

# GV ORBIT

## Dynamic System Orchestrator for SDI, IP and Hybrid Networks



Unified configuration, control, monitoring and tally management system designed for open standards-based SDI, IP and hybrid networks – easily mimics traditional SDI operational control for IP systems.

GV Orbit® is a consolidated, complete configuration, control and monitoring solution for the dynamic orchestration of broadcast media networks, whether SDI, IP or hybrid. Its underlying architecture is based on open standards with many features and functions specifically crafted to make IP easy.

The strength and key differentiator for GV Orbit is the notion of **Dynamic Orchestration**. The ability to build, configure and change systems on-the-fly, whether by adding/removing devices or simply changing a name, is extremely powerful. In today's cost-conscious world, fast and efficient deployment and re-purposing of systems for alternative scenarios or productions is a key requirement, and that's where GV Orbit excels.

GV Orbit is comprised of license-enabled software modules that allow users to customize a system to suit their exact needs. Perhaps only a video and audio routing system is required and all facility monitoring will be implemented using an existing or alternative platform and industry standard protocols. In this scenario, license only the GV Orbit control module. Conversely, one may defer to third-party (northbound) router control but still use the configuration and monitoring capabilities of GV Orbit for networked Grass Valley® devices.

With GV Orbit, media organizations can configure, control and monitor all their core system components, sourced from a single, proven, and experienced solutions provider, to ensure full interoperability.

### Benefits

- Unified configuration, control and monitoring to speed up operations and reduce risk
- Equally suitable for SDI, pure IP or hybrid, easing migration and maximizing flexibility
- Verified and tested in many workflows with Grass Valley devices...the largest open standards-based IP portfolio on the market
- Replicates traditional SDI operation in IP and hybrid systems to reduce training requirements and costs
- "Live updating" minimizes downtime
- Open IP standards including SMPTE ST 2022-6/-7, ST 2110, ST 2059 (PTPv.2) and AMWA NMOS (IS-04, IS-05, BCP-002-01) to ensure compatibility
- Third-party device integration enables flexibility and choice

### Applications

- Venues, studios and control rooms
- Remote production
- OB vehicles and flyaways
- Numerous other media and broadcast applications including live production switcher tally, monitoring by exception and more

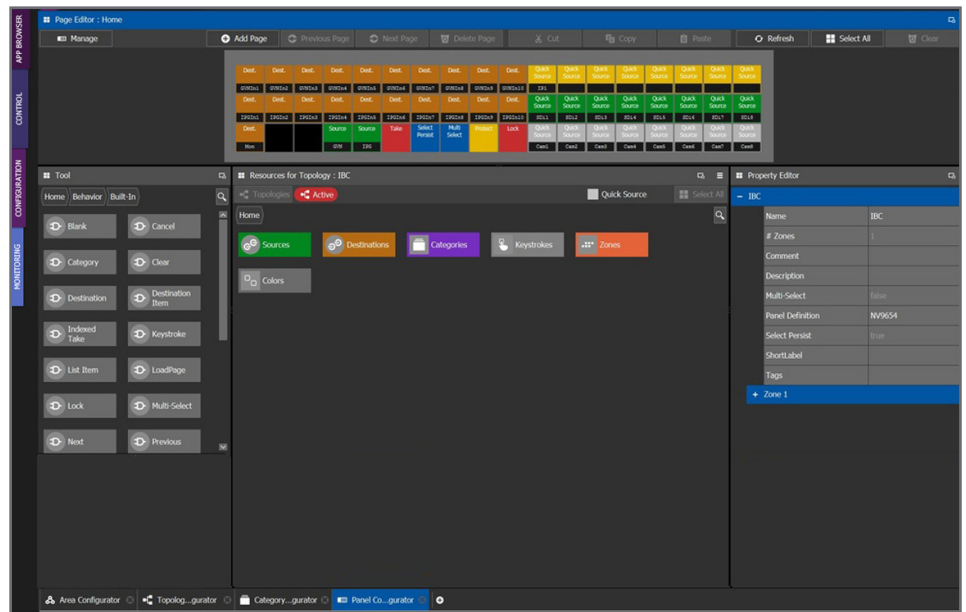
## Key Features

- Automatic device discovery and configuration
- Easy device addressing, setup and system configuration
- Intuitive graphical screens including device lists and topology views with “drill-down”
- Live updating including signal renaming and device addition/removal
- Comprehensive routing control for SDI, IP and hybrid environments
- Seamless integration with GV Fabric® and other COTS Ethernet switches
- Clean switching with either “make-before-break” or “break-before-make” switching to balance bandwidth utilization versus accuracy
- Supports integration of a s selection of Grass Valley control panels with live updating
- SMPTE ST 2022-7 hitless failover for seamless switching between redundant IP flows
- Pathfinding, including dynamic creation of shuffled audio flows
- Grass Valley MV Series multiviewer configuration
- Wide selection of optional predefined monitoring screen sets
- Custom screen creation tools
- Monitoring by exception for proactive, worry-free fault identification
- Warning and/or alarm pop-ups
- System-wide logging, backup and restore
- Multiple system tools for system management and analysis
- SMPTE ST 2059 compliant IP Precision Time Protocol

## GV Orbit Highlights

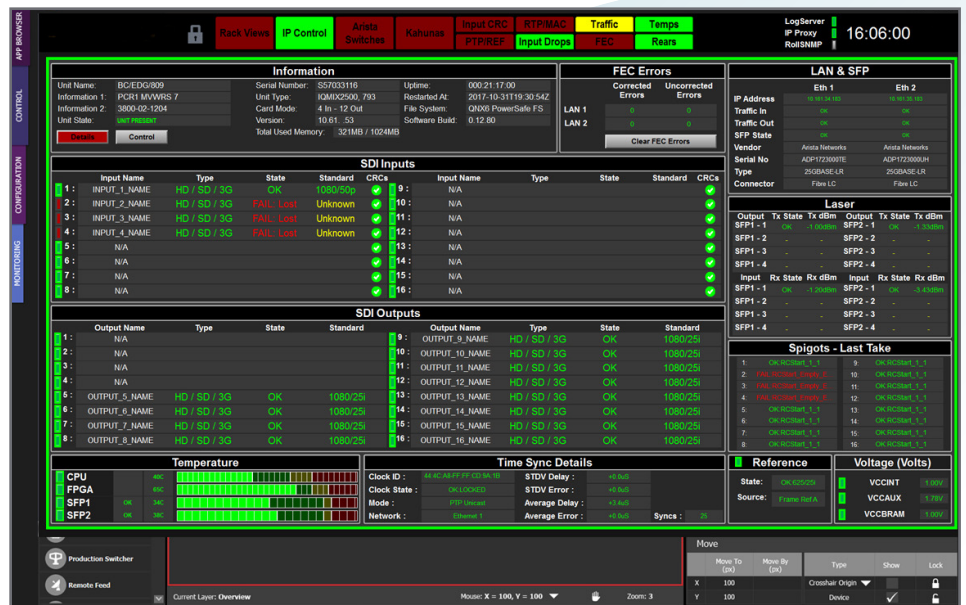
### In-operation “Live” Updates

GV Orbit screens are fully customizable. For IP, it’s easy to make router panel layouts mimic traditional SDI facilities, minimizing the need for training on new operational procedures. With GV Orbit’s Live Updating, removing devices, changing control surfaces, or just renaming signals can all be done on the fly... no more downtime while you push configurations to router controllers! GV Orbit’s live updating is ideal for fixed or mobile production environments that need rapid reconfiguration as events, venues, locations and personnel change.



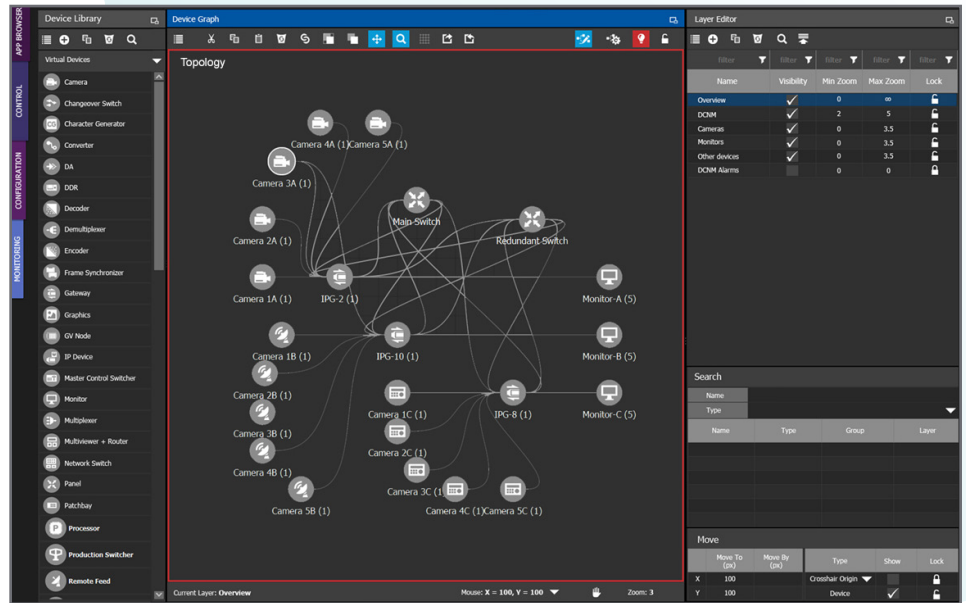
### IP Device Discovery & Detection

GV Orbit immediately recognizes and displays the addition of a new device with all its parameters rapidly accessible on the network. Simply drag the new device onto the visual network topology diagram and you are ready for deployment. GV Orbit delivers the flexibility to add not only Grass Valley IP products, but also NMOS-compliant third-party devices. The solution is forward-looking and ready to incorporate new open standards as they arrive.



## Dynamic Pathfinding

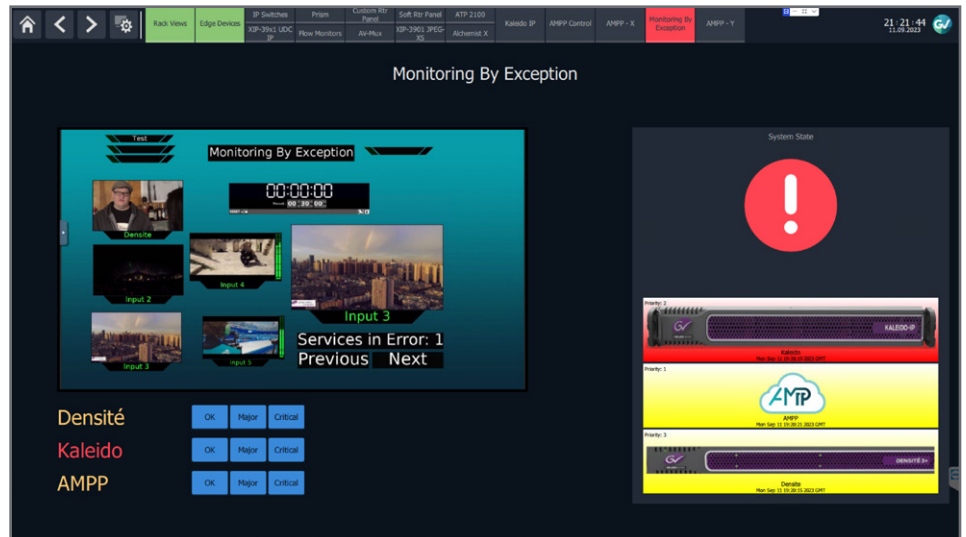
Audio Live, Grass Valley's COTS-based IP audio router, receives, consolidates and encapsulates multiple audio flows in a single device. GV Orbit and Audio Live combine to enable Dynamic Pathfinding. IP endpoint devices subscribe to audio flows from the network. When GV Orbit initiates audio shuffling at an endpoint, and the newly requested audio composition is not immediately available, Audio Live will dynamically create the new flow compatible with the device's SMPTE ST 2110-30 designated audio level. Every device has access to other flows across the network and the process is simplified. Complex flow requests and audio channel shuffling at the endpoints are eliminated. Monitoring is also greatly simplified because audio monitoring devices only need to subscribe to the same newly composed flows.



## Comprehensive, System-wide Monitoring

GV Orbit's monitoring toolset is powerful and feature-rich. It's the software used to enable all the required system warnings and alarms, to visualize graphical indicators and to display streamed thumbnails. It is also used to configure Grass Valley's MV range of multiviewers.

GV Orbit is ideal for "monitoring by exception." A status window or notification will only appear after receipt of an associated warning or alarm. This saves valuable engineering resources because your technical experts can focus on resolving issues rather than laboriously searching for them. What's more, the system can be set up to either perform an automated response, such as a signal changeover, or prompt manual intervention. GV Orbit diagnostic tools give you multiple ways to probe system status including "drill down" through pictorial representation of your facility or at the logic level depicting network flows and connectivity. Alternatively, you can simply specify a parameter such as IP address or a system parameter like temperature. GV Orbit will then display that information for every device on your network.



Tally Manager  
Overview

## Protocol Assignment

## System

Protocol Assignment Table  
Edit Protocol Assignment Table

Last Updated: September 01, 2023 19:06:46 Fri Refresh

Channel	Physical Connector	Channel Label	Control Protocol	Control Function	List Config	Device Config	PHY Config	Definitions	Tally Manager Config	Channel Mode	Status
1	Ethernet	NV9000 (NP17)	nv9000_rtr	Router Monitor and Control	N/A	View Edit	View Edit	Monitor Control	Inputs / Outputs Router Global Alias Cfg	None	No Comm
2	Ethernet	Kahuna Switcher	kahuna_tally	Switcher Monitor and Control	N/A	View Edit	View Edit	N/A	Inputs / Outputs Router Global Alias Cfg	None	No Comm
3	Ethernet	K-Frame	gv_etp	Switcher Monitor	N/A	View Edit	View Edit	Monitor	Inputs / Outputs Router Global Alias Cfg	None	No Comm
4	Ethernet	GV LDX Camera	c2ip	Camera Control	N/A	View Edit	View Edit	N/A	Inputs / Outputs Router Global Alias Cfg	None	No Comm
5	Ethernet	SW-P-08 Devices	snell_rtr	Router Monitor and Control	N/A	View Edit Heartbeat Rate	View Edit	Monitor Control	Inputs / Outputs Router Global Alias Cfg	None	No Comm
6	Ethernet	Multiviewer	tsl_eth	Multi-Viewer Control	N/A	View Edit	View Edit	Actions	Inputs / Outputs Router Global Alias Cfg	None	No Comm
7	Ethernet	label6	Unassigned	N/A Channel Type	N/A	Unassigned	N/A	N/A	Inputs / Outputs Router Global Alias Cfg	None	No Comm
8	Ethernet	label7	Unassigned	N/A Channel Type	N/A	Unassigned	N/A	N/A	Inputs / Outputs Router Global Alias Cfg	None	No Comm

## Tally Management Made Simple

GVO-Tally, the tally management solution for GV Orbit, allows users to collect and employ live production tally information from K-Frame™, Kahuna®, Kula®, and Masterpiece and to send tally status downstream to destinations like Grass Valley camera tally lamps and multiviewers. Because GVO-Tally is built into the GV Orbit configuration interface, it can connect directly to GVO-Control (if present) thus gathering router crosspoint information from directly within the orchestration system. GVO-Tally runs on the GV Orbit server – no additional hardware is needed. This makes it a cost-effective solution with pricing comparable to an external tally system but with no additional investment in rack space, cabling or wiring labor.

Channel#	Physical Connector	Channel Label	Control Protocol	Group Toggle Range
1	Ethernet	NV9000 (NP17)	nv9000_rtr	0 0
2	Ethernet	Kahuna Switcher	kahuna_tally	0 0
3	Ethernet	K-Frame	gv_etp	0 0
4	Ethernet	GV LDX Camera	c2ip	0 0
5	Ethernet	SW-P-08 Devices	snell_rtr	0 0
6	Ethernet	Multiviewer	tsl_eth	0 0
7	Ethernet	label6	Unassigned	0 0
8	Ethernet	label7	Unassigned	0 0

## System Overview

GV Orbit consists of configuration, control, monitoring and tally modules that may be purchased separately but used together, in several combinations, within a common user experience.

**GV Orbit Lite** is a no-cost solution for the preparation and configuration of SDI and/or IP Grass Valley devices for deployment on a network. It may be downloaded from the Grass Valley website and installed on one or more PCs running Microsoft Windows.

**GV Orbit Configuration Pro** is a paid “professional” version of the GV Orbit Configuration module.

**GV Orbit Monitoring Pro** is a complete monitoring solution with support for Grass Valley and third-party products.

**GV Orbit Control** is a router control solution offered in “Express,” “Professional” and “Enterprise” versions, each with additional options for the type and quantity of router sources and destinations to be controlled. The Enterprise version includes additional applications and services supporting such tasks as third-party device integration, automatic (dynamic) pathfinding and multi-hop control.

**GV Orbit Tally** is a tally manager that communicates live production tally information from Grass Valley production switchers to destinations like Grass Valley camera tally lamps and multiviewers.

**Out-of-the-box Operational** tools are available as an option to Professional and Enterprise products. This

pre-built tool set includes a broad array of pre-defined monitoring screens.

Combined, these modules create a complete solution for configuration, control and monitoring of SDI, hybrid or pure IP networks. A fully-featured routing system, for example, may be implemented (when purchasing the “Control” software module) that includes salvos, breakaways with “live” updating for both PC softpanels and hardware control panels. Alternatively, northbound control from a third-party or automation system is possible. This may then be – within the same user interface – combined with comprehensive monitoring and configuration capabilities.

A summary of the functionality provided by each GV Orbit variant is shown below:

### GV Orbit Lite\*

- Device discovery
- Device configuration
- Device software install/update
- Device backup/restore
- Device resident licensing

\* Supports Grass Valley devices only

### GV Orbit Professional Configuration, Control and Monitoring

#### GV Orbit Lite functionality, plus\*\*...

- Device alarm status
- Alarm management
- Alarm logging
- System-wide software install/update
- System-wide backup/restore
- Run log aggregation
- Parameter control
- Router control
- Custom page usage
- Thumbnail/proxy displays

\*\* Depending on the modules you purchase

### GV Orbit Control Enterprise

#### GV Orbit Control Professional functionality, plus...

- Third-party device integration
- Automatic pathfinding
- Multi-hop control
- Services orchestration

### GV Orbit Tally

#### Support for:

- GV Camera Connect XML protocol for pushing camera tally
- GV Ethernet Protocol for K-Frame Ethernet Tally protocol to receive tallies
- Kahuna 360, Kahuna 48/64/9600 for Tally Protocol to receive tallies
- NP0017 Protocol to control GVOC, NV9000, etc. For tally use-cases it is read-only
- Snell SW-P-08 Protocol for Router Control
- Snell SW-P-08 Protocol for Router Emulation
- TSL 5.0 protocol for pushing out UMD and Tally Control to any multiviewer

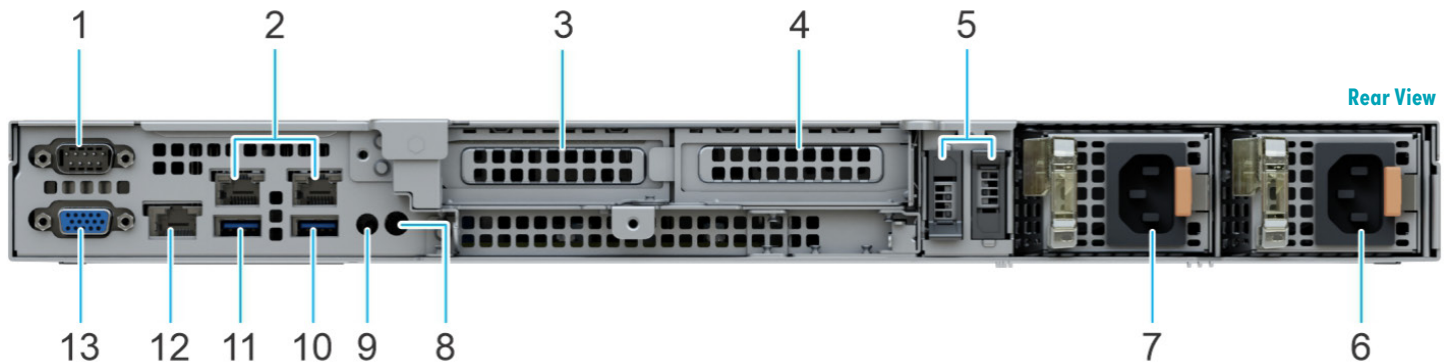
	Level			
	Lite	Express	Professional	Enterprise
GV Orbit Config	No Cost		GVO-CFG-PRO	
GV Orbit Monitoring			GVO-MON-PRO	
GV Orbit Control		GVO-CTL-XPS	GVO-CTL-PRO	GVO-CTL-ENT
GV Orbit Tally		OPTION (GVO-TALLY)		



Front View



Front View Behind Fascia Panel



Rear View

- |                              |                             |                       |                        |
|------------------------------|-----------------------------|-----------------------|------------------------|
| 1 Serial connector           | 5 BOSS riser slots          | 8 System ID button    | 11 USB 2.0 port        |
| 2 Ethernet ports             | 6 Power supply unit (PSU 2) | 9 CMA jack            | 12 iDRAC ethernet port |
| 3 PCIe expansion card slot 1 | 7 Power supply unit (PSU 1) | 10 USB 3.2 Gen 1 port | 13 VGA port            |
| 4 PCIe expansion card slot 2 |                             |                       |                        |

## Specifications

### Input/Output Ports

#### Chassis Front (Behind Fascia):

Status LED indicators  
 VGA\* Connector (x1)  
 eSATA: Connection for external storage  
 USB 2.0 port  
 Enterprise port: iDRAC (Micro USB 2.0 port)  
 Information tag: Service Tag, NIC, MAC address  
 CAC: Common Access Card/Smart Card Reader

#### Chassis Rear:

COM: Serial port  
 Enterprise port: iDRAC (RJ45)  
 VGA Connector (x1)  
 USB 2.0 port (1x)  
 USB 3.0 port (1x)  
 LAN: RJ45 1GBase-T port (x2)

#### PCIe 3.0 Slots:

NIC: Intel X710 Dual Port 10 GbE SFP+ Adapter, PCIe gen4 Low Profile (x2)  
 (One additional PCIe gen4 slot available)

### Power

**Power Supply (x2):** 600W redundant  
**Connector (x2):** IEC  
**Mains Voltage:** 115-235 VAC, 50/60 Hz

### System

**CPU:** Intel Xeon E-2334 3.4 GHz, 8M Cache, 4C/8T, Turbo (65W), 3200 MT/s  
**Memory:** (4) 32 GB UDIMM, 3200 MT/s, ECC  
**Hard Drives (x2):** 960 GB SATA SSD with RAID-1

### Physical

**Height:** 43 mm (1.7 in.), 1 RU rackmount  
**Width:** 434 mm (17.1 in.)  
**Depth (including bezel):** 570 mm (22.44 in.) Bezel to rear wall  
**Weight:** 11.74 kg (25.88 lbs.)

### Environmental

**Operating Temperature:** +5°C to 45°C (41°F to 113°F)  
**Non-operating Temperature:** -40°C to 70°C (-40°F to 158°F)  
**Operating Relative Humidity:** 8% to 85% (non-condensing)  
**Non-operating Relative Humidity:** 5% to 95% (non-condensing)  
**Ventilation:** Front to rear

### Compliance

**EMC – Emissions:** FCC Part 15 (USA), EN55103-1 (EU)  
**EMC – Immunity:** EN55103-2 (EU)  
**Safety:** UL1419 (USA), EN60950 (EU) Hazardous Material: RoHS-6 (UK) – Complies EU Directive

\* The rear VGA port overrides the front VGA port when both the ports are connected.

## Ordering

### GV Orbit Hardware and Operating Environment

#### GVO-HW

GV Orbit 1 RU server with dual Intel Xeon 12-core 2.6 GHz CPUs, dual power supplies, dual 960 GB SSD with RAID, 96 GB RAM, and Quad-port 10 GbE network adapter, including 4x 10G SR SFPs. Buy two GVO-HW for a redundant cluster.

#### GVO-BASE-V3

GV Orbit V3.x base operating system and application software. One required per hardware server or virtual machine.

### GV Orbit Client Seats

#### GVO-CLIENT

License for additional GV Orbit full engineering client seat. The functionality included is based on server options licensed. Access to all configuration and design functions as well as run mode for custom edited screens.

#### GVO-CLIENT-OP

License for additional GV Orbit operator client seat. Functionality included is based on server options licensed. Access only to run-mode for custom edited screens, in thick client or HTML5 browser.

### GV Orbit Core Functionality

#### GVO-CFG-PRO

License for GV Orbit Configuration Professional software. One license is required per server. Each license includes one full client seat (GVO-CLIENT) for the first server in a cluster, or one operator seat (GVO-CLIENT-OP) for additional servers in a redundant cluster.

#### GVO-MON-PRO

License for GV Orbit Monitoring Professional software. One license is required per server. Includes Mapview, logging, email alerts, SNMP southbound monitoring, etc. Each license includes one full client seat (GVO-CLIENT) for the first server in a cluster, or one operator seat (GVO-CLIENT-OP) for additional servers in a redundant cluster.

#### GVO-CTL-XPS

License for GV Orbit Control Express software. One license is required per server. Includes aliases, breakaway, lock and protect, GPIO logic, salvos, support for GV Hardware Panels, tie-lines, audio shuffle, path-finding, and logical devices. Baseband routing. Each license includes one full client seat (GVO-CLIENT) for the first server in a cluster, or one operator seat (GVO-CLIENT-OP) for additional servers in a redundant cluster.

#### GVO-CTL-PRO

License for GV Orbit Control Professional software. One license is required per server. Includes Control Express features plus support for GV IP devices and IP switch interface for network policy control.

#### GVO-CTL-ENT

License for GV Orbit Control Enterprise software. One license is required per server. Includes Control Professional features plus support for third-party IP devices.

#### GVO-TALLY

Option to provide a comprehensive solution to drive On-Air signs, UMD, camera tallies and a means to connect control rooms and studios within a facility and between facilities. Includes a GTP virtual processing node configured with the Tally Manager license and four (4) GVO-PROTOCOL licenses.

### Per-Destination Control Licenses

#### GVO-CTL-BB

License for control of one baseband destination, including hybrid SDI, SDI, MADI, AES or ASI. Alternatively allows control of one virtual crosspoint destination. Requires GV Orbit Control Enterprise, Professional or Express (GVO-CTL-ENT or GVO-CTL-PRO or GVO-CTL-XPS).

#### GVO-CTL-BB-NB

License for router control accomplished from a north-bound control or automation system. One license is required per GVO-CTL-BB destination and per logical baseband destination.

#### GVO-CTL-GV

License for control of one IP destination with GV control for Grass Valley equipment only. Includes SMPTE ST 2022-7 redundancy. Requires GV Orbit Control Enterprise or Professional (GVO-CTL-ENT or GVO-CTL-PRO). May also be used for GVO-CTL-BB destinations.

#### GVO-CTL-GV-NB

License for router control accomplished from a north-bound control or automation system. One license is required per GVO-CTL-GV destination and per logical GV IP destination.

#### GVO-CTL-IP

License for control of one IP destination; including non-GV NMOS IS-05 or NAT control. Includes SMPTE ST 2022-7 redundancy. Requires GV Orbit Control Enterprise or Professional (GVO-CTL-ENT or GVO-CTL-PRO). May also be used for GVO-CTL-GV or GVO-CTL-BB destinations.

#### GVO-CTL-IP-NB

License for router control accomplished from a north-bound control or automation system. One license is required per GVO-CTL-IP destination and per logical IP destination.

#### GVO-CTL-NB

License for router control accomplished from a north-bound control or automation system. One license is required per GVO-CTL-xxx destination.

### Third-Party Support Options

#### GVO-CTL-PROV

License for a third-party switch interface to manage network policy control.

#### GVO-MON-DEVICE

License for monitoring of supported devices. One license per device, per server cluster. Required for all supported third-party devices monitored via SNMP or other methods. Not required for Grass Valley devices. Requires GV Orbit Monitoring Professional (GVO-MON-PRO).

### "Off-the-shelf" Monitoring Packages

#### GVO-MON-SCR-IPD

License for preconfigured monitoring screens for IP deployments.

### Upgrade Packages

#### GVO-CTL-XPS2PRO

Trade-in and upgrade one server to GV Orbit Control Professional (GVO-CTL-PRO). Requires the forfeiture of the existing GV Orbit Express license (GVO-CTL-XPS).

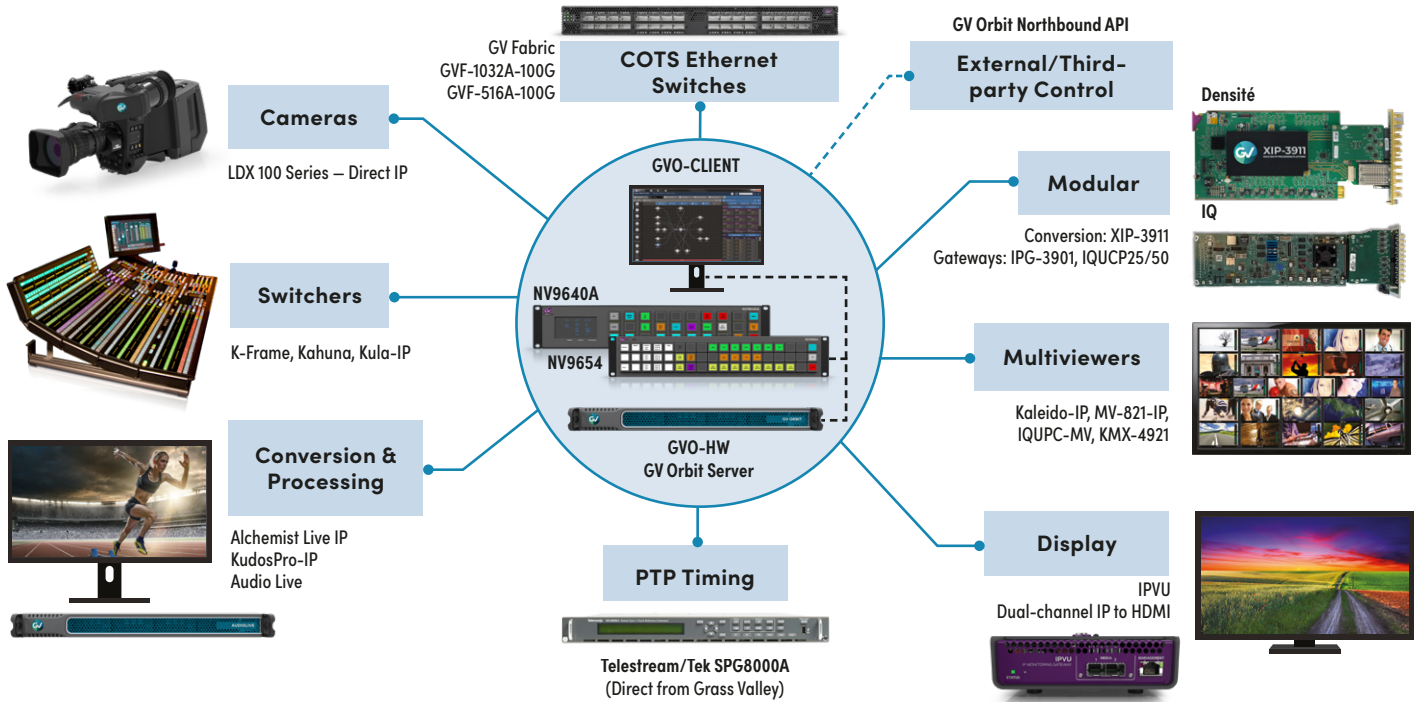
#### GVO-CTL-PRO2ENT

Trade-in and upgrade one server to GV Orbit Control Enterprise (GVO-CTL-ENT). Requires the forfeiture of the existing GV Orbit Professional license (GVO-CTL-PRO) or existing GVO-CTL-XPS+GVO-CTL-XPS2PRO.

#### GVO-PROTOCOL

Adds the configuration and operation of one additional protocol to a GVO-TALLY option. License is not shared between GTP nodes; one license per node is required. Multiple GVO-PROTOCOL licenses may be required per GTP node depending on the application.

GV Orbit enables configuration, control and monitoring of end-to-end open standard-based IP systems.



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