polling Screen

Click to **Save Changes** made on this screen.

Click to **Cancel Changes** made on this screen.

Click to create a **New** row item.

Click to **Delete** all the row items.

indicates a change has been made, but not yet saved.

Click to **Scan the Network** the for units/devices/frames.

Click to set polling **Options**. See Polling Options, on page 145.

Click to **Delete** a row item.

Fig. 12-7: Log Server Service - Polling Screen Controls

Click a column heading to alphabetically sort. Clicking toggles sorting 'A-to-Z' or 'Z-to-A'.

Navigation bar, see Page Navigation Bar, on page 144

Total number of items
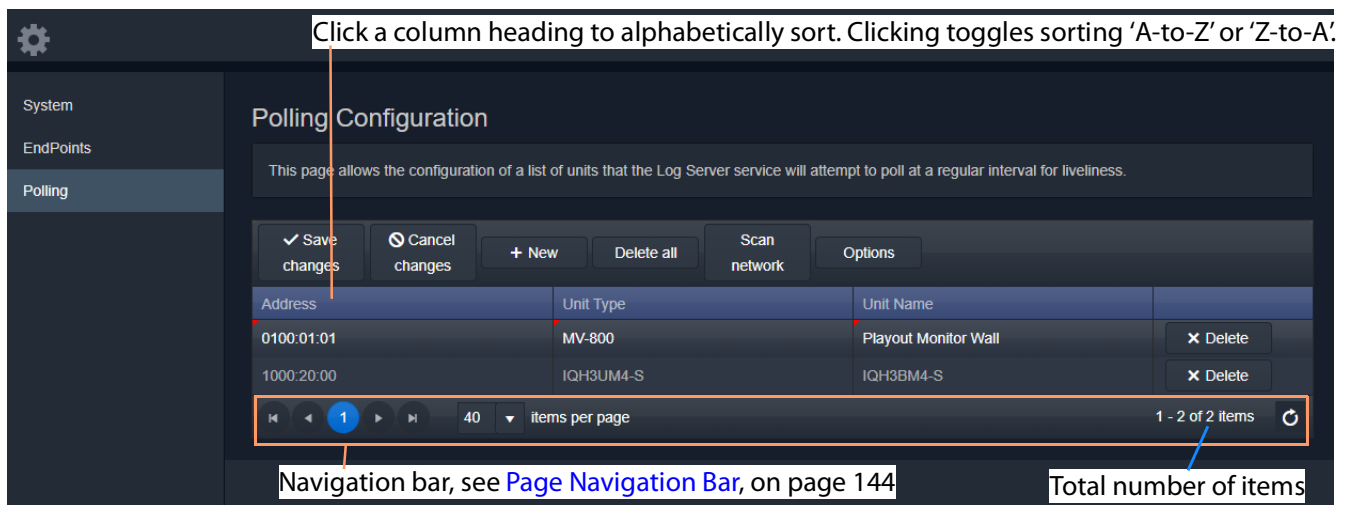
Fig. 12-8: Log Server Service - Polling Screen Controls

Table 12-3: GV Orbit Log Server Service - Polling Screen Controls

Setting	Description
Save Changes	Button. Click to save local changes to the **Log Server** service. Any changes, except **Delete All**, are first made in the screen locally and then must be explicitly saved to commit these changes back to the server.
Cancel Changes	Button. Click to cancel local changes.
+New	Button. Click to add a new, empty row item to the list. Then: • Address can be manually configured. • 'Unit Type' and 'Unit Name' may also be filled in, but these fields are *informative only*. **Note:** A new row item is a local change and needs explicitly saving with **Save Changes**.
Delete All	Button. Click to delete all row items. A prompt is offered to the user. **Note:** All entries from the polling list are deleted immediately *on the server*. Thus <u>NO 'Save Changes'</u> is needed.
Scan Network	Button. Click to automatically locally-populate the table with all units/devices etc. which are found on the network. **Note:** A **Save Changes** is required to save this change.
Options	Button. Click to set up the options in the **Polling Options** dialog (see Polling Options, on page 145), which allows the user to set up: • Unit Poll Rate (seconds). • Max Missed Polls - Maximum number of missed polls allowed.

Page Navigation Bar

The **Polling** screen row items are presented in one or more pages, which may be navigated using the navigation bar, see Figure 12-9. The number of 'Items per page' can be set with a drop-down box and the total number of items is shown. Pages can be navigated with the page selection buttons or with the arrow buttons.
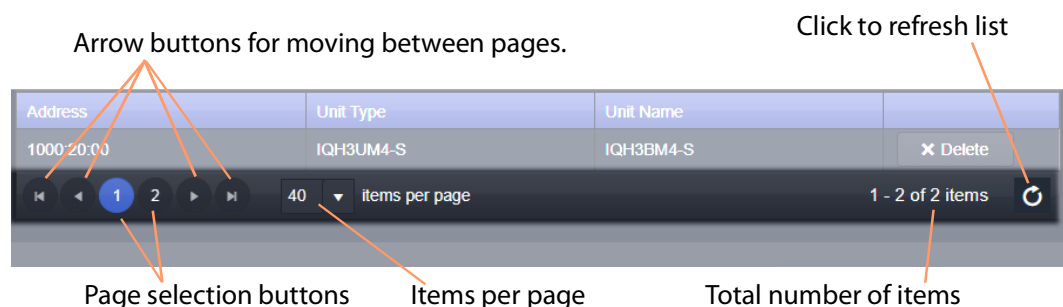
Arrow buttons for moving between pages.

Click to refresh list

Page selection buttons   Items per page   Total number of items

Fig. 12-9: Page Navigation Bar

Polling Options

Click the **Options** button to show the **Polling Options** dialog. See Figure 12-10 and Table 12-4.
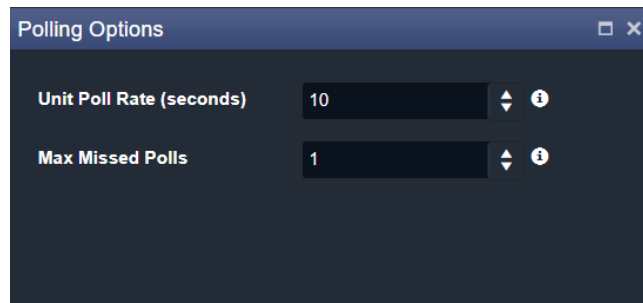

Fig. 12-10: Polling Options Dialog

Table 12-4: Polling Options

Option	Description
Unit Poll Rate (seconds)	Text field. Enter the polling period (in seconds). Each specific unit/device/frame is polled once every **Unit Poll Rate** seconds. (Polling messages are RollCall 'GETID' messages.) A **Log Server** service will spread out all polling over the polling period. Thus, if the total number of units in the polling list is N, then: • the service sends out a polling message every **Unit Poll Rate** / N seconds; and • polling messages are sent at a rate of N / **Unit Poll Rate** per second.
Max Missed Polls	Text field. Enter the total number of polls of a unit/device/frame that a **Log Server** service is allowed to miss before declaring that device dead or lost. **Note:** If a poll is missed, then the next poll is sent immediately; thus, this is *not* dependent on 'Unit Poll Rate'.

Automatic Polling

When a **Log Server** service initially detects a unit/device/frame, the device is automatically added to the polling list. This quickens the occurrence of the initial poll and thus the initial log request made of the device.

Map View Service

Introduction

The **Map View** service runs on a GV Orbit server and performs some functions for a GV Orbit 'Control and Monitoring' project (C&M project).

A C&M project's custom user panel(s) typically comprise one or more control/monitoring user panels/screens running on a client computer. The **Map View** service performs server-side functionality (rather than client-side) to support the GV Orbit C&M project and such server-side processing can continue without the client application, or the client computer, running.

Key **Map View** service functions are:

- **Alarm State** - Provide 'alarm state' information to a client C&M project for any:
    - 'Link State' of the C&M project custom user panel hierarchy.
    - Exception Monitoring widgets in custom user panels.
    - 'User Folder' status in the **Network** window tree-view.
- **Remote Values** - Hold values based on RollCall commands. These Remote Values can be used in a C&M project.
- **Server-side Functionality** - Carry out any Server-side Processing for a C&M project (global logic files).

A repository on a GV Orbit server is used to hold GV Orbit projects. This ensures the same project (and same version of the project) is running throughout a GV Orbit system.
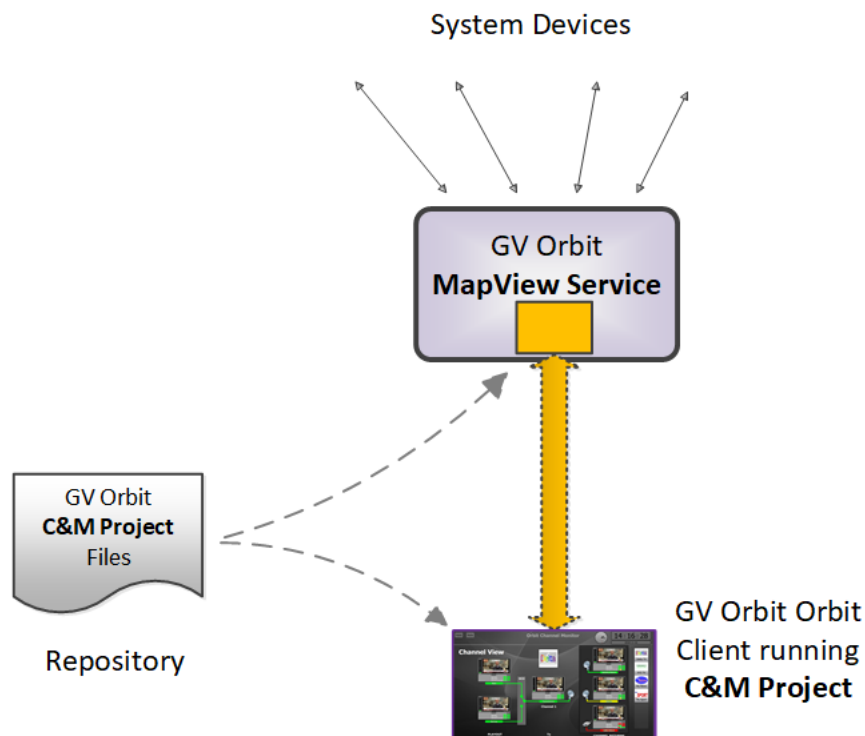
Fig. 13-1: GV Orbit Map View Service

Link State

The service evaluates the alarm state of *all* custom user panels of a designated C&M project. Typically, C&M project custom panels are linked in some hierarchy. The service publishes overall, live project 'Link state' alarm information to the client C&M project. This enables any on-screen icons to actively reflect the overall state of devices and/or custom panels. (For example, an on-screen widget which links to other custom panels - using a GV Orbit Link Behaviour - may show a flashing red border to indicate an error state in the panel it links to.)

> CAUTION
>
> To ensure that the 'state' of all the 'Links' in a C&M project are correctly shown on a panel, the **Map View** service and the GV Orbit Client(s) must be using the *same* version of the *same* C&M project.
>
> If project versions are different, then grayed-out links may be shown on-screen.

Remote Values

The user can define a list of variables for the **Map View** service to hold. These **Remote Values** are stored by the service and are based on RollCall commands. The values persist and will, for example, survive a server reboot or a C&M project reopening/change. The values can be written to or read by a C&M project custom panel using a GV Orbit RollCall+ Behaviour.

In a C&M project, **Remote Values** may be used and bound to C&M project on-screen controls and widgets, or to cause other actions to be carried out.

Remote Values can be used for *non-volatile* storing of values in a monitoring system. An example application for this is:

- The state of devices in a system, and/or of individual device inputs, can be stored and then used at the start-up of a client project, enabling specific actions to be taken based on these persisting 'monitoring system' values.

Remote Values are implemented as user-defined RollCall+ commands. The commands are for the RollCall address of the **Map View** service itself. An example application for this is:

- User-defined RollCall+ commands can be created. The C&M project can issue these via a RollCall+ GV Orbit Behaviour. Such commands can be used to indicate some monitoring system state, or to emulate some RollCall+ commands from other devices.

Server-side Processing

The **Map View** service carries out server-side processing defined in a GV Orbit C&M project in 'Global files'. This processing runs on the server even without the project running on the client. Global files are defined as part of the C&M project, but will run on the GV Orbit server.

It is important for the **Map View** service and C&M project clients to be using the *same* version of the *same* project.

System Screen

Table 13-1 below describes the system settings of the **Map View** service's **System** configuration screen of Figure 13-2.

Press **Cancel** to discard changes to settings.

Press **Save** to apply changes made to setting items on the configuration screen.

Fig. 13-2: Map View Service - System Settings

Table 13-1: GV Orbit Map View Service - System Settings

Setting	Description
System Settings:	
Client Domain	Text box. Enter a GVOP domain number that the **Map View** service is to use (usually the 'Client' domain). This should be set to match the client domain used by the GV Orbit C&M project to be served by the **Map View** service. The valid range is 1 to 232. See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains. **Note:** If the GV Orbit Client running the C&M project and the GV Orbit service are on different domains they cannot communicate and see each other's data.
Network Interfaces	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Address	Text box. Enter RollCall address to use for the **Map View** service. This will uniquely identify the service in the GV Orbit system. This will be used when the service publishes its own event log data. See RollCall Address, on page 243 for information about RollCall address. The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore the default RollCall address for the service. Default: F110:01:08
Unit Name	Text box. Enter a name for the **Map View** service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Clear	Button. Click to restore the default name for the service.

Table 13-1: GV Orbit Map View Service - System Settings (continued)

Setting	Description
Project Settings:	**Note:** These **Map View** service 'Project Settings' are system-specific. The **Map View** service requires access to the GV Orbit C&M project that it will serve. Project files are stored in a repository on the GV Orbit server, one project per repository. Both the GV Orbit service and the GV Orbit client have access to the repository.
Repository URL	Drop-down box. Select the C&M project repository for the **Map View** service to use. (The drop-down list is automatically filled out by the GV Orbit server.)
Status	Status information, read-only. Indicates the status of the service's connection to the repository holding the target C&M project files.
Startup Delay (seconds)	Text box. Enter a delay (in seconds) from the start-up of the service to when it begins to publish data onto the domain. This gives a freshly-started **Map View** service time to obtain all log data and correctly calculate all resulting 'Link State' information before publishing results. (This is used for dual-redundant GV Orbit server cases, to prevent a newly-starting service from publishing initial start-up data values to a system. Typical values required are in the range 10 to 60 seconds.)

Remote Values Screen

> **Note:** **Remote Values** are system-specific items.

Click on the **Remote Values** side-tab to see the **Remote Values** screen which holds a list of 'Remote Value' items. See Figure 13-3.

The **Remote Values** defined in the **Map View** service are based on user-defined RollCall+ commands. The RollCall+ command numbers used are chosen by the user and they must be uniquely defined for any one **Map View** service. A value for each user-defined RollCall+ command is stored by the service.

Press **Save Changes** to apply user changes to **Remote Value** items on the screen.

Press **Cancel Changes** to discard changes to settings.

Click **+New** to create a new Remote Value item.

Click to **Delete** an item.

Remote Values

The Map View service can store a collection of RollCall+ command values for use within a Control and Monitoring project.

These commands are useful for maintaining state globally within a project.

Current Values

The following remote values have been defined. Note: Connect to these in Orbit using a RollCall+ behaviour with the address set to that of the Map View service.

Command Number	Description	Initial Value	Current Value	Type	
2000	My Test Command	73	73	String	✕ Delete
2001	My Test String	OK	OK	Int	✕ Delete
2002	My Test Boolean	True	True	Float	✕ Delete
2003	My_Test Float	12.5678	12.5678	Boolean	✕ Delete
2004	My Remote Value	50	50	Int	✕ Delete

✔ Save changes   🚫 Cancel changes   + New

List of **Remote Value** items

Reset

The service stores the current value. Reset Current Values will reset these back to the Initial values.

Reset current values   Refresh current values

Click **Refresh Current Values** to refresh all current values to their initial value.

Click **Reset Current Values** to set all current values to their initial value.

Fig. 13-3: Map View Service - Remote Values

Managing Remote Values

New Remote Value

To create a new **Remote Value**, from the **Map View** service configuration screen:

1 Go to the **Map View** service **Remote Values** tab.
2 Click **+New**.
   A new **Remote Value** item appears in the list.

Fig. 13-4: New Remote Value Item

3 Enter a new 'Command Number'.
For example, '2004'.
(**Note:** This must be unique for this **Map View** service.)

4 Enter a 'Description' for the new RollCall+ command.

5 Enter an 'Initial Value' for the value that is stored by the new RollCall+ command.
For example, '50'.

6 From the 'Type' drop-down list, select the type of value that is stored by the RollCall+ command (i.e. text string, integer number, logical Boolean, or floating point number).
For example, select 'Int' for integer type.

Fig. 13-5: Selecting Remote Value Type from Drop-Down List

7 Click **Save Changes**.

A new **Remote Value** item is created in the list.

Command Number	Description	Initial Value	Current Value	Type	
2004	My New Remote Value	50		Int	✕ Delete
2000	My Test Command	73	73	String	✕ Delete
2001	My Test String	OK	OK	Int	✕ Delete
2002	My Test Boolean	True	True	Float	✕ Delete
2003	My_Test Float	12.5678	12.5678	Boolean	✕ Delete

Fig. 13-6: New Remote Value Item

Once a user-defined **Remote Value** is set up in the **Map View** service, a client C&M project custom panel can read from or write to the value via a RollCall+ command using a GV Orbit RollCall+ Behaviour and the **Map View** service's RollCall address and the corresponding (Remote Value) command number.

Reset a Remote Value

All the **Remote Values** can be reset to their initial values by clicking **Reset Current Values**.

Command Number	Description	Initial Value	Current Value	Type	
2000	My Test Command	73	73	String	✕ Delete
2001	My Test String	OK	OK	Int	✕ Delete
2002	My Test Boolean	True	True	Float	✕ Delete
2003	My_Test Float	12.5678	12.5678	Boolean	✕ Delete
2004	My New Remote Value	50	50	Int	✕ Delete

Reset

The service stores the current value. Reset Current Values will reset these back to the Initial values.

Reset current values   Refresh current values

Fig. 13-7: Reset to Initial Values

Refresh Remote Value Display

All the displayed 'Current Values' can be refreshed and updated by clicking **Refresh Current Values**.

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C&M Project Remote Value Example

The C&M project example below uses a simple GV Orbit C&M project to display a **Remote Value** on a C&M project custom panel and change the **Remote Value** from the panel.

In this example, a C&M project custom panel shows the value of the **Remote Value** that has the command number '2004'. The custom panel is designed so that a new value can be entered via an on-screen text box, and its value can be incremented or zeroed by clicking panel buttons. See Figure 13-10.

The **Remote Value** is shown when the C&M project is run.

On-screen actions (when C&M project is running):
- enter a new value in 'Text Box' widget;
- click 'Zero Count' to set a value of 0; and
- click 'Increment Count' to increment value by 1.
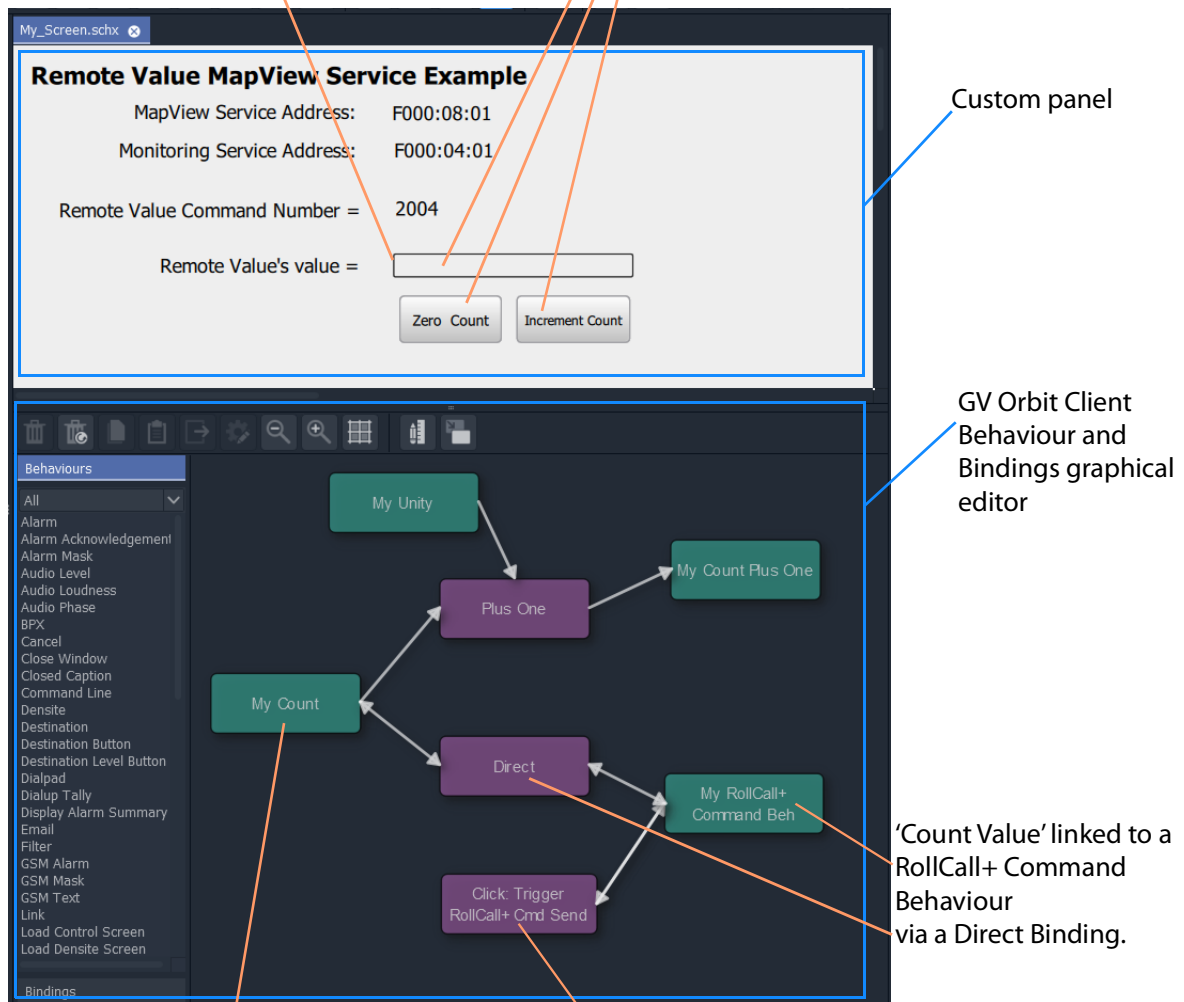
Custom panel

GV Orbit Client Behaviour and Bindings graphical editor

'Count Value' linked to a RollCall+ Command Behaviour via a Direct Binding.

A RollCall+ command is sent when the **Remote Value** changes

The **Remote Value**'s value is stored in the C&M project in a 'Local Value' Behaviour 'My Count'.

Fig. 13-8: C&M Project Screenshot - Remote Values Example

A **Remote Value** has already been created with RollCall+ command number '2004' (see Managing Remote Values, on page 151). In this example, the on-screen value shown on the user panel is linked to a GV Orbit RollCall+ Behaviour configured for '2004'. A RollCall+ command is automatically sent out upon a value change to keep the **Remote Value** up to date with any local changes made.

The **Map View** service stores any new values of the RollCall+ command, allowing all of the GV Orbit system to see any **Remote Value** value changes, including the C&M project. A C&M project gets an initial start-up value from the **Map View** service.

When the project is run, the on-screen behavior of the user panel is shown in Figure 13-9. It is a simple demonstration of how a **Remote Value** can be read/written by a custom panel.

a) Initial Value of **Remote Value** shown after start up.

b) New value entered into text box on-screen.

c) 'Increment Count' clicked once.

d) 'Zero Count' clicked once.

Fig. 13-9: On-Screen Running of Custom User Panel and Remote Value Example

C&M Project Behaviours and Bindings

The GV Orbit Behaviours and Bindings that are 'behind the scenes' in this C&M project custom user panel implement the panel's functionality. These are shown in Figure 13-10 and Figure 13-11.

a) C&M project Custom User Panel

b) Behaviours and Bindings 'behind' the Custom User Panel
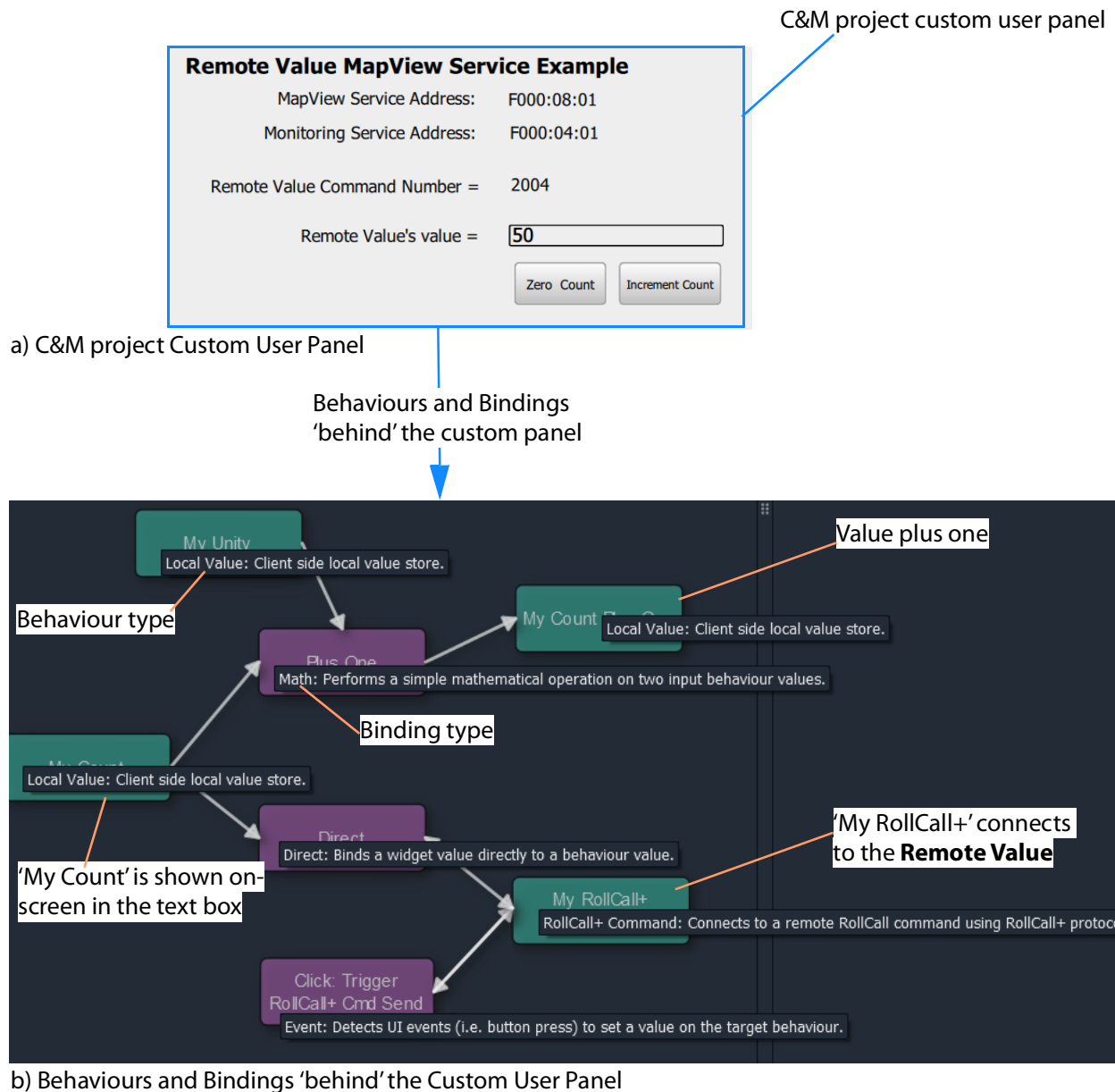
Fig. 13-10: Annotated Behaviour and Bindings Graphical Editor Showing:
a) Custom User Panel.
b) Behaviours and Bindings Behind the Custom User Panel.
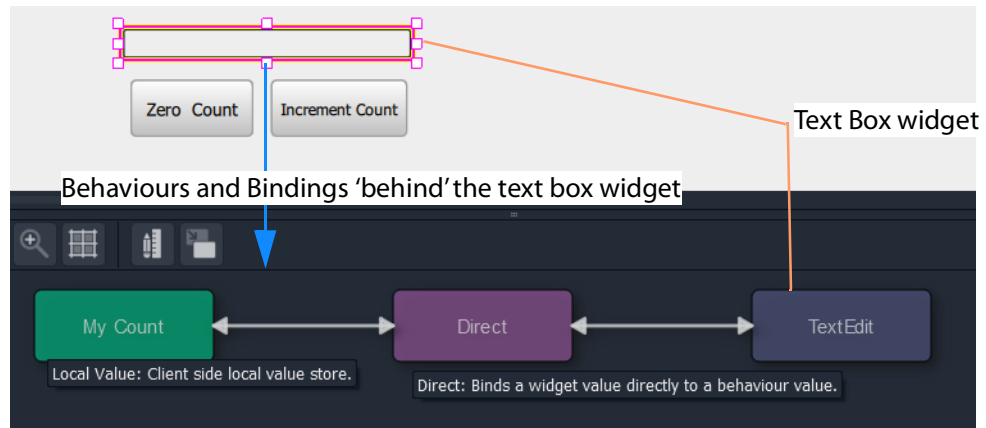
a) Text Box Widget's Behaviour and Binding
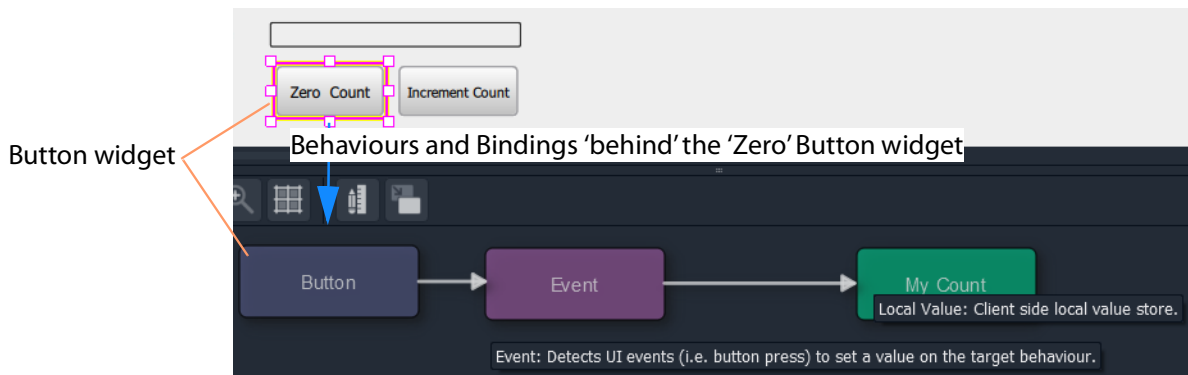
b) **Zero Count** Button's Behaviour and Binding
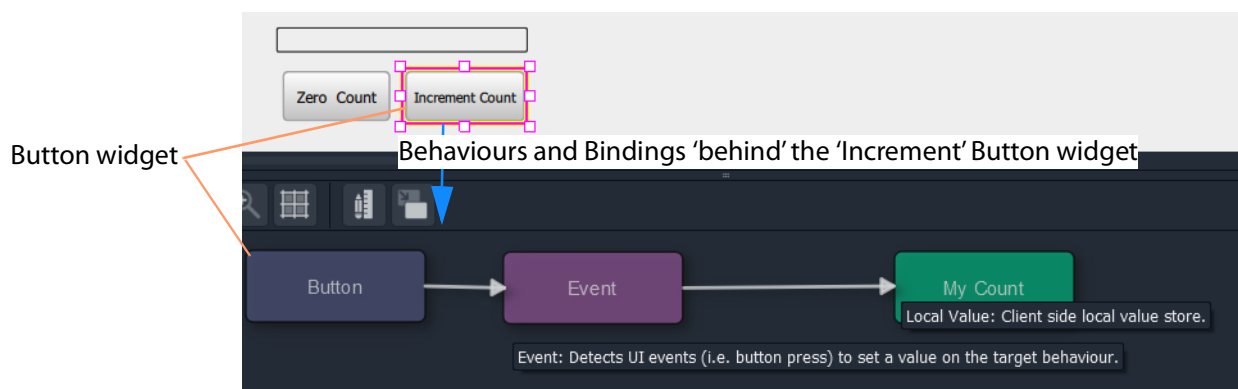
c) **Increment Count** Button's Behaviour and Binding

Fig. 13-11: Annotated Behaviour and Bindings Graphical Editor for:
> *a) Text Box Widget.*
> *b) Zero Count Button.*
> *c) Increment Count Button.*

Masking Service

Introduction

The GV Orbit **Masking** service manages masking of alarms within a system. The service maintains and publishes information about which alarms should be masked. It also maintains any timers related to the application of masks in a system.

Alarm producers in a system, such as the GV Orbit **Monitoring** service, subscribe to the **Masking** service for masking information and use it to determine the state of each of their alarms before publishing them. Thus the **Masking** service itself is only *indirectly* responsible for publishing alarms with a masked state.

Features of the **Masking** service include:

- **System Masks** - system wide masking operations.
- **Timed Masks** - mask for a duration.
- **Device-Level Mask** - mask alarms from a unit/device/service.
- **Alarm-Level Mask**- mask a particular alarm from a unit/device/service.
- **Mask Persistence** - enabling active masks to be applied after a power cycle.
- **Mask Until OK** - mask an alarm until fault condition cleared.
- Redundancy.
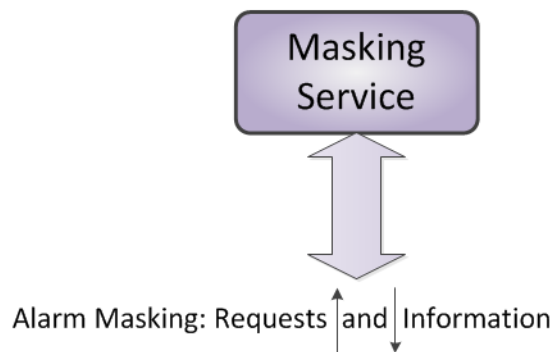
Fig. 14-1: GV Orbit Masking Service

System Screen

The **Masking** service configuration screen is shown in Figure 14-2 and the settings are described in Table 14-1.
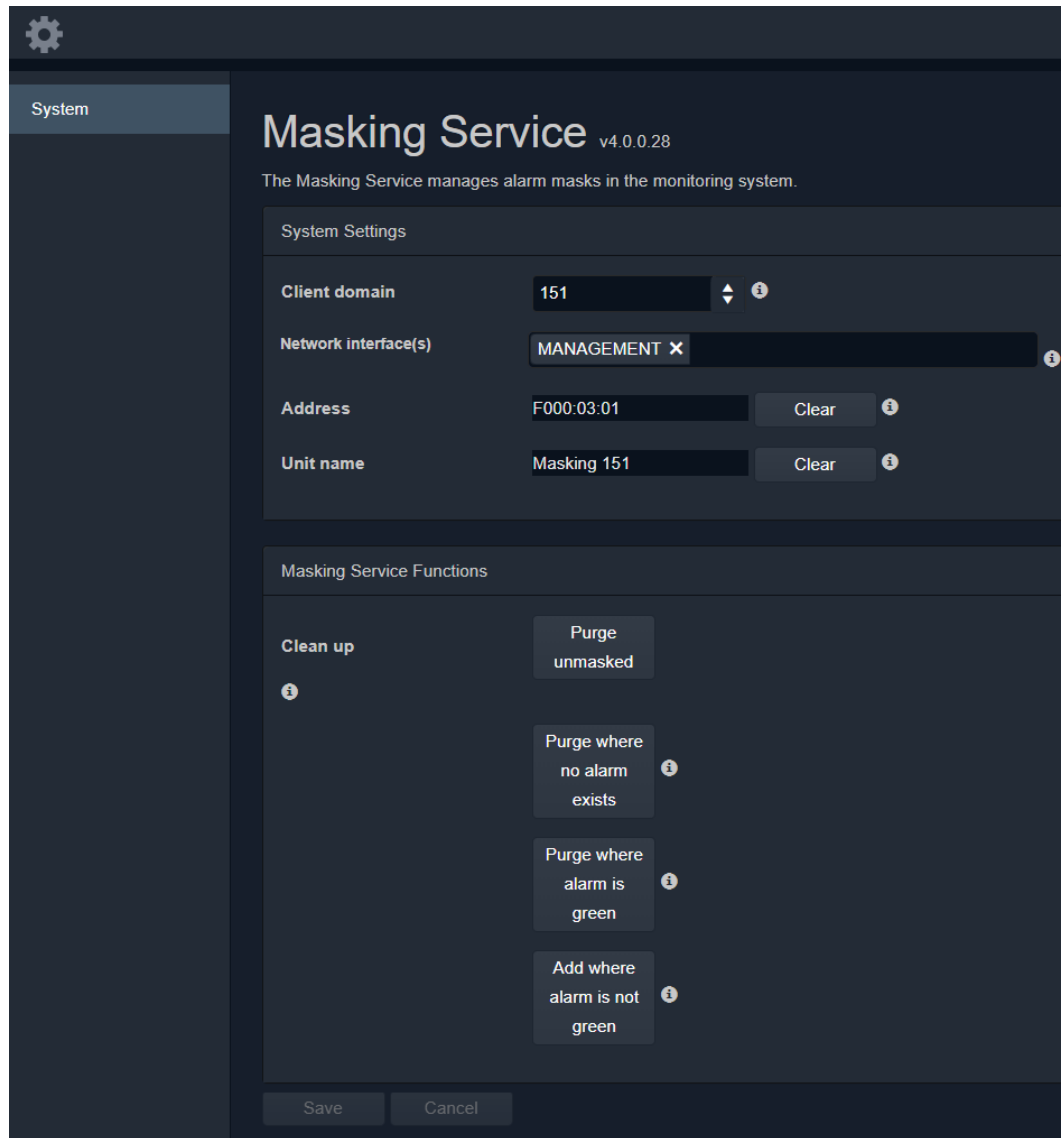
Fig. 14-2: Masking Service - System Screen

Table 14-1: GV Orbit Masking Service - System Settings

Setting	Description
System Settings:	
Client Domain	Text box. Enter a GVOP domain number that the service can use for operation of the service ('Client' domain). The valid range is 1 to 232. (See Grass Valley Orchestration Protocol (GVOP), on page 247, for information on Domains.)

Table 14-1: GV Orbit Masking Service - System Settings (continued)

Setting	Description
Network Interfaces	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Address	Text box. Enter RollCall address for the service to use for sending out log data relating to service operation. This will uniquely identify the **Masking** service in the GV Orbit system. (See RollCall Address, on page 243, for information about RollCall address.) The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore default RollCall address for the service. Default: F110:01:03
Unit Name	Text box. Enter a unique name for the service. This is a human-readable identifier for the **Masking** service. This name will be used when the service publishes any log data and used in the **Network** window in a GV Orbit Client. **Note**: This name should be unique, including for redundant configurations. For example, 'Masking A' and 'Masking B'.
Clear	Button. Click to restore default name for the service.

Masking Service Functions:

	'Clean up' actions which affect the masking information stored in the **Masking** service. These actions clean up any residual masking in a system. (Often in a live system there are many residual masks which are no longer valid and need to be cleaned up.) **Note:** Each action offers a prompt to the user, to confirm the action before any changes are made.

Table 14-1: GV Orbit Masking Service - System Settings (continued)

Setting	Description
Purge unmasked	Button. Click to purge all masks that are in the 'Unmasked' state. When a mask is removed (i.e unmasked), the **Masking** service keeps information about the mask, including its time-stamp and who removed it. To clear these masks from the **Masking** service, the **Purge unmasked** option can be used.
Purge where no alarm exists	Button. Click to purge all masks with no known existing current alarm. These masks will be purged from the **Masking** service. **Note:** Alarms may no longer exist in a system because: • A device has been removed from a system. • A device is temporarily off-line. **CAUTION:** Take care when using this option, because purging will affect both devices that have been removed from a system and those that are temporarily off-line.
Purge where alarm is green	Button. Click to purge all masks where the alarm state is 'OK' (green). These masks will be purged from the **Masking** service. **Note:** This does not affect masks where no alarm exists.
Add where alarm is not green	Button. Click to make the monitoring system alarms show 'all green'. This function instructs the **Masking** service to add masks of the type "mask until green" to all alarms that are not showing 'OK' (green state). **Note:** This is a useful function during commissioning of a system. See Add Mask Where Not Green, on page 163.

Applying a Mask

Masking can be applied via the GV Orbit Client application with either:
• the **Network** window (right-click on a device item); or
• in an **Alarm List** window (right-click on an alarm item); or
• an **Alarm Mask Behaviour** on a GV Orbit C&M project custom user panel.

Mask Types

The following masking types are available:

Mask Device

This type of mask will mask an alarm from a device. It is a device-level mask.

Mask Alarm

This type of mask will mask an alarm from a device. It is an alarm-level mask.

UnMask

This will remove any alarm mask type from a device or alarm.

Mask Until Time (Snooze Alarm)

This type of mask will mask an alarm and automatically remove the mask after a configurable period of time. When the mask is removed, any latched alarm values will be reset.

The **Masking** service monitors this time period and will automatically effect the removal of the mask when the time period has expired.

For example, this is useful if some engineering work is to be done which may cause alarms while it is being done. In this case, setting a **Snooze Alarm** mask for the duration of the work:

- will mask alarms for that time;
- will expire after the preset time; and
- masks will then behave as normal.

> **Note:**
> If a further mask is made on an alarm which is already actively masked by a 'Snooze Alarm' mask, then the *later* mask will take precedence.

> **Note:**
> The period of time used is selected by the user when applying the 'Snooze Alarm' mask; the user selects from several choices. The choices can be configured in GV Orbit Client with a GV Orbit C&M project open.
> (See the **Masking** tab in the 'Tools -> Options -> Monitoring' dialog accessed from the main menu in GV Orbit Client.) The choices offered are configurable. The default choices are:
> - 1 minute;
> - 5 minutes;
> - 20 minutes;
> - 1 hour;
> - 24 hours; and
> - 7 days.

Mask Until Normal

This type of mask will mask an alarm or device and automatically remove it when the alarm state is 'OK' (i.e. when an on-screen alarm goes green).

For example, this is useful if an error condition occurs, and is acknowledged and remedial work is underway or scheduled. In this case, the alarm can be masked until the work is carried out and the error cleared.

Masking Service Functions

> **Note:**
> For a description of all **Masking Service Functions**, please see the 'Masking Service Functions' items in Table 14-1, on page 159. (Masking Service Functions:)

Add Mask Where *Not* Green

This masking service function is a useful during, for example, the commissioning of a new system. Alarms will be masked until their alarm state goes green (i.e. until system device is set up properly), at which point the mask is removed (i.e. the alarm is unmasked).

Alarms Generated

The **Masking** service itself sends out alarm log data.
To view live alarms from the **Masking** service itself in the GV Orbit Client application:

1   Right-click in the **Network** window on the **Masking** service item and select 'Alarm List'.

A **Alarm List** window is shown which shows status information about the service, including the alarms it generates. See Figure 14-3.

Masking service item in **Network** window

Right-click and select 'Alarm List'.
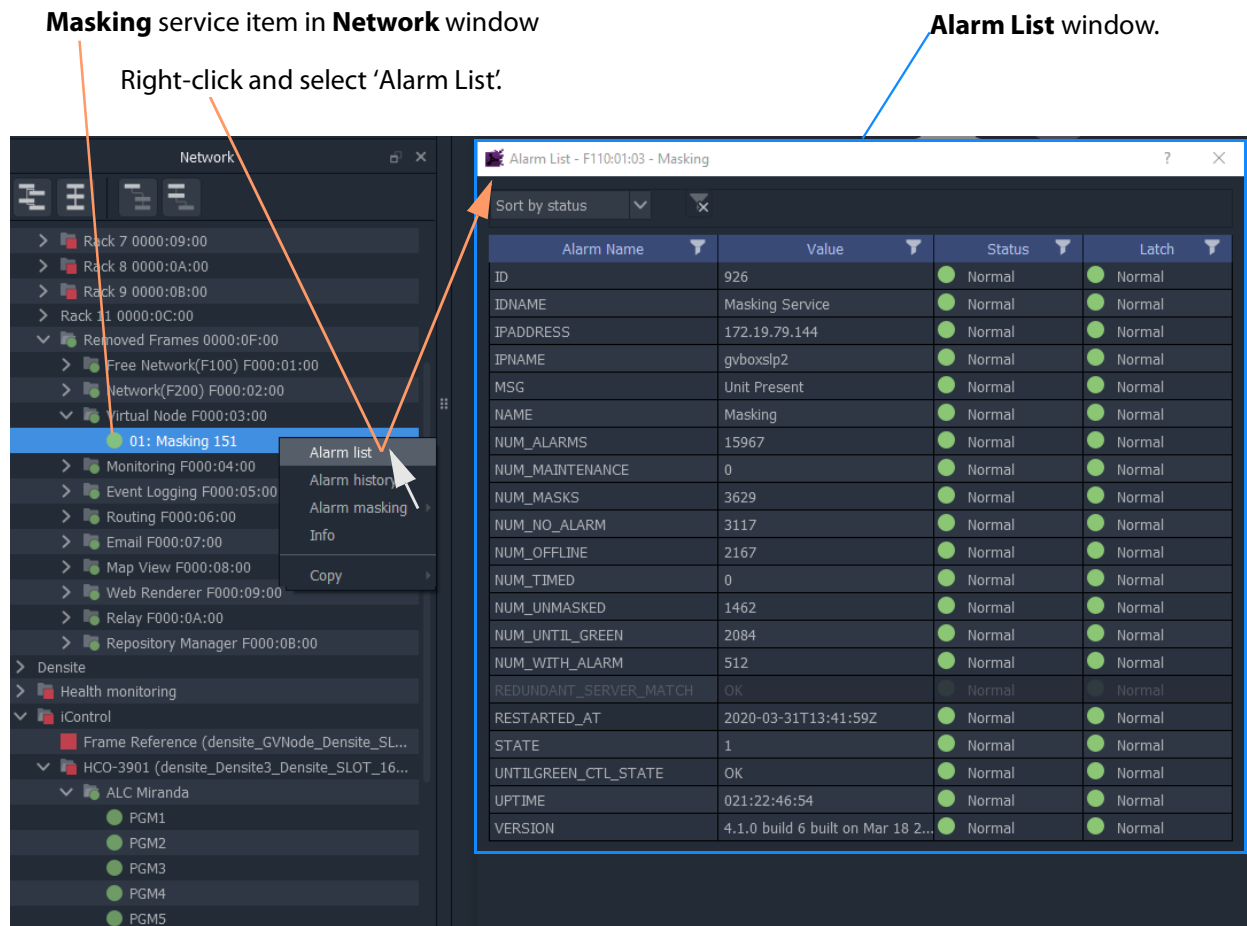
Alarm List window.

Fig. 14-3: Masking Service's Alarm List Window

Masking Service Alarm Summary Information

The **Alarm Summary** window shows some status values for the **Masking** service; these include some count values which are described in Table 14-2.

Table 14-2: Masking Service Information

Alarm Count	In the Masking Service, Total Number of .....
NUM_ALARMS	Alarms
NUM_MAINTENANCE	Maintenance masks.

NUM_MASKS	Total number of masks.
	Where:
	    NUM_MASKS = NUM_MAINTENANCE + NUM_OFFLINE + NUM_UNMASKED
	and
	    NUM_MASKS = NUM_NO_ALARMS + NUM_WITH_ALARMS

Table 14-2: Masking Service Information (continued)

Alarm Count	In the Masking Service, Total Number of .....
NUM_NO_ALARM	Masks where no matching alarm can be found.
NUM_OFFLINE	Off-line masks.
NUM_TIMED	Masks with an automatic expiration time period.
NUM_UNMASKED	Masks which have been unmasked at some stage.
NUM_UNTIL_GREEN	Masks which are 'masked until green'.
NUM_WITH_ALARM	Masks where a matching alarm *can* be found.

Monitoring Service

Introduction

A monitoring system is interested in alarm status information. The primary purpose of the GV Orbit **Monitoring** service is to calculate key 'alarm state' information from log messages from system devices/units. There may be large amounts of log data and most of it may be informative. The **Monitoring** service processes log information on a GVOP domain and produces alarm information. Various pieces of alarm information may come from one source device (i.e. the same device address) and this information can be combined together. Resulting alarm information is sent out as alarm messages into the GV Orbit system.

> **Note:**
>
> The **Monitoring** service can combine various 'alarm state' information from a *single* device (i.e. from a single device address).
> The service *does not* combine together 'alarm state' information from multiple device addresses.

A GV Orbit client can subscribe to these alarm messages and, for example, alarm state information can be used on a GV Orbit C&M project custom user panel (using GV Orbit Alarm Behaviours).

A GV Orbit client or a GV Orbit service may also write log data to a GVOP domain for the **Monitoring** service to process.

> **Note:**
>
> The **Monitoring** service must be running for alarms to be present in the GV Orbit system; this includes alarms for GV Orbit themselves.

Additionally, there is a 'light' protocol to allow third party devices/systems to access some alarm state information.

> **Note:**
>
> In a GV Orbit system, the 'GVOP domain number' should match across:
> - Logging Service
> - GV Orbit Service(s)
> - GV Orbit Client(s).
>
> And each item must have a unique RollCall address or system identifier.
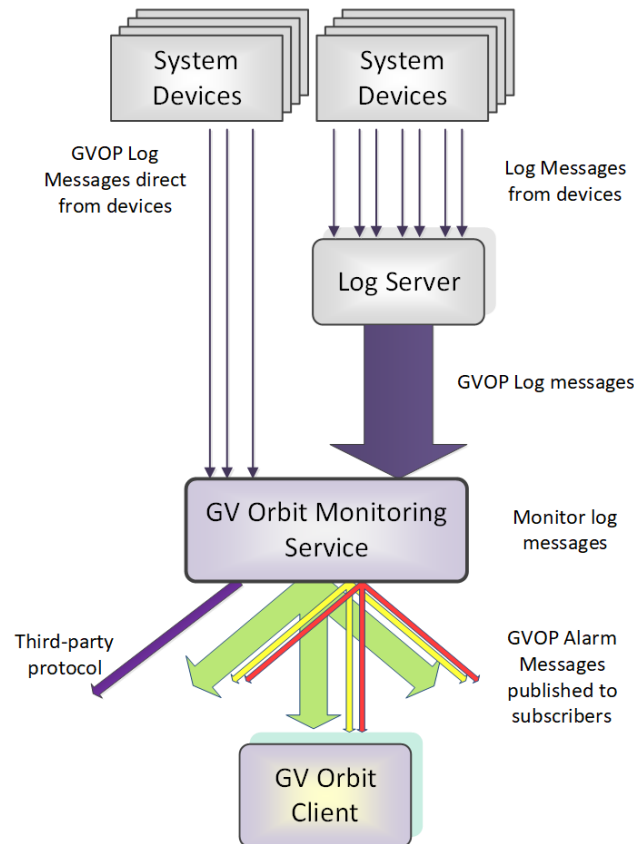
Fig. 15-1: GV Orbit Monitoring Service

Log Fields and Headers

A log message contains a HEADER=VALUE pair, commonly referred to as a **Log Field**. Log Fields from a **Log Server** service, or from a **Densité Manager** service, or directly from devices/units (i.e. any device in a 'control and monitoring' GVOP domain) can be processed by the **Monitoring** service: The service detects the alarm state of current Log Fields ('OK', 'Warning', or 'Error') and publishes the resulting calculated state information in GVOP alarm messages to subscribers.

STATE Log Field

A **STATE Log Field** is automatically added to each unit in a system by the **Monitoring** service. This contains the aggregate alarm state of all the unit's log messages, providing a useful overall log field for monitoring to use.

Header Rules

A **Monitoring** service is pre-configured with rules for processing the main and common **Headers** found in system log messages.

Every log message in the system should have an accompanying header rule.

Header Rules are listed on the **Headers** configuration screen (see Headers Screen, on page 182, for details). Each listed header has corresponding 'alarm state matching rules' which provide, for example, information about allowable limits for a Log Field. The rules determine a resulting alarm state for the Log Field.

When the current value of a Log Field header changes, the resulting Alarm state is determined by the **Monitoring** service, which looks up the corresponding **Header Rule** and works out what 'state' to apply ('OK', 'Warning', 'Error').
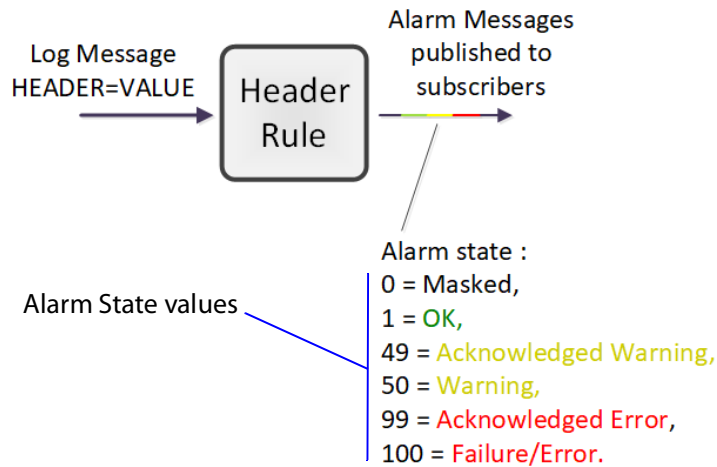
Fig. 15-2: Header Rule

> **Note:**
> The Alarm state value for an:
> - 'Acknowledged Warning' is distinct from Warning'.
> - 'Acknowledged Error' is distinct from 'Error'.

Rules

A rule for a Header is defined through one or more 'state matching' rules for the Header value. The following types of rules can be defined for different Header value types:

- String value rule.
- Numeric value rule.
- 'Rate of change' value rule.

Each Header rule can be configured with an automatic acknowledge time period. The **Monitoring** service automatically acknowledges an 'Error' or 'Warning' after this period.

Wild Card *

An asterisk wild card character (*) can be used when forming rules for similarly-named Headers. This can reduce the amount of Header rule configuration needed.

A device may often have many similarly-named Log Fields. In this case, Header rules can be created using a wild card character to create rules which apply to more than one Header. The wild card, *, is used in place of a number in the Header name.

For example, 'INPUT_*' includes Headers INPUT_1, INPUT_2, INPUT_3, ... etc.

Number Range [ ]

A number range may be specified in a Header name for a rule to specify a range of Headers.

For example, 'INPUT_[1-10]' covers Headers INPUT_1 to INPUT_10.

Categories

Categories can effectively combine several log messages from one device into one log message to ease subsequent monitoring in a system.

When monitoring a system, it is a common requirement to show a single alarm state for multiple log messages from a given device. This can be achieved in GV Orbit with the **Monitoring** service: Often, a device has many similar Log Fields. For example, a multiviewer has many inputs with similar corresponding Headers. The **Monitoring** service can monitor multiple alarm messages and aggregate the results into one alarm state (called, say, "INPUT_STATE") using **Categories**. See Figure 15-3.
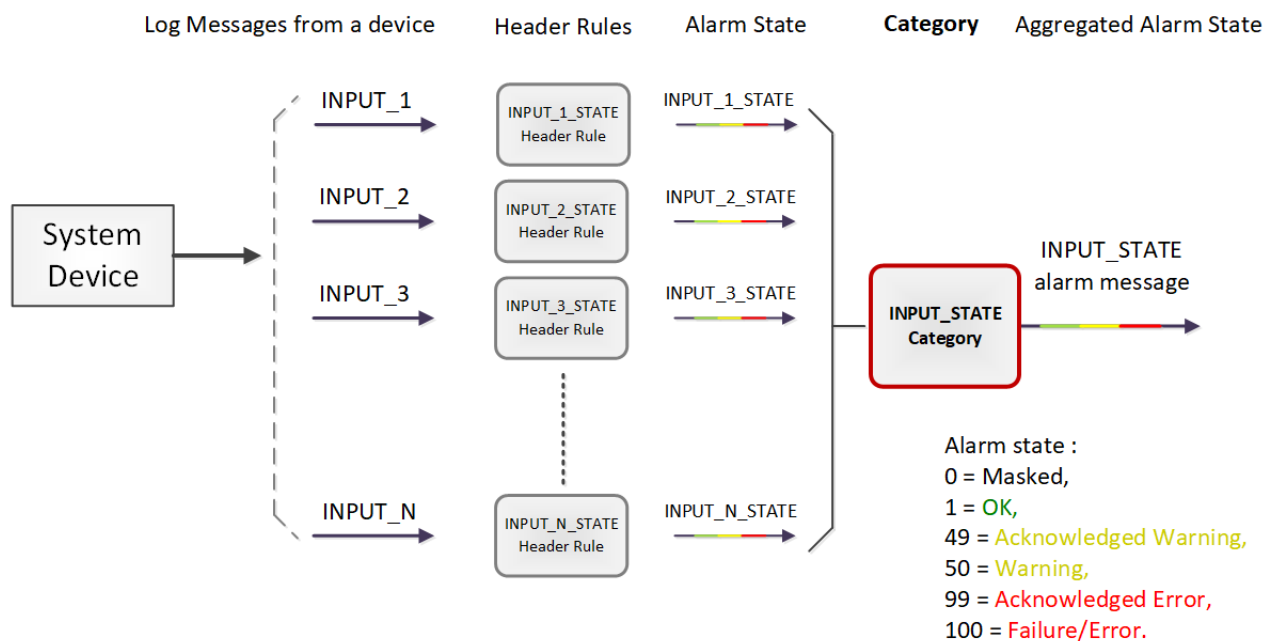
Fig. 15-3: Category Example - Block Diagram

Example Use Cases

Often, a device has many similar Log Fields. For example, a multiviewer has many inputs with similar corresponding Headers.

- A multiviewer with 48 inputs:
  Headers may include: INPUT_1_STATE, INPUT_2_STATE, and so on up to INPUT_48_STATE.

  A category can be used create a new Log Field (called, say, 'INPUT_STATE') to contain the overall combined alarm states of all the INPUT_*_STATE Log Fields.

- For a single multiviewer input:
  Headers may include: INPUT_1_LOST, INPUT_1_STATE, INPUT_1_STANDARD, INPUT_1_FRAMERATE.

A category can be used create a new Log Field (called, say, 'INPUT') to contain the overall combined alarm states of all the INPUT_1* Log Fields.

Note:

Monitoring of multiple Log Fields and aggregating the resulting alarm states can be achieved in GV Orbit in one of two ways:

1. Solely with a C&M project custom user panel in GV Orbit Client:

    a design a GV Orbit client custom user panel to look at multiple log message types;

    b use Behaviours and Bindings to determine alarm states for each log message, and to aggregate the multiple results into one alarm state; and then

    c show alarm state on the custom panel (for example, with a Tally lamp).

Or, alternatively:

2. With a **Monitoring** service *and* GV Orbit client custom panel(s):

It can be more convenient to perform the aggregation centrally and then provide a single, aggregate Log Field to one or more subscribing GV Orbit client custom panels. Do this using the **Monitoring** service and a GV Orbit client panel:

    a configure the service to look at multiple log messages;

    b configure the service with a **Category** to aggregate the log messages;

    c design a GV Orbit C&M project custom panel to look at the new, single (aggregated) log message; and

    d show the alarm state on the custom panel (with a Tally lamp).

See Categories Screen, on page 175, for more details.

System Screen

Press **Save Changes** to apply changes made to setting items on the configuration screen.

Press **Cancel Changes** to discard changes to settings.

Fig. 15-4: Monitoring Service - System Settings Screen

Table 15-1: GV Orbit Monitoring Service - System Settings

Setting	Description
System Settings:	
Client Domain	Text box. Enter a GVOP domain number that the service will monitor (typically, this is the 'Client' domain). The valid range is 1 to 232. (See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains.) **Note:** The **Client Domain** should be set to match the domain used by a GV Orbit Project in a GV Orbit Client. If the GV Orbit Client and Monitoring Service are on different domains they cannot see each other's data.
Network Interface(s)	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Address	Text box. Enter RollCall address for the service to use to write its state messages to. This will uniquely identify the service in the GV Orbit system. This will be used when the service publishes its own log data. (See RollCall Address, on page 243 for information about RollCall address.) The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore the default RollCall address for the service. Default: F110:01:04
Unit Name	Text box. Enter a name. This is a human-readable identifier for the **Monitoring** service to use. This name appears in the GV Orbit client **Network** window.
Clear	Button. Click to restore the default name for the service.
Log Server Connection Settings:	
	A **Monitoring** service connects to a **Log Server** service via a Log Server GVOP domain to get Rollcall-protocol device log data.

Table 15-1: GV Orbit Monitoring Service - System Settings (continued)

Setting	Description
Log Server Domain	Text box. Enter the GVOP domain number for the **Monitoring** service to get its **Log Server** log information from. **Note:** This should be different to the **Client Domain**.
Log Server Interface(s)	Drop-down box. Click in the cell and select the server computer network interface(s) for the **Monitoring** service to use to communicate with the **Log Server**. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. When one or more interfaces have been selected the service will use only those interfaces listed. To delete an item from the list, click on its adjacent **x**. **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding Log Sever(s).
Log Server 1 IP	Text box. Enter IP address of the where the **Log Server** is running which the **Monitoring** service is connected to. For a typical GV Orbit system, both services are running on the same GV Orbit server and, in this case, the 'loop back' IP address 127.0.0.1 should be used. **Note:** In some systems, a different IP address may be specified by the GV Orbit system administrator.
Clear	Button. Click to clear the text box.
GVOP Device Alarm Settings:	
	A **Monitoring** service connects to a **Densité Manager** service to get device log data.
Device Alarm Domain	Text box. Enter a GVOP domain number of the **Densité Manager** service to connect to. This may be the same as the Client domain number.
Interface(s)	Drop-down box. Click in the cell and select the server network interface(s) for the **Monitoring** service to use to connect to the **Densité Manager** service. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service.

Table 15-1: GV Orbit Monitoring Service - System Settings (continued)
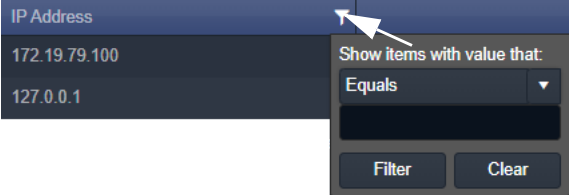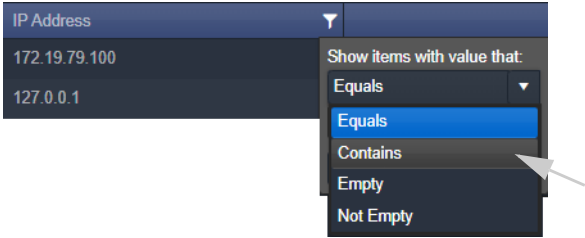
Setting	Description
Devices	A list of IP address(es) where the **Densité Manager** service is running, to which the **Monitoring** service is connected. If the list is empty, then the **Monitoring** service will attempt to discover any devices on the **Device Alarm Domain** that are accessible.
	For a typical GV Orbit system, both services run on the same GV Orbit server and, in this case, the 'loop back' IP address `127.0.0.1` is used. **Note:** In some systems, different IP address(es) may be specified by the GV Orbit system administrator.
	IP addresses can be added for other devices that support GVOP alarms. For example, Grass Valley Kaleido IP.
+New	Button. Click to add a new IP address item.
Delete	Button. Click to delete an IP address item.
Filter ▼	The list may be filtered by clicking on the Filter icon: Click on the drop-down list to select the filter: Click the **Filter** button to apply the filter. Click the **Clear** button to remove filtering.
Enable SDC-03	Check box. Select to enable the SDC-03 (Traffic Light) interface. See SDC-03 Interface, on page 175. **Note:** Enabling SDC-03 requires a **Monitoring** service restart.

Table 15-1: GV Orbit Monitoring Service - System Settings (continued)

Setting	Description
Enable Categories	Check box. • Select to enable 'Categories' in the **Monitoring** service. • Deselect to disable. When disabled, the **Monitoring** service will not add additional log field categories. **Note:** This requires a **Monitoring** service Stop/Start.
Monitoring Service Purge	Button. Click **Purge Stale Data** to force the **Monitoring** service to remove log fields which are grayed-out: For example, because their source publisher has gone away.

Monitoring Redundancy

Dual-redundancy can be achieved by running two **Monitoring** services with each connected to its own **Log Server** and **Densité Manager** services.

Further resilience can be achieved if both **Monitoring** services are connected to each other's own **Log Server** and **Densité Manager** services. This configuration does result in extra data on the GVOP domain.

SDC-03 Interface

The **SDC-03 Interface** allows a third-party device/system to connect to the **Monitoring** service and obtain high-level monitoring information. SDC-03 is a 'light' status-monitoring protocol allowing access to alarm data generated by the **Categories** screen.
Note: Detailed log data is not available over this interface.

The SDC-03 interface is available under NDA from Grass Valley. For information on the SDC-03 status monitoring protocol, please contact Grass Valley Support.

Categories Screen

A **Category** allows a user to define a new Header to carry an aggregated Alarm state and define a list of the Log Fields which should be aggregated. The list may be defined:
- As a collection of fixed headers.
- Using wild cards (i.e. INPUT_*).
- Using ranges (i.e. INPUT_[1-20]).

When **Categories** are enabled, the **Monitoring** service automatically scans each device in the system and adds the new Log Field to any devices which have matching Header rules. Thus, the new status information appears in a device's **Alarm Summary** window.

Figure 15-5 shows the **Monitoring** service **Categories** configuration screen and describes the screen controls and features.
shows an example of setting up a new **Category**.

Fig. 15-5: Monitoring Service - Categories Screen

Click to **Save** changes made on this screen.

Click to **Cancel** changes made on this screen.

Click to **Edit** the Category item

Click **+New** to create a **New Category** item.

Click to **Delete** the item

Indicates a change has been made, but not yet saved.

Fig. 15-6: Categories List

Categories Example

In this example, a new **Category** is created which aggregates together some Log Headers.

New Category

To create a new **Category**:

1 Open the **Categories** screen of the **Monitoring** service.

2 Click **+New**.

A new, blank **Category** item appears at the top of the **Category** list.
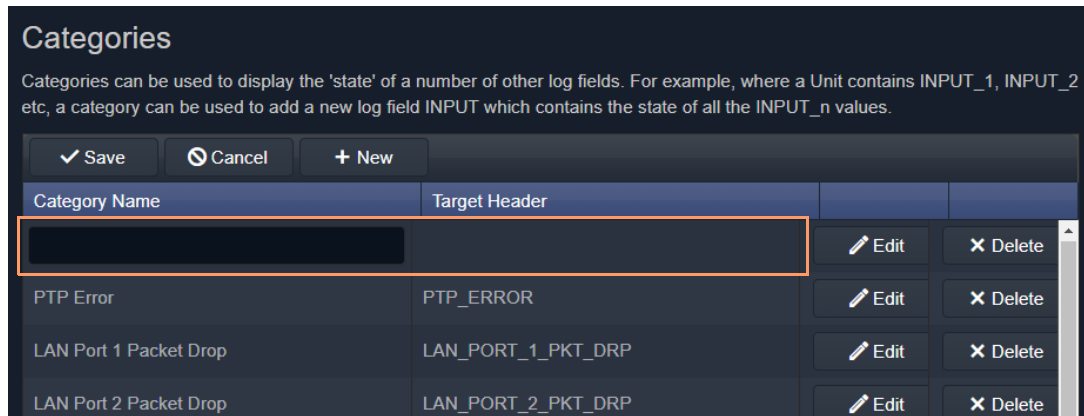
Fig. 15-7: New Blank Category Item

3 Enter a name for the new **Category** - a human-readable, 'friendly' name.

4 Enter a name for the Log Field Header to be used by the **Category** (Target Header).
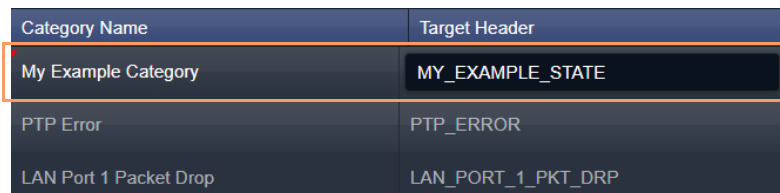
Fig. 15-8: New Category Name and Header

5 Click **Save**.

Edit - Add Header Match Pattern

1 Click **Edit** to edit the new **Category** item.

Click **Edit**
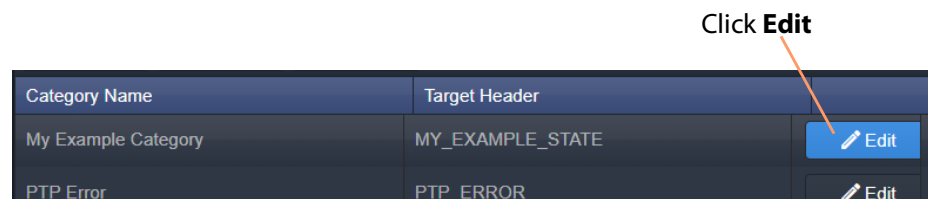
Fig. 15-9: Edit New Category

The **Edit Category** dialog is shown. See Figure 15-10.

New Category name   New Header name
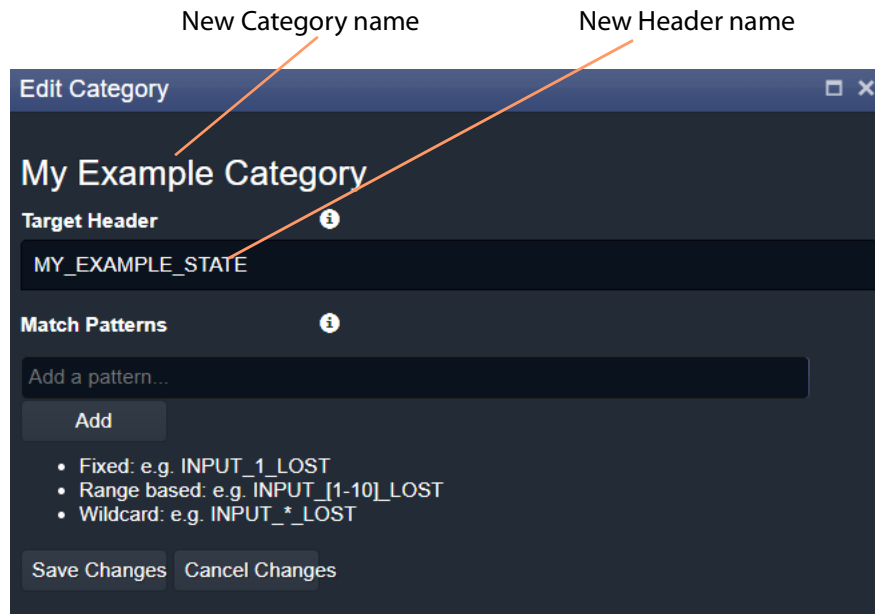
Fig. 15-10: Edit Category Dialog

2 In the **Match Patterns** text box,
   begin entering a Header **Match Pattern** text string. For example, "INPUT_".

   As the text string is entered, a drop-down list appears showing all the candidate
   Header names filtered on the entered text. See Figure 15-11.

Begin to enter
Match Pattern text

Scroll bars to
navigate
filtered list

Filtered Header
names in
drop-down list
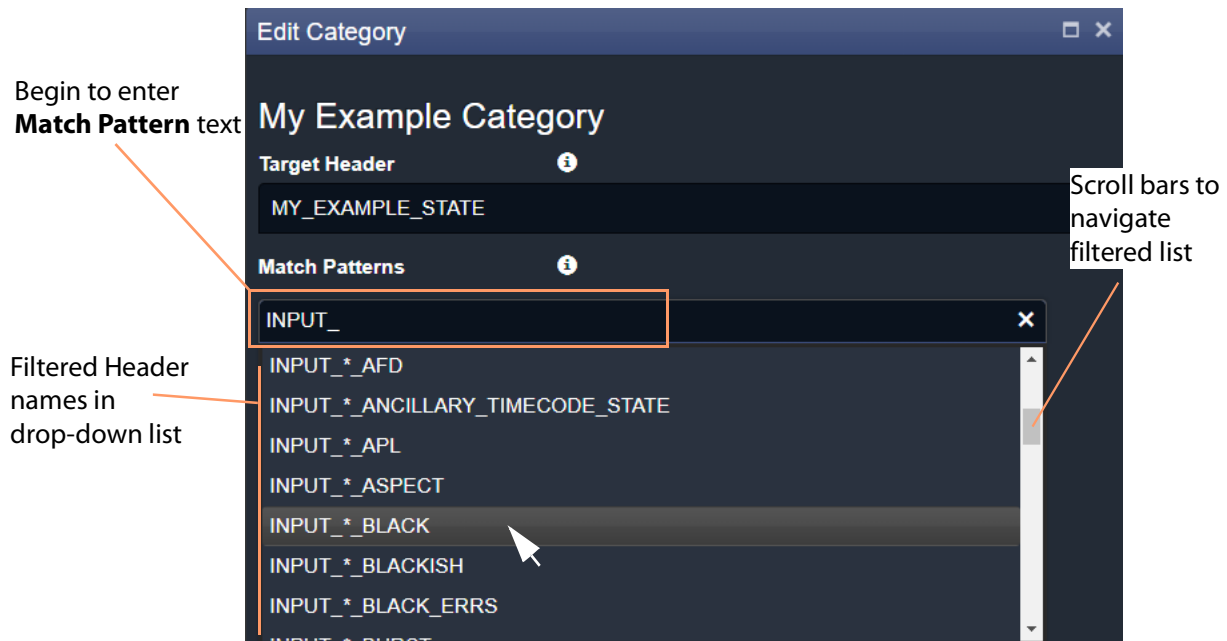
Fig. 15-11: Select a Match Pattern From Drop-Down List

3 Select a **Match Pattern** from the drop-down list.
   For example, INPUT_*_BLACK.

4   If required,
    now edit the selected **Match Pattern** string further.

    For example, replace the wild-card '*' character in 'INPUT_*_BLACK' with a range,
    INPUT_[1-8]_BLACK, to look for black detection status only on inputs 1 to 8.

The selected **Match Pattern** has been edited in the text box.
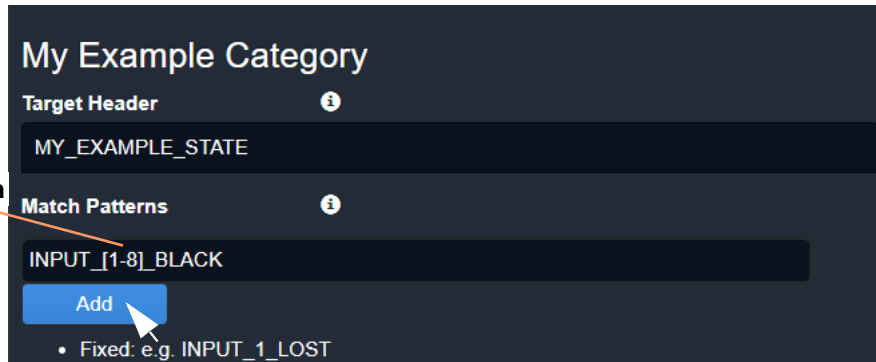
Fig. 15-12: Entering a Match Pattern

5   Click **Add**.

    A **Match Pattern** is added to the **Category**.

Added **Match Pattern**
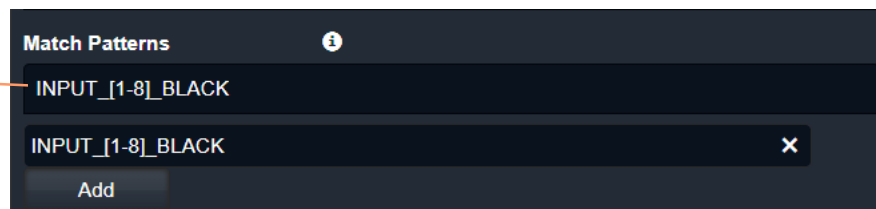
Fig. 15-13: Added Match Pattern

One **Match Pattern** has now been set up for this **Category**. More match patterns may be added, if required.

More Match Patterns

To add more **Match Patterns** into the **Category**:

1   Clear the text entry box by clicking on the **x** that appears when the cursor hovers over the right-hand end of the text box. (See Figure 15-14.)
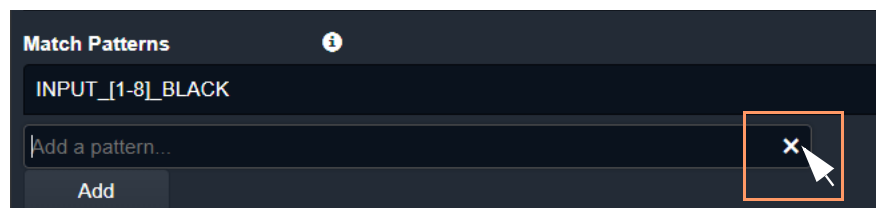
Fig. 15-14: Clear Match Pattern Entry Text Box

2   Begin entering another Header **Match Pattern** text string and select the required name item in the drop-down list.
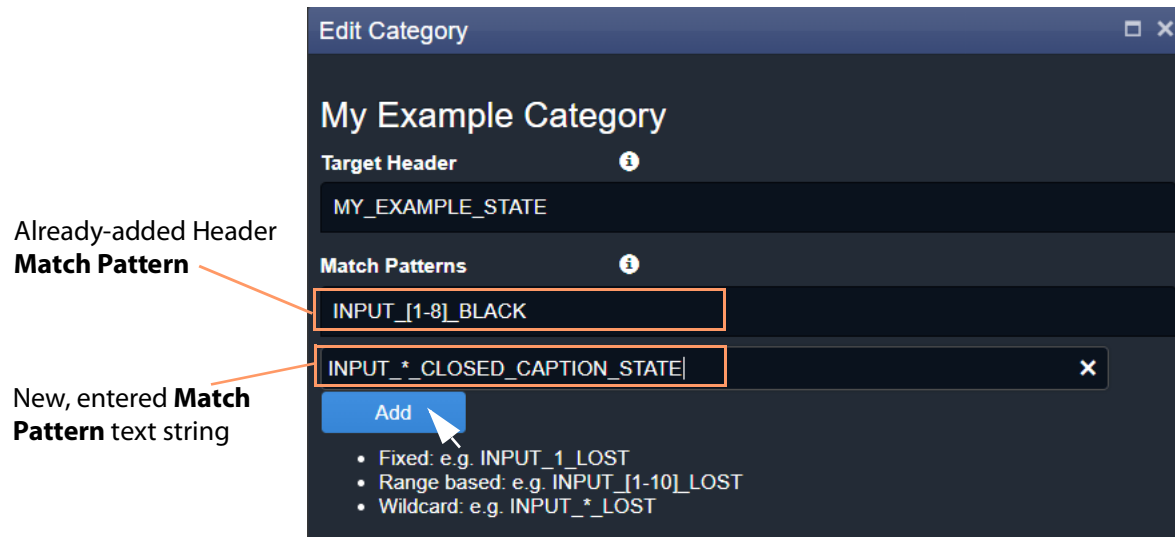
Fig. 15-15: Entering Another Header Match Pattern

3 Click **Add**.

The newly-entered text string is added to the **Category**.

Two Header **Match Patterns** have now been set up for this **Category**. See Figure 15-16.
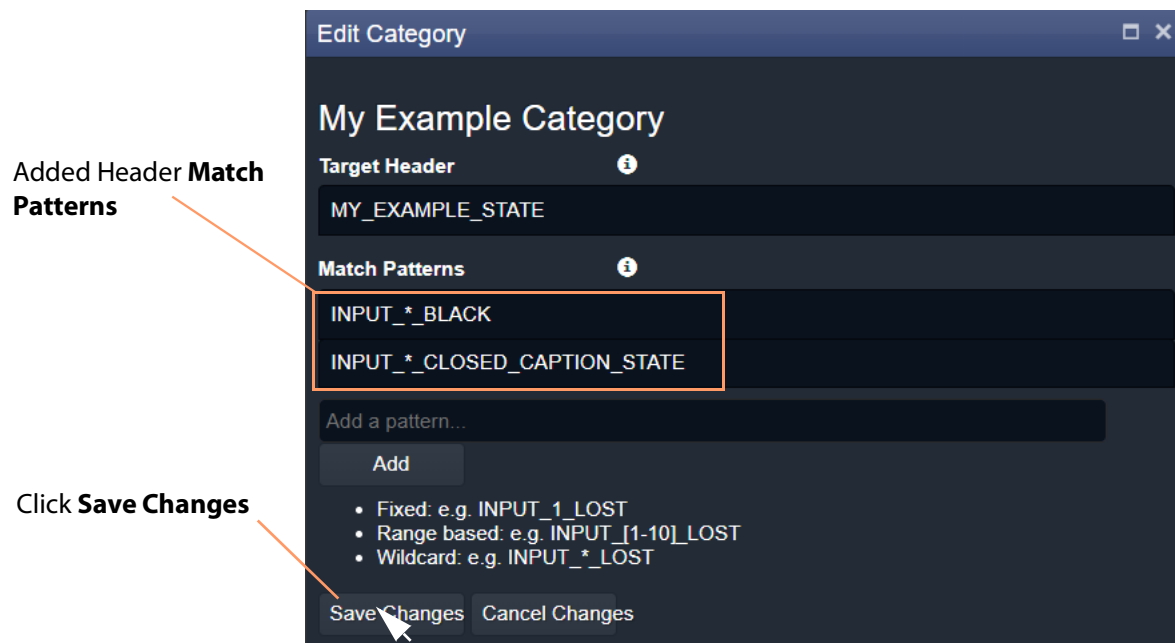
Fig. 15-16: Save Header Match Patterns

In this example, the new **Category** will now aggregate together alarm messages about input black detection and input closed caption status.

4 Click **Save Changes**.

The changes made in the **Edit Category** dialog are saved and the dialog is closed.

The new **Category** appears at the bottom of the **Category** list in the **Categories** screen. See Figure 15-17.

Newly-created **Category** item

Fig. 15-17: New Category in Category List

Headers Screen

The **Headers** configuration screen contains a list of **Header** rule items, i.e. Headers with their state matching rules. Custom items can be added. Rules may be edited.

Header Screen Information

State Matching Rules

- Numeric State Matching Rule, on page 183
- Rate of Change State Matching Rule, on page 183
- String State Matching Rule, on page 184

Numeric State Matching Rule

This rule operates on a Log Field with a numeric value.

The rule derives an alarm state ('OK', 'Warning', 'Error/Fail') from a numeric range defined by threshold values. When a value is within a range, the corresponding alarm state is used. See Figure 15-18.

Custom **Numeric State** matching rules can be created.
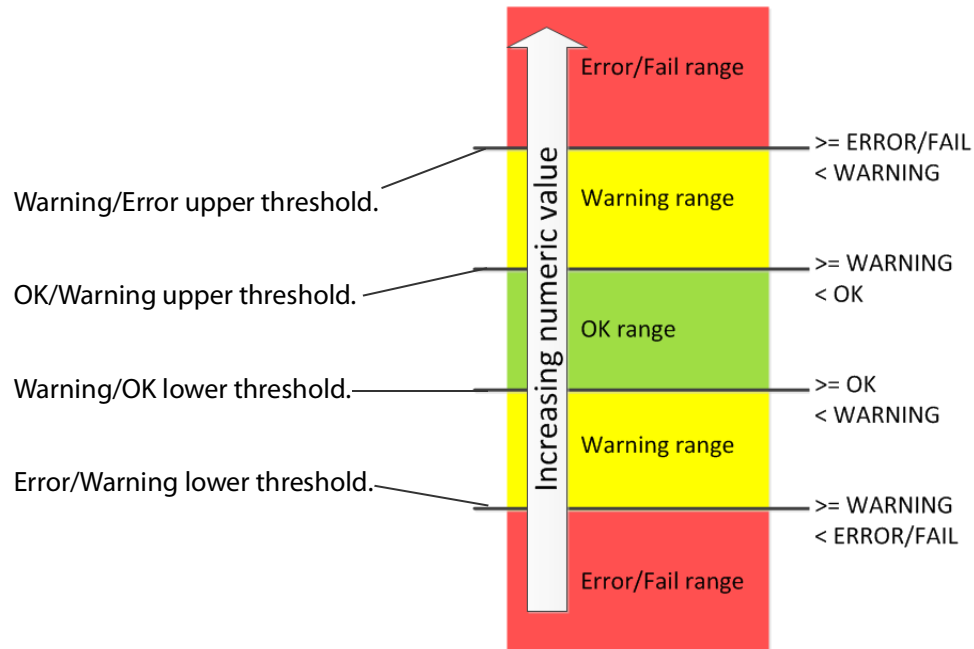
Fig. 15-18: Numeric Value Rule Thresholds

Rate of Change State Matching Rule

This rule operates on a Log Field with a numeric value (for example, an error count).

The rule derives an alarm state ('OK', 'Warning', 'Error/Fail') from a *rate of change* of the numeric value, rather than from the absolute value itself.

The **Rate of Change** rule allows a low frequency of device status events to occur before and alarm is triggered. For example, input SDI CRC errors may occasionally occur on a device and monitoring can be set up to only trigger an alarm if many errors occur.

Threshold rates of change values are defined over a defined sample interval. When a value's 'rate of change' exceeds a certain amount per sample interval, a 'Warning' Alarm state and beyond that, a 'Failure/Error' Alarm state is used. See Figure 15-19.

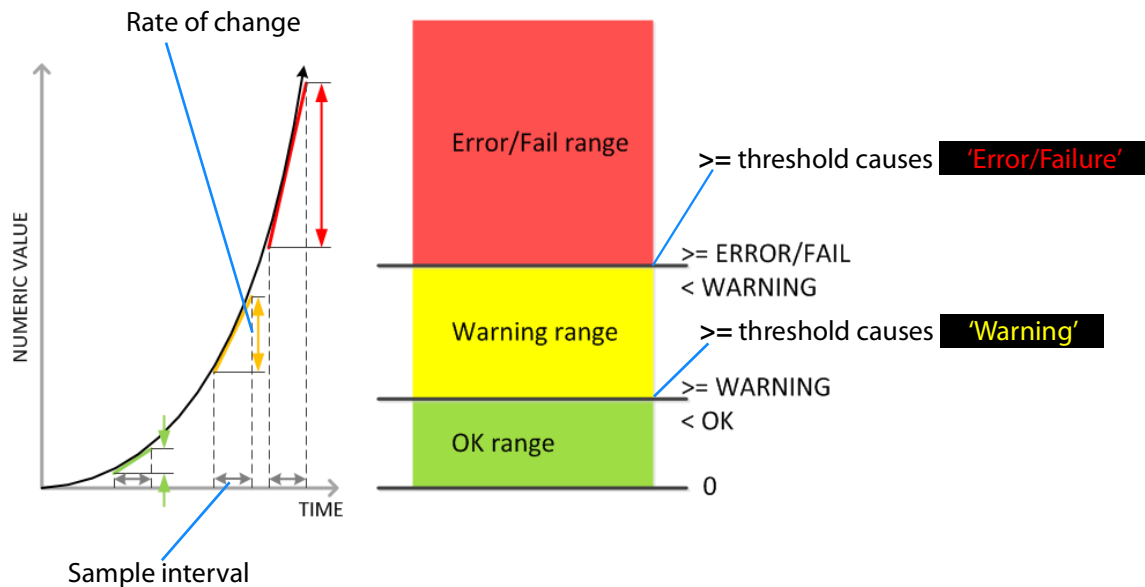Custom **Rate of Change** state matching rules can be created.

Fig. 15-19: Rate of Change Rule Thresholds

String State Matching Rule

This rule operates on a Log Field with text string values. The rules assign alarm states ('OK', 'Warning', 'Error/Fail') from a semicolon-separated list of text string conditions. The text condition matches strings that start with specified text and the syntax uses an asterisk wild card character.

For example,   UNIT LOST*;FAIL   matches text strings starting with 'Unit lost' or 'Fail'.

When a text string condition is met, the corresponding Alarm state value is used.

Custom **String State** matching rules can be created.

> **Note:**
> Text string matching conditions are *not* case-sensitive.

Deferring Alarms in String State Matching

For a **String State Matching** rule, the assertion of a resulting alarm can be delayed (deferred). This has the effect of ignoring any short alarm conditions for a defined period. A deferring period (in seconds) can be configured *per string matching condition*:

For example, if the **String State Matching** rule is "5?LOST*;CRITICAL*" then:

- Log Field values starting with 'LOST' will cause an alarm only after 5 seconds, unless the error condition goes away within that time.
- Log Field values containing 'CRITICAL' would cause an alarm immediately.

Deferring is used for two main purposes: Alarm Escalation and Alarm Suppression.

Alarm Escalation

Warning and Error/Failure conditions can be configured in a rule with the same expressions, but with different defer periods. (See Deferring Alarms in String State Matching, on page 184.)
In this way, a Warning alarm can change into an Error/Failure alarm if the alarm is not dealt with within a certain period of time.

For example, a Warning alarm is set up to monitor some status value with no defer period and an Error/Failure alarm is set to monitor the same status but with a defer period. When an alarm expression condition matches, there is first a Warning alarm state asserted and then an Error/Failure alarm state is asserted after a defer period (if the alarm is not cleared).

The Error/Failure defer time thus provides 'warning time' and may be used to give the user some time to deal with the problem before it escalates.

Alarm Suppression

Occasionally there are alarms which flicker into Error/Failure or Warning states only briefly and which may only be serious if they stay fixed in one state for longer than a set period of time - for example, a 'video input is black' alarm. Deferring an alarm can suppress this "noise".
(See Deferring Alarms in String State Matching, on page 184.)

For example, in order to avoid spurious false triggers, a Video Input Black alarm can be deferred for up to 5 seconds, thus ignoring brief, legitimate occurrences of a black video image.

Headers List

The **Headers** configuration screen defines the rules for each Header in the system. A list of all Headers is presented in pages with a navigation bar to enable the user to navigate between pages of the list. The number of list items per pages can be selected and the total number of items is shown. See Figure 15-20.

Click to **Save Changes** made on this screen.

Click to **Cancel Changes** made on this screen.

Click to create a **New Header** rule item.

Click to **Edit** the Header rule item.

Click to **Delete** the Category item.

List of Header rules.

Header	Title	String State	Number State	Ack Delay	
3G	3G	Default	None	-1	✕ Delete
ACTIVE_MSG	Active Unit State	None	None	-1	✕ Delete
ADDRESS	Address	Default	None	-1	✕ Delete
AES	AES	Default	None	-1	✕ Delete
AESREF	AES Ref	Default	None	-1	✕ Delete
AES_1	AES 1	Default	None	-1	✕ Delete
AES_2	AES 2	Default	None	-1	✕ Delete
AES_3	AES_3	Default	None	-1	✕ Delete
AES_4	AES_4	Default	None	-1	✕ Delete
AES_5	AES_5	Default	None	-1	✕ Delete
AES_6	AES_6	Default	None	-1	✕ Delete
AES_7	AES_7	Default	None	-1	✕ Delete
AES_8	AES_8	Default	None	-1	✕ Delete
AES_INPUT_*...	AES Input * Type	Default	None	-1	✕ Delete
AES_OUTPUT...	AES Output * Type	Default	None	-1	✕ Delete
AFD_CONFLICT	AFD Conflict	Default	None	-1	✕ Delete
ALL	All	Default	None	-1	✕ Delete
ALL ERR CNT	All Err Cnt	Default	None	-1	✕ Delete
ALL ERROR COUNT	All Error Count	Default	None	-1	✕ Delete
ALL STATS	All Stats	Default	None	-1	✕ Delete

Page navigation bar

1 2 3 4 5 ... ► ►| 20 ▼ items per page   1 - 20 of 1216 items

Total number of items

Click to Refresh the list

Fig. 15-20: Monitoring Service - Headers List Screen

Columns:

Header name

Header rule title,
human-readable name

Auto-acknowledge time
period

◤ indicates a change has
been made, but not yet
saved.

State rule used:

String state rule   Numeric state rule

Click 'Header' or 'Title' column headings to
toggle A-to-Z, Z-to-A sorting of the **Header** list

Fig. 15-21: Monitoring Service - Header List Columns

Filtering the Headers List

The **Headers** list can be filtered using the filter text boxes at the top of the 'Header' and 'Title' columns. This provides two filters to reduce the number of displayed items.

1 Begin to enter text into one of the filter boxes.

A drop-down list of possible **Header** names/titles is shown.
See Figure 15-22.
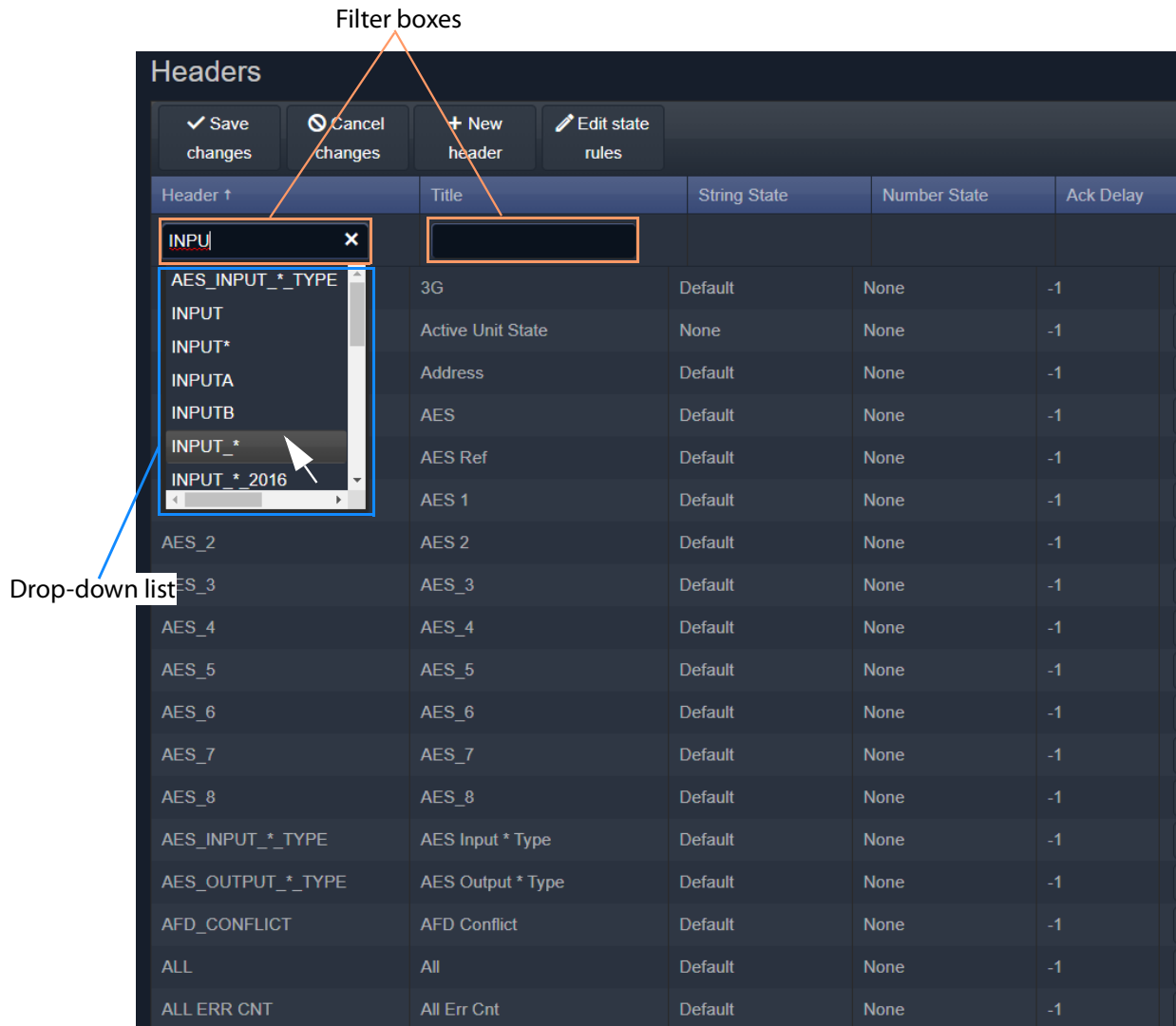
Fig. 15-22: Filtering Header Rule Items

2 Select an item from the drop-down list.

The Header list is filtered on the selected item. See Figure 15-23.
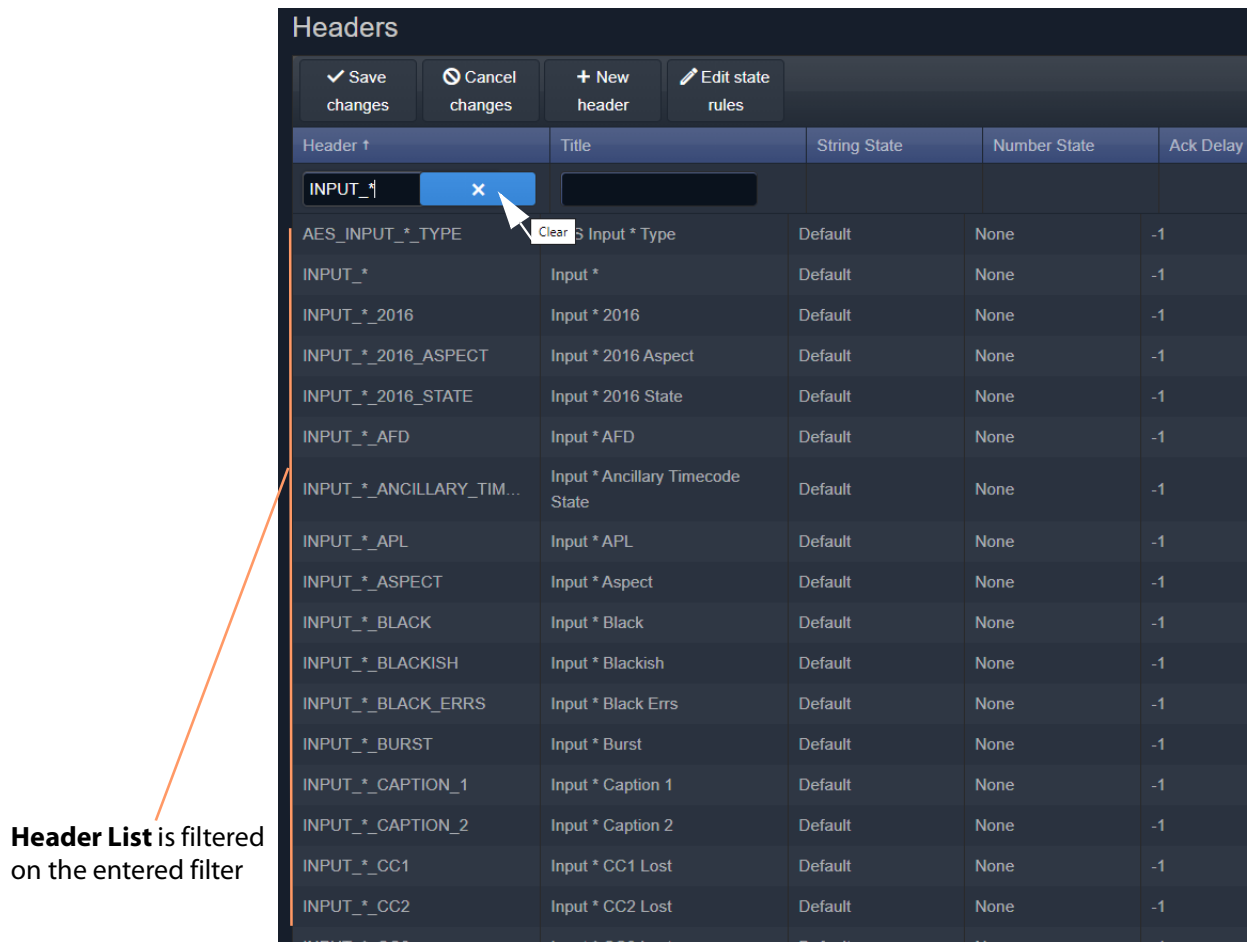
Fig. 15-23: Filtered Header List Items

Additional Filter

1 To additionally filter with the second filter box, enter text into the box and select from the drop-down box.

Clear Filter

1 To clear the filtering, click on the **x** button beside each filter box.

New Header Rule

To create a new rule for a new **Header**:

1 Click **+New Header**.

2 Begin to enter the **Header** name and
select a name from the drop-down list (or enter a new name, if required). (This is the Header that the rule will apply to.) See Figure 15-24.

Click **+New Header**

Begin to enter
Header name

Select a
from the
drop-down
list.
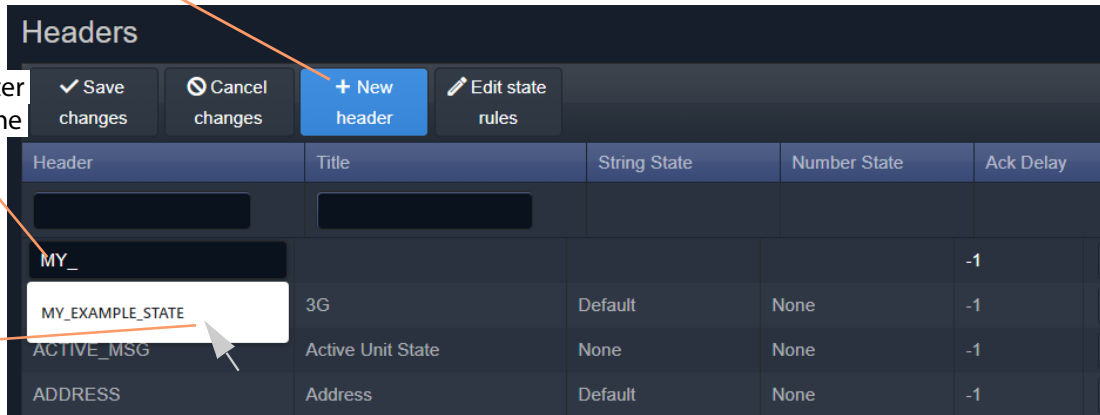
Fig. 15-24: Enter Header Rule Name

3 Enter a name (title) for the new **Header Rule**, a human-readable text string. See Figure 15-25.

Enter **Header Rule** title, a human-readable text string.
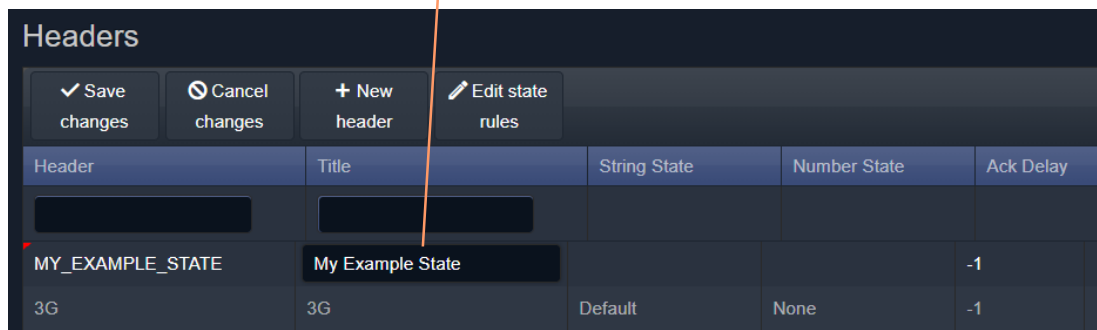
Fig. 15-25: Enter a Name (Title) for the Header Rule

4 Select state rule for the **Header Rule** (a **String State** rule and/or a **Number State** rule). See Figure 15-26.

Select a State rule   **String State** rule   **Number State** rule
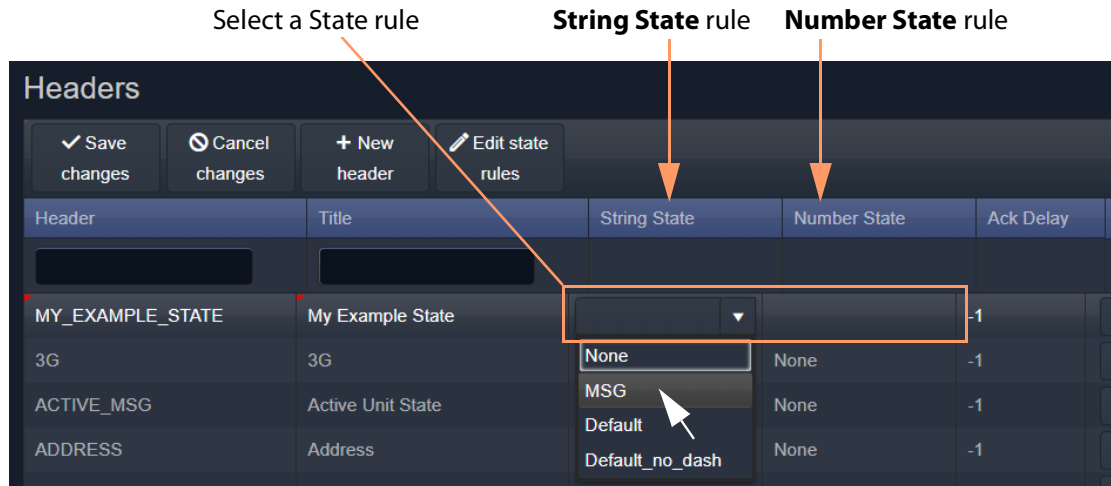
Fig. 15-26: Select a State Rule to Use (String or Number)

> **Note:**
>
> Custom state rules (**String State** or **Numeric State**) can be set up. See State Rules, on page 192.

5 If an auto-acknowledge is required, set the timeout period (**Ack Delay** figure in seconds, -1 = no auto-acknowledge). See Figure 15-27.

Select an auto-acknowledge **Ack Delay** (seconds) (-1 = no auto-acknowledge)
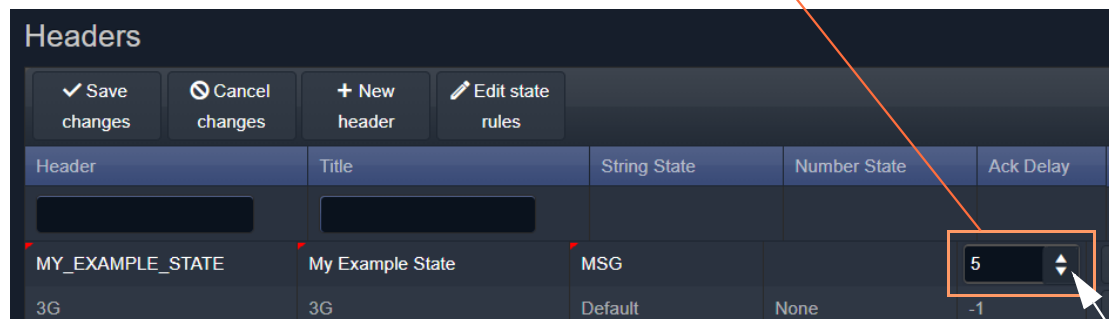
Fig. 15-27: Select an Ack Delay Figure (seconds)

6 Click **Save Changes**.

A new **Header Rule** has been created. See Figure 15-28.
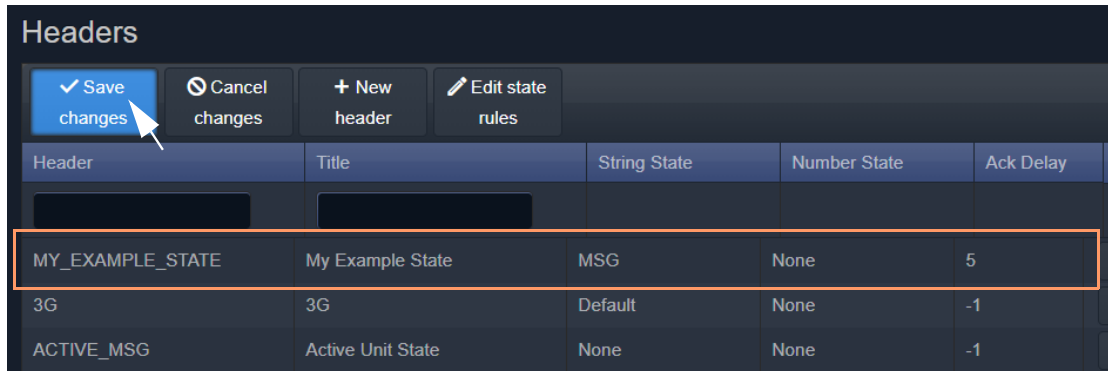
Fig. 15-28: New Header Rule Created

State Rules

The **Monitoring** service has some default state rules already defined for processing **Header** values. Custom state rules can be generated and then used in any Header rule; this can be done for 'String' matching, or 'Number' matching, or for processing a 'Rate of Change'.

Edit a State Rule

To edit a state rule:

1 Click **Edit State Rules** in the **Headers** configuration screen, see Figure 15-29.

The **Edit States** dialog is shown, see Figure 15-30.

Click to **Edit State Rules** to edit or create state rules
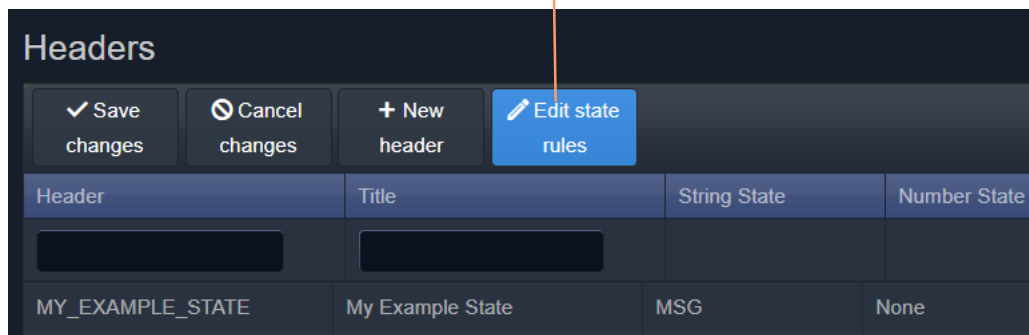
Fig. 15-29: Edit State Rules Button

Tabs for selecting type of rule - 'String', 'Numeric' and 'Rate Of Change'.

Click to **Delete** the selected state rule

Select State drop-down box

Save changes button
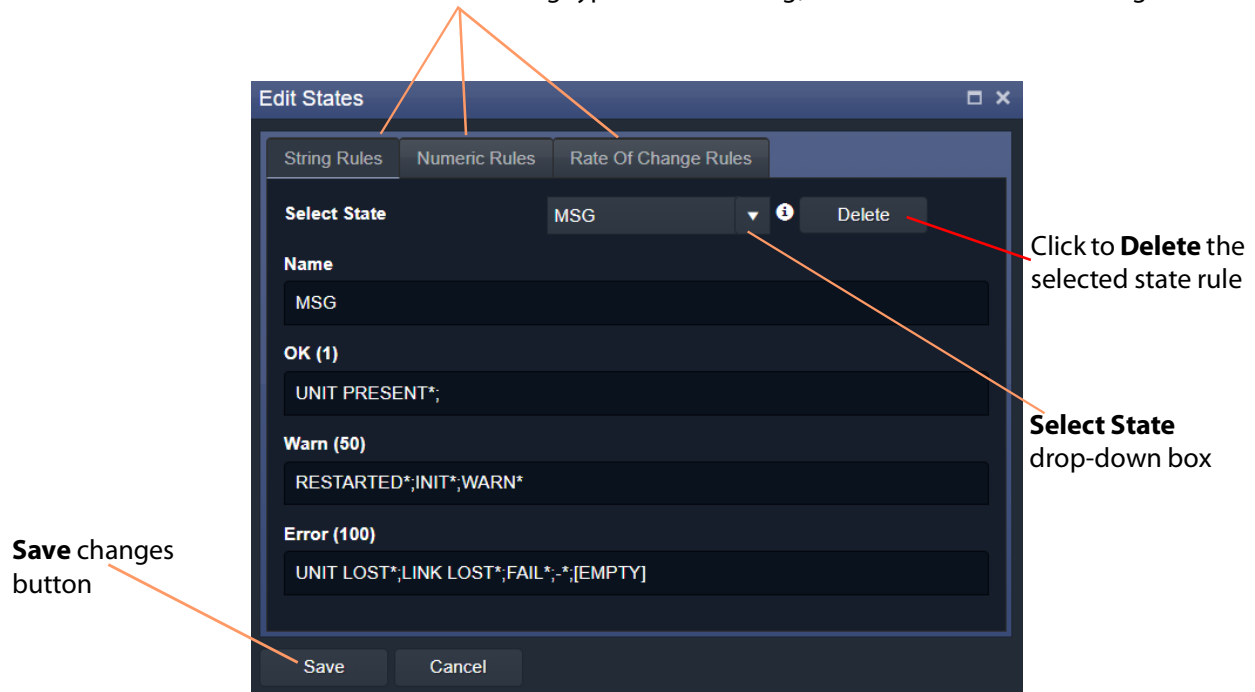
Fig. 15-30: Edit States Dialog

2 Select the state rule type to edit by clicking on a tab ('String Rules', 'Numeric Rules', or 'Rate Of Change Rules').

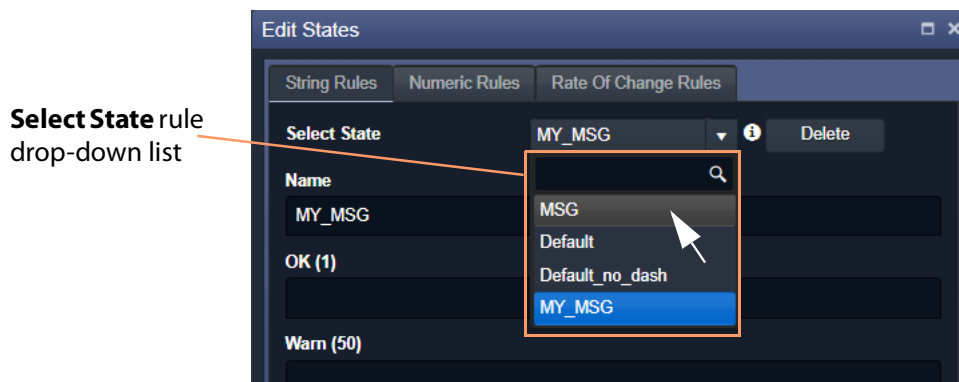3 Select the state rule to edit from the **Select State** drop-down list. See Figure 15-31.

Select State rule drop-down list

Fig. 15-31: Select State Drop-Down List

4 Edit the settings, see:
   • String State Rule Settings, on page 196;
   • Numeric State Rule Settings, on page 197; or
   • Rate Of Change State Rule Settings, on page 198).

5 Click **Save**.

Create a New State Rule

To create a new state rule:

1 Click **Edit State Rules** in the Headers configuration screen.

The **Edit States** dialog is shown.

2 Select the type of state rule to edit by clicking on a tab ('String Rules', 'Numeric Rules', or 'Rate Of Change Rules').

3 Click on the **Select State** drop-down box and enter a *new* **State Rule** name. See Figure 15-32a.

GV Orbit detects that this is a new name.

4 Click **Add new item** in the drop-down list. See Figure 15-32b.

The new name item is added into the drop-down list. See Figure 15-33a.

Enter a new **State Rule** name in box
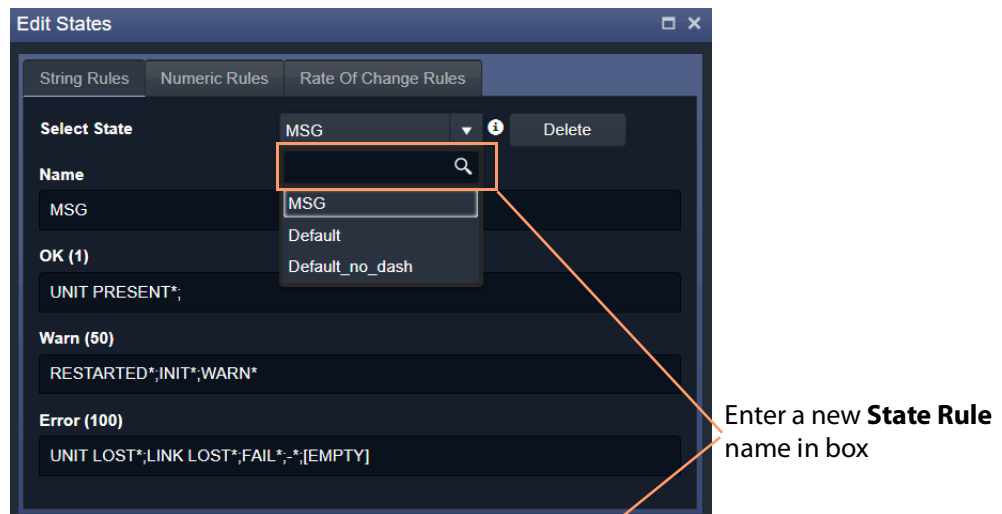
a) Enter new **State Rule** name
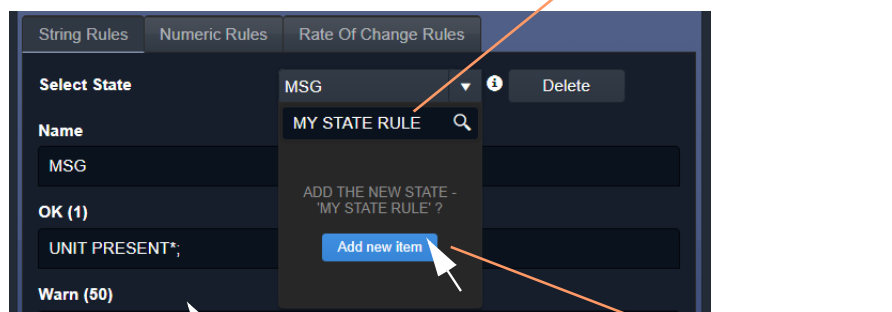
b) Add Item

Click **Add new item**

Fig. 15-32: New State Name

5 Select the new item in the drop-down list by clicking on it.

A new blank **State Rule** is created and shown in the dialog. See Figure 15-33b.

Select new item in drop-down list

a) Name added to drop-down list

b) New Blank State Rule

Fig. 15-33: New State Name

6 Edit the rule settings as required, see:

- String State Rule Settings, on page 196;
- Numeric State Rule Settings, on page 197; or
- Rate Of Change State Rule Settings, on page 198).

7 Click **Save**.

State Rule Settings

A **State Rule** describes how to derive an alarm state ('OK', 'Warning', 'Error/Fail') from a log message value. A message's **Header** value is processed and an Alarm state derived. **State Rule** types include:

- **String** - defining text string matching and mapping to Alarm states.
- **Numeric** - defining number range mapping to Alarm states.
- **Rate Of Change** - defining a number rate of change rule for mapping to Alarm states.

Each rule type has various settings, as described in sub-sections below:

String State Rule Settings

A text rule is entered into the **Edit States** dialog for alarm states 'OK', warning ('Warn'), and error 'Error'. One or more text conditions may be entered as a semicolon-separated list of text conditions. (See String State Matching Rule, on page 184.)
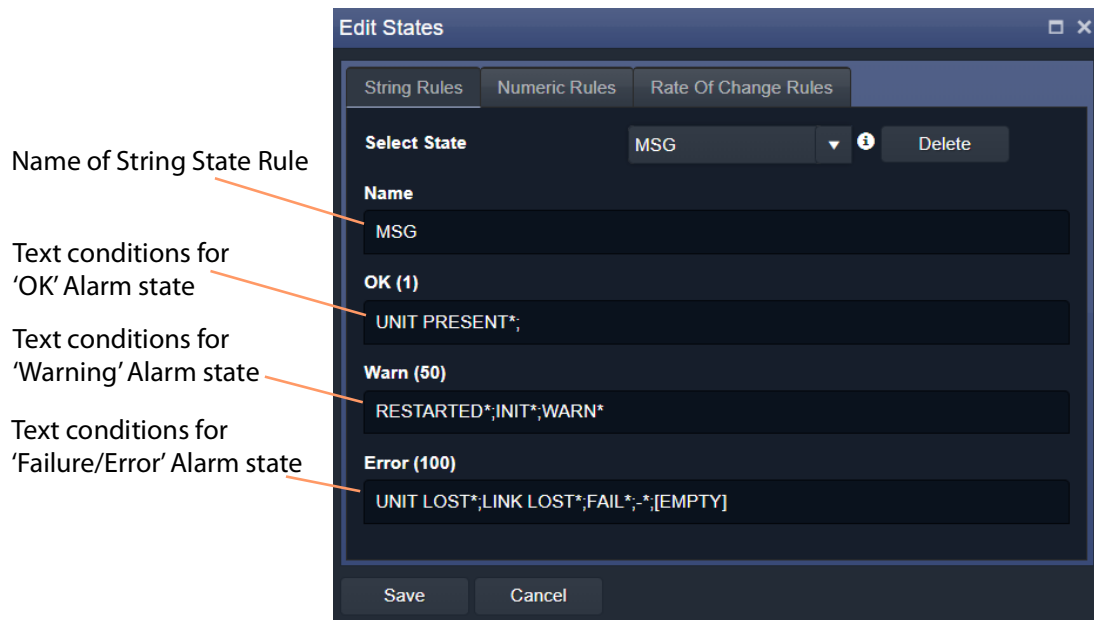
Name of String State Rule

Text conditions for 'OK' Alarm state

Text conditions for 'Warning' Alarm state

Text conditions for 'Failure/Error' Alarm state

Fig. 15-34: String Rules Tab

1 Enter the text conditions for each Alarm state. ('OK', 'Warn', 'Error')
2 Click **Save**.

Note:
In a text rule condition:

- '**[EMPTY]**'   matches a Log Field with no value.

    Example,   `UNITLOST*;LINKLOST*;FAIL*;-;[EMPTY]`

- '**-**'   matches a Log Field with a value of '-' (an 'unknown' value).

    Example,   `FAIL*;-`

- '***'   is a wild card and matches any characters.

Numeric State Rule Settings

Numeric rules have parameters which map alarm states ('OK', 'Warning', 'Error/Fail') to value ranges (or bands) of the numeric parameter involved. These are specified with upper- and lower-threshold values. (See Numeric State Matching Rule, on page 183, for a description.)

Lower-threshold value, _below_ which causes:

Threshold values ('lower' and 'upper')

• an Error.

• a Warning.

Name of **Numeric** State Rule

Upper-threshold value, _at or above_ which causes:

• a Warning

• an Error.

Fig. 15-35: Edit States Dialog - Numeric Rules Tab

1 Enter the upper- and lower-threshold values (i.e. for lower- and upper- 'OK-Warning' and 'Warning-Error' thresholds).

2 Click **Save**.

Rate Of Change State Rule Settings

'Rate of Change' rules have parameters which map alarm states ('OK', 'Warning', 'Error/Fail') to a changing value. (See Rate of Change State Matching Rule, on page 183, for more information.)

A rate of change is specified with a sample interval (a duration) and threshold values. Value increments per sample interval are mapped to alarm states. See Figure 15-35.
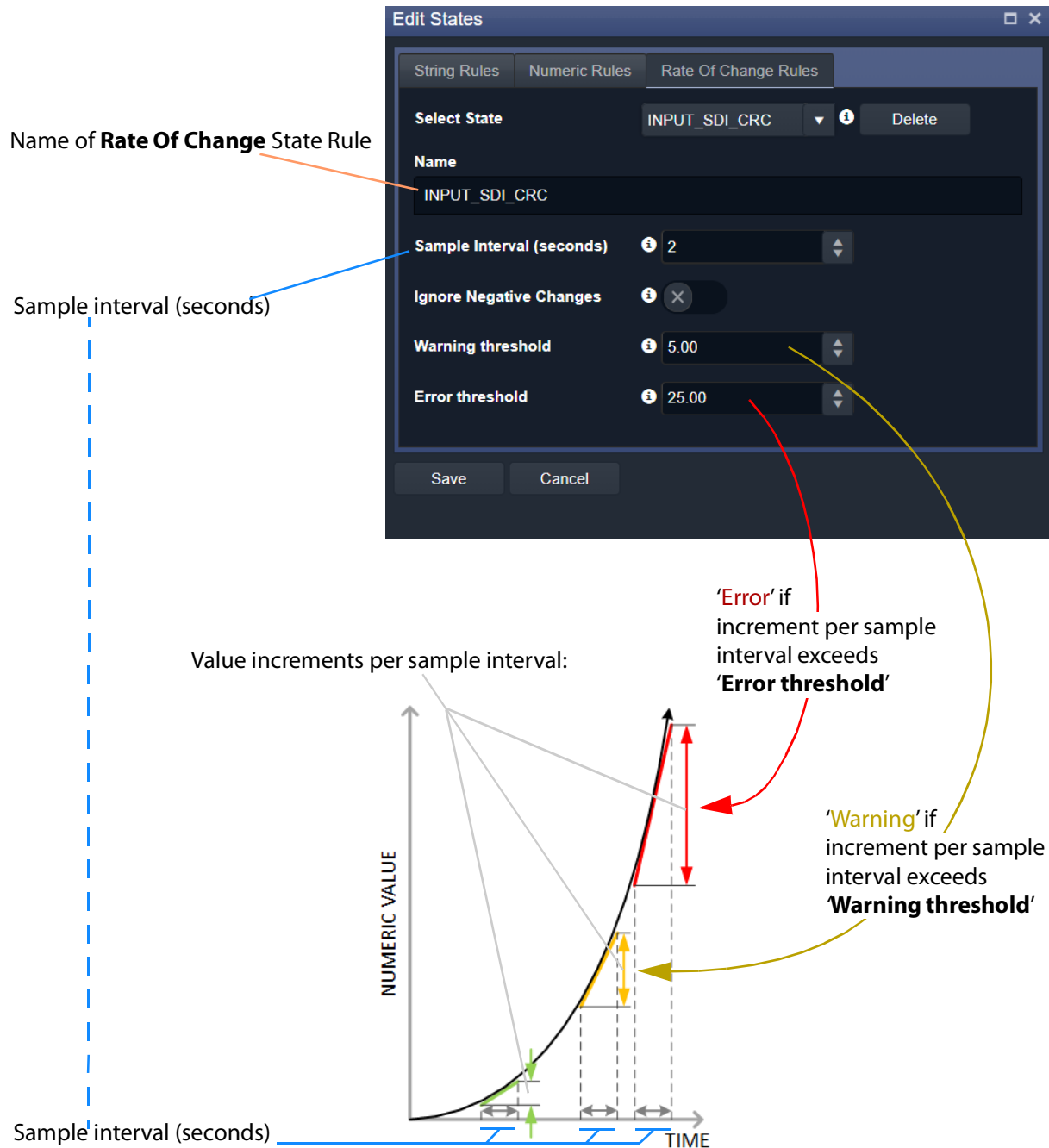
Fig. 15-36: Edit States Dialog - Rate Of Change Rules Tab

1 Enter the Sample interval (seconds).

To ignore any negative changes in value:

2 Select 'Ignore Negative Changes' for any negative changes in the value not to be taken into account.
(Deselect to include negative value changes.)

Then:

3 Enter the:
- Warning threshold value; and
- Error threshold value.

Finally:

4 Click **Save**.

State Rule Defaults

a) String Rules Defaults

b) Numeric Rules Defaults

c) 'Rate of Change' Rules Defaults

Fig. 15-37: Default State Rules

Relay Service

Purpose

The GV Orbit **Relay** service allows GV Orbit to pass (relay) selected GVOP data between two GV Orbit local GVOP Domains in a GV Orbit system and/or between two network interfaces of the GV Orbit server. The configuration of a **Relay** service depends on the GV Orbit system design and requirements.

> **Note:**
> Configuration of the **Relay** service is system-specific.

For example, the service can be used to:

- Allow GV Orbit system alarm data to be passed to an MV-8 series multiviewer on a different GVOP Domain to be displayed.

> **Note:**
> A Relay service relays only GVOP data within/between GV Orbit systems. It does not relay other data nor message types.
> For example, it will not relay 'ping' messages.
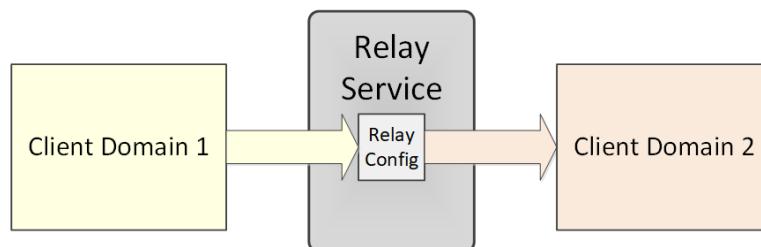
Fig. 16-1: Relay Service

Use Cases

The **Relay** service is used in certain system use cases and can be set up to perform zero, one, or more relay tasks in a GV Orbit system. Setting up the **Relay** service is done with use cases and includes the relaying of:

- Alarm data from GV Orbit to a MV-8 Series multiviewer (version v3.x and earlier). See Figure 16-2a.
- Status from a MV-8 Series multiviewer (version v3.x and earlier) into a GV Orbit system. See Figure 16-2b.
- IP Routing data between different networks/Domains. Data is sent in *both* directions (to and from) between the networks/Domains involved. See Figure 16-3.
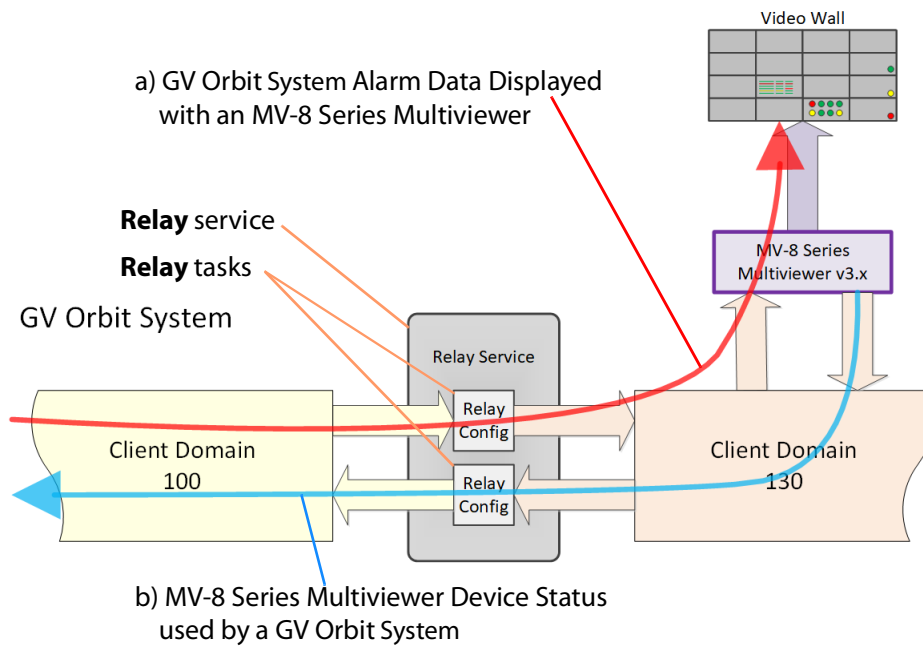
Fig. 16-2: Relay Use Cases:
    a) MV-8 Series Multiviewer Displaying GV Orbit System Alarm Information.
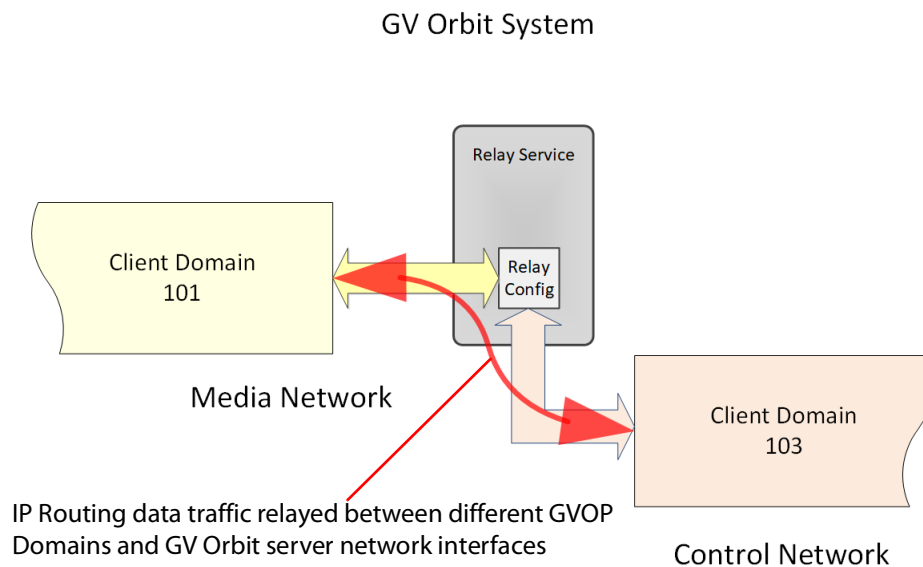   b) MV-8 Series Multiviewer Device Status Used by a GV Orbit System.

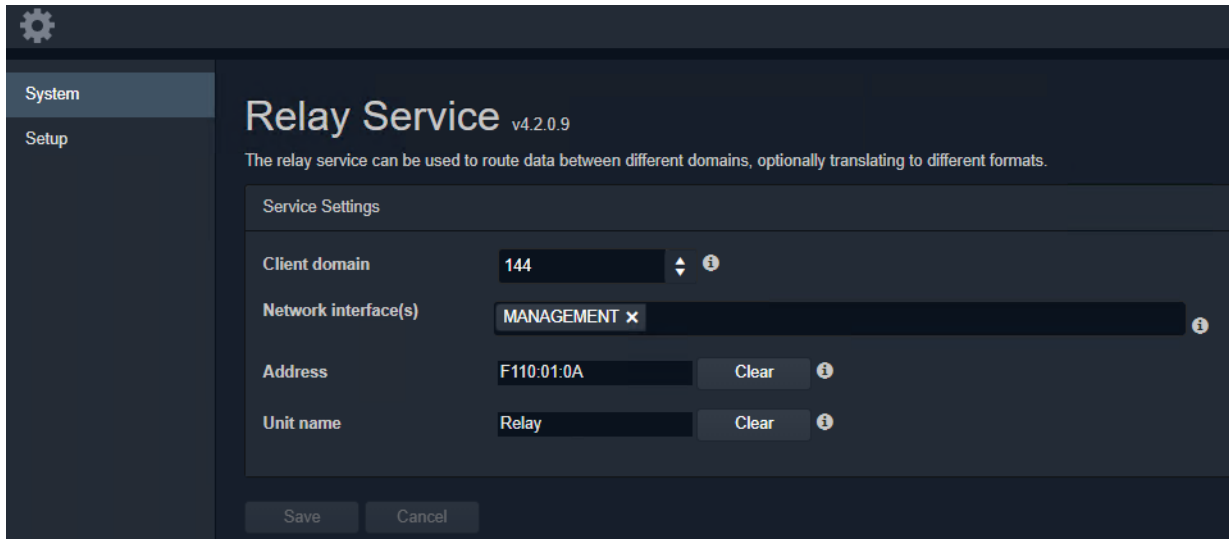Fig. 16-3: Relay IP Routing Traffic Use Case

System Screen

Fig. 16-4: Relay Service - System Screen

Table 16-1: Relay Service - *System Settings*

Setting	Description
Client Domain	Text box. Enter a GVOP domain number of the system's Client Domain. This is the domain on which the service will report its status. The valid range is 1 to 232. See Grass Valley Orchestration Protocol (GVOP), on page 247 for Domain information.
Network Interface(s)	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this is empty and all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Address	Text box. Enter RollCall address to uniquely identify the service in the GV Orbit system. It will be used when the service publishes event log data. See RollCall Address, **on page 243** for information about RollCall address. The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore the default RollCall address for the service. Default: F110:01:0A

Table 16-1: Relay Service - *System Settings (continued)*

Setting	Description
Unit Name	Text box. Enter a name for the **Relay** service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Clear	Button. Click to restore the default name for the service.

Setup Screen

The **Setup** screen lists zero or more **Relay** task configurations; new items can be created quickly and edited. Each item is a task performed by the **Relay** service.

A **Relay** task passes selected data one way from one (source) Domain to one (destination) Domain. For passing data in both directions, two **Relay** tasks are required, one in each direction.

Relay task configuration items   Click **Edit** to modify a   Click **Delete** to delete
                                        configuration item.   a configuration item.

Click **Cancel Change** to cancel changes made.

Click **Save Change** to save changes made.

Click **Add Config** to create a new
Relay task configuration item.

Fig. 16-5: Relay Service - Setup Screen (Example Relay Task Configurations Shown)

New Relay Task Configuration

To create a new **Relay** task configuration:

1 Click **Add Config**.

A new, unconfigured item is added to the list.

2 Click **Edit** for the (new) item on the list.

A **Configuration** dialog is shown. See Figure 16-6.

3 Configure the **Relay** task item. See Configure Relay Task, on page 204.

4 Click **Apply** when configuration settings changes are done.

Configure Relay Task

A relay task requires the following information to be configured:

• Use case - I.e. this defines the selected GVOP message data type(s) to be relayed.

• Source (**From**) and destination (**To**) locations - I.e: Domain ID number; GV Orbit server network interface(s) for the relay task to use; and Device IP addresses to use (if no multicast is enabled).

This is done in the **Relay** service's **Configuration** dialog. See Figure 16-6.

Click **Apply** to save configuration changes made.

Click **Cancel** to cancel changes made.

Fig. 16-6: Relay Service - Configuration Dialog

Table 16-2: Relay Service - *Configuration Dialog*

Setting	Description
Description	Text box. Enter a text description of the **Relay** task.
From:	A **Relay** task passes selected messages one-way: • **From** a source GVOP Domain. • To a destination GVOP Domain.
Domain	Text box. Enter the Domain number of the *source* Domain. See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains.
Interface(s)	Drop-down box. Click in the cell and select the GV Orbit server network interface(s) for the service to use for the *source* of data messages to relay. More than one interface may be selected. **Note:** By default this cell is empty, in this case, all network interfaces will be used by the service.
Peer Address List	Text box. A list of comma-separated IP addresses for the service to connect to for *source* data. The IP address of a GV Orbit server which is running another Relay service may be specified, allowing Relay services to be chained together. **Note:** Leave this field empty if multicast addressing is enabled on the network. In this case, all Domain members will be contacted.
To:	A **Relay** task passes selected messages one-way: • From a source GVOP Domain. • **To** a destination GVOP Domain.
Domain	Text box. Enter the Domain number of the *destination* Domain.
Interface(s)	Drop-down box. Click in the cell and select the GV Orbit server network interface(s) for the service to use for the *destination* of relayed data messages. More than one interface may be selected. By default this cell is empty, in this case, all network interfaces will be used by the service.

Table 16-2: Relay Service - Configuration Dialog (continued)

Setting	Description
Peer Address List	Text box. A list of IP addresses for the service to connect to. The IP address of a GV Orbit server which is running another Relay service may be specified, allowing Relay services to be chained together. **Note:** Leave this field empty if multicast addressing is enabled on the network. In this case, all Domain members will be contacted. **Note:** For the IP Routing use case (see Relay Task Configuration Use Cases, on page 206), multicast discovery is not used and is disabled on the 'to' side. For this use case, enter a list of client computers running GV Orbit Client. (Alternatively, leave this field blank and point each GV Orbit Client at this Relay service's GV Orbit server IP address.)
Common Configurations	Drop-down box. The drop-down list presents **Relay** task use cases. Select a use case; this selects the data type to be relayed by the **Relay** task. See Relay Task Configuration Use Cases, on page 206.
Apply	Button. Click to apply changes made in the dialog.

Relay Task Configuration Use Cases

Use cases which can be selected in the **Relay** service's **Setup** configuration screen in the 'Common Configurations' drop-down box are described here:

Alarms *from* GV Orbit *to* a 'Version 3' MV-8xx Multiviewer

Relay alarms *from* GV Orbit Monitoring system *to* a version 3 MV8xx Multiviewer (I.e. to a version 3.x or earlier MV-8 Series multiviewer.)

The use case interfaces to a MV-8 series multiviewer device running v3.x software.

It translates messages from a GV Orbit system *to* such a multiviewer device, includes translating from GV Orbit message format to Orbit 3.x message format. The relaying is in one direction only.

Log Server data *from* a 'Version 3' MV-8xx Multi-viewer to GV Orbit

Relay Log Server data *from* a version 3 MV8xx Multi-viewer to GV Orbit Monitoring system (I.e. from a version 3.x or earlier MV-8 Series multiviewer.)

The use case interfaces to a MV-8 series multiviewer device running v3.x software.

It translates messages to a GV Orbit system *from* such a multiviewer device, includes translating from Orbit 3.x message format to GV Orbit message format. The relaying is in one direction only.

Relay IP Routing data between different networks

This **Relay** service configuration translates IP routing GVOP messages and data from one GV Orbit system or network *to* another GV Orbit system or network. The relaying is in both directions.

This configuration supports the following use cases for a GV Orbit system:

- Controlling routing for 'in-band' control devices from 'out of band'.

  Control of 'in-band' IP endpoint devices from GV Orbit Client running on computers with only 'out-of-band' network access.

  IP routing GVOP messages on a 'Media' network are relayed onto the 'Control/Management' network, removing the need for a GV Orbit Client to have direct access to the 'Media' network when used for IP Routing applications.

- Extend the reach of IP routing messages.

  IP routing GVOP messages from all of the distributed IP devices can be presented on a single network. Messages are relayed by the **Relay** service as uni-cast messages, rather than multi-cast; this may travel through IP switches and across, for example, a VPN connection in cases where multi-cast does not.

Note: For this IP Routing **Relay** service use case, multicast discovery is disabled on the 'To' side. This avoids accidentally polluting the 'to' side with data and/or recursive discovery issues. Because all the IP endpoints have been brought together, automatic discovery is unnecessary.

Note: The **Relay** service does not pass 'ping' traffic. Therefore, for GV Orbit Clients configuring IP endpoints via a **Relay** service, the 'Connection Scan' feature of the GV Orbit 'Network' project will not work properly from that client.

GV Orbit Network Project

When using the IP Routing configuration in the **Relay** service to enable GV Orbit Client to control IP endpoints, any GV Orbit Network project's setup must be modified to connect to IP endpoint devices via the **Relay** service.

To modify the GV Orbit Network project's setup in GV Orbit Client:

1 In the router workflow tab, click on the 'IP Configuration and Spreadsheet Import' icon to open the Network project tab.

2 Click on the **Comms Setup** button to open the **Comms Setup** dialog. See Figure 16-7.

Comms Setup button

Comms Setup dialog

'Connections Options' pane
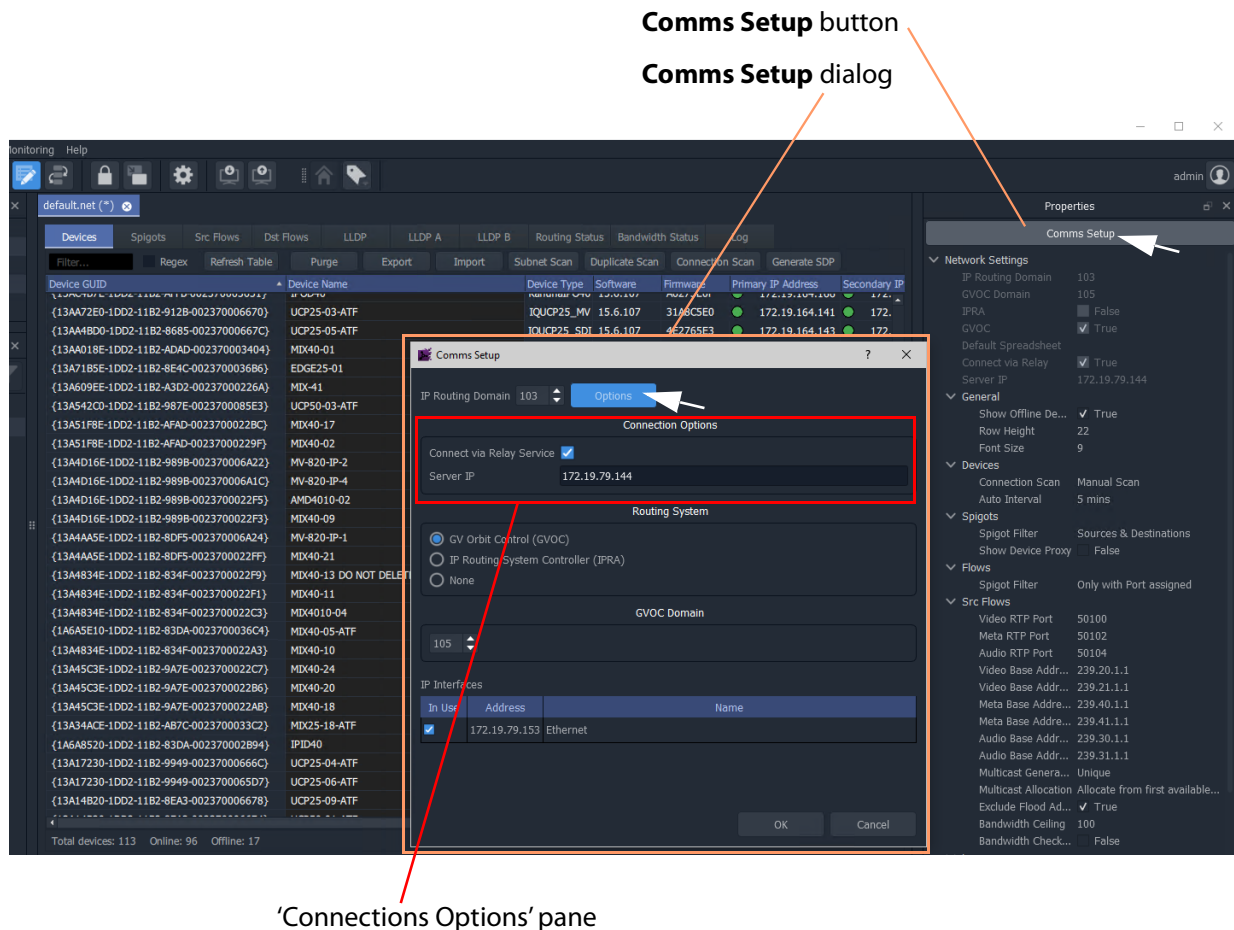
Fig. 16-7: Comms Setup Button and Dialog in a GV Orbit Network Project

In the **Comms Setup** dialog:

3   Click the **Options** button to show the 'Connection Options' pane in the dialog.

4   Select 'Connect via Relay Service'.

5   Enter the 'Server IP' address of the GV Orbit server that is running the **Relay** service to connect to.

6   Click **OK**.

This has modified the GV Orbit Network project to connect via the **Relay** service.

Repository Manager Service

Purpose

The **Repository Manager** service runs on a GV Orbit server computer. It manages repositories of GV Orbit projects for the GV Orbit system. There is one project per repository. Access is provided for GV Orbit clients and other GV Orbit services (for example, for the **Map View** service and for the **Web Renderer** service).

Repositories on the GV Orbit server ensure the same project (and same version of the project) is used and is running throughout a GV Orbit system.

System Screen
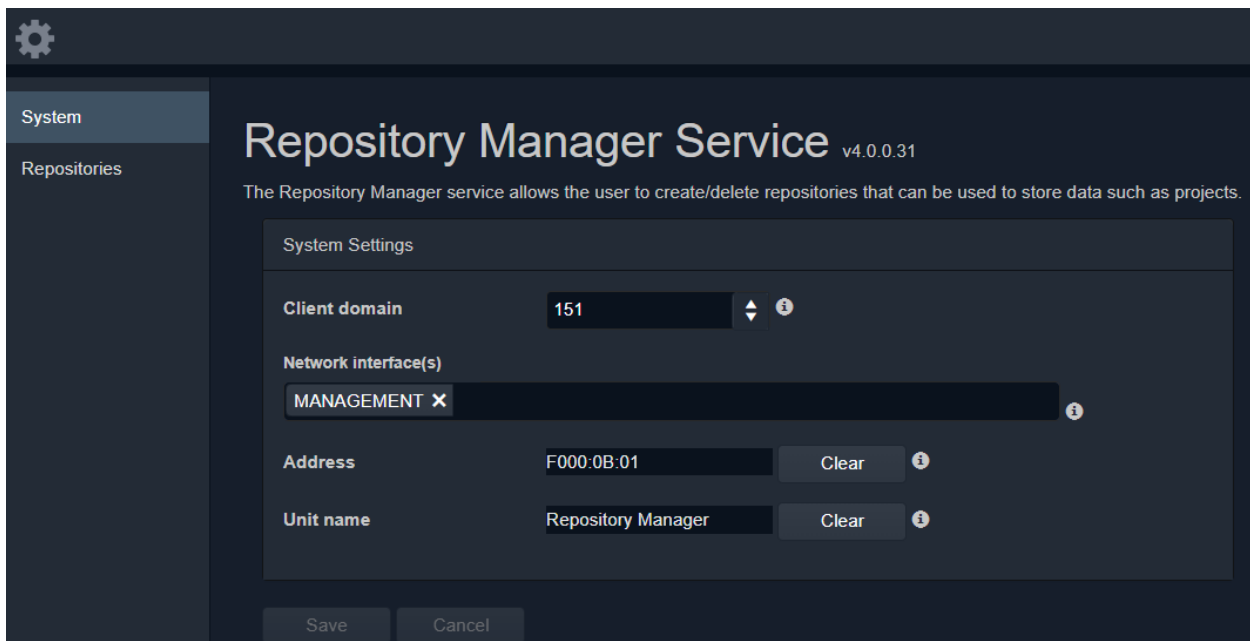
Fig. 17-1: Repository Manager Service - System Screen

Table 17-1: Repository Manager Service - *System Settings*

Setting	Description
Client Domain	Text box. Enter a GVOP domain number for the system's client domain. This is the domain on which the service will report its status. The valid range is 1 to 232. See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains.
Network Interface(s)	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Address	Text box. Enter a RollCall address to use for the **Repository Manager** service. This will uniquely identify the service in the GV Orbit system. This will be used when the service publishes its own event log data. See RollCall Address**, on page 243** for information about RollCall address. The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore the default RollCall address for the service. Default: F110:01:0B
Unit Name	Text box. Enter a name for the **Repository Manager** service, a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Clear	Button. Click to restore the default name for the service.

Repositories Screen

> **Note:** **Repositories** are system-specific items.

All repositories on the GV Orbit server are listed on the **Repositories** screen. The list can be sorted alphabetically and displayed items can be filtered. A new repository can be created and an existing one can be deleted.

Click to **Save Changes** made on this screen.

Click to **Cancel Changes** made on this screen.

Click **+New** to create a **New Repository** item.

Click to **Delete** the item

Indicates a change has been made, but not yet saved.

Page navigation bar
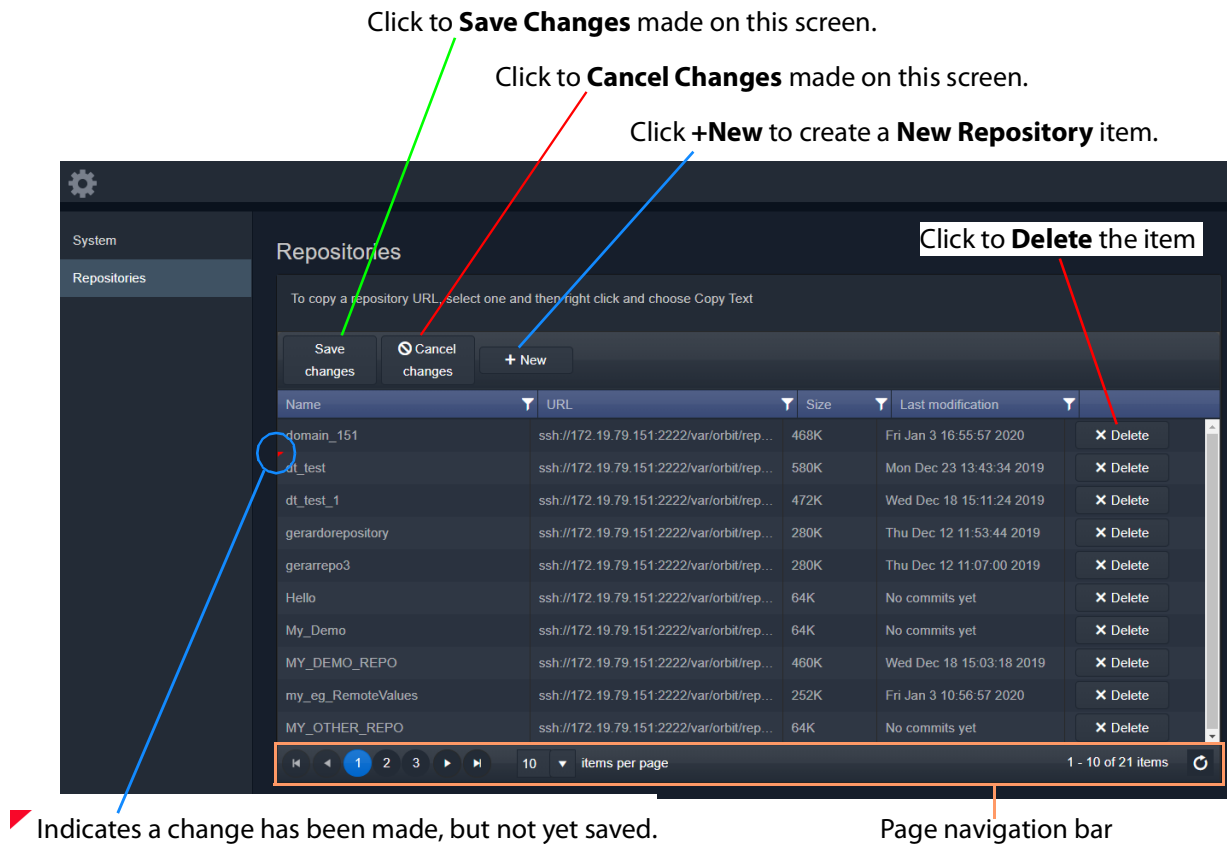
Fig. 17-2: Repositories Screen

Table 17-2: Repositories Screen - Column Headings

Column Heading	Description
Name	Name of the **Repository**.
URL	URL of the **Repository** on the GV Orbit server. (Read-only) To copy the URL: • right-click on the URL item; and • select 'Copy Text'.
Size	Size of the **Repository** (bytes). (Read-only)
Last Modification	Time/date when a GV Orbit project was last pushed to the **Repository**. (Read-only)

New Repository

A new **Repository** can be created and added to the list. This is done from the GV Orbit server on the **Repository Manager** service's **Repositories** screen.

> **Note:**
> A new **Repository** can also be created on the server from the GV Orbit Client application: Click 'Connections -> GV Server' in the main menu, and create a new **Repository** in the 'Setup' dialog.

To create a new **Repository** from the **Repositories** screen:

1 Click **+New**.

A new, blank row item is created in the list.

New, blank row item
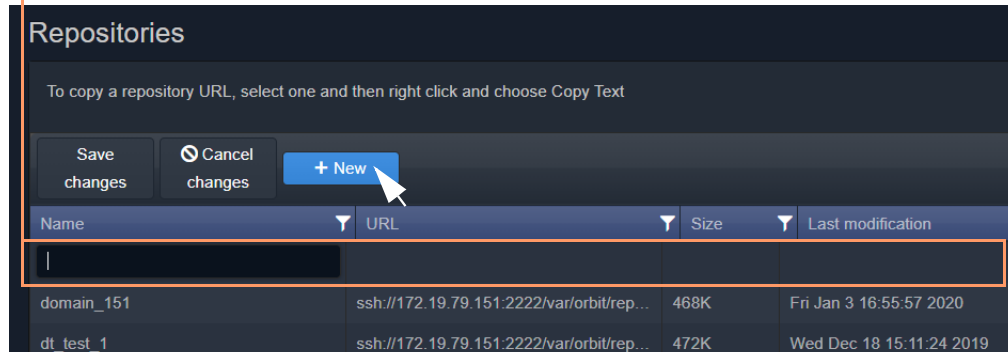
Fig. 17-3: New Repository Row Item

2 Enter a name for the new **Repository**.
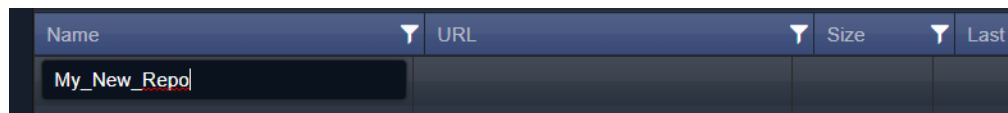
Fig. 17-4: Enter Repository Item Name

3 Press Enter when done.
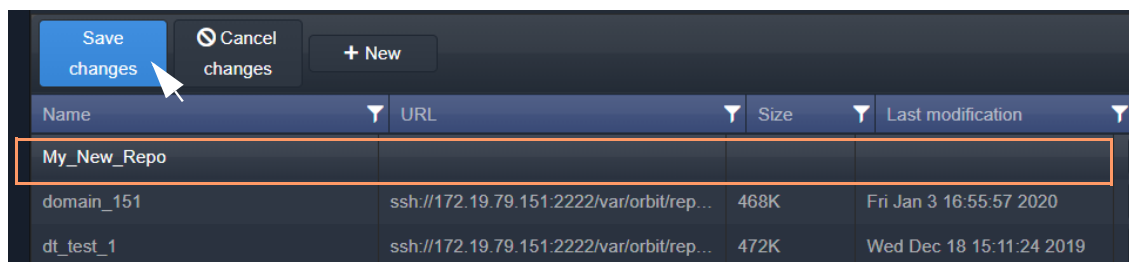
Fig. 17-5: Save New Row Item

4 Press **Save Changes**.

The new row item is added into the sorted list and given a URL. See Figure 17-6a.

a) New Repository Item.

b) After a GV Orbit C&M project has been pushed to the Repository.

Fig. 17-6: New Repository Item:
a) New Repository Item.
b) After a Push.

The new **Repository** has not had a project pushed to it yet and the 'Last Modification' column reads 'No commits yet'. After a project 'push' to a repository, the 'Last Modification' column shows the time and date of the 'push'. See Figure 17-6b.

Column Sorting

Click on a column heading to toggle between A-Z and Z-A alphabetical sorting of the presented **Repositories** list items.

a) A-Z sorting of **Repository** list

b) Z-A sorting of **Repository** list

Fig. 17-7: Sorting Repositories List:
a) A-Z sorted.
b) Z-A sorted.

Column Filtering

The presented **Repository** list items may be filtered on columns.

Column Filter

1 Click on the filter icon ( ) in a column heading.
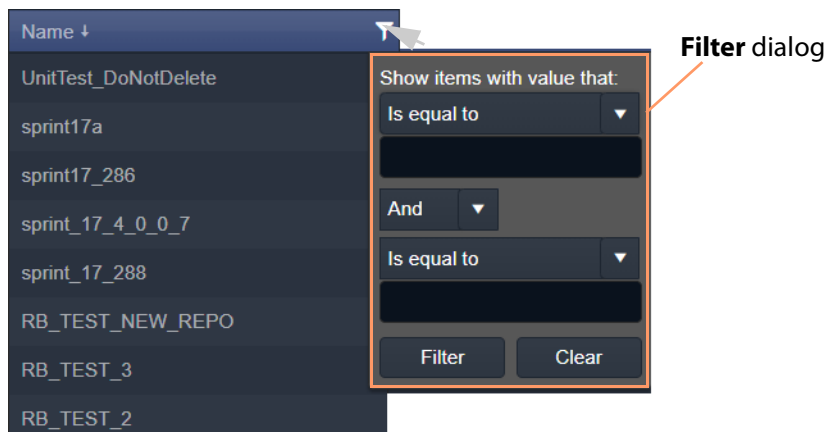
A **Filter** dialog is shown. See Figure 17-8.

Fig. 17-8: Filter Dialog

2 Set up the filter condition in the dialog. (See Filter Conditions, on page 216 for more information.)

3 Click **Filter** to apply the filtering.

The presented items in the list are filtered.
While filtering is being done, the filter icon in the column heading changes color, indicating filtering is being applied to the column.

Filter icon indicates filtering on these columns

Fig. 17-9: Filtered List

Clear a Column Filter

To clear a column filter:

1 Click **Clear** in the column's **Filter** dialog.

Filter Conditions

Two filter conditions may be entered into a **Filter** dialog. The conditions can be combined in an 'AND' or in an 'OR' way.
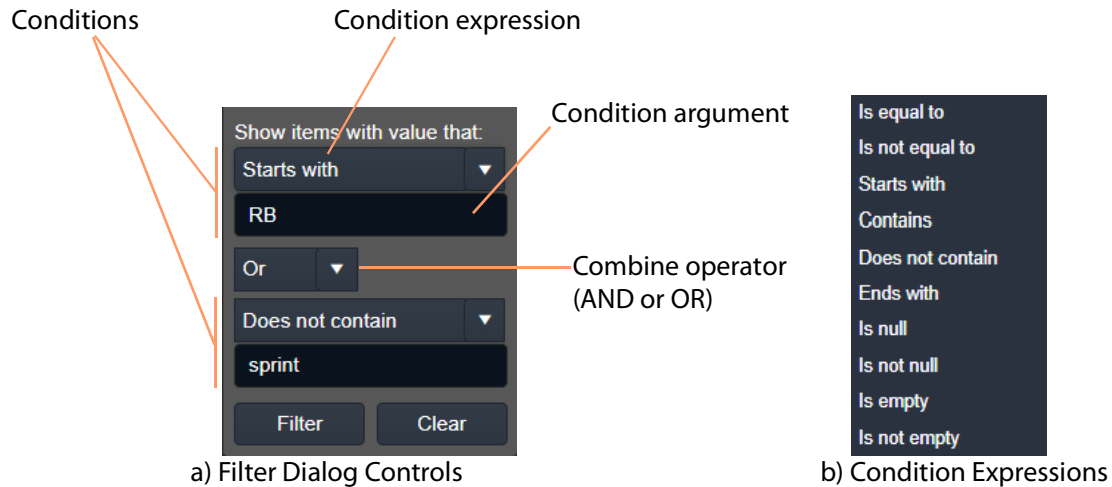
Conditions   Condition expression

Condition argument

Combine operator
(AND or OR)

a) Filter Dialog Controls   b) Condition Expressions

Fig. 17-10: Filter Dialog: a) Controls; b) Condition Expressions.

Filter Example

This example filters on the **Name** column and shows the items whose **Name**:

- starts with 'RB'; or
- does not contain 'sprint'.

To filter on a **Name** column:

1   Click on the filter icon in the **Name** column heading to show the **Filter** dialog.

In the **Filter** dialog:

2   Click on the first, 'condition expression' drop-down box, see Figure 17-11a.

3   Select a condition expression in the drop-down list. See Figure 17-11b.
     ('Starts with')

4   Enter 'condition argument' text.
     ('RB')

5   Click on the 'combine operator' drop-down box and select an operator. See Figure 17-11c.
     ('OR')

6   Select a second condition expression in the drop-down list.
     ('Does not contain')

7   Enter condition argument text for the second condition.
     ('sprint')

8   The completed filter set up is shown in Figure 17-11d.

9   Click **Filter** to apply this filter.
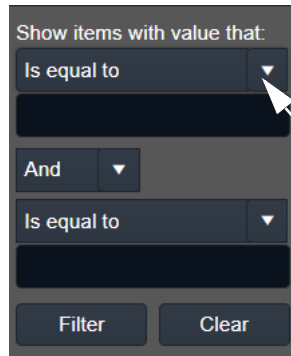
a) Filter dialog
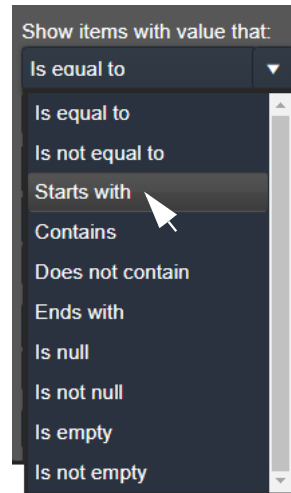
b) Condition expression
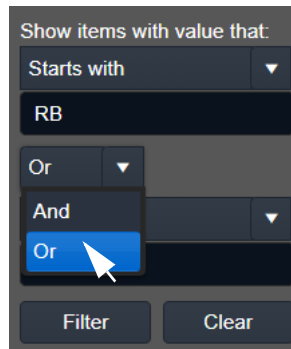
c) Combining operator

d) Filter conditions set up

Fig. 17-11: Example Setting Up Filter Dialog
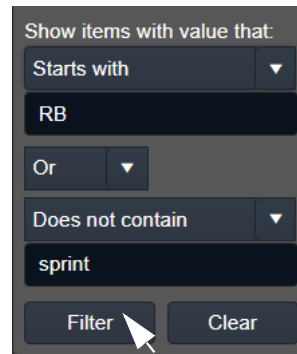
Routing Service

Introduction

The **Routing** service provides a translation between dedicated routing protocols and a router controller for GV Orbit clients and services. The **Routing** service connects to a router controller device using either the NP0017 or SW-P-08 Grass Valley protocols. And GV Orbit soft router control panels connect to the **Routing** service.

The service also enables the state of all routings and routing levels (i.e. every crosspoint in the routing system) to be saved as a 'snapshot'. These can be saved and recalled, providing the ability to control and to change a GV Orbit routing system on-the-fly.

Typically, this is the
GV Orbit Control application
running on the GV Orbit server
using the NP0017 protocol.
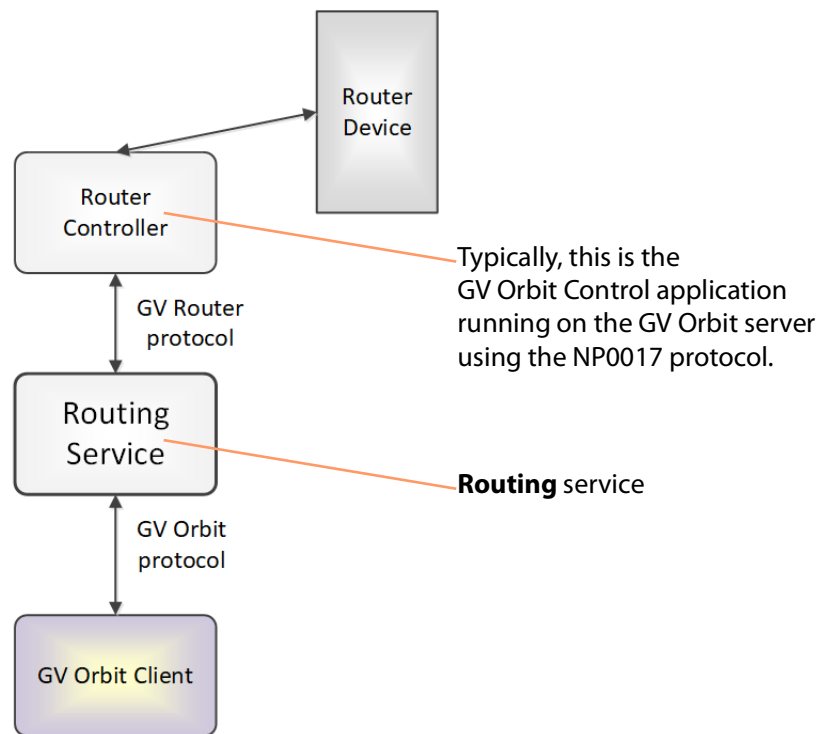
Routing service

Fig. 18-1: GV Orbit Routing Service

CAUTION
Routing service settings should only be changed by a GV Orbit system administrator.

System Screen

See Table 18-1, on page 220.

See Routing Service Settings, on page 220.

See Router Control Settings, on page 221.

See Name Length Selection Settings, on page 222.

See SW-P-08 Settings (SW-P-08 Connection Only), on page 222.

Press **Cancel** to discard changes to settings.

Press **Save** to apply changes made to setting items on the configuration screen.

Fig. 18-2: GV Orbit Routing Service - System Screen

Table 18-1: System Settings

Setting	Description
Client Domain	Text box. Enter a GVOP domain number that the **Routing** service will use (i.e. the GV Orbit 'Client' domain). Messages published onto this domain will be logged. The valid range is 1 to 232. See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains. **Note:** If the GV Orbit Client and **Routing** service are on different GVOP domains they cannot see each other's data.
Network Interface(s)	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).

Routing Service Settings

Table 18-2: Routing Service Settings

Setting	Description
Logging Address	Text box. Enter RollCall address for the **Routing** service to use to log its state. This will uniquely identify the service in the GV Orbit system. The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore the default RollCall address for the service. Default: F110:01:06
Logging Name	Text box. Enter a user-definable name for the unit, to be a human-readable identifier for the **Routing** service.
Clear	Button. Click to restore the default name for the service.

Router Control Settings

Note:
For router control using the **GV Orbit Control** application on the GV Orbit server, then the default settings suffice.

However,
for router control using some other, external router controller,
then these settings are system-specific.

Router Controller Connection Settings

Table 18-3: Router Controller Connection Settings

Setting	Description
IP	Text box. The IP address of the device that the 'router controller' is running on. Typically, the router controller is the GV Orbit **Control** application running on the GV Orbit server in the system. In this case, **IP** should be left at its default loop-back IP address (127.0.0.1) setting. **Note:** In some systems, this may be need to be set up by the GV Orbit system administrator to be some other device running a router controller.
Clear	Button. Click to clear the text box.

Port	Text box.
	The IP port number to use to connect to the router controller.
	
	Note: The IP port number is specific to the router controller type and, typically, is defined for a specific protocol.
	
	Router control connection protocols:
	• **NP0017** (default) - GV Orbit services use IP port number 9194 upwards for routing. IP port number:
	  • 9194 is used for GV Orbit Control routing 'Area 1';
	  • 9195 is used for 'Area 2';
	  • 9196 is used for 'Area 3'; etc.
	• **SW-P-08** - GV Orbit services use IP port number 2000.

Connection Protocol	Drop-down box. Select the router control protocol to use by the **Routing** service for its router controller connection(s). The service supports the following protocols: • **NP0017** ('NP17') (default) • **SW-P-08**
Connection Status	Text box (read-only). Displays the status of the connection to the router controller.

Name Length Selection Settings

Table 18-4: GV Orbit Routing Service - Name Length Selection Settings

Setting	Description
Name Length	Drop-down box. Select '8 Character Names' or 'Extended Names' to be used for the router signal names. When in: • 'NP0017' mode - **Routing** service will use names longer than 8 characters. (Default) • 'SW-P-08' mode - **Routing** service will use 32-character names when in the 'Extended Names' mode.

SW-P-08 Settings (SW-P-08 Connection Only)

The table below describes the SW-P-08 settings of the **Routing** service configuration screen of

> **Note:**
> These settings only apply for a SW-P-08 protocol connection to a router controller.

Table 18-5: SW-P-08 Settings

Setting	Description
Matrix	Text box. Enter the router matrix number on the router controller for the **Routing** service to connect to.
Levels	Text box. Enter a CSV list of levels indexes and, optionally, names that the **Routing** service should retrieve. Not all levels may require control by the **Routing** service. This list specifies which levels and their names. **Note:** Levels in a router are normally numbered from 1 onwards and may route SDI signals *or* audio signals. Enter CSV items in the format: Index:Name for example: `1:video,2:metadata,3:aud1,4:aud2`
Reset	Button. Click to set to '1'.
Use Level Names	Check box. Select how router signal ports are named. • **Yes** - use a port's 'association' name. **Note:** The association name for a port will not vary depending on which level you are accessing. • **No** - use the 'level' name. **Note:** Level names vary depending on the router matrix level being accessed.

Snapshots Screen

A snapshot can be taken of all the routes in a routing system (i.e. the sources that are connected to all destinations), including any shuffles and breakaways.

The **Routing** service's **Snapshots** screen contains a table showing all snapshots, with the snapshot name and the data/time of creation.
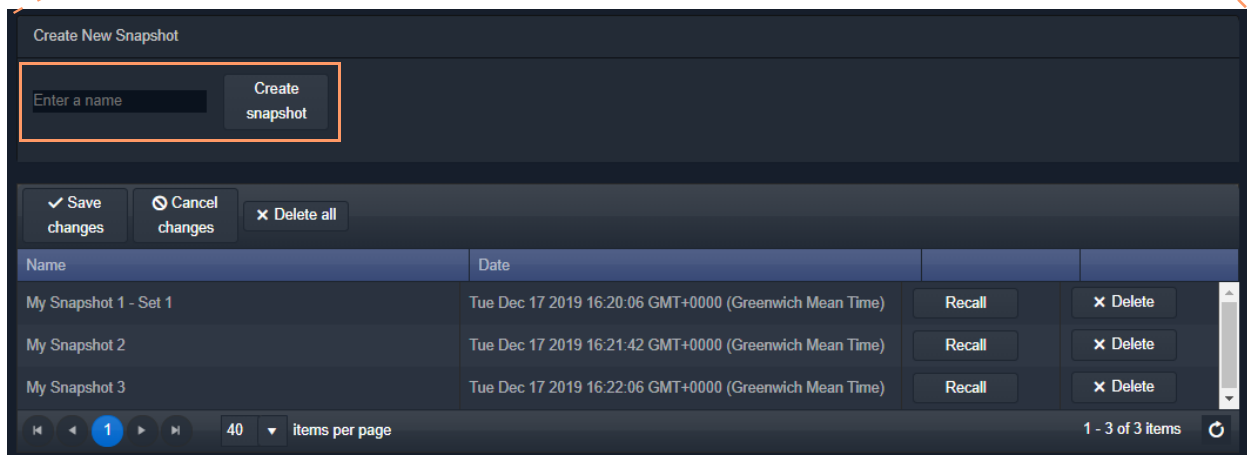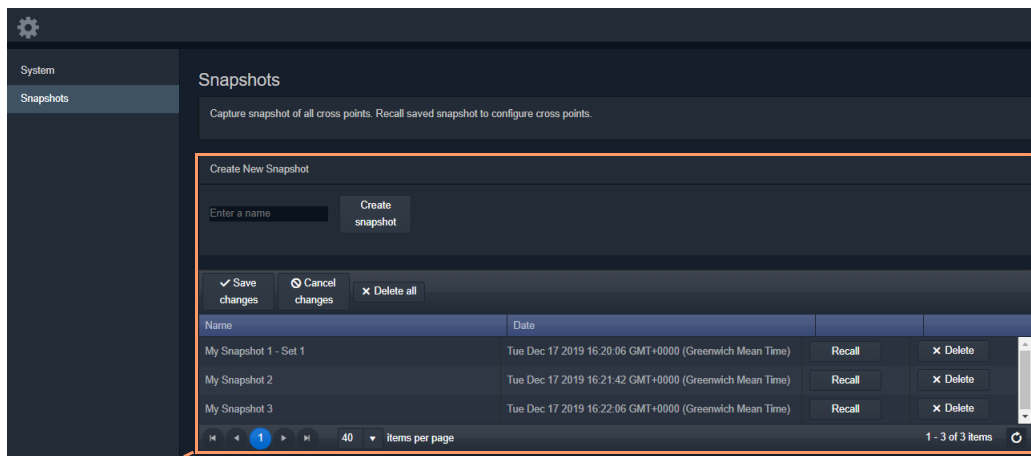

Fig. 18-3: Routing Service Snapshots Screen

Create a New Snapshot

To create a new snapshot:

1 Enter name in **Create New Snapshot** text box.

2 Click **Create Snapshot**.

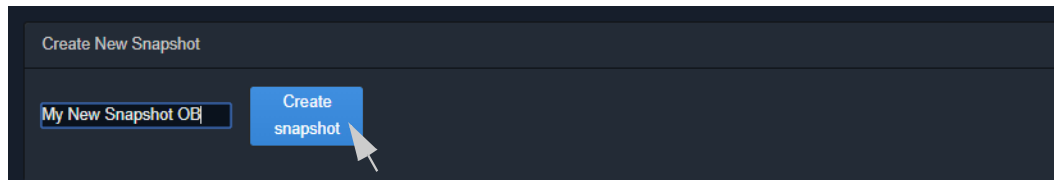   The sources routed to each destination are saved (including all levels if 'shuffle' and 'breakaway' are involved).

Fig. 18-4: Create Snapshot

Recall Snapshot

To recall a saved snapshot:

1   Select the snapshot in the list.

2   Click **Recall**.

The saved snapshot of route connections is recalled. All routing 'crosspoints' will be set as per the saved configuration.
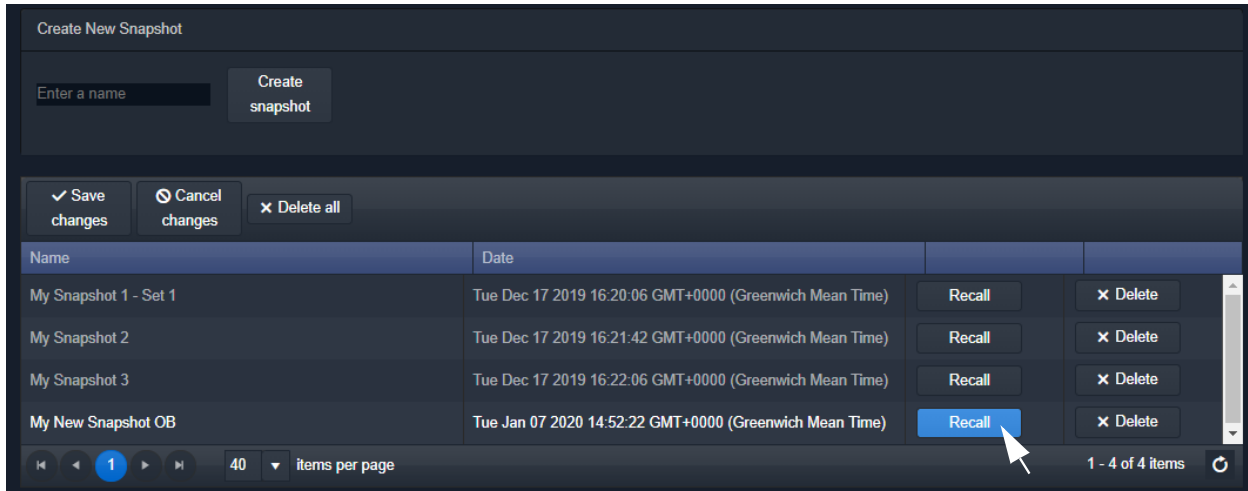

Fig. 18-5: Recall Snapshot

> **Note:**
>
> Destinations that were not routed when a snapshot was created will not be modified when the snapshot is recalled. These destinations are unaffected by the recall and remain routed to their current sources.

Delete Snapshot

Snapshots can be deleted individually or all can be deleted in one go.

To delete a snapshot:

1   Select the snapshot in the list.

2   Click **x Delete**.

To delete all snapshots:

•   Click **x Delete All**.

Rename a Snapshot

To rename a snapshot:

1 Click on the snapshot **Name** item in the list.

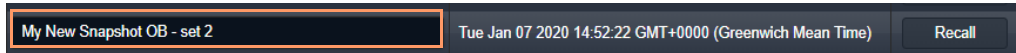2 Enter a new name. (See Figure 18-6.)

Fig. 18-6: Enter New Snapshot Name

And press Return.

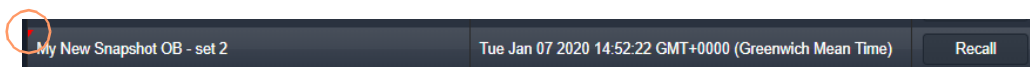The change to the list item is marked with a small red triangle; the item needs saving.

Fig. 18-7: Snapshot Name Changed but Change Not Saved

3 Click **Save Changes**. (See Figure 18-8.)

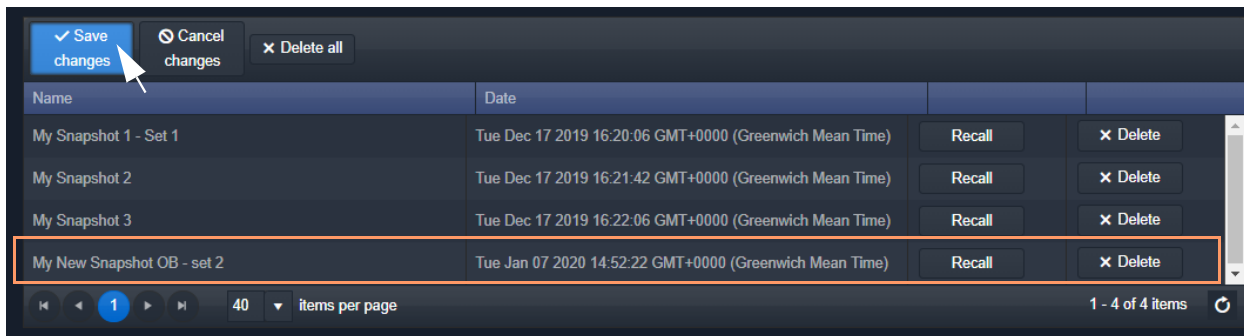(To cancel any changes made, click **Cancel Changes**.)

Fig. 18-8: Snapshot Name Changed and Saved

SNMP Service

Introduction

The GV Orbit **SNMP** service lists and manages SNMP connections to devices from a GV Orbit system. It provides device status and information to the system for supported devices, permitting device monitoring.

Devices must be added to the **SNMP** service's **SNMP Devices** list. Devices are assigned a RollCall address and are then discoverable by a GV Orbit system. Discovered devices are presented in the GV Orbit Client **Network** window and device alarm and status information may be inspected.

Supported devices:

- GV Fabric commercial-off-the-shelf IP switch.

SNMP Service RollCall Address Range

The SNMP service will use a new, automatic RollCall address for each device added. The RollCall address range used is:

F110:01:11   to   F110:01:FF

The RollCall address can be changed by the user when adding a device, if required.

Recommendation:
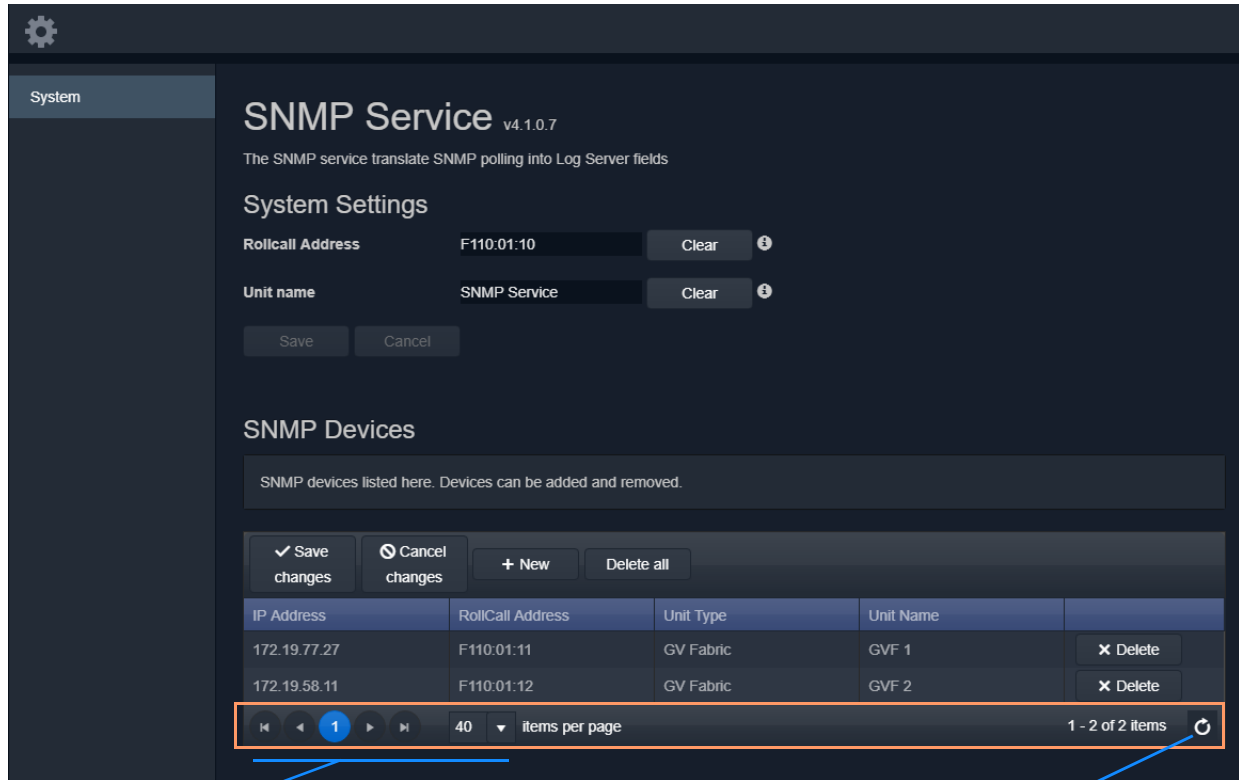Keep the SNMP service RollCall address range clear when using automatically assigned RollCall addresses for added SNMP devices.

System Screen

The **SNMP** service configuration screen is shown in Figure 19-1.

Fig. 19-1: SNMP Service - System Screen

Table 19-1: SNMP Service - System Settings

Setting	Description
RollCall Address	Text box.
	Enter RollCall address to use for the **SNMP** service. This will uniquely identify the service in the GV Orbit system. This will be used when the service publishes its own log data.
	See RollCall Address Setting, on page 89, and RollCall Address, on page 243, for information about RollCall address.
	The user is free to define the RollCall addresses for a system.
Clear	Button.
	Click to restore default RollCall address for the service.
	Default: F110:01:10

Table 19-1: SNMP Service - System Settings (continued)

Setting	Description
Unit Name	Text box. Enter a name for the **SNMP** service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Clear	Button. Click to restore default name for the service.

SNMP Devices List

Supported SNMP devices must be added to the list managed by the service. The list is presented with a selectable number of items per page. Pages are navigated using the controls at the bottom of each list page.

Table 19-2: SNMP Devices List Controls

Setting	Description
+New	Button. Add a new SNMP device item.
Delete All	Button. Delete all list items.
Save Changes	Button. Save changes made to the list. Changes include additions to the list or deletions.
Cancel Changes	Button. Cancel any changes made to the list.
Delete	Button, per row item. Delete the list row item.

Adding an SNMP Device

This example adds a GV Fabric IP switch.

1 Click **+New**.

A new row item is shown.

> **Note:** The **RollCall Address** column is automatically filled in with the next RollCall address in the SNMP service's RollCall address range. The address can be edited and changed, if required.

RollCall address automatically filled in for a new item. This may be edited.

Fig. 19-2: New, Blank SNMP Device Item

2 Enter the IP address of the device to be added in the **IP Address** column.

3 If required, modify the device's RollCall address in the **RollCall Address** column.

4 Enter a name for the added device in the **Unit Name** column.
Use a human-readable name to appear in the **Network** window of GV Orbit.

5 Click **Save Changes**.
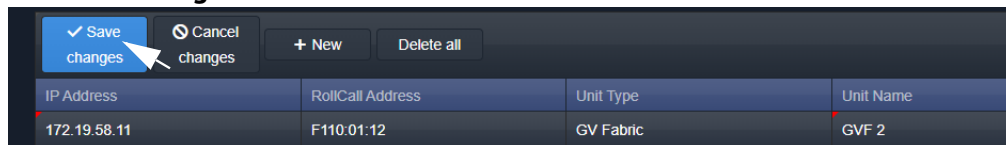
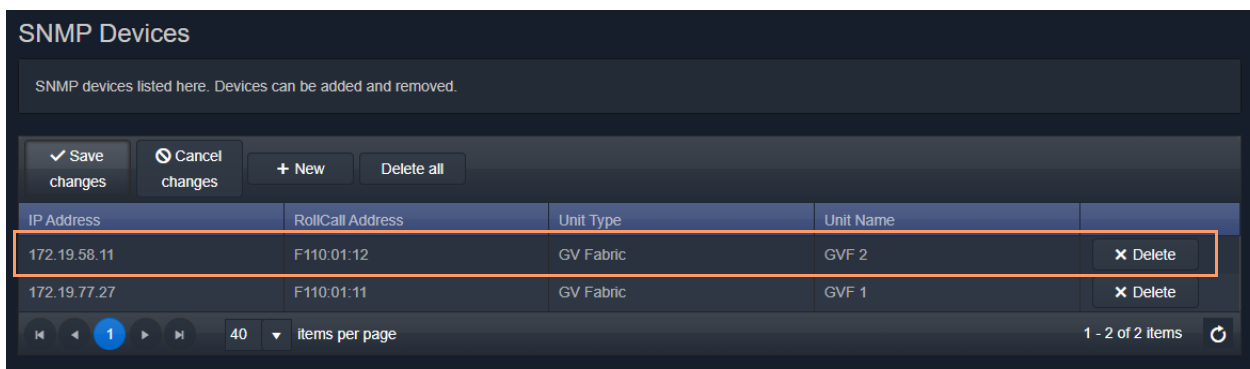The SNMP device is added to the **SNMP Devices** list.

Fig. 19-3: New SNMP Device Item

View GV Fabric Device in Network Window

Once a device is added to the SNMP service's list, it appears in the GV Orbit Client's **Network** window, ordered by the device's RollCall address. (In this example, the SNMP service RollCall address is F110:01:10 and the added device is set to be F110:01:12.)
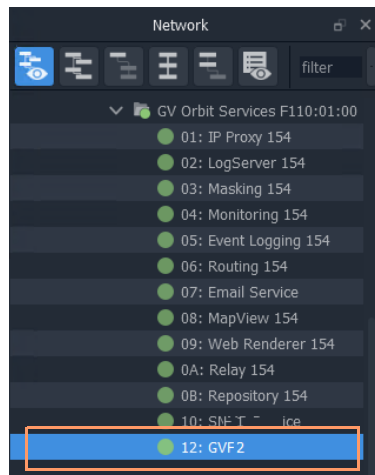
Fig. 19-4: Added SNMP Device in Network Window

To view GV Fabric information:

1 Right-click on the **Network** window item and select 'Alarm List'.

The **Alarm List** window is displayed for the device.

Fig. 19-5: Alarm List Window Example

GV Fabric Device Information

Device information presented in the **Alarm List** window includes:

- Unit's serial number, name and location.
- Unit's overall state (GV Orbit alarm state - OK, Warning, Error).

- Unit ID number, ID name, description, up time.
- Software/firmware version.
- RollCall address, IP address.
- CPU loading.
- LAN IP port status, speed and settings; storage status.
- Health: Cooling fan speed, temperature; PSU current, power, voltage.
- SNMP configuration.

Web Renderer Service

Introduction

Users are able to design and create custom graphical 'control-and-monitoring' operator panels using the GV Orbit Client application. These custom user panels can be deployed within the GV Orbit Client tool to control/monitor devices in a GV Orbit system. Additionally, these custom operator panels can be deployed in a web browser allowing users to control/monitor via a web browser.

With the **Web Renderer** service configured, its **Web View** tool facility can be used from a web browser. This loads up a GV Orbit control and monitoring (C&M) project and translates its custom user panels into HTML5 and displays the panels in a web browser.

> IMPORTANT
>
> For the **Web Renderer** service, use a finished and working GV Orbit C&M project which has its 'Home schematic' set (see Web View Example, on page 236).

New custom user panels can then be rolled out easily by just updating the GV Orbit project on the repository on the GV Orbit server.

> **Note:**
>
> The **Web Renderer** service supports the Chrome web browser.
>
> > Version: 77.0.3865.75 (Official Build) (64-bit)
> >
> > Available from: https://www.google.com/chrome/

> CAUTION:
>
> Use of other browsers may result in incorrect rendering of the C&M custom user panels.

Web View Tool

Web Renderer service configuration screen provides access to a **Web View** tool from a web browser. This tool loads up an existing GV Orbit C&M project and translates its custom user panel(s) into HTML5 for display in the web browser.

Like custom user panels when they are running in the GV Orbit Client application, the **Web View** tool uses the other GV Orbit services (such as Masking, Monitoring, Map View, Event Logging, Log Server etc.) to run the user panels successfully; this enables the rendered user panels to be populated with the correct data values and alarm states etc.

The **Web View** tool will also run any logic that is embedded in a custom panel. However, any 'Global logic' belonging to the C&M project (i.e. logic contained in GV Orbit .globalx files) is still executed by the **Map View** service; and n*ot* by the **Web View** tool.

See Web View Example, on page 236, for an example using **Web View** from a C&M project.

System Screen
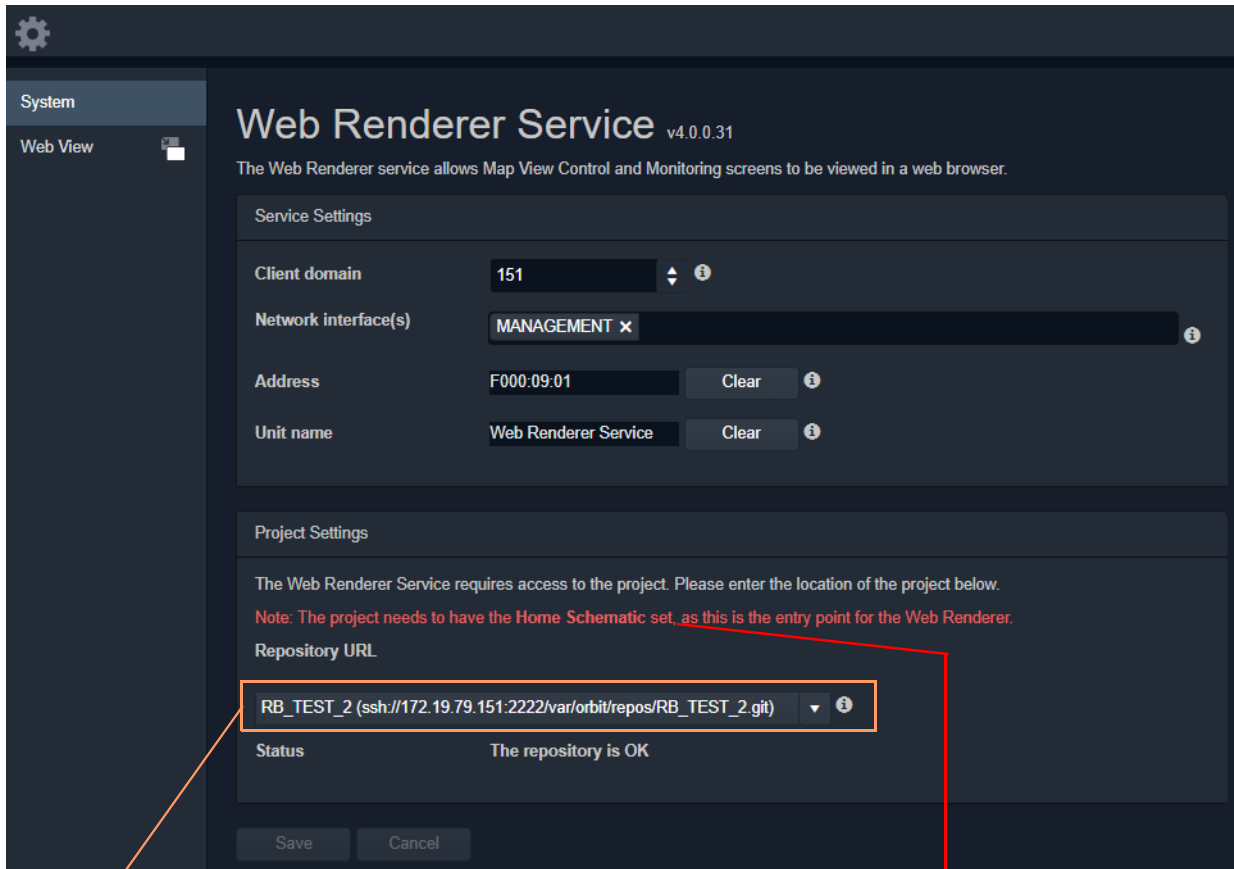
Web Renderer service must be told which GV Orbit C&M project to use from the **Repository**.

See , on , for how to set the '*Home Schematic*' for a C&M project in GV Orbit Client.

Fig. 20-1: Web Renderer - System Screen

Table 20-1: GV Orbit Web Renderer Service Settings

Setting	Description
Service Settings:	
Client Domain	Text box. Enter a GVOP domain number that the **Web Renderer** service will use (usually the 'Client' domain). Messages published onto this domain will be logged. The valid range is 1 to 232. See Grass Valley Orchestration Protocol (GVOP), on page 247 for information on Domains. **Note:** If the GV Orbit Client and service are on different GVOP domains they cannot see each other's data.
Network Interface(s)	Drop-down box. Click in the cell and select the server network interface(s) for the service to use. More than one interface may be selected. By default this cell is empty, in this case, all interfaces will be used by the service. (See Network Interface(s) Setting, on page 88.) **Note:** When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s).
Address	Text box. Enter RollCall address to use for the service. This will uniquely identify the service in the GV Orbit system. See RollCall Address, on page 243 for information about RollCall address. The user is free to define the RollCall addresses for a system.
Clear	Button. Click to restore the default RollCall address for the service. Default: F110:01:09
Unit Name	Text box. Enter a name for the service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Clear	Button. Click to restore the default name for the service.

Table 20-1: GV Orbit Web Renderer Service Settings (continued)

| Setting	Description
Project Settings:	The GV Orbit C&M project being connected to must have its 'Home schematic' set. This acts as an entry point into the custom user panel for the Web Renderer's **Web View** tool. See Web View Example, on page 236, for an example. Step 1: Set 'Home' in the C&M Project, on page 237, shows how to set the 'Home schematic' for a C&M project in GV Orbit Client. **Note:** These **Web Renderer** settings are system-specific.
Repository URL	Select the C&M project's **Repository** on the GV Orbit server. **Note:** The service must be told where the GV Orbit C&M project is and have network access to it.
Status	Shows status of the service's connection to the **Repository**.

Web View Tool

With the **Web Renderer** service configured,
to access the **Web View** tool in a web browser:

1 Click on the **Web View** side-tab.

   A new tab is opened in the web browser inviting the user to log into a GV Orbit project. See Figure 20-2.
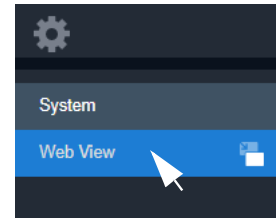
   > **Recommendation:**
   > View the **Web Renderer** service's configuration page from a web browser when using the **Web View** tool.
   > If the **Web Renderer** service's configuration page is viewed from within GV Orbit Client, then a Web View tool tab will not open and no web-view results.
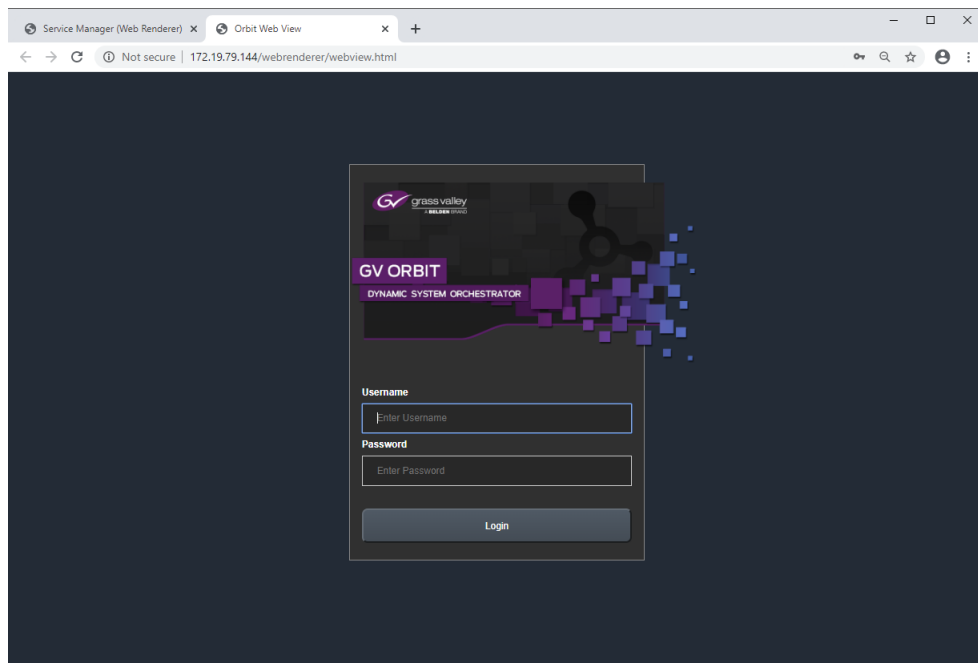
Fig. 20-2: Web View GV Orbit Project Login in Web Browser

See Web View Example, on page 236, for an example using **Web View** from a C&M project.

Web View Example

A finished and working GV Orbit C&M project is required. This must work in a GV Orbit control/monitoring system in the GV Orbit Client application. All other GV Orbit services must be set up in order for the project's custom user panels to show live data and function correctly etc.

The **Web Renderer** service will run any logic that is embedded in a custom user panel in order to render the panel. However, any global logic within a C&M project (contained in GV Orbit .globalx files) is not run by the service, instead, it is still executed by the **Map View** service.

This example shows the steps required to take a working C&M project and show its custom user panel(s) in a web browser.

Prerequisites

- A working GV Orbit C&M project.
- A working GV Orbit control and monitoring system with a GV Orbit server running GV Orbit services.
- Network access to stored GV Orbit C&M projects on the GV Orbit server.
- A client computer with the Chrome web browser installed.

Procedure

To see a GV Orbit C&M project custom user panel running in a web browser:

Step 1: Set 'Home' in the C&M Project

These steps need only be carried out once on the GV Orbit C&M project:

1 Open the working C&M project in GV Orbit Client.

2 Open the *top level* custom graphical user panel.
(Custom user panels are usually designed as a schematic hierarchy and the top level schematic will be used as the home entry point for the **Web View** tool into the custom user panels.)

3 In the main menu, click '**Project** -> **Set xxx as Home**'.

This sets the current open schematic to be the project's home schematic.

4 Click **Save Project**.

5 Click **Project -> Push** in the main menu.

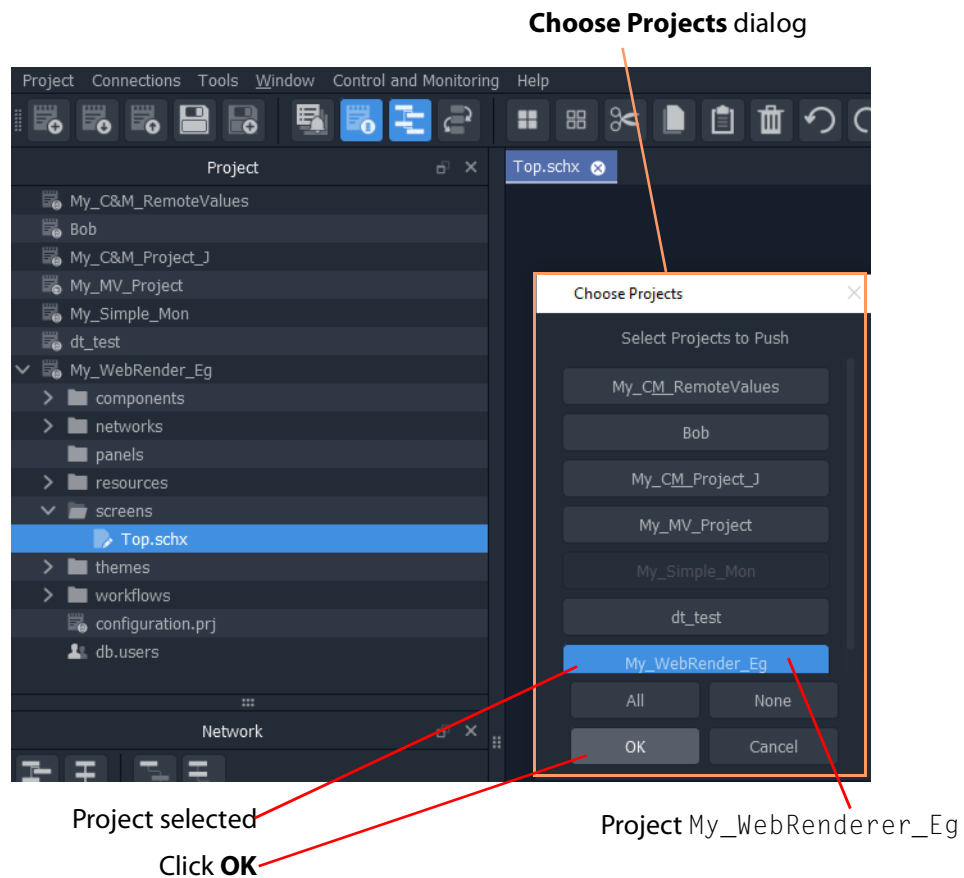The **Choose Projects** dialog is shown. See Figure 20-3.

Fig. 20-3: Choose Projects Dialog

6 Ensure the project name is selected in the **Choose Projects** dialog.

7 Click **OK**.

The project is pushed to the repository on the GV Orbit server.

8 A pop-up **Push** dialog informs the user when the project has been pushed successfully. Click **OK** in the pop-up to close it.

9 Close the GV Orbit Client.

This has prepared the GV Orbit C&M project for use with the **Web Renderer** service's **Web View** tool.

Step 2: Configure the Web Renderer Service

The following steps configure the **Web Renderer** service to point at the GV Orbit C&M project repository:

1 Open the **Web Renderer** service configuration screen on the GV Orbit server.

2 In the 'Project Settings' section, in the **Repository URL** drop-down list, select the URL of the C&M project to be used.
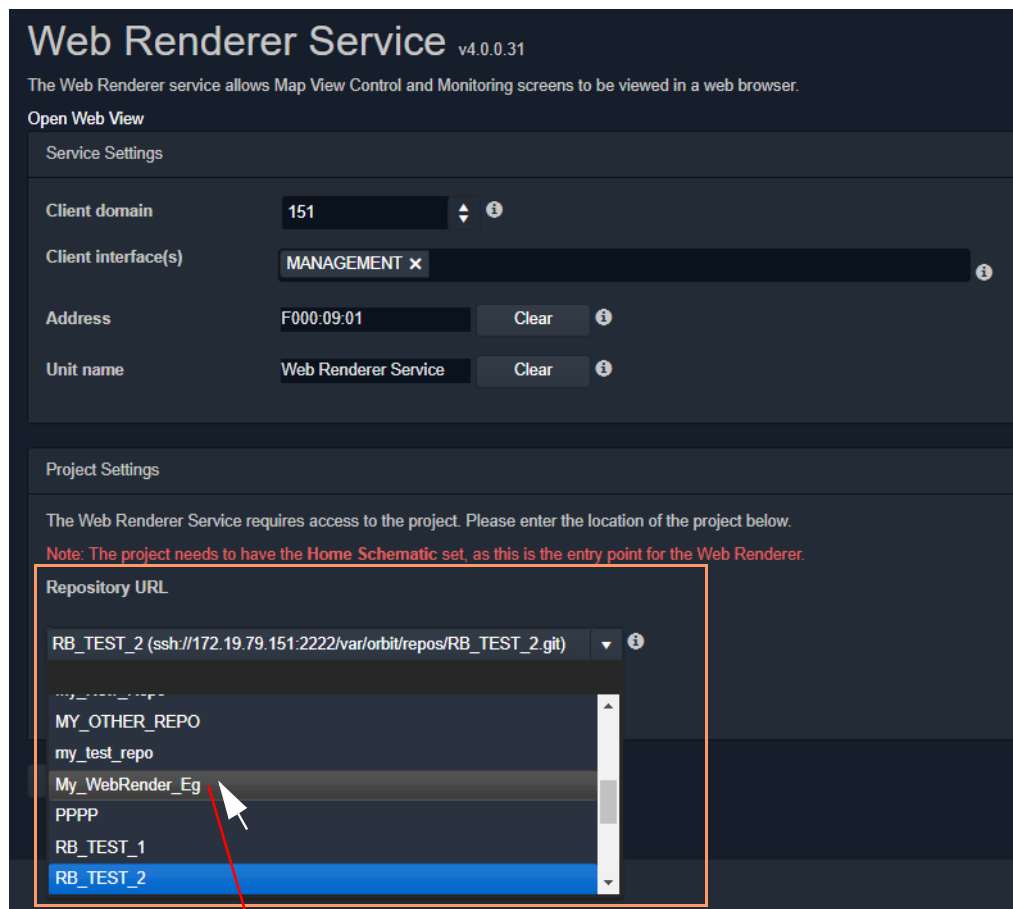
In drop-down list, select **Repository URL** for project `My_WebRenderer_Eg`

Fig. 20-4: Select Repository URL

This points the service at the C&M project.

3 Click **Save**.

The settings change is saved.

A pop-up dialog indicates when this is done.
Click **OK** to clear the pop-up dialog.

This has configured the **Web Renderer** service running on the GV Orbit server to look at the required GV Orbit C&M project.

Step 3: View Custom User Panel on Client Computer

The following steps can be performed on one or more client computers to yield more than one instance of the one custom graphical user panel. The same panel design may then be used by more than one operator to control/monitor system devices.

On a client computer:

1   Log into the GV Orbit server with a Chrome web browser.

2   View the **Web Renderer** service's configuration screen.

3   Click on the **Web View** side-tab.

4   Enter the C&M project's user name and password at the prompt.
    (User access to the project is the same as for opening the project in GV Orbit Client.)
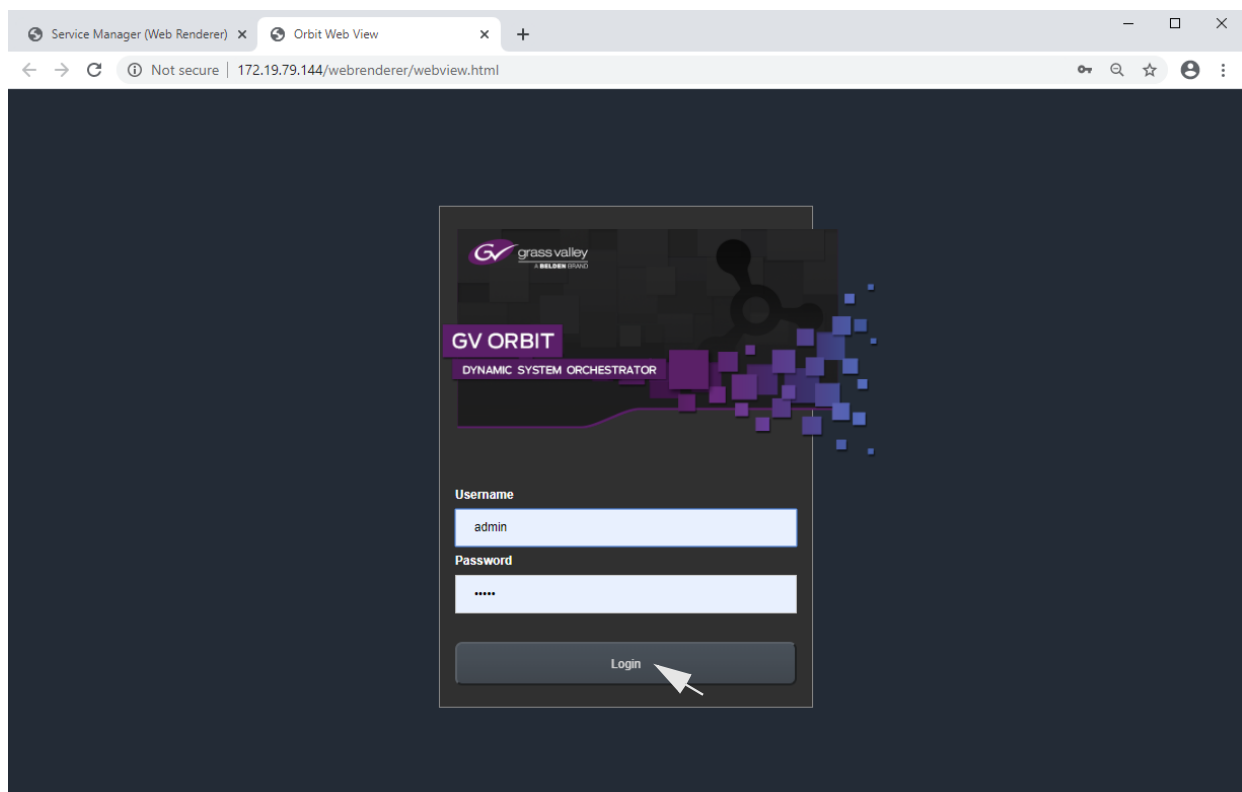
    See Figure 20-5.

Fig. 20-5: Web View C&M Project Login

5   Click **Login**.

    The **Web View** tool opens the C&M project and renders its 'Home schematic' into the web browser window. The custom user panel of the C&M project is shown in the web browser with live data. See Figure 20-6.
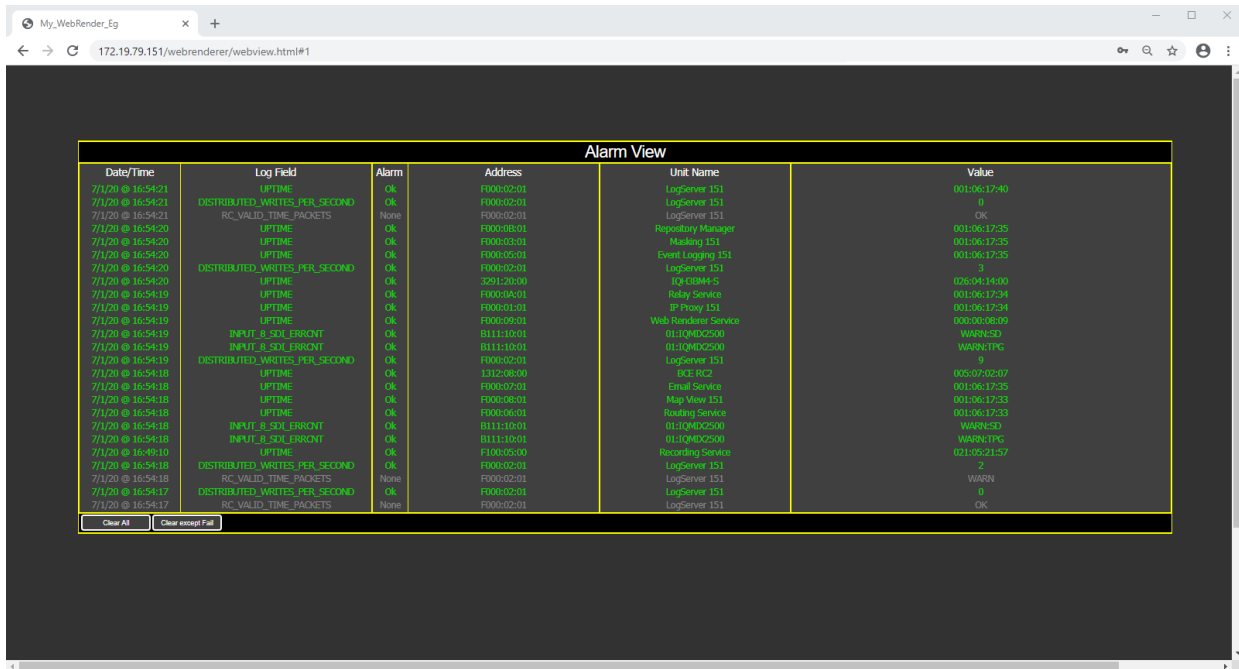
Fig. 20-6: C&M Project Custom User Panel Running in a Web Browser via Web View

The custom C&M project custom user panel can now be used. For comparison, the same project is shown in Figure 20-7 running in the GV Orbit Client application.
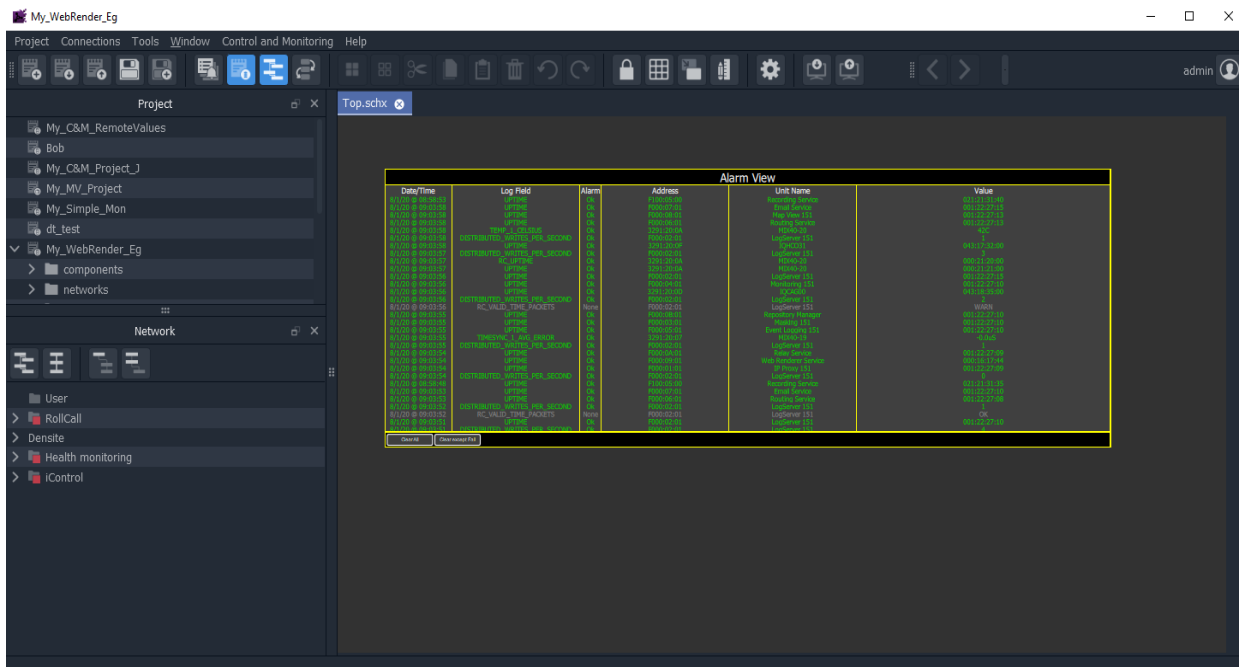

Fig. 20-7: C&M Project Custom User Panel Running in GV Orbit Client

Multiple Client Users and Projects

Multiple Users of the Same Project

One **Web Renderer** service installation can serve up a GV Orbit C&M project to more than one client user. Each client user must access the **Web Renderer** configuration screen from their (client) computer and click **Web View** to see and use the project custom user panel in their own web browser.

Multiple Different Projects

Each server installation of the **Web Renderer** service can only serve up one GV Orbit C&M project; it can do this to one or more client viewers. And there can only be one installation of a **Web Renderer** service on a GV Orbit server.

If there are one or more different GV Orbit C&M projects to be viewed and used via the **Web Renderer** service, then there must be one separate **Web Renderer** service installation on a separate server per project. Each **Web Renderer** service is then configured for a different project. Client users may then access any of the **Web Renderer** service's configuration screens and click **Web View** to view and use the corresponding C&M project operator panel.

Contact Grass Valley Professional Services for more information.

GV Orbit Addresses and Protocols

RollCall Address

A RollCall address is used by RollCall-protocol devices and by GV Orbit in a Grass Valley GV Orbit system. Addresses must be unique in a system.

Devices in a network that have the same RollCall 'network number' value will be placed within the same branch in the **Network** window in a GV Orbit Client. The address also defines the position of a device in the **Network** window.

RollCall Address Format

A RollCall address uses hexadecimal numbers, i.e. digits 0 to 9, A to F.

The RollCall address format is:

NNNN:UU:PP

Where:

NNNN - RollCall network number. Four hexadecimal digits.

UU - Unit/device number. Two hexadecimal digits.

PP - RollCall port. Two hexadecimal digits.

Network Number (NNNN) Form

The RollCall network number, NNNN, comprises four hexadecimal digits 0-F.

The original architecture of a RollCall system dictated that the network number, **NNNN**, may **only contain zero or more *trailing* zeros** and, additionally, that '0000' is not allowed. Thus, for example:

- ✓ 1000, 12D0, 1456, 2100 are *valid* RollCall network numbers.
- ✗ 1203, 0001, 0F00, 0000 are *invalid* network numbers.

Device Addressing

A Grass Valley IQ modular frame houses an IQ Gateway card and this is assigned a Network Number, NNNN, by an IP Proxy service. The unit/device number, UU, is defined on the Gateway card itself. The RollCall port number, PP, is determined by each modular slot in the IQ frame.

> **Note:**
> When connecting *directly* to an IQ frame, instead of via an IP Proxy service, then the Network Number part, NNNN, of the address is 0000.

For a Grass Valley MV-8 Series multiviewer (e.g. MV-821):

- The Network Number and Unit/device number are specified in the multiviewer's RollCall configuration/control screen (RollCall template).
- The RollCall Port number adopts the values 01 through to 48, corresponding to each of the 48 multiviewer video inputs.

Network Tree View

In a system, devices etc. are each assigned a RollCall address. These are presented in the GV Orbit Client's '**Network**' window as a tree-view. The RollCall address format governs the tree-view hierarchy presented. Addresses should be assigned to devices according to the required device grouping. For example, devices may be grouped according to location, function, or operation. This is normally done by the system architect.

The four 'Network Number' digits of the RollCall address (N_1 N_2 N_3 N_4) directly allow four levels of tree-view hierarchy. Hierarchy nodes may also be labeled.

This is shown in Figure A-1 with some specimen Network Numbers.

Devices

Network Number, NNNN $(N_1\ N_2\ N_3\ N_4)$

$N_1\ N_2\ N_3\ N_4$
'Letter-As' = 1 2 3 0

a) Devices and Nodes listed
in an **IP Proxy** service **Connections** Screen

Hierarchy parent nodes defined

Tree-view hierarchy
displayed

Network number for:

'AAA-2' = 1 2 3 5

b) Devices and Nodes listed
in a GV Orbit Client **Network** window tree-view

Fig. A-1: Generic Device Groupings Example:
a) In IP Proxy Service Connections.
b) in Network Window Tree-View.

RollCall Messages

RollCallv3

First generation of RollCall messages. Device status, logging and information is sent on this messaging system. Used on RollCall-protocol systems.

A RollCall address is used to uniquely identify RollCall-protocol Grass Valley devices when using the RollCallv3 protocol over Ethernet.

> **Note:**
> When the RollCallv3 protocol is used over (older) Grass Valley 'RollNet' connections (serial or 75 Ohm BNC), the network number portion, NNNN, of the RollCall address is used when routing messages across bridged 'RollNet' network segments.

RollCall+

This is the next generation of Grass Valley RollCall messaging system supported by some Grass Valley devices/units.

Grass Valley Orchestration Protocol (GVOP)

This is the next generation of Grass Valley messaging system; it is extended with many new messaging features for today's user applications. GVOP provides a common alarm functionality between RollCall-protocol and Densité-protocol devices.

Unique device identifiers are used in both cases. For:

- RollCall-protocol devices, it is the RollCall address; and for
- Densité-protocol devices, it is the Densité URL.

Used in a GV Orbit system, between GV Orbit, for processing alarm and log data information from devices and controlling IP endpoints.

GVOP Domain

Domains can be used to segregate data traffic on a common network or across one or more networks. In a GV Orbit system, there may be the following domains:

- a (main) 'Client' domain;
- a 'Log Server' domain; and
- a 'Routing' domain.

   (See Figure 6-3, GV Orbit Services Ecosystem Diagram with Domains, on page 75 in Chapter 6.)

These domains may be present on one network or across a pair of redundant networks, or they may be spread across different networks. For example, a 'Routing' domain controls device IP endpoints and may use in-band device control over high-speed media networks.

A domain is identified by a number in the range is 1 to 232. A domain value of zero, 0, is typically reserved for general device discovery and is not normally used for control data.

> **Note:**
> In a GVOP GV Orbit system, devices, GV Orbit clients and services should have the same domain number. If a device is on a different domain number, then it will not be seen/discovered.

Contact Us

Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1-530-478-4148.

To obtain a local phone number for the support center nearest you, consult the Contact Us section of Grass Valley's website (www.grassvalley.com).

An online form for e-mail contact is also available from the website.

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