GV ORBIT

VERSION 2.3.0

Admin Guide

13-03082-090 AL

2021-08-04

FCC Compliance

In order to comply with FCC/CFR47: Part 15 regulations, it is necessary to use high-quality, triple-screened Media or Monitor cable assemblies with integrated ferrite suppression at both ends.

Patent Information

This product may be protected by one or more patents.

For further information, please visit: www.grassvalley.com/patents/

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Title	GV Orbit Admin Guide

Part Number   13-03082-090 AL

Revision   2021-08-04, 00:30

Important Safety Information

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

Symbols and Their Meanings

Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Indicates that the user, operator or service technician should refer to the product manuals for important operating, maintenance, or service instructions.

This is a prompt to note the fuse rating when replacing fuses. The fuse referenced in the text must be replaced with one having the ratings indicated.

Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.

Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

Indicates that static sensitive components are present, which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Indicates that the equipment has more than one power supply cord, and that all power supply cords must be disconnected before servicing to avoid electric shock.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Canadian Standard Association (CSA) regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Intertek Testing Services regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley product means that it complies with all applicable European Union (CE) directives.

The presence of this symbol in or on Grass Valley product means that it complies with safety of laser product applicable standards.

Warnings

A warning indicates a possible hazard to personnel, which may cause injury or death. Observe the following general warnings when using or working on this equipment:

• Appropriately listed/certified mains supply power cords must be used for the connection of the equipment to the rated mains voltage.

• This product relies on the building's installation for short-circuit (over-current) protection. Ensure that a fuse or circuit breaker for the rated mains voltage is used on the phase conductors.

• Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only.

• Do not operate the equipment in wet or damp conditions.

• This equipment is grounded through the grounding conductor of the power cords. To avoid electrical shock, plug the power cords into a properly wired receptacle before connecting the equipment inputs or outputs.

• Route power cords and other cables so they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.

• Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.

• Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.

• High leakage current may be present. Earth connection of product is essential before connecting power.

• Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.

• To avoid fire hazard, use only the fuse type and rating specified in the service instructions for this product, or on the equipment.

- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Use proper lift points. Do not use door latches to lift or move equipment.
- Avoid mechanical hazards. Allow all rotating devices to come to a stop before servicing.
- Have qualified service personnel perform safety checks after any service.

Cautions

A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- This equipment is meant to be installed in a restricted access location.
- When installing this equipment, do not attach the power cord to building surfaces.
- Products that have no on/off switch, and use an external power supply must be installed in proximity to a main power outlet that is easily accessible.
- Use the correct voltage setting. If this product lacks auto-ranging power supplies, before applying power ensure that each power supply is set to match the power source.
- Provide proper ventilation. To prevent product overheating, provide equipment ventilation in accordance with the installation instructions.
- Do not operate with suspected equipment failure. If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.
- To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.
- This unit may have more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.
- Follow static precautions at all times when handling this equipment. Servicing should be done in a static-free environment.
- To reduce the risk of electric shock, plug each power supply cord into separate branch circuits employing separate service grounds.

Electrostatic Discharge (ESD) Protection

Electrostatic discharge occurs when electronic components are improperly handled and can result in intermittent failure or complete damage adversely affecting an electrical circuit. When you remove and replace any card from a frame always follow ESD-prevention procedures:

- Ensure that the frame is electrically connected to earth ground through the power cord or any other means if available.
- Wear an ESD wrist strap ensuring that it makes good skin contact. Connect the grounding clip to an *unpainted surface* of the chassis frame to safely ground unwanted ESD voltages. If no wrist strap is available, ground yourself by touching the *unpainted* metal part of the chassis.
- For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms.

- When temporarily storing a card make sure it is placed in an ESD bag.
- Cards in an earth grounded metal frame or casing do not require any special ESD protection.

Battery Handling

This product may include a backup battery. There is a danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Before disposing of your Grass Valley equipment, please review the *Disposal and Recycling Information* at:

http://www.grassvalley.com/assets/media/5692/Take-Back_Instructions.pdf

Cautions for LCD and TFT Displays

Excessive usage may harm your vision. Rest for 10 minutes for every 30 minutes of usage.

If the LCD or TFT glass is broken, handle glass fragments with care when disposing of them. If any fluid leaks out of a damaged glass cell, be careful not to get the liquid crystal fluid in your mouth or skin. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water. Never swallow the fluid. The toxicity is extremely low but caution should be exercised at all times.

Mesures de sécurité et avis importants

La présente section fournit des consignes de sécurité importantes pour les opérateurs et le personnel de service. Des avertissements ou mises en garde spécifiques figurent dans le manuel, dans les sections où ils s'appliquent. Prenez le temps de bien lire les consignes et assurez-vous de les respecter, en particulier celles qui sont destinées à prévenir les décharges électriques ou les blessures.

Signification des symboles utilisés

Signale la présence d'une tension élevée et dangereuse dans le boîtier de l'équipement ; cette tension peut être suffisante pour constituer un risque de décharge électrique.

Avertit l'utilisateur, l'opérateur ou le technicien de maintenance que des instructions importantes relatives à l'utilisation et à l'entretien se trouvent dans la documentation accompagnant l'équipement.

Invite l'utilisateur, l'opérateur ou le technicien de maintenance à prendre note du calibre du fusible lors du remplacement de ce dernier. Le fusible auquel il est fait référence dans le texte doit être remplacé par un fusible du même calibre.

Identifie une borne de mise à la terre de protection. Il faut relier cette borne à la terre avant d'effectuer toute autre connexion à l'équipement.

Identifie une borne de mise à la terre externe qui peut être connectée en tant que borne de mise à la terre supplémentaire.

Signale la présence de composants sensibles à l'électricité statique et qui sont susceptibles d'être endommagés par une décharge électrostatique. Utilisez des procédures, des équipements et des surfaces antistatiques durant les interventions d'entretien.

Le symbole ci-contre signifie que l'appareil comporte plus d'un cordon d'alimentation et qu'il faut débrancher tous les cordons d'alimentation avant toute opération d'entretien, afin de prévenir les chocs électriques.

La marque UL certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque C-CSA-US certifie que l'appareil visé a été testé par l'Association canadienne de normalisation (CSA) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque C-UL-US certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque ETL Listed d'Intertek pour le marché Nord-Américain certifie que l'appareil visé a été testé par Intertek et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

Le marquage CE indique que l'appareil visé est conforme aux exigences essentielles des directives applicables de l'Union européenne en matière de sécurité électrique, de compatibilité électromagnétique et de conformité environnementale.

Le symbole ci-contre sur un appareil Grass Valley ou à l'intérieur de l'appareil indique qu'il est conforme aux normes applicables en matière de sécurité laser.

Avertissements

Les avertissements signalent des conditions ou des pratiques susceptibles d'occasionner des blessures graves, voire fatales. Veuillez vous familiariser avec les avertissements d'ordre général ci-dessous :

- Un cordon d'alimentation dûment homologué doit être utilisé pour connecter l'appareil à une tension de secteur de 120 V CA ou 240 V CA.
- La protection de ce produit contre les courts-circuits (surintensités) dépend de l'installation électrique du bâtiment. Assurez-vous qu'un fusible ou un disjoncteur pour 120 V CA ou 240 V CA est utilisé sur les conducteurs de phase.
- Dans le présent manuel, toutes les instructions qui nécessitent d'ouvrir le couvercle de l'équipement sont destinées exclusivement au personnel technique qualifié.
- N'utilisez pas cet appareil dans un environnement humide.
- Cet équipement est mis à la terre par le conducteur de mise à la terre des cordons d'alimentation. Pour éviter les chocs électriques, branchez les cordons d'alimentation sur une prise correctement câblée avant de brancher les entrées et sorties de l'équipement.
- Acheminez les cordons d'alimentation et autres câbles de façon à ce qu'ils ne risquent pas d'être endommagés. Supportez correctement les enroulements de câbles afin de ne pas endommager les connecteurs.
- Coupez l'alimentation avant de nettoyer l'équipement. Ne pas utiliser de nettoyants liquides ou en aérosol. Utilisez uniquement un chiffon humide.
- Des tensions dangereuses peuvent exister en plusieurs points dans cet équipement. Pour éviter toute blessure, ne touchez pas aux connexions ou aux composants exposés lorsque l'appareil est sous tension.
- Avant de procéder à toute opération d'entretien ou de dépannage, enlevez tous vos bijoux (notamment vos bagues, votre montre et autres objets métalliques).
- Pour éviter tout risque d'incendie, utilisez uniquement les fusibles du type et du calibre indiqués sur l'équipement ou dans la documentation qui l'accompagne.
- Ne pas utiliser cet appareil dans une atmosphère explosive.
- Présence possible de courants de fuite. Un raccordement à la masse est indispensable avant la mise sous tension.
- Après tout travail d'entretien ou de réparation, faites effectuer des contrôles de sécurité par le personnel technique qualifié.

Mises en garde

Les mises en garde signalent des conditions ou des pratiques susceptibles d'endommager l'équipement. Veuillez vous familiariser avec les mises en garde ci-dessous :

- L'appareil est conçu pour être installé dans un endroit à accès restreint.
- Au moment d'installer l'équipement, ne fixez pas les cordons d'alimentation aux surfaces intérieures de l'édifice.
- Les produits qui n'ont pas d'interrupteur marche-arrêt et qui disposent d'une source d'alimentation externe doivent être installés à proximité d'une prise de courant facile d'accès.
- Si l'équipement n'est pas pourvu d'un modules d'alimentation auto-adaptables, vérifiez la configuration de chacun des modules d'alimentation avant de les mettre sous tension.

- Assurez une ventilation adéquate. Pour éviter toute surchauffe du produit, assurez une ventilation de l'équipement conformément aux instructions d'installation.
- N'utilisez pas l'équipement si vous suspectez un dysfonctionnement du produit. Faites-le inspecter par un technicien qualifié.
- Pour réduire le risque de choc électrique, n'effectuez pas de réparations autres que celles qui sont décrites dans le présent manuel, sauf si vous êtes qualifié pour le faire. Confiez les réparations à un technicien qualifié. La maintenance doit se réaliser dans un milieu libre d'électricité statique.
- L'appareil peut comporter plus d'un cordon d'alimentation. Afin de prévenir les chocs électriques, débrancher tous les cordons d'alimentation avant toute opération d'entretien.
- Veillez à toujours prendre les mesures de protection antistatique appropriées quand vous manipulez l'équipement.
- Pour réduire le risque de choc électrique, branchez chaque cordon d'alimentation dans des circuits de dérivation distincts utilisant des zones de service distinctes.

Protection contre les décharges électrostatiques (DES)

Une décharge électrostatique peut se produire lorsque des composants électroniques ne sont pas manipulés de manière adéquate, ce qui peut entraîner des défaillances intermittentes ou endommager irrémédiablement un circuit électrique. Au moment de remplacer une carte dans un châssis, prenez toujours les mesures de protection antistatique appropriées :

- Assurez-vous que le châssis est relié électriquement à la terre par le cordon d'alimentation ou tout autre moyen disponible.
- Portez un bracelet antistatique et assurez-vous qu'il est bien en contact avec la peau. Connectez la pince de masse à une *surface non peinte* du châssis pour détourner à la terre toute tension électrostatique indésirable. En l'absence de bracelet antistatique, déchargez l'électricité statique de votre corps en touchant une surface métallique *non peinte* du châssis.
- Pour plus de sécurité, vérifiez périodiquement la valeur de résistance du bracelet antistatique. Elle doit se situer entre 1 et 10 mégohms.
- Si vous devez mettre une carte de côté, assurez-vous de la ranger dans un sac protecteur antistatique.
- Les cartes qui sont reliées à un châssis ou boîtier métallique mis à la terre ne nécessitent pas de protection antistatique spéciale.

Manipulation de la pile

Ce produit peut inclure une pile de sauvegarde. Il y a un risque d'explosion si la pile est remplacée de manière incorrecte. Remplacez la pile uniquement par un modèle identique ou équivalent recommandé par le fabricant. Disposez des piles usagées conformément aux instructions du fabricant. Avant de vous séparer de votre équipement Grass Valley, veuillez consulter les *informations de mise au rebut et de recyclage* à:

http://www.grassvalley.com/assets/media/5692/Take-Back_Instructions.pdf

Précautions pour les écrans LCD et TFT

⚠️ Regarder l'écran pendant une trop longue période de temps peut nuire à votre vision. Prenez une pause de 10 minutes, après 30 minutes d'utilisation.

Si l'écran LCD ou TFT est brisé, manipulez les fragments de verre avec précaution au moment de vous en débarrasser. veillez à ce que le cristal liquide n'entre pas en contact avec la peau ou la bouche. En cas de contact avec la peau ou les vêtements, laver immédiatement à l'eau savonneuse. Ne jamais ingérer le liquide. La toxicité est extrêmement faible, mais la prudence demeure de mise en tout temps.

Environmental Information

European (CE) WEEE directive.

This symbol on the product(s) means that at the end of life disposal it should not be mixed with general waste.

Visit www.grassvalley.com for recycling information.

Grass Valley believes this environmental information to be correct but cannot guarantee its completeness or accuracy since it is based on data received from sources outside our company. All specifications are subject to change without notice.

If you have questions about Grass Valley environmental and social involvement (WEEE, RoHS, REACH, etc.), please contact us at environment@grassvalley.com.

Lithium Batteries
Battery Warning

CAUTION
This equipment contains a lithium battery.
There is a danger of explosion if this is replaced incorrectly.
Replace only with the same or equivalent type.
Dispose of used batteries according to the manufacturer's instructions.
Batteries **shall only** be replaced by trained service technicians.

Your Grass Valley equipment usually comes with at least one button battery located on the main printed circuit board. The batteries are used for backup and should not need to be replaced during the lifetime of the equipment.

Battery Disposal

Before disposing of your Grass Valley equipment, please remove the battery as follows:

1 Make sure the AC adapter / power Cord is unplugged from the power outlet.
2 Remove the protective cover from your equipment.
3 Gently remove the battery from its holder using a blunt instrument for leverage such as a screwdriver if necessary. In some cases the battery will need to be desoldered from the PCB.
4 Dispose of the battery and equipment according to your local environmental laws and guidelines.

WARNING
- Be careful not to short-circuit the battery by adhering to the appropriate safe handling practices.
- Do not dispose of batteries in a fire as they may explode.
- Batteries may explode if damaged or overheated.
- Do not dismantle, open or shred batteries.
- In the event of a battery leak, do not allow battery liquid to come in contact with skin or eyes.
- Seek medical help immediately in case of ingestion, inhalation, skin or eye contact, or suspected exposure to the contents of an opened battery.

Laser Safety - Fiber Output SFP and QSFP Modules Warning

LASER SAFETY

CLASS 1
LASER PRODUCT

The average optical output power does not exceed 0 dBm (1mW) under normal operating conditions. Unused optical outputs should be covered to prevent direct exposure to the laser beam.

Even though the power of these lasers is low, the beam should be treated with caution and common sense because it is intense and concentrated. Laser radiation can cause irreversible and permanent damage of eyesight. Please read the following guidelines carefully:

- Make sure that a fiber is connected to the board's fiber outputs before power is applied. If a fiber cable (e.g. patchcord) is already connected to an output, make sure that the cable's other end is connected, too, before powering up the board.

- **Do not** look in the end of a fiber to see if light is coming out. The laser wavelengths being used are totally invisible to the human eye and can cause permanent damage. Always use optical instrumentation, such as an optical power meter, to verify light output.

Mains Supply Voltage

Before connecting the equipment, observe the safety warnings section and ensure that the local mains supply is within the rating stated on the rear of the equipment.

Safety and EMC Standards

This equipment complies with the following standards:

Safety Standards

CE

Information Technology Equipment - Safety Part 1

EN60950-1: 2006

Safety of Information Technology Equipment Including Electrical Business Equipment.

UL1419 (4th Edition)

Standard for Safety – Professional Video and Audio equipment (UL file number E193966)

EMC Standards

This unit conforms to the following standards:

EN55032:2015 (Class A)

Electromagnetic Compatibility of multimedia equipment - Emission requirements

EN61000-3-2:2014 (Class A)

Electromagnetic Compatibility - Limits for harmonic current emissions

EN61000-3-3:2013

Electromagnetic Compatibility - Limits of voltage changes, voltage fluctuations and flicker

EN55103-2:2009 (Environment E2)

Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2. Immunity

> **WARNING**
> This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

FCC / CFR 47:Part 15 (Class A)

Federal Communications Commission Rules Part 15, Subpart B

Caution to the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
	This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
	Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC Performance of Cables and Connectors

Grass Valley products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the metal shell.

SIGNAL/DATA PORTS

For unconnected signal/data ports on the unit, fit shielding covers. For example, fit EMI blanking covers to SFP+ type ports; and fit 75 Ω RF terminators to BNC type ports.

COAXIAL CABLES

Coaxial cables connections (particularly serial digital video connections) shall be made with high-quality double-screened coaxial cables such as Belden 8281 or BBC type PSF1/2M, Belden 1694A (for 3Gbps), and Belden 4794A (for 12Gbps).

Table of Contents

1 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
13-03082-090	GV Orbit Admin Guide (this document)
13-03082-170	GV Orbit Client 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 302.

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

2
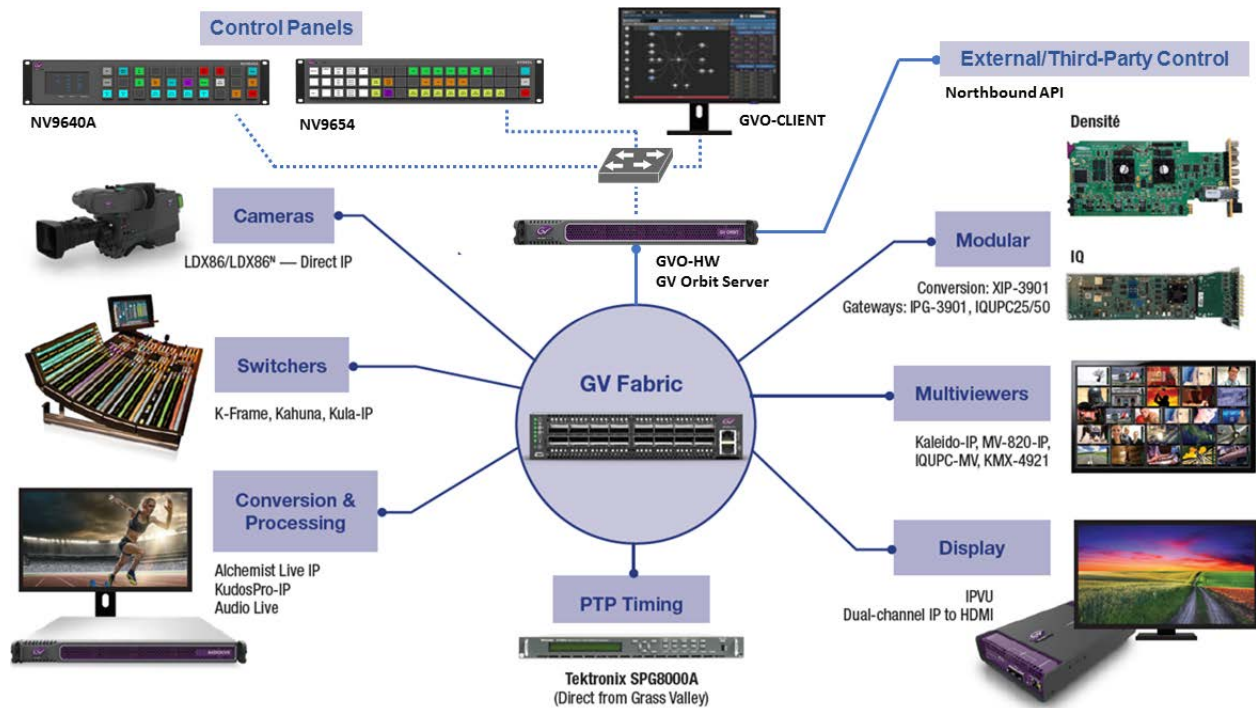
GV Orbit Server Installation

Introduction

GV Orbit Server	GV Orbit VM
●	

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

If you are using a Virtual Machine host, see GV Orbit Software Installation on a VM, on page 33 instead.

Getting Organized / Unpacking

Required Materials

Your GV Orbit Server package includes the following:

- One GV Orbit Server (model XR2)
- 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 management port for each GV Orbit Server **GB1** port. See:
    - XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server.
  - 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 52.
  - 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.

- 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 52 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.
- Client PC (refer to the *GV Orbit Release Notes* for client PC requirements; see Related Documentation, on page 25).
- 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

XR2 Model

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; see About the Server's Information Tag, on page 30.
[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)

Item	Description
[14] NIC PCIe 3.0 Slots	RJ45 10GBase-T port (×4) or Intel X710 Quad Port 10Gb SFP+
[15] VGA	VGA Connector (×1)
[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 25.

About the Server's Information Tag

On the front of the server is a pull-out tag that contains information that uniquely identifies the server. The Service Tag number is used for support and GV Orbit licensing purposes. The Service Tag number is also found on the server's shipping box.

Typical Server Information Tag.
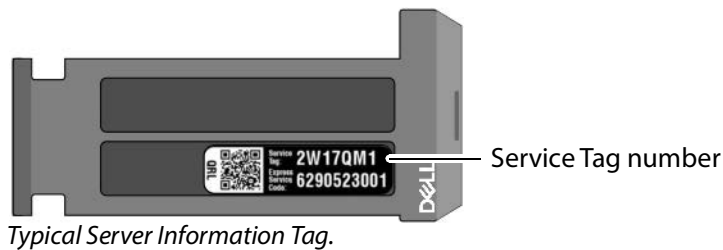
Mechanical Installation

Setting up the GV Orbit Server Hardware

To set up the GV Orbit Server hardware

1 Install the GV Orbit Server:

   • For an XR2 model GV Orbit Server: Refer to the *Dell EMC PowerEdge XR2 Installation and Service Manual* (see Related Documentation, on page 25) 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 52.

GV Orbit Software Installation on a VM

Introduction

GV Orbit Server	GV Orbit VM
	●

This chapter provides information about system requirements, and it will guide you through GV Orbit software installation on a Virtual Machine (VM) server.

If you have purchased a GV Orbit Hardware Server, see GV Orbit Server Installation, on page 27 instead.

Note: Throughout this user guide, the GV Orbit hardware server that Grass Valley sells is referred to as the *GV Orbit Server*. Whenever you see a reference to *GV Orbit Server*, it also applies equally to the VM on which GV Orbit is installed.

Virtual Machine and Network Installation Requirements

GV Orbit Software Installation Files

The following files are needed from Grass Valley to install GV Orbit Server on the virtual machine. See Related Documentation, on page 25.

- GV Orbit VM software installation OVA file.
- The latest GV Orbit software installation package.
- Once the GV Orbit is up and running on the VM, you can get the **System Serial Number** that you send to Grass Valley to get a licevirtualizationnse file in return. See Ordering and Installing a License / Updating a License, on page 189.

Required Materials

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

- Hardware server. For requirements, refer the Release Notes for more information. See Related Documentation, on page 25.
- VMware installed and configured on the server. For VMware requirements, refer the Release Notes for more information. See Related Documentation, on page 25.
- A network that connects the VM to connect to:
  - 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.

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.

- Client PC (refer to the *GV Orbit Release Notes* for client PC requirements; see Related Documentation, on page 25).

About the GV Orbit OVA

The OVA contains an empty 900 GB VMDK disk and the ISO image of the GV Orbit OS build.

You can:

- Make the disk bigger if you want **before starting the VM for the first time**.
- Can add extra network interfaces before or after starting the VM for the first time.

You need to configure the VM such that the following resources are reserved for the GV Orbit VM:

- RAM dedicated to the GV Orbit VM:
    - 64 GB RAM minimum, for small systems such as an OB truck.
    - 96 GB RAM or more is the recommended minimum when you have a large system.

        Any more RAM that is allocated to the GV Orbit VM will be put to use. More RAM will be necessary for very large systems.

- 8 vCPUs. You are responsible for making sure these vCPUs are dedicated to the GV Orbit VM.

To install the GV Orbit VM, see Deployment of a GV Orbit VM server using OVA, on page 35.

To reserve VM resources, see Resource reservation for the GV Orbit VM server., on page 40.

The OVA does not contain the GV Orbit applications, which must be uploaded in a later step.

Deployment of a GV Orbit VM server using OVA

GV Orbit software is packaged as an OVA file for easier installation on a VMware server. Proceed as follows.

1 Download the OVA file you obtained from Grass Valley to your computer.

2 Log in to the vSphere Client.

3 Right-click **Datacenter** and select **Deploy OVF Template**.
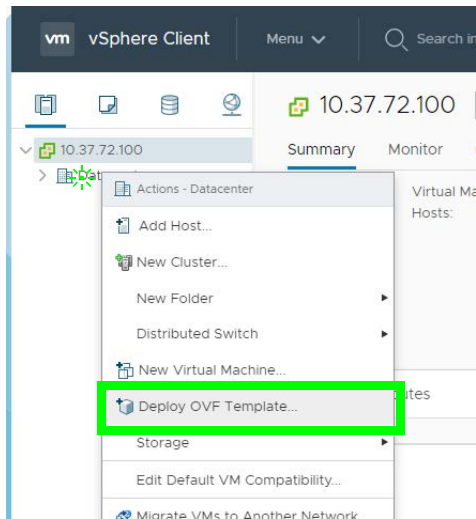
4 Select **Local file** and **Choose Files** to select the OVA file you obtained from Grass Valley.

5 Navigate to the OVA file you obtained from Grass Valley to your computer and select it. Click **Open**.
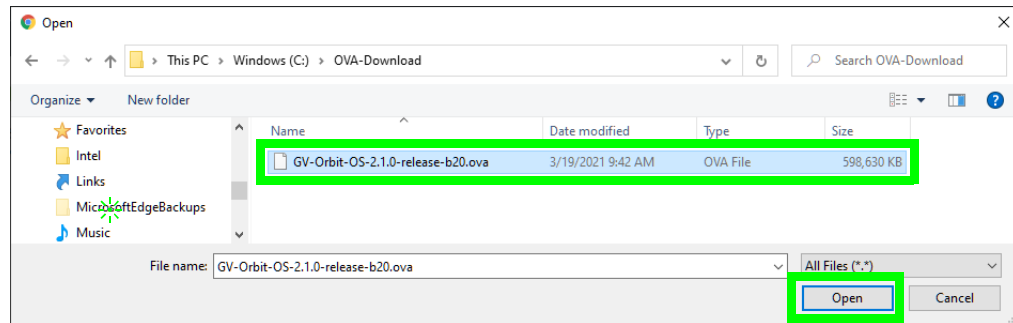
6 Click **NEXT**.
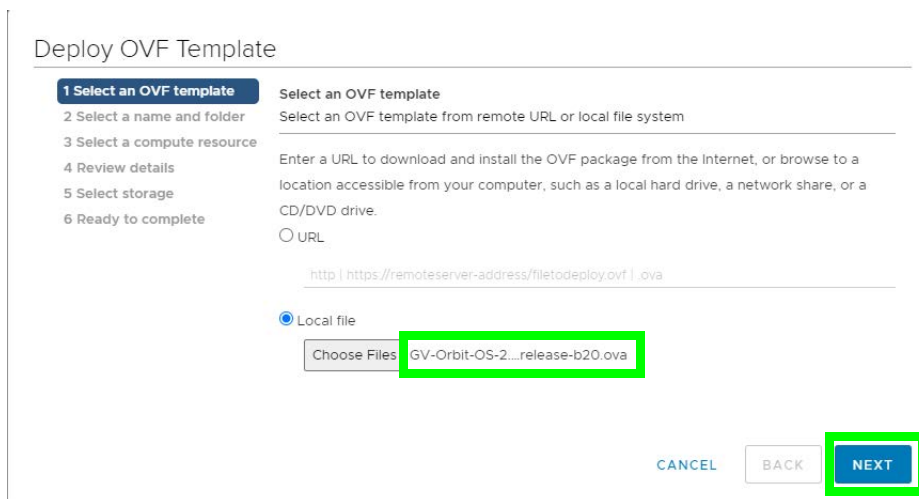
7 Specify a unique name for the GV Orbit VM and target location on the VM.
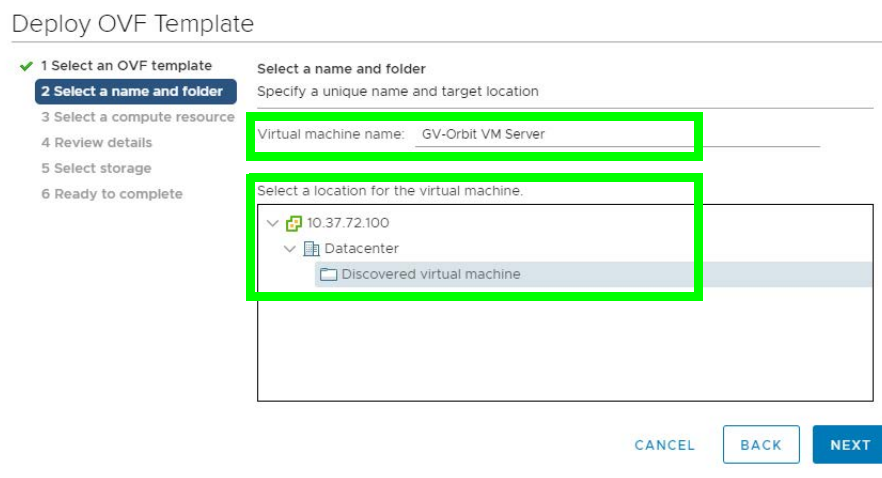
8   Select the destination compute resource and click **NEXT**.

9   Review details and click **NEXT**.

10 Select the storage to be used for the VM and click **NEXT**.

11 Select a destination network and click **NEXT**. This is the first network interface and it should be associated to the MANAGEMENT network VLAN on which the client PCs, panels, and management ports of production equipment are connected. **NOTE:** Once GV Orbit is up and running, you will have to assign the MANAGEMENT group to eth0. See To configure a network interface, on page 90.

12 Review settings and click **FINISH** to start the creation of the GV Orbit VM.

Deploy OVF Template

✔ 1 Select an OVF template
✔ 2 Select a name and folder
✔ 3 Select a compute resource
✔ 4 Review details
✔ 5 Select storage
✔ 6 Select networks
7 Ready to complete

Ready to complete
Click Finish to start creation.

Provisioning type	Deploy from template
Name	GV-Orbit VM Server
Template name	GV-Orbit
Download size	Unknown
Size on disk	500.0 GB
Folder	Discovered virtual machine
Resource	10.37.72.101
Storage mapping	1
All disks	Datastore: 101-Store; Format: Thick provision lazy zeroed
Network mapping	1
VM Network	VLAN-496
IP allocation settings	
IP protocol	IPV4
IP allocation	Static - Manual

CANCEL   BACK   FINISH

Wait for the deployment to complete.

Recent Tasks   Alarms

Task Name	⌄	Target	⌄	Status
Deploy OVF template		GV-Orbit VM Server		✓ Completed

Resource reservation for the GV Orbit VM server.

To avoid GV Orbit performance degradation, CPU and memory resources must be reserved for the GV Orbit VM.

1 Select the new VM and then right-click **Edit Settings**.

GV Orbit
Admin Guide

GV Orbit Software Installation on a VM
Resource reservation for the GV Orbit VM server.
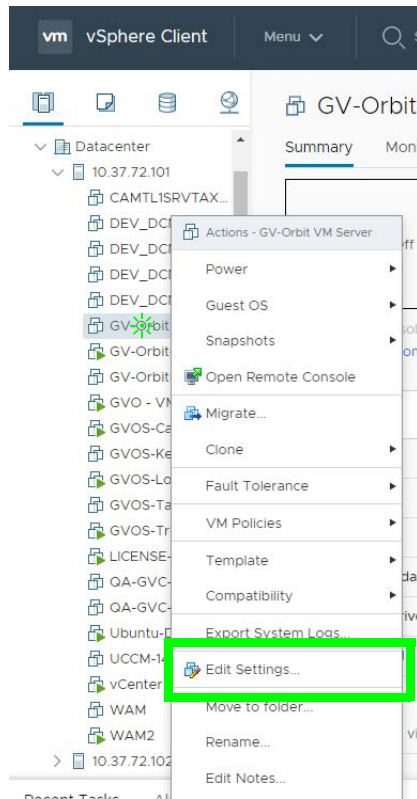
2 Expand the **CPU** section.
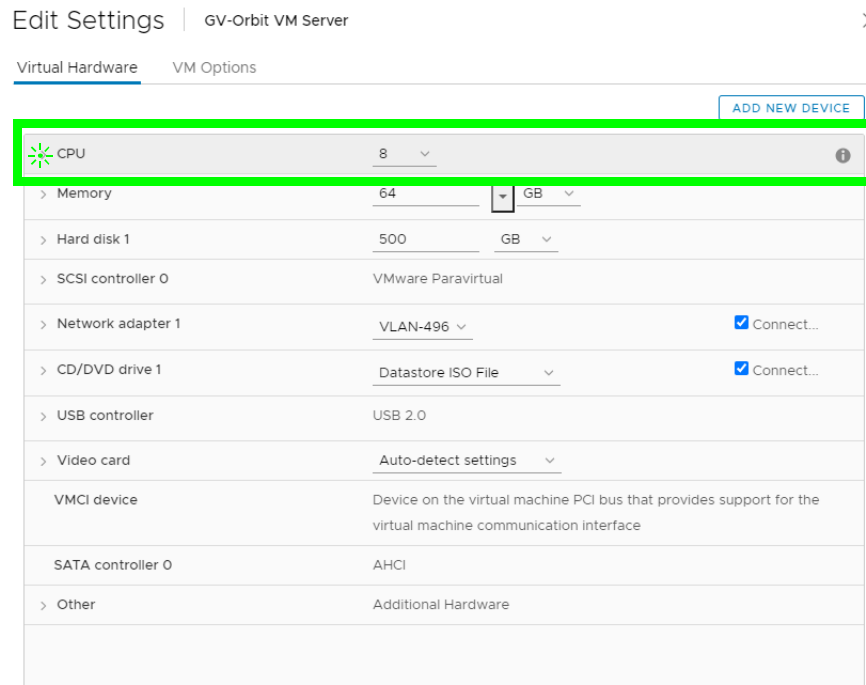
3 Set the CPU **Reservation** to the **Maximum** value.
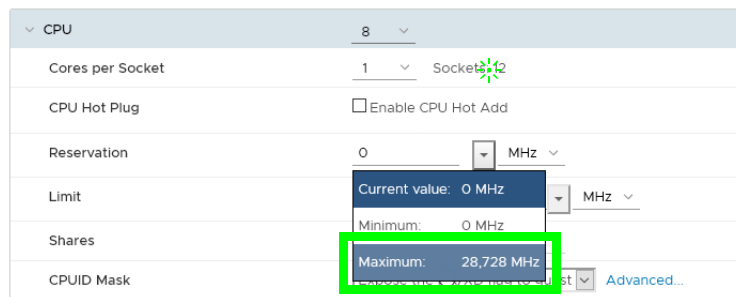
4 Expand the **Memory** section.

5 Set the memory **Reservation** to the **Maximum** value.
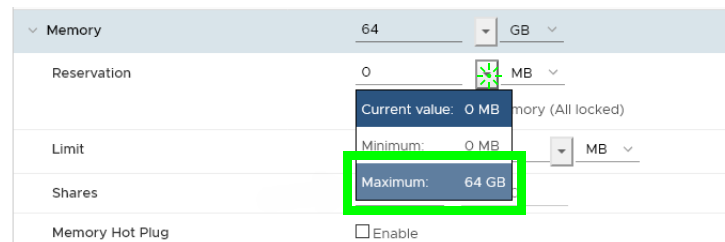
6 Observe that the Hard disk 1 is already set to 900 GB.

GV Orbit Software Installation on a VM
Resource reservation for the GV Orbit VM server.

GV Orbit
Admin Guide

7   Click **OK**.

8   **Power On** the GV Orbit VM server and configure it following standard procedures.
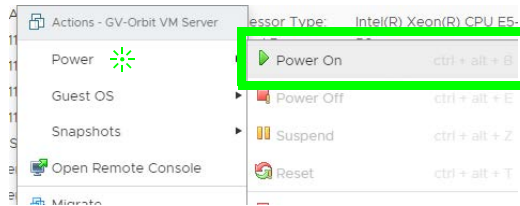
When the VM first starts, it installs the OS on the designated virtual disk and then reboots.

9   You must then configure the physical machine's network using the server's console menu, items **2**, **3**, and **4**. For this, refer to the server's documentation.
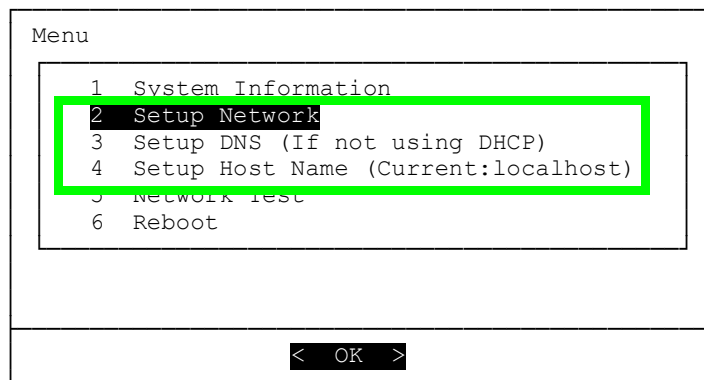
10   Commission the GV Orbit VM installation. See Commissioning the GV Orbit Server, on page 56. During commissioning, you will install the latest GV Orbit package with the latest OS and application images.

GV Orbit Server Cabling 4

Introduction

GV Orbit Server	GV Orbit VM
●	

This chapter shows how to interconnect the GV Orbit Server with its associated networks. The following server models are available.

Server Model	See
XR2	XR2 Model GV Orbit Server, on page 44

XR2 Model GV Orbit Server

XR2 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 261.
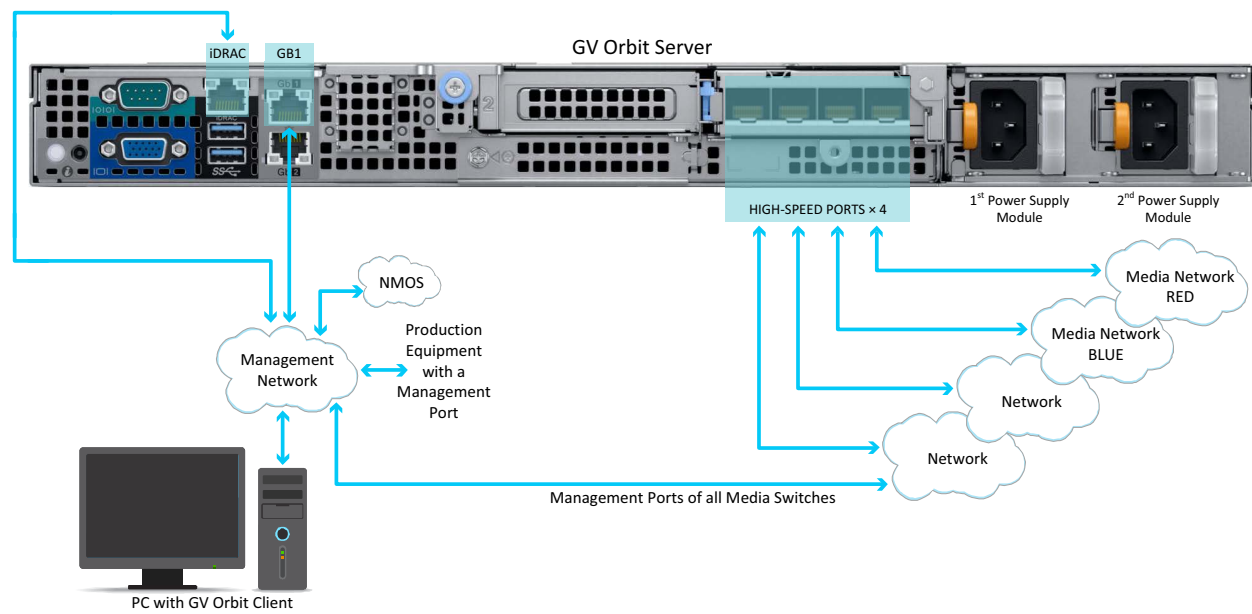
XR2 Typical cabling diagram
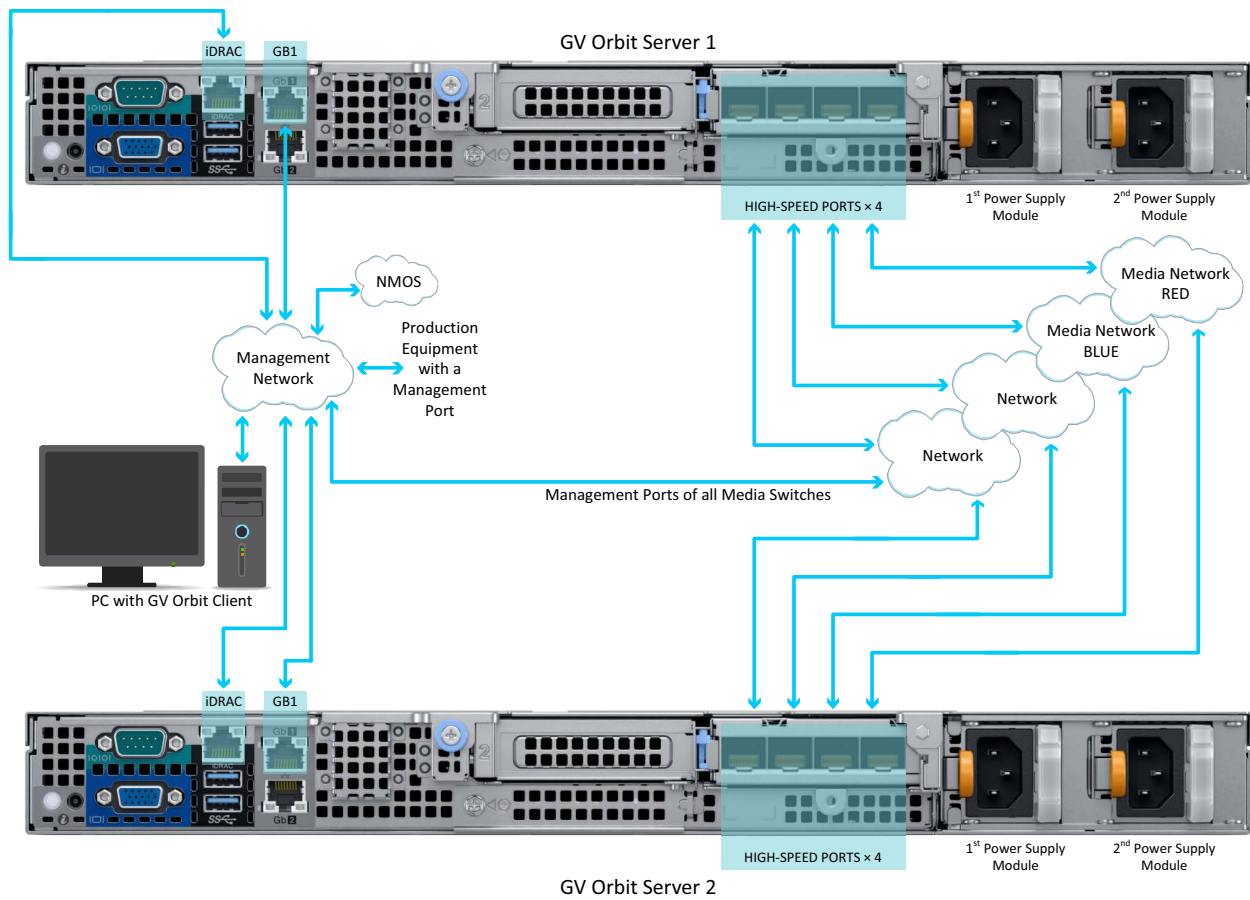
XR2 Typical cabling diagram for a cluster

XR2 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.

XR2 Ethernet Port Identification with an SFP (fiber) Network Card, on page 46

XR2 Ethernet Port Identification with an RJ-45 (copper) Network Card, on page 46
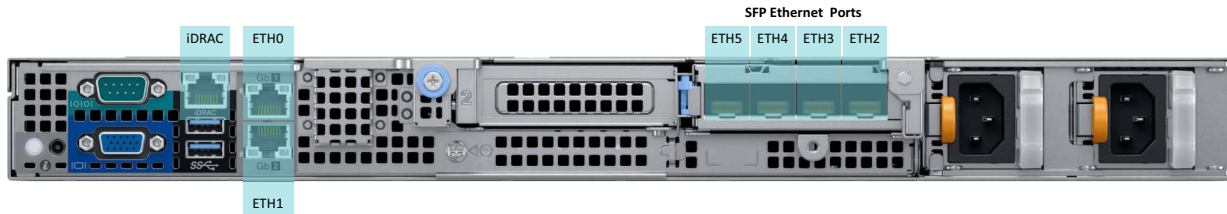
XR2 Ethernet Port Identification with an SFP (fiber) Network Card

*XR2 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 is usually 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 purposes. Otherwise it can be used for any other application.

XR2 Ethernet Port Identification with an RJ-45 (copper) Network Card
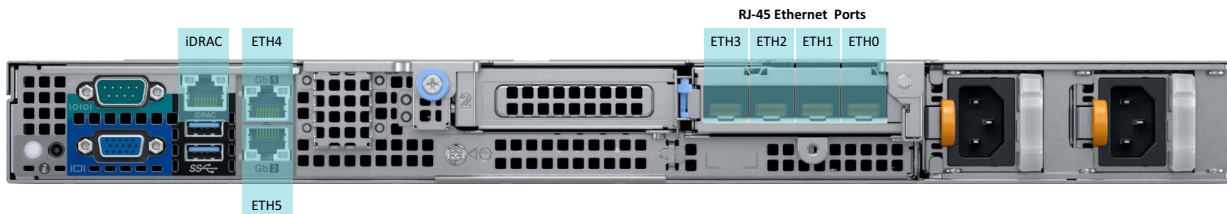
*XR2 Ethernet port identification used in the GV Orbit Admin interface with a GV Orbit Server equipped with an **RJ-45 (copper)** network card*

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

Port Identification			
Marked on the Server Chassis	**In the BIOS**	**In GV Orbit and OS**	**Connection Type and Data Bandwidth**
–	–	eth2	RJ-45 / 10GB
–	–	eth1	RJ-45 / 10GB
–	–	eth0	RJ-45 / 10GB

i. This interface port is usually 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 purposes. 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 71.
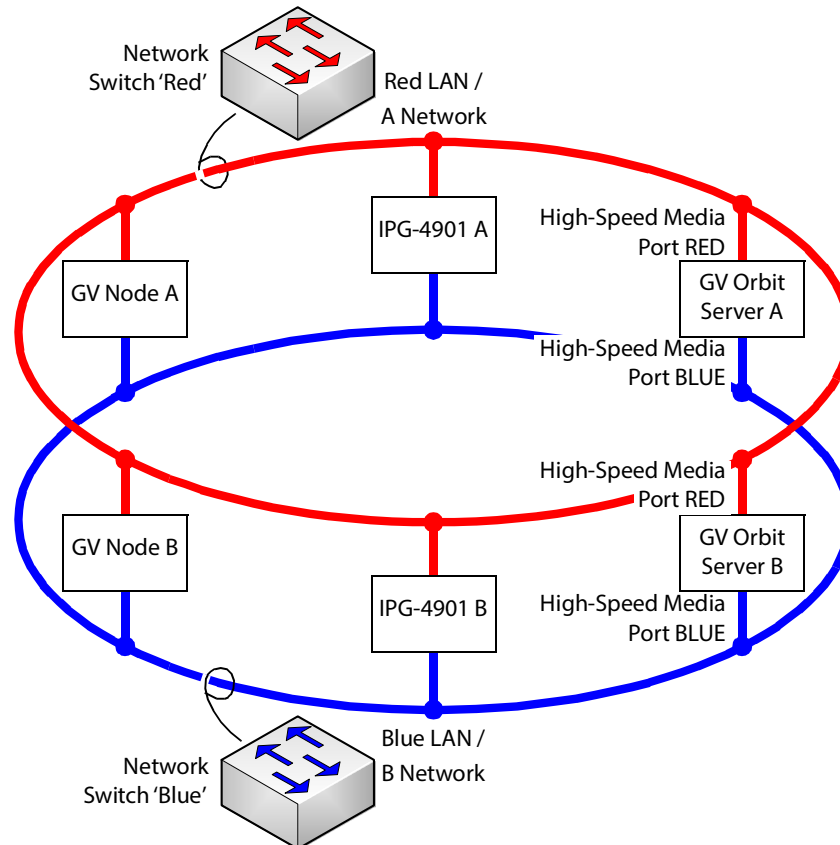
PREREQUISITES:

- 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 302. 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 XR2 Cabling Diagram, on page 44 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. For a GV Fabric switch, refer to *Configuring a GV Fabric Network*

Switch Device in the GV Orbit Client User Guide. See Related Documentation, on page 25.

Getting Started

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

GV Orbit Server	GV Orbit VM
●	

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* for an XR2 model GV Orbit Server.

See Related Documentation, on page 25. See also First-Time Start-up Configuration, on page 52 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 25.

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).
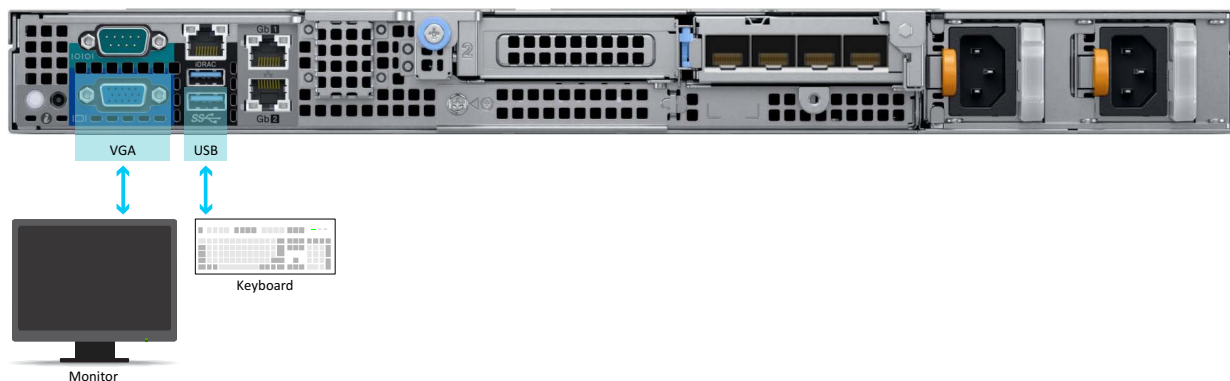
3　Connect the power cords to the GV Orbit Server frame, and then turn the power on. The power switch is located on the front panel.

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.
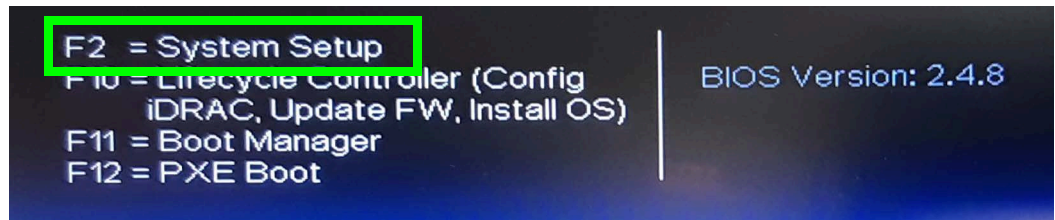
Note: Though the description for F10 mentions iDRAC, do not use this option as it is not functional.

5 With the keyboard's down arrow key, select **iDRAC Settings**.
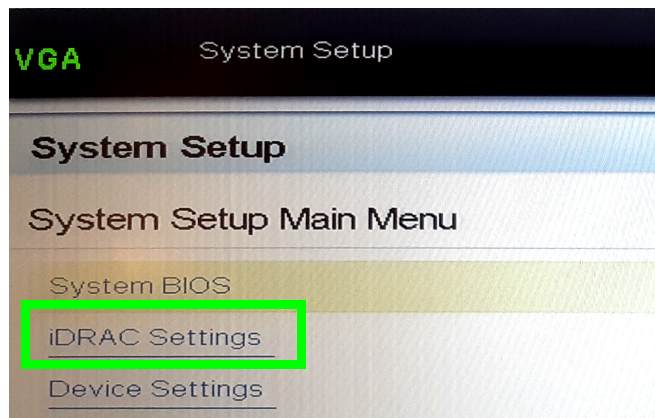
6 With the keyboard's down arrow key, select **Network**.
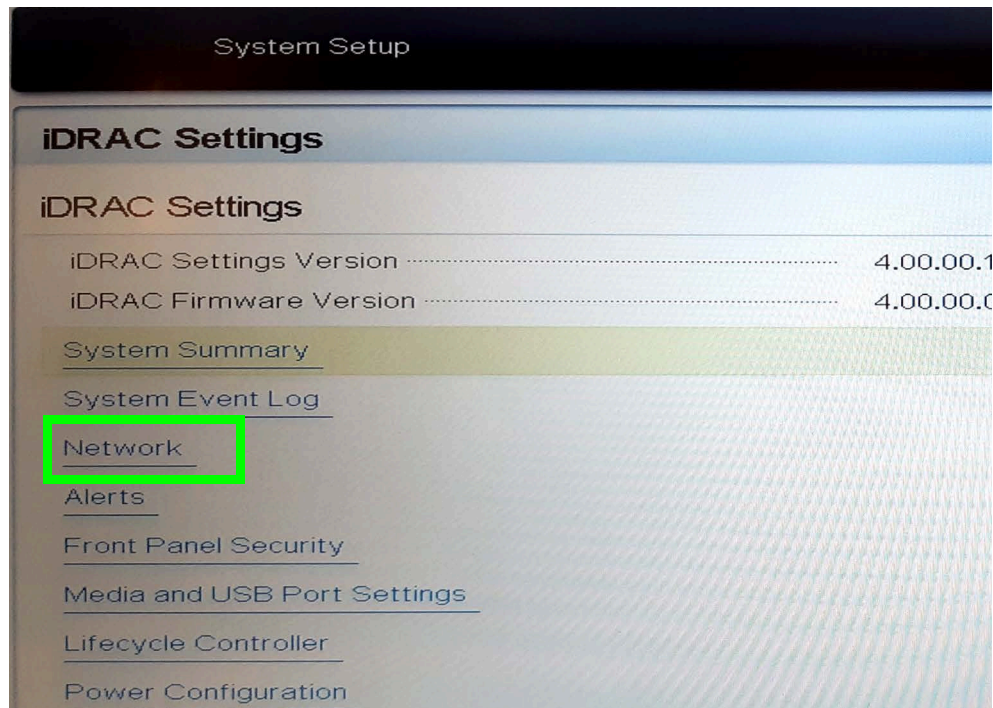
7 Set **Enable NIC** to **Enabled**.

8 Set **NIC Selection** and **Failover Network** according to Bridging iDRAC onto a LAN on Motherboard (LOM) Port to Save Cabling, on page 52.
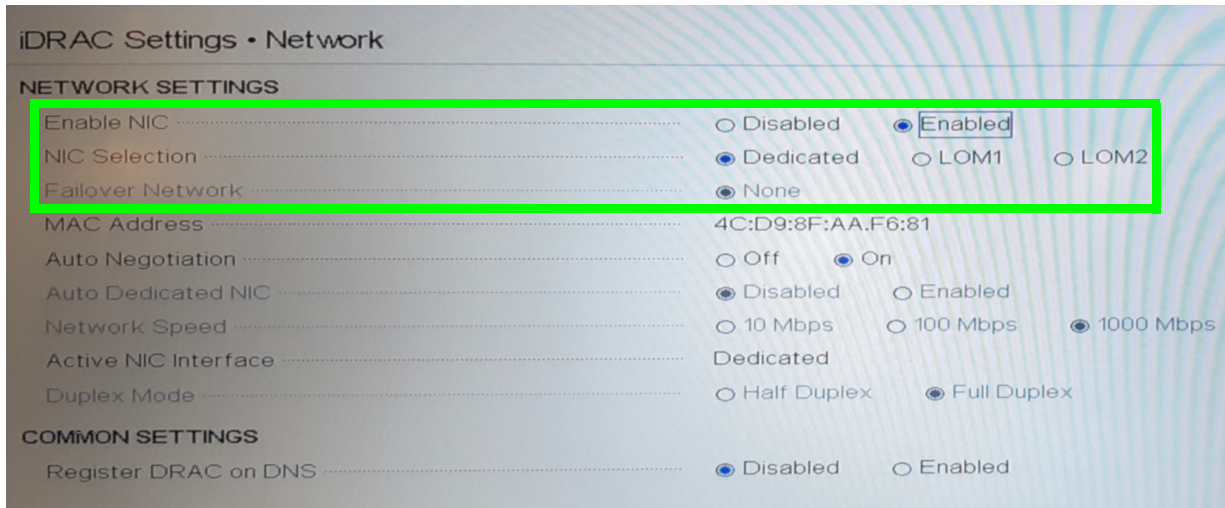
9 Set the network configuration for the iDRAC interface under **IPV4 Settings**.

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)
```
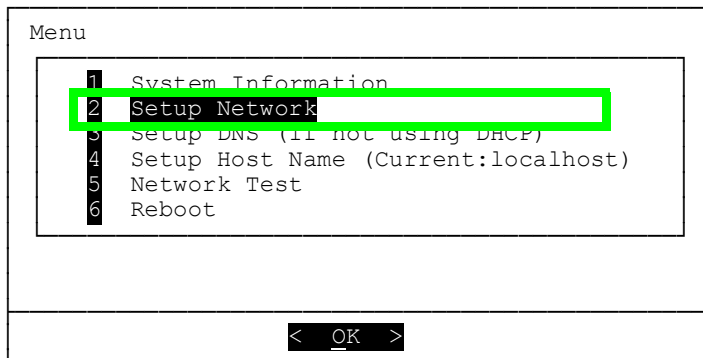

12 With the keyboard's down arrow key, select **Setup Network**.

13 Configure the GV Orbit Server's Management Ethernet network interface according to:
   • XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server.

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
```

Certain IP addresses are reserved by GV Orbit and cannot be used. Refer to the Release Notes for more information. See Related Documentation, on page 25.

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 88). 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   >                        │
    └──────────────────────────────────────────────┘
```
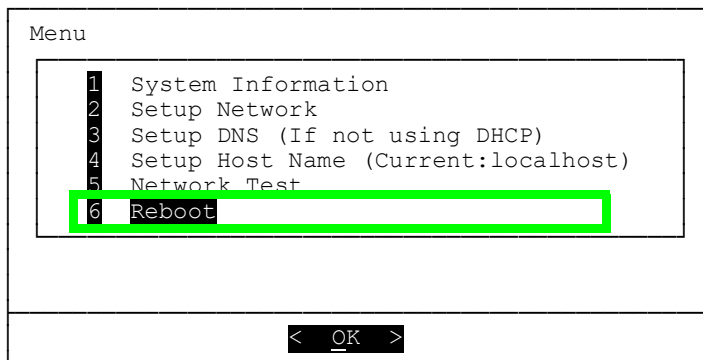
Allow the GV Orbit Server to reboot and wait for the console menu to appear.

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 XR2 Cabling Diagram, on page 44:
   • One *Management Network* connected to **GB1** (preferred) 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 25

Commissioning the GV Orbit Server

GV Orbit Server	GV Orbit VM
●	●

References to GV Orbit Server apply equally to GV Orbit VM.

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 57 for more information.

2 Install the latest software package with the latest OS and application images. See Upgrade Task, on page 98. Refer to the GV Orbit Release Notes for important information about the GV Orbit software package. See Related Documentation, on page 25.

3 License your GV Orbit installation. See Ordering and Installing a License / Updating a License, on page 189.

4 Upgrade all GV Orbit applications. See Upgrading GV Orbit Server Applications, on page 103.

5 For GV Orbit VM only: Assign the MANAGEMENT group to eth0. See To configure a network interface, on page 90.

6 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 88 and XR2 Cabling Diagram, on page 44.

7 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 88.

8 Configure the GV Orbit Server according to your needs. See GV Orbit Server / VM Configuration Tasks, on page 63.

9 For a GV Orbit Server to be part of a cluster for continued operation (failover protection) should a GV Orbit Server fail, you must configure both servers for this. See Cluster Task, on page 71.

10 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 63.

11 Configure GV Orbit, refer to the *GV Orbit Client User Guide*; see Related Documentation, on page 25.

Launching and Logging in to GV Orbit Admin Interface

GV Orbit Server	GV Orbit VM
●	●

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 52, this is shown as *10.0.3.5*.

- For GV Orbit running on a VM, this is the IP address you set in step 11 on page 38 of the procedure Deployment of a GV Orbit VM server using OVA, on page 35.

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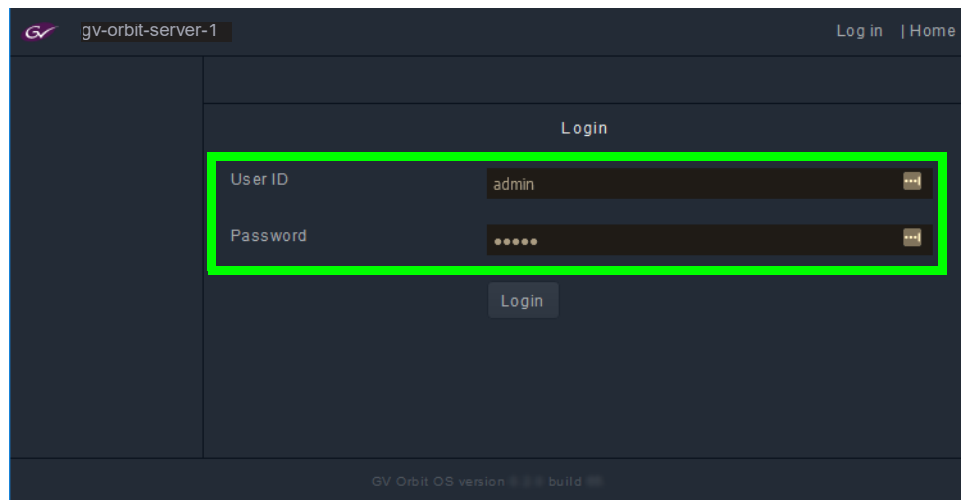
2 Enter your login credentials. The default login is *admin / admin*.

GV Orbit Admin Home Stage interface opens.
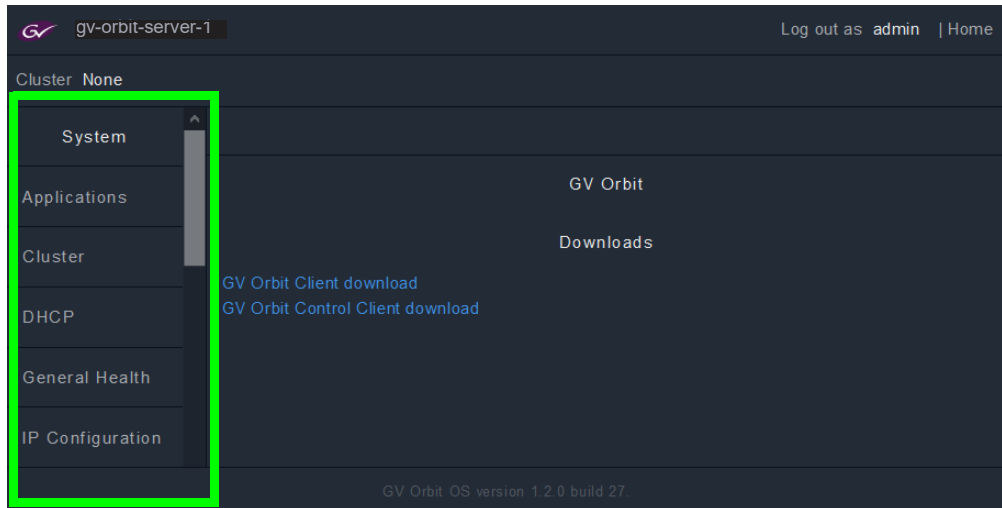
Note: Some options shown above are not available to users with a non-administrator role. For more informations, see Users Task, on page 104.

The left hand side of the screen has a menu of the available configuration screens. For **System** tasks, see GV Orbit Server / VM Configuration Tasks, on page 63. For Services tasks, see GV Orbit Services, on page 107.

3 Change the admin password to secure access to the server. See Password Change Screen, on page 106.

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.
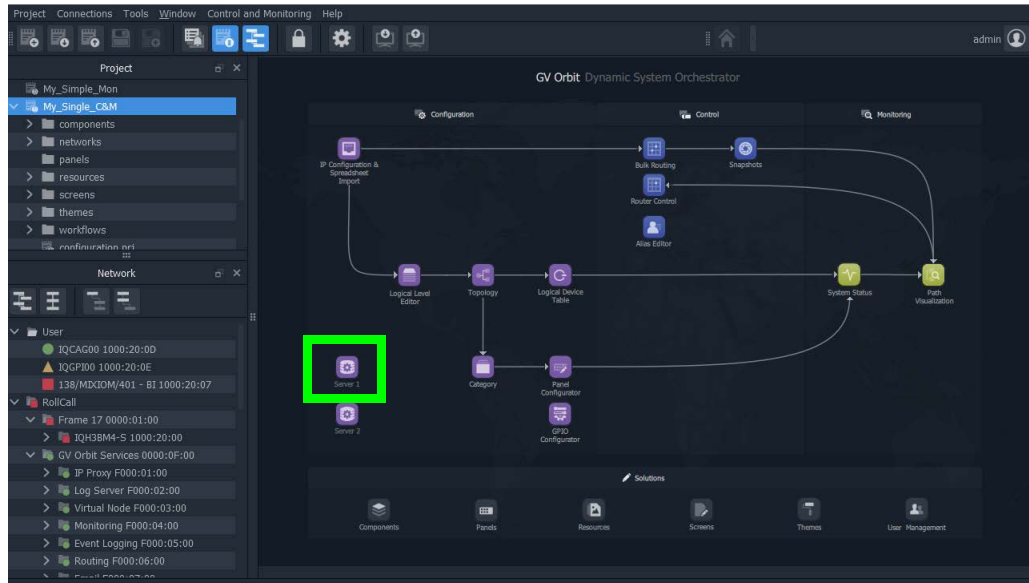
Fig. 5-1: C&M Project Workflow Stage and Server Icon

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

Navigating Back to GV Orbit Home / Downloads Stage

GV Orbit Server	GV Orbit VM
●	●

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.
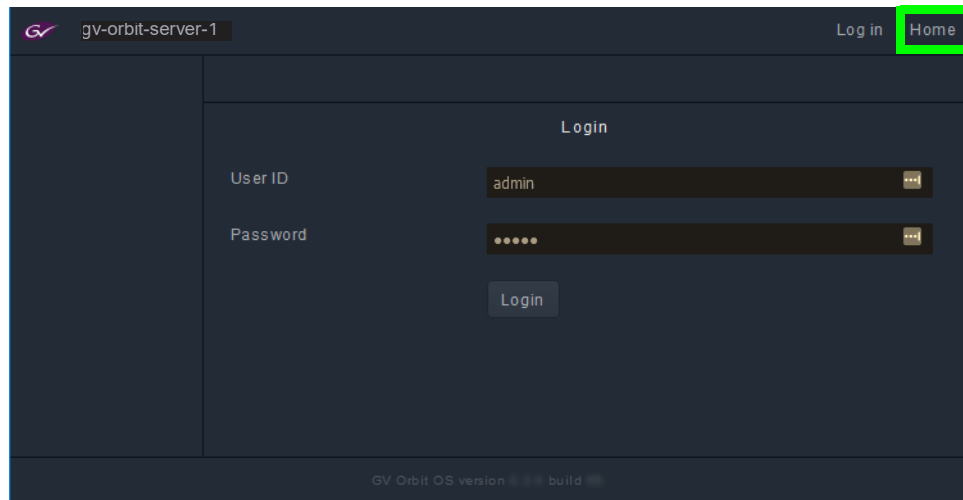
The GV Orbit Downloads task is shown.

To download the GV Orbit client software application, see GV Orbit Client Software Application Downloads, on page 63.

Switching User Profiles

GV Orbit Server	GV Orbit VM
●	●

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 105.

To switch to another user profile

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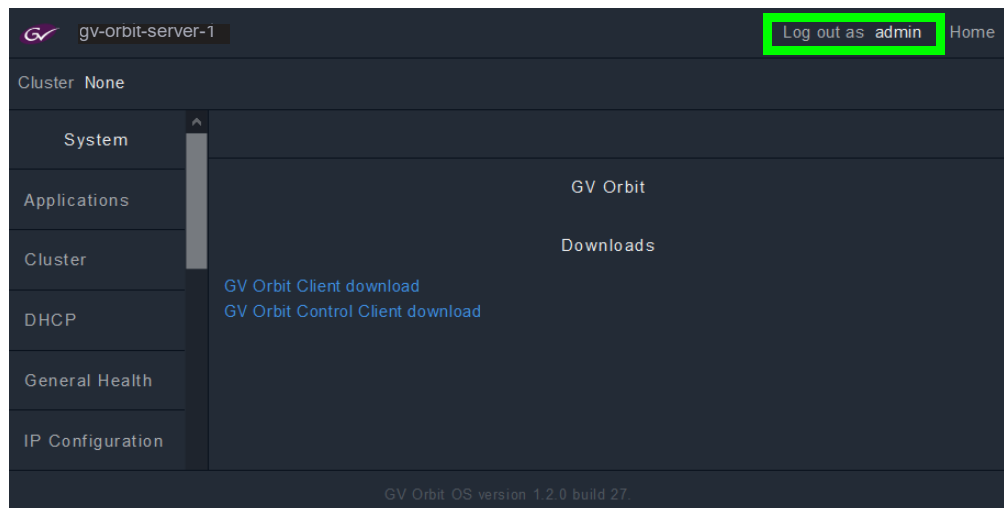
The Login screen appears.
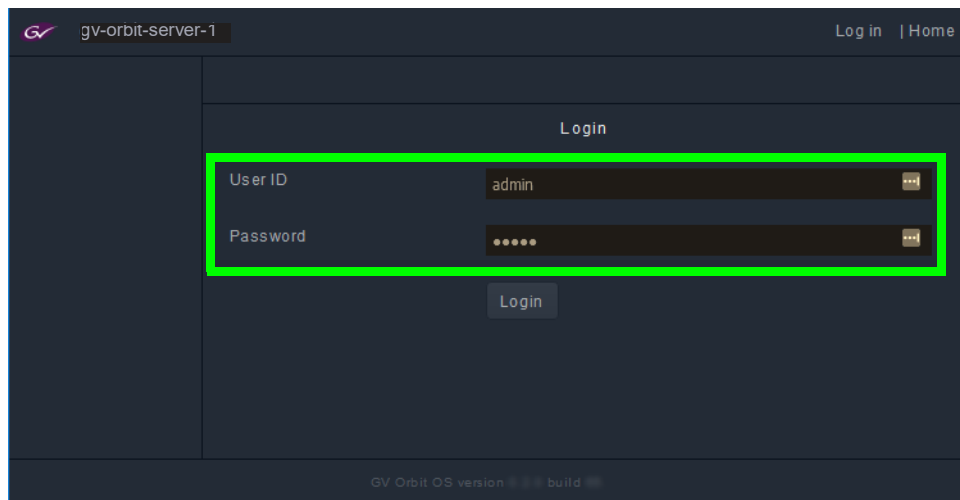
2 Enter the login credentials for the user profile, in the **User ID** and **Password** fields.

3 Click **Log in**.

GV Orbit Admin Home Stage interface opens.

GV Orbit Server / VM Configuration Tasks

GV Orbit Server	GV Orbit VM
●	●

References to GV Orbit Server apply equally to GV Orbit VM.

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 application, log in to GV Orbit Admin. See Launching and Logging in to GV Orbit Admin Interface, on page 57.

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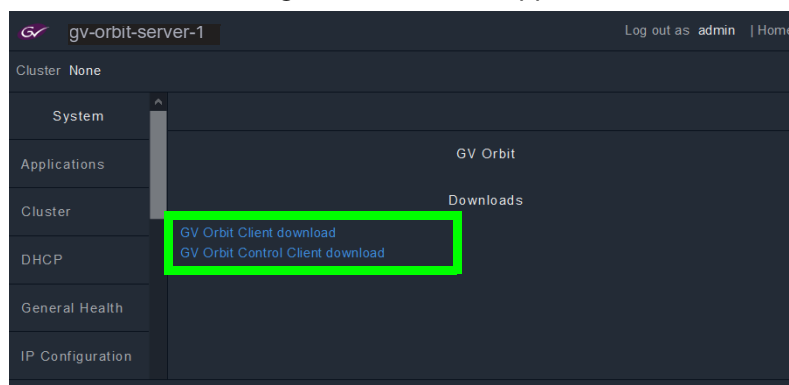
Your browser will ask to save a file.

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 User Guide*; see Related Documentation, on page 25.

System

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

- Applications Task, on page 65
- Cluster Task, on page 71
- DHCP Task, on page 79
- General Health Task, on page 84
- IP Configuration Task, on page 88
- Log Files Task, on page 94
- Upgrade Task, on page 98
- Users Task, on page 104

Applications Task

You must be an administrator user to access this task. See Users Task, on page 104 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 65.
- 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 67.
- 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 97.

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.

Note: The License Service is not included in a system backup. So when restoring a backup, the system will retain its existing licenses. If the backup is being restored on a new server with no existing licenses, then new licenses must be requested again. See Ordering and Installing a License / Updating a License, on page 189.

Pulldown list of the Global Backups available locally on the GV Orbit Server

Export generation status

Parameter	Description
Choose File	To upload a previously-created Global Backup file to the GV Orbit Server from your PC. See Restoring a Global Backup from your PC to the GV Orbit Server, on page 67.
Import	
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 69.
Restore	Restore the Global Backup to the GV Orbit Server's configuration that was selected from the pulldown list. See Restoring a Global Backup from your PC to the GV Orbit Server, on page 67. Schedule this maintenance operation during off hours when the system is not in use.

Parameter	Description
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	Create a backup file from the Global Backup that was selected from the pulldown list. This file can then be exported as a file to your PC. See Saving a Global Backup to your PC, on page 67.
Exported Backup	This is the last generated global backup file for export. Click **Download** to copy this file to your PC.

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

Saving a Global Backup to your PC

After making changes to GV Orbit, save your work for disaster recovery.

1 Click **Backup**.

The GV Orbit Server generates a global backup file locally on the server.

2 Select the just created Global Backup from the pulldown list.

3 Click **Export**.

The current export generation status is shown below.

4 When export generation is complete (no longer is an export generation message shown), click **Download**.

5 Select a destination for the file on your PC and click **OK**.

Restoring a Global Backup from your PC to the GV Orbit Server

For disaster recovery or to transfer the settings to a new GV Orbit Server, upload a global backup file from your PC to the GV Orbit Server.

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

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.

3 Select the backup in the pulldown list.

4 Click **Restore**.

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 69. The services of certain applications also have configuration properties in **Services**. For more information about each service, see GV Orbit Services, on page 107.
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.
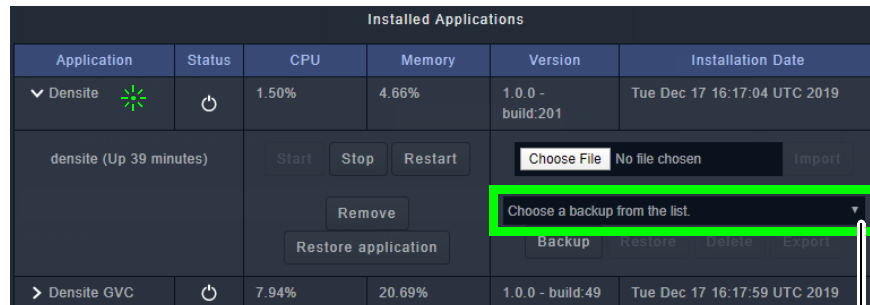
Pulldown list of the backups available locally on the GV Orbit Server

| 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. To install an application (that has been removed for example), see Application Upgrade/Installation, on page 101.
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.

Parameter	Description
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.
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 97.

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 104 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 68 to know the GV Orbit Control application's operating status.

GV Orbit Control Service	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 services) 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 in to 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 73.
(active) (standby)	If two GV Orbit Servers hosts 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 Service 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 service(s). 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 88.
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.

Parameter	Description
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 services. 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 GVOS System 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 networks. See XR2 Cabling Diagram, on page 44 for a cluster.
  - Have the same GV Orbit software revision.
  - Have their network configuration set. See IP Configuration Task, on page 88.
  - Are operational. With a browser, you are able to navigate through the administration interface of both GV Orbit Servers.
  - Have the same services installed with the same software revision.
  - When GV Orbit Server is to support DHCP (to be used with NV Panels or GV Fabric network switch for example), special configuration requirements must also be followed for this. See DHCP Task, on page 79 and specifically DHCP with a GV Orbit Server Cluster, on page 82.
  - Have the license Service installed and configured on both GV Orbit Servers. As of GV Orbit version 2.0.0 or higher, licensing is required. See License Service, on page 183.

- Have a license file from Grass Valley specifically for this cluster that must be installed on both GV Orbit Servers.
  - For GV Orbit Servers, see Pre-Ordering a License File, on page 183. The same license file is applied to both GV Orbit Servers.
  - For GV Orbit VM hosts, see Ordering and Installing a License / Updating a License, on page 189. The same license file is applied to both GV Orbit VM hosts.
- For GV Orbit VM hosts, both VM hosts must be identical in every way. For example:
  - Physical servers running the VM must be the same model and have the same options.
  - Same VMware version installed on both server.
  - Same VM resources are reserved for GV Orbit.
- A cluster formed with a mix of one GV Orbit Server and one GV Orbit VM has not been tested and is unsupported.

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.
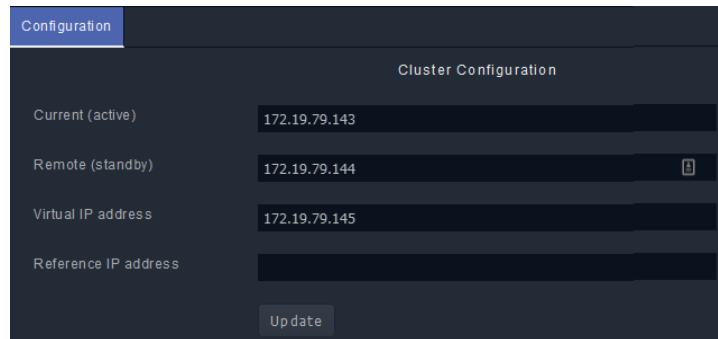
Dissolving a Cluster

Schedule this maintenance operation during off hours when the system is under reduced demand. Do not make configuration changes with GV Orbit Control while the cluster has been dissolved as such changes may be lost when the cluster is created again.

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.

  See also Identifying which server in a Cluster is Active or Standby, on page 78.

- 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 Software and Applications on a Cluster

When upgrading a cluster from GV Orbit version 1.7.X or lower to GV Orbit version 2.0.0 or higher, you must install the License Service in order to make GV Orbit operational, as a special one-time upgrade procedure. In all cases, licensing is required as of GV Orbit version 2.0.0 or higher.

Each server of a GV Orbit Server cluster must be licensed. This is done by uploading to each server in the cluster the same license file. This license file is based on the **System Serial Number**s / *Service Tag* numbers[1] of both GV Orbit Servers that form the cluster. Both members of the cluster will have the same **License Identifier**.

A license for a single GV Orbit server can be upgraded to support a GV Orbit Server cluster, should you migrate from a single server to a two server cluster installation. For this, you will need the **System Serial Number**s / *Service Tag* numbers of both GV Orbit Servers that form the cluster and **License Identifier** for the current license that you want to upgrade.

PREREQUISITES:

- You must have a license for the cluster. See Pre-Ordering a License File, on page 183.
- When sending the **System Serial Number**s / *Service Tag* numbers of both GV Orbit Servers to Technical support to obtain a license for a cluster, you must say that it is for a cluster license. A cluster license is a single license file that is applied to both GV Orbit Servers that form the cluster.
- To upgrade a cluster, you must first break the cluster and then upgrade the two GV Orbit Servers individually with the latest software (including the License Service) and install the same license on both servers.
- Schedule this maintenance operation during off hours when the system is not in use.

Upgrade Example Context

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.

  See also Identifying which server in a Cluster is Active or Standby, on page 78.
- The virtual IP address for the cluster is 172.19.79.145.

To upgrade software and applications on a cluster

Proceed as follows.

1 Dissolve the cluster. See Dissolving a Cluster, on page 74.

---

1. The *Service Tag* number is found on each server's Information Tag. See About the Server's Information Tag, on page 30.

2 Upgrade the software on GV Orbit Server 2 (the standby server). See Upgrade Task, on page 98. See also Identifying which server in a Cluster is Active or Standby, on page 78.

3 Install or update the license on GV Orbit Server 2 if necessary. See Troubleshooting License Service Errors, on page 185 to identify and correct any licensing issues.

4 Upgrade the applications on GV Orbit Server 2. See Application Upgrade/Installation, on page 101.

5 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.

---

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

7 Click **Update**.

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

9 Click **Update**.

10 Deactivate the topology in the GV Orbit Control application on GV Orbit Server 1 and activate it on GV Orbit Server 2. When connecting with GV Orbit Control, do not use the virtual IP address to connect GV Orbit Control. Use the individual GV Orbit Server 1 IP address / GV Orbit Server 2 IP address (172.19.79.143 / 172.19.79.144).

   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.

11 Upgrade the software on GV Orbit Server 1. See Upgrade Task, on page 98.

12 Install or update the license on GV Orbit Server 1 if necessary. See Troubleshooting License Service Errors, on page 185 to identify and correct any licensing issues.

13 Upgrade the applications on GV Orbit Server 1. See Application Upgrade/Installation, on page 101.

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

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

16 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 78.

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 302. **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.
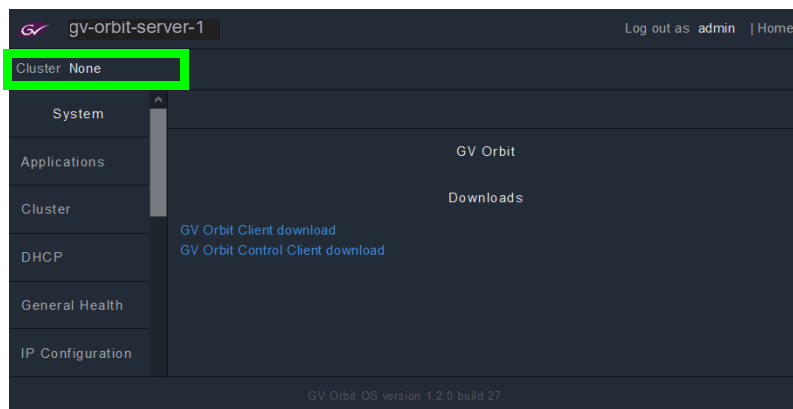
Cluster Parameter	Description
None	The server you have connected to is currently not part of a cluster.
Active server	The server you have connected to is currently the active member of a cluster.
Standby server	The server you have connected to is currently the standby (inactive) member of a cluster.

DHCP Task

The DHCP task configures DHCP support for NV Panels and GV Fabric network switches (to support Zero Touch Provisioning (ZTP)) on enabled network interfaces.

- When a NV panel is connected to the network switch, GV Orbit issues an IP address to the panel using DHCP.

- When a GV Fabric network switch's management interface is discovered on the network by GV Orbit, GV Orbit sends a DHCP response packet to the GV Fabric network switch with the IP address and the necessary ZTP instructions to start the switch's automatic configuration process. Refer also to *Configuring a GV Fabric Network Switch Device* in the GV Orbit Client User Guide. See Related Documentation, on page 25.

Assigned IP addresses are persisted and survive any reboot or upgrade actions. The following tabs are documented below.

- Config Screen, on page 80
- Leases Screen, on page 81

Once the GV Orbit Server has been configured, see Connecting the NV Panel, on page 82.

PREREQUISITES:

- One or more Ethernet interfaces must have been configured on the GV Orbit Server. See IP Configuration Task, on page 88. 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 / GV Fabric network switch(es). See XR2 Cabling Diagram, on page 44.

- When two GV Orbit Servers form a cluster (see Creating a GV Orbit Server Cluster, on page 73):

  - DHCP cannot be enabled / disabled once a cluster has been formed. First break the cluster to proceed. See Dissolving a Cluster, on page 74.

  - Before creating a cluster, both GV Orbit Servers must have an identical DHCP configuration: both servers must have the same 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 prior to creating a cluster, to configure an NTP server (see NTP Screen, on page 89) 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 before creating the cluster.

  - Once the cluster has been created (see Creating a GV Orbit Server Cluster, on page 73), you cannot enable/disable interfaces on either member of the cluster. In a cluster, DHCP leases can be issued by either the Active or Standby server.

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 88 and XR2 Cabling Diagram, on page 44.
	• 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 81. With a cluster, these options are unavailable. See DHCP with a GV Orbit Server Cluster, on page 82.
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 83. 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 82.

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 83.

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 the lease file on each server at the same time.

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 97.

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 94.

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 / GV Fabric network switch management interface 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 74.

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 XR2 Cabling Diagram, on page 44.

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 81.

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 71 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 Client User Guide. See Related Documentation, on page 25.

Connecting the GV Fabric Network Switch

Once DHCP has been configured on the GV Orbit Server(s), connect the GV Fabric network switch as follows.

1   Ensure DCHP is enabled on the GV Orbit Server's Ethernet interface that is connected to the management network switch. See XR2 Cabling Diagram, on page 44.

2   Connect the GV Fabric switch's management interface to the management network switch.

GV Orbit automatically discovers the presence of the GV Fabric network switch on the management network and sends a DHCP response packet to the GV Fabric network switch with the IP address and the necessary Zero Touch Provisioning (ZTP) instructions to start the switch's automatic configuration process.

3   Refer to *Configuring a GV Fabric Network Switch Device* in the GV Orbit Client User Guide. See Related Documentation, on page 25.

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 80). 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 XR2 Cabling Diagram, on page 44.

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 88.

5 Click **Purge** to clear unreachable leases. See Purge unreachable leases, on page 81.

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 81.

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 85
- Hardware Screen, on page 85
- Storage Screen, on page 86
- Network Screen, on page 86
- Network Activity Screen, on page 87

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:

- XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server.
- About the GV Orbit OVA, on page 34 for a GV Orbit VM.

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 104 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 88
- Host Name Screen, on page 88
- DNS Screen, on page 88
- PING Screen, on page 88
- NTP Screen, on page 89
- GVOP Domain Screen, on page 89
- Interfaces Configuration Screen, on page 90
- Expert Screen, on page 93

Interfaces Status Screen

The Interfaces Status screen provides network interface details for each GV Orbit server Ethernet interface. See also:

- XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server.
-
- About the GV Orbit OVA, on page 34 for a GV Orbit VM.

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: • XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server. • About the GV Orbit OVA, on page 34 for a GV Orbit VM. *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.

GVOP Domain Screen

Set the global GVOP Domain IDs to be used by all services and applications. When changing a GVOP Domain ID, refresh your browser screen for any service you are viewing to see that the change has taken place.

See Figure 7-3, GV Orbit Services Ecosystem Diagram with Domains, on page 110 for a system diagram showing an example of Domains and Grass Valley Orchestration Protocol (GVOP), on page 301 for information on GVOP Domains.

Parameter	Description
Monitoring domain, also known as *Client Domain* in the admin interface	The GVOP Domain ID for monitoring traffic.
Control domain	The GVOP Domain ID for the Routing Domain. This is used for control of IP Endpoints for signal routing.
Logging domain	The GVOP Domain ID for the Log Server Domain. This is used by the Log Server service for RollCall-protocol devices.

Individual services can still be configured with a different GVOP domain, to override the above setting; this is done in the configuration screen of the individual service. See Client GVOP Domain ID Setting, on page 126.

Interfaces Configuration Screen

The GV Orbit server has one or more Ethernet network interfaces that it uses to communicate with other IP devices on these networks. See:

- XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server.
- About the GV Orbit OVA, on page 34 for a GV Orbit VM.

Certain IP addresses are reserved by GV Orbit Control and cannot be used. Refer to the Release Notes for more information. See Related Documentation, 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 74. Once the network parameters have been changed, you then create the cluster again. See Creating a GV Orbit Server Cluster, on page 73.

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 individual network interface has a working DHCP server, the IP configuration parameters can be 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. To identify the physical location of ports on the server, see: • XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server. • About the GV Orbit OVA, on page 34 for a GV Orbit VM.
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 automatically assigned by the network's DHCP server.
Address	When **Method** is set to **Static**, set the network interface's address that uniquely identifies this port to the network. Certain IP addresses are reserved by GV Orbit Control and cannot be used. Refer to the Release Notes for more information. See Related Documentation, on page 25.
Netmask	When **Method** is set to **Static**, set the subnetwork mask for the connected network that defines the range of local IP addresses.

Parameter	Description
Default gateway	When **Method** is set to **Static**: For the primary MANAGEMENT interface only, set the IP address of the router connected to the MANAGEMENT network. Only configure one default gateway for one of the GV Orbit server's network interfaces. Leave the **Default Gateway** setting blank for all other network interfaces. Static routes must be configured for all remaining network interfaces; see To configure static routes for the remaining network interfaces, on page 91.
DHCP client gateways	Comma separated list of connected router IP addresses on the current interface subnet. Routers should be listed in order of preference / priority. The GV Orbit DHCP server publishes this list to the current DHCP clients that are connected to this interface. Refer also to RFC2132, Section 3.5. If the IP link to the router with the first IP address in the list becomes unreachable, DHCP clients switch their active gateway to the router with the second IP address in the list.
Groups	Sets the network use, for example the application or data type of a given network. See Network Groups Explained, on page 92 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 (where the **Groups** parameter is set to **MANAGEMENT**), you will have to enter the new GV Orbit server's management IP address into the address bar of your web browser to reconnect to the GV Orbit server.

To configure static routes for the remaining network interfaces

The **Default Gateway** parameter should be set for the primary **MANAGEMENT** network interface; see To configure a network interface, on page 90. For each of the remaining network interfaces, you can create a static route that associates a network interface with its connected router, to effectively assign a gateway to each network interface.

Configure a gateway (static route) to a network interface 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 network ID: the portion of an IP address that uniquely identifies this subnetwork on an internetwork (Wide Area Network (WAN)). Certain IP addresses are reserved by GV Orbit Control and cannot be used. Refer to the Release Notes for more information. See Related Documentation, on page 25.

Parameter	Description
Netmask	The subnetwork mask for the connected network that defines the range of local IP addresses.
Gateway	The Gateway IP address for the traffic originating from the current GV Orbit interface.

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).

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 routers 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.
- To reserve network bandwidth on media networks for media data exclusively. This ensures that a file transfer of a software update for example, does not oversubscribe the network and cause dropped packets.

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.
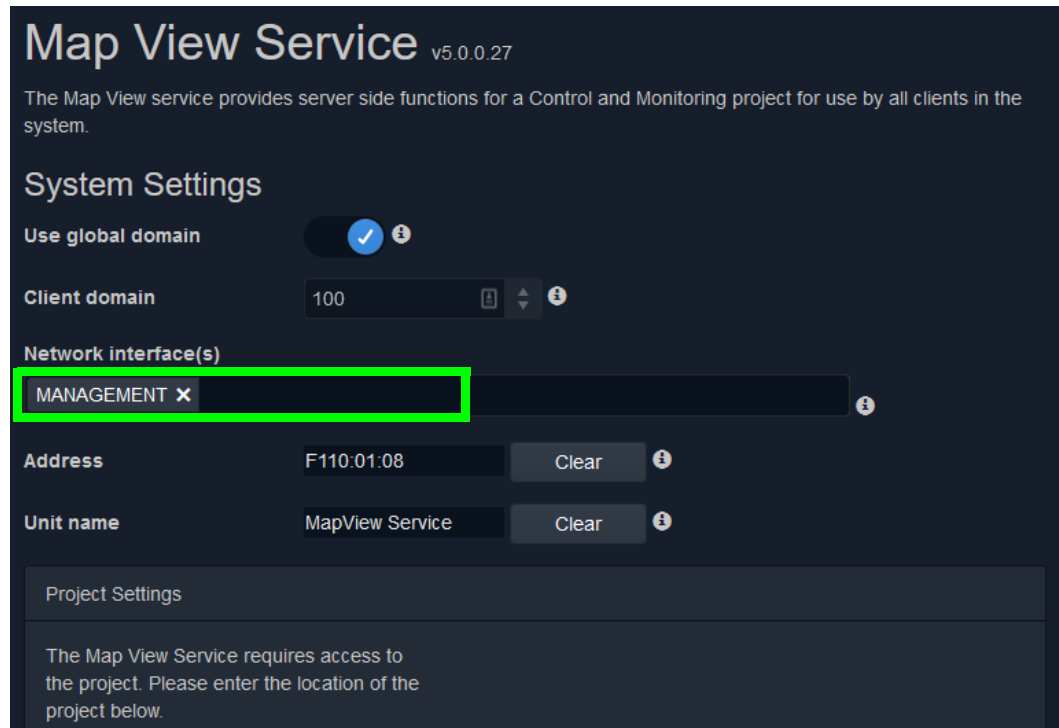
> **Note**: Certain production equipment is not equipped with a Management Ethernet port as such equipment uses its media Ethernet ports to also communicate management and control information along with the media streams. To support this class of equipment, you will need to add the MEDIA group to the **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 261.

For more information about each service, see GV Orbit Services, on page 107.

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 network 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 51.

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 74. Once the network parameters have been changed, you then create the cluster again. See Creating a GV Orbit Server Cluster, on page 73.
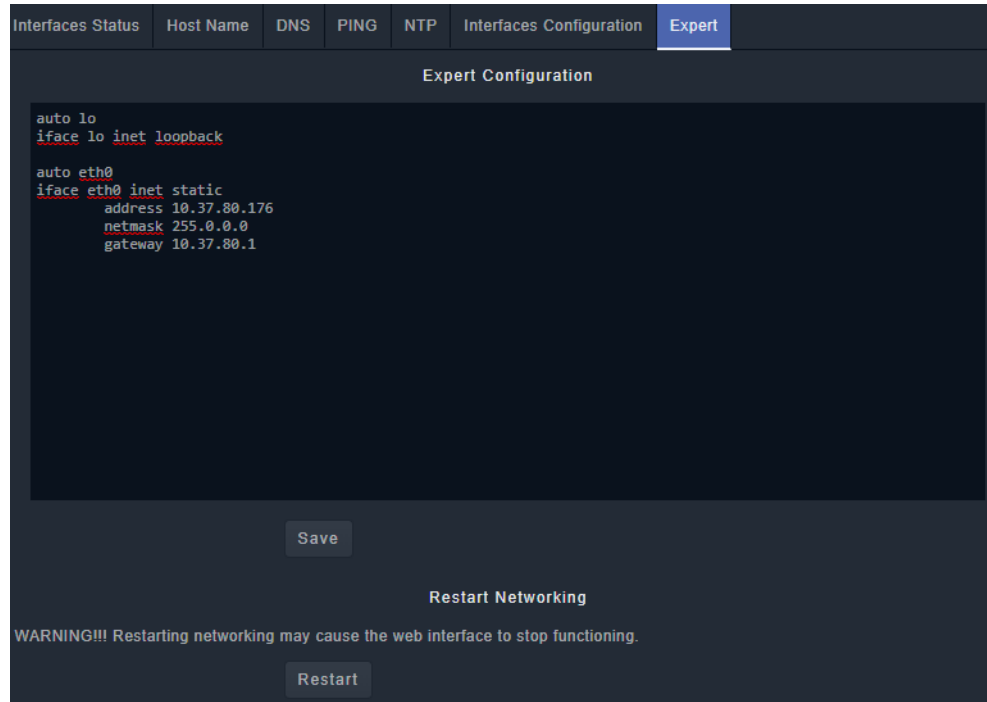
Parameter	Description
Save	Save the changes you have made to the ipconfig file.
Restart	Restart the IP stack to apply the changes you have made to the ipconfig file.

Log Files Task

Grass Valley Technical Support may ask that you send them a log file or core dump to help with system diagnostics. The following tabs are documented below.

- Log Files Screen, on page 94
- Core Dumps Screen, on page 97

Log Files Screen

View the log files for the following GV Orbit services.

- Densité GVOC
- Densité
- Device Manager
- Elastic
- GV Orbit Control

- IP Friendly Name Service
- License Service
- Automatic Network Configurator
- NMOS Registry
- Alarm API
- Email
- Repository Manager
- IP Proxy
- Log Server
- Map View
- Masking
- Monitoring
- MV Cluster Manager
- Event Logging
- Relay
- Routing
- SNMP
- Web Renderer
- Server Health
- System

For more information about the GV Orbit services, see GV Orbit Services, on page 107.

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 97.
Tail	Click to see the tail of the service's log. See also Log File / Tail Log File Details, on page 97.
Download	Click to download a log file.
Size	Shows the log file's file size.
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.

Core Dumps Screen

A core dump is a file containing a copy of the process' memory at the time of a crash. This file can be sent to Grass Valley for root analysis to possibly improve software stability in a future software release. When an error such as `2021-04-12 20:59:42` **[CRASH] ERROR - 11 Process crashed** : `/opt/gv/orbit/bin/node node PID=11 SIGNAL=11` is shown in the gvos.log, this indicates that a core dump was generated for the service; see Log Files Task, on page 94 for more information. When a core dump has occurred, it is shown in the Core Dump screen for you to download to your PC.

Parameter	Description
Service/Process Name	Shows the name of the service or process for which a core dump was generated.
Info	Shows specific process information such as the core dump time stamp, the software build version.

Parameter	Description
Last Modified	Shows a time stamp as to when the core dump file was generated. A new core dump file overwrites the previously generated one.
Size	Shows the file size on disk for the core dump file.
Download	Click to download the core dump file to your PC. This file can be sent to Grass Valley for root analysis to improve software stability in a future software release.

Upgrade Task

You must be an administrator user to configure this task. See Users Task, on page 104 for more information. The Upgrade Task allows you to:

- Upload the latest software onto the GV Orbit Admin Web Interface and then install it. See Software File Upload and Operating System Upgrade, on page 99.
- Upgrade the individual applications running on the GV Orbit server to the latest available version when the software upload has application updates. See Application Upgrade/Installation, on page 101 and Upgrading GV Orbit Server Applications, on page 103.
- 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 97.

For a cluster, a special upgrade procedure must be followed. See Upgrading Software and Applications on a Cluster, on page 75.

Verifying Upgrade File Integrity

To ensure the integrity of any software upgrade file you are going to upload to the GV Orbit Server, a SHA256 file is also provided to confirm the checksum of the update file. This ensures that the file you are about to upload to the server is complete and intact. If necessary, re-download the upgrade file to get a good copy.

For this procedure, you must have 7-Zip installed on your PC. 7-Zip is available for download from www.7-zip.org.
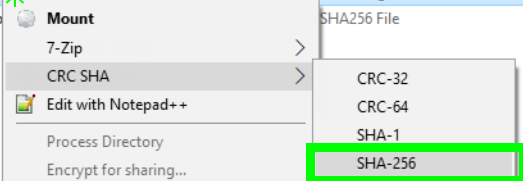
Proceed as follows.

1 Download both the upgrade file and it associated SHA256 file.

2 Right-click the upgrade file and select **SHA-256**.

The checksum is calculated for the upgrade file.
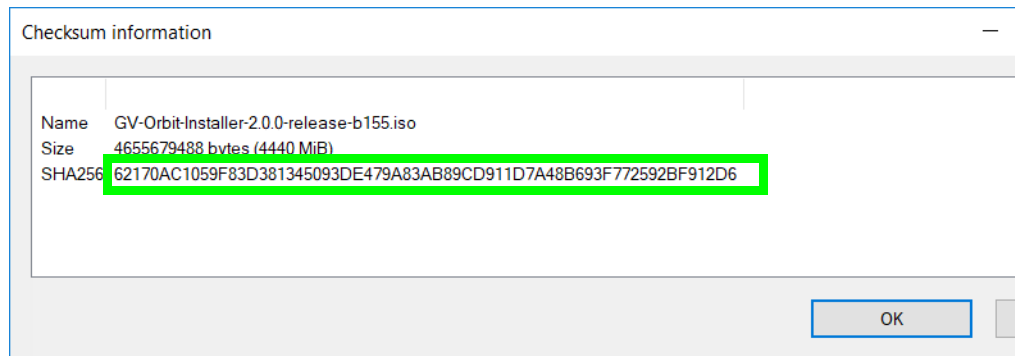
3 Open the SHA256 file in a text editor and compare the checksum value shown to that calculated for the upgrade file.
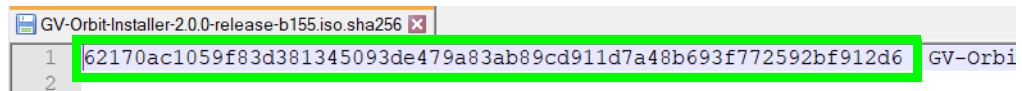
- If the checksum values do not match:
    - Try to download the file again and ensure that the download has completely finished. Calculate the checksum again to verify the file's integrity.
    - Contact Technical Support to obtain a legitimate upgrade file. See Grass Valley Technical Support, on page 302.
- If the checksum values do match, you are clear to upload the upgrade file to GV Orbit Server. See Software File Upload and Operating System Upgrade, on page 99.

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 302.

- 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.
	1 Click **Choose File** to identify the upgrade file on our PC.
Upload	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 104.
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/Installation

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 99), then you can upgrade those applications. Applications that can be upgraded/installed are shown with a blue background.

When the License Service is not installed, the **License service must first be installed** errors are shown on the Application Upgrade screen.

These errors are resolved by installing the License Service and activating the GV Orbit's license. This is a special one-time upgrade procedure when upgrading from GV Orbit version 1.7.X or lower to GV Orbit version 2.0.0 or higher. See Troubleshooting License

Service Errors, on page 185 and Pre-Ordering a License File, on page 183 for more information. Only applications that are allowed by the license can be upgraded or run.

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 all   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 107.
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 99.
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**. **Cannot be installed:** installation of this application is blocked by your server's current license. See License Service, on page 183. **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 103.
Message	Shows the current progress of a task in your browser's lower left corner. **License option disabled:** installation of this application is blocked by your server's current license and is unavailable. See License Service, on page 183. For the available license types, see Services Availability, on page 108.
Select all	Select all applications that are shown as **Ready to install** 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 / installs the selected applications with the application version shown in **Uploaded version**. Wait for the upgrade / install of the applications to complete before carrying out other operations such as a reboot. See also Upgrading GV Orbit Server Applications, on page 103.

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 Software and Applications on a Cluster, on page 75.

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 302.

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 302.

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 97 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 104
- Create User Screen, on page 105
- Password Change Screen, on page 106

The *admin* user is a special profile that is used by clients to connect to the GV Orbit Admin Web Interface 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 105), their profiles are shown here.

Note: To access the Administration screen, you must be an administrator. Otherwise, the Administration screen is not visible.
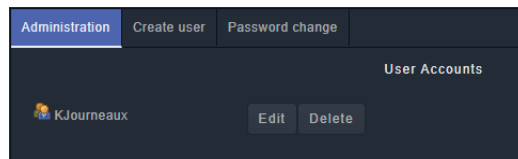
In addition, you can perform the following actions in the **Administration** screen:

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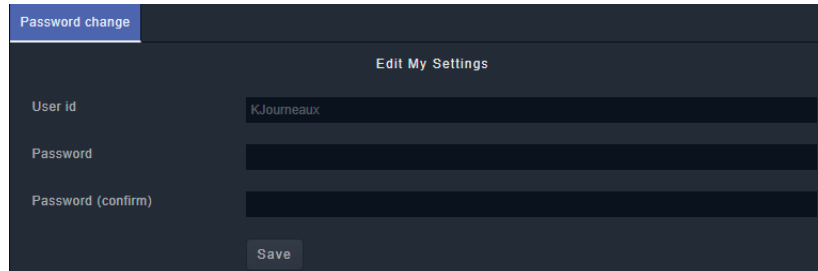
Parameter	Description
Edit	Click to modify the user's credentials (user ID / password).
Delete	Click to remove the user account.

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**.

GV Orbit Services

GV Orbit Server	GV Orbit VM
●	●

References to GV Orbit Server apply equally to GV Orbit VM.

Introduction

You must be an administrator user to access GV Orbit Services. See Users Task, on page 104 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.
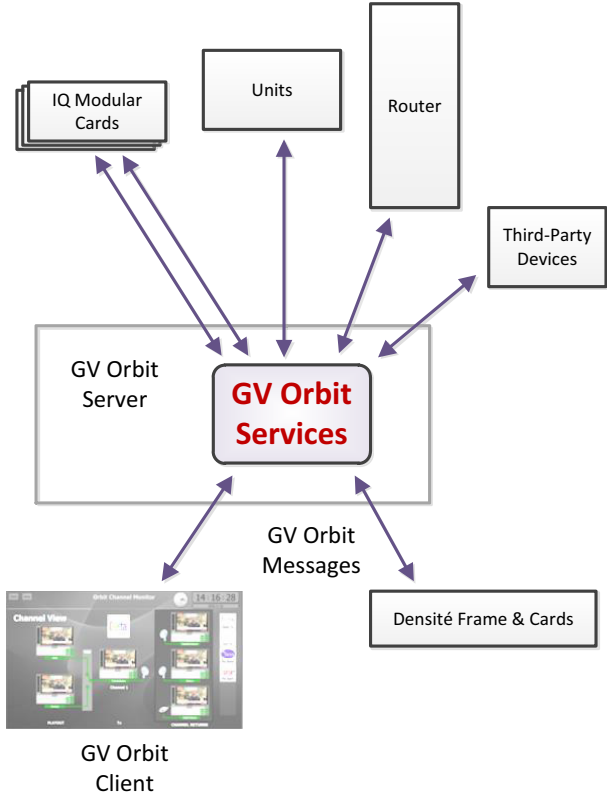
Fig. 7-1: GV Orbit Services

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 112.

Services Availability

The GV Orbit **Professional** and **Enterprise** products use GV Orbit Services running on one or more GV Orbit servers. To know which services are available for each GV Orbit product option code, refer to **Service Licensing and Software Versions Included in GV Orbit** in the *GV Orbit Release Notes*. See Related Documentation, on page 25.

As of GV Orbit version 2.0.0 or higher, the licensing model is enforced by the License service, which must first be installed in order to upgrade any GV Orbit service. For more information, see License Service, on page 116.

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 71 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 7-2 shows a general view of a GV Orbit Services ecosystem.
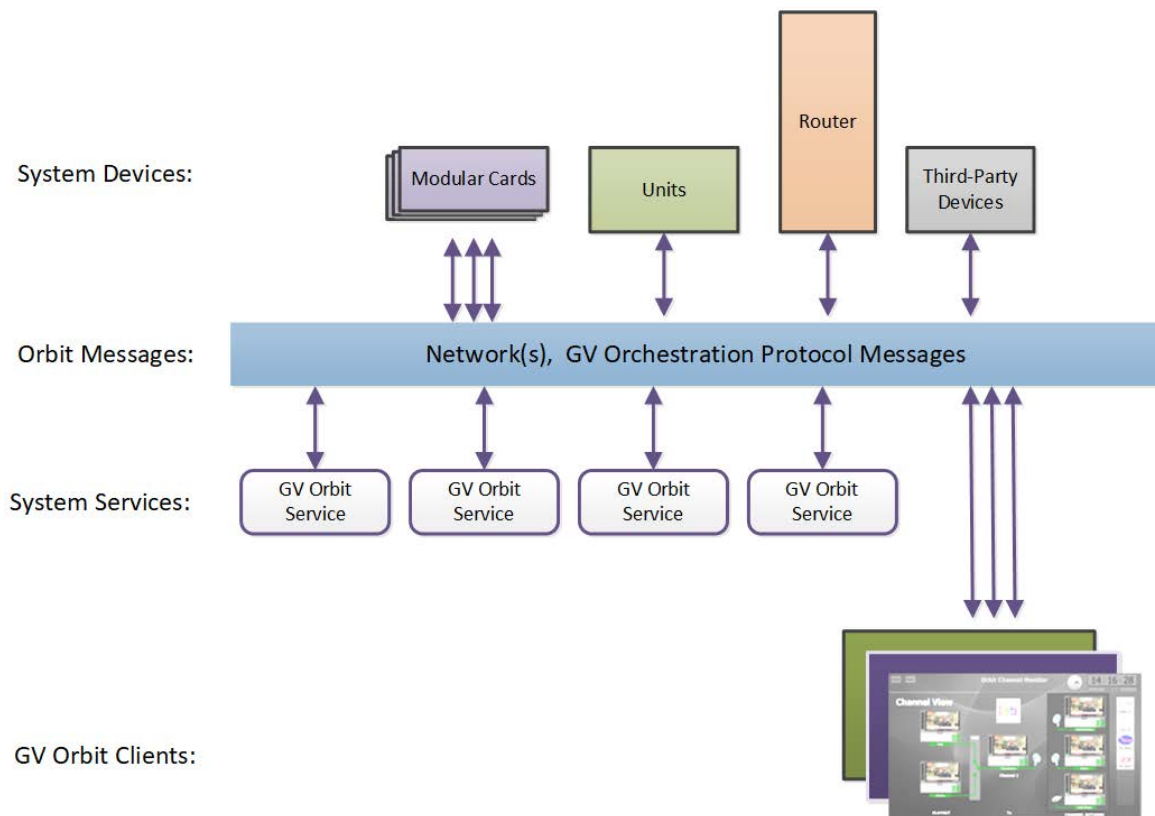
Fig. 7-2: GV Orbit General Diagram

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 7-3 shows a functional diagram of a GV Orbit Services ecosystem, showing system devices, services, and the GV Orbit message communication 'Domains'.
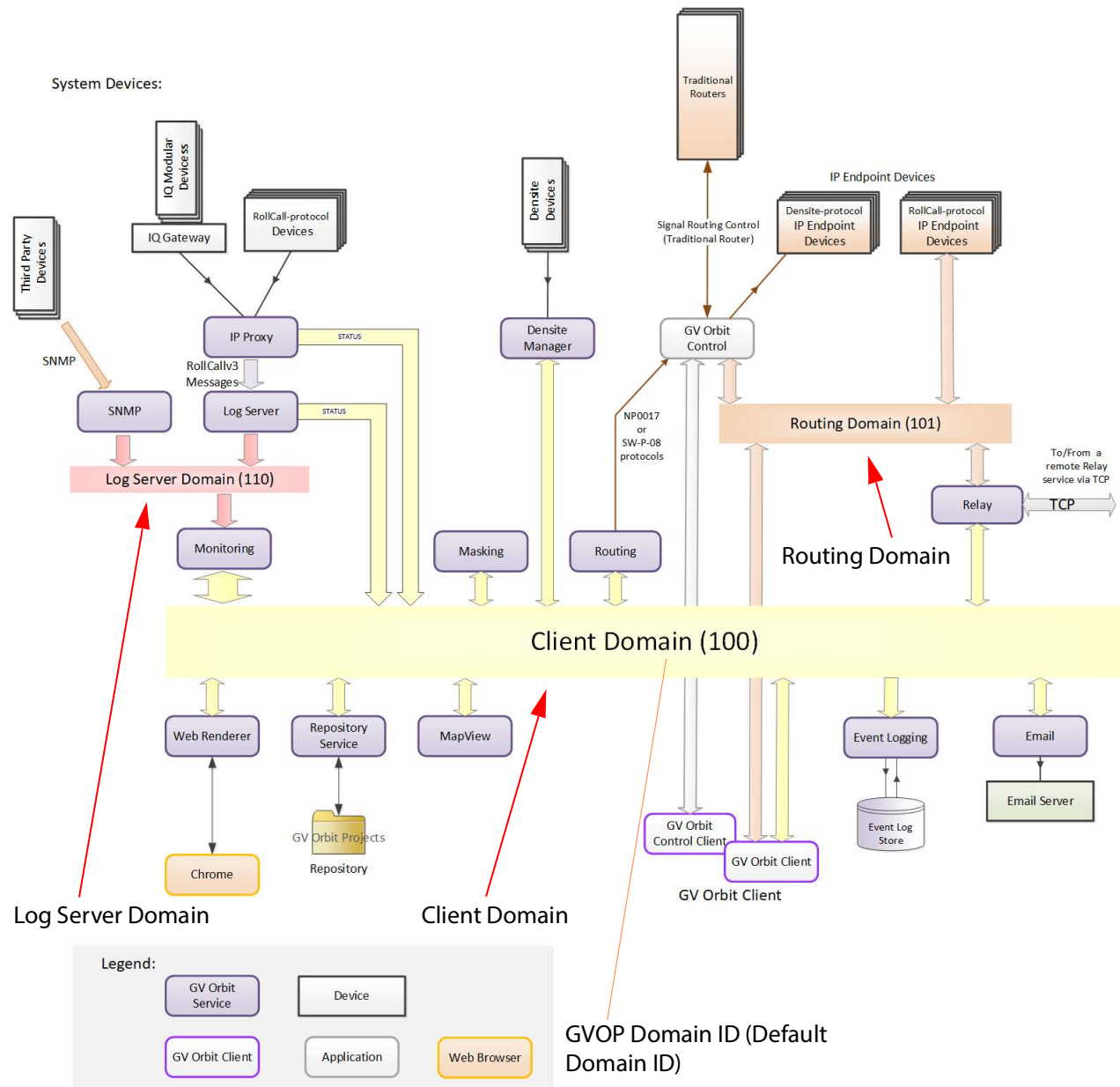
Fig. 7-3: GV Orbit Services Ecosystem Diagram with Domains

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). See Grass Valley Orchestration Protocol (GVOP), on page 301 for information on GVOP Domains.

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 7-3 on page 110.) Each Domain is defined with a Domain ID Number.

Services Overview

Alarm API Service

This service exchanges alarm information between GV Orbit and external devices (such as processing cards) through a REST API over HTTP. Alarm information can be imported (written) into GV Orbit or it can exported from GV Orbit (read).

All calls are currently unencrypted using HTTP and as such, the system architecture must take this into account. The Alarm API service has an option to switch off inbound alarms, which only provides read-only access to alarm data.

This service has integrated API documentation, allowing you to develop your own alarm application for a device.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Alarm API Service, on page 136.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Automatic Network Configurator Service

The **Automatic Network Configurator** service automatically configures any discovered GV Fabric network switch for use with GV Orbit. When this service finds a GV Fabric network switch on the network, or when you factory-reset an existing GV Fabric network switch, the service uses Zero Touch Provisioning (ZTP) to automatically configure the GV Fabric network switch. Out of the box, the GV Fabric network switch comes with its ZTP process enabled.

This service uses ZTP to automatically perform the following switch configuration actions:

- Update the GV Fabric network switch with the latest approved/compatible firmware.
- Set the GV Fabric network switch's Initial configuration.
- Set the GV Fabric management network settings and credentials.

Once the GV Fabric network switch is configured and made available, this service makes any GV Fabric network switch available in the:

- GV Orbit Client *Network View*.
- *Discovered Devices* list in the GV Orbit Control client. To use the GV Fabric network switch with GV Orbit, refer to *Configuring a GV Fabric Network Switch Device* in the **GV Orbit Client User Guide**. See Related Documentation, on page 25.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Channel Manager

The **Channel Manager** service supports Densité devices such as the XIP-3901-UDC-IF that have two or more independent processing channels so that GV Orbit can individually control these processing channels as needed. This allows the card's resources to be used as and where needed without having to be aware of where the card is physically located.

Refer to **Channel Manager / Snapshot Recall Card Support** in the *GV Orbit Release Notes* for a list of supported cards for this feature. See Related Documentation, on page 25.

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

Precondition: The License Service must be installed and running.

For more information, see Densité Manager Service, on page 139.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Device Manager

The GV Orbit **Device Manager** service lists and manages connections to devices from a GV Orbit system to provide device operating status and information for the purpose of device health monitoring for supported devices.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Device Manager Service, on page 142.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Elastic Service

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

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Email Service

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

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Email Service, on page 150.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Event Logging Service, on page 153.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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. This service also provides the GV Orbit Client application for users to download, install, and connect to the GV Orbit Server.

Precondition: The License Service must be installed and running.

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. This service also provides the GV Orbit Control Client application for users to download, install, and connect to the GV Orbit Server.

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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 Client User Guide. See Related Documentation, on page 25.

There is no admin configuration interface for this service.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

The **IP Friendly Name** service uses 101 as the Default Client GVOP Domain ID. 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.

Precondition: The License Service must be installed and running.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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 69.

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.

Precondition: The License Service must be installed and running.

For more information, see IP Proxy Service, on page 176.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Kibana Service

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

You should disable this service as usually it is not required for production use; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The Elastic Service and License Service must be installed and running.

There is no admin configuration interface for this service.

License Service

GV Orbit is licensed software, sold under the following GV Orbit product option codes:

- GVO-CFG-PRO
- GVO-MON-PRO
- GVO-CTL-PRO
- GVO-CTL-ENT

See Services Availability, on page 108 for more information.

As of GV Orbit version 2.0.0 or higher, the licensing model is enforced by the License service, which must first be installed in order to upgrade and activate any other GV Orbit service that is a licensed part of this software version.

When this service is not installed, the following **License service must first be installed** errors are shown in the Application Upgrade screen **Message** area. These errors are resolved by installing and configuring the License Service. See Troubleshooting License Service Errors, on page 185 for more information.

For more information, see License Service, on page 116.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Log Server Service, on page 191.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

MV Cluster Manager Service

This service is used with a cluster of multiviewers and it automatically translates a single GV Orbit 'Clustered Multiviewer' project into its constituent, 'single-multiviewer' projects and pushes all of the individual projects out to their respective, individual multiviewers.

This service watches for and reads a 'Clustered Multiviewer' project from a repository on the GV Orbit server and automatically manages each individual multiviewer device of an **MV Cluster**. In this way, video walls served by an **MV Cluster** can be defined and managed independently of the individual multiviewer devices.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see MV Cluster Manager Service, on page 256.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Map View Service, on page 202.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Masking Service, on page 213.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Monitoring Service, on page 220.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

NMOS Registry 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 Registry 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 Client User Guide**. See Related Documentation, on page 25.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Relay Service, on page 261.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

Precondition: The License Service must be installed and running.

For more information, see Repository Manager Service, on page 270.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Routing Service, on page 279.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

SNMP Service

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

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see SNMP Service, on page 286.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Snapshot Recall Service

The **Snapshot Recall** service records the configuration setting of one or more devices such as the XIP-3901-UDC-IF. These setting become presets that can later be recalled as needed according to the production needs at the moment.

Refer to **Channel Manager / Snapshot Recall Card Support** in the *GV Orbit Release Notes* for a list of supported cards for this feature. See Related Documentation, on page 25.

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Server Health Service

The GV Orbit **Server Health** service monitors the GV Orbit Server hardware's health parameters. Through this service, it is now possible to monitor and view alarms for the GV Orbit server's health status in the Network view in the GV Orbit client. The alarms available in the GV Orbit client include:

- Power supply status
- Fan status
- Server redundancy status
- Temperature

- Server resource usage
- Application status (including resource usage per application)

Precondition: The License Service must be installed and running.

There is no admin configuration interface for this service.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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.

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Precondition: The License Service must be installed and running.

For more information, see Web Renderer Service, on page 287.

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

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 57.

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

Disabling Unneeded Services to Improve GV Orbit Performance

When initially configuring GV Orbit, you normally allow all services to run. Once you have fully built-out your GV Orbit deployment, you may not need all services to be running. Some services may already be disabled by the GV Orbit license. By disabling unneeded services:

- More server resources are available to the remaining services that are running on the server, which can improve performance for faster path finding and quicker takes for example.
- More available RAM and CPU cycles for path finding.
- Reduced disk IOs for unneeded services.
- Faster reboot time if only the required services need to be started.

Schedule this maintenance operation during off hours when the system is not in use. Disable a service by stopping it, see Application Maintenance, on page 69. Once you have disabled one or more services, fully exercise your GV Orbit installation to ensure it meets your operational needs by making takes to and from all devices, use any connected panels, and so on.

If you find that GV Orbit no longer works as expected, start a service and see if it restores normal operation.

First assume all available services are needed and then turn off services by exception by going through the following check list.

- Are email notification needed? No, stop the Email Service.
- Are HTML project screens needed? No, stop the Web Renderer Service.
- Is the Relay Service being used to relay IP routing commands from the media to control network? No, stop the Relay Service.
- Does the project use custom Kibana screens? No, stop the Kibana Service. While Kibana can be used for troubleshooting and analysis of logged data, it usually is not required for production use.
- Are any devices being monitored using SNMP? No, stop the Device Manager and SNMP Service.
- Are alarms being imported or exported using the Alarm REST API? No, stop the Alarm API Service.
- Are MV Series multiviewers configured using the Room mode? No, stop the MV Cluster Manager Service.

The following services are required when:

- Routing Service is required for crosspoint snapshot or Bulk Routing/Soft Panels in the GV Orbit Client.
- Monitoring Service, Masking Service, Event Logging Service, and Elastic Service is required for alarms on the network tree or custom screens.
- Map View Service is required for aggregate state on custom user screens.
- Densité GVOC Service is required for upgrade and control of Densité Devices.
- IP Proxy Service and Log Server Service for connection and alarms for IQ devices.
- Automatic Network Configurator Service is required when used with GV Fabric network switches.
- NMOS Registry Service is required when GV Orbit is used with NMOS devices.

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 57.

> 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 57).

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.
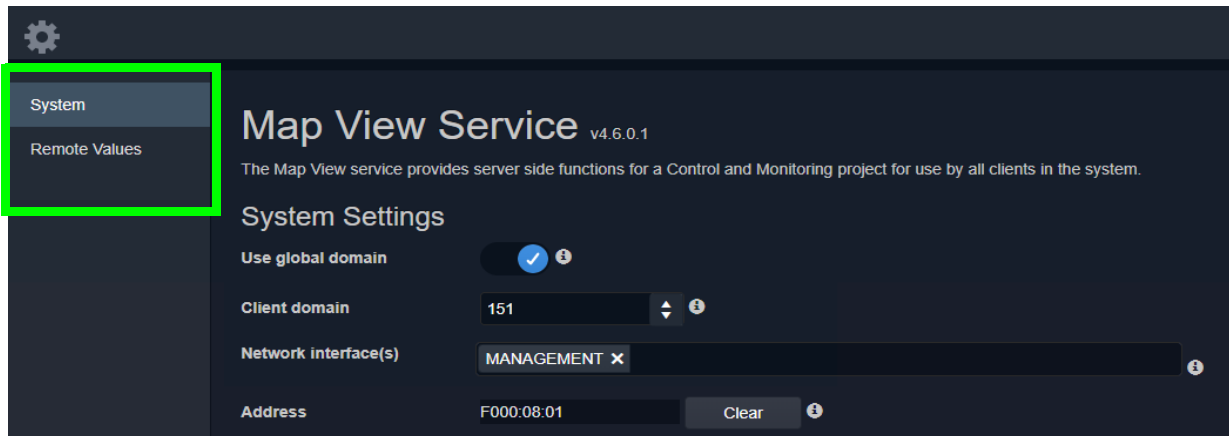
Figure 8: Typical GV Orbit Service Configuration Screen

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 126.

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 125.)

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.

> Note: Settings need to be saved before they take effect before new log data is logged (processed, viewed, and searched).

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.
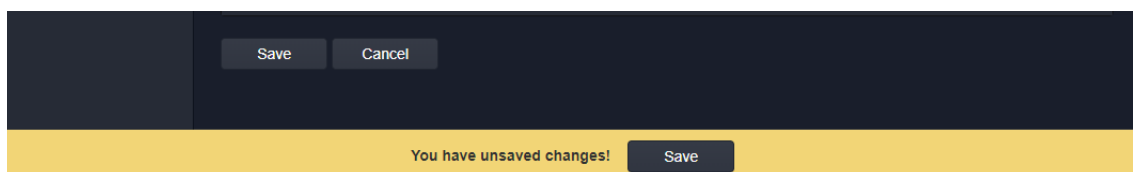
Figure 9: Unsaved Changes Banner

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.
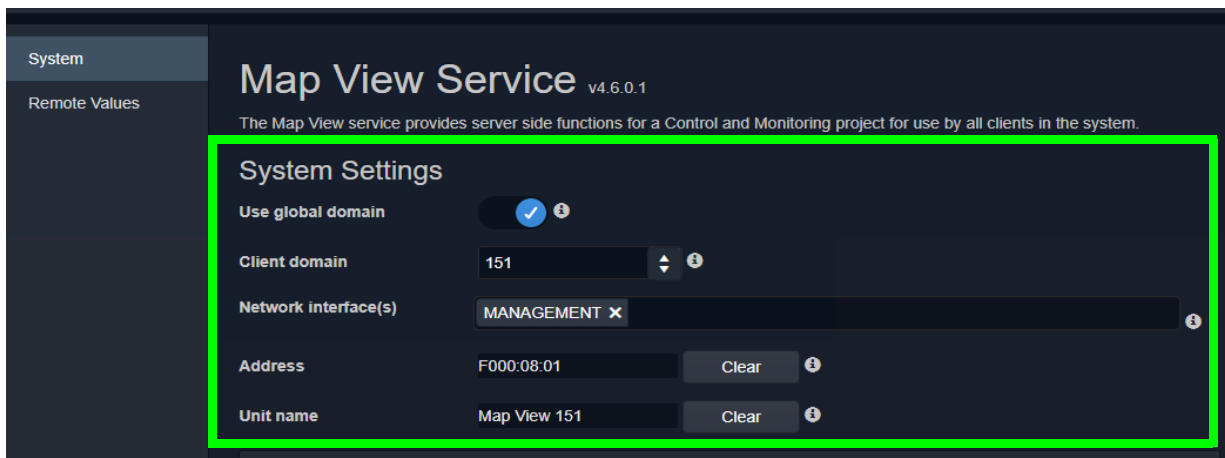
Figure 10: Example Common Setting Types (Map View Service Shown)

Client GVOP Domain ID Setting

Each service uses a GVOP Domain ID to communicate within a GV Orbit system. This setting is made on the service's **System** configuration screen. A global Client Domain ID can be set up in the GVOP Domain screenGV Orbit (see GVOP Domain Screen, on page 89) to set the default Domain ID to be used by all services. For certain services, you can override the default Domain ID it is to use as follows:

•   Enable **Use Global Domain** setting to use the global settings currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89.

•   Disable the **Use Global Domain** setting and enter a value in the **Client Domain** field to manually set the Domain ID for this individual service.

In most use cases, enable **Use global domain** so that all services will use the same Client GVOP Domain ID throughout the GV Orbit system.

See Figure 7-3, GV Orbit Services Ecosystem Diagram with Domains, on page 110 for a system diagram showing an example of Domains and Grass Valley Orchestration Protocol (GVOP), on page 301 for information on GVOP Domains.

> Note: GV Orbit Client(s) and GV Orbit Service(s) must be on the same GVOP Domain ID to be able to work (to communicate and exchange data with each other).
> For example, if the GV Orbit Client and **Email** service are on different GVOP Domain IDs, they cannot exchange data with each other.

Default GVOP Domain IDs

The valid range for a GVOP Domain ID is 1 to 232. A new GV Orbit system uses the following default GVOP Domain IDs. The GVOP Domain ID should match across all GV Orbit service so the services can communicate with each other.

GV Orbit Services Domain	Default GVOP Domain ID	Comment
System Domain	0	Internally used by GV Orbit for system auto-discovery.
Client Domain	100	Monitoring traffic.
Routing Domain	101	For control of IP Endpoints for signal routing.
Log Server Domain	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.

Here are further guidelines:
- Do not add the MEDIA interface for any service **Network Interface(s)** with the exception of the Relay Service, if this is actually needed in practice. The reason is you do not want to pollute the MEDIA networks with unnecessary traffic like alarm data.
- Even for the Relay Service, the MEDIA interface should only be enabled when setting up the Relay Service operation. It is not needed for the main service alarming.

For more information about the networks connected to the GV Orbit Server, see:
- XR2 Port Identification, on page 45 for an XR2 model GV Orbit Server.
- About the GV Orbit OVA, on page 34 for a GV Orbit VM.

• IP Configuration Task, on page 88 and more specifically the **Groups** parameter in Interfaces Configuration Screen, on page 90.

> 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.

When selecting the interface(s) to use, ensure selected interface(s) are on the same network as the corresponding GV Orbit Client(s). For GV Orbit, all services use the MANAGEMENT interface to communicate.
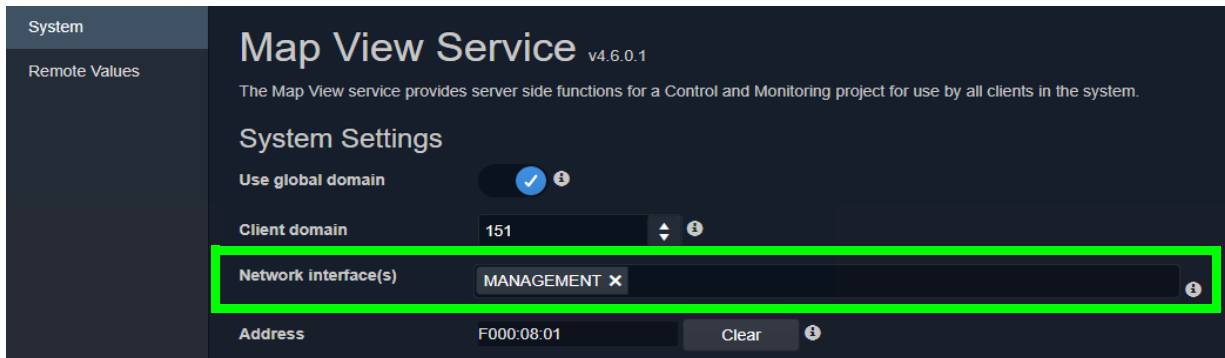
To select the network interface(s) to be used by a service

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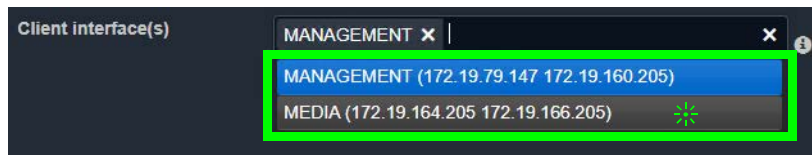
2 Select a server network interface the service is allowed to use from the drop-down list. Repeat to add more than one interface.

When one or more interfaces have been selected the service will use only those interfaces listed.
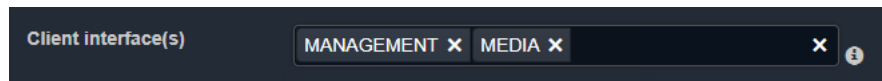
> Note: When selecting **Network Interface(s)** to use for services, ensure the selected interface(s) are the ones being used by the corresponding GV Orbit Client(s) and production equipment for the service.

To delete a network interface item

To delete an item from the list of selected interfaces:

1 Click on its adjacent **x**.
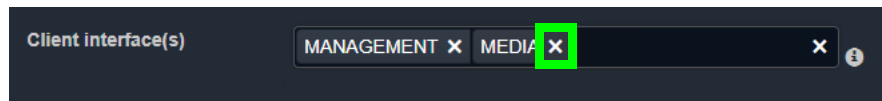
RollCall Address Setting

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 129, and RollCall Address, on page 297, for information about RollCall address.

Click the **Clear** button beside the **Address** text box to restore a service's default address.
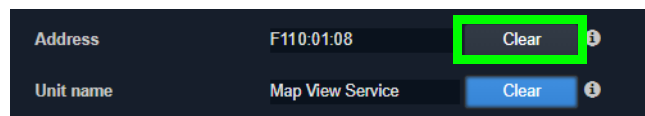
Figure 11: Address and Unit Name Clear Buttons

Unit Name Setting

Each **Service** is given a unique 'friendly' name that is a human-readable identifier for the service, which helps to identify the service in log files, in the GV Orbit Client **Network** window in a GV Orbit Client, and so on.

Note: This name should be unique, including for redundant configurations. For example, 'Masking A' and 'Masking B'.

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 that requires it;
- a default log file configuration is set up;
- default IP port numbers are used; and
- many alarm monitoring settings are pre-configured.

RollCall address uniquely identify services in the GV Orbit system. This will be used when the service publishes its own log data. You are free to define the RollCall addresses for a system.

Default Service RollCall Addresses and Unit Names

Service Default Unit Name	Default RollCall Address
Alarm API Service	F110:01:0D
Automatic Network Configurator Service	Not applicable
Channel Manager	Not applicable
Densité Manager Service	Not applicable
Densité GVOC Service	Not applicable
Device Manager	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 Friendly Name Service	Not applicable
IP Proxy Service	F110:01:01
Kibana Service	Not applicable
License Service	Not applicable
Log Server Service	F110:01:02
MV Cluster Manager Service	F110:01:0C
Map View Service	F110:01:08
Masking Service	F110:01:03
Monitoring Service	F110:01:04
NMOS Registry Service	Not applicable
Relay Service	F110:01:0A
Repository Manager Service	F110:01:0B
Routing Service	F110:01:06
SNMP Service	F110:01:10
Snapshot Recall Service	Not applicable
Server Health Service	Not applicable
Web Renderer Service	F110:01:09

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 is used by services that have alarms and the service published its own log data to the logging service. 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, RollCall-protocol devices and frames, and so on through the **Densité Manager** service, **IP Proxy** service and **Log Server** service.
- The user's email server settings through the **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 129, and RollCall Address, on page 297, 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 68.

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 User Guide*. See Related Documentation, on page 25.

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**.
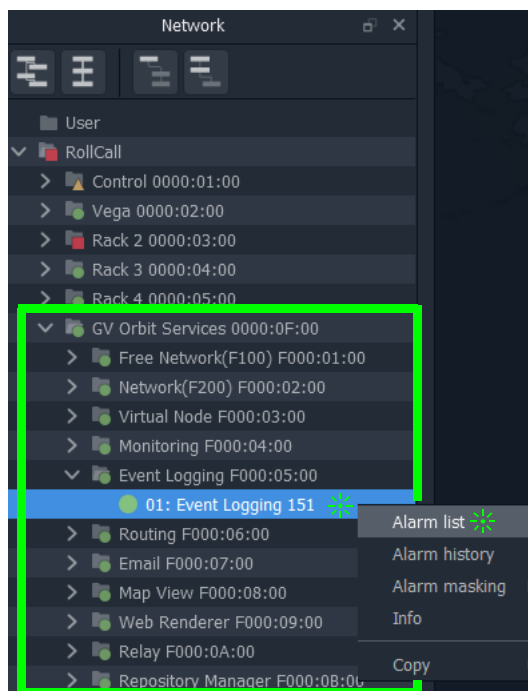
The **Alarm List** summary for the service is shown.

Common User Interface Features

Changes need to be Saved List Indicator

A red triangle ◥ appears in the top-left of each table entry after is has been edited. This indicates that a 'Save' must be performed for the change to be applied.
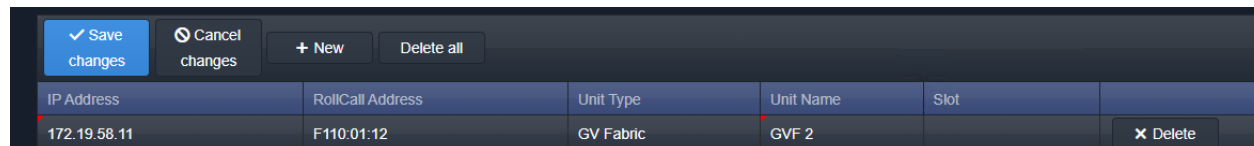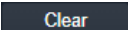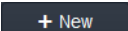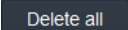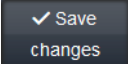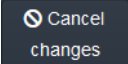
Figure 12: Example Filter Rules List
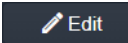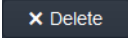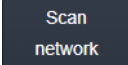
List Control Buttons

Configuration lists have a number of common control buttons with the following functions. The following shows a typical list.

List Control Button	Description
Clear Clear	Restore the default value for the parameter.
+ New New	Add a new, empty row item to the list. Then fill in the information required for each column. A new row item needs explicitly saving with **Save**.
Delete all Delete all	Delete all list row items. A confirmation prompt is shown. This then action is carried out immediately.
✓ Save changes Save Changes	Save changes made to the list. Changes include additions to the list or deletions. 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 Cancel Changes	Cancel any changes made to the list.

List Control Button	Description
Edit (✎ Edit)	Edit the selected item.
Delete (✕ Delete) (✕)	Delete the list row item.
Scan Network (Scan network)	Click to automatically locally-populate the table with all units/devices and such which are found on the network. **Note:** Click **Save Changes** is required to save this change.

Page Navigation Bar

When a list is too long to be shown on one page, navigation buttons are available to continue down the list. 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
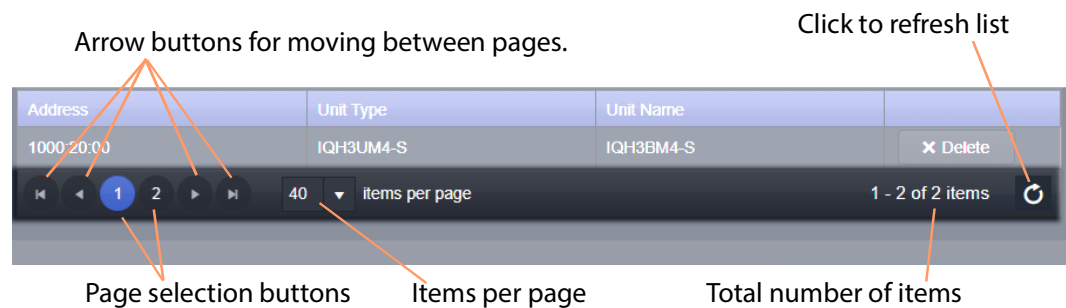
Sorting Rows

Certain lists support sorting. Click on a column title to sort the list by A-to-Z. Click the column title a second time to sort the list by Z-to-A.

Alarm API Service

Introduction

The AlarmAPI provides access to the GV Orbit monitoring data through a REST interface.

The monitoring data is presented using the Common Data Model for Alarms (CDMA). This model provides the current state of all Grass Valley equipment, including IQ modular, Densité, multiviewers, and so on.

All calls are currently unencrypted using HTTP and as such, the system architecture must take this into account. The Alarm API service has an option to switch off inbound alarms, which only provides read-only access to alarm data.

The API supports:

- Querying of alarms
- Alarm notifications using push or pull
- Creation, update and deletion of alarms
- Automatic removal of obsolete alarms where a publisher is inactive

Within a GV Orbit system, alarms are grouped into collections based around a device (sometimes called a Unit). Devices may be physical, such as a modular card, or virtual such as a categorized alarm. To obtain a list of all devices use the */devices* endpoint. Devices are identified by a path, which may be a virtual Linux style file system path (typical on Densité/iControl equipment) or a RollCall address of the form NNNN:UU:PP. The RollCall address has a logical path built in and therefore can be resolved to a path in a network tree.

This service has integrated API documentation, allowing you to develop your own alarm application for a device. See API Spec (Open API) and API Documentation, on page 137. The API documentation has software code snippets usage examples commonly-used languages.

PREREQUISITES: To use the Alarm API service, software development is needed to create code necessary to interface with the devices you want to share alarm data with.

Open source tools are available to help you to quickly create code in a variety of languages to interact with GV Orbit's Alarm API service.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

The **Alarm API Service System** configuration screen is shown.

Setting	Description
System Settings > Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
System Settings > Client Interface(s)	See Network Interface(s) Setting, on page 127.
System Settings > Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
System Settings > Unit Name	See Unit Name Setting, on page 129.
System Settings > Enable Write Access	Set to allow an external device to both read alarm data from and to write alarm data to GV Orbit. For example, this must be enabled if you want a card such as the XIP-3901-JPEG-XS to make its alarms available in GV Orbit. Furthermore, you must set the GV Orbit Server's Management / Virtual IP address in the XIP-3901-JPEG-XS card's configuration; see Cluster Task, on page 71 for this information. Disable to ignore inbound alarms; this provides read-only access to GV Orbit alarm data. This option protects GV Orbit alarms from being written to by an external application.

API Spec (Open API) and API Documentation

The **API Spec (Open API)** screen is a YAML file available for download of the API documentation for the client and service side APIs. The YAML file is used to auto generate the HTML documentation found in the **API documentation** screen.

The GV Orbit Alarm API provides access to GV Orbit monitoring data through REST. The monitoring data is presented using the Common Data Model for Alarms (CDMA) model. This model provides the current state of all Grass Valley equipment, including IQ modular, Densité cards, multiviewers, and so on.

This document defines the endpoints used to access this data, including input and output data types.

The YAML file can be used with OpenAPI tools such as *Open API Generator* to help you to quickly create code in a variety of languages to interact with GV Orbit's Alarm API service.

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.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

The **Densité Manager** service **System** configuration screen is shown.
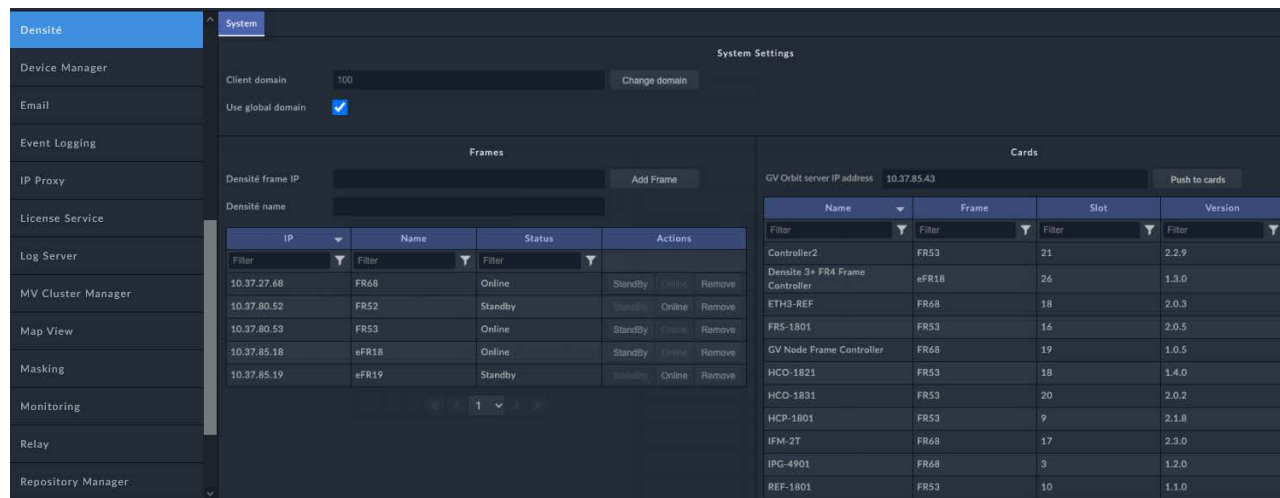
Setting	Description
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126. Click **Change domain** to apply your change.
Change Domain	Click to save the new GVOP Domain ID to be used 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 GVOP Domain ID.

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Set: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Deselected: use the **Client domain** setting configured above.
Frames	A list of the currently added frames that are managed by this service. See also Adding a Densité Frame.
Densité Frame IP	Enter the IP address of the Densité frame controller to be added. Click **Add Frame** to apply your change.
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.
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	A list of all the cards visible to the service that have been found in frames that have been added to the service.
GV Orbit server IP address Push to cards	**NOTE:** These parameters are for certain Densité cards / applications that use a web configuration interface to configure them. Note that these specific Densité cards / applications do not use iControl to configure them. • Shows the current GV Orbit Server's IP address that certain Densité cards are to communicate their alarms to. • When a cluster has been formed, this shows the virtual IP address that the cards will use to communicate with the active server in a GV Orbit server cluster. Click **Push to cards** to set the shown **GV Orbit server IP address** into the configuration of each of the cards listed below, when applicable.
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 list below. The Densité frames also become visible in the GV Orbit Client's **Network** Window.

Densité card(s) are Missing in GV Orbit Client's Network Window's Tree View

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 User Guide. See Related Documentation, on page 25. The Densité card then becomes available in the GV Orbit Client's Network Window's tree view.

Device Manager Service

Introduction

The GV Orbit **Device Manager** service lists and manages the connections to supported devices from a GV Orbit system to provide device operating status and information for the purpose of device health monitoring.

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.

With this service, the alarm list for a supported device can be viewed in GV Orbit Client, found under **SNMP** in the **Network** pane.
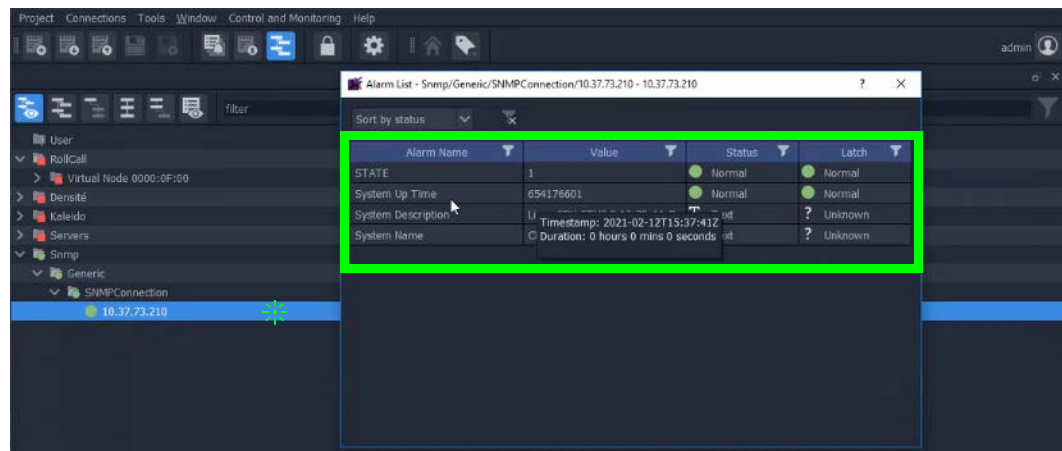
Supported devices:
- GV Fabric IP switch. These devices can be auto-discovered if the network supports multicast.
- Cisco Nexus 9000 series IP switches. These devices:
    - Must be explicitly added to the **Device Manager** service's **Devices** list.
    - Require a RollCall address.
    - Only appear in the GV Orbit Client's network tree once the device has published its first alarm.

    This service provides SNMP drivers for:
    - Nexus 9500 modular series:
        - Nexus 9000 Supervisor module.
        - Nexus 9000 Line cards.
    - Nexus 9300/9200 'fixed', single switches.
- Generic SNMP. This service provides basic SNMP connectivity status for SNMP enabled devices. These devices must be explicitly added to the **Device Manager** service's **Devices** list.

> **Note:** The **Device Manager** service only supports SNMP v2c device protocol.

- Device drivers can be uploaded to the GV Orbit Server to support new devices.

PREREQUISITES:

- To support communication with SNMP devices, this service depends on the SNMP service being installed and running. See SNMP Service, on page 286.
- Certain IP addresses are reserved by GV Orbit and cannot be used. Refer to the Release Notes for more information. See Related Documentation, on page 25.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

Device Manager service RollCall Address Range

The **Device Manager** service will use a new, automatic assigned RollCall address for each device added. This is generated by assigning the next highest available RollCall address. The RollCall address range used is:

F110:02:01   to   F11:02:FF

You can change the assigned RollCall address when adding a device, if required.

Recommendation:

Keep the **Device Manager** service RollCall address range clear when using automatically assigned RollCall addresses for added SNMP devices.

Devices Screen

The **Device Manager** service, **Devices** screen is shown below. Some devices may be automatically discovered and shown in the **Devices** screen. You must add the supported devices that are not discoverable to the list (see Adding a Device, on page 145). To view more information about a device, select the device in the table to view its configuration **Properties** on the right.

Setting	Description
⊞ Devices	Shows the currently configured devices that are to be monitored that have been added to the Device Manager. See Adding a Device, on page 145.
📖 Drivers	Shows the currently available device drivers that are available on the GV Orbit Server. See Drivers Screen, on page 144. See Adding a Driver File, on page 148 to add a new driver onto the GV Orbit Server.
⏻ Start	For a selected SNMP device driver only: click to start the driver's operation when it is stopped.
↘ Stop	For a selected SNMP device driver only: click to stop the driver's operation when it is running.
🗑 Delete	Click to delete the selected driver.
⊕ Add	Click to add a driver. Each device has its own individually-configured driver that is used to communicate with it. Set the driver configuration parameters below. See Adding a Device, on page 145.
💾 Save	Click to apply your changes made to the driver configuration parameters.
⊗ Cancel	Click to cancel the addition of a new driver.
Name	Shows the device's name, to identify it. This is the concatenation of the device's driver name and IP address. For GV Fabric devices, the **Name** text field displays the hostname of the GV Fabric device.
Host IP Address	Shows the device's network IP address.
Driver	Shows the name of the driver used to communicate with the device.
Status	Shows the current GV Orbit Server connection status with the device.
Filter Value	Narrow down the displayed items to only show entries that contain the text you have entered. For example, set **GV Fabric** as a filter to only see log entries with the word *GV Fabric* in them. Click ✕ to cancel the filter.

Drivers Screen

The **Device Manager** service, **Drivers** configuration screen is shown below.

Setting	Description
Devices	Shows the currently configured devices that are to be monitored that have been added to the Device Manager. See Devices Screen, on page 143. See Adding a Device, on page 145 to add a new device.
Drivers	Shows the currently available device drivers that are available on the GV Orbit Server. See Adding a Driver File, on page 148 to add a new driver onto the GV Orbit Server.
Download	Click to download to your PC the selected driver file in the **Driver files** list below.
Delete	Click to delete the selected driver file from the GV Orbit Server.
Choose File Upload	Add a driver file to the GV Orbit Server. These driver files are shown in **Driver files**. Each device type has its own driver file to support communications with the device. See Adding a Driver File, on page 148.
Driver files	Shows a list of driver files that have been uploaded to the GV Orbit Server through **Choose File** / Upload.
Name	Shows the device's name, to identify it. This is the concatenation of the device's driver name and IP address. For GV Fabric devices, the **Name** text field displays the hostname of the GV Fabric device.
Version	The driver's software version.
Manufacturer	The brand of hardware the filter is made to work with.
Module	The software application through which the connection is being made.
Module Version	The software application's version number through which the connection is being made.
Created	The driver's compilation date and time.

Adding a Device

Add a device as follows.

1 In the **Devices** configuration screen, click **Add** ⊕ .
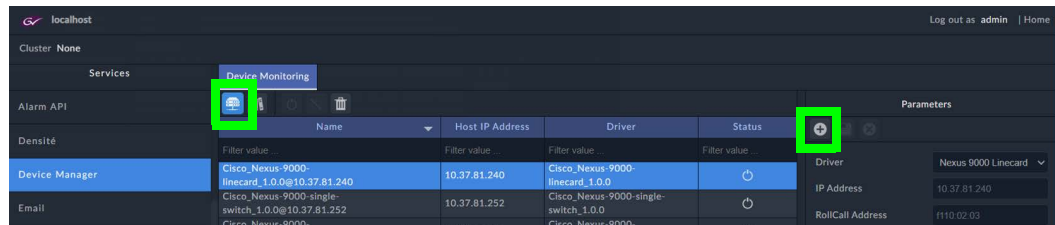
The configuration parameters for a new device is shown.
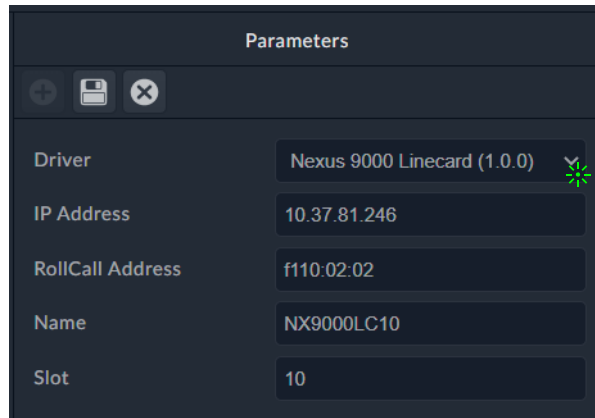
2 Select a driver for the device from the **Driver** drop-down list.

Driver Option	Description	To configure the device's driver, see
GV Fabric	GV Fabric IP switch. It can be auto-discovered if the network supports multicast.	Configuring a GV Fabric Switch or Nexus 9000 Single Switch, on page 146
Nexus 9000 Single Switch	Nexus 9300/9200 'fixed', single switches.	
Nexus 9000 Linecard	Nexus 9000 Line cards.	Adding a Modular Type Device (Nexus 9000 Line cards and Nexus 9000 Supervisor module), on page 147
Nexus 9000 Supervisor	Nexus 9000 Supervisor module.	
SNMP Connection	Generic SNMP. Basic SNMP connectivity status.	Configuring an SNMP Device, on page 147

Configuring a GV Fabric Switch or Nexus 9000 Single Switch

Configure the parameters for a GV Fabric switch or Nexus 9000 Single switch as follows.

1 Set the IP address of the device in **IP Address**.

2 If required, modify the device's RollCall address in the **RollCall Address**.

> **Note:** The **RollCall Address** column is automatically filled in with the next available RollCall address in the **Device Manager** service's RollCall address range. The address can be edited and changed, if required.

3 Set a name for the added device in **Name**. Use a human-readable name that will appear in GV Orbit's **Network** window.

Note: For a GV Fabric device type, the **Unit Name** text field is not editable.

4 Click **Save** 💾 .

The device is added to the **Devices** list.
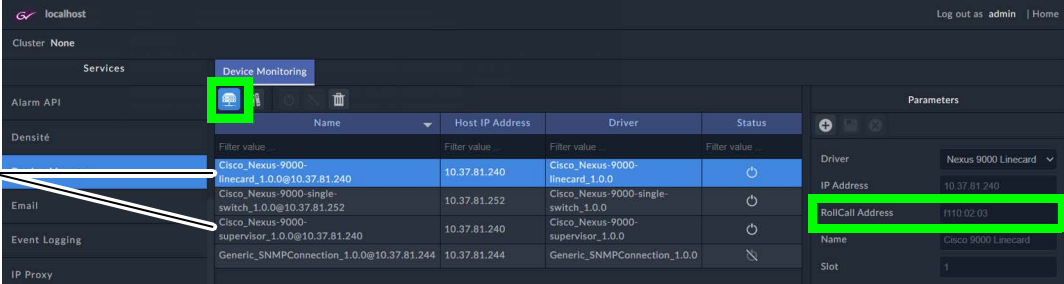
Adding a Modular Type Device (Nexus 9000 Line cards and Nexus 9000 Supervisor module)

A device may be modular and consist of more than one module. Modules can share the same SNMP interface. For example, a Cisco Nexus 9500 IP switch, with a Supervisor module and one or more line-cards.

Each module / card must be added as a separate line item in the **SNMP Devices** list. As such, each line item should have:

- the same IP address
- different RollCall addresses
- unique Names

Modular IP Switch line items with the same IP address, but different RollCall addresses

Configure the parameters for each Cisco Nexus 9500 IP switch, with a Supervisor module and one or more line-cards as follows.

1 Set the IP address of the device in **IP Address**. All associated Supervisor modules and line-cards must have the same IP address.

2 If required, modify the device's RollCall address in the **RollCall Address**.

> **Note:** The **RollCall Address** column is automatically filled in with the next available RollCall address in the **Device Manager** service's RollCall address range. The address can be edited and changed, if required.

3 Set a name for the added device in **Name**. Use a human-readable name that will appear in GV Orbit's **Network** window.

4 For a line-card, set the **Slot** number.

5 Click **Save** 💾 .

The device is added to the **Devices** list.

Configuring an SNMP Device

Configure the parameters for an SNMP device as follows.

1 Set the IP address of the device in **Host IP Address**.

2 Set the device's SNMP port number in **Host SNMP Port**. Typically, set 161 when
   GV Orbit Server is to communicate with SNMP Agents through polling, or set 162 when
   the device is to send unsolicited Traps to GV Orbit Server's SNMP Manager. See the
   device's documentation for more information.

3 Set the read community string required to access the device's MIB in **Read Community**.
   Device manufacturers often ship their equipment with a default *public* password.
   However, you can change the device's community string to keep intruders from getting
   information about the device's configuration.

4 When GV Orbit Server is to communicate with SNMP Agents through polling, set the
   polling time in **Poll Interval (sec)**.

5 Click **Save** .

   The device is added to the **Devices** list.

Adding a Driver File

A number of drivers are pre-installed with the GV Orbit Server software and are not shown
in the **Driver files** list. Each device type has its own driver to support communications with
the device. If a compatible GV Orbit Device Manager driver needs to be added, proceed as
follows.

1 Obtain a driver file from Grass Valley and save it on your PC.

2 Click **Choose File** and select the driver file on your PC.

3 Click **Upload** .

Viewing the Device Health in the Network Window

Once a device is added to the **Device Monitoring** list, it can be viewed in GV Orbit Client,
found under **SNMP** in the **Network** window, ordered by the device's RollCall address.

> **Note:** If a device has more than one RollCall address (for example an IP
> switch with a Supervisor module and one or more Line Cards) then there area
> separate line items in the **Network** window, one for each RollCall address.

To view device information

1 Find the device in the **Network** window. For example, an SNMP device is found under
   Snmp.
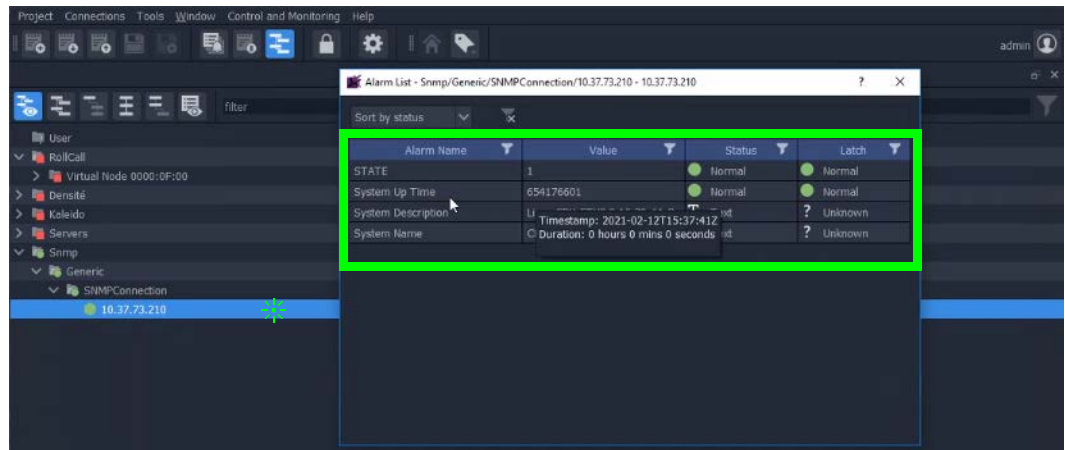
2   Right-click on the **Network** window item and select *Alarm List*.

The **Alarm List** window is displayed for the device.

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.
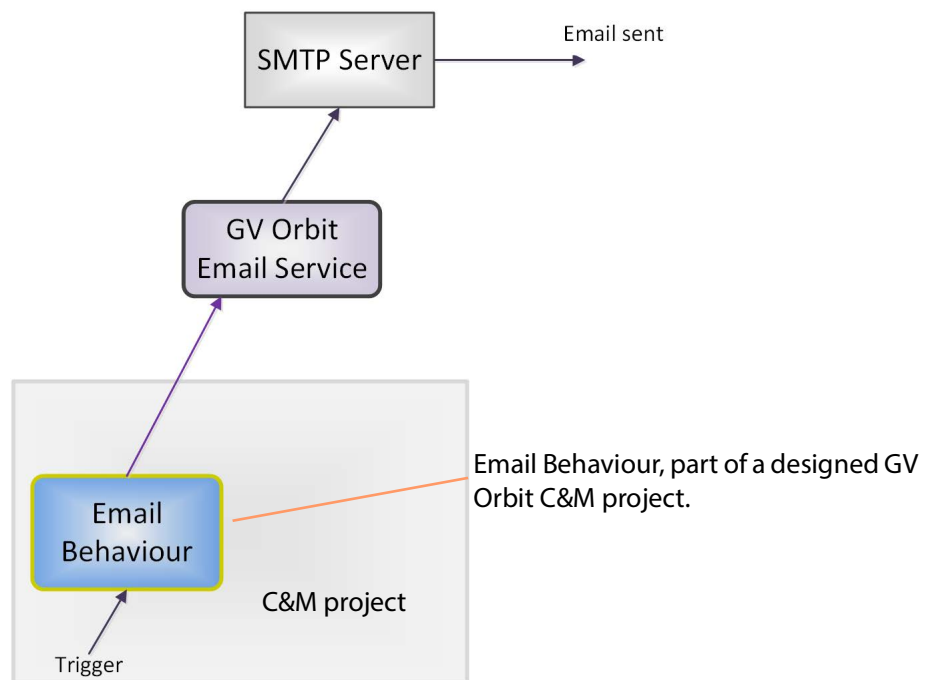
Figure 1: GV Orbit Email Service

> **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.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.
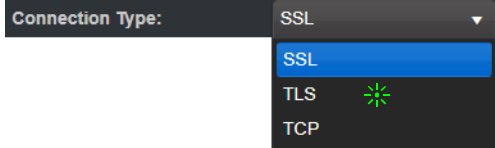
Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

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

Setting	Description
System Settings	See also Service System Settings, on page 126.
System Settings > Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
System Settings > Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126. Click **Change domain** to apply your change.
System Settings > Network Interface(s)	See Network Interface(s) Setting, on page 127.
System Settings > Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
System Settings > Unit Name	See Unit Name Setting, on page 129.
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'.
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 Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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.
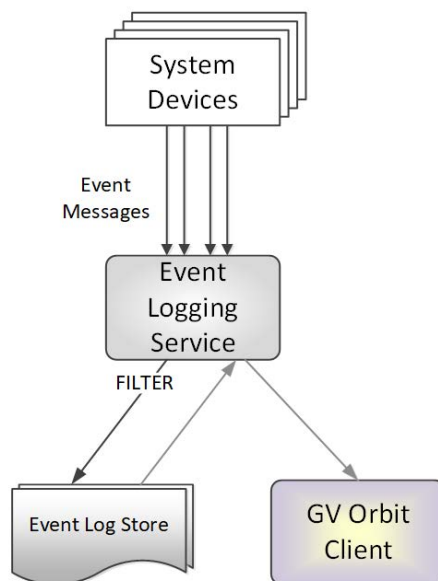
Figure 2: GV Orbit Event Logging Service

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

See also Common User Interface Features, on page 133.

Setting	Description
System Settings	See also Service System Settings, on page 126.
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
System Settings > Client domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126. Messages published by other services onto this domain will be logged.
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 128.
System Settings > Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall addresses.

Setting	Description
System Settings > Unit Name	See Unit Name Setting, on page 129.
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 Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

Event Log Setup Screen

Figure 3: Event Log Setup Screen

Current Event Log 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.
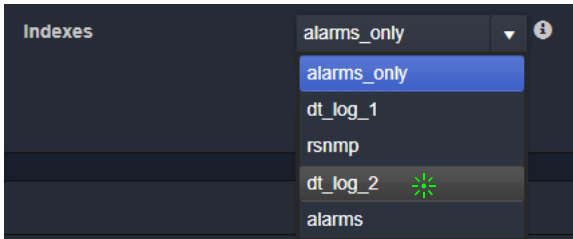
The **Event Logging** service stores either all data or just filtered data. This enables data to be logged for, for example, just alarms from devices for one channel. Different event log configurations can be set up individually.
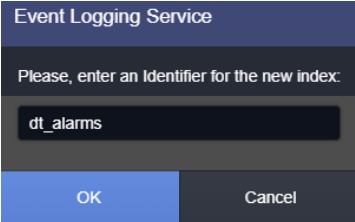
Event log configuration settings also allow time periods (days) to be set before automatically clearing log data.

Default Log Configuration

A GV Orbit system has a default log 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 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 Configuration, on page 158.

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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.
	
	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 Configuration, on page 158.

Indexes > Delete	Deletes the selected index from the **Indexes** drop-down.

Event Log Configuration

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

Current Index Configurations ℹ

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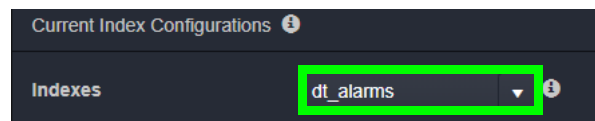
The selected index's name is then shown in the **Index Name** field.

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

Figure 4: 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 161 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 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 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 1.

Table 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:

- 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. The list can be scrolled though. See Figure 5. See also Changes need to be Saved List Indicator, on page 133.

Figure 5: Example Filter Rules List

See also

Note:

The set of devices and services that are accessible by the **Event Logging** service, and hence the events stored in the event log, is defined by using a common GVOP Domain ID. This is usually the Client GVOP Domain ID. For more information, see Client GVOP Domain ID Setting, on page 126.

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 using the GVOP Domain ID. See Default GVOP Domain IDs, on page 127.
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 using the GVOP Domain ID. See Default GVOP Domain IDs, on page 127.
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 Text Format

The event log entries are in JavaScript Object Notation (JSON) format with a single entry per line. See Figure 6.

```
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":"
```

Figure 6: Sample Event Log Extract

Entries are human-readable but are not easy to browse. GV Orbit offers a log viewer for easier log viewing. See Event Log Viewer (Alarm History), on page 164.

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.

Example to Create a New Event Log

To quickly create a new event log:

1 Click **New** to view the **Event Logging** service dialog.

2 Enter a name (identifier) for a new event log file configuration (index). For example, 'chan_001'. (The name acts as an identifier for the event log data-set to be created.)

Note: Event log naming rules:
- Lowercase only
- Cannot include \, /, *, ?, ", <,>, |, ` ` (space character), ,, #
- Cannot start with -, _, +
- Cannot be . or ..
- Cannot be longer than 255

3 Click **OK** in the dialog.

The **Index name** field shows the new event log file configuration name.

4 Select **Enable this index**.

5 At the bottom of the screen, set **Delete Data After (days)** to '7'.

Log data will be kept for 7 days.
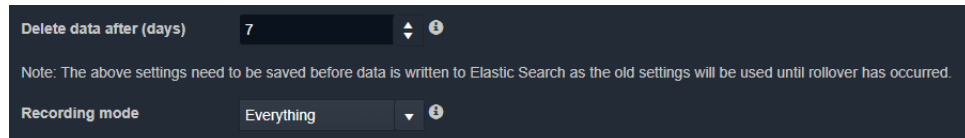
Fig. 3-1: Event Logging Service - Search Setup Screen Controls

6 Set **Recording Mode** to 'Everything'.

7 Click **Save**.

This has set up a new event log to record all events, alarms and log messages.

Event Log Viewer (Alarm History)

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

Event log data may also be viewed in GV Orbit Client in the **Alarm History** window (click on the **Alarm History** window tool bar icon) and select the required tab. See **Alarm History Window** in the GV Orbit Client User Guide. See Related Documentation, on page 25.

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.
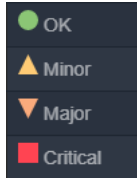
Alarms that are masked are shown 'grayed-out' (duller) in the list.

| Icon	Description
Clear all filters	This clears all column filters that have been applied. See Clear Column Filters, on page 171.
Hide show columns	To reduce the number of logged parameters that are shown, you can hide/show columns. See Hide/Show Columns, on page 169.
Search parameters	Show the **Search Parameters** dialog and select the time period to view. See Search Parameters Dialog, on page 166.
Refresh data	Update the screen with the latest available event log data.
Column filter	Set a column filter. See Filter Columns, on page 170.

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 166.
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 • 3.34 V • FAIL:Low • +0.1 us • 1.32 dBm • 6.0 kBytes/sec • 39 C
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 166.
- To filter columns on specific criteria (see Filter Columns, on page 170).
- To reduce the number of logged parameters that are shown, you can hide/show columns. See Hide/Show Columns, on page 169.

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.
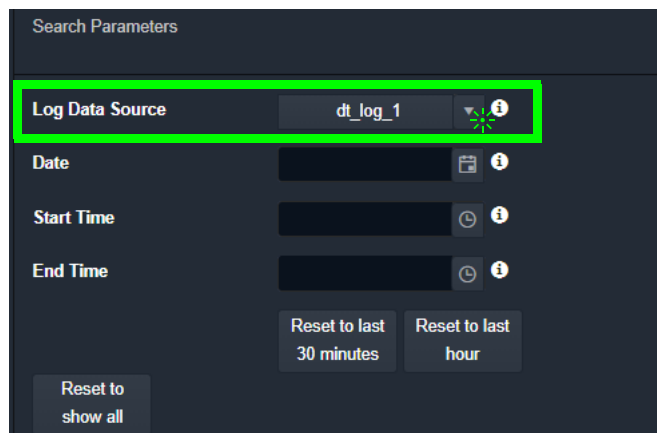
2 Select an event index configuration in the **Log Data Source** drop-down list.

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.
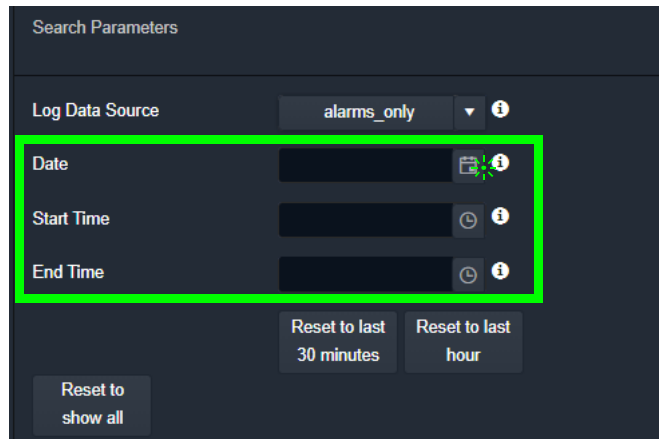
Figure 4: Search Parameters Dialog+

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.

Control	Description
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.

Figure 5: Event Log Viewer - Search Results

Hide/Show Columns

- Click the **Hide/Show Columns** icon ( ) and select the columns to hide or to show.
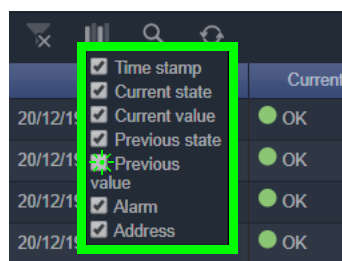
Figure 6: Select Columns - Hide/Show

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:
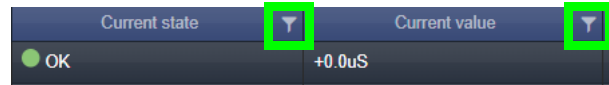
    The **Filter Column** dialog is shown.

2 Select the column filter condition in the first drop-down menu ('Equals' or 'Not Equals'). For example 'Equals'.
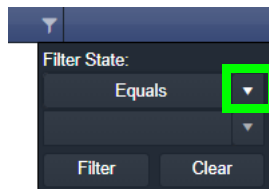
3 Select the column filter value. (Values presented in the drop-down list depend on the column being filtered.) For example, 'Major'.
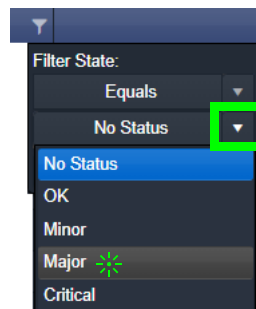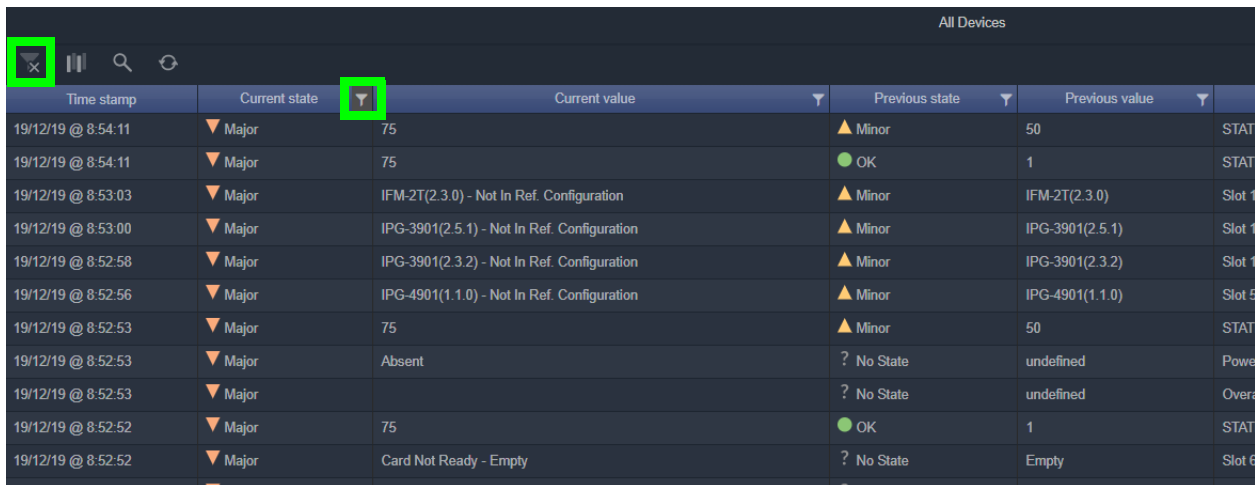
4 Click **Filter** to apply the column filter.
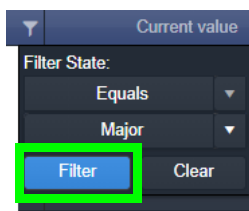
    The column filter is applied and the log data shown is restricted accordingly. In this example, only current 'Major' warnings are picked out by the filter and shown.

    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':
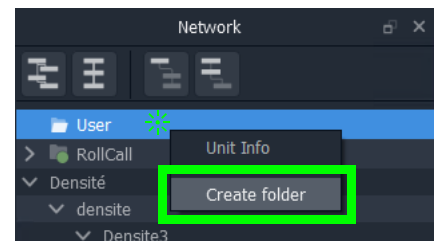
   The **Create Folder** dialog is shown.

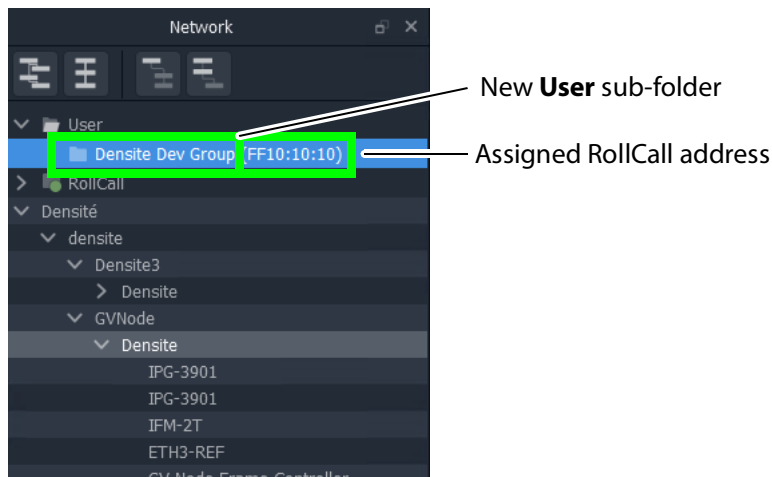3 Enter a name for the new user (sub-)folder (such as 'Densité Dev Group') and click **OK**.

   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.

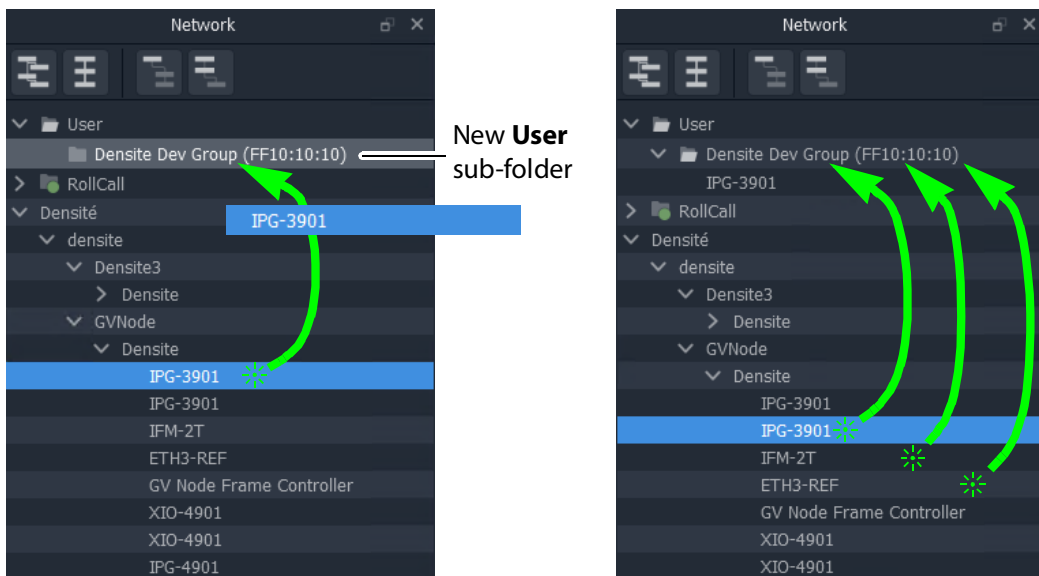7 Drag one or more Densité devices of interest in the **Network** window into the new **User** sub-folder.

New **User** sub-folder

Figure 7: Drag Densité Device into New User Sub-Folder

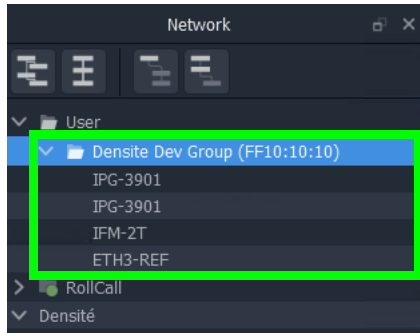The dragged devices are now shown beneath the **User** sub-folder.

Figure 8: 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.

Figure 9: 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 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 Configuration, on page 158).

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.
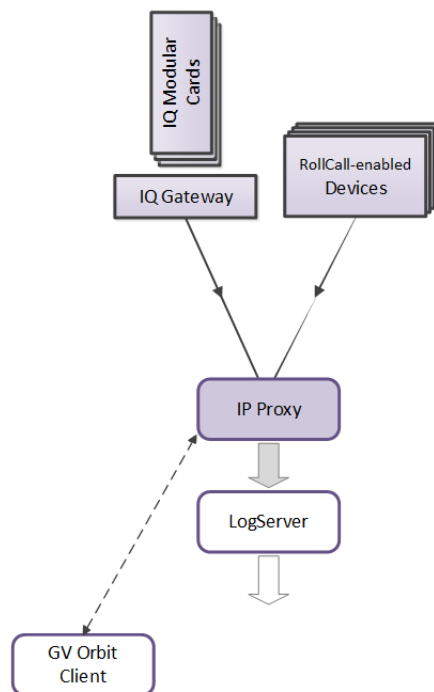
Figure 10: GV Orbit IP Proxy Service

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.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.
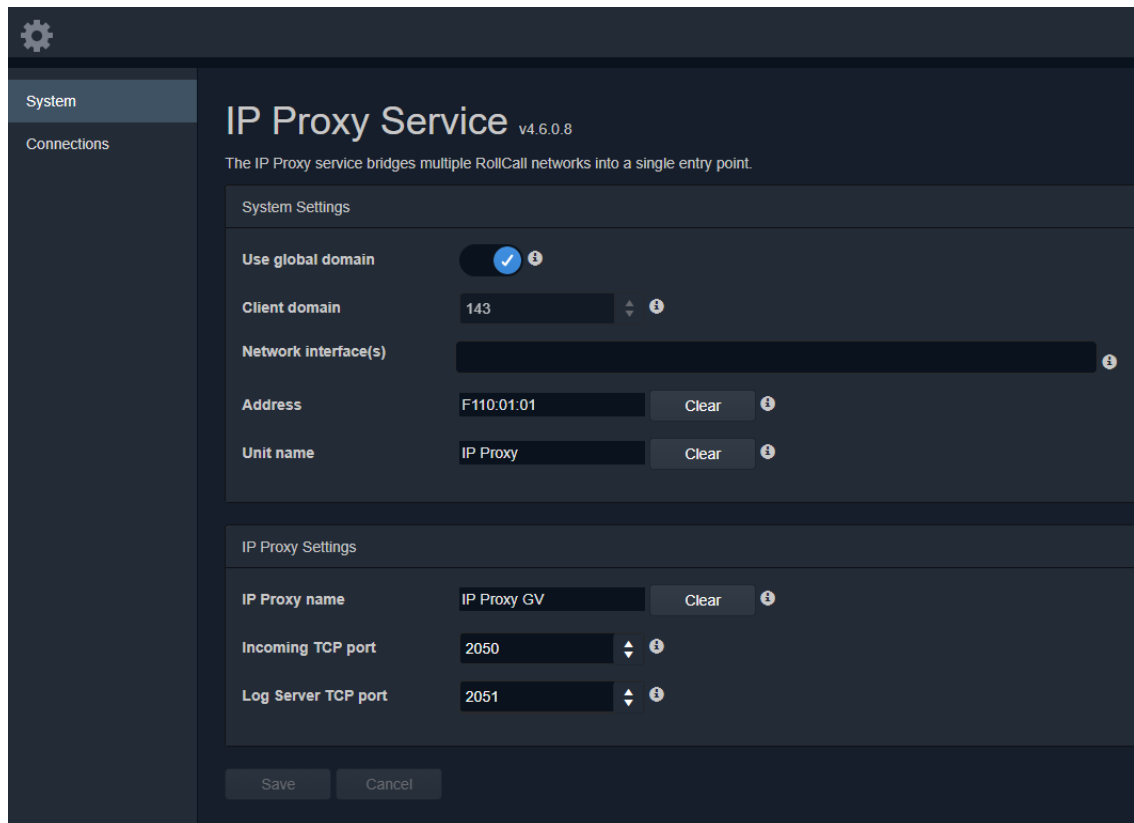
System Screen

Figure 11: IP Proxy Service System Screens

Table 2 below describes the 'System' screen setting of the IP Proxy configuration screen.

Table 2: GV Orbit IP Proxy Service - System Settings

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interfaces	See Network Interface(s) Setting, on page 127.

Table 2: GV Orbit IP Proxy Service - System Settings (continued)

Setting	Description
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall addresses.
Unit Name	See Unit Name Setting, on page 129.
IP Proxy Settings:	**Note:** Any changes in this section will require an **IP Proxy** service stop/start.
IP Proxy Name	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**.
Incoming TCP Port	Enter IP port number to use for RollCall connections from connected devices to the **IP Proxy** service. Default = 2050
Log Server TCP Port	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
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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.
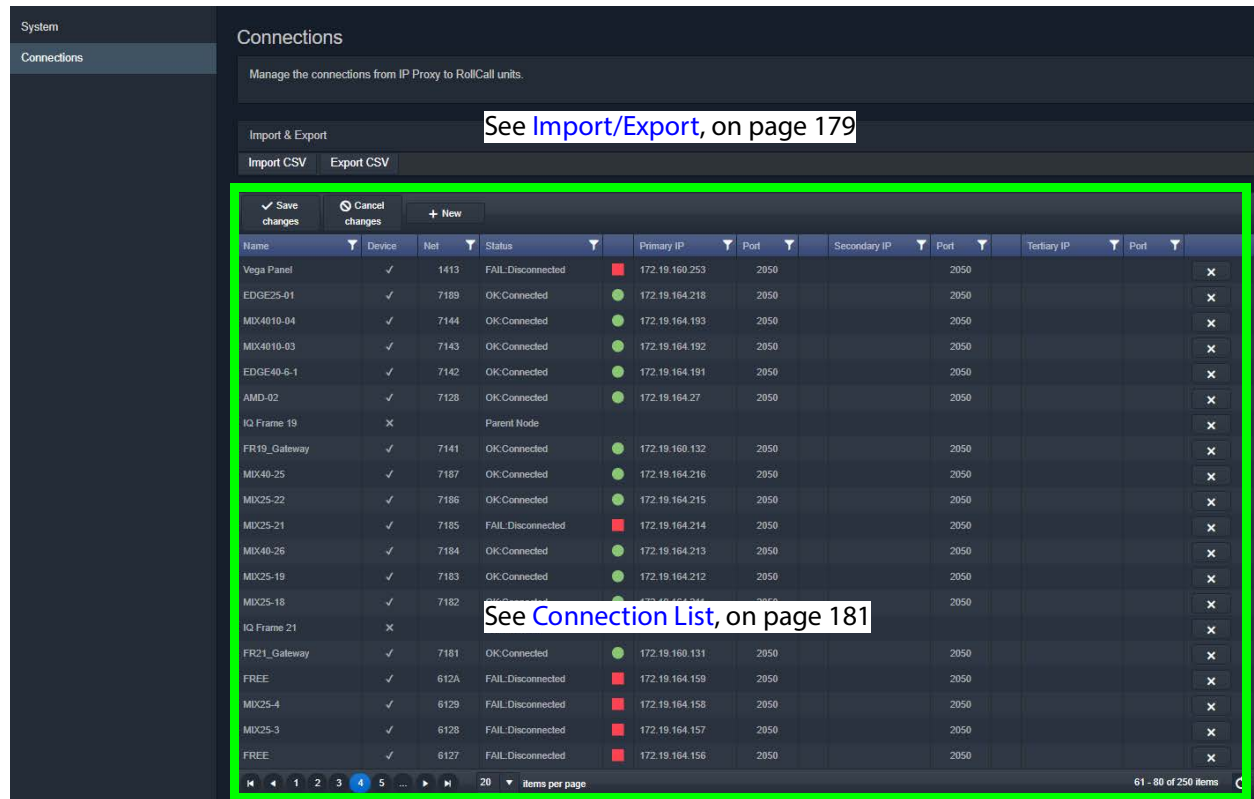
Figure 12: IP Proxy Service - Connections Screen

Import/Export

See also List Control Buttons, on page 133.

Table 3: Connections Screen - Import and Export Controls

Control	Description
Import CSV	Click to import a spreadsheet (CSV format) of connections. • Select a CSV file. • Click **Open**.
Export CSV	Click to export a spreadsheet (CSV) of connections. (See Exported CSV Connections, on page 180.)

Exported CSV Connections

An exported spreadsheet file is in comma-separated variables (CSV) format. (See Figure 13.)

```
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

Figure 13: 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

See also Common User Interface Features, on page 133.

Figure 14: IP Proxy Service - Connections

Table 4: Connections Screen - Column Headings

Column Heading	Description
Name	Enter a name for the device, or frame, or virtual tree node.
Device	• Select for a device, or frame, or unit with a RollCall connection. • Deselect for a virtual tree node.
Net	Enter the 4-hex-digit RollCall address network number. for example, the four most significant digits of the RollCall address. For example, 4300.
Status	Shows 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	Primary IP address of device/frame/unit.
Port	IP port number for primary IP address.
Secondary IP	Secondary IP address of device/frame/unit.
Port	IP port number for secondary IP address.

Table 4: Connections Screen - Column Headings (continued)

Column Heading	Description
Tertiary IP	Tertiary IP address of device/frame/unit.
Port	IP port number for tertiary IP address.

License Service

Introduction

GV Orbit is licensed software, sold under the following GV Orbit product option codes:

- GVO-CFG-PRO
- GVO-MON-PRO
- GVO-CTL-PRO
- GVO-CTL-ENT

The GV Orbit **Professional** and **Enterprise** products use GV Orbit Services running on one or more GV Orbit servers. To know which services are available for each GV Orbit product option code, refer to **Service Licensing and Software Versions Included in GV Orbit** in the *GV Orbit Release Notes*. See Related Documentation, on page 25.

As of GV Orbit version 2.0.0 or higher, this licensing model is enforced. The License Service must first be installed with a license in order to upgrade any GV Orbit service.

PREREQUISITES:

- For trial or time-limited licenses, the server's current time setting must be maintained with reasonable accuracy (±12 hours) and should not be tampered with. See **Date/Time Configuration** in the NTP Screen, on page 89 to check the server's current time. Tampering with the server's clock to extend a license will be detected, resulting in the license being invalidated, and system unavailability.

  The operation of the server's integrated Real Time Clock (RTC) is maintained by a coin cell that ensures that the server keeps time, even during long periods when it is powered off (RTC drift is less than 10 seconds per month). This prevents the clock from drifting too much.

- A license file must be installed on the GV Orbit server to make it operational. See below for more information.

Pre-Ordering a License File

GV Orbit Server	GV Orbit VM
●	

To have less downtime, first obtain a license file for your GV Orbit Server or the GV Orbit Server cluster before:

- Commissioning a new GV Orbit Server or GV Orbit Server cluster that is running GV Orbit version 2.0.0 or higher for the first time.
- Upgrading a GV Orbit Server to GV Orbit version 2.0.0 or higher for the first time.
- Re-installing a new license, to change options / features for example.

Perform this procedure any time before your planned upgrade / installation window.

The **System Serial Number** and **License Identifier** found in the License Server configuration screens are only available once the a GV Orbit Server has been upgraded to GV Orbit version 2.0.0 or higher and the License Service has been installed and is running.

1   Find the necessary GV Orbit Server identification information that Grass Valley needs for license generation:

   • **The GV Orbit Server has never been licensed (it is running GV Orbit version 2.0.0 or higher for the first time):** Record the *Service Tag* number found on each server's Information Tag. See About the Server's Information Tag, on page 30. For a cluster, there should be two server Information Tags; one for each GV Orbit Server.

   • **The GV Orbit Server has been licensed:** Record the **License Identifier** found in the License Service screen. See Ordering and Installing a License / Updating a License, on page 189. For a cluster, the **License Identifier** is the same for both GV Orbit Servers.

2   Contact Technical Support to request a new license. See Grass Valley Technical Support, on page 302. If the license is for a GV Orbit Server cluster, you must say that it is for a cluster license. A cluster license is a single license file that is applied to both GV Orbit Servers that form the cluster.

3   Once you receive a license file from Technical Support, save it to your PC's filesystem.

   The anatomy of a license's filename is shown below.

   CUSTOMER-NAME-FA37955C340748DF98D65B09C28D2AE0-00005.license

   Customer Identifier   License Identifier   License Revision Number

4   License installation:

   • **For a single GV Orbit Server:** The license file will be uploaded to the GV Orbit Server. See Ordering and Installing a License / Updating a License, on page 189.

   • **For a GV Orbit Server Cluster:** The same license file will be uploaded to both GV Orbit Servers that form the cluster. See Upgrading Software and Applications on a Cluster, on page 75.

License Enforcement

Licenses can be time-limited for a trial period with an expiry date or perpetual without an expiry date. Only a single license can be applied to a GV Orbit server at a time. If changes are required, then a new license needs to be applied to the GV Orbit server.

As of GV Orbit version 2.0.0 or higher, GV Orbit applications are protected by a license option that behaves as follows when the required license option is not activated:

   • The application will not start automatically and it will not be possible to manually start it.

- It will not be possible to upgrade the application to a newer version.

Notes

- Certain licenses have an **End Date**. Such trial / demo licenses are time-limited after which the license expires. When the license expires, it will not immediately stop the operation of any licensed applications, so as to prevent causing on-air issues. However, licensed application will not restart if stopped or if the server reboots.
- Installing GVO 2.0.0 or higher OS or the License Service application does not activate any licensing. The license requirements comes with the new applications' version when you upgrade.

- Never edit a license file as this will invalidate it.

Troubleshooting License Service Errors

As of GV Orbit version 2.0.0 or higher, the licensing model is enforced by the License service, which must first be installed and a license applied in order to upgrade and activate any other GV Orbit application that is part of this software version.

When the License Service is not installed, in **Application Upgrade** of the **Upgrade** screen, the following **License service must first be installed** errors are shown in the Application Upgrade screen **Message** area.

Once the License service is installed, in **Application Upgrade** of the **Upgrade** screen, **The License service must be installed to start licensed application** errors are shown in the **Application Upgrade** screen **Message** area. This indicates that the license file has not been uploaded to the License Service. For more information about the **Application Upgrade** screen, see Application Upgrade/Installation, on page 101.

These errors are resolved as follows.

Step	Error Message	Required Action	See
1	*[Service name] cannot be installed due to incompatible OS dependency. Need X.X.X, but X.X.X is installed.*	Upgrade GV Orbit server to the latest OS and application version.	Upgrade Task, on page 98.
2	*License service must first be installed.*	Install the License Service.	Installing the License Service, on page 188.
3	*The License service must be installed to start licensed application.*	Install the GV Orbit server license.	Ordering and Installing a License / Updating a License, on page 189.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

License Service Screen

License Overview

The **License Service** configuration screen is shown. This screen shows the GV Orbit's current licensing status.
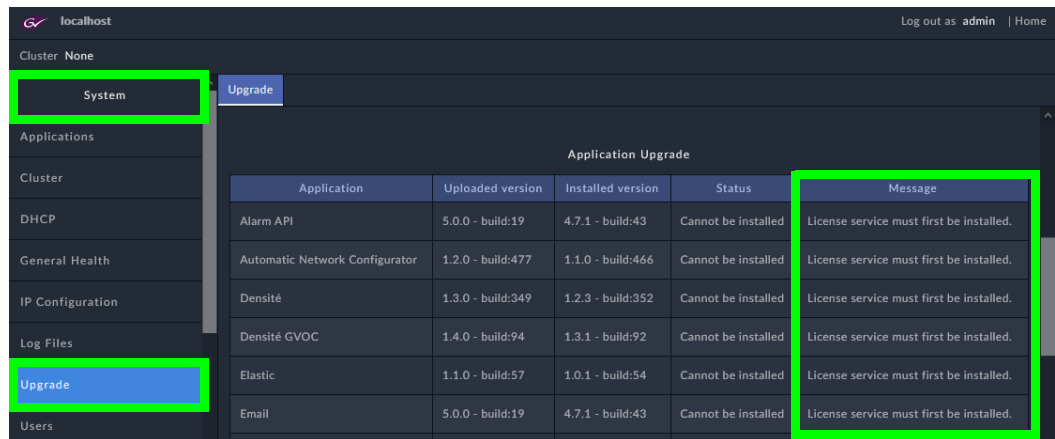
Setting	Description
Option	Shows the GV Orbit options. For more information about the options, see Services Availability, on page 108. **License: GVO:** • **No license file set for product GVO:** A GV Orbit license file from Grass Valley has not been uploaded to the server.The services depending on missing license options will not be started and cannot be upgraded. See Ordering and Installing a License / Updating a License, on page 189. • **System serial number [XXX] does not match license [XXX]:** The license you have applied was created for another GV Orbit Server. Apply the correct license generated for this server. • [blank]: A valid license file has been applied to the GV Orbit server. **GVO-CFG-PRO:** License for GV Orbit Configuration Professional software (one license required per server). Each license includes one client seat (GVO-CLIENT). **GVO-MON-PRO:** License for GV Orbit Monitoring Professional software (one license required per server). Each license includes one client seat (GVO-CLIENT). Includes: mapview, HTML and logging support. **GVO-CTL-PRO:** License for GV Orbit Control Professional software (one license required per server). Each license includes one client seat (GVO-CLIENT). Includes: Aliases, breakaway, lock and protect, GPIO logic, salvos, northbound control and support for GV Hardware Panels. **GVO-CTL-ENT:** License for GV Orbit Control Enterprise software (one license required per server). Each license includes one client seat (GVO-CLIENT). Includes: Professional features plus; automatic pathfinding, multi-hop control and shuffle.
Description	Shows a license description.
Active	Shows whether a license is active or not (as defined by the currently uploaded license file): ✓**:** The license is currently active. ✗**:** The license is currently inactive; this results in unavailability of the licensed features. See Ordering and Installing a License / Updating a License, on page 189.
Qty	Shows the current number of license activations on each server that is listed in the license. **0:** This license option is inactive. **1:** A license for this option is enabled on all the servers that have their **System Serial Number** listed in the license.

Setting	Description
End Date	Licenses can be time limited: **Perpetual:** The license has no expiry date. **[a date]:** The license is active for a time-limited duration after which the license expires. When the license expires, it will not immediately stop the operation of any licensed applications, so as to prevent causing on-air issues. However, licensed application will not restart if stopped or if the server reboots.
Ordering Information	Shows the information you need to order a license or to update a pre-existing license. See Ordering and Installing a License / Updating a License, on page 189.
License Update	Once you receive a license file from Grass Valley, upload the file to apply the license. See Ordering and Installing a License / Updating a License, on page 189.
License Details	This shows the clear text content of the current license file you have installed on the GV Orbit server. This can help you to better understand any error messages shown above or why a given option is currently disabled.

Installing the License Service

When upgrading from GV Orbit version 1.7.X or lower to GV Orbit version 2.0.0 or higher, you must install the License Service application in order to make GV Orbit operational, as a special one-time upgrade procedure.

When this application is not installed, the following **License service must first be installed** errors are shown on the **Application Upgrade** screen **Message** area.

To install the License Service application, proceed as follows.

1 In the **Application Upgrade** screen, select the **License Service** so that it is highlighted in blue. See also Application Upgrade/Installation, on page 101.

2 Click **Upgrade**.

   Wait for the License Service to be installed.

In the message area, **The License service must be installed to start licensed application** errors are shown in the Application Upgrade screen **Message** area. These errors are resolved by configuring the License Service.

3 Once the license service is installed, refresh the GV Orbit Admin page in your browser.

In the left hand column, the **License Service** becomes available under **Services**.

4 Open the **License Service**'s configuration screen found in the left hand column, under **Services**.

5 Order and install a license for the GV Orbit server or GV Orbit server cluster. See below.

Ordering and Installing a License / Updating a License

GV Orbit Server	GV Orbit VM
●	●

References to GV Orbit Server apply equally to GV Orbit VM.

A license is to a specific GV Orbit server installation. A GV Orbit server is identified by its **System Serial Number**. Once a license is installed, the license is uniquely characterized by its **License Identifier**. For the least down-time for a GV Orbit Server, pre-order the license before hand; see .

If this server is part of a cluster, see .

Parameter	Description
System Serial Number	This is the same as the *Service Tag* number found on the server's Information Tag. See About the Server's Information Tag, on page 30. If this server is part of a cluster, the system serial number for the other member of the cluster will also be shown.
License Identifier	This uniquely identifies a license associated to a specific GV Orbit Server or GV Orbit Server cluster.
License Revision Number	This value is incremented every time a license is regenerated by Grass Valley.
Install new license file	Click **Browse** to select the license file to apply to this GV Orbit Server.

To order and install a license, proceed as follows.

1 If you already have a license file for this GV Orbit Server (from Pre-Ordering a License File, on page 183), skip to step 4.

2 Record the **System Serial Number** and if available, the **License Identifier** and contact Technical Support to request a new license or a license update. For a cluster, there should be two **System Serial Numbers**; one for each GV Orbit Server. See Grass Valley Technical Support, on page 302.

   If the license is for a GV Orbit Server cluster, you must say that it is for a cluster license. A cluster license is a single license file that is applied to both GV Orbit Servers that form the cluster.

3 Once you receive a license file from Technical Support, save it to your PC's filesystem.

   The anatomy of a license's filename is shown below.

   CUSTOMER-NAME-FA37955C340748DF98D65B09C28D2AE0-00005.license

   Customer Identifier   License Identifier   License Revision Number

4 Under **License Update**, click **Browse** and select the license file you saved to your PC's filesystem.

5 Click **Apply License**.

   The License Service screen updates with the parameters and application permissions accorded to the GV Orbit server by the license file.

6 Upgrade GV Orbit Server's applications. See Application Upgrade/Installation, on page 101.

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.
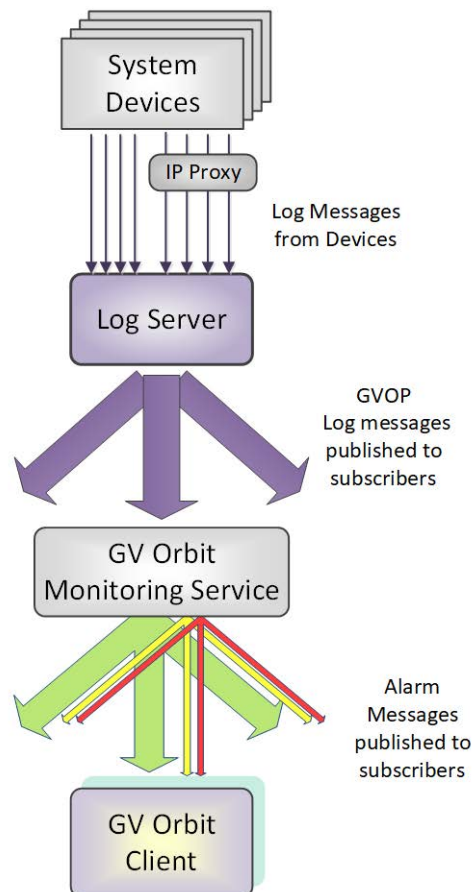
Fig. 15: GV Orbit Log Server Service

Typical System Architecture

A typical control and monitoring system that uses the **Log Server** service is shown in Figure 16. The example is for a dual-redundant implementation; single **Log Server** service implementations are possible.
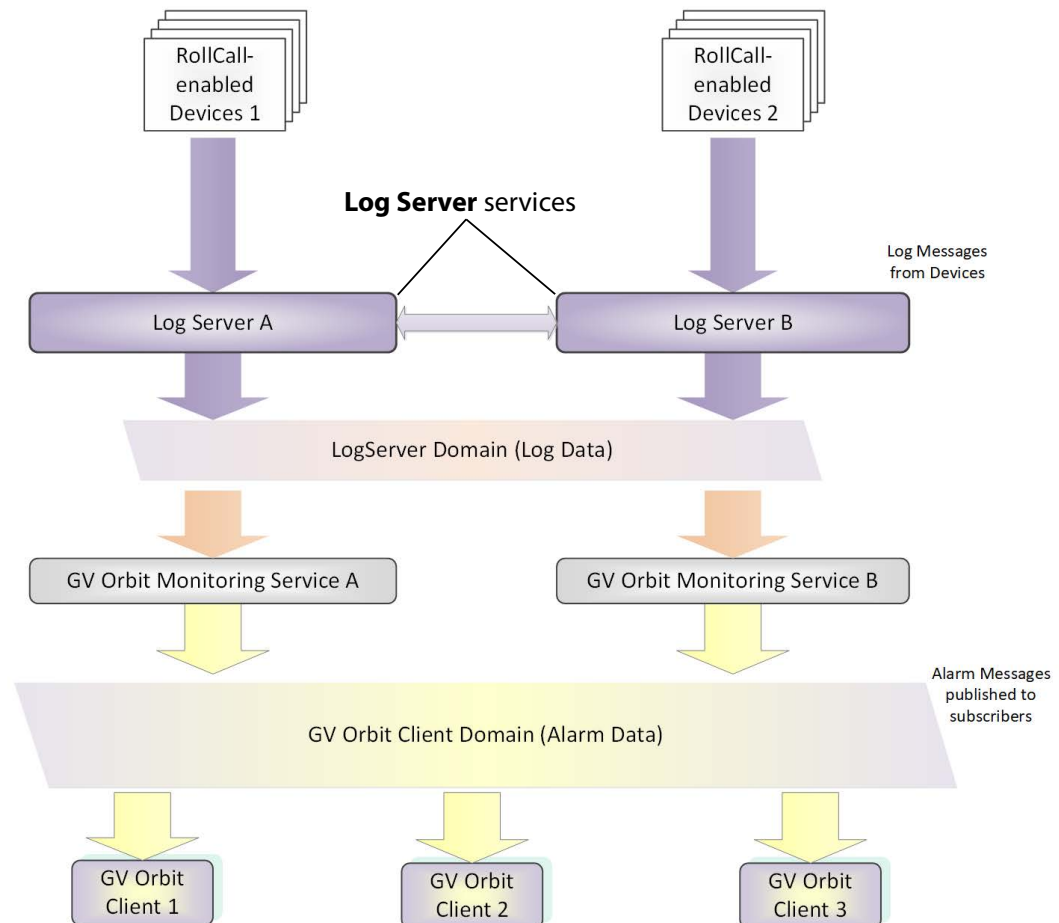
Fig. 16: GV Orbit Log Server System

Log Server services A and B in Figure 16 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, and so on).

> **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 (for example, 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

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

System Screen

Table 5 describes the system settings screen tab of the **Log Server** 'System' configuration screen, see Figure 17.
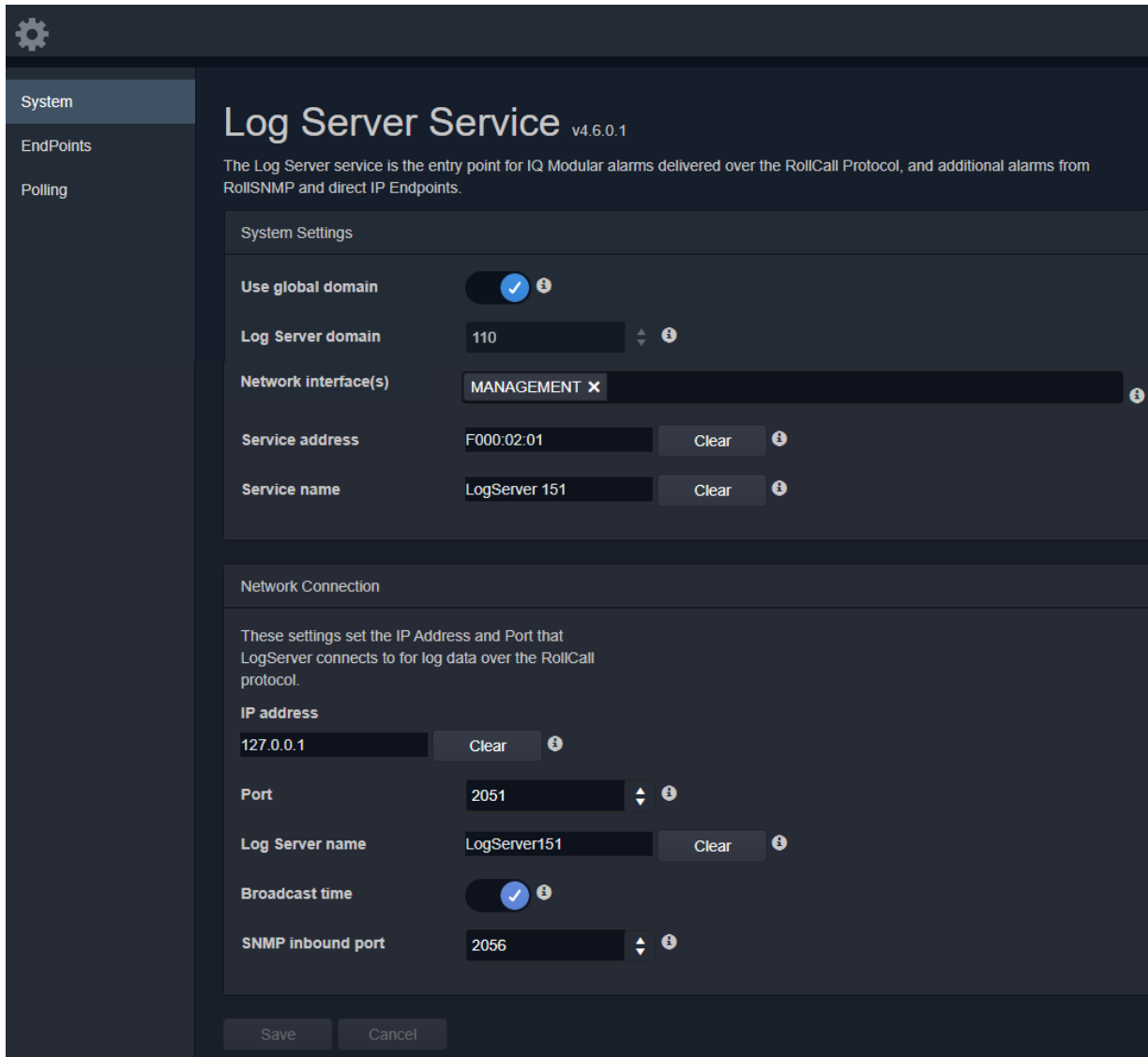
Fig. 17: Log Server Service - System Screen

Table 5: Log Server Service - System Settings

Setting	Description
System Settings:	
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.

Table 5: Log Server Service - System Settings (continued)

Setting	Description
Log Server Domain	Enter the GVOP Domain ID that other services will publish their 'raw' log data onto to be ingested by this service. See Default GVOP Domain IDs, on page 127.
Network Interface(s)	See Network Interface(s) Setting, on page 127.
Service Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
Service Name	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'.
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	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. Such as an IQ Gateway. **Note:** The loop-back host IP address 127.0.0.1 should be used when the Log Server service is co-located on the same GV Orbit Server, which is typically the case. Default: 127.0.0.1.
Port	Enter the IP port number to use for the RollCall protocol messages targeting the RollCall IP share device. Default is 2050.
Log Server Name	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 196 for information about setting up IQ gateways.)
Broadcast Time	• 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.

Table 5: Log Server Service - System Settings (continued)

Setting	Description
SNMP Inbound Port	Enter IP port number to use to listen for in-bound SNMP data from Grass Valley's RollSNMP.
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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 5, that is used to identify **Log Servers** to devices.

Figure 18 shows the relevant IQ Gateway configuration screen, openable in GV Orbit Client (or via the Grass Valley RollCall Control Panel tool).
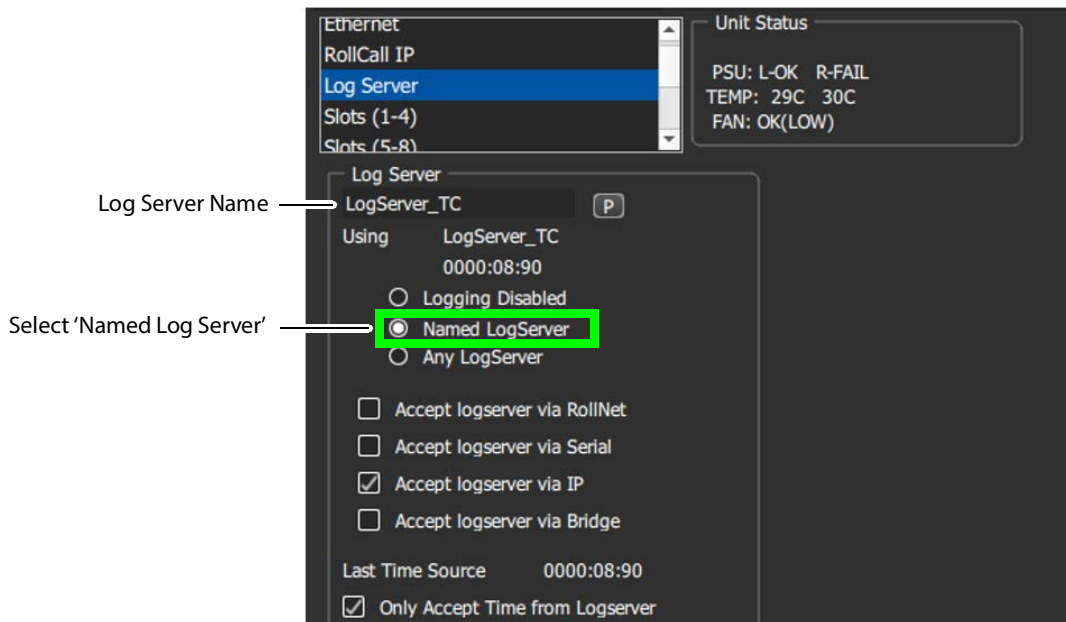

Fig. 18: IQ Gateway Configuration Screen Extract

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. For example, '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. For example, '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, and so on. See Figure 19. See also Changes need to be Saved List Indicator, on page 133 and List Control Buttons, on page 133.
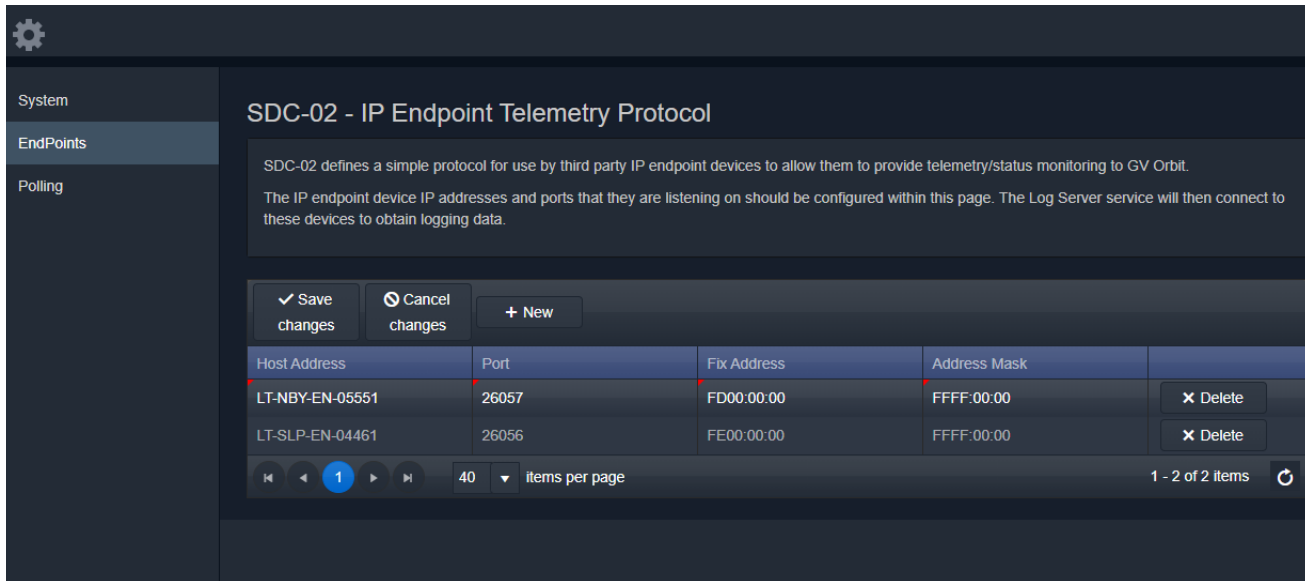
Fig. 19: Log Server Service - EndPoints Screen

Table 6: 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 198 for more information on address mapping.
Address Mask	Enter a RollCall address mask to be used in the mapping of addresses. For example, FFFF:00:00. See RollCall Address Mapping, on page 198 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 297).

- **Fix Address** is the target address 'stem'. Typically this would be the 'network number' part of the RollCall address, for example, 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 20 and Table 9. See also Common User Interface Features, on page 133.

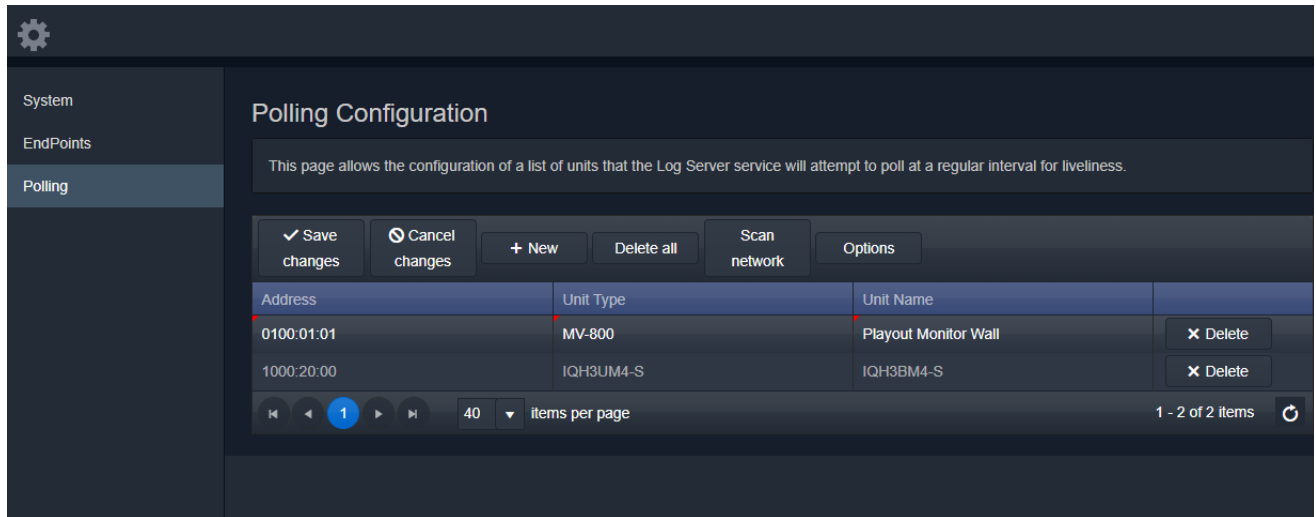*Fig. 20: Log Server Service - Polling Screen*

Table 7: Log Server Service - Polling Screen Column Headings

Column Heading	Description
Address	RollCall address
Unit Type:	Unit/Device/Frame type (informative only)
Unit Name:	Unit/Device/Frame name (informatively only)

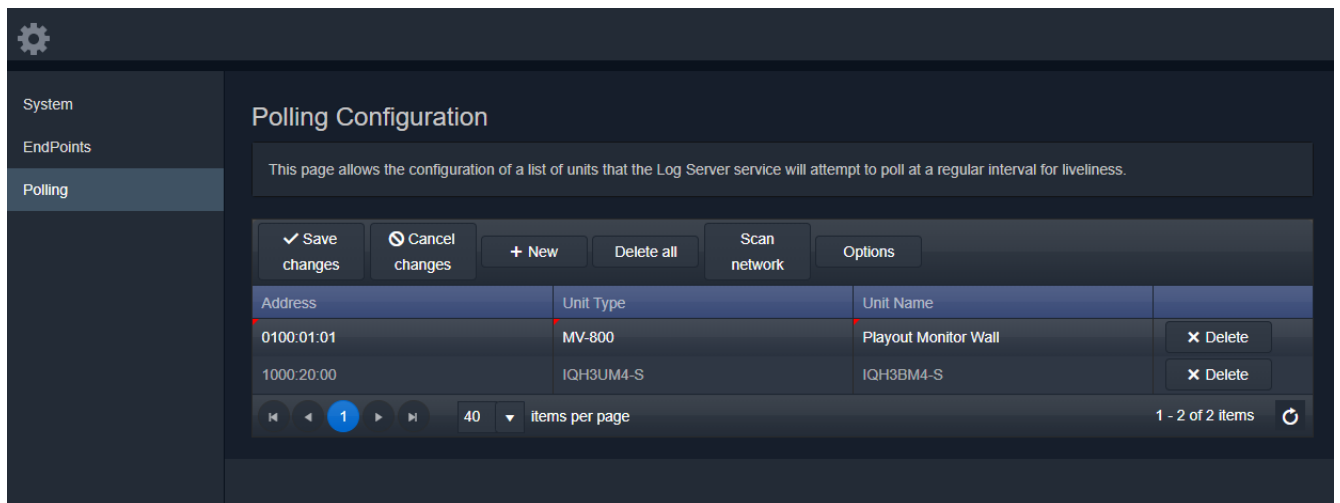See also Common User Interface Features, on page 133.

Fig. 21: Log Server Service - Polling Screen Controls

Table 8: GV Orbit Log Server Service - Polling Screen Controls

Setting	Description
Options	Click to set up the options in the **Polling Options** dialog (see Polling Options, on page 201), which allows the user to set up: • Unit Poll Rate (seconds). • Max Missed Polls - Maximum number of missed polls allowed.

Polling Options

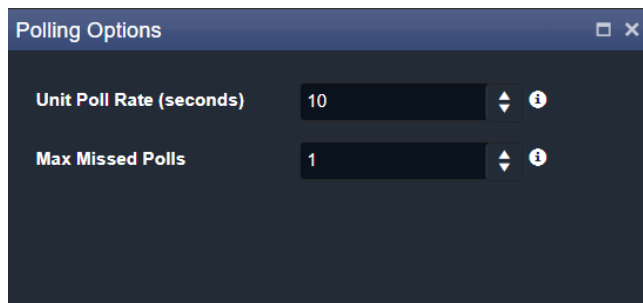Click the **Options** button to show the **Polling Options** dialog. See Figure 22 and Table 9.

Fig. 22: Polling Options Dialog

Table 9: Polling Options

Option	Description
Unit Poll Rate (seconds)	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	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.
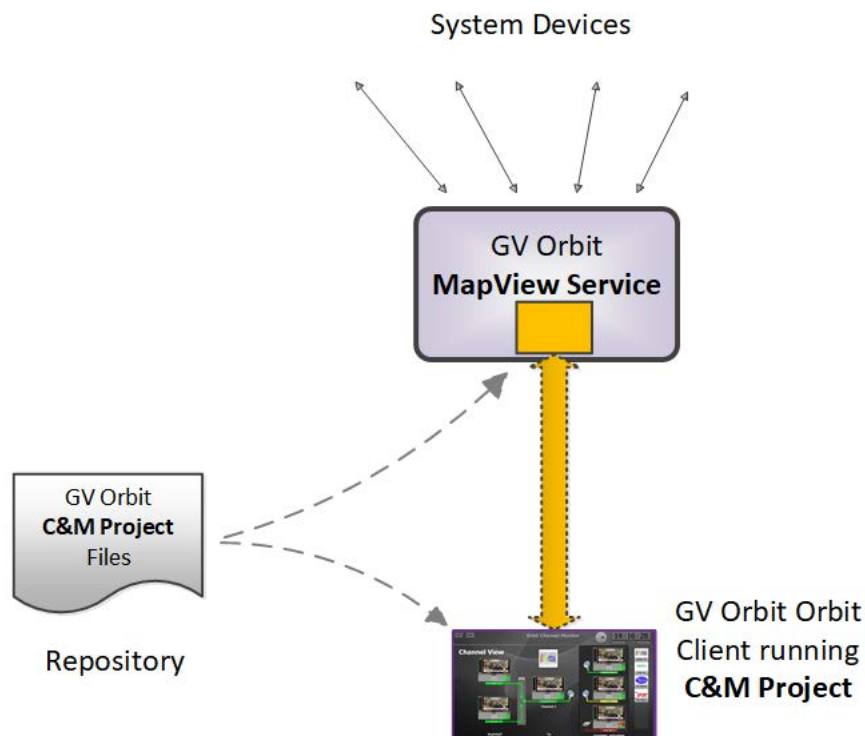

Figure 23: GV Orbit Map View Service

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.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

Table 10 below describes the system settings of the **Map View** service's **System** configuration screen of Figure 24.
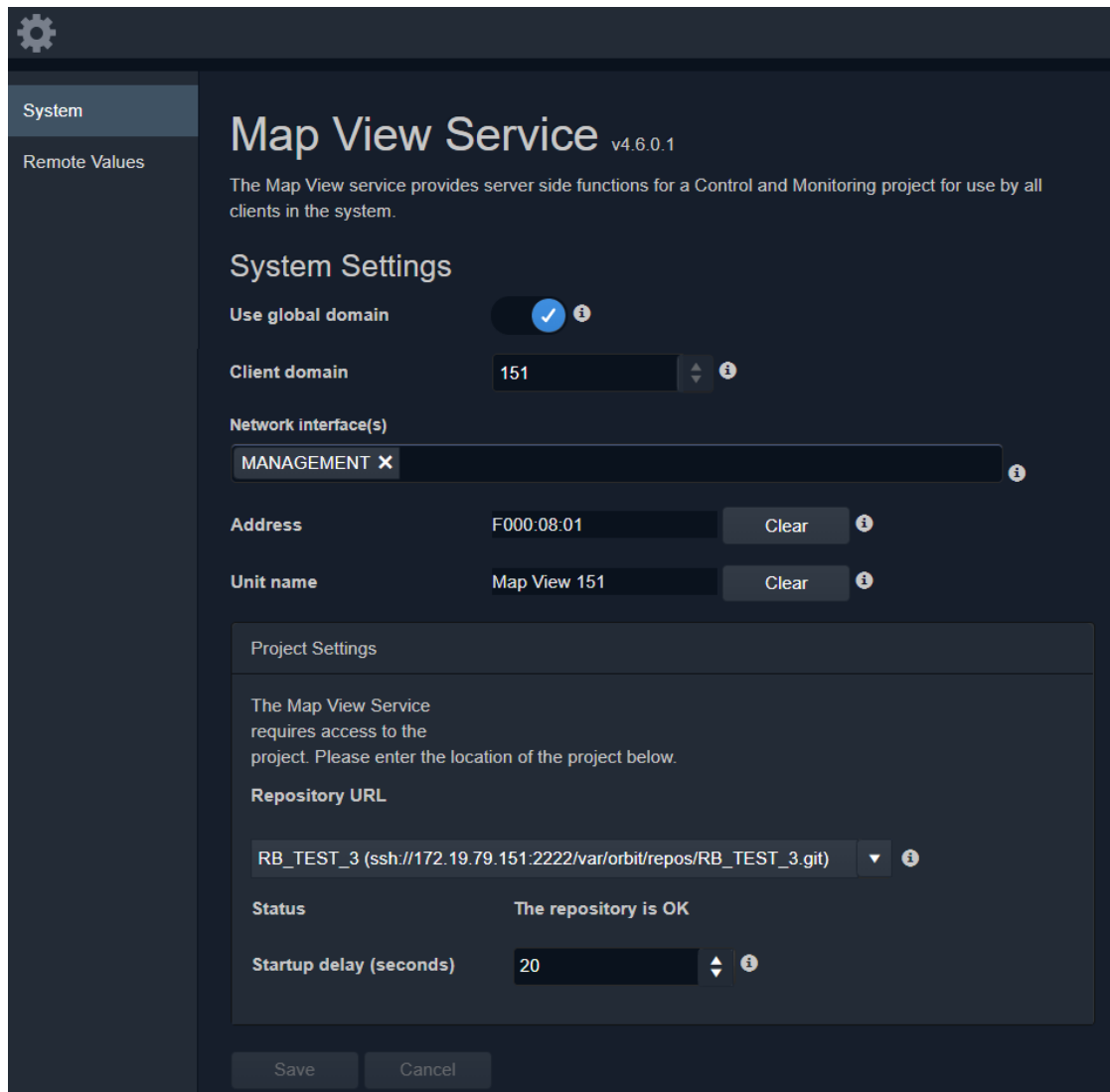

Figure 24: Map View Service - System Settings

Table 10: GV Orbit Map View Service - System Settings

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interfaces	See Network Interface(s) Setting, on page 127.
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall addresses.
Unit Name	See Unit Name Setting, on page 129.
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	Select the C&M project's **Repository** for the **Map View** service to use.
Status	Shows the status of the service's connection to the repository holding the target C&M project files. The **Repository Manager** service must be running for this. See Repository Manager Service, on page 270.
Startup Delay (seconds)	Enter a delay (in seconds) from the start-up of the service to when it begins to publish data to other services. 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 needed for 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.
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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 25.

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. See also List Control Buttons, on page 133.

Figure 25: Map View Service - Remote Values

Button	Description
Reset current values	Set all current values to their initial value
Refresh current values	Refresh all current values to their initial value

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.

Figure 26: 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 (for example, text string, integer number, logical Boolean, or floating point
   number).
   For example, select 'Int' for integer type. See also Changes need to be Saved List
   Indicator, on page 133.

Figure 27: Selecting Remote Value Type from Drop-Down List

7 Click **Save Changes**.

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

Figure 28: 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**.

Figure 29: Reset to Initial Values

Refresh Remote Value Display

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

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 32.

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.

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

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'.

Figure 30: 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 207). 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 31. It is a simple demonstration of how a **Remote Value** can be read/written by a custom panel.

Figure 31: 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 32 and Figure 33.

a) C&M project Custom User Panel
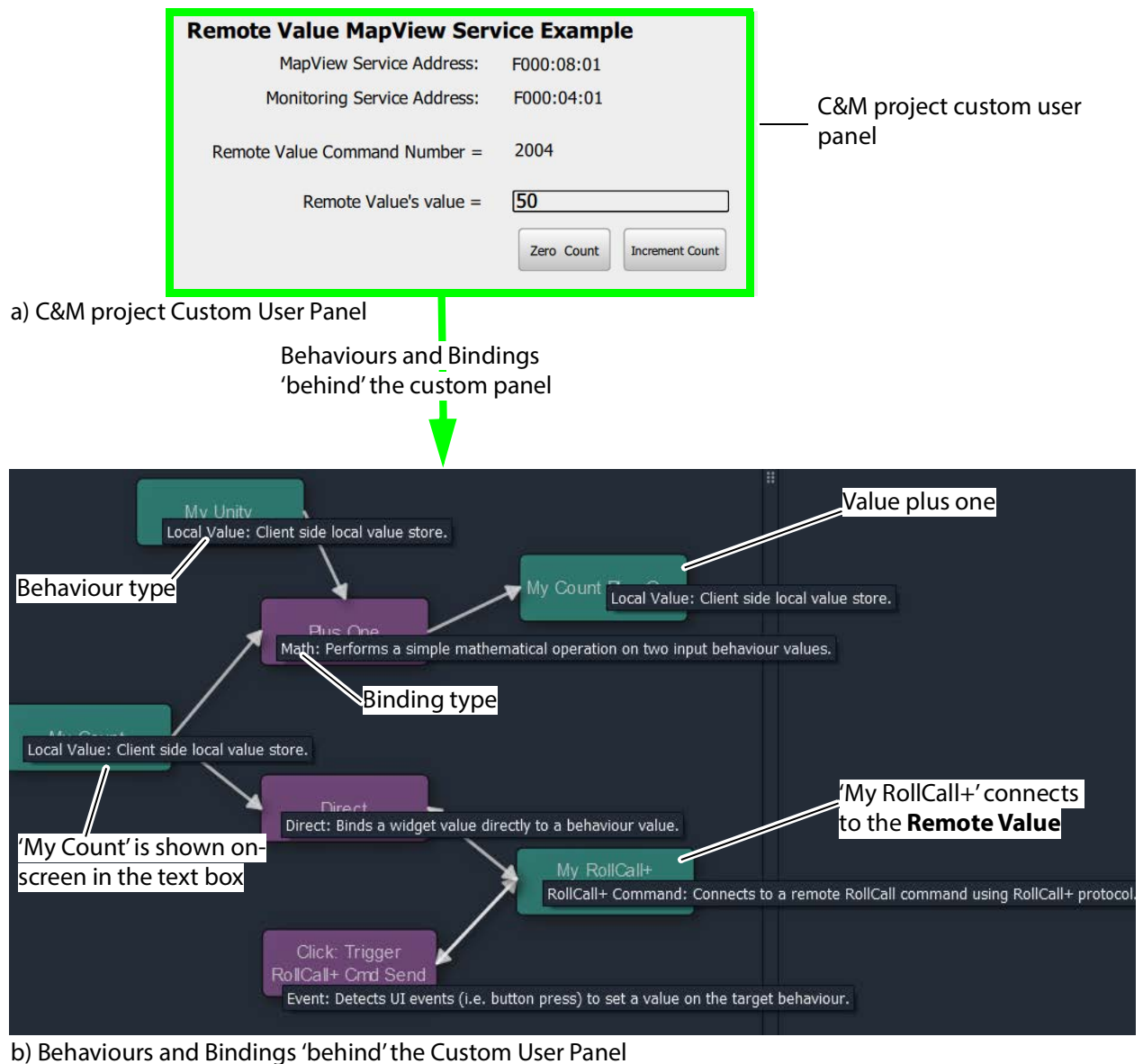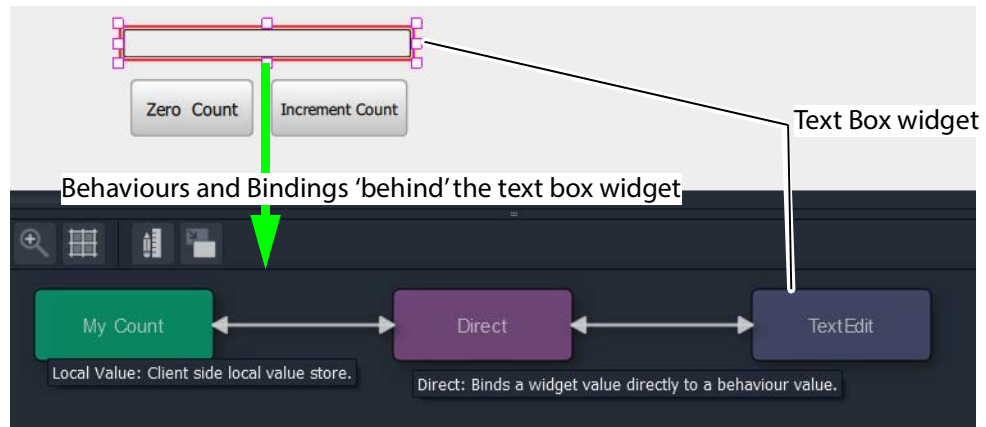
b) Behaviours and Bindings 'behind' the Custom User Panel

Figure 32: 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
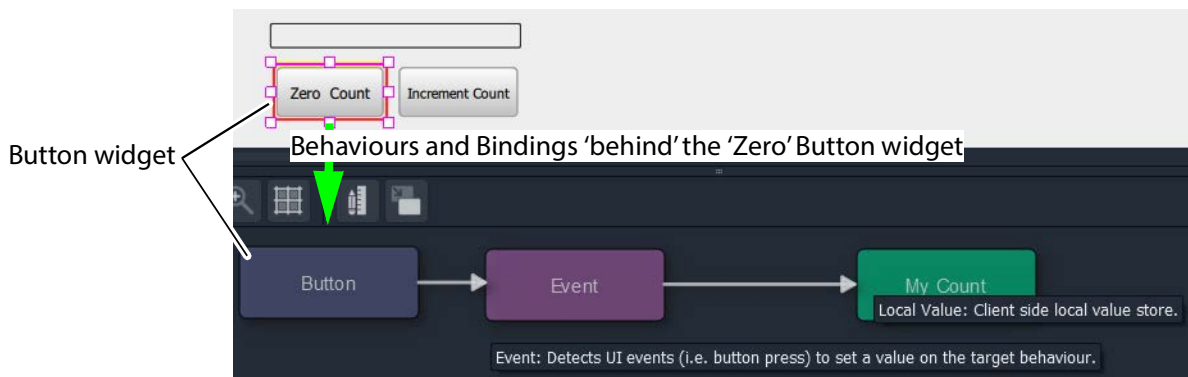
b) **Zero Count** Button's Behaviour and Binding
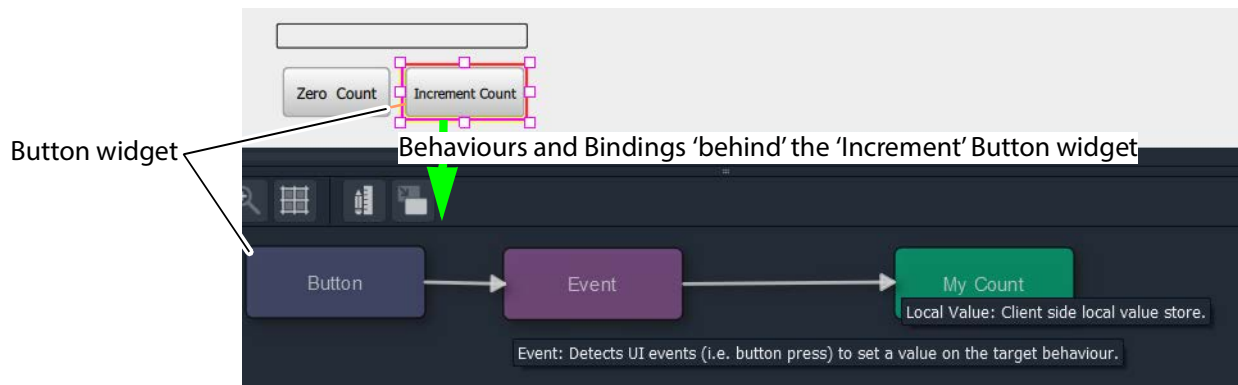
c) **Increment Count** Button's Behaviour and Binding

Figure 33: 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.
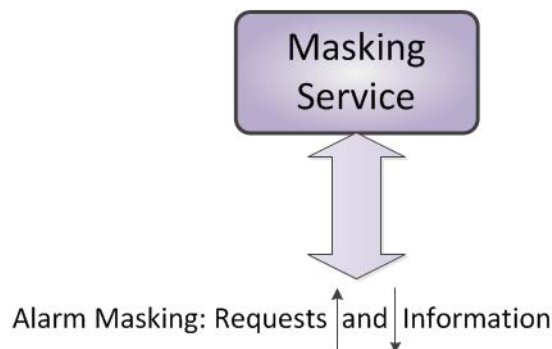- **Mask Until OK** - mask an alarm until fault condition cleared.
- Redundancy.

Figure 34: GV Orbit Masking Service

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

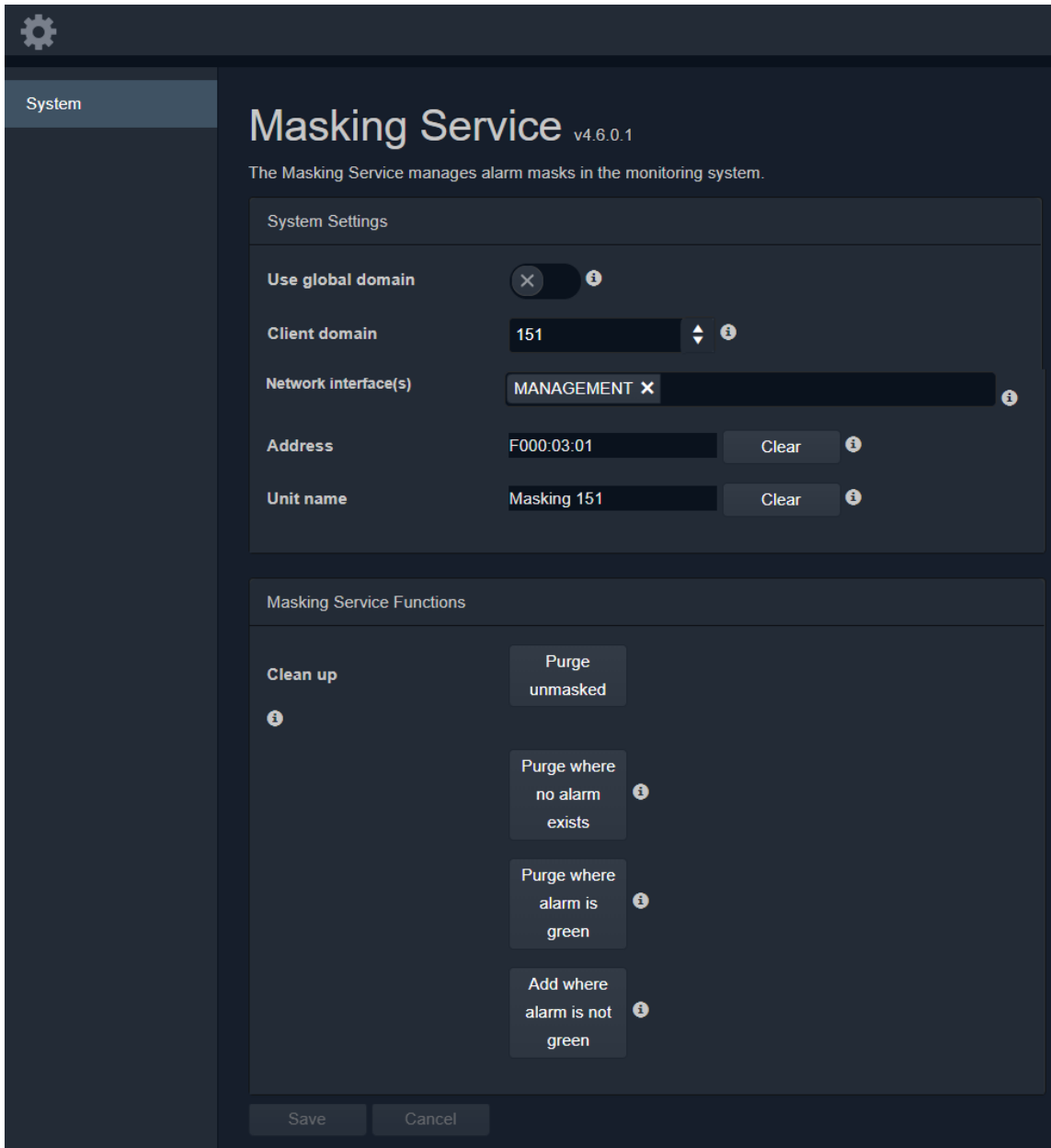The **Masking** service configuration screen is shown in Figure 35 and the settings are described in Table 11.

Figure 35: Masking Service - System Screen

Table 11: GV Orbit Masking Service - System Settings

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interfaces	See Network Interface(s) Setting, on page 127.
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall addresses.
Unit Name	See Unit Name Setting, on page 129.
Masking Service Functions	These are '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 confirm the action before any changes are made.
Purge unmasked	Click to purge all masks that are in the 'Unmasked' state. When a mask is removed (for example, 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	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	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.

Table 11: GV Orbit Masking Service - System Settings (continued)

Setting	Description
Add where alarm is not green	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 alarm is Not Green, on page 217.
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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' (for example, 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, on page 215 in Table 11, on page 215.

Add Mask Where alarm is *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 (for example, until system device is set up properly), at which point the mask is removed (for example, 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'.

An **Alarm List** window is shown which shows status information about the service,

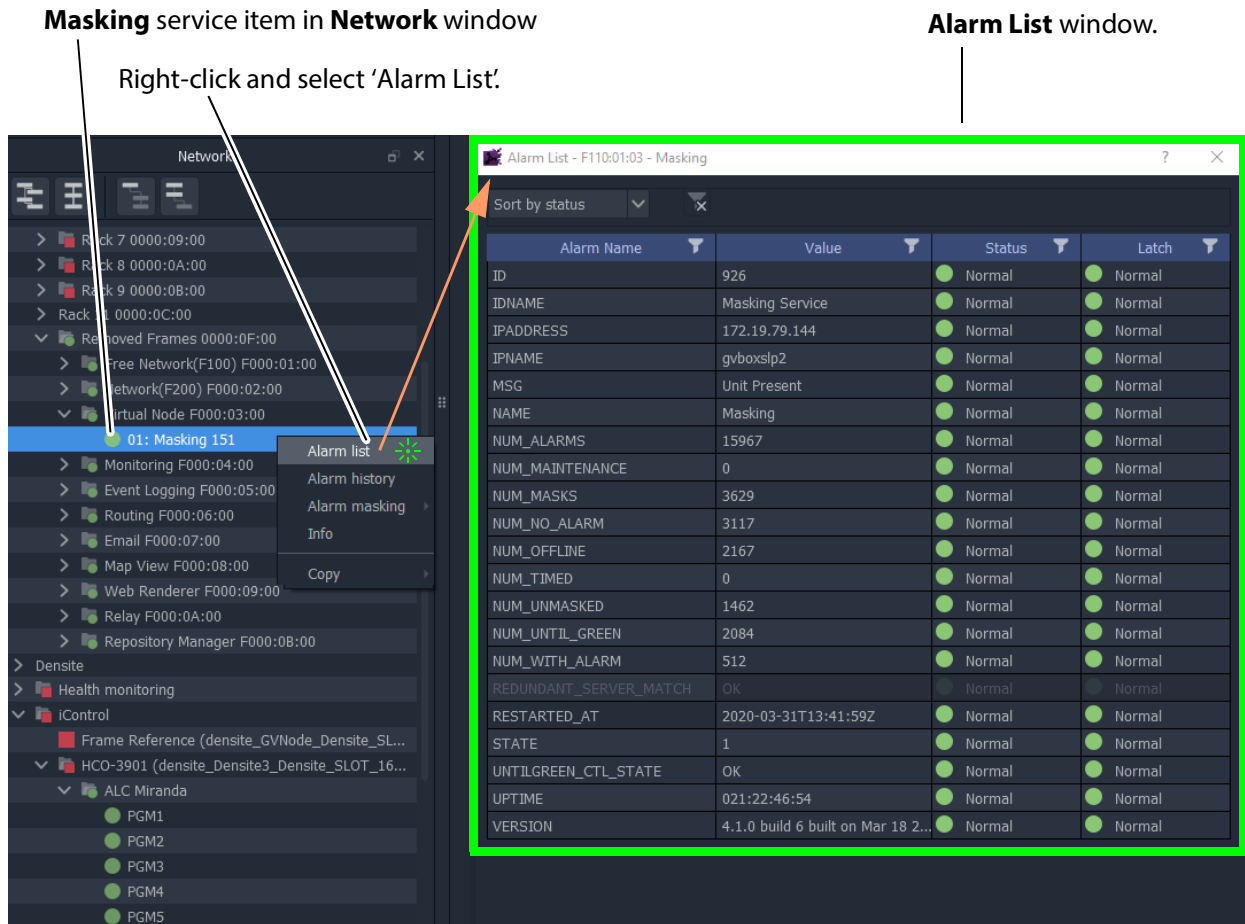including the alarms it generates. See Figure 36.

Masking service item in **Network** window

Right-click and select 'Alarm List'.

Alarm List window.

Figure 36: 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 12.

Table 12: 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 12: 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 received on a Domain ID Number and produces alarm information. Various pieces of alarm information may come from one source device (for example, 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 (for example, 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 Domain ID Number 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 Services 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 'Domain ID Number' should match across services. See Default GVOP Domain IDs, on page 127.
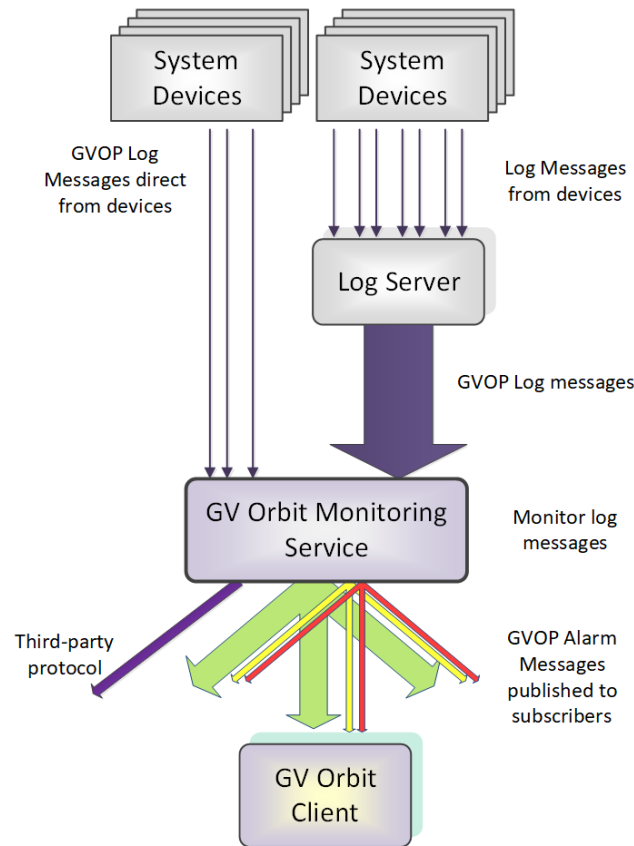
Figure 37: GV Orbit Monitoring Service

Log Messages and Headers

A log message contains a HEADER=VALUE pair, commonly referred to as a Log Field which comprises a **Header** with a value. Similar to log messages, alarm messages also have HEADER=VALUE pairs. Log Fields can be processed by the **Monitoring** service from:

- a **Log Server** service; or
- from a **Densité Manager** service; or
- directly from devices/units (for example, any device in a 'control and monitoring' GVOP domain).

The service detects the alarm state of current Log Fields ('OK', 'Warning', or 'Error') and publishes the resulting calculated state information as GVOP alarm messages to subscribers.

STATE Alarm

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

Monitoring Rules

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

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

Monitoring Rules are listed on the **Monitoring Rules** configuration screen (see Monitoring Rules Screen, on page 238, for details). Each listed rule has corresponding 'alarm state matching rules' which provide, for example, information about allowable limits for a message's **Header**. 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 **Monitoring Rule** and works out what 'state' to apply (for example, 'OK', 'Warning', 'Error').
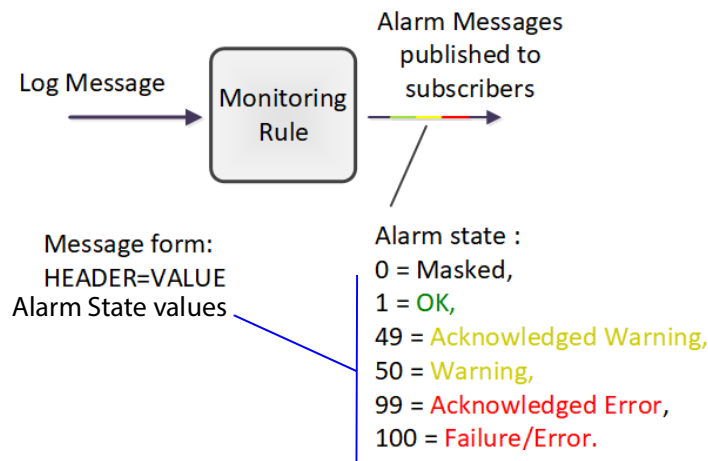
Figure 38: Monitoring Rule

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

Rules

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

- String value rule. (See String State Rule Settings, on page 251.)
- Numeric value rule. (See Numeric State Rule Settings, on page 253.)
- 'Rate of change' value rule. (See Rate Of Change State Rule Settings, on page 254.)

Each 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 **Monitoring** rule configuration needed.

A device may often have many similarly-named Log Fields. In this case, rules can be created using a wild card character to create rules which monitor 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, ... and so on.

Number Range [ ]

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

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

Categories

Categories can effectively combine several log messages/alarms from one device into one alarm 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 log/alarm messages and aggregate the results into one aggregate alarm message (called, say, "INPUT_STATE") using **Categories**. See Figure 39.
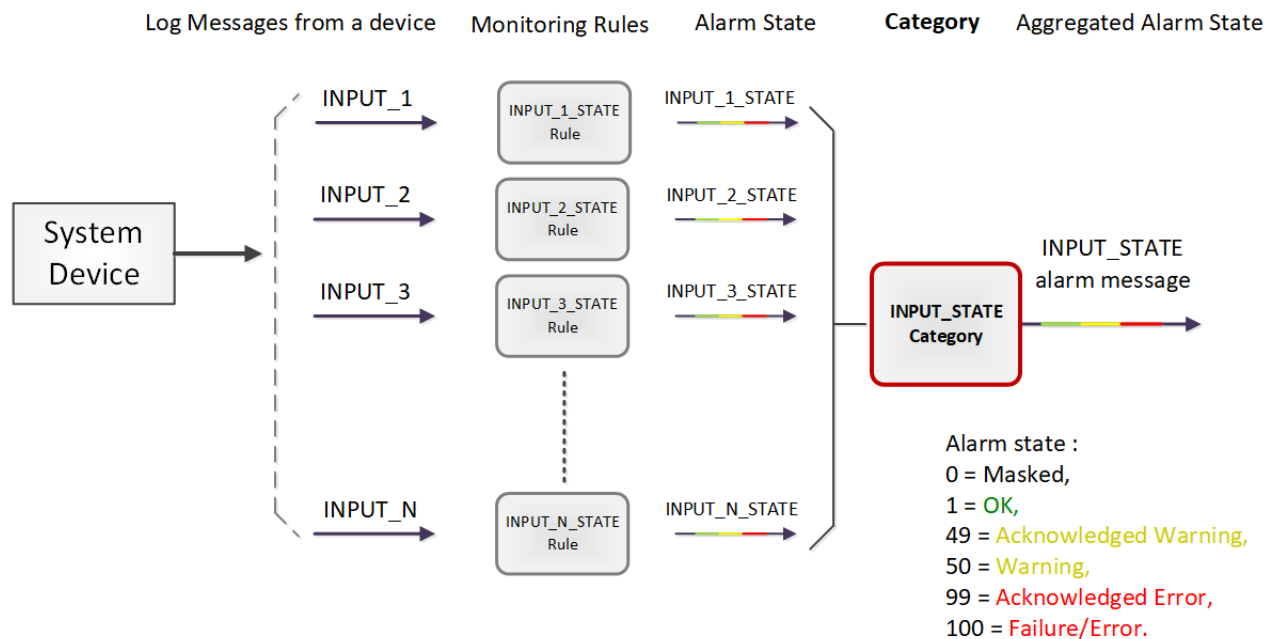
Figure 39: Category Example - Aggregate Alarm Message

Example Use Cases

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

- 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 alarm (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 alarm (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 alarm 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) alarm message; and

   d show the alarm state on the custom panel (with a Tally lamp).

See Categories Screen, on page 230, for more details.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

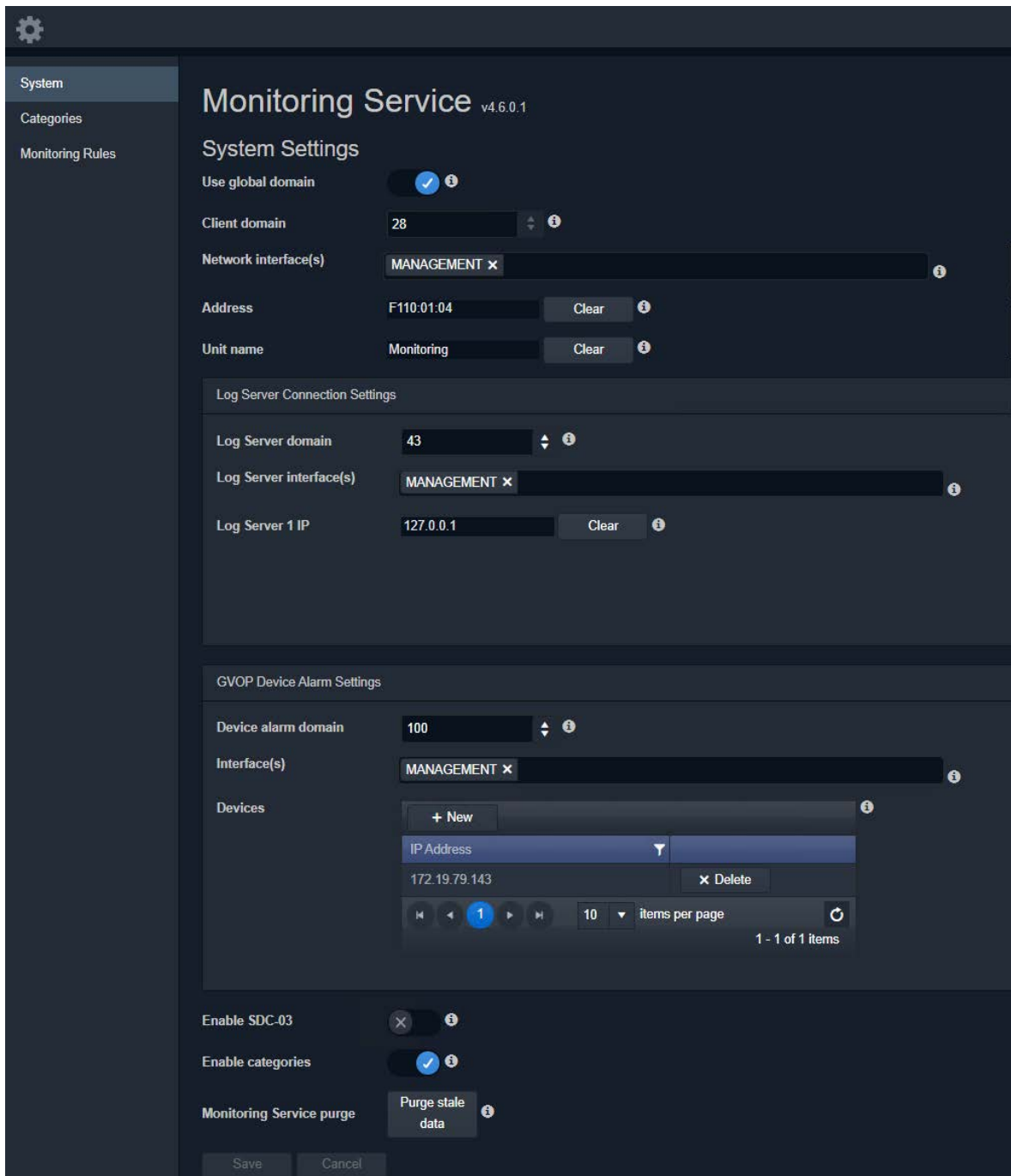See also Common User Interface Features, on page 133.

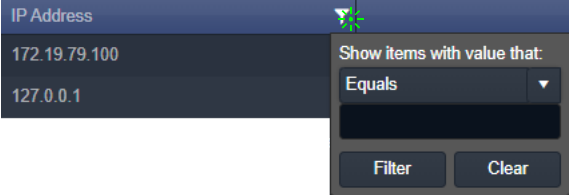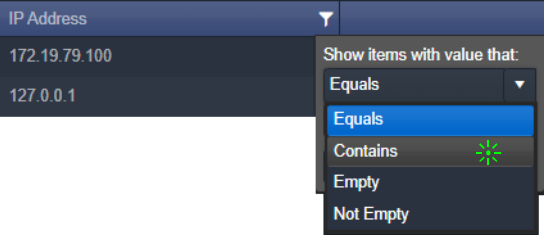*Figure 40: Monitoring Service - System Settings Screen*

Table 13: GV Orbit Monitoring Service - System Settings

Setting	Description
System Settings:	See also Service System Settings, on page 126.
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interface(s)	See Network Interface(s) Setting, on page 127.
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
Unit Name	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.
Log Server Connection Settings:	
Log Server Domain	Enter the Log Server Domain ID Number so that the **Monitoring** service can communicate to the **Log Server** service. For more information, see Default GVOP Domain IDs, on page 127.
Log Server Interface(s)	Click in the cell and select the network interface(s) that the **Monitoring** service is to use to communicate with the **Log Server**. For GV Orbit, all services use the MANAGEMENT interface. See also Network Interface(s) Setting, on page 127.
Log Server 1 IP	Enter IP address of the where the **Log Server** is running on which the **Monitoring** service is connected to. The loop-back host IP address 127.0.0.1 should be used when the Log Server and Monitoring services are co-located on the same GV Orbit Server, which is typically the case. Default: 127.0.0.1.
GVOP Device Alarm Settings:	
	A **Monitoring** service connects to a **Densité Manager** service to get its device log data.
Device Alarm Domain	Enter the **Device alarm domain** ID Number set in the **Densité Manager** service for the **Monitoring** service to connect to it. This can be the same as the Client GVOP Domain ID. For more information, see Client GVOP Domain ID Setting, on page 126.
Interface(s)	Click in the cell and select the network interface(s) for the **Monitoring** service to use to connect to the **Densité Manager** service. More than one interface may be selected. For GV Orbit, all services use the MANAGEMENT interface. See also Network Interface(s) Setting, on page 127.

Table 13: 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** ID Numbers that are accessible. The loop-back host IP address 127.0.0.1 should be used when the Log Server and Densité Manager services are co-located on the same GV Orbit Server, which is typically the case. Default: 127.0.0.1. **Note:** In some systems, different IP address(es) may be specified. IP addresses can be added for other devices that support GVOP alarms. For example, Grass Valley Kaleido IP.
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	Select to enable the SDC-03 (Traffic Light) interface. See SDC-03 Interface, on page 229. **Note:** Enabling SDC-03 requires a **Monitoring** service restart.
Enable Categories	•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	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.
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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 alarm message to carry an aggregated Alarm state and define a list of the message Headers which should be aggregated. The list may be defined:

- As a collection of fixed headers.
- Using wild cards (for example, INPUT_*).
- Using ranges (for example, INPUT_[1-20]).

When **Categories** are enabled, the **Monitoring** service automatically scans each device in the system and adds the new alarm to any devices which have matching **Monitoring Rules**. Thus, the new status information appears in a device's **Alarm Summary** window.

Figure 41 shows the **Monitoring** service **Categories** configuration screen and shows a list of categories that have been created. To create a category, see Categories Example, on page 232, for an example of setting up a new **Category**.
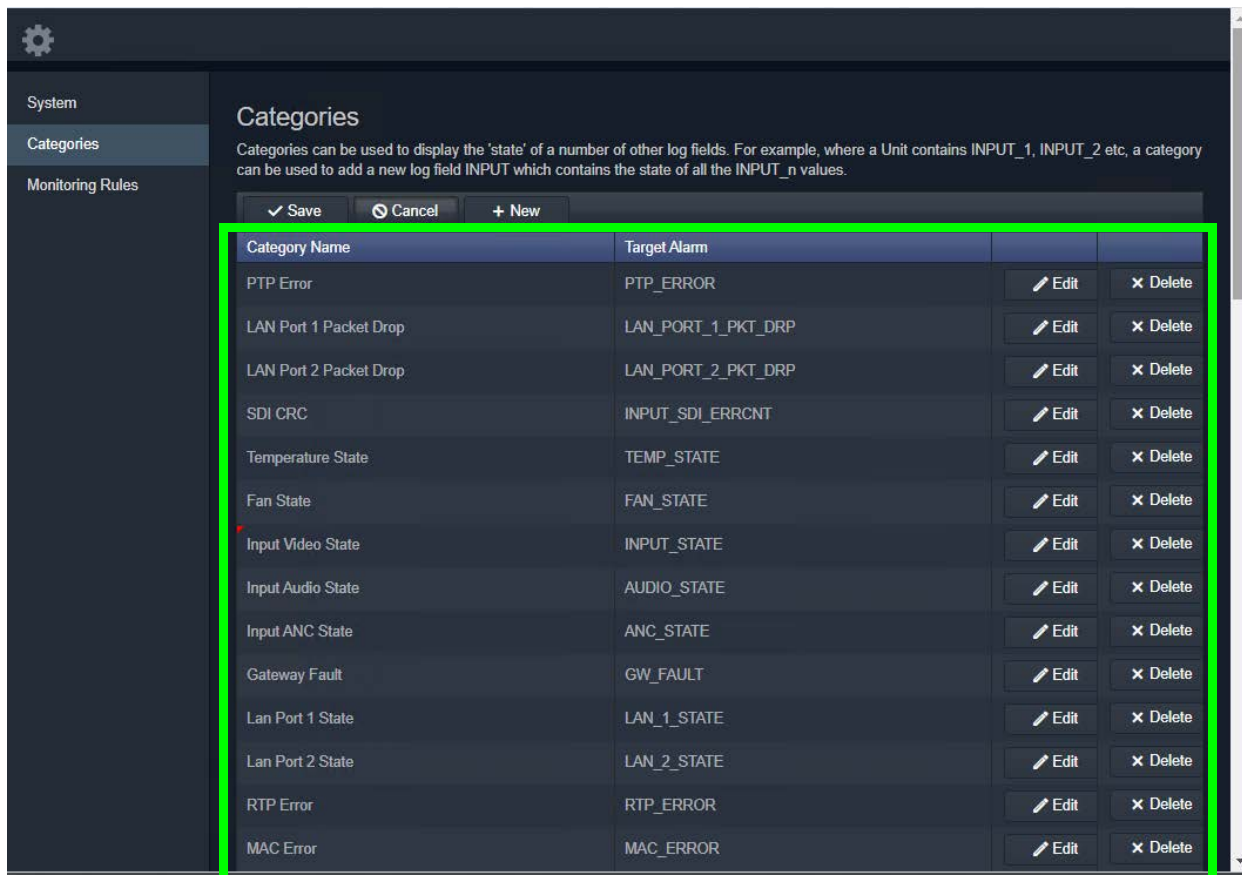
Figure 41: Monitoring Service - Categories Screen

Column	Description
Category Name	A human-readable name
Target Alarm	HEADER name used by the Category's alarm message

See Changes need to be Saved List Indicator, on page 133 and List Control Buttons, on page 133.

Figure 42: Categories List

Categories Example

In this example, a new **Category** is created which aggregates together some messageHeaders.

Step 1: 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.
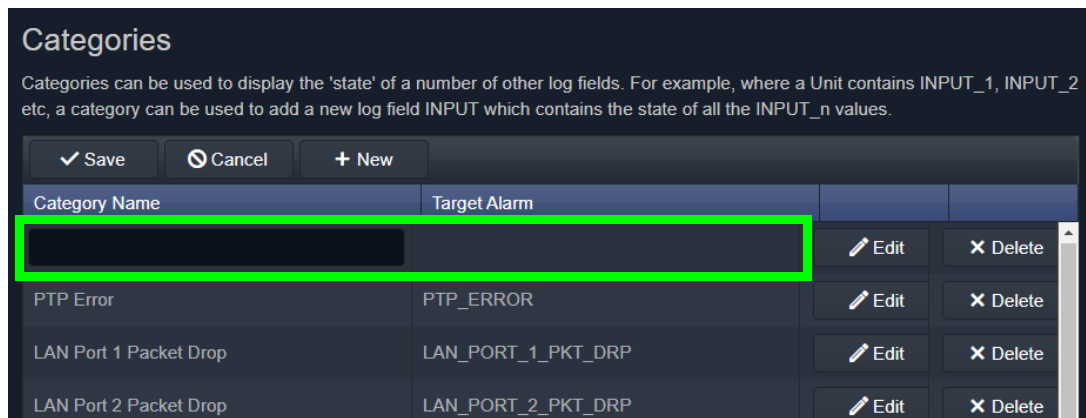
Figure 43: New Blank Category Item

3 Enter a name for the new **Category** - a human-readable, 'friendly' name.
4 Enter a name for the Header to be used by the **Category's** alarm message (Target Alarm).
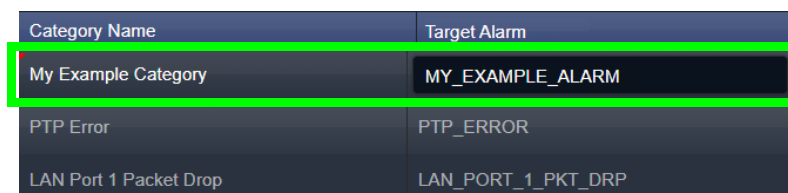
Figure 44: New Category Name and Alarm

5 Click **Save**.

Step 2: Edit - Add Header Match Pattern(s)

1 Click **Edit** to edit the new **Category** item.
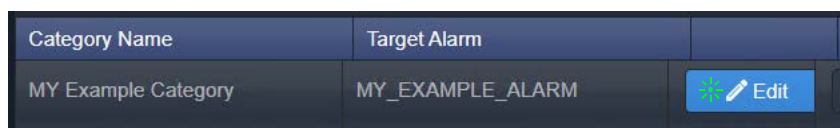
Figure 45: Edit New Category

The **Edit Category** dialog is shown. See Figure 46.

New Category name   New Target Alarm name
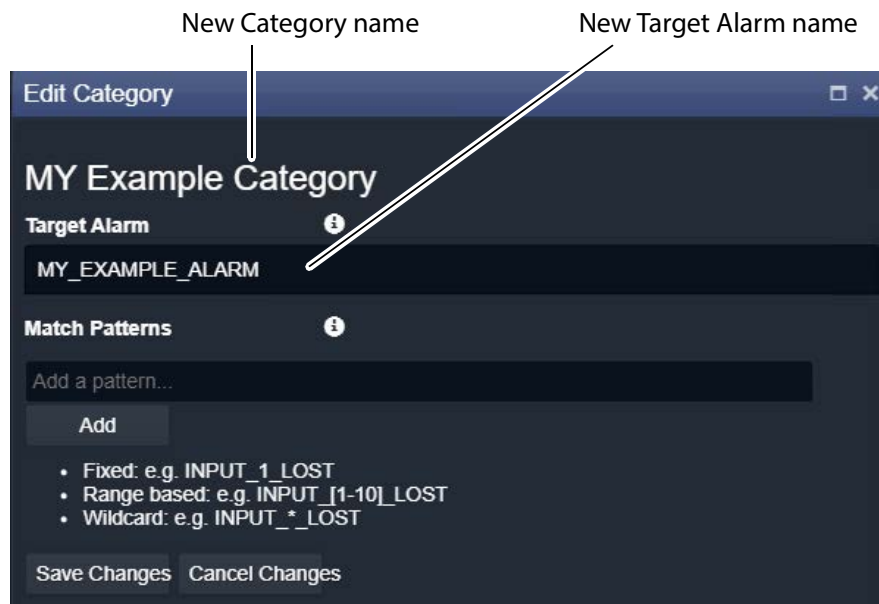
Figure 46: Edit Category Dialog

2 In the **Match Patterns** text box,
begin entering a message Header **Match Pattern** text string. For example, "INPUT_".

As the text string is entered, a drop-down list appears showing all the candidate message Header names filtered on the entered text. See Figure 47.

Begin to enter
Match Pattern
text

Filtered Header
names in
drop-down list
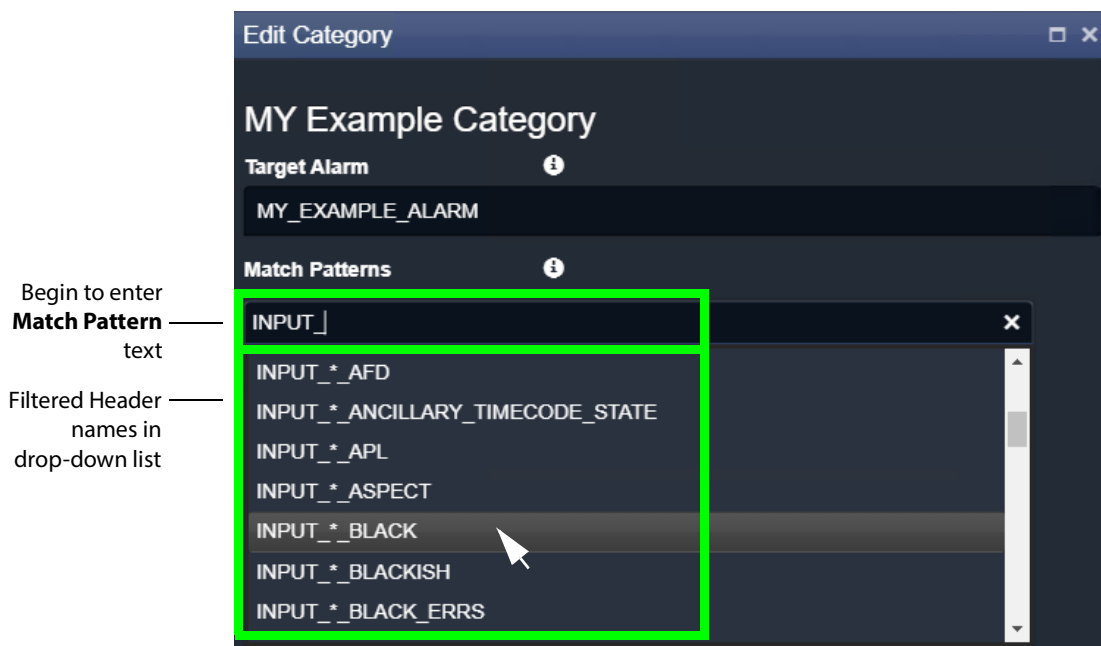
Figure 47: Select a Match Pattern From Drop-Down List

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 and then press the Enter/Return key.

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. Then press Enter/Return.
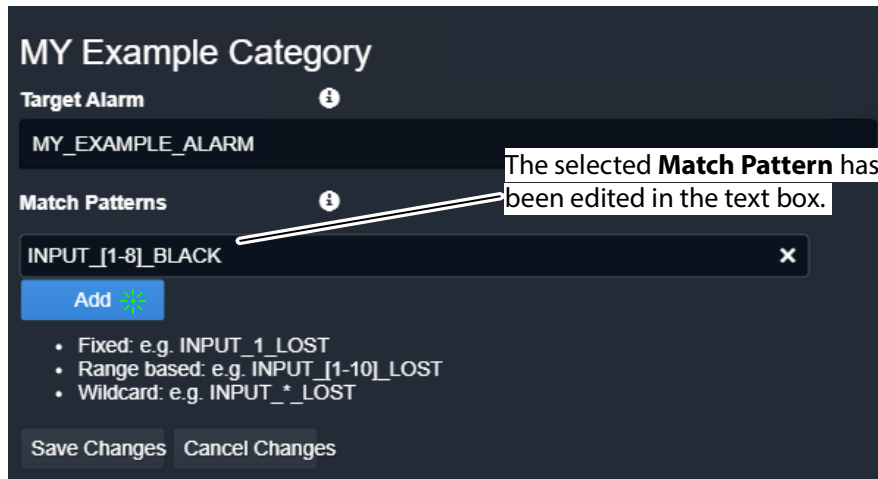
Figure 48: Editing a Match Pattern

5 Click **Add**.

A **Match Pattern** is added to the **Category**.
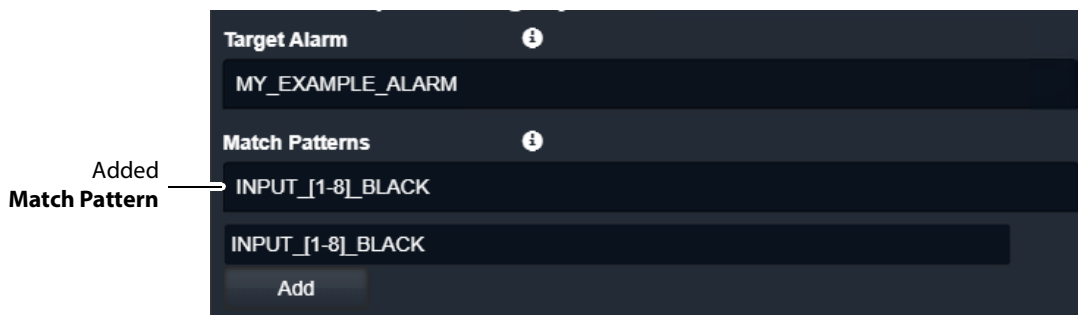
Figure 49: Added Match Pattern

One **Match Pattern** has now been set up for this **Category**. More match patterns may be added, if required.

Step 3: 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 50.)
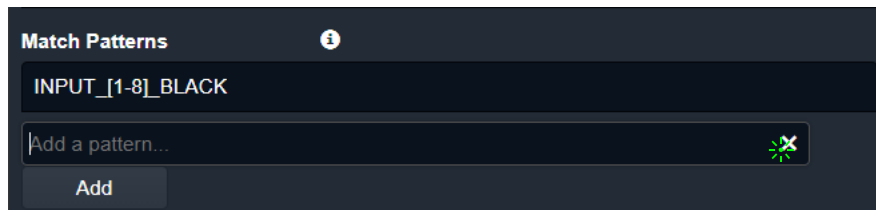
Figure 50: Clear Match Pattern Entry Text Box

2 Begin entering another message Header **Match Pattern** text string and select the required name item in the drop-down list.
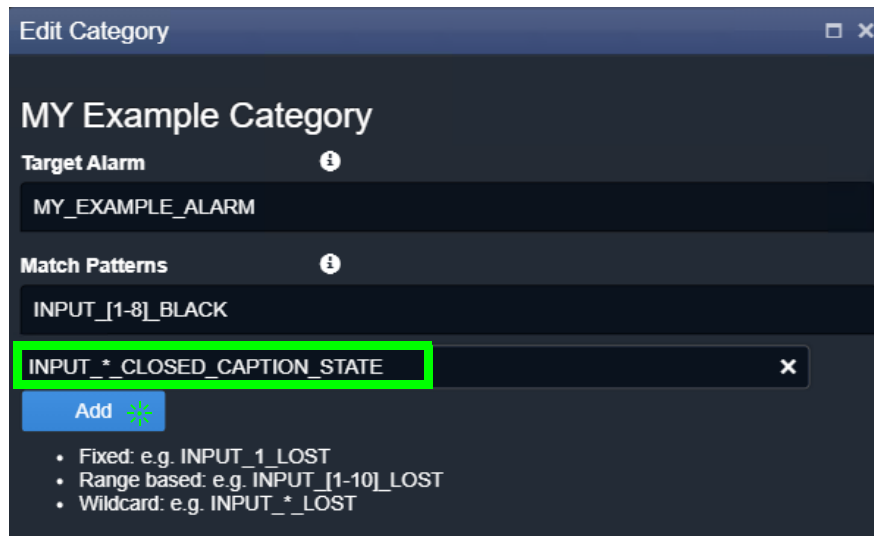
Figure 51: Entering Another Match Pattern

3 Click **Add**.

The newly-entered text string is added to the **Category**.

Two message Header **Match Patterns** have now been set up for this **Category**. See Figure 52.

Figure 52: Save Header Match Patterns

4 Click **Save Changes**.

The changes made in the **Edit Category** dialog are saved and the dialog is closed.

In this example, the new **Category** will now aggregate together alarm messages about:

- input black detection; and
- input closed caption status.

The new **Category** appears at the bottom of the **Category** list in the **Categories** screen. See Figure 53.

Figure 53: New Category in Category List

Monitoring Rules Screen

The **Monitoring Rules** configuration screen contains a list of **Monitoring Rule** rule items, for example, a list of message Headers with their state matching rules. Custom items can be added. Rules may be edited.

Monitoring Rules Screen Information

State Matching Rules

The following types of rules exist:
- Numeric State Matching Rule, on page 238
- Rate of Change State Matching Rule, on page 239
- String State Matching Rule, on page 239

Numeric State Matching Rule

This rule operates on a message Header that has 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 54.

Custom **Numeric State** matching rules can be created.
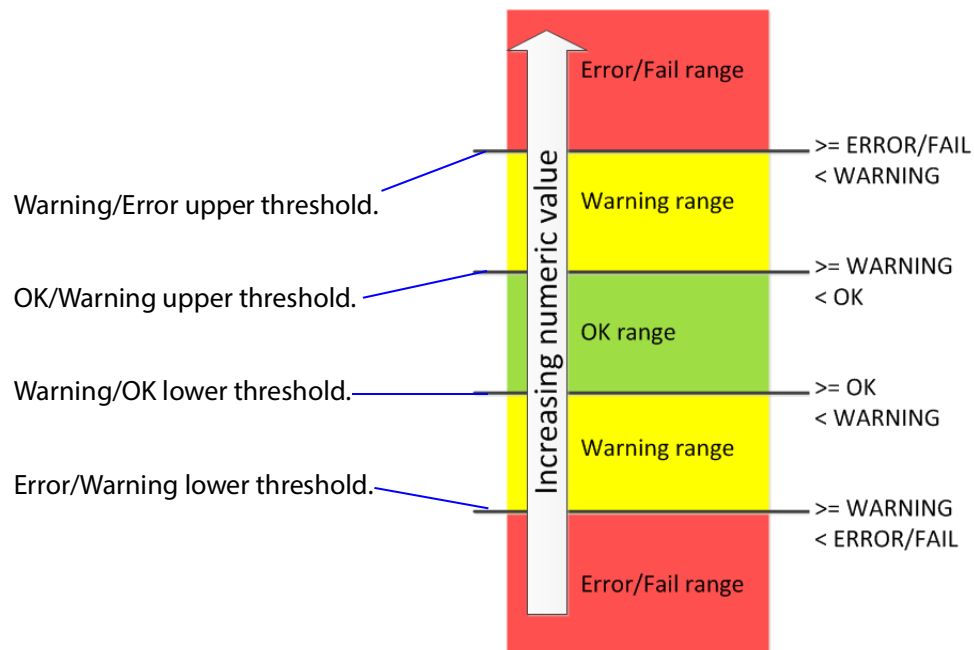
Figure 54: Numeric Value Rule Thresholds

Rate of Change State Matching Rule

This rule operates on a message Header that has 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 55.

Custom **Rate of Change** state matching rules can be created.
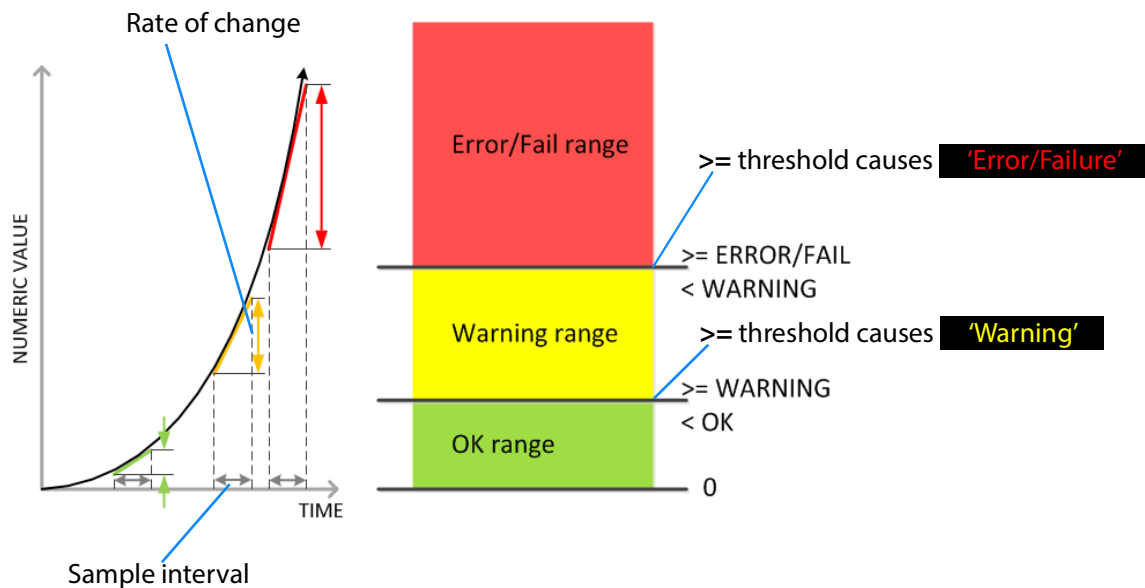
Figure 55: Rate of Change Rule Thresholds

String State Matching Rule

This rule operates on a message Header that has 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 240.)
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 240.)

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.

Monitoring Rules List

The **Monitoring Rules** configuration screen defines the rules for each message Header in the system. A list of all message 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 56. See also Common User Interface Features, on page 133.

Figure 56: Monitoring Service - Monitoring Rules Screen

GV Orbit Services
Monitoring Rules Screen

GV Orbit
Admin Guide
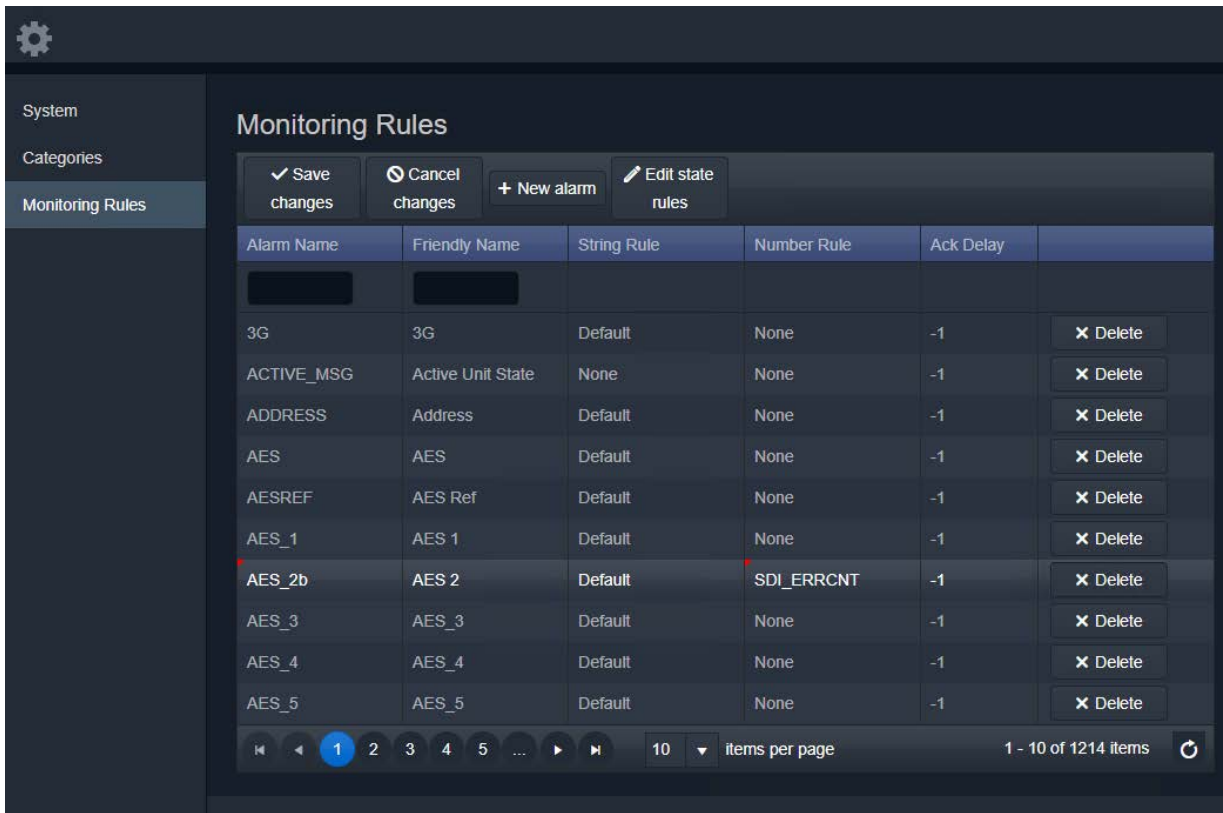
Figure 57: Monitoring Service - Monitoring Rules List Columns

Setting	Description
Alarm name	The alarms' name
Friendly Name	Rule title, a friendly, human-readable name
String Rule Number Rule	State rule used: • String state rule • Numeric state rule
Ack Delay	Auto-acknowledge time period

Filtering the Monitoring Rules List

The **Monitoring Rules** list can be filtered using the filter text boxes at the top of the 'Alarm Name' and 'Friendly Name' 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 Alarm names is shown. See Figure 58.
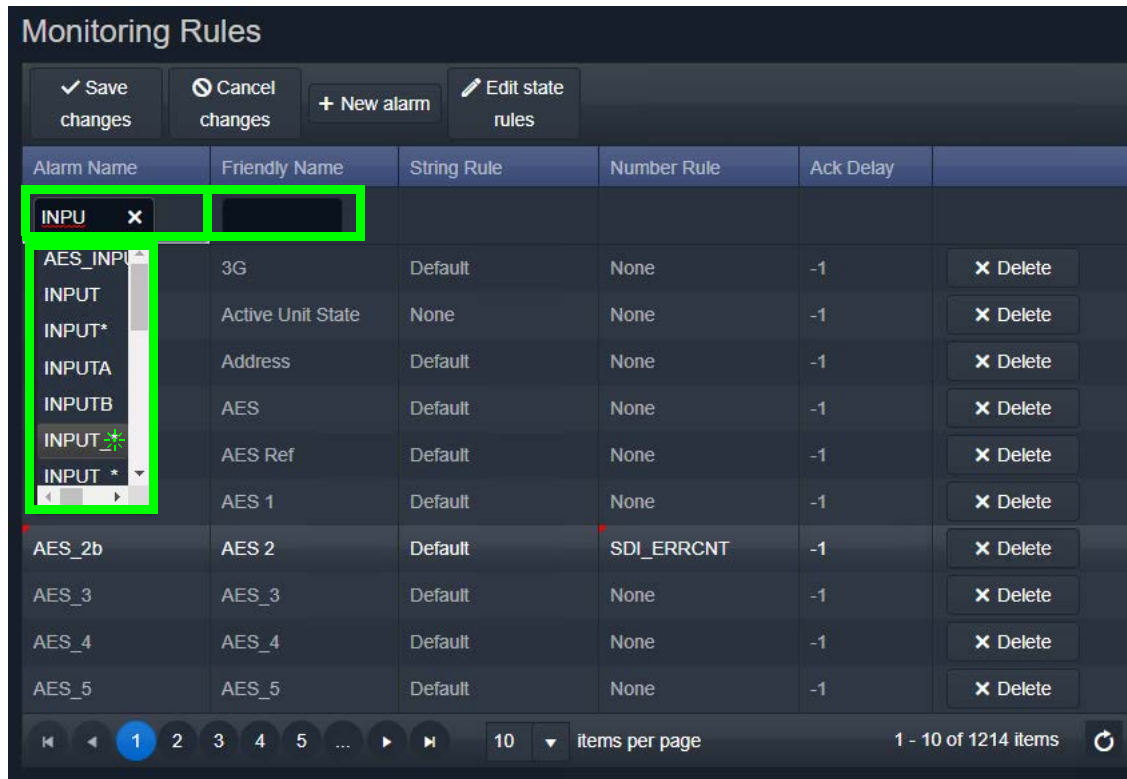
Figure 58: Filtering Monitoring Rule Items

2 Select an item from the drop-down list.

The **Monitoring Rules** list is filtered on the selected item. See Figure 59.

Figure 59: Filtered Monitoring Rules 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 Monitoring Rule

To create a new **Monitoring Rule** for a new message Header:

1 Click **+New Alarm**.

2 Begin to enter the new **Alarm**'s name and select a name from the drop-down list (or enter a new name, if required). This is the message Header that the new Monitoring rule will apply to. See Figure 60.
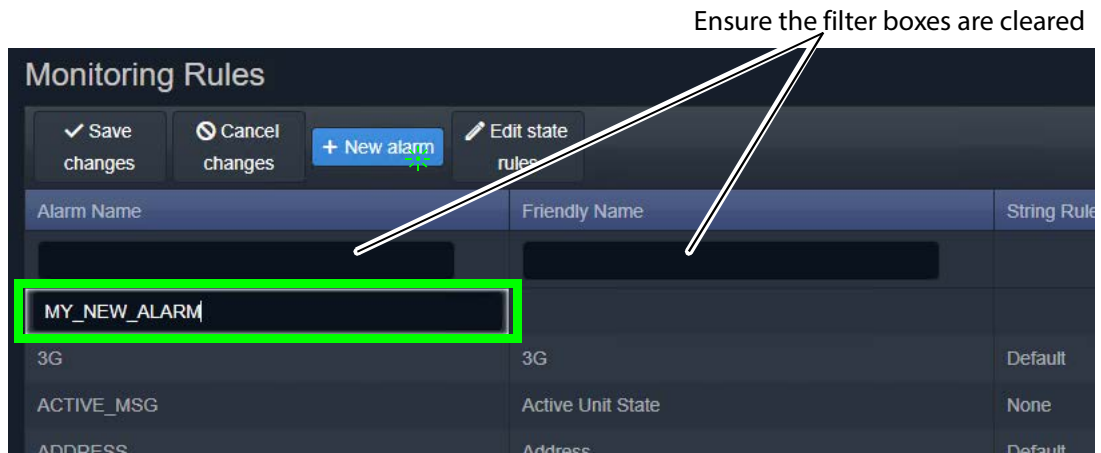
Ensure the filter boxes are cleared

Figure 60: Enter Alarm Name

3 Enter a friendly name (title) for the new **Monitoring Rule**, a human-readable text string. See Figure 61.
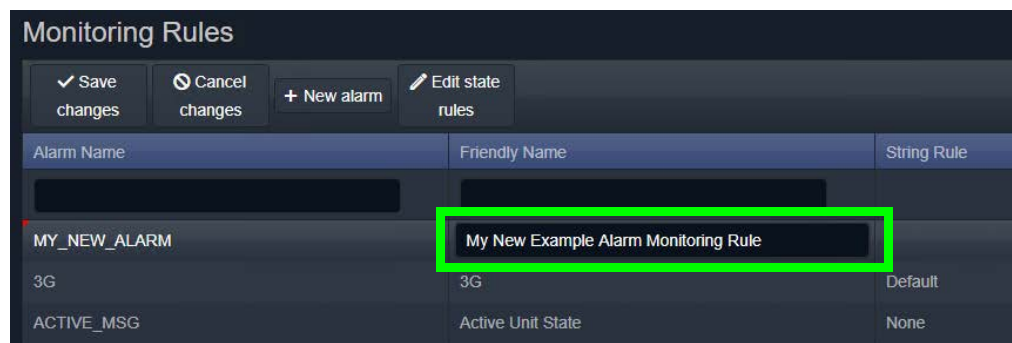

Figure 61: Enter a Friendly Name for the Monitoring Rule

4   Select state rule to use (for example, a **String** rule and/or a **Number** rule). See Figure 62.

Select a State rule   **String** rule   **Number** rule

Figure 62: Select a State Rule to Use (String or Number)

> **Note:**
> Custom state rules (**String** or **Numeric**) can be set up. See Monitoring State
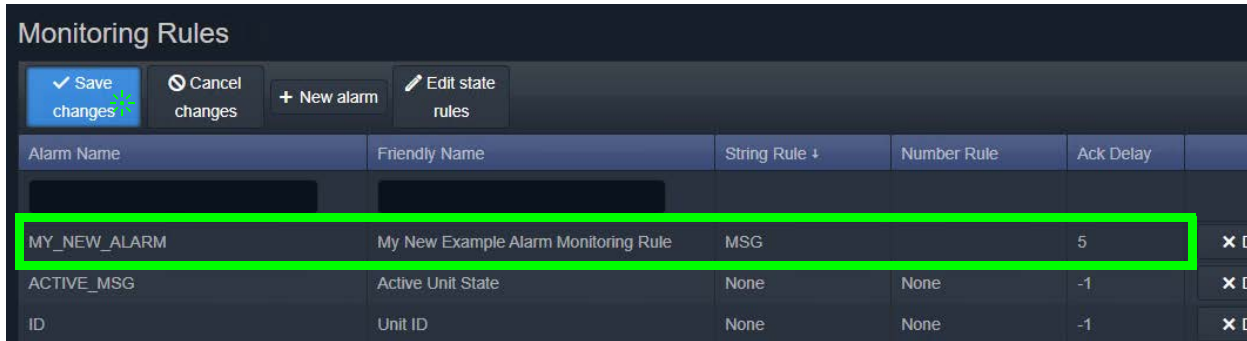> Rules, on page 248.

5   If an auto-acknowledge is required, set the timeout period (**Ack Delay** figure in seconds, -1 = no auto-acknowledge). See Figure 63.

Figure 63: Select an Ack Delay Figure (seconds)

6   Click **Save Changes**.

A new **Monitoring Rule** has been created. See Figure 64.

Figure 64: New Monitoring Rule Created

Monitoring State Rules

The **Monitoring** service has some default state rules already defined for processing message **Header** values. Custom state rules can be generated and then used in any **Monitoring 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 **Monitoring Rules** configuration screen, see Figure 65.

The **State Rules** dialog is shown, see Figure 66.
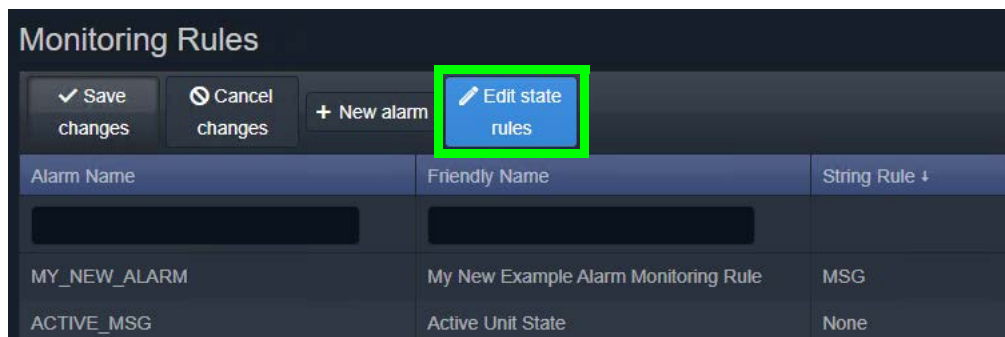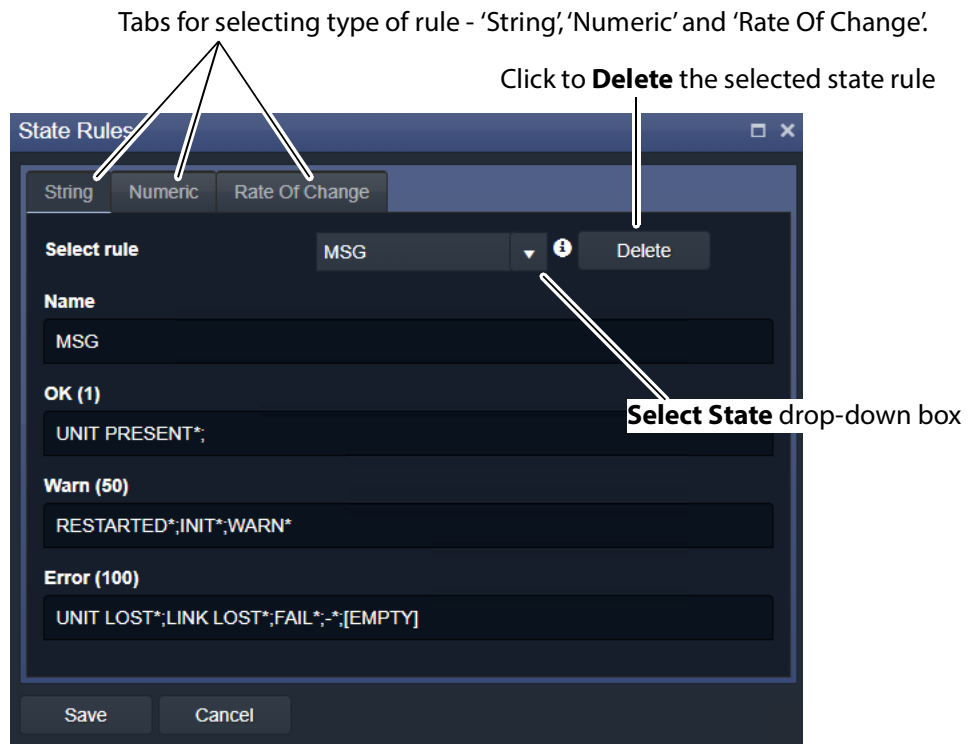

Figure 65: Edit State Rules Button

Tabs for selecting type of rule - 'String', 'Numeric' and 'Rate Of Change'.

Click to **Delete** the selected state rule

Select State drop-down box

Figure 66: State Rules Dialog

2 Select the state rule type to edit by clicking on a tab (for example, 'String', 'Numeric', or 'Rate Of Change').

3 Select the state rule to edit from the **Select Rule** drop-down list. See Figure 67.

Figure 67: Select Rule Drop-Down List

4 Edit the settings, see:
- String State Rule Settings, on page 251;
- Numeric State Rule Settings, on page 253; or
- Rate Of Change State Rule Settings, on page 254).

5 Click **Save** in the dialog.

Create a New State Rule

To create a *new* state rule:

1 Click **Edit State Rules** in the **Monitoring Rules** configuration screen.

The **State Rules** dialog is shown.

2 Select the type of state rule to edit by clicking on a tab (for example, 'String', 'Numeric', or 'Rate Of Change').

3 Click on the **Select State** drop-down box and enter a *new* name for the **State Rule**. See Figure 68a.

GV Orbit detects that this is a new name.

4 Click **Add new item** in the drop-down list. See Figure 68a.

The new name item is added into the drop-down list. See Figure 69b.

a) Enter new **State Rule** name and Add Item

b) New Item

Figure 68: New State Rule 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 69.

Figure 69: New Blank State Rule

6 Edit the rule settings as required, see:

- String State Rule Settings, on page 251;
- Numeric State Rule Settings, on page 253; or
- Rate Of Change State Rule Settings, on page 254).

7 Click **Save** in the dialog.

State Rule Settings

A **State Rule** describes how to derive an alarm state ('OK', 'Warning', 'Error/Fail') from a log message **Header** value. A message's **Header** value is processed and an Alarm state is 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 **State Rules** 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 239.)
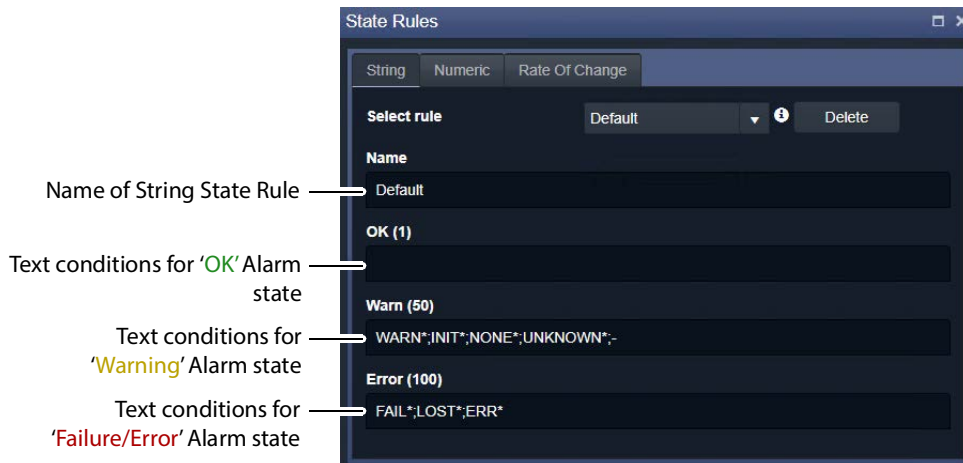
Figure 70: String Rules Tab

1 Enter the text conditions for each Alarm state. ('OK', 'Warning', 'Error') See Figure 71 for some typical, semi-colon separated, default text rules.

Figure 71: Typical Message String Rules

2 Click **Save** in the dialog.

Note:

In a text rule condition:

- '**[EMPTY]**' matches a message Header with no value.

  Example, `UNITLOST*;LINKLOST*;FAIL*;-;[EMPTY]`

- '**-**' matches a message Header with a value of '-' (for example, 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 238, for a description.)
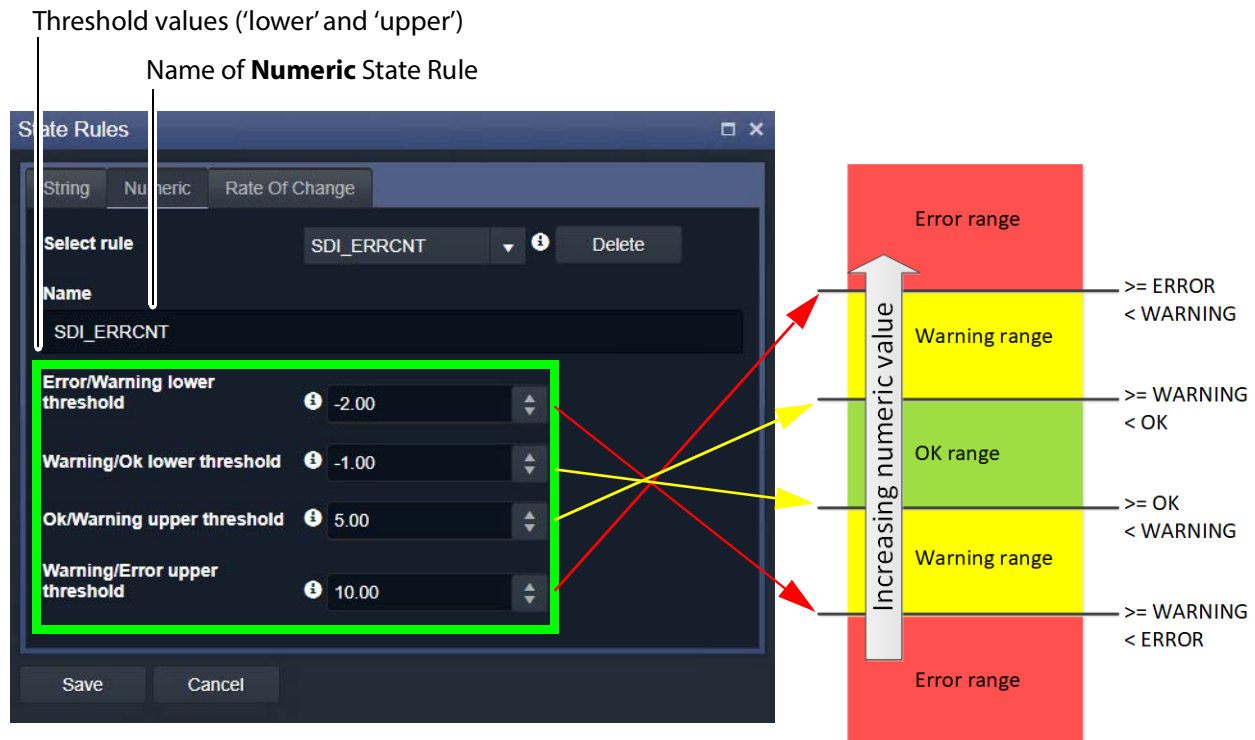

Figure 72: State Rules Dialog - Numeric Rules Tab

Parameter	Description
Error/Warning lower threshold	Lower-threshold value, _below_ which causes an Error.
Warning/OK lower threshold	Lower-threshold value, _below_ which causes a Warning.
OK/Warning upper threshold	Upper-threshold value, _at or above_ which causes a Warning.
Warning/Error upper threshold	Upper-threshold value, _at or above_ which causes an Error.

1 Enter the upper- and lower-threshold values (for example, 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 239, 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 72.

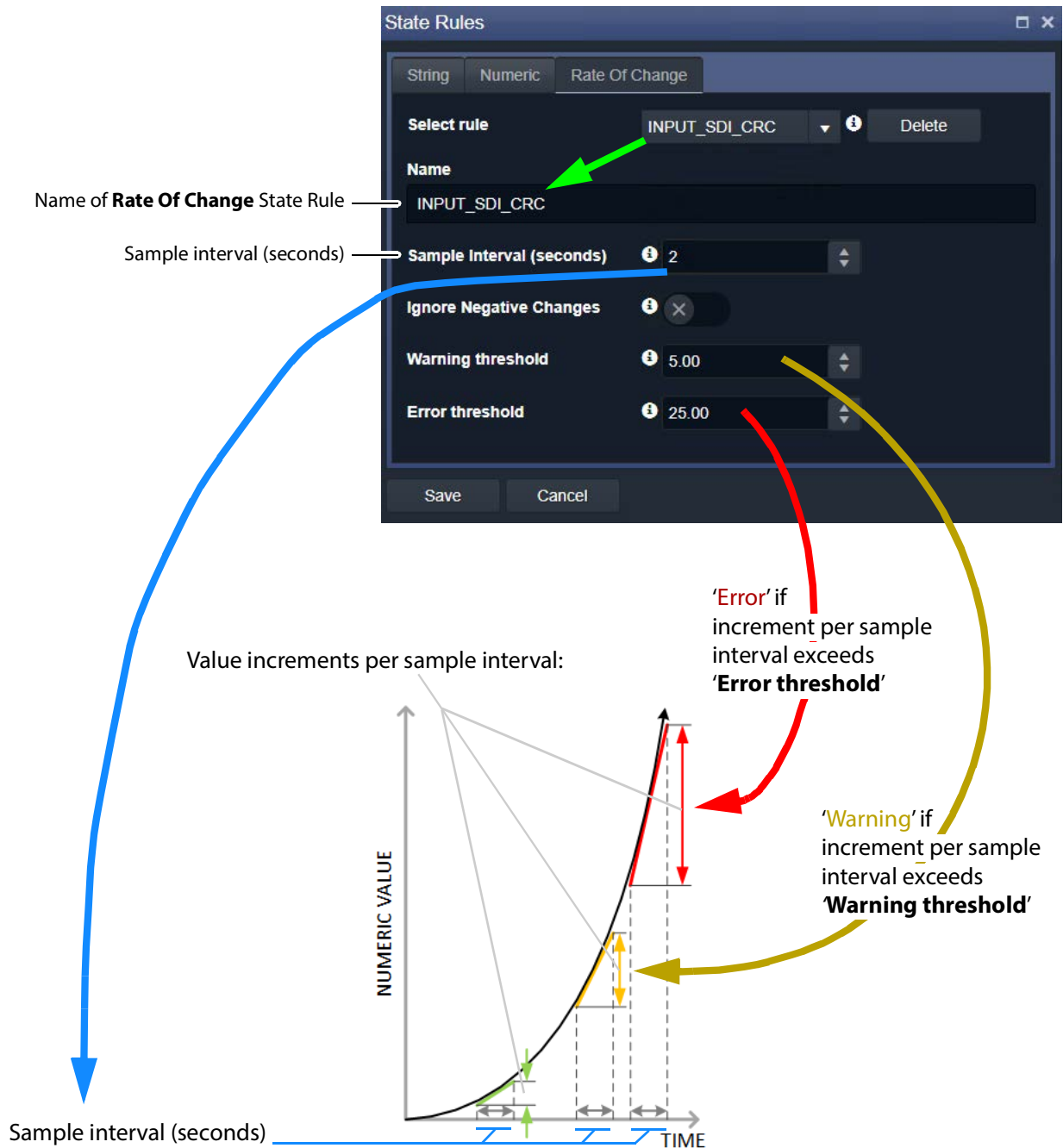*Figure 73: State Rules Dialog - Rate Of Change Rules Tab*

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**.

MV Cluster Manager Service

Introduction

The **MV Cluster Manager** is optionally run on the GV Orbit server. This service is needed when a cluster of multiviewers has been configured in GV Orbit Client. It automatically translates a single GV Orbit 'Clustered Multiviewer' project into its constituent, 'single-multiviewer' projects and pushes all of the individual projects out to their respective, individual multiviewers.

> **Note:** For information about MV Clusters and Clustered MV projects, see the *GV Orbit Client User Guide*. See Related Documentation, on page 25.

This service watches and reads a 'Clustered Multiviewer' project from a repository on the GV Orbit server and automatically manages each individual multiviewer device of an **MV Cluster**. In this way, video walls served by an **MV Cluster** can be defined and managed independently of the individual multiviewer devices.

> **Note:** An **MV Cluster** may comprise one or more MV-8 Series multiviewer devices.

Figure 1 shows a functional block diagram for the **MV Cluster Manager** service.
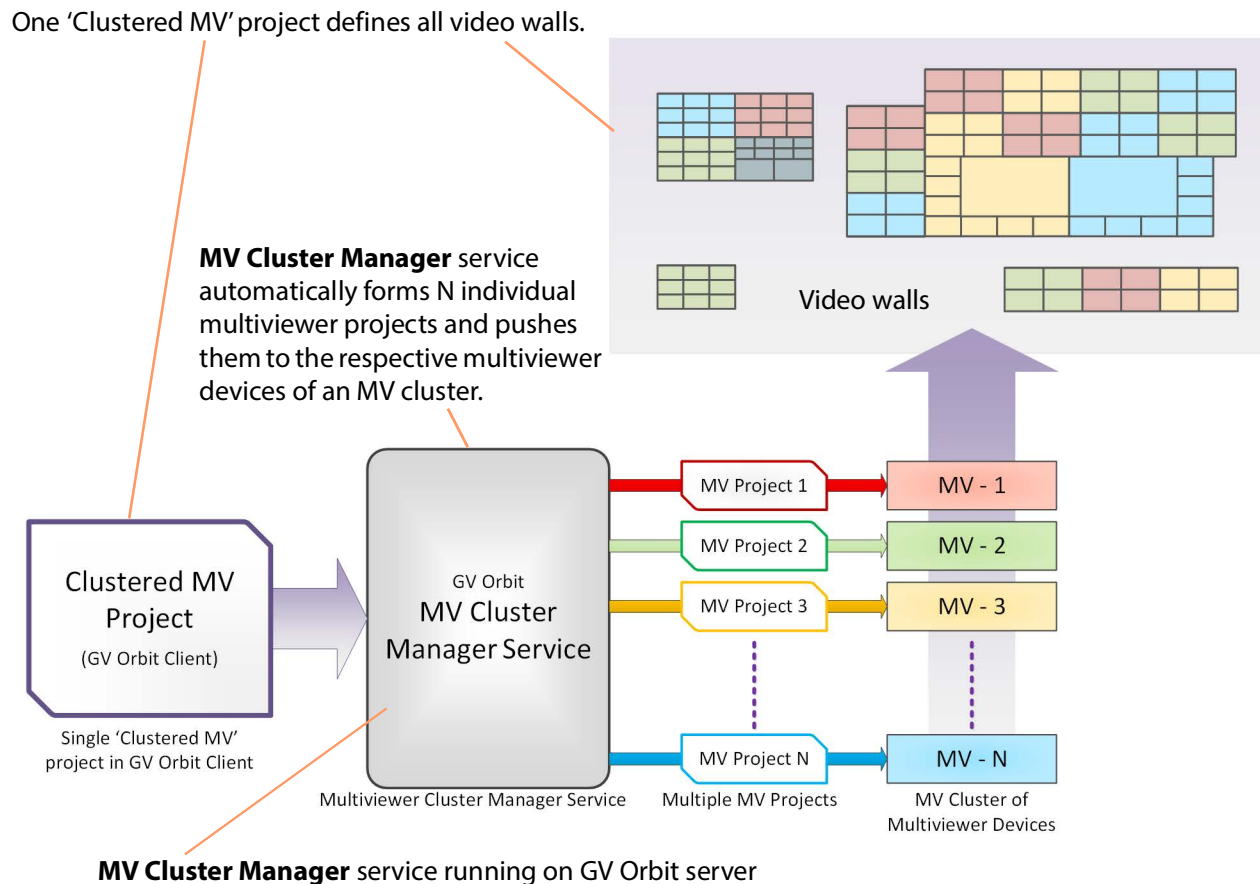
One 'Clustered MV' project defines all video walls.

MV Cluster Manager service automatically forms N individual multiviewer projects and pushes them to the respective multiviewer devices of an MV cluster.

Figure 1: MV Cluster Manager Service

Once the service is configured, it will:

- continually monitor the availability of multiviewers;
- put a watch on the relevant GV Orbit server repository for any 'Clustered MV' project changes;
- rebuild constituent 'single-multiviewer' projects when changes are detected in the Clustered MV project;
- automatically push constituent projects to appropriate single multiviewer devices.

The service will alert the GV Orbit system to any off-line multiviewers and missing repositories.

The service is automatically discovered by a GV Orbit Client in a GV Orbit system and a user can then create and deploy a 'Clustered MV' project.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

The configuration screen for the service is shown below:

Select the GV Orbit server project **Repository** in which GV Orbit 'Clustered MV' project has been saved to.

Figure 2: MV Cluster Manager - System Screen

Table 1-1: MV Cluster Manager Settings

Setting	Description
Service Settings:	

Use global domain	Set which Domain ID this service is to use.
	  • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89.
	  • Disabled: use the **Client domain** setting configured below.

Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interface(s)	See Network Interface(s) Setting, on page 127.
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
Unit Name	Enter a name for the service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Project Settings:	The GV Orbit Clustered MV project being connected to must have been saved to a GV Orbit server's repository.
Repository URL	Select the **Repository** in which the 'Clustered MV' project has been saved to on the GV Orbit server.
Status	Shows status of the service's connection to the project **Repository** on the GV Orbit server. The **Repository Manager** service must be running for this. See Repository Manager Service, on page 270.

Table 1-1: MV Cluster Manager Settings (continued)

Setting	Description
MV Status	Shows the status of the connections to the multiviewer devices in a multiviewer cluster.
	Each multiviewer appears as an entry in a status table which shows the result of sending 'ping' messages to each device.
	For each multiviewer, the period between 'ping' messages is 5 seconds.
	MV Status table column headings:
	• **Name** - Name of the multiviewer device.
	• **Pings** - Indicates the status of the last five 'ping' messages sent to the device:
	• '.' = ping successful;
	• 'x' = ping failed.
	• **Last Ping** - Time of the last ping (hh:mm:ss).
	• **Project Push** - Status of the last project push to the multiviewer device. This shows:
	• 'OK' and the time (hh:mm:ss); or
	• 'FAIL' and the time of failure, plus an engineering error log message, if the project push was not OK.
Save/ Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

Relay Service

Purpose

The GV Orbit **Relay** service allows GV Orbit to pass (relay) selected GVOP data between two GV Orbit local Domain ID Numbers 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 Domain ID Number 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.
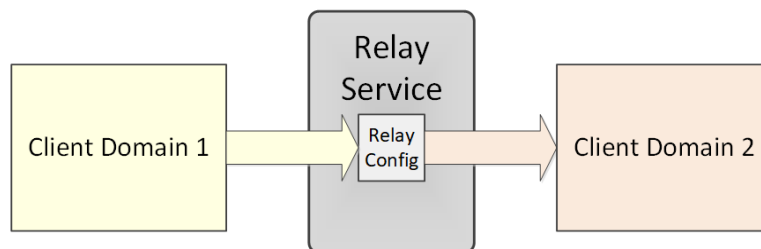> For example, it will not relay 'ping' messages.

Figure 3: 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 4a.
- Status from a MV-8 Series multiviewer (version v3.x and earlier) into a GV Orbit system. See Figure 4b.
- IP Routing data between different networks/Domain ID Numbers. Data is sent in *both* directions (to and from) between the networks/Domain ID Numbers involved. See Figure 5.
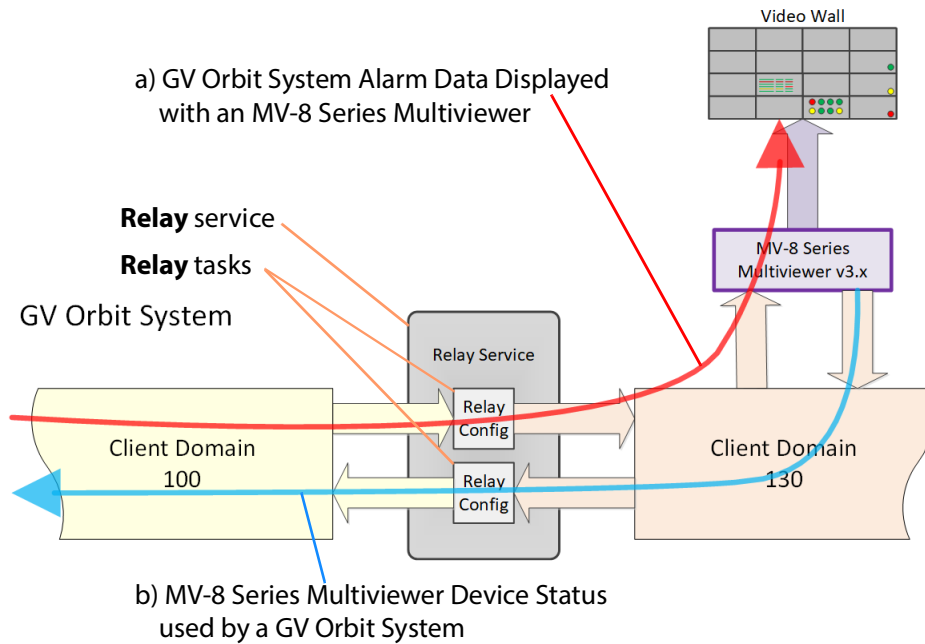
Video Wall

a) GV Orbit System Alarm Data Displayed
with an MV-8 Series Multiviewer

Relay service

Relay tasks

GV Orbit System

Relay Service

MV-8 Series
Multiviewer v3.x

Relay
Config

Client Domain
100

Client Domain
130

Relay
Config

b) MV-8 Series Multiviewer Device Status
used by a GV Orbit System

Figure 4: 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.

GV Orbit System

Relay Service

Client Domain
101

Relay
Config

Media Network

Client Domain
103

IP Routing data traffic relayed between different Domain
ID Numbers and GV Orbit server network interfaces
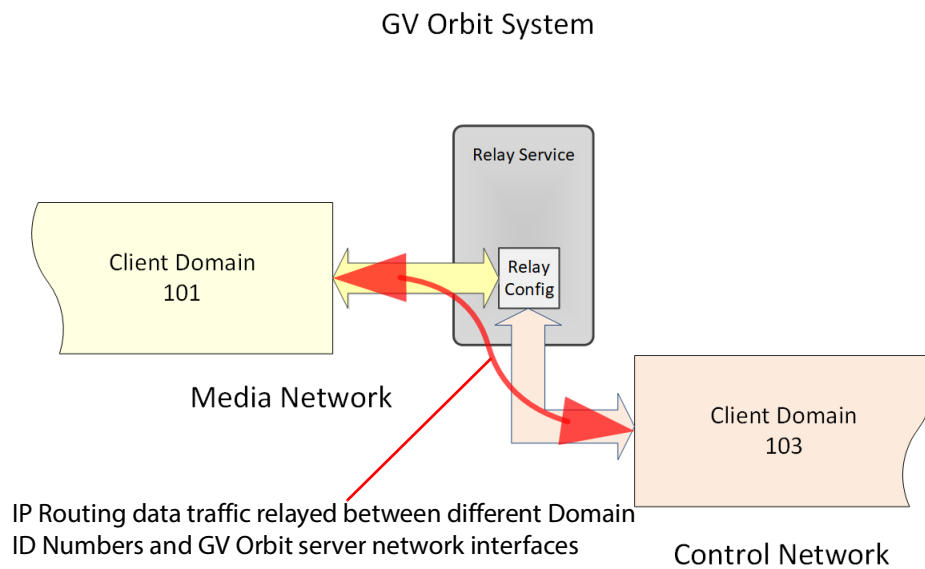
Control Network

Figure 5: Relay IP Routing Traffic Use Case

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.
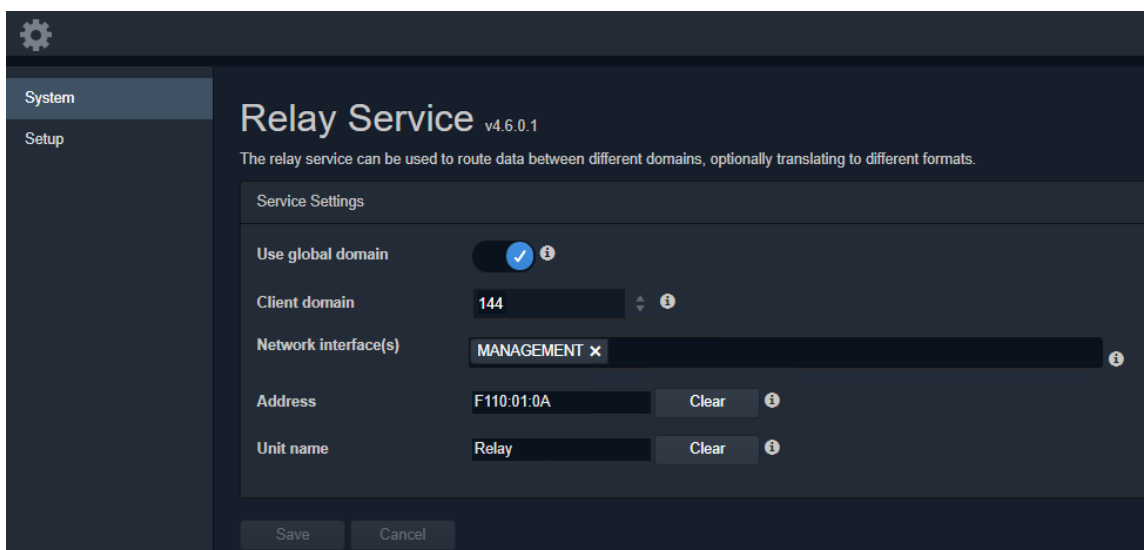
System Screen

Figure 6: Relay Service - System Screen

Table 2: Relay Service - System Settings

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interface(s)	See Network Interface(s) Setting, on page 127.
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.

Table 2: Relay Service - System Settings (continued)

Setting	Description
Unit Name	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.
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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 ID Number to one (destination) Domain ID Number. For passing data in both directions, two **Relay** tasks are required, one in each direction. See also List Control Buttons, on page 133.

Relay task configuration items

Click **Edit** to modify a configuration item.

Click **Delete** to delete a configuration item.

Click **Add Config** to create a new **Relay** task configuration item.

Figure 7: 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 8.

3 Configure the **Relay** task item. See Configure Relay Task, on page 265.

4 Click **Apply** when configuration settings changes are done.

Configure Relay Task

A relay task requires the following information to be configured:

- Use case - for example, this defines the selected GVOP message data type(s) to be relayed.
- Source (**From**) and destination (**To**) locations - For example: Domain ID Number; GV Orbit server network interface(s) for the relay task to use; and Device IP addresses to use (if no multi-cast is enabled).

This is done in the **Relay** service's **Configuration** dialog. See Figure 8.

Figure 8: Relay Service - Configuration Dialog

Table 3: Relay Service - Configuration Dialog

Setting	Description
Description	Enter a text description of the **Relay** task.
From:	A **Relay** task passes selected messages one-way: • **From** a source Domain ID Number. • **To** a destination Domain ID Number.
Domain	Enter the Domain ID Number of the *source* Domain. See Default GVOP Domain IDs, on page 127 for information on Domain ID Numbers.
Interface(s)	Click in the cell and select the network interface(s) for the service to use for the *source* of data messages to relay. More than one interface may be selected. See also Network Interface(s) Setting, on page 127. **Note:** By default this cell is empty, in this case, all network interfaces will be used by the service.
Peer Address List	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 ID members will be contacted.
To:	A **Relay** task passes selected messages one-way: • **From** a source Domain ID Number. • **To** a destination Domain ID Number.
Domain	Enter the Domain ID Number of the *destination* Domain.
Interface(s)	Click in the cell and select the network interface(s) for the service to use for the *destination* of relayed data messages. More than one interface may be selected. See also Network Interface(s) Setting, on page 127. By default this cell is empty, in this case, all network interfaces will be used by the service.
Peer Address List	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 ID members will be contacted. **Note:** For the IP Routing use case (see Relay Task Configuration Use Cases, on page 267), 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.)

Table 3: Relay Service - Configuration Dialog (continued)

Setting	Description
Common Configurations	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 267.
Apply Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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

(For example, 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

(For example, 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 9.

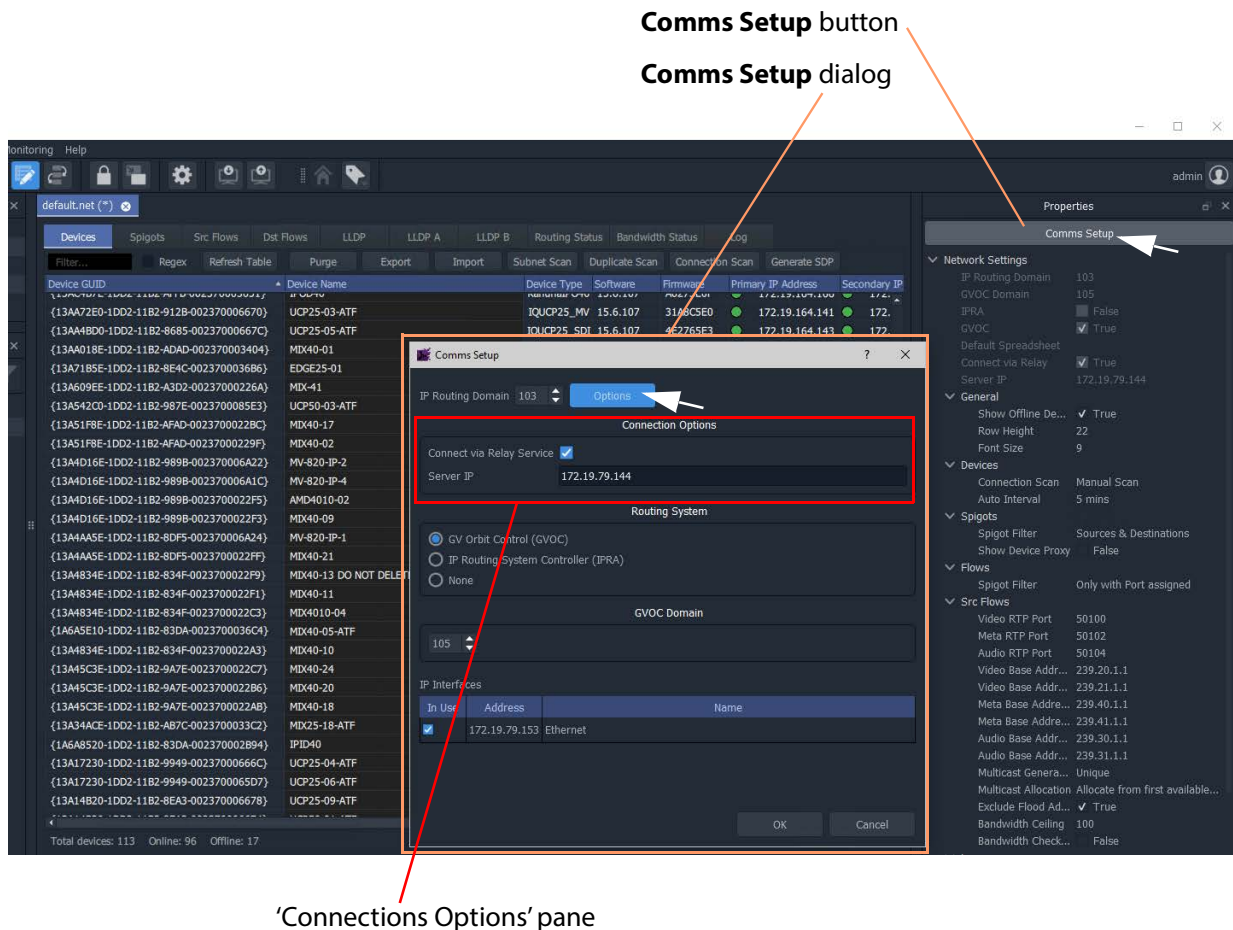**Comms Setup** button

Comms Setup dialog

'Connections Options' pane

Figure 9: 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, **MV Cluster Manager** 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.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.
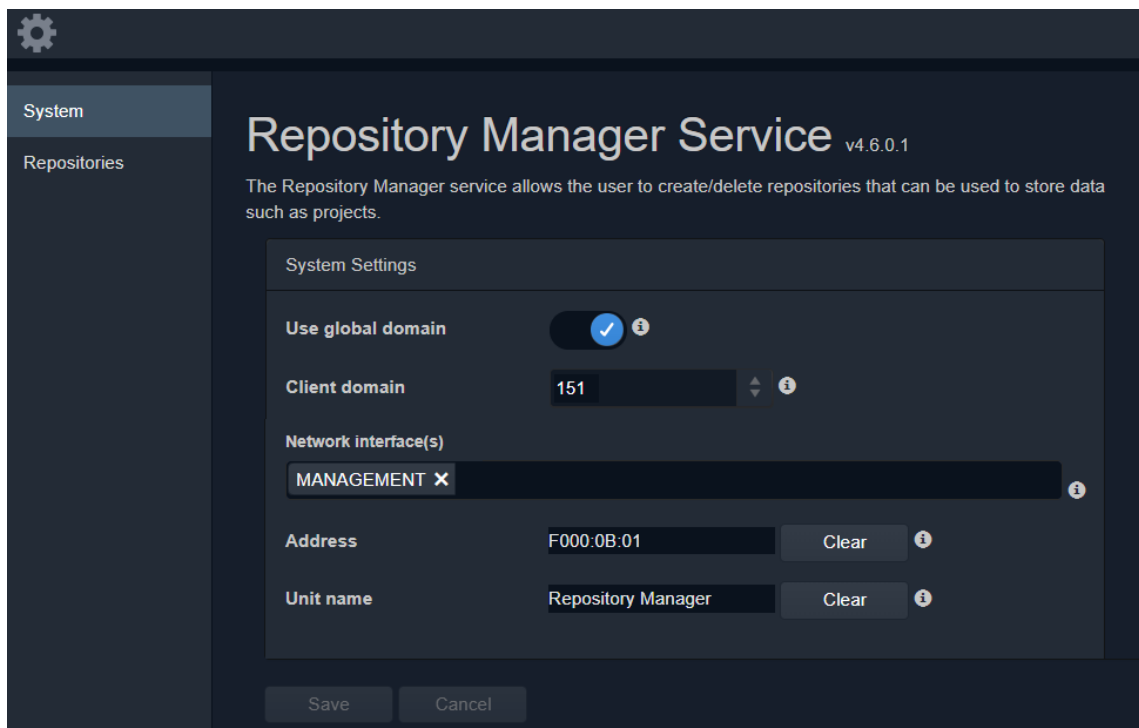
System Screen

Figure 10: Repository Manager Service - System Screen

Table 4: Repository Manager Service - System Settings

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interface(s)	See Network Interface(s) Setting, on page 127.
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
Unit Name	Enter a name for the **Repository Manager** service, a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

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. See also Common User Interface Features, on page 133.
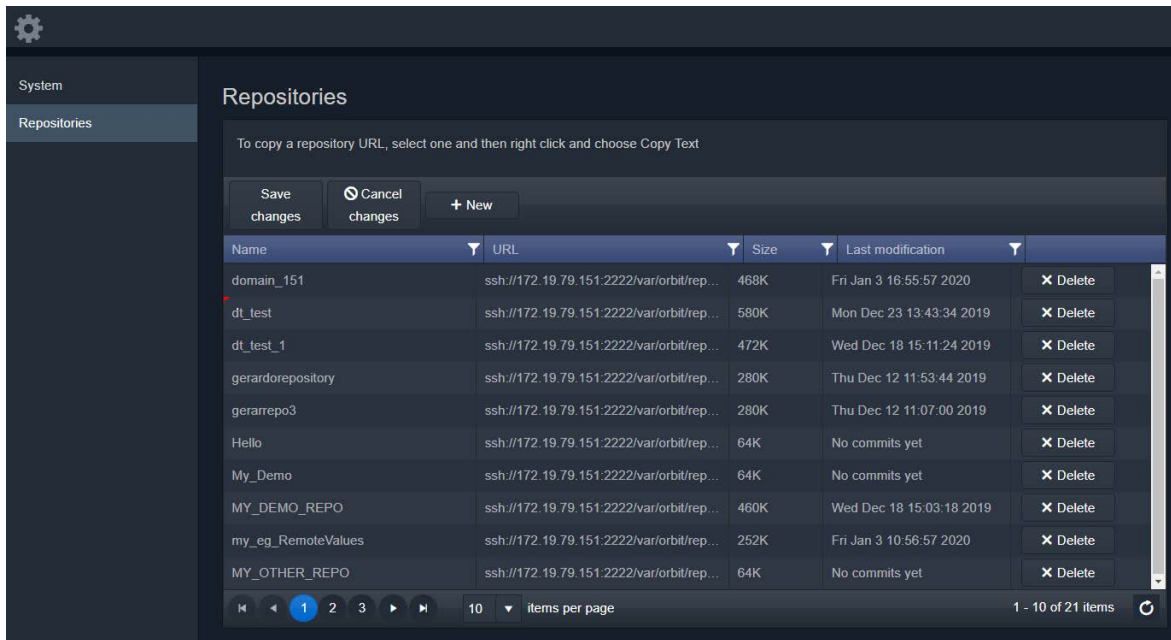
Figure 11: Repositories Screen

Table 5: 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
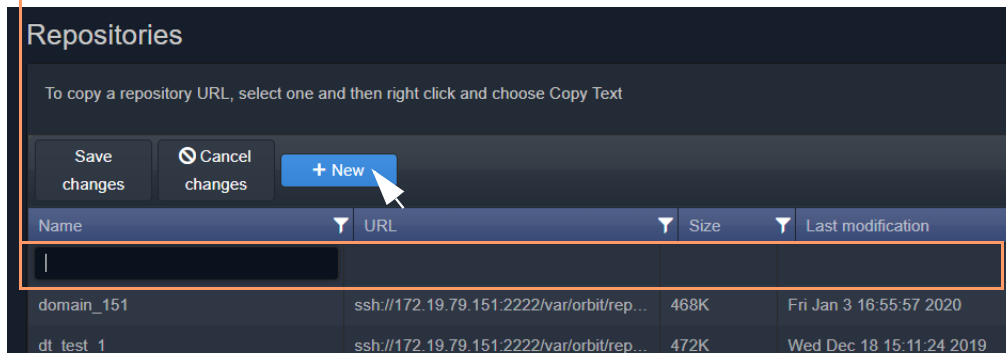
Figure 12: New Repository Row Item

2 Enter a name for the new **Repository**.
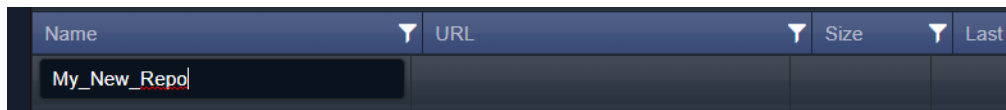
Figure 13: Enter Repository Item Name

3 Press Enter when done.
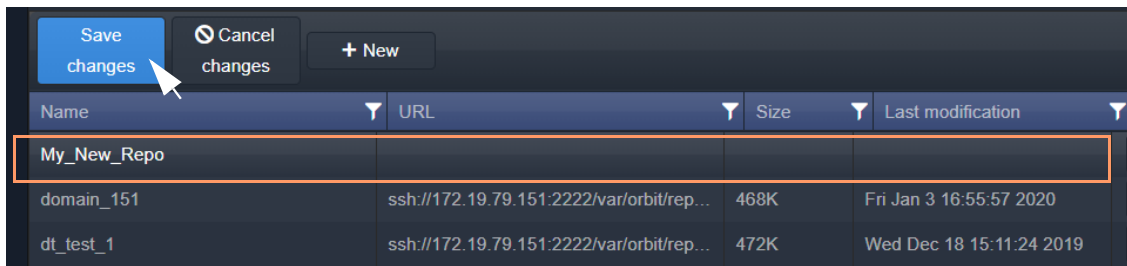
Figure 14: Save New Row Item

4 Press **Save Changes**.

The new row item is added into the sorted list and given a URL. See Figure 15a.

a) New Repository Item.

b) After a GV Orbit C&M project has been pushed to the Repository.

Figure 15: 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 15b.

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

Figure 16: 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.
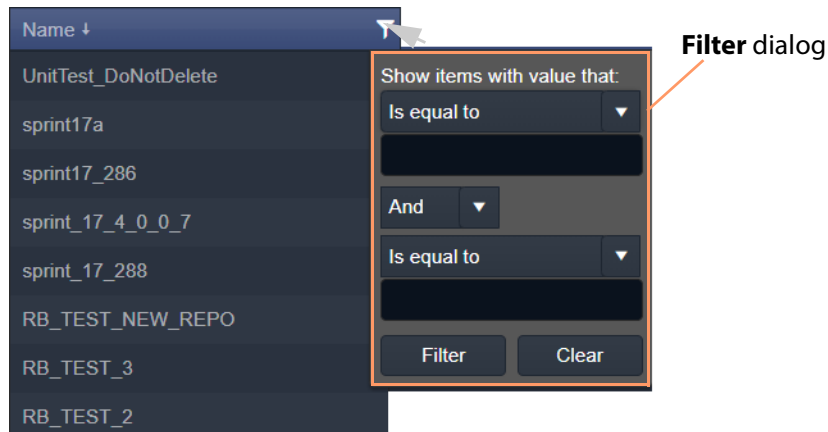
Figure 17: Filter Dialog

2 Set up the filter condition in the dialog. (See Filter Conditions, on page 277 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.

Figure 18: 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.

a) Filter Dialog Controls   b) Condition Expressions
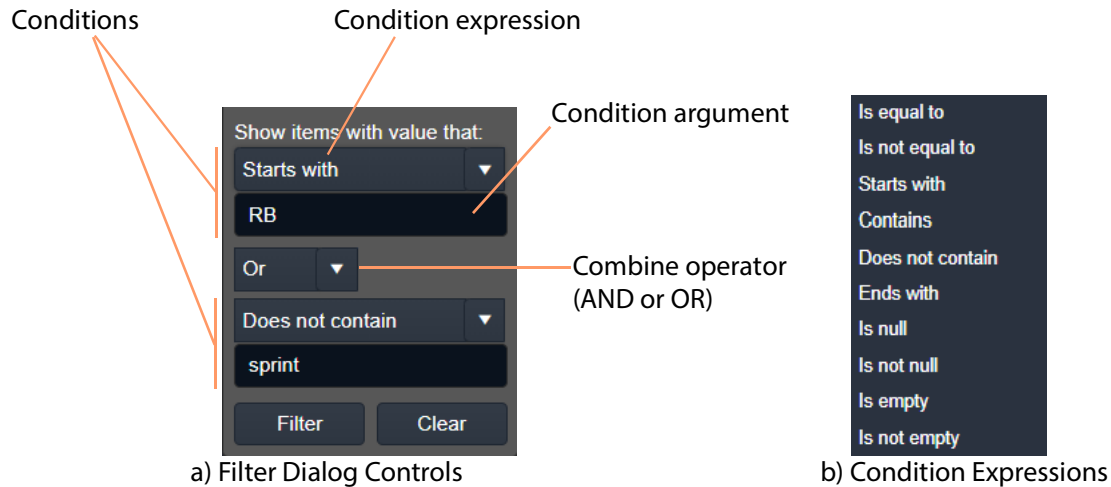
Figure 19: Filter Dialog: a) Controls; b) Condition Expressions.

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 20a.

3 Select a condition expression in the drop-down list. See Figure 20b.
   ('Starts with')

4 Enter 'condition argument' text.
   ('RB')

5 Click on the 'combine operator' drop-down box and select an operator. See Figure 20c.
   ('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 20d.

9 Click **Filter** to apply this filter.
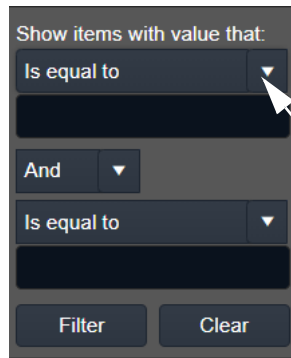
a) Filter dialog
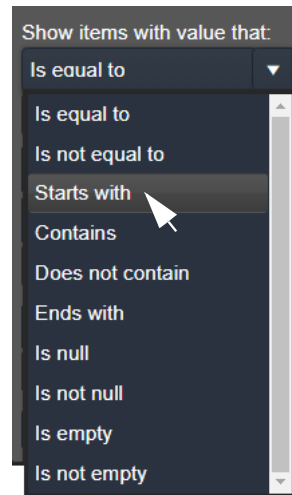
b) Condition expression
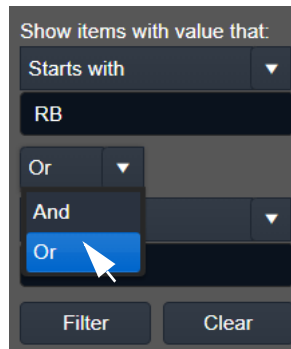
c) Combining operator
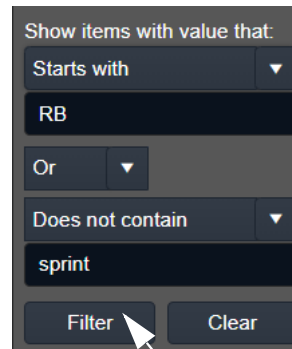
d) Filter conditions set up

Figure 20: 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 (for example, 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.
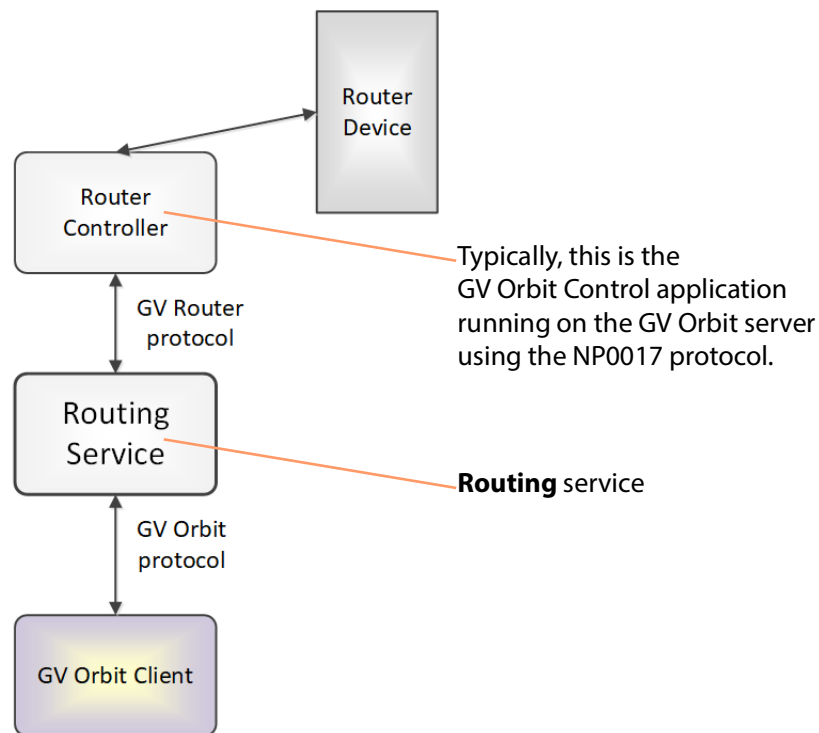
Figure 21: GV Orbit Routing Service

CAUTION
Routing service settings should only be changed by a GV Orbit system administrator.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.

System Screen

See Table 6, on page 281.

See Routing Service Settings, on page 281.

See Router Control Settings, on page 281.

See Name Length Selection Settings, on page 282.

See SW-P-08 Settings (SW-P-08 Connection Only), on page 282.

Figure 22: GV Orbit Routing Service - System Screen

Setting	Description
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

Table 6: System Settings

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client Domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network Interface(s)	See Network Interface(s) Setting, on page 127.

Routing Service Settings

Table 7: Routing Service Settings

Setting	Description
Logging Address	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. Default: F110:01:06
Logging Name	Enter a user-definable name for the unit, to be a human-readable identifier for the **Routing** 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 8: Router Controller Connection Settings

Setting	Description
IP	The IP address of the device that the 'router controller' service is running on. The loop-back host IP address 127.0.0.1 should be used when the Routing service is co-located on the same GV Orbit Server, which is typically the case. Default: 127.0.0.1.
Port	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'; and so on. • **SW-P-08** - GV Orbit services use IP port number 2000.
Connection Protocol	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	Shows the status of the connection to the router controller.

Name Length Selection Settings

Table 9: GV Orbit Routing Service - Name Length Selection Settings

Setting	Description
Name Length	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 10: SW-P-08 Settings

Setting	Description
Matrix	Enter the router matrix number on the router controller for the **Routing** service to connect to.
Levels	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	Click to set to '1'.
Use Level Names	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 (for example, 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.
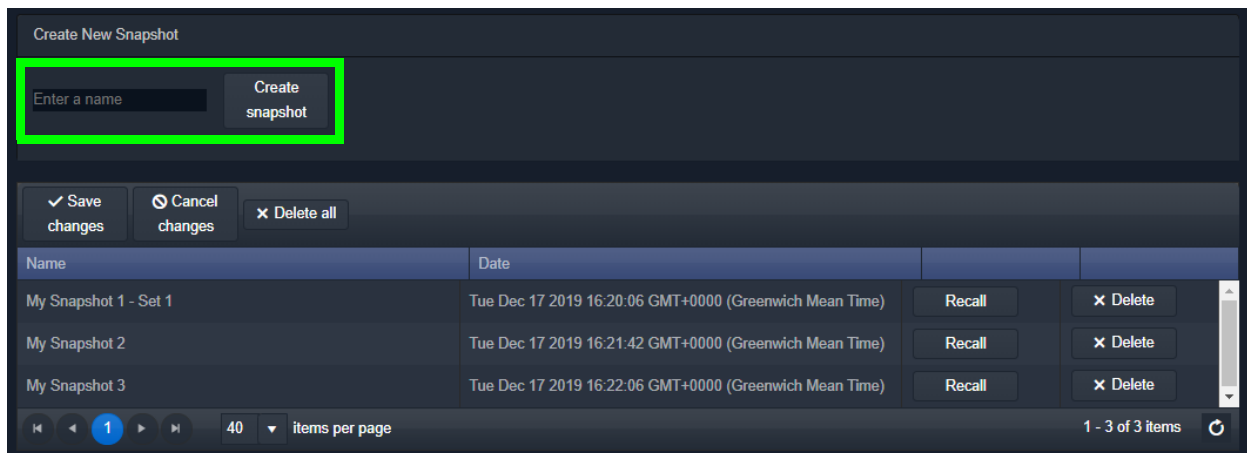
Figure 23: Routing Service Snapshots Screen

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).
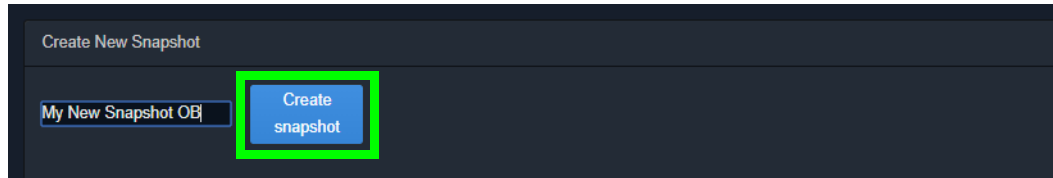
Figure 24: Create Snapshot

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.
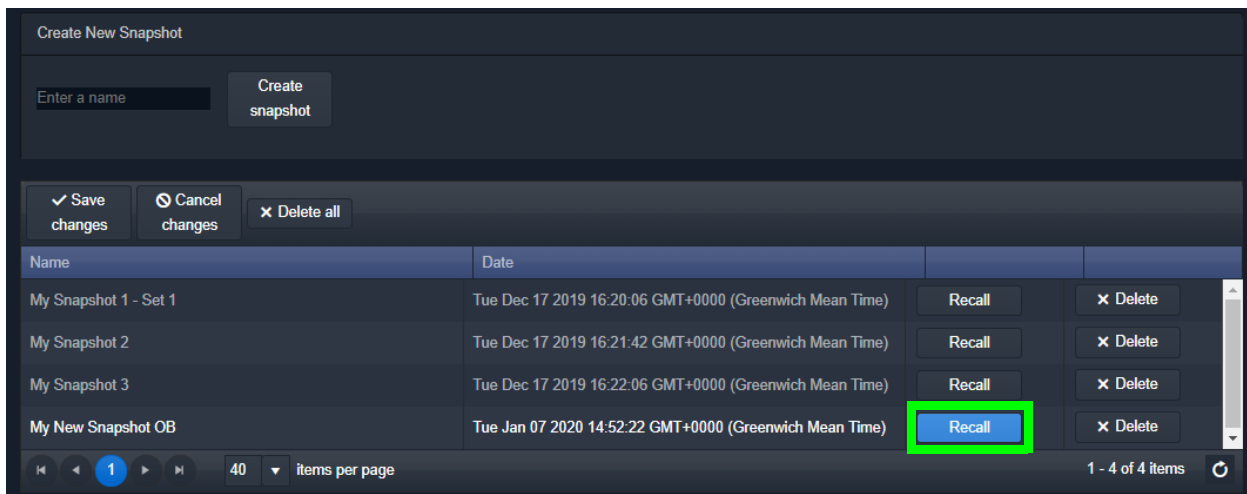
Figure 25: Recall Snapshot

> **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 26.)
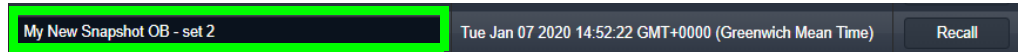
Figure 26: Enter New Snapshot Name

And press Return.

The change to the list item is marked with a small red triangle; the item needs saving. See also Changes need to be Saved List Indicator, on page 133.
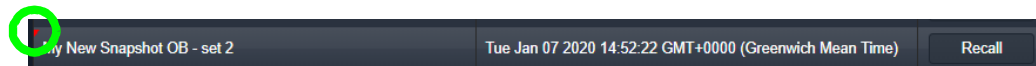
Figure 27: Snapshot Name Changed but Change Not Saved

3 Click **Save Changes**. (See Figure 28.)

(To cancel any changes made, click **Cancel Changes**.)
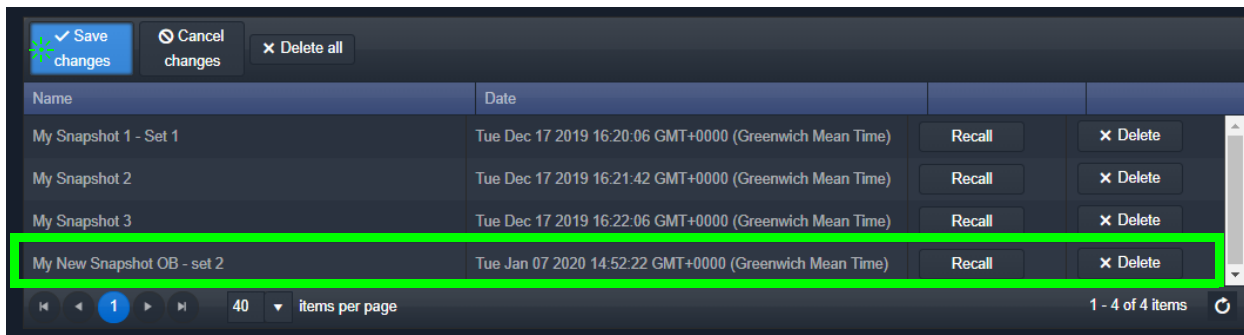
Figure 28: Snapshot Name Changed and Saved

SNMP Service

Introduction

The GV Orbit **SNMP** service translates SNMP polling information from devices into Log Server fields that can be used by GV Orbit for health monitoring of devices. This service works in conjunction with the **Device Manager** service. To configure an SNMP device, see Device Manager Service, on page 142.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

System Screen

The **SNMP** service configuration screen is shown below.

Setting	Description
RollCall Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
Unit Name	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.

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 through 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 291).

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 Google 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.

If two GV Orbit Servers are configured in a redundant configuration as a cluster, a failover from one GV Orbit Server to the other will cause all Web users to be logged out. Once the failover is complete, Web users can re-login. See also Identifying which server in a Cluster is Active or Standby, on page 78.

Is this Service Needed?

You may disable this service under specific circumstances; see Disabling Unneeded Services to Improve GV Orbit Performance, on page 121.

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) to run the user panels successfully; this enables the rendered user panels to be populated with the correct data values, alarm states, and so on.

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 (for example, 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 291, for an example using **Web View** from a C&M project.

Logging of this Service's Activities

This service supports logging that can help with troubleshooting. See Log Files Task, on page 94.
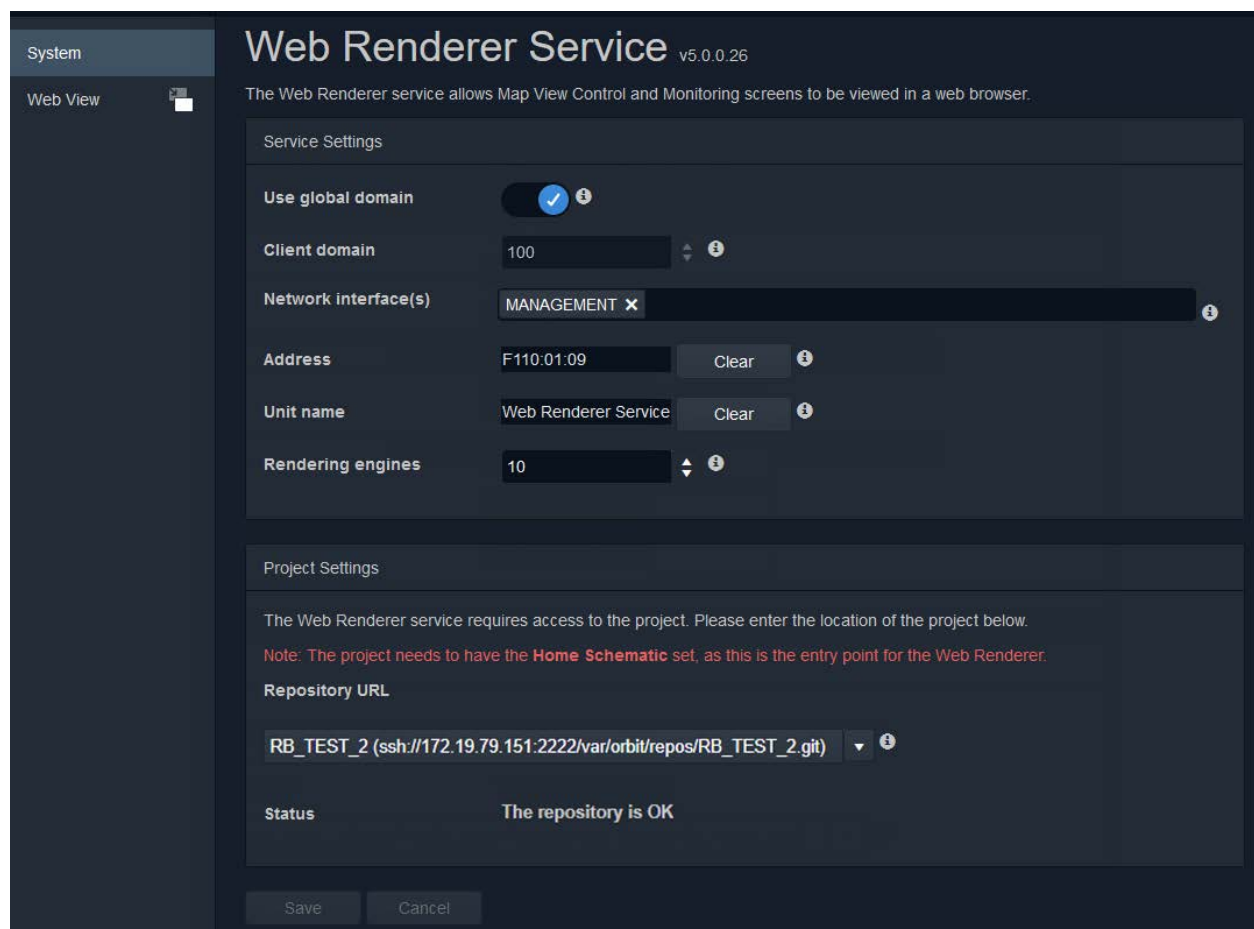
System Screen

Figure 29: Web Renderer - System Screen

Table 11: GV Orbit Web Renderer Service Settings

Setting	Description
Use global domain	Set which Domain ID this service is to use. • Enabled: use global Domain setting currently configured in the GVOP Domain screen. See GVOP Domain Screen, on page 89. • Disabled: use the **Client domain** setting configured below.
Client domain	Enter the Client GVOP Domain ID that the service will use to communicate with other clients. For more information, see Client GVOP Domain ID Setting, on page 126.
Network interface(s)	See Network Interface(s) Setting, on page 127.
Address	See RollCall Address Setting, on page 129, and RollCall Address, on page 297, for information about RollCall address.
Unit name	Enter a name for the service, to be a human-readable identifier for the service which appears in the GV Orbit client **Network** window.
Rendering engines	Set the number of Web Rendering Engine instances to instantiate for user loading purposes. See How to Set the Number of Rendering Engines, on page 289.
Repository URL	Select the C&M project's **Repository** on the GV Orbit server. 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 291, for an example. Step 1: Set 'Home' in the C&M Project, on page 291, shows how to set the 'Home schematic' for a C&M project in GV Orbit Client. **Note:** These **Web Renderer** settings are system-specific.
Status	Shows status of the service's connection to the **Repository**. The **Repository Manager** service must be running for this. See Repository Manager Service, on page 270.
Save Cancel	Applies / discards the changes you have made to the above settings. See To save settings changes, on page 125.

How to Set the Number of Rendering Engines

The **Rendering Engines** parameter allows you to set the number of Web Rendering Engines to instantiate for containment purposes. This parameter provides the ability to distribute Web users across multiple Web Rendering Engines who are assigned to a given Web Rendering Engine on a rotating basis, with each user connecting to the next available Web Rendering Engine.

If a Web Rendering Engine instance fails, only the users connected to that Web Rendering Engine are logged out, The Web Rendering Engine instance will restart, but these users will need to re-login. Users on other Web Rendering Engines are not impacted.

The recommended setting for this parameter is 10 Web users per Web Rendering Engine instance. So 5 Web Rendering Engine instances support 50 Web users.

Having fewer Web users per Web Rendering Engine instance means that if the instance crashes, fewer users will lose their connection. More Web Rendering Engine instances provides more operational resilience.

Each Web Rendering Engine instance adds very little to the memory footprint on the GV Orbit Server. To reduce memory usage:
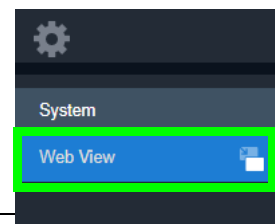
- Reduce the total number of Web users.
- Simplify your Web Renderer project.

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 allowing you to log into a GV Orbit project. See Figure 30.

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.
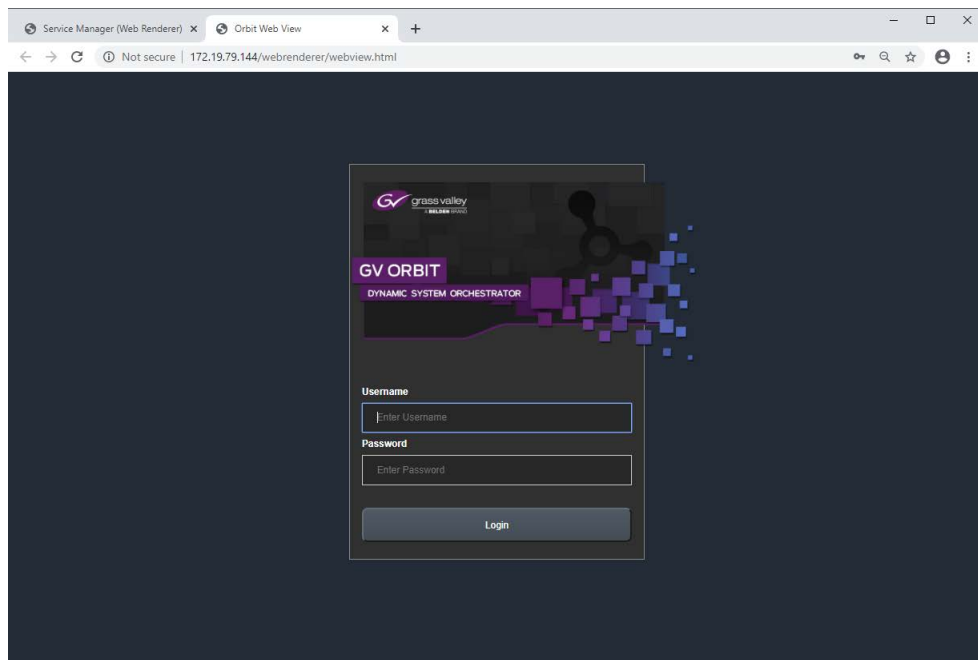

Figure 30: Web View GV Orbit Project Login in Web Browser

See 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.

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.
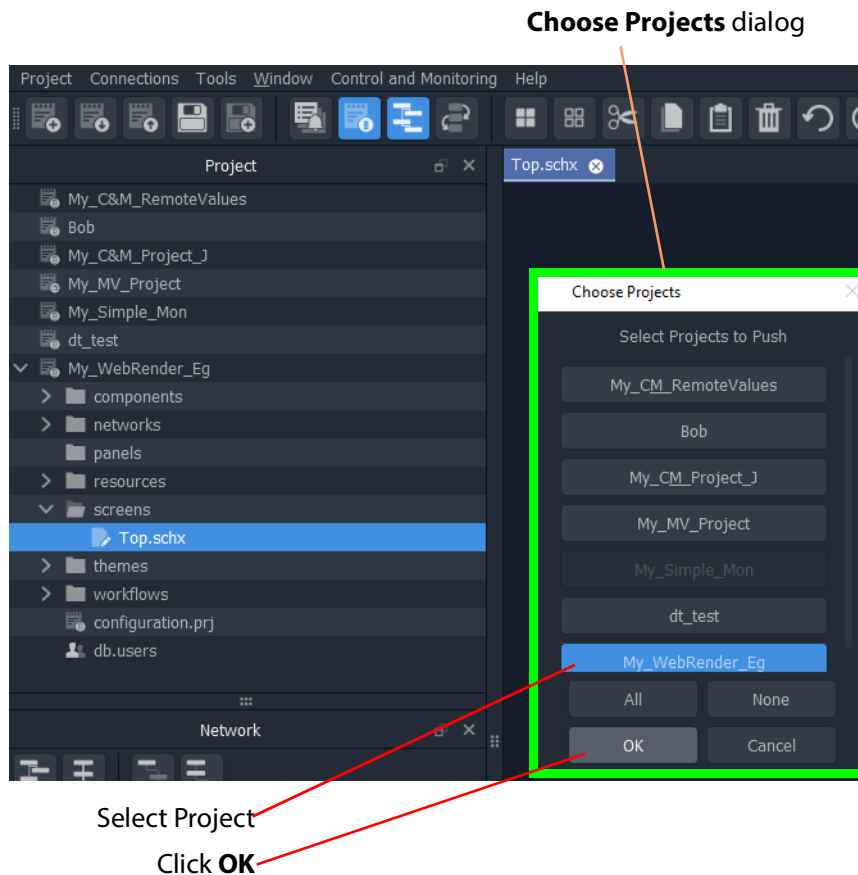
   The **Choose Projects** dialog is shown. See Figure 31.

Choose Projects dialog

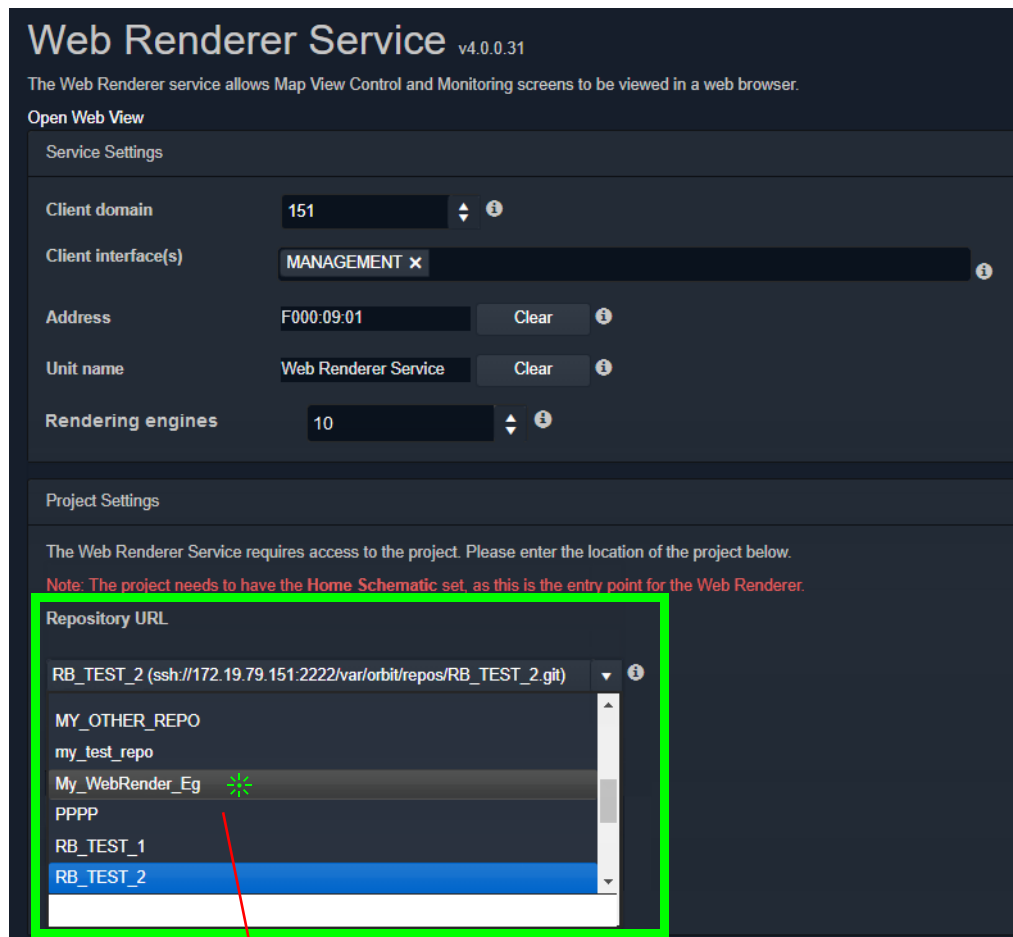Select Project

Click **OK**

Figure 31: 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 the **Repository URL** for project `My_WebRenderer_Eg`
Figure 32: 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.)
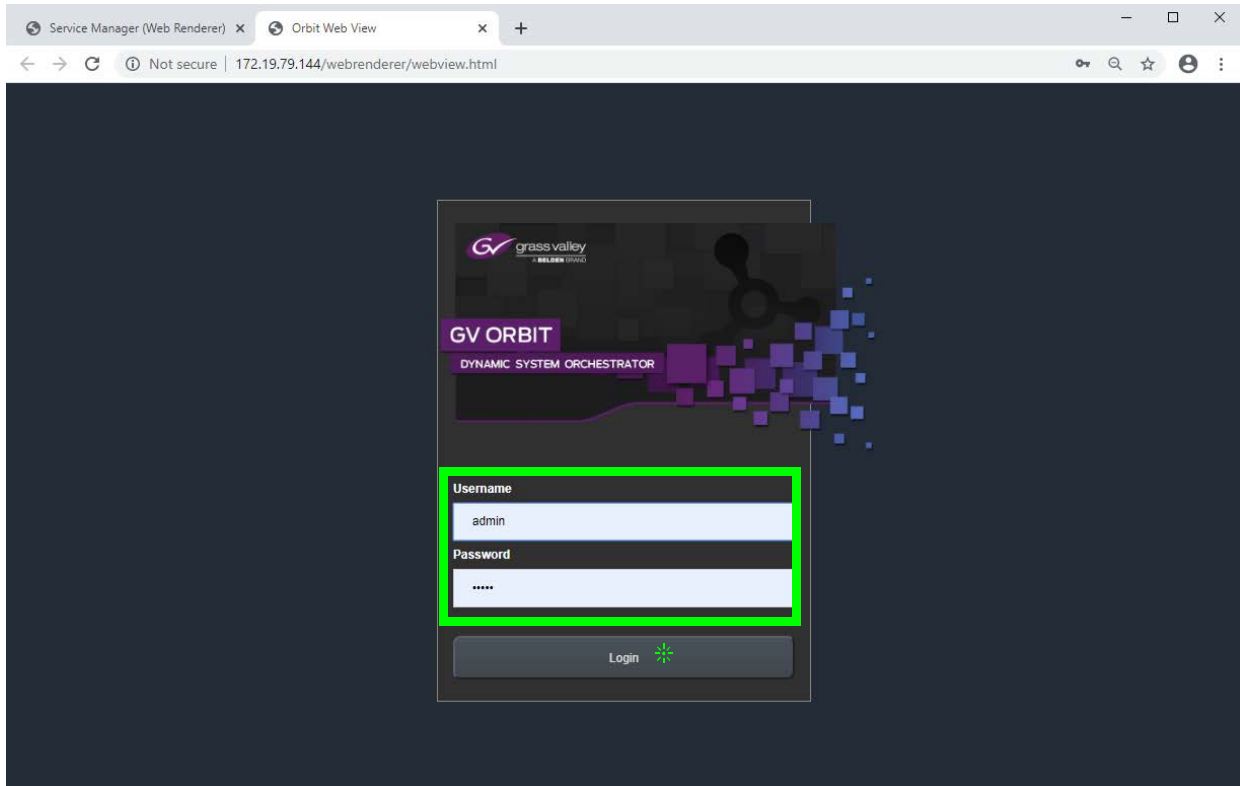
See Figure 33.

Figure 33: 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 34.
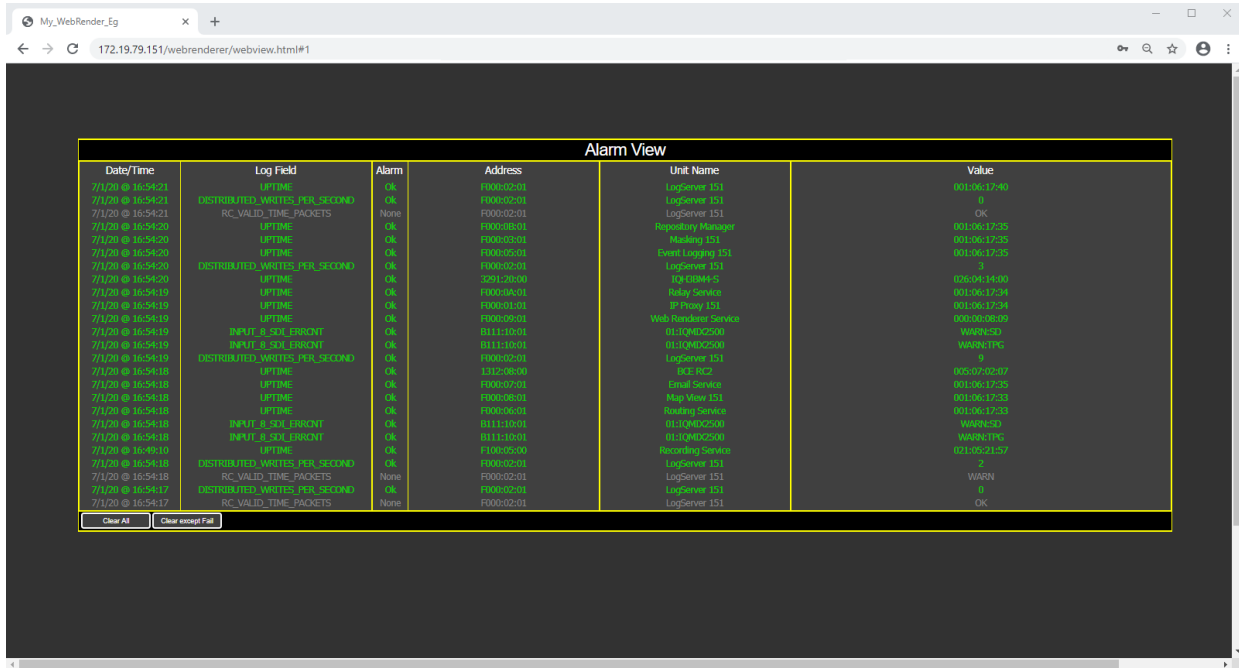
Figure 34: C&M Project Custom User Panel Running in a Web Browser via Web View

The custom C&M project custom user panel can now be used. For comparison, the same project is shown in Figure 35 running in the GV Orbit Client application.
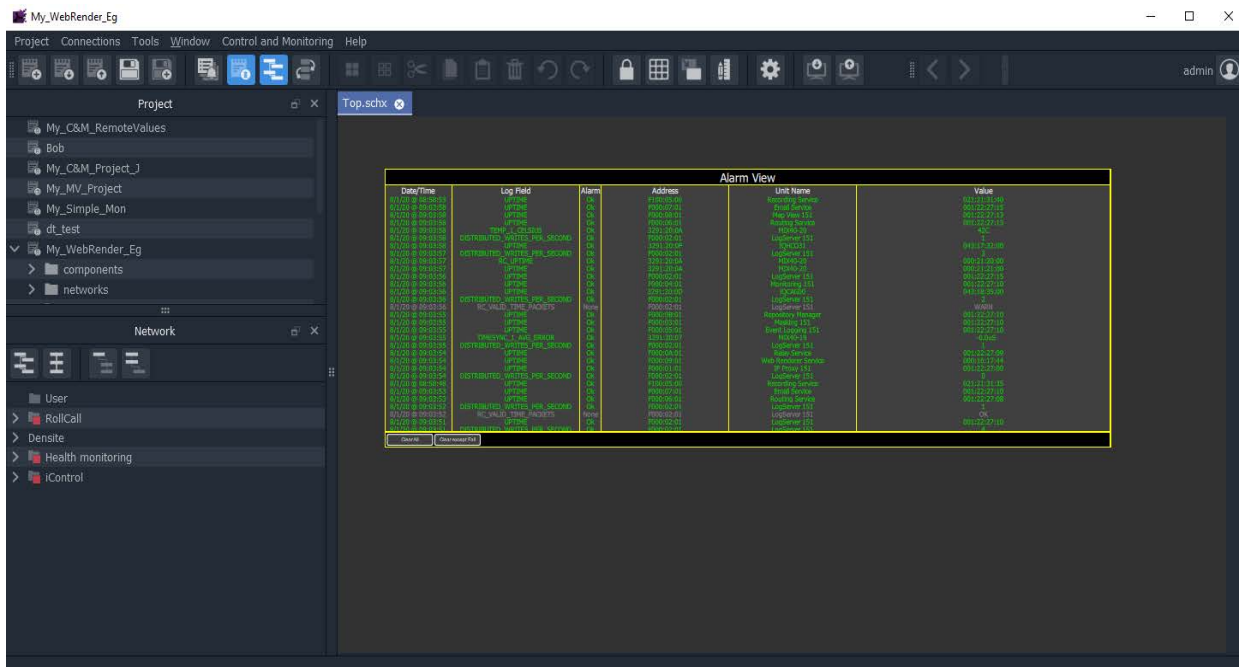

Figure 35: C&M Project Custom User Panel Running in GV Orbit Client

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 Services 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, for example, 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 (such as an 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 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 7-1 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

Tree-view hierarchy
displayed

Network number for:

'AAA-2' = 1 2 3 5

Hierarchy parent nodes defined

a) Devices and Nodes listed
in an **IP Proxy** service **Connections** Screen

b) Devices and Nodes listed
in a GV Orbit Client **Network** window tree-view

Fig. 7-1: 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 Services, 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.

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 GV Orbit system, devices, GV Orbit clients and services should have the same GVOP Domain ID. If a device is on a different GVOP Domain ID, then it will not be seen/discovered.

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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