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A **BELDEN** BRAND

GV CONVERGENT

Version 1.7.0

Quick Tour of Client Tasks

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Table of Contents

1 Introduction	9
2 Getting Started With GV Convergent Client	11
Logging In To GV Convergent Client	11
Navigating Back to Stage	12
Switching User Profiles	13
Viewing Notifications	14
3 Configuration Tasks	17
Required Permissions	17
Area Configurator Tasks	17
Accessing Areas in the GV Convergent Client	18
Adding an Area	19
Configuring a Controller Group	19
Selecting an Area	23
Deleting an Area	23
Logical Level Editor Tasks	24
Accessing the Logical Level Editor	24
Viewing the Default Logical Levels	26
Duplicating a Logical Level	27
Creating a 4K Switching Setup	28
Editing a Logical Level	29
Deleting a Logical Level	30
Configuring a New Logical Level	30
Configuring the Logical Levels of the Devices in a Topology	31
Topology Configurator Tasks	32
Accessing the Topology Configurator	33
Selecting a Topology	34
Refreshing the Device Graph	36
Viewing the Topology in Full Screen Mode	36
Creating a Topology	38
Adding Devices to a Topology	40
Linking the Devices in a Topology	41
Setting the Link's Physical Connection Parameters	42
Deleting the Connection Between Device Groups	45
Defining Properties for the Devices	46
Deleting a Device From a Topology	48
Activating a Topology	49
Making an Active Topology Inactive	50
Unlocking / Relocking a Topology	51
Locking an Unlocked Topology	53

Logical Device Table Tasks	54
Accessing the Logical Device Table task	54
Modifying the Default Sources in the Logical Level Table	55
Adding a Source to the Logical Level Table	56
Configuring Streams for New Sources	58
Adding and Configuring a Destination	58
Deleting a Source or Destination	58
Exporting a Logical Device Table	59
Selecting all Devices in the Logical Device Table for Export	59
Create Logical Devices with Shuffled Audio	59
Configuring Virtual Crosspoints (XPTs)	61
Filtering Sources and Destinations	68
Category Configurator Tasks	69
Accessing the Category Configurator	69
Creating a Category for the Sources in Your Topology	70
Assigning a Keystroke Label to a Source or Destination	72
Creating a Keystroke Label	73
Panel Configurator Tasks	74
Accessing the Panel Configurator	74
Creating a New Panel	75
Duplicating a Pre-Existing Panel	77
Configuring a Panel's Properties	78
Adding Actions to a Panel	79
Adding Resources to the Panel	80
Adding the New Panel to the Topology	84
4 Special Device Configuration Tasks	87
Description of Common Device Properties	88
Configuring a GV Node Device	89
Configuring an IPG-3901 / IPG-4901 Device	100
Connecting an IPG-4901 device	104
Device properties	104
Example Topology Using an IPG-4901	105
Configuring an IQMix Device	106
Adding NMOS Devices to a Topology	109
5 Monitoring Tasks	111
Overview	111
Path Manager Tasks	112
Accessing the Path Manager	112
Viewing Information about the Tie Lines	112
Viewing Information about the Streams	113
Viewing Information about the Destinations	113
Viewing Information about the Status	114
System Status Task	115
Accessing the System Status Task	115
Forcing the Inactive Controller to be the Active Controller	116
Permissions	118

6 Control Tasks	121
Overview.....	121
Alias Editor Tasks	122
Accessing Alias Editor Tasks.....	122
About External IDs and Northbound Control Interfaces	122
Adding Aliases	123
Router Control Tasks.....	124
Accessing the Router Control Task	124
Performing Actions in Router Control	124
Creating Salvos.....	125
Selecting the Name of Sources and Destinations	127
7 Administration Tasks	129
The User Management Task Overview.....	130
Creating User Profiles.....	131
Granting Access Permissions to an Area	133
Viewing Permissions by Role	136

1 Introduction

The purpose of this guide is to provide a brief introduction to GV Convergent Client and its features.

When you log in to GV Convergent Client you open the Stage.

The GV Convergent Client Stage presents a series of tiles, which are arranged in the order you would perform the tasks if you were to configure a GV Convergent system from start to finish. Each task builds on the last. It all begins by defining one or more areas. Once you have area, you can add logical levels. Then, you can create a topology.

These tasks are described in the chapters that follow.

GV Convergent Documentation

Other GV Convergent Client guides include:

- *GV Convergent Release Notes*
- *GV Convergent, A Quick Tour of the Admin Tasks*

Getting Started With GV Convergent Client



This chapter describes the following tasks:

- [Launching GV Convergent Client](#), on page 11
- [Logging In To GV Convergent Client](#), on page 11
- [Navigating Back to Stage](#), on page 12
- [Switching User Profiles](#), on page 13
- [Viewing Notifications](#), on page 14

Launching GV Convergent Client

Once GV Convergent Client is installed on your computer, the shortcut icon appears on your desktop.

For details on installing GV Convergent Client for the first time, refer to *A Quick Tour of GV Convergent Admin tasks*.

Logging In To GV Convergent Client

Tip: Before logging in to GV Convergent Client ensure that you have a valid **user name** and **password**, as well as the **Management IP address** of GV Convergent Admin.

To log in to GV Convergent Client

- 1 Click the GV Convergent Client icon on your PC.
The GV Convergent Client login screen appears.



- 2 Enter your user name and password in the **User name** and **password** text boxes.
- 3 Enter the Management IP address of the GV Convergent Admin in the **Server** text box.
- 4 Click **Log in**.

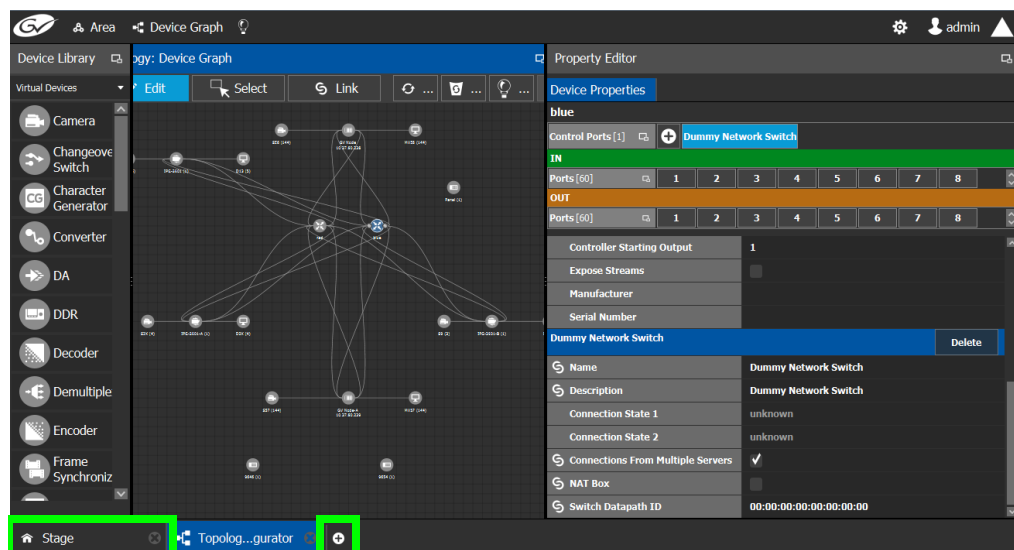
Navigating Back to Stage

The Stage is the main entry point to configure GV Convergent. At any time, you can return to the Stage view.

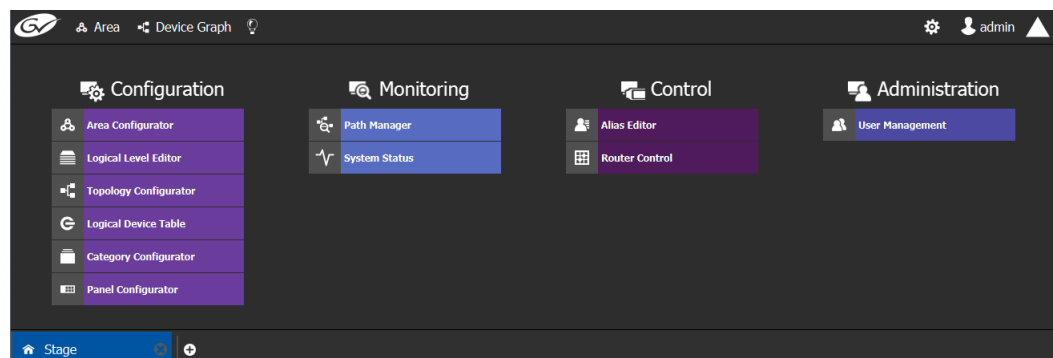
To navigate back to Stage

- 1 Open GV Convergent Client to any task.
- 2 Do one of the following:
 - Click the Stage tab at the bottom of the UI.
 - Click the plus button at the bottom of the UI.

Tip: The second option is useful, if you have a lot of tasks open.



The home or **Stage** view appears.



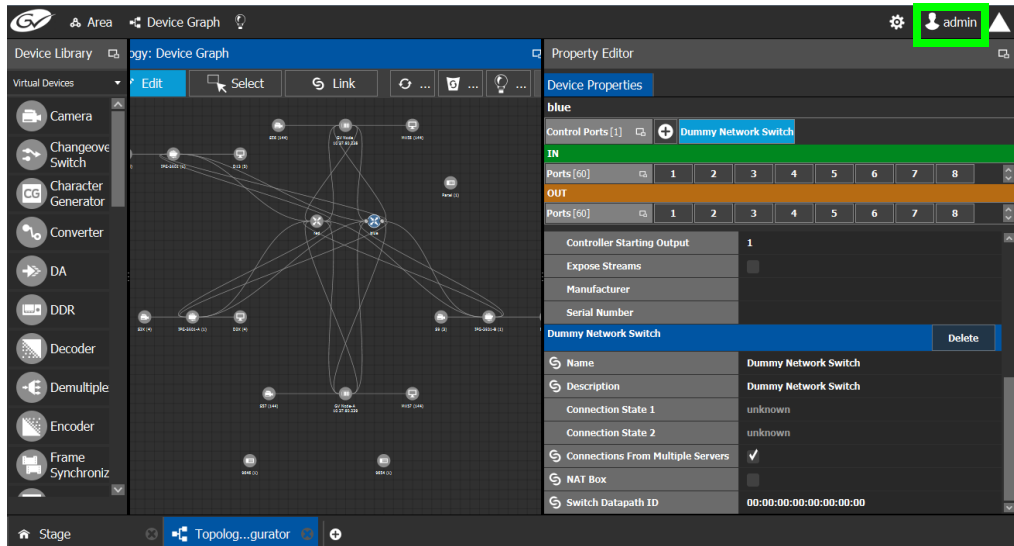
Switching User Profiles

From the Stage or any open task, you can change to another user profile.

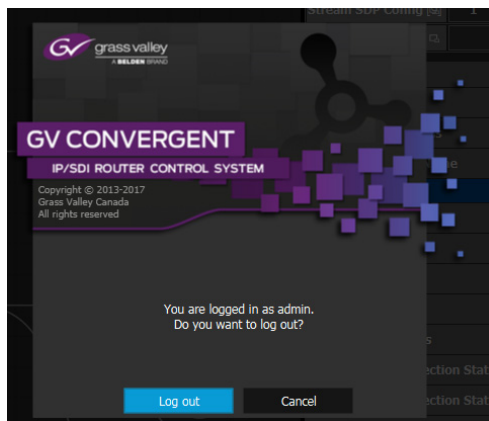
Note: Before switching to another user profile, ensure that you have the required user name, password, and Management IP address.

To switch to another user profile

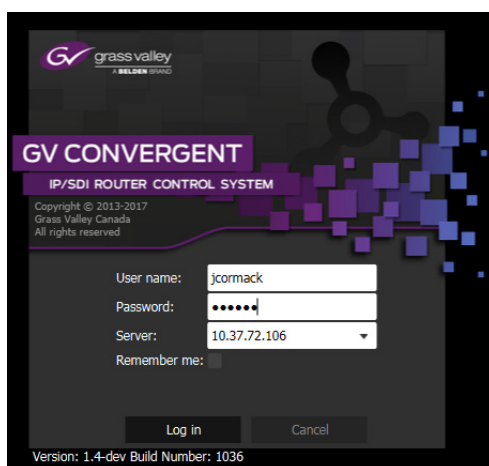
- 1 Click on the user profile name at the top right of GV Convergent Client.



A confirmation message appears.

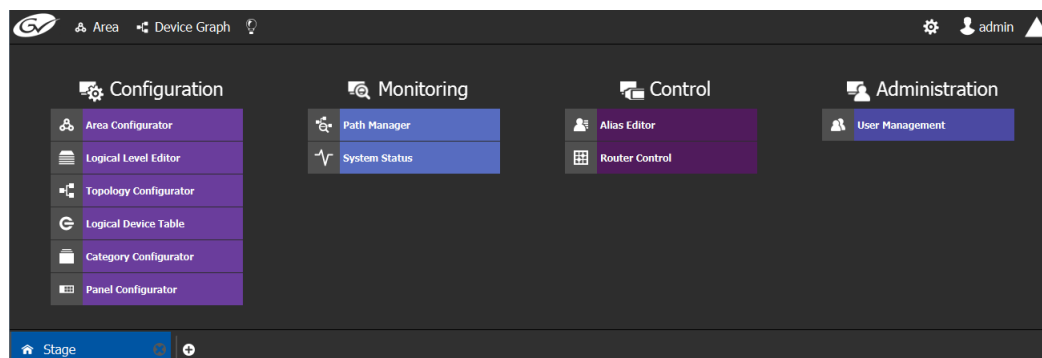


- 2 Click **Log out** to continue.
The Log in screen appears.



- 3 Enter your login credentials in the **User name** and **Password** text boxes.
- 4 Enter the Management IP address of the GV Convergent server you are connecting to in the **Server** field.
- 5 Click **Log in**.

GV Convergent Client opens to the view applicable to the user.



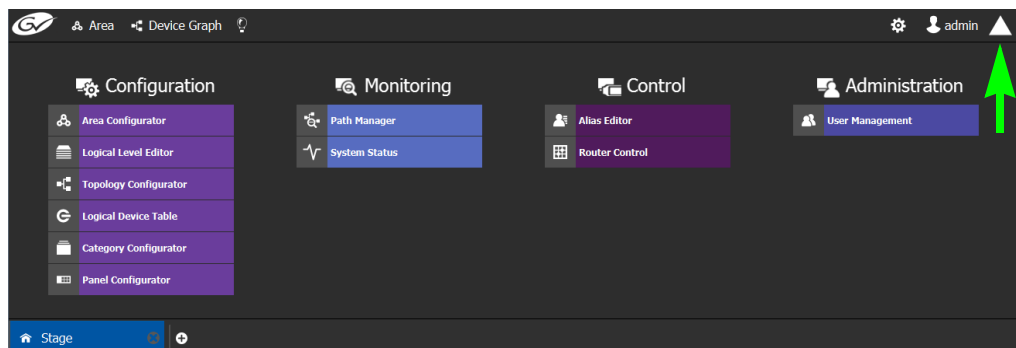
Note: Access permissions vary according to the permissions granted to the user's role. For further information, see [Administration Tasks](#), on page 129.

Viewing Notifications

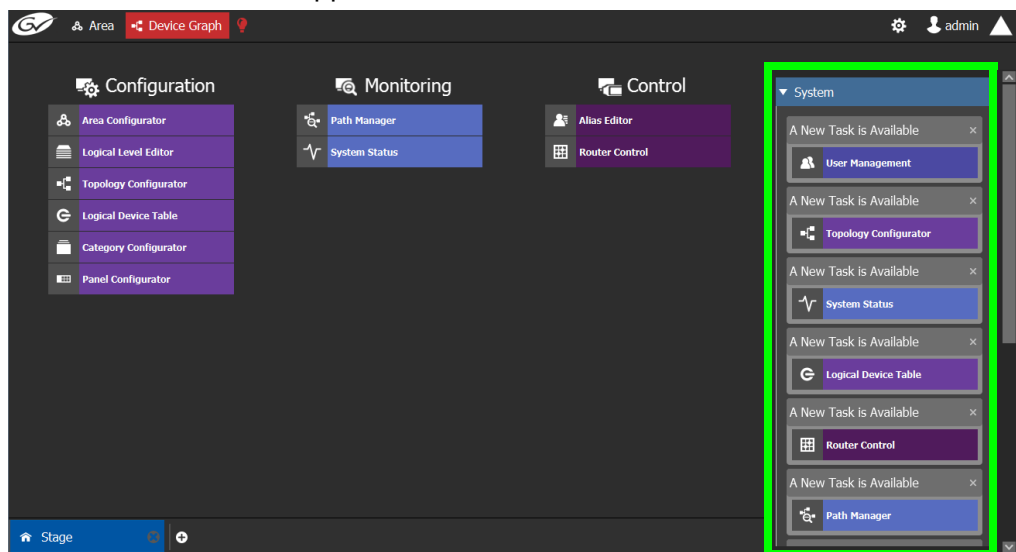
A notification is an indicator that an event has occurred.

To view your notifications

- 1 Log in to GV Convergent Client.



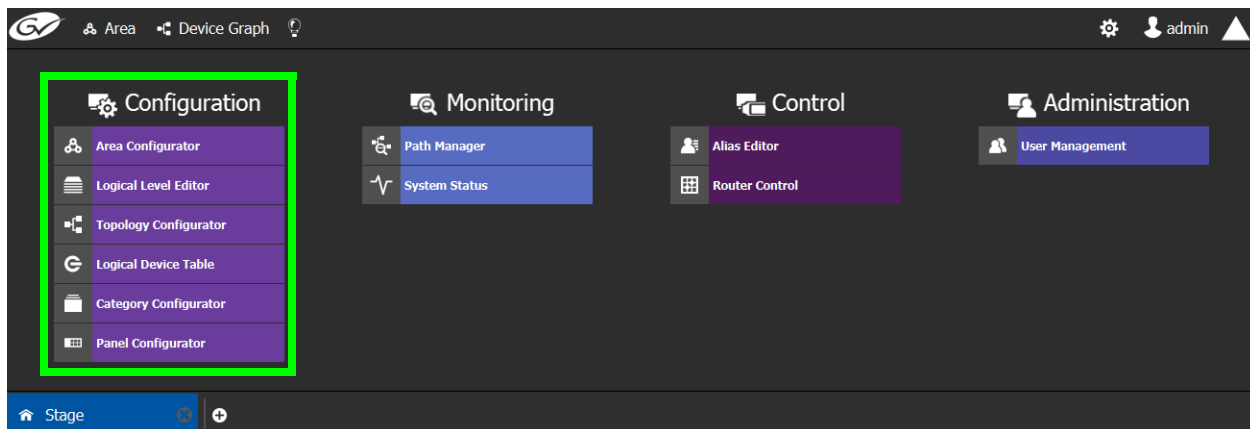
- 2 Click on the up arrow in the top right corner of the UI.
The Notification window appears.



- 3 Expand the **System** list. The list of new events appears.
- 4 Click on a listed event on the right to view it in the UI.

3 Configuration Tasks

The Configuration tasks in GV Convergent Client are used for creating and maintaining areas, topologies, categories, and panels.



The Configuration Tasks are described under the following headings:

- [Area Configurator Tasks](#), on page 17
- [Logical Level Editor Tasks](#), on page 24
- [Topology Configurator Tasks](#), on page 32
- [Logical Device Table Tasks](#), on page 54
- [Category Configurator Tasks](#), on page 69
- [Panel Configurator Tasks](#), on page 74

Required Permissions

Only users who are assigned to the Administrators role have View, Edit, and Delete permissions in the Area task. All other configuration tasks are accessible to users with either Administrator or Engineer rights only. For more information, see [Viewing Permissions by Role](#), on page 136.

Area Configurator Tasks

The Area Configurator task is used for configuring the *Areas* and controllers in GV Convergent.

An *Area* is container that is used for grouping together a subset of resources within a system. Typically, these resources are closely related, by physical location, functionality, ownership, and/or logical organization. An area is managed by a single controller group, which is made up of:

- a single controller

- or optionally, two redundant controllers to provide 1:1 failover protection

This section describes the following:

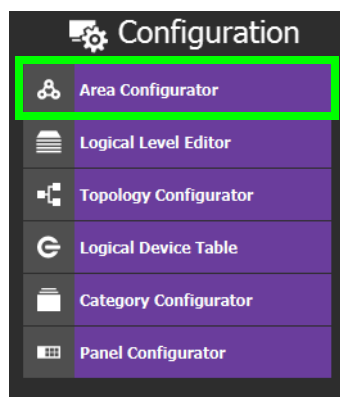
- [Accessing Areas in the GV Convergent Client](#), on page 18
- [Adding an Area](#), on page 19
- [Configuring a Controller Group](#), on page 19
- [Selecting an Area](#), on page 23
- [Deleting an Area](#), on page 23

Accessing Areas in the GV Convergent Client

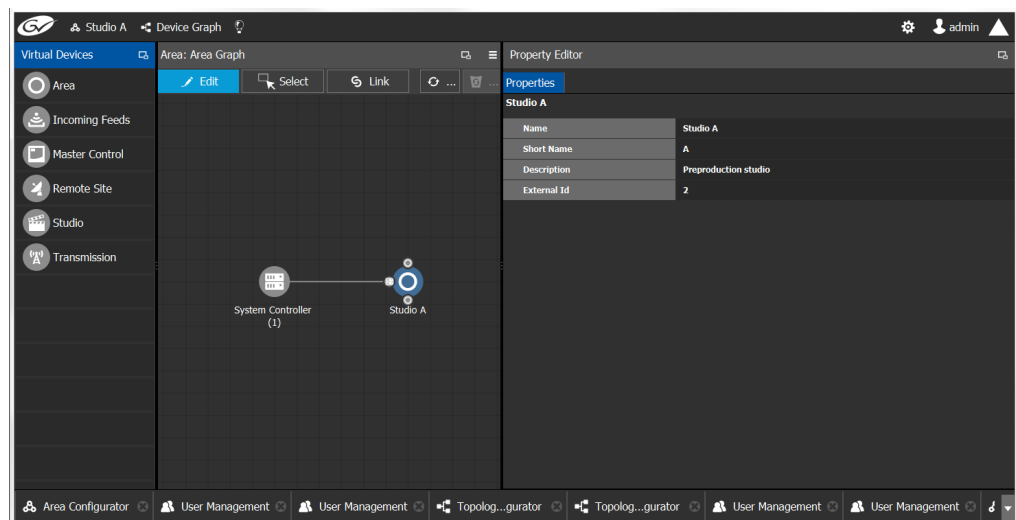
All configuration in GV Convergent Client begins by creating one or more areas. Once you have the areas defined, you can add the logical levels, the topologies, and so on.

To configure the area in GV Convergent Client

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Area Configurator**.



The Area Graph appears.



By default, there is one area, called Area. Use the Property Editor on the right to rename it and make it easy to identify within your system.

- 3 Select the Area to access the Property Editor.
You are automatically in Edit mode. **Edit** is highlighted in the bar at the top.
- 4 Enter the required information in the **Name**, **Short Name**, **Description**, and **External ID** fields to identify the area.
- 5 Repeat the procedure for each area in your system.

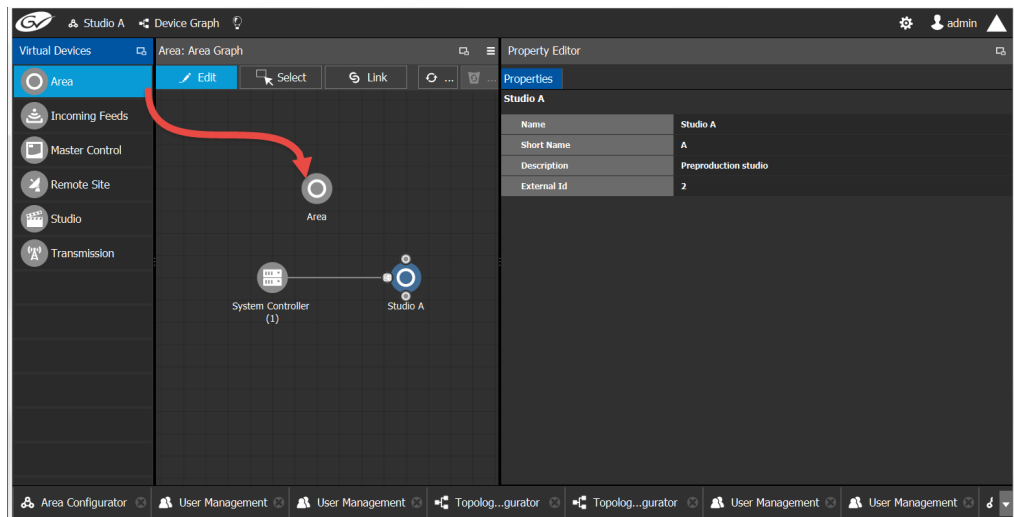
Adding an Area

You can create multiple areas for your system. This can facilitate configuration and control tasks. Smaller subsets are easier to bring into focus and manage.

To add an area

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Area Configurator**. See [Accessing Areas in the GV Convergent Client](#), on page 18.

This opens the Area Graph.



- 3 Select the area tile on the left.
- 4 Drag it to the Area Graph.
- 5 Repeat the procedure as many times as required to add all the areas you require.

Configuring a Controller Group

By default, there is one area and one System Controller group on the Area Configurator Device Graph.

A controller group can have one or more areas. The controller is a physical or virtual server that runs the GV Convergent software.

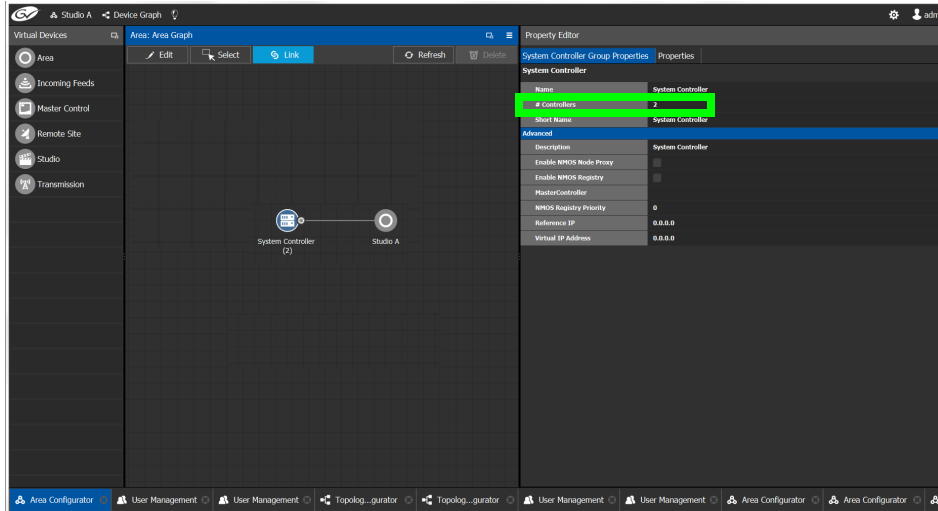
A Controller group can be made up of either one or two controllers. You need two controllers to implement redundancy or failover protection. In the redundant configuration, one controller is active and the other is on standby. If there is a problem, such as a network connection loss, the standby controller becomes the active controller,

automatically. In addition, you can force the standby controller to become the active controller by performing a manual failover operation, at any time.

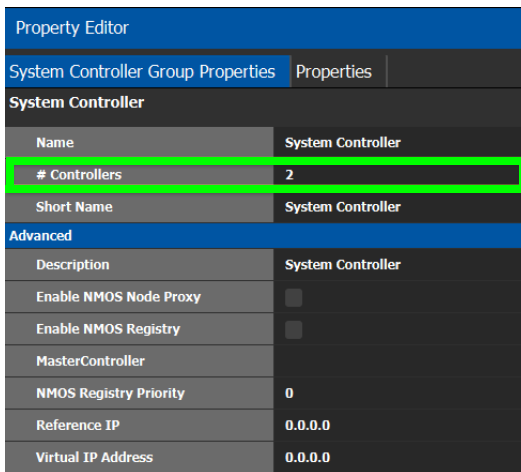
To configure a controller group

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Area Configurator**. See [Accessing Areas in the GV Convergent Client](#), on page 18.

By default, there is one controller and one area on the graph.



- 3 Select the bubble for the **System Controller** you are configuring.
- 4 Select the **System Controller Group Properties**.

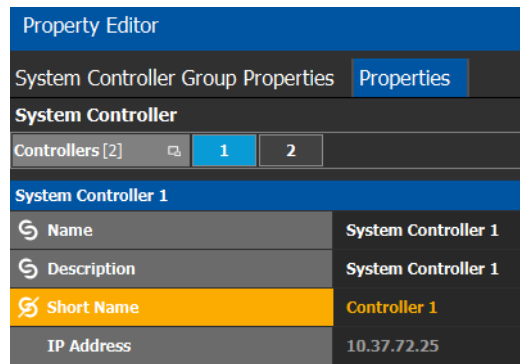


The following properties can be configured for the panel. See also [Description of Common Device Properties](#), on page 88.

Parameter	Description
Name	The name or identifier for this system controller group.
# Controllers	Enter 2 in the field if you are setting up redundancy. Otherwise, enter 1 . You can only have one or two system controllers in a group.

Parameter	Description
Description	An optional description for this system controller group.
Virtual IP Address	Set the IP that is configured for the master and allows for transparent failover for third party control systems. For example, in a cluster configuration, a soft panel can be configured to point to the virtual IP. When a failover happens, the control is maintained through the panel using the virtual IP.
Reference IP	Set the IP of a machine that is always on. After a failover the server that can connect first to this IP will become the master.
Enable NMOS Registry	Starts an NMOS registry on the GV Convergent controller.
NMOS Registry Priority	Sets the priority of the registry that is started when the 'Enable NMOS Registry' option is enabled.
Domain Ids	Only applications / devices that use the same Domain IDs can communicate with each other on the network. For example, this parameter is used by SAM devices. This is a comma separated list of domain IDs on which you want to discover devices and communicate with them. The default value for Grass Valley equipment is 101 . Valid range: 0 to 232 .

- 5 Select the **Properties** tab.
- 6 Select **1** under **System Controller** to configure the first controller.

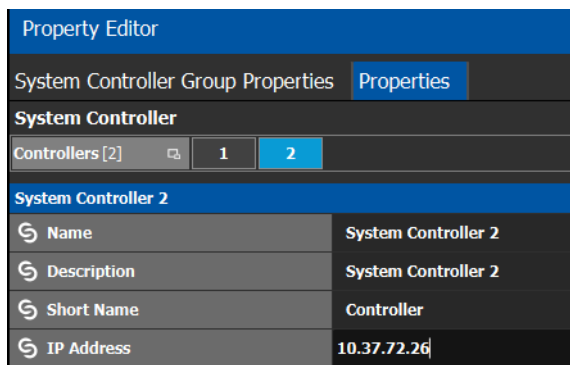


The following properties can be configured for the individual system controller that form the system controller group. See also [Description of Common Device Properties](#), on page 88.

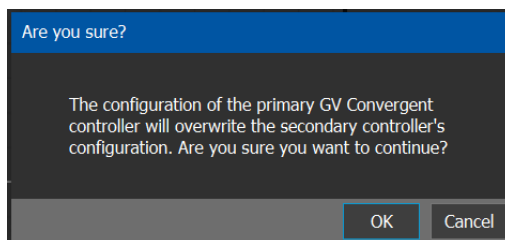
Parameter	Description
Name	The name or identifier for this system controller instance.
Description	An optional description for this system controller instance.

Parameter	Description
Short Name	A nickname used wherever the controller is specified. This name should be limited to 8 characters or less in length. This requirement is important if you are using NVISION panels as they use the Short Name to display device names and NVISION hardware can display a maximum of 8 characters for a device name. Otherwise, a longer nickname can be used.
IP Address	The network IP address for this system controller instance. This field for System Controller 1 is populated automatically with this system controller's Management IP address. This cannot be changed. When system controller redundancy is used (System Controller 2 is available), set the network IP address for System Controller 2.

- 7 Select tab **2** under **System Controller** to configure the second controller.



- 8 Update the identification fields for the second controller: see the table above.
A confirmation message is displayed:



- 9 Click **OK** to continue.

Notes

When redundancy has been configured, System Controller 2 joins the Controller group automatically as the standby controller. It becomes the active controller in the event of an automatic or manual failover.

When you click OK, the database from Controller 1 is copied to Controller 2

You can view the health of both controllers on the System Status task. The System Status Task page will show the status of the controllers at all times, and the right hand section shows the health of devices specific to a topology. However, you must create your areas

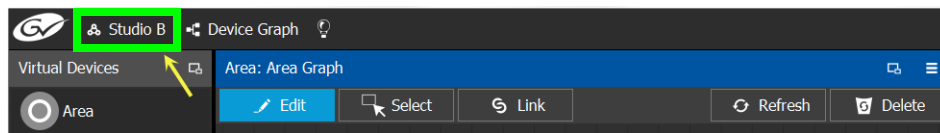
and topologies first. See [System Status Task](#), on page 115.

Selecting an Area

You must select an area before you can create or maintain a topology within it. Only one area can be selected at a time.

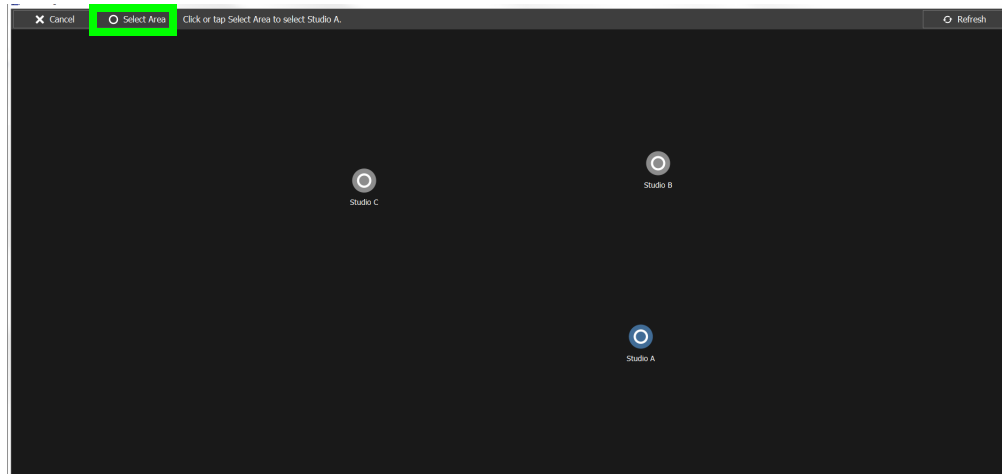
To switch from one selected area to another

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
The currently selected Area is displayed at the top of the interface.



Note: You can perform this procedure from Stage or from any open task. You can always select an area.

- 2 Click on this area.
A secondary window appears.




- 3 Click on the area that you to select.
In the screen shot above, this is Studio A.
- 4 Click **Select Area** at the top of the window.

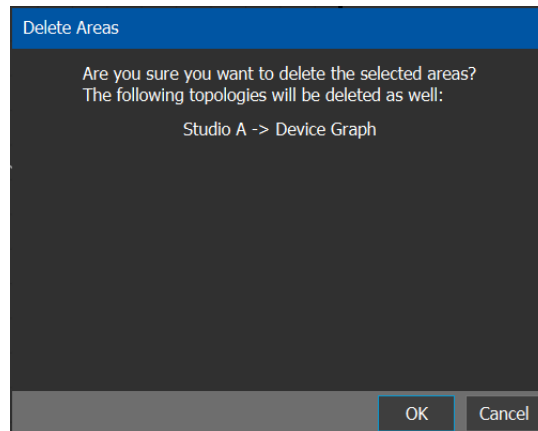
Deleting an Area

Note: You cannot delete the currently selected Area. If necessary, make another Area active first. See [Selecting an Area](#), on page 23.

To delete an area

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.

-
- 2 Select **Configuration > Area Configurator**. See [Accessing Areas in the GV Convergent Client](#), on page 18.
 - 3 Click on the Area you want to delete.
 - 4 Click **Delete**  at the top of the logical level editor.
 - 5 A confirmation message appears. It lists the topologies created in the Area.



- 6 Click **OK** to continue.

Logical Level Editor Tasks

This section describes the following:

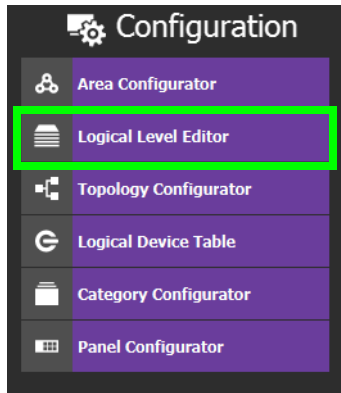
- [Accessing the Logical Level Editor](#), on page 24
- [Viewing the Default Logical Levels](#), on page 26
- [Duplicating a Logical Level](#), on page 27
- [Editing a Logical Level](#), on page 29
- [Deleting a Logical Level](#), on page 30
- [Configuring a New Logical Level](#), on page 30
- [Configuring the Logical Levels of the Devices in a Topology](#), on page 31

Accessing the Logical Level Editor

Use the Logical Level Editor to define new logical levels and to view the compatibility of the default levels.

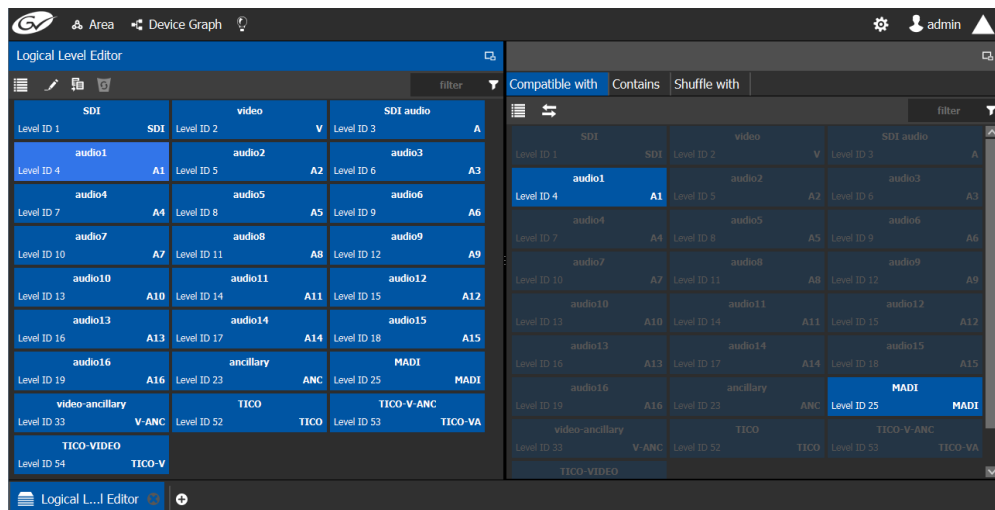
To access the Logical Level Editor Task

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select an area.
- 3 Select **Configuration > Logical Level Editor**.



The Logical Level Editor appears.

Note: Only users who are assigned to the Administrators or Engineers role in the selected area have View, Edit, and Delete permissions in the Logical Level Editor task. See [Viewing Permissions by Role](#), on page 136.



Note: Before you can open the Logical Level Editor, you must open an Area and a Topology. Logical levels are defined specifically for each topology.

The Logical Level Editor has two columns:

- The first column contains tiles for all default logical levels along with the logical levels you have added.
- The second column has three tabs: *compatible with*, *contains* and *shuffles with*. The *shuffles with* allows a user to configure which audio levels can be shuffled with which.

Viewing the Default Logical Levels

The default logical levels are represented by the first tiles displayed in the left and center columns, beginning with video, then audio, and finally ancillary. When you create new logical levels, they are added after these.

You can change the Short Label and Level ID of a default Logical Level, but not the Name. Also, you cannot delete a default level.

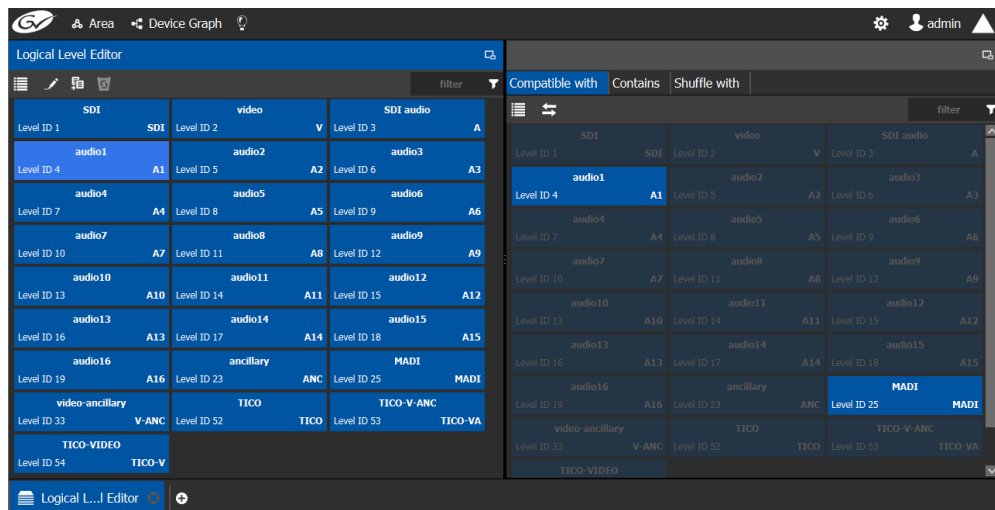
Verifying the Compatibility of the Default Logical Levels

However, you always modify the compatibility of the logical levels you create. The rule applies to the signal types.

To verify the compatibility of Logical Levels

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Logical Level Editor**. See [Accessing the Logical Level Editor](#), on page 24.

The Logical Level Editor appears.



The Logical Level Editor has three columns:

- The left hand column contains tiles for all default logical levels along with the logical levels you have added.
- The center column contains the same tiles. When you select a tile in the left hand column, the compatible logical levels are highlighted in this column.
- The right hand column contains tiles representing the signal type the logical level contains, such as video, audio, or ancillary.

- 3 Select a logical level tile on the left.

The tiles for the logical levels it is compatible with are highlighted in the center column.

Note: A logical level is always compatible with itself.

Verifying the Signal Type of the Default Logical Levels

Like the compatibility, the signal types of the default logical levels is predefined and cannot be changed. However, you always modify the signal type for the logical levels you create.

To verify the signal types of the default logical levels

- 1 Follow the procedure under [Verifying the Signal Type of the Default Logical Levels](#), on page 27.
- 2 When you select a tile for a logical level in the left hand column, the compatibility is highlighted in the center column and the signal type is displayed in the right hand column.

Duplicating a Logical Level

A pre-existing logical level can be copied to reuse that logical level's configuration properties and then you only need to modify the necessary logical level properties as required for the new application.

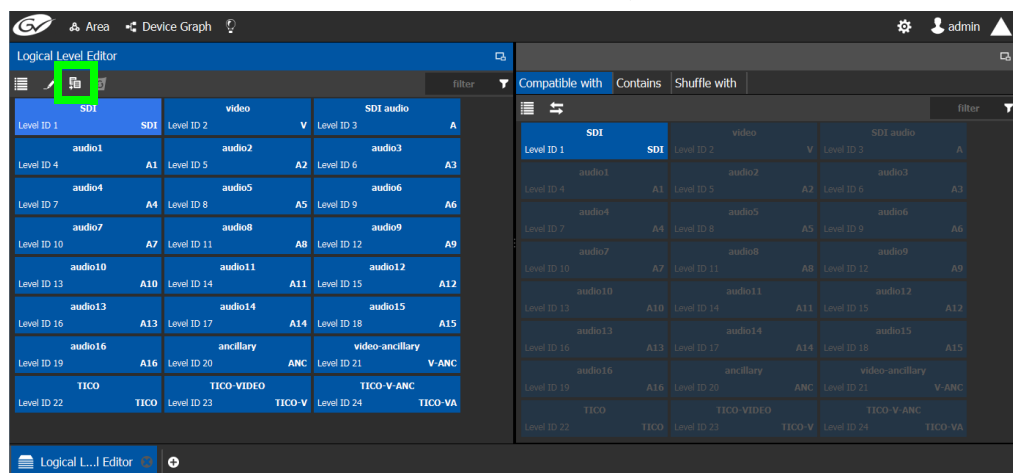
Notes

Logical levels are specific to topologies. In another topology, you won't see the logical levels you create in the currently selected topology.

Only SDI and TICO levels can be duplicated.

To duplicate a logical level

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Logical Level Editor**. See [Accessing the Logical Level Editor](#), on page 24.
- 3 Select a pre-existing level on the left-hand panel that you want to duplicate.



- 4 Click the **Duplicate** button  at the top of the interface. The Logical Level configuration window opens.

Level To Duplicate	SDI
Name Prefix	
Name Suffix	HD
Short Label Prefix	
Short Label Suffix	HD
Starting Level ID	36
<input type="button" value="Ok"/> <input type="button" value="Cancel"/>	

- 5 Enter meaningful names to identify the level in the **Name Prefix**, **Name Suffix**, **Short Label Prefix**, and **Short Label Suffix** text boxes.
- 6 Enter a unique identifier in the **Starting Level ID** text box.
- 7 Click **OK**.

A tile for your new logical level is displayed in the left hand column.


video-ancillary		TICO-V-ANC		TICO-VIDEO	
Level ID 33	V-ANC	Level ID 34	TICO-VA	Level ID 35	TICO-V
Level ID 36	SDIHD	Level ID 37	VHD	Level ID 38	AHD
Level ID 39	A1HD	Level ID 40	A2HD	Level ID 41	A3HD
Level ID 42	A4HD	Level ID 43	A5HD	Level ID 44	A6HD
Level ID 45	A7HD	Level ID 46	A8HD	Level ID 47	A9HD
Level ID 48	A10HD	Level ID 49	A11HD	Level ID 50	A12HD
Level ID 51	A13HD	Level ID 52	A14HD	Level ID 53	A15HD
Level ID 54	A16HD	Level ID 55	ANCHD	Level ID 56	V-ANCHD

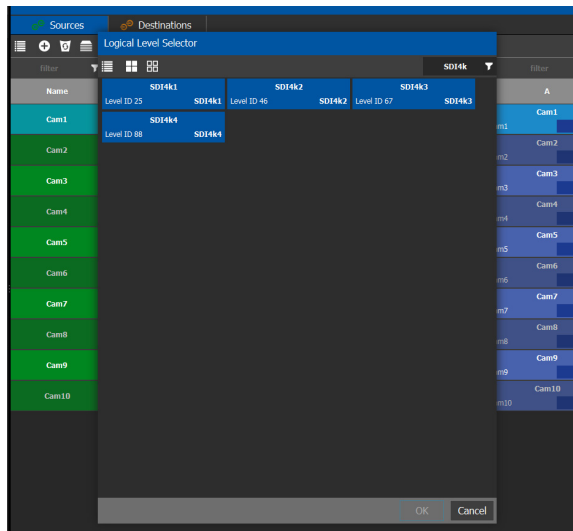
See [Configuring the Logical Levels of the Devices in a Topology](#), on page 31.

Creating a 4K Switching Setup

Use the following procedure to setup 4K switching.

To setup 4K switching

- 1 Create the following 4K logical levels from the Logical Level Editor: SDI4k1, SDI4k2, SDI4k3 and SDI4k4. See [Duplicating a Logical Level](#), on page 27.
- 2 From the logical device table, click the Levels icon .
- 3 Select the levels you want to display in the table. As shown below, a filter "SDI4k" was applied and then you can select the 4 SDI 4k levels.



The logical device table will show 4 columns, each with a 4K level.

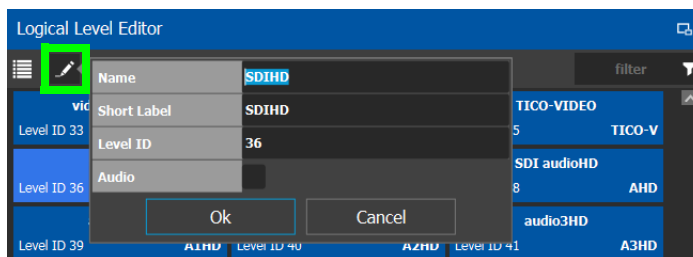
- 4 Configure the 4K sources and destinations by assigning streams to each level, like Cam1 to SDI4k1, Cam2 to SDI4k2, Cam3 to SDI4k3, Cam4 to SDI4k4.
- 5 Repeat from step 2 for destinations.
- 6 Do takes between a logical source and destination that have the quad-level link streams.

Editing a Logical Level

Use the following procedure to modify the identification information of a logical level. The audio setting signals that the level is an audio level.

To configure a new logical level

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Logical Level Editor**. See [Accessing the Logical Level Editor](#), on page 24.
- 3 Select a level on the left-hand panel that you want to edit.



Note: For the default logical levels, you can modify the Short Label and Level ID. You cannot modify the Name.

- 4 Click **Edit** at the top of the logical level editor.

- 5 Modify the text in the **Name**, **Short Label**, and/or **Level ID** fields and/or the **Audio** setting as required.
A level with **Audio** set will appear in the Shuffles with tab of the right pane for shuffling rules.
- 6 Click **OK**.

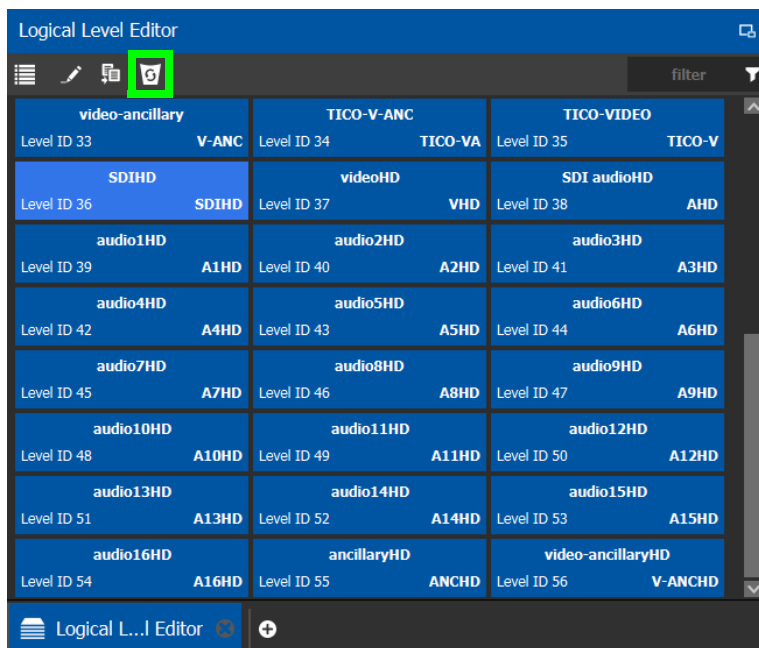
Deleting a Logical Level

Use the following procedure to delete a logical level that is not required in the selected topology.

Note: You cannot delete the default logical levels. The Delete button is disabled when you click on these levels

To configure a new logical level

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Logical Level Editor**. See [Accessing the Logical Level Editor](#), on page 24.
- 3 Select the tile for the logical level you want to delete.



- 4 Click **Delete** at the top of the logical level editor.

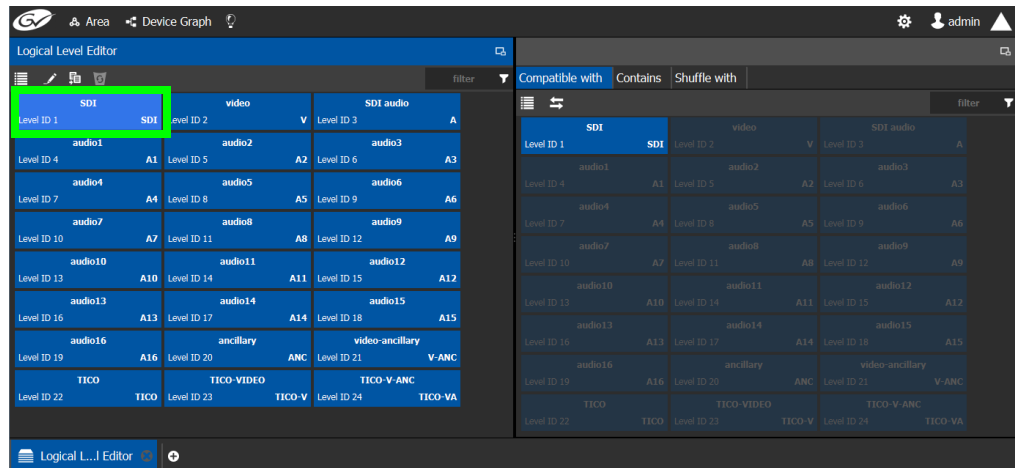
Note: There is no confirmation for the deletion.

Configuring a New Logical Level

Use the following procedure to configure your new logical level. This determines which signal types are compatible with this level.

To configure a new logical level

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Logical Level Editor**. See [Accessing the Logical Level Editor](#), on page 24.
- 3 Select the tile for the logical level you want to configure.



The tile for your new logical level is automatically highlighted in the right hand column.

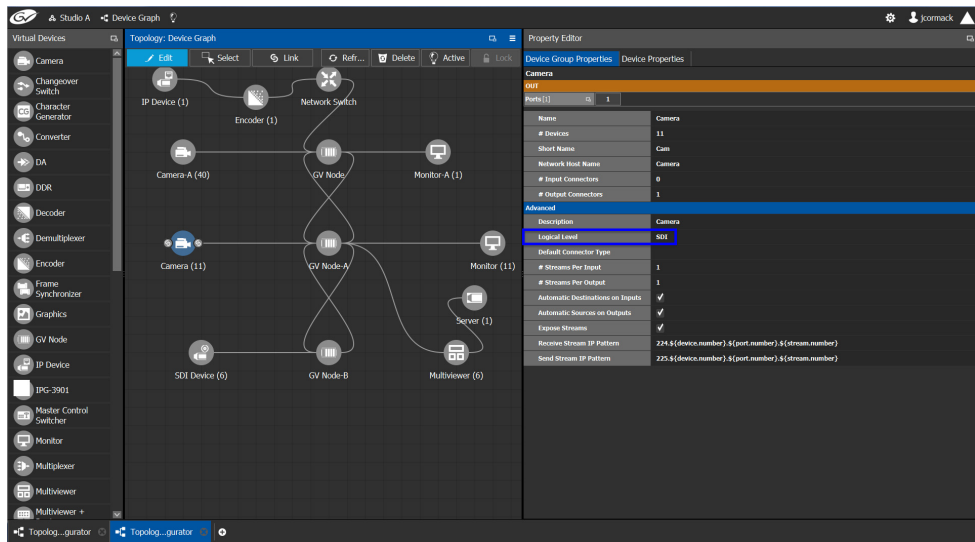
- 4 Select the tiles for the signal types in the right hand column that are compatible. Click a tile a second time to deselect it.

Configuring the Logical Levels of the Devices in a Topology

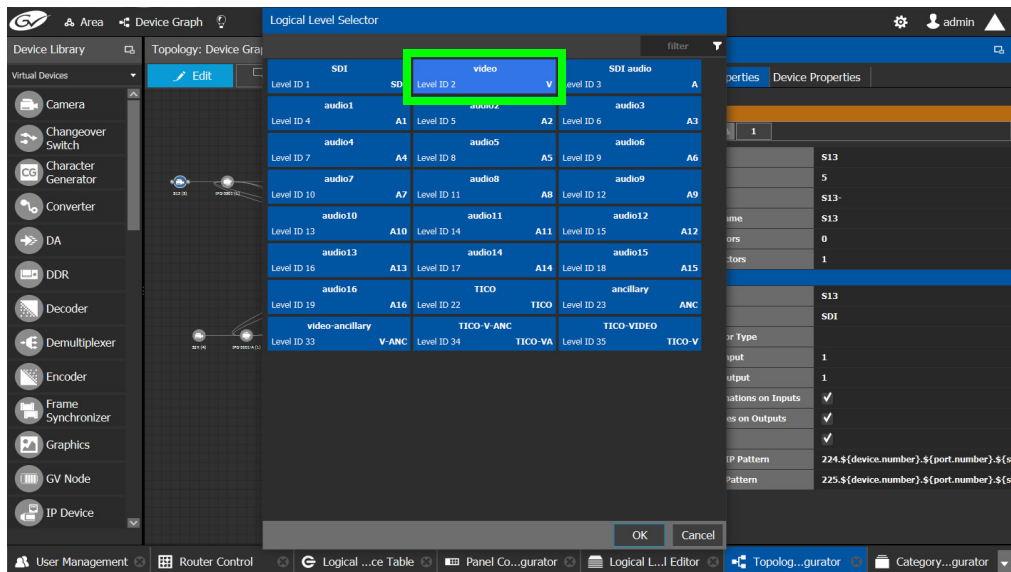
Use the following procedure to add logical levels to the devices in your topology.

To configuring an area in GV Convergent Client

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Topology Configurator**.
- 3 Select the required Area. See [Selecting an Area](#), on page 23.
- 4 Select the required topology in the area.



- 5 Select the device for which you are configuring a logical level.
In the example, shown in the screen shot above, the camera is selected.
SDI is the default logical level for cameras.
- 6 Select Device Group Properties.
- 7 Select the **Logical Level** parameter in the Property Editor.
This opens the Logical Level list.



- 8 Select the required logical level for the device group.

Topology Configurator Tasks

In the previous task, the Area Configurator, you defined the various Areas in your system. Within each Area, you can create multiple *Topologies*. The topologies show how the various physical and logical devices are arranged within the broadcasting facility.

See [Area Configurator Tasks](#), on page 17.

These sections describes the following:

- [Accessing the Topology Configurator](#), on page 33
- [Selecting a Topology](#), on page 34
- [Refreshing the Device Graph](#), on page 36
- [Creating a Topology](#), on page 38
- [Adding Devices to a Topology](#), on page 40
- [Linking the Devices in a Topology](#), on page 41
- [Defining Properties for the Devices](#), on page 46
- [Deleting a Device From a Topology](#), on page 48
- [Activating a Topology](#), on page 49
- [Making an Active Topology Inactive](#), on page 50
- [Unlocking / Relocking a Topology](#), on page 51
- [Locking an Unlocked Topology](#), on page 53

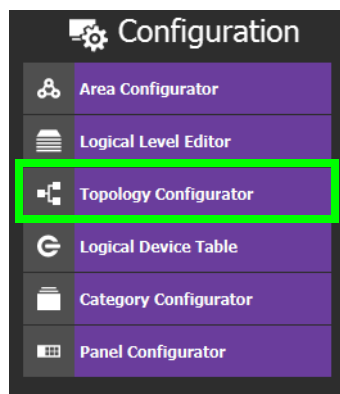
Certain devices require a detailed procedure to configure them; see [Special Device Configuration Tasks](#), on page 87 for more information about these devices.

Accessing the Topology Configurator

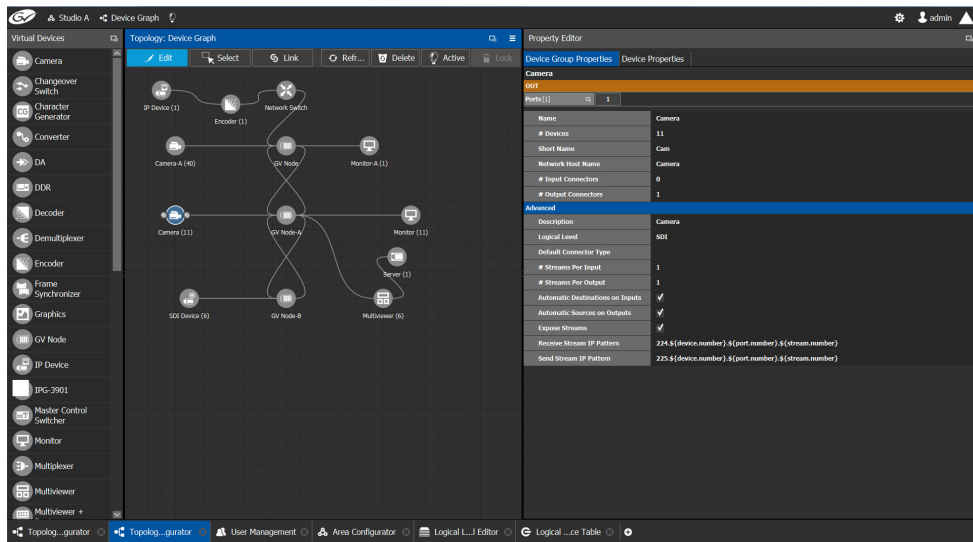
You can access the Topology Configurator from Stage or from any open task. Access permissions are required. See also [Selecting a Topology](#), on page 34.

To access the Topology Configurator from Stage

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select **Configuration > Topology Configurator**.



The Topology Configurator appears. The Topology Configurator comprises three sections. The left hand column has a list of bubbles, representing the device groups, such as cameras, routers, and monitors. You drag these onto to a Device Graph and create connections between them. Then, you can configure the properties for the Device Groups in the Property Editor.



If an Area is open, the Topology Configurator opens in that area. You can switch areas from anywhere in GV Convergent Client. See [Selecting an Area](#), on page 23.

Access Permissions


Access permissions to the Topology Configurator vary according to role. Only users who are assigned to the Administrators or Engineers role can View, Edit, and Delete topologies and device properties. Operators have the right to view topologies and device properties. Maintenance staff and Guests have no access. See [Viewing Permissions by Role](#), on page 136.

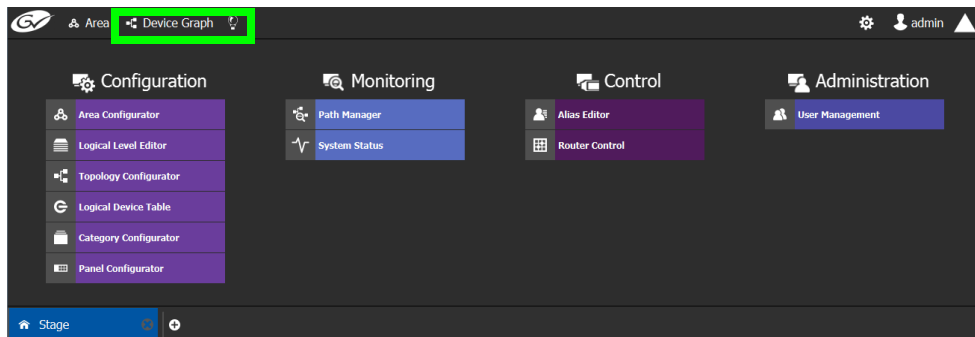
Selecting a Topology

To work on a topology, you need to select it so that it is open in the Topology Configurator. You can work on only one topology at a time.

To select a topology

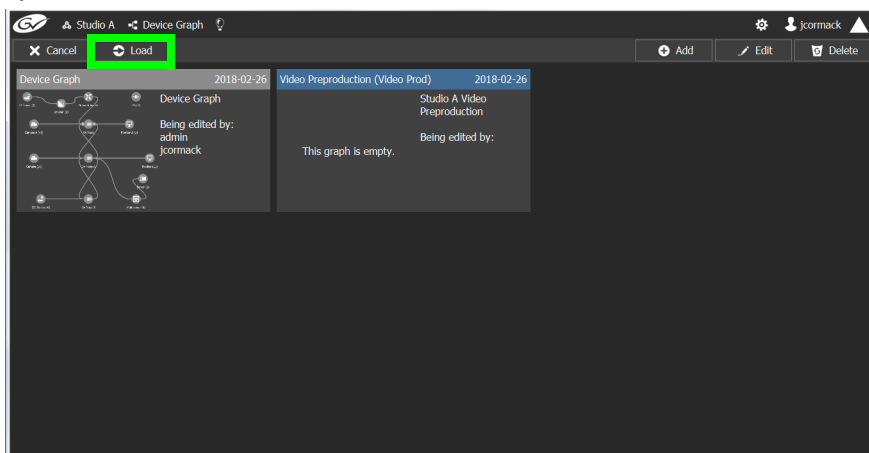
Note: A topology must be created in an area. Then, it is available only in the area where it was created.

- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Click on the  icon for the currently selected topology at the top left of GV Convergent Client.

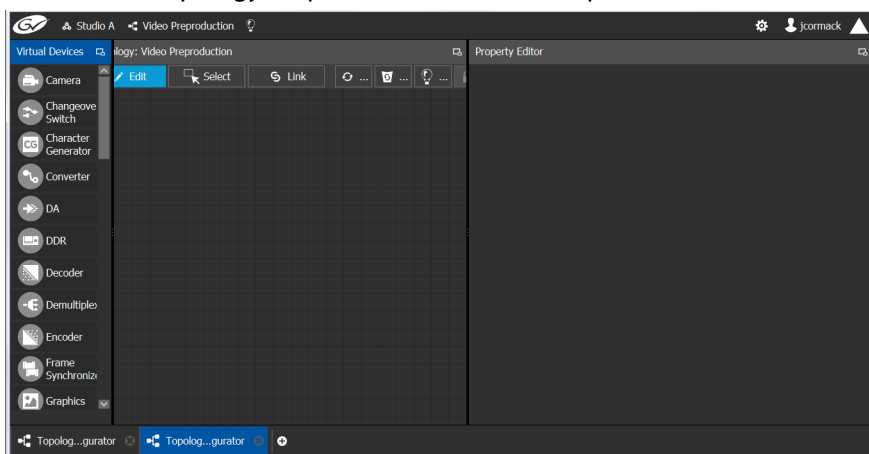


This opens a secondary window.

- 3 Double-click the topology you want to update or select the topology you want to update and then click **Load**.



The selected topology is opened in the Device Graph.



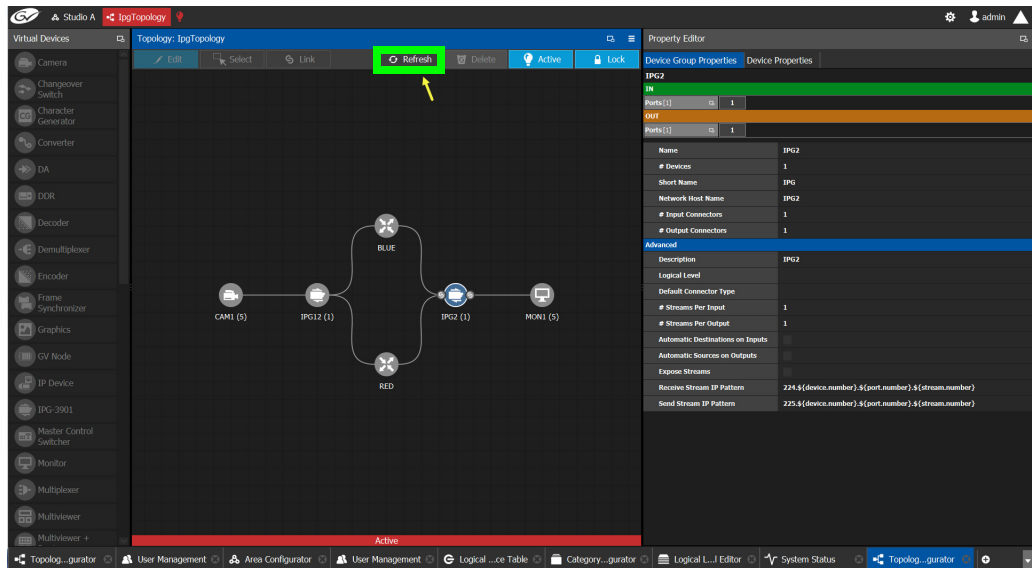
If the topology is new, the Device Graph is blank. The next step is to begin adding devices. See [Adding Devices to a Topology](#), on page 40.

Refreshing the Device Graph

If you have added a lot of devices to a topology in the Device Graph or made many other modifications to it, you may need to refresh the Device Graph. You can refresh topology regardless of whether it is active or inactive.

To refresh the Device Graph

- 1 Open a topology in the Topology Configurator.



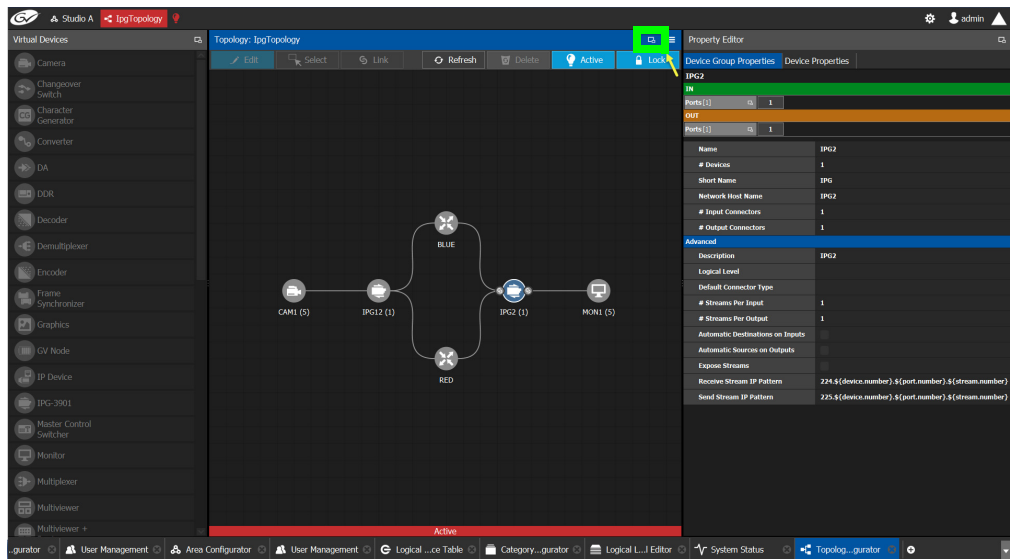
- 2 Click the Refresh button at the top of the interface.
The topology is inaccessible during the brief time it takes to refresh the window.

Viewing the Topology in Full Screen Mode

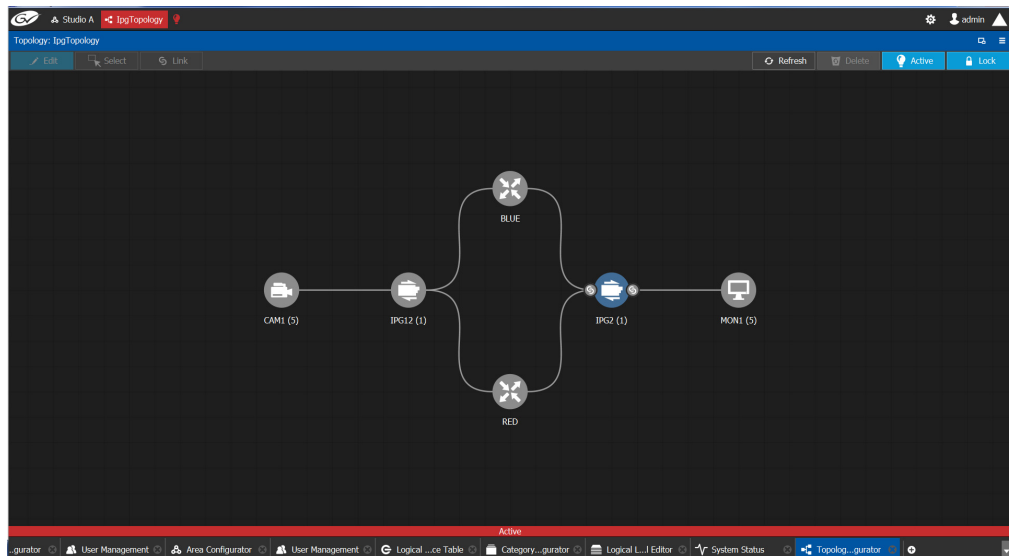
By default, the selected topology is displayed in the Device Graph in the center of the Topology Configurator task. The devices are displayed on the left and the Property Editor is displayed on the right.

To view the topology in fullscreen mode

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.
- 3 Select the required topology. See [Selecting a Topology](#), on page 34.



- 4 Click the Fullscreen toggle button at the top of the interface.
The Device Graph expands across all three columns in the Topology Configurator.



TIP

To zoom and center the topology view:

- click the Refresh button.
- double-click an empty space.

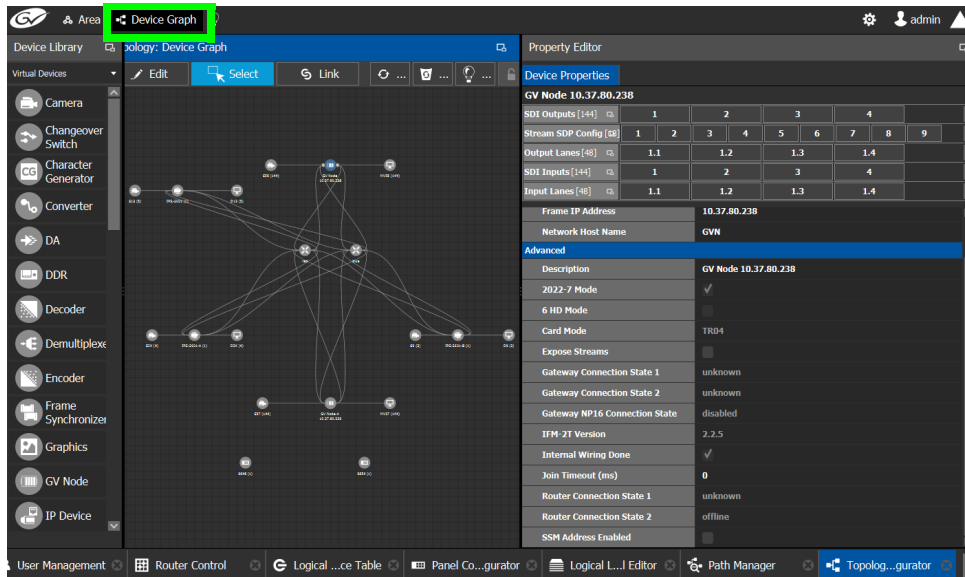
To return to default mode


- 1 When the Device Graph is in fullscreen mode, click the Fullscreen button to toggle the display back to the default mode.

Creating a Topology

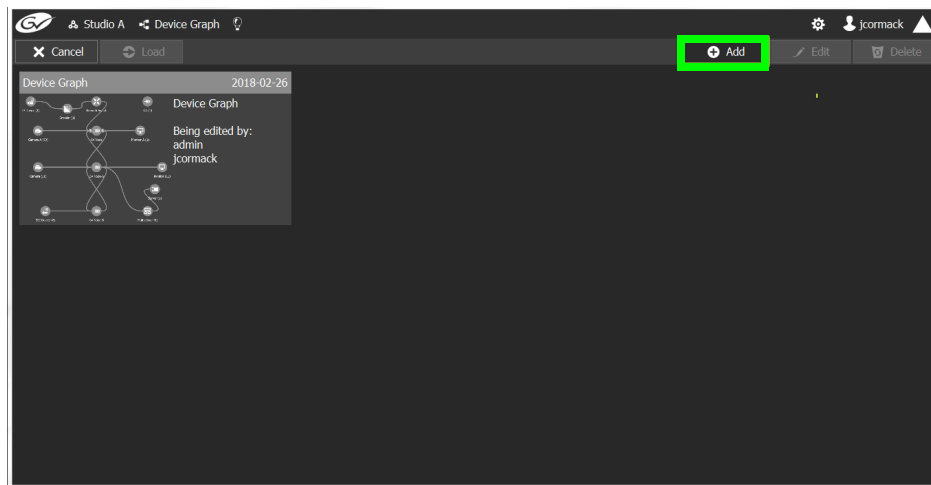
To create a new topology

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.

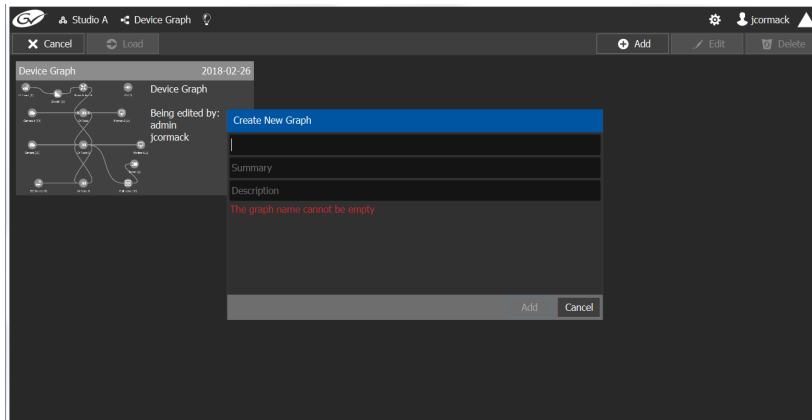


- 3 Click the topology icon . This is located beside **Device Graph** or the name of the open topology at to the top of the Topology Configurator.

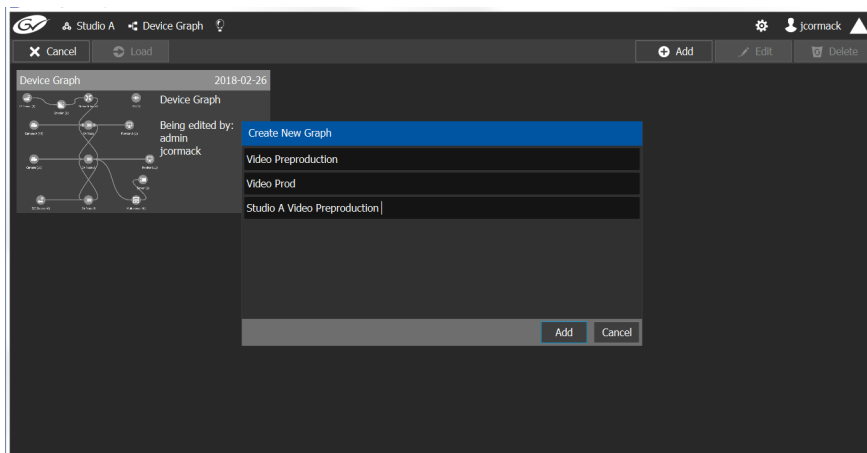
This opens a secondary window.



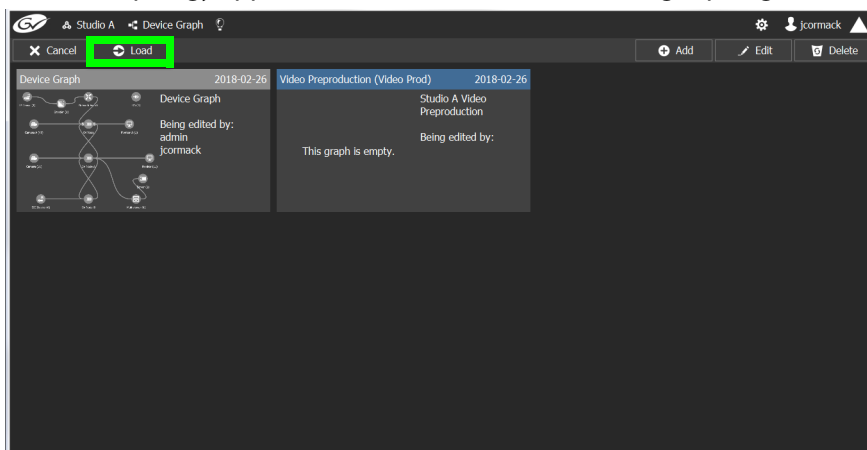
- 4 Click **Add**.
The Create New Graph window appears.



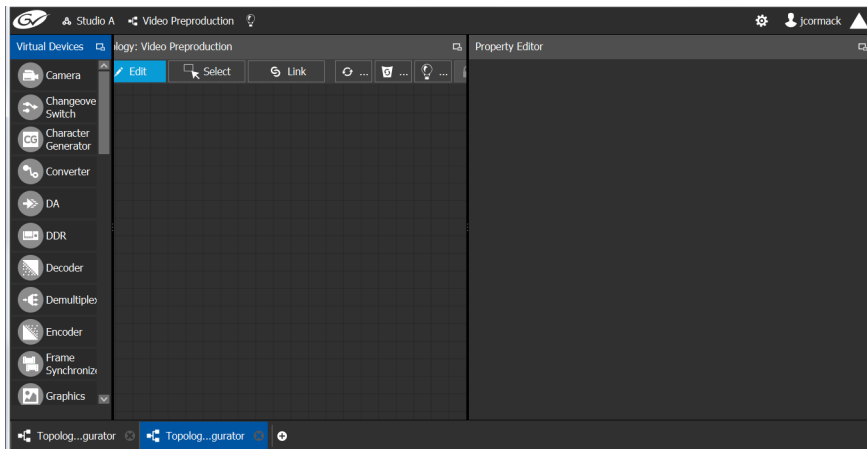
- 5 Enter a name for the new topology and enter meaningful text in the **Summary** and **Description** fields for easy identification.



- 6 Click **Add** on the Create New Graph window.
The new topology appears in the list box with the existing topologies.



- 7 Select the new topology and click **Load**. Or double-click the topology.
The selected topology is opened in the Device Graph.



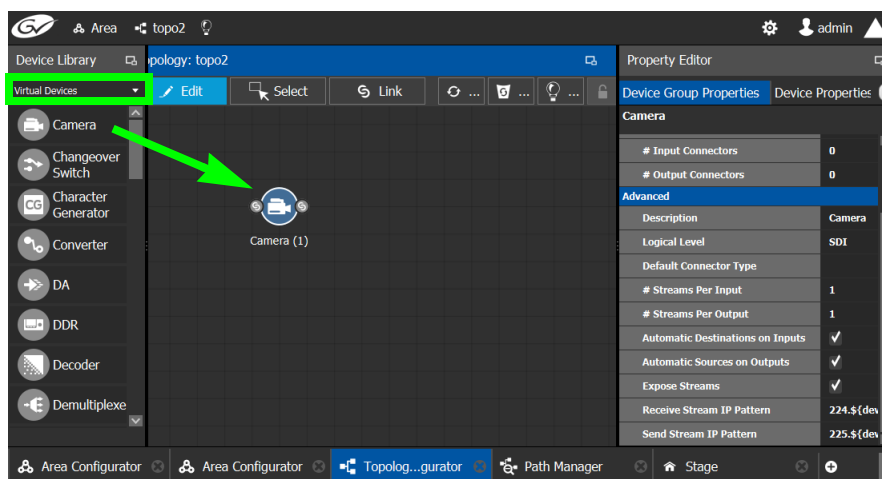
If the topology is new, the Device Graph is blank. The next step is to begin adding devices. See [Adding Devices to a Topology](#), on page 40.

Adding Devices to a Topology

By adding devices to a topology, you are making a representation in GV Convergent of the real world equipment you are using, and the physical interconnections made between this equipment.

To add a device to a topology

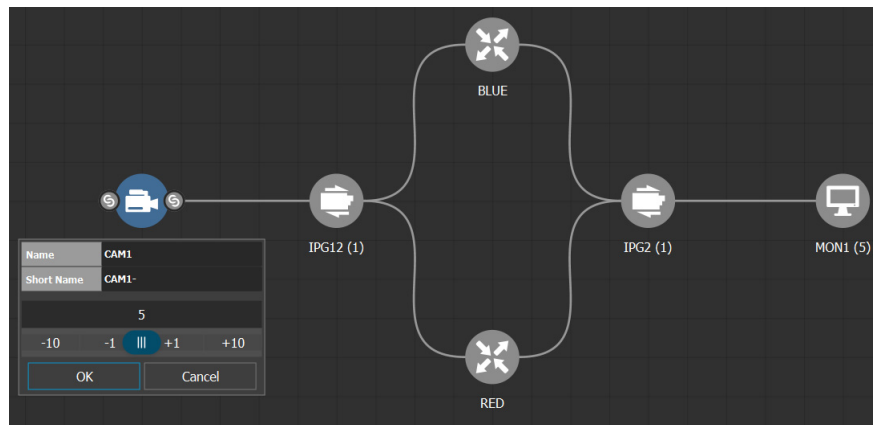
- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.
- 3 From the **Device Library, Virtual Device** on the left, select **Virtual Devices** from the drop-down list.



- 4 From the **Device Library, Virtual Device** find devices that represents a piece of equipment you want to control: select the device bubble and drag it into position on the Device Graph and release the mouse button.
Initially, the device bubble represents a single device, such as a single camera. However, a bubble is a device group that can represent one or more devices.
- 5 Click on the name of the device underneath the bubble to create a device group.

A device group is a collection of devices of the same type that can be configured together. All bubbles in a graph are automatically device groups; the only exceptions are routers, network switches and GV Nodes.

The Device Group configuration window appears.



- 6 Enter meaningful names to identify the device group in the **Name** and **Short Name** fields.

In this case, the Camera device group is named CAM1 to identify the cameras controlled by Controller 1. These parameters can also be set in the Property Editor.

- 7 Use the plus and minus buttons to enter the number of devices in the group.
- 8 Click **OK**.

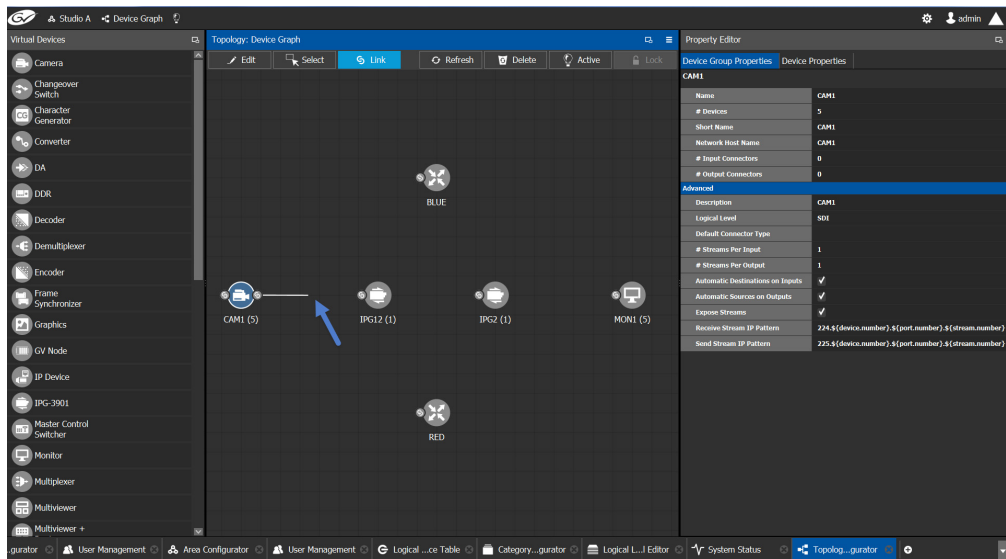
- 9 Repeat [step 4](#) to [step 8](#) until you have added all the required devices to the topology.
In the above example, five monitors, two IPGs, two network switches, and five cameras are added to the Device Graph.

Linking the Devices in a Topology

Once the device groups are added to the Device Graph, the next step is to create links between them using the Link mode which allows you to link bubbles with a touch-based device. Otherwise, if you are using a mouse and keyboard interface, you can link devices together using the following procedure while in the Edit mode as well.

To link devices or device groups in a topology

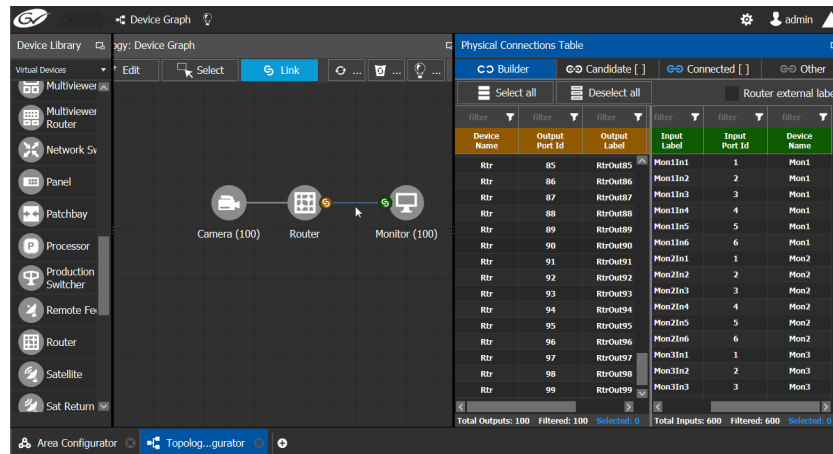
- 1 Open the required topology in the Device Graph.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.
- 3 Select the required topology. See [Selecting a Topology](#), on page 34.



- 4 Click the **Link** button at the top of the interface.
- 5 Select the first bubble in the pair you want to connect.
When the bubble is selected, the device is highlighted in blue and both the bubble's input and outputs ports become available. Input ports are on the left side of the bubble. Output ports are on the right side of the bubble.
- 6 Select an input or output port on the bubble.
If the input port was selected, the output ports of all the available devices appear. If the output port was selected, the input ports of all the available devices appear.
- 7 Draw a line, with your mouse, between the ports of the two devices to make the connection between them. Or if you are using a touch-based device, the Link mode allows you to link bubbles together by dragging a bubble over others so that the connectors touch each other and then pull them apart to their final position.

Setting the Link's Physical Connection Parameters

When a link is selected, the **Physical Connection Table** appears. It is in this table where you create the connections between device ports. When you draw a topology graph and you link two devices, you are indicating that the two devices in two groups are virtually connected. Therefore, you need a place to specify how these devices are actually (physically) connected. This is achieved through the Physical Connections Table. It is in this table where you will actually specify that port1 of device1 that is part of group1 is connected physically with port1 of device1 of group2, for example.



To make a connection, you must start in the Builder tab, and then complete the action in the Candidate tab.

The **Physical Connection Table** uses connection icons as follows.

Icon	State (status)	Action
	The stream is ready to be connected as it has been selected in the Builder tab.	—
	The stream is connected.	Connect: make the connection between the source and destination devices.
	—	Disconnect: break the connection between the source and destination devices.

The **Physical Connection Table** uses port type icons as follows. A source's output port type must be linked to the same input port type at the destination.

Port Type Icon	Description
	The connection type is SDI.
	The connection type is IP.
	The connection type is MADI.

In the **Physical Connection Table**, more than one table row can be selected at a time; to add to a selection, use *Shift* or *Ctrl* to select a range of table rows or to add another row to the selection.

Builder Tab

The Builder tab shows all the outputs and the inputs available for connections. The output streams are shown on the left and the inputs are shown on the right for the selected link. By selecting streams in the Builder tab makes them available in the Candidate tab where they

are then linked. For extra information about an input or output, set **Router external labels**. The Router external labels are only available for router ports and not all device ports.

Device Name	Output Port Id	Output Label	Input Label	Input Port Id	Device Name
Rtr	85	RtrOut85	Men1In1	1	Mon1
Rtr	86	RtrOut86	Men1In2	2	Mon1
Rtr	87	RtrOut87	Men1In3	3	Mon1
Rtr	88	RtrOut88	Men1In4	4	Mon1
Rtr	89	RtrOut89	Men1In5	5	Mon1
Rtr	90	RtrOut90	Men1In6	6	Mon1
Rtr	91	RtrOut91	Men2In1	1	Mon2
Rtr	92	RtrOut92	Men2In2	2	Mon2
Rtr	93	RtrOut93	Men2In3	3	Mon2
Rtr	94	RtrOut94	Men2In4	4	Mon2
Rtr	95	RtrOut95	Men2In5	5	Mon2
Rtr	96	RtrOut96	Men2In6	6	Mon2
Rtr	97	RtrOut97	Men3In1	1	Mon3
Rtr	98	RtrOut98	Men3In2	2	Mon3
Rtr	99	RtrOut99	Men3In3	3	Mon3

To associate a device's output stream to another device's input

- 1 Select one or more source output stream table rows that you want to link to destination's input.
- 2 Drag the source output stream table rows onto the destination input(s).
The selected items become available in the Candidate tab.

You can bypass the Candidate tab as follows: you select all your destination, and all your sources and then with your right mouse button held down you drag the destinations over the sources. With this method, the only way to review your connections is by going into the Connected tab and disconnecting the wrong/unwanted ones.

Candidate Tab

Once a device's output stream has been associated to another device's input in the Builder tab, you can review these associations to then select the ones you want to link together.

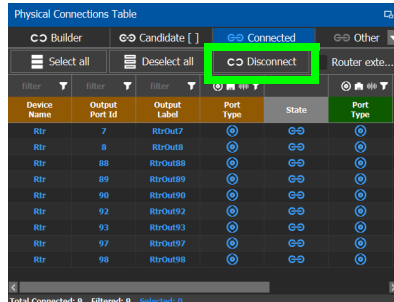
Device Name	Output Port Id	Output Label	Port Type	State	Port Type
Rtr	1	RtrOut1			
Rtr	2	RtrOut2			
Rtr	3	RtrOut3			
Rtr	4	RtrOut4			
Rtr	5	RtrOut5			
Rtr	6	RtrOut6			
Rtr	9	RtrOut9			
Rtr	10	RtrOut10			
Rtr	11	RtrOut11			
Rtr	12	RtrOut12			
Rtr	13	RtrOut13			
Rtr	14	RtrOut14			
Rtr	15	RtrOut15			
Rtr	16	RtrOut16			
Rtr	17	RtrOut17			

To link a device's output stream to another device's input

- 1 Select one or more table rows that you want to link the source's output stream to the destination's input.
- 2 When satisfied with your selection, click Connect at the top of the table.

Connected Tab

This tab shows the currently linked streams between the source's output and the destination's input. Links can be disconnected in this tab.



To disconnect a device's output stream from another device's input

- 1 Select one or more table rows that you want to disconnect the source's output stream to the destination's input.
- 2 When satisfied with your selection, click Disconnect at the top of the table.

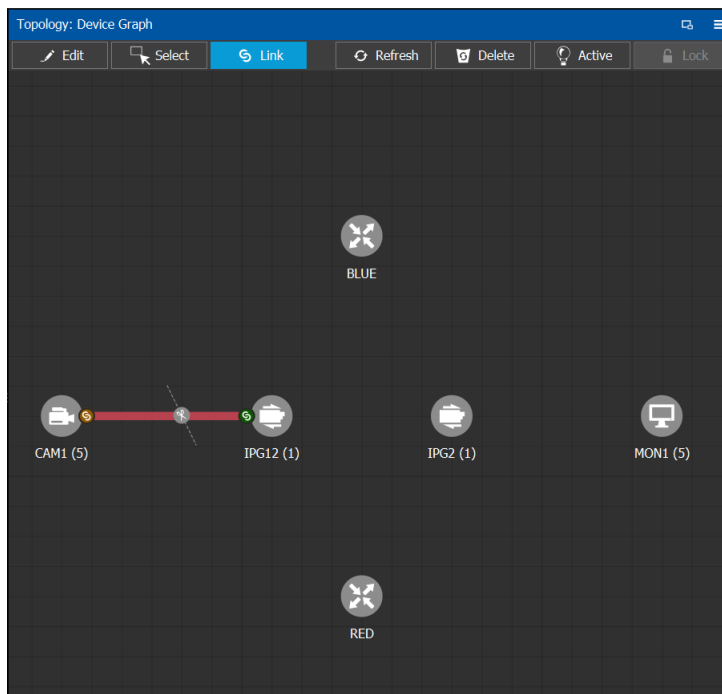
Other Tab

This tab will show you all the other connections that a device's ports has on another links. For example, you have device1 with 20 ports, 10 are connected to device2 and 10 to device3. You select the first link and you connect the 10 ports. You select the second link on the Other tab you will see the first 10 ports that you connected.

Deleting the Connection Between Device Groups

To delete the connection between devices

- 1 Open the required topology in the Device Graph.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.
- 3 Select the required topology. See [Adding Devices to a Topology](#), on page 40.



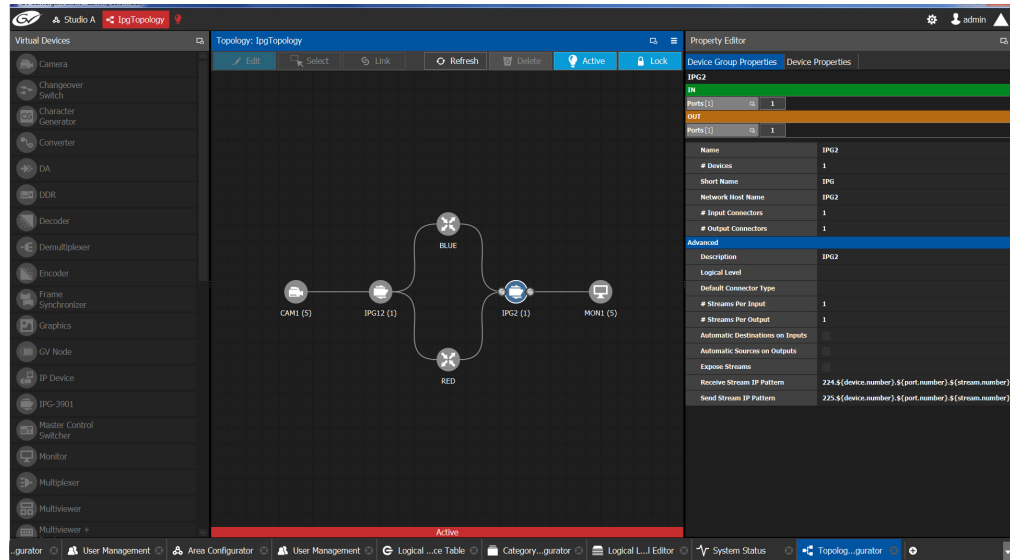
- 4 Select the **Link** button at the top of the interface.
- 5 Draw a line across the connection.
The scissor icon appears on the line and the link turns red.
- 6 Release the mouse.
The connection link is removed.

Defining Properties for the Devices

You set the parameters for the selected device in the **Property Editor**. The configuration parameters for most devices is intuitive and no further explanation is required. However, the configuration of certain devices requires advanced knowledge; see [Special Device Configuration Tasks](#), on page 87 for more information about these devices.

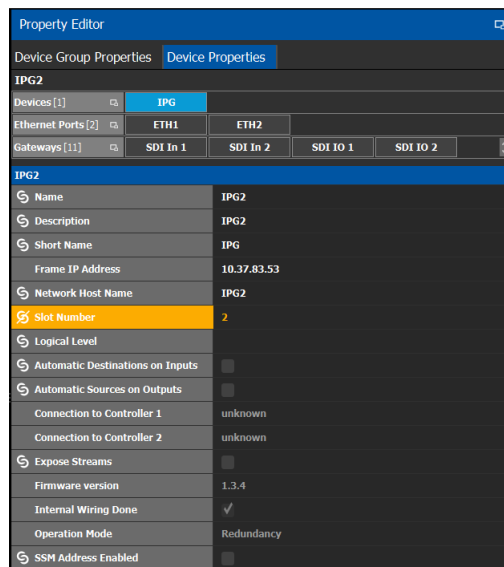
To define properties for a device

- 1 Open the required topology in the Device Graph. See [Selecting a Topology](#), on page 34.
- 2 Select the device you want to configure.
The Property Editor is displayed on the right.



In this case, the IPG2 bubble is selected and the Device Group Properties tab is selected in the Property Editor.

- 3 Select the **Device Properties** tab to view the properties for the individual device.



For example, for the Cameras, there is a Device Group Properties tab for the camera group and a separate tab for each of the five cameras.

Camera Device Group Properties

The screenshot shows the 'Property Editor' window with the 'Device Group Properties' tab selected. The main title is 'CAM1'. Below it, there is a section for 'OUT' with a 'Ports [1]' field set to '1'. A table lists the following properties:

Name	CAM1
# Devices	5
Short Name	CAM1-
Network Host Name	CAM1
# Input Connectors	0
# Output Connectors	1

Below this is an 'Advanced' section with the following properties:

Description	CAM1
Logical Level	SDI-HD
Default Connector Type	
# Streams Per Input	1
# Streams Per Output	1
Automatic Destinations on Inputs	<input checked="" type="checkbox"/>
Automatic Sources on Outputs	<input checked="" type="checkbox"/>
Expose Streams	<input checked="" type="checkbox"/>
Receive Stream IP Pattern	224.\${device.number}.\${port.number}.\${stream.number}
Send Stream IP Pattern	225.\${device.number}.\${port.number}.\${stream.number}

Camera Device Properties

The screenshot shows the 'Property Editor' window with the 'Device Properties' tab selected. The main title is 'CAM1'. Below it, there is a row of device buttons: 'CAM1-1', 'CAM1-2', 'CAM1-3', 'CAM1-4', and 'CAM1-5'. The 'CAM1-1' button is selected. Below this, there is a 'Control Ports [0]' field with a plus sign. A section for 'OUT' has a 'Ports [1]' field set to '1'. A table lists the following properties for 'CAM1 1':

Name	CAM1 1
Description	CAM1 1
Short Name	CAM1-1
Network Host Name	CAM1-1
Logical Level	SDI-HD
# Input Connectors	0
# Output Connectors	1
Default Connector Type	
# Streams Per Input	1
# Streams Per Output	1
Automatic Destinations on Inputs	<input checked="" type="checkbox"/>
Automatic Sources on Outputs	<input checked="" type="checkbox"/>
Expose Streams	<input checked="" type="checkbox"/>

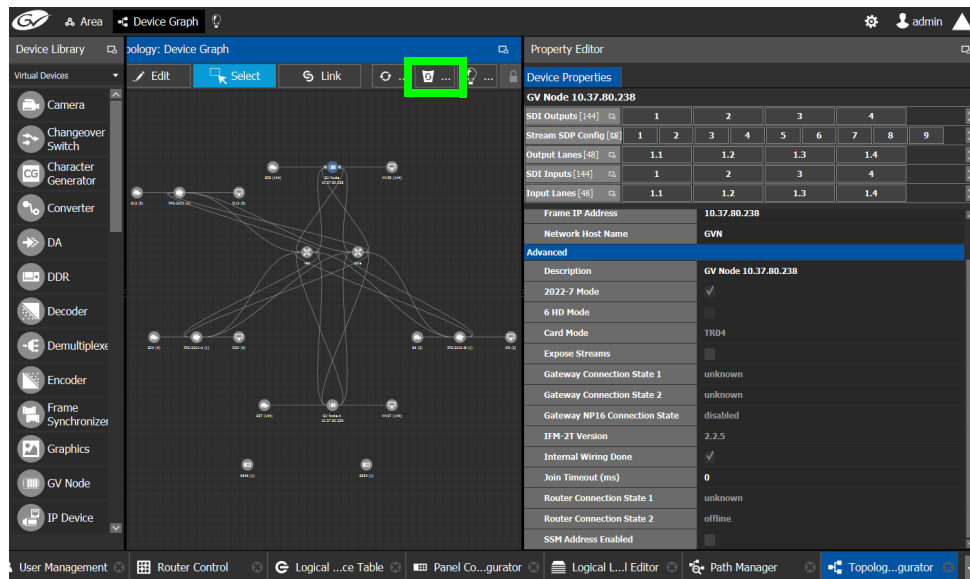
Note: All devices, device groups, and connections have properties.

Deleting a Device From a Topology

You must open a topology in the Topology Configurator before you can delete it.

To delete a topology

- 1 Select the Area. See [Selecting an Area](#), on page 23.
- 2 Select the topology. See [Selecting a Topology](#), on page 34.



- 3 Select the device you want to remove.
The device is highlighted on the graph.
- 4 Click **Delete**.

Activating a Topology

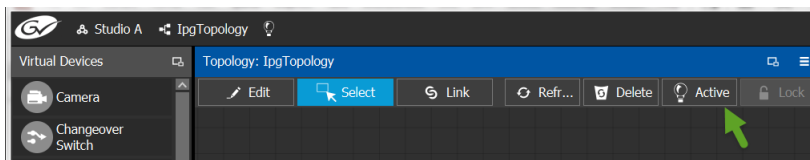
By activating a topology makes GV Convergent connect to and activate all drivers to devices in the topology. For example, for a GV Node it means initiating the Densité and NP0016 connections and being able to control them. By activating a topology, panels will become active and light up.

You must select a topology and open it in the Topology Configurator before you can make it active.

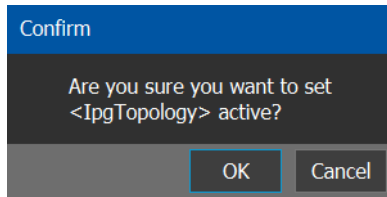
Note: Only one topology can be active at a time for each area.

To make a topology active

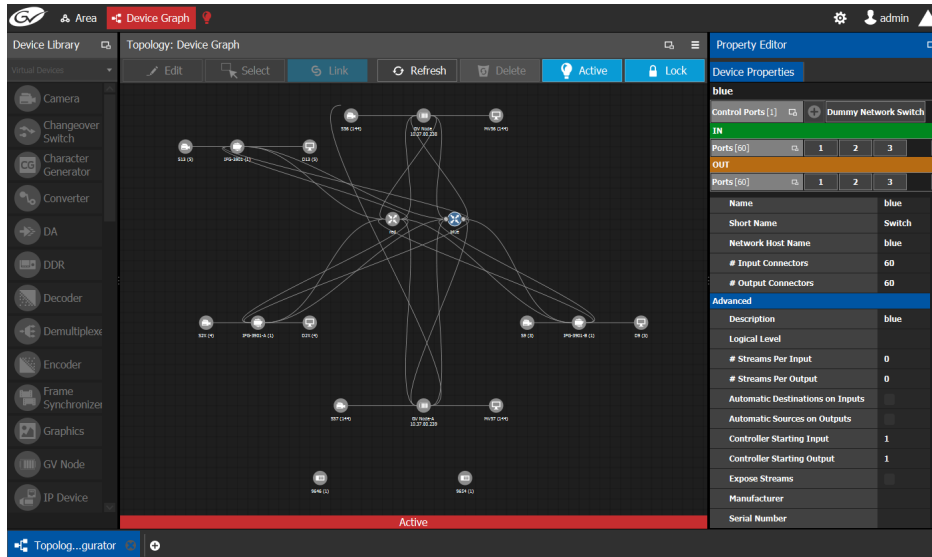
- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.



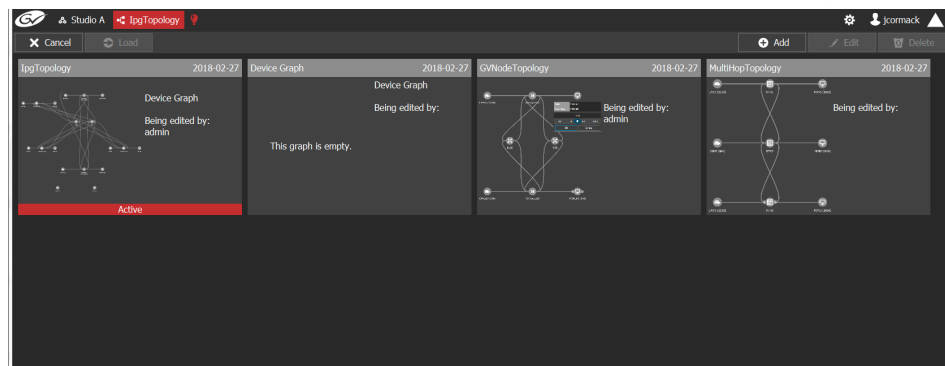
- 3 Click **Active** at the top of the Topology Configurator.
A confirmation message appears.



- Click **OK** to continue.
The following changes occur.



- The topology name is displayed in red at the top of the Topology Configurator.
- A red lightbulb is displayed beside the topology name.
- A red bar is displayed at the base of the Device Graph.
- Active is written on the bar.
- The topology is locked.
- The red Active bar is displayed on the thumbnail for the active topology.

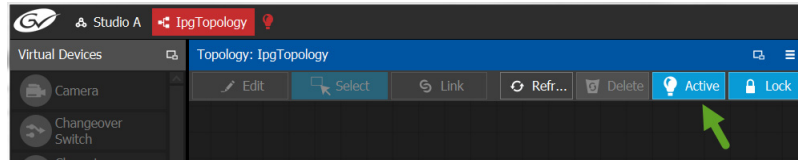


Making an Active Topology Inactive

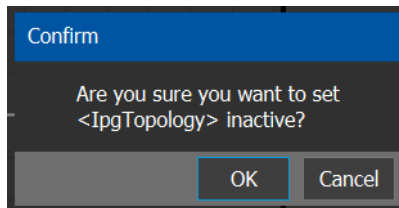
Only one topology can be active at a time for each area. You must open the active topology in the Topology Configurator before you can make it inactive.

To make an active topology inactive

- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Adding Devices to a Topology](#), on page 40.

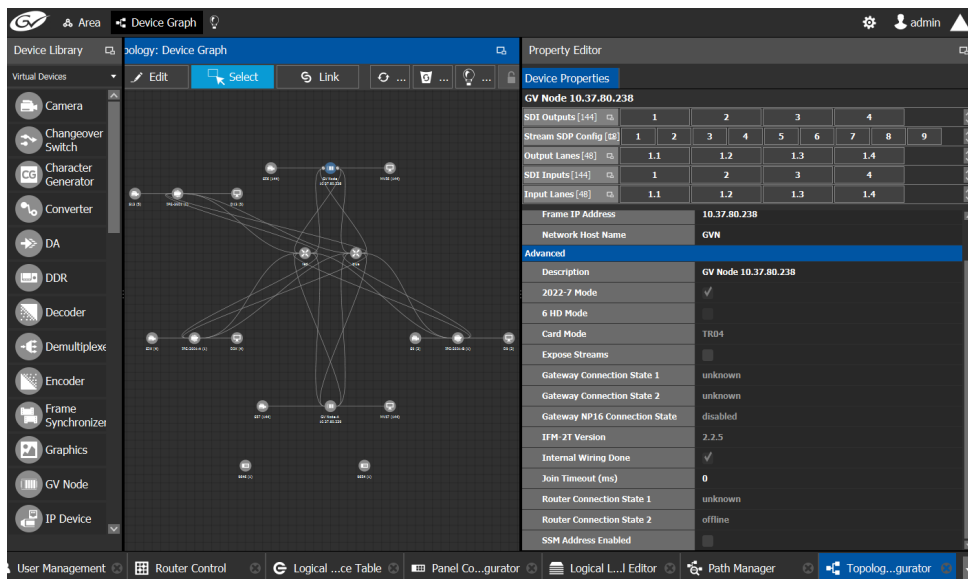


- 3 Click the **Active** button at the top of the Topology Configurator.
A confirmation message appears.



- 4 Click **OK** to continue.

The following changes occur.



- The topology name no longer appears in red at the top of the Topology Configurator.
- The red bar no longer appears at the base of the Device Graph.
- The topology is unlocked.
- The red Active bar is no longer displayed on the thumbnail for the active topology in the secondary window.

Unlocking / Relocking a Topology

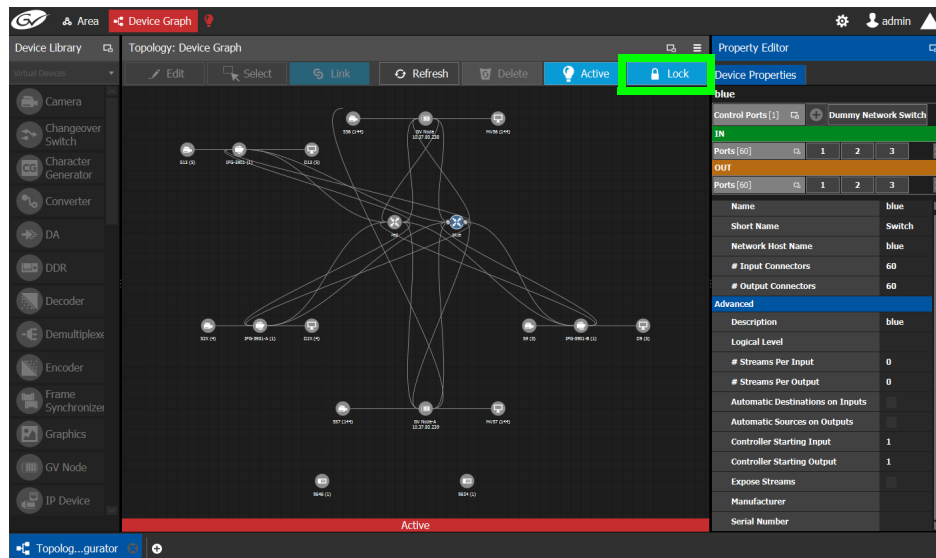
A topology is locked automatically when you make it active. The lock only affects the current GV Convergent Client application. If multiple users have the same topology open,

then each user can lock/unlock their client to do edits; this setting is not global to all open clients.

To unlock an active topology

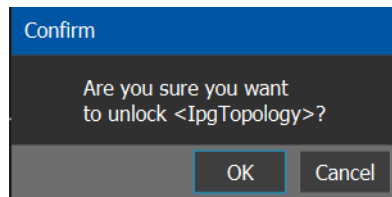
- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.

This opens the topology in the Topology Configurator.

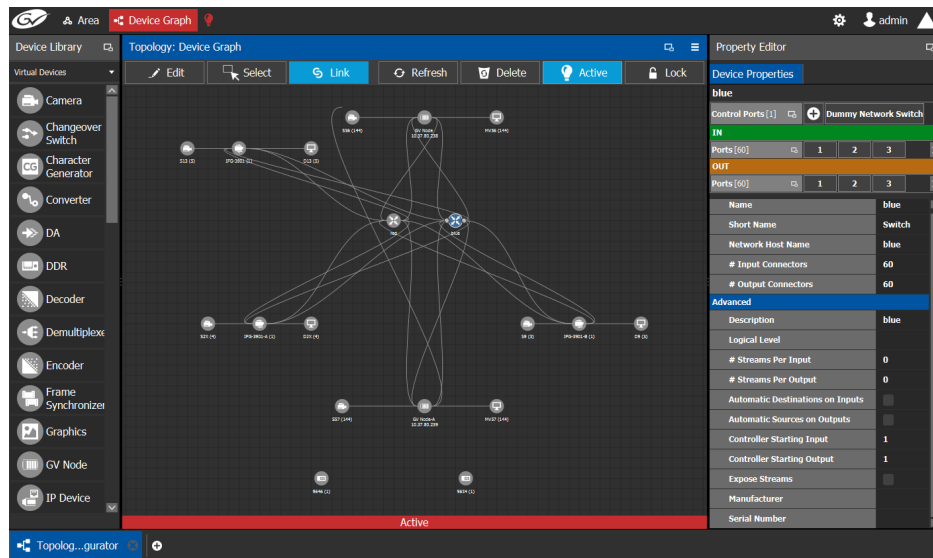


- 3 Click the **Lock** button.

A confirmation message appears.



- 4 Click **OK** to continue.



When a topology is unlocked

- The Lock icon is no longer highlighted in blue.
- The lock icon is unlocked.
- If you have Edit permissions to the Topology Configurator for the selected area, you can modify the active topology.

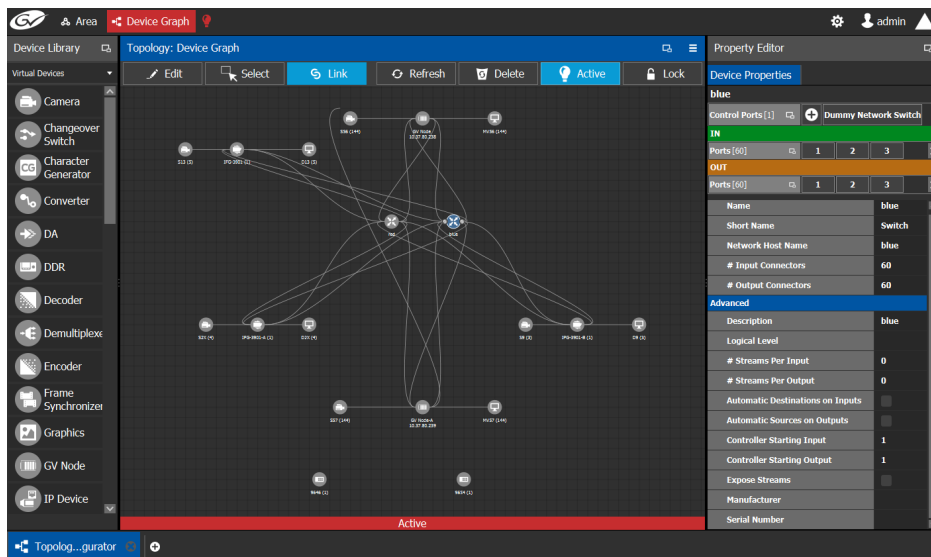
Locking an Unlocked Topology

It is recommended to relock an unlocked topology, when you have finished your edits. This prevents you from inadvertently making edits on an active topology, such as selecting an object and pressing delete by accident.

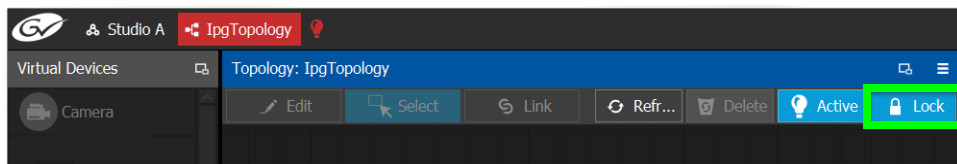
Note: You can only lock an unlocked active topology. Inactive topologies cannot be locked or unlocked.

To lock a unlocked active topology

- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.
This opens the topology in the Topology Configurator.



- 3 Click the unlocked Lock button at the top of the Topology Configurator.
No confirmation message appears.



The **Lock** icon switches to the locked state.
No one can edit the topology.

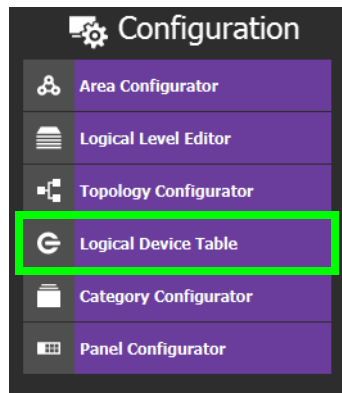
Logical Device Table Tasks

Use the Logical Device Table task to view and configure the streams for the logical levels. The Logical Device Table task is also where you create virtual crosspoints (XPTs) and to configure logical destination devices that are related to these virtual XPTs. See [Configuring Virtual Crosspoints \(XPTs\)](#), on page 61.

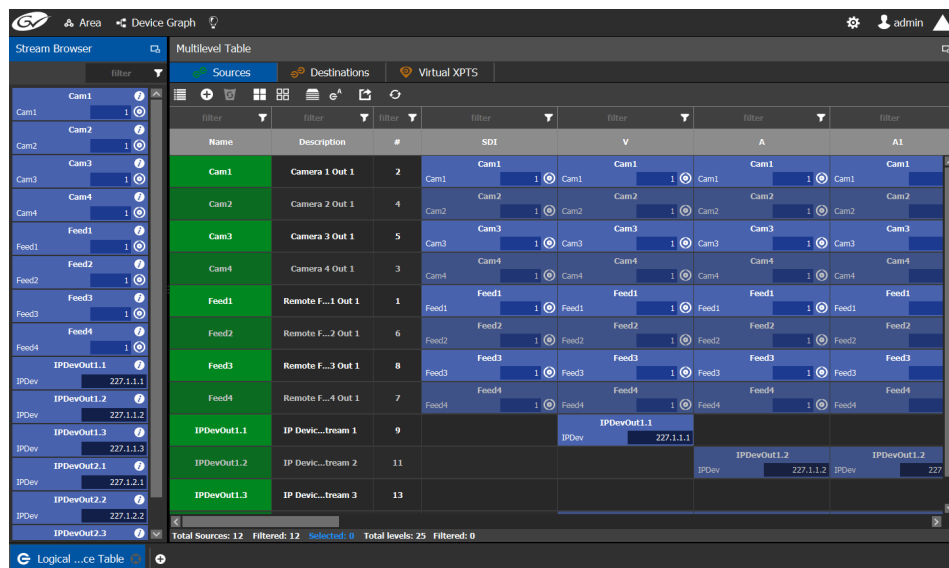
Accessing the Logical Device Table task

To access the Logical Device Table Task

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select an area. See [Selecting an Area](#), on page 23.
- 3 Select a topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Configuration > Logical Device Table**.



The Logical Device Table task appears.



The default streams, for your topology, are displayed in the left hand column under **Stream Browser**.

There are two tabs in the right hand column under **Multilevel Table**.

- 5 Select **Sources** to view the streams from the sources.

The Logical Level associated with the source are displayed. For information on the logical levels, see [Logical Level Editor Tasks](#), on page 24.

- 6 Scroll down in the **Sources** view to see all the levels for the selected source.


Modifying the Default Sources in the Logical Level Table

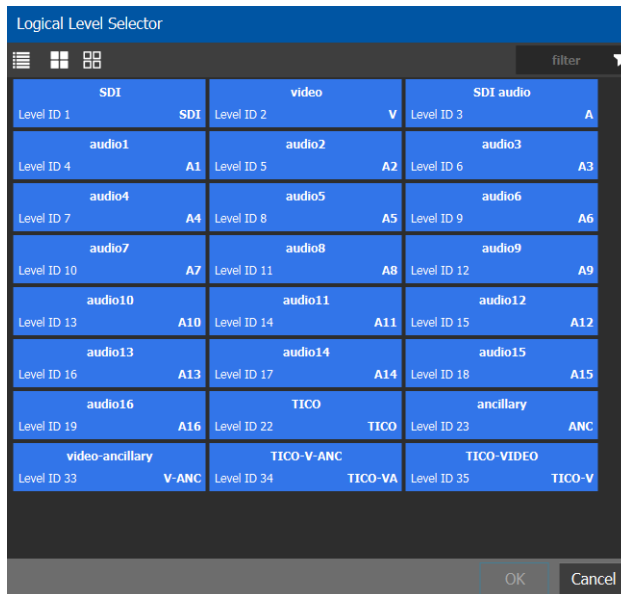
Note: You cannot delete a default source from the Logical Level Table. However, you can modify the levels associated with the source. Also, you can modify or delete the sources that you create.

If you try to delete a default source from the Logical Level Table, the following message is displayed at the bottom of the task.

The selected sources are automatically generated, and cannot be deleted. **OK**

To modify the logical levels associated with a source

- 1 Select a Source in the Logical Device Table. See [Accessing the Logical Device Table task](#), on page 54.
- 2 Click the Logical Levels icon  at the top of the table.
A secondary window opens displaying the levels for the selected source.



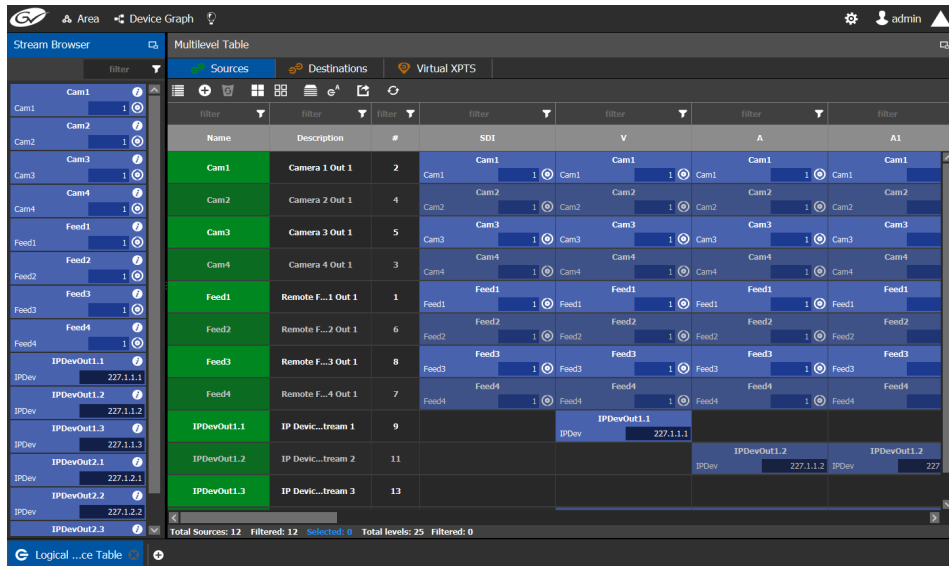
- 3 Select one or more levels you want to use for the selected source.
- 4 Click **OK**.

Adding a Source to the Logical Level Table

By default, the logical device table displays the sources in the selected topology. You can add a logical device to the table that is not in the topology. You would then have the option of switching to the new logical device in place of the existing device.

To add a source to the logical level table

- 1 Open the logical level table for the required topology.

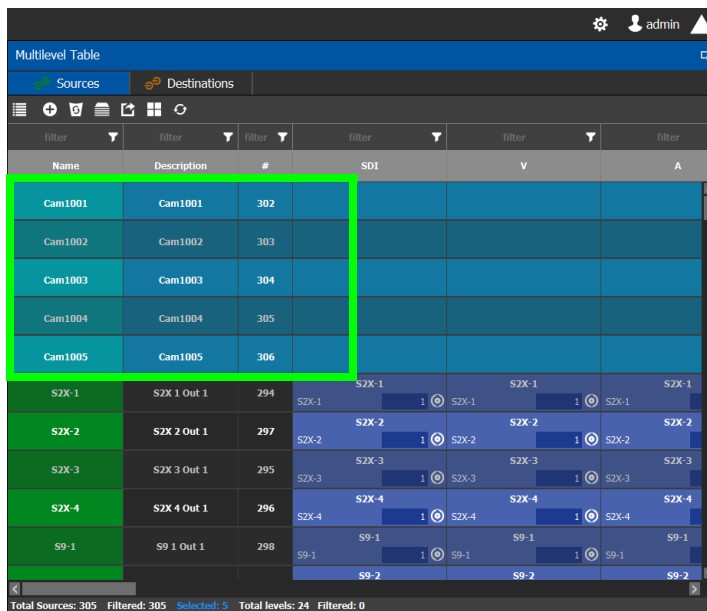


- 2 Click the **Add** icon at the top of the table.
A secondary window appears.

Base Name:	CAM100
Start Index:	1
Count (Max 200):	5
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

- 3 Enter the required information in the **Base Name**, **Start Index**, and **Count** fields.
- 4 Click **OK**.

New sources are created. The **Base Name** is displayed under the **Name** and **Description** fields. The number of new sources created corresponds to the number you enter in the **Count** field.



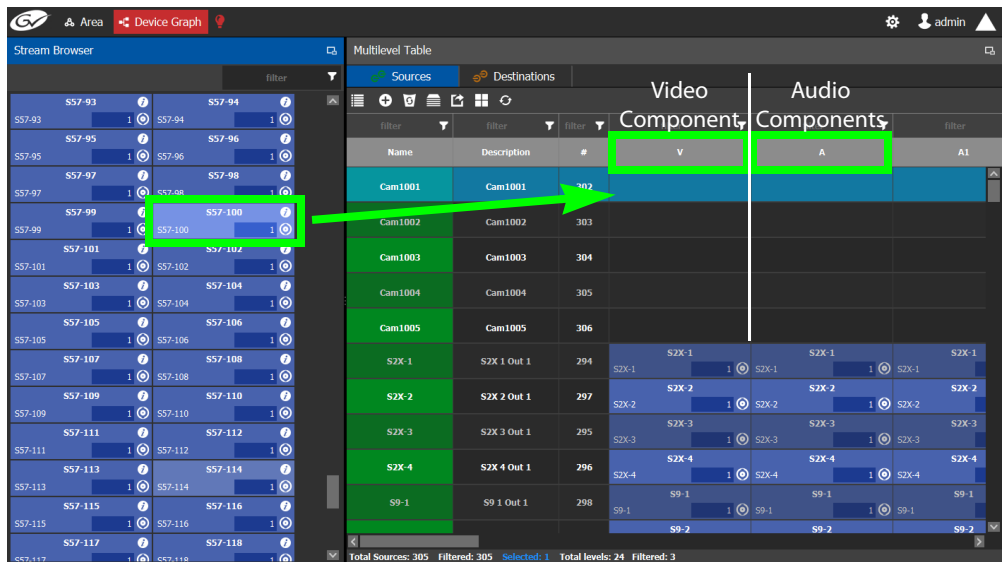
In the example, five new sources are created. The name for each device begins with the base name CAM100. A number is appended to the base name. This begins with the starting index and increases by one for every number in the count.

Configuring Streams for New Sources

After creating new sources, the next step is to configure the streams for them. Different streams can be assigned to different levels, so that a source is composed of streams from different devices (to do implicit breakaway). For instance, you could create a source with Video from a GV Node and the audio from an IPG-3901 or IPG-4901. You would do this by assigning the GV Node stream under SDI, and the IPG-3901 or IPG-4901 stream under Audio.

To configure streams for the new sources

- 1 Open the logical level table for the required topology.
In the left hand column under **Stream Browser**, the default streams for your topology are displayed.
- 2 Drag a stream onto a source.



In the above image, a stream is added to a source for its video components. Drag the same stream or another stream from the **Stream Browser** to a source to add its audio components.

Adding and Configuring a Destination

The procedures for adding and configuring destinations are the same as for adding and configuring sources. For details, see [Adding a Source to the Logical Level Table](#), on page 56 and [Configuring Streams for New Sources](#), on page 58.

Deleting a Source or Destination

You can delete any source or destination that you create.

To delete a source or destination

- 1 Open the Logical Device Table task for the required topology.
- 2 Select the Sources tab or the Destination tab according to what you are deleting.
- 3 Select the sources or destinations in the table.


Note: You can delete one or more sources or destinations at the same time.

- 4 Click the **Delete** icon .

Exporting a Logical Device Table

You can export the data in your logical device table in a csv file.


To export a logical device table

- 1 Open the Logical Device Table task for the required topology.
- 2 Click the **Export** icon .
- 3 Navigate to the folder where you want to save the file.
- 4 Click **Save**.

Selecting all Devices in the Logical Device Table for Export

You can select all devices in the logical device table, for example, to export the Device Table's configuration data to a csv file.

To select all the devices and save their configuration data

- 1 Open the Logical Device Table task for the required topology.
- 2 Click the **Export** icon .
- 3 Navigate to the folder where you want to save the file.
- 4 Click **Save**.

Create Logical Devices with Shuffled Audio

You can define the audio configurations for logical sources by selecting any audio sub-stream (from a MAD1 stream for example) in the Logical Device Table and change its pre-assigned level directly in the table.

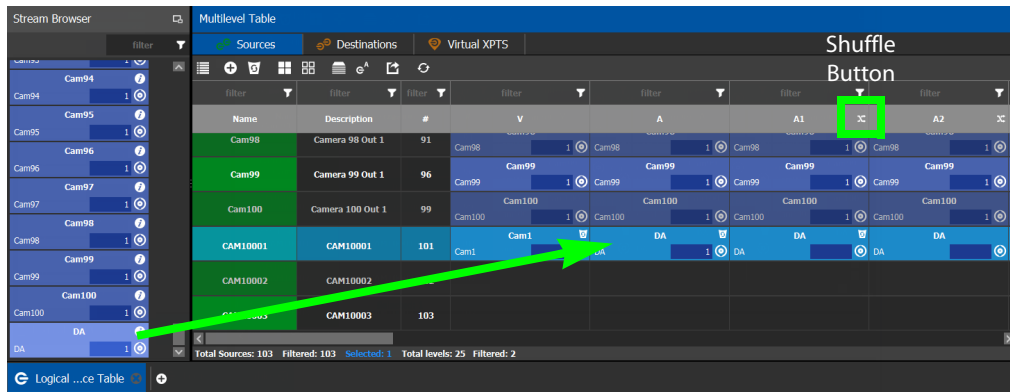
For example:


- you may have audio embedded on the first 8 audio channels for English-language program and the last eight channels for French-language program. In this scenario, the first logical source would have the implicit stream for audio in only the first 8 audio logical levels (that is, associated to audio 1 to audio 8) and the second logical source would have those same first 8 logical levels of audio explicitly defined with the same stream, but the audio logical levels are associated to audio 9 to audio 16.

- a user defined destination logical device may include MAD1 audio. In order to define the destination as utilizing the logical source audio from logical levels audio 1 and audio 2 onto logical levels audio 11 and audio 12, it is necessary to place the destination device stream under logical levels audio 11 and audio 12, but define the source audio of the stream as coming from source logical levels audio 1 and audio 2, respectively.

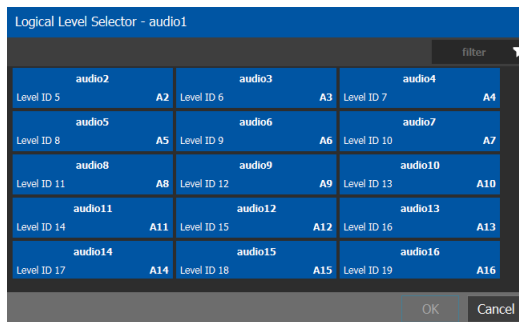
To create logical devices with shuffled audio


- 1 Create one or more new logical devices. See [Adding a Source to the Logical Level Table](#), on page 56.
- 2 Drag a stream from the stream browser (for example, an audio stream) and drop it on its corresponding level on the newly created logical device (audio level, **A**). Once the stream is dropped on its level, all the corresponding sub-levels will be automatically filled in (**A1** to **A16**). The table will show the main stream on the audio level and 16 other sub-levels contained in this level.

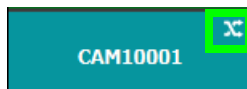


If the selected row/cell is eligible for shuffling, a shuffle button  will appear in the column header.

- 3 Select the row and click the shuffle button to open a logical level selector with the filtered compatible levels available for selection.

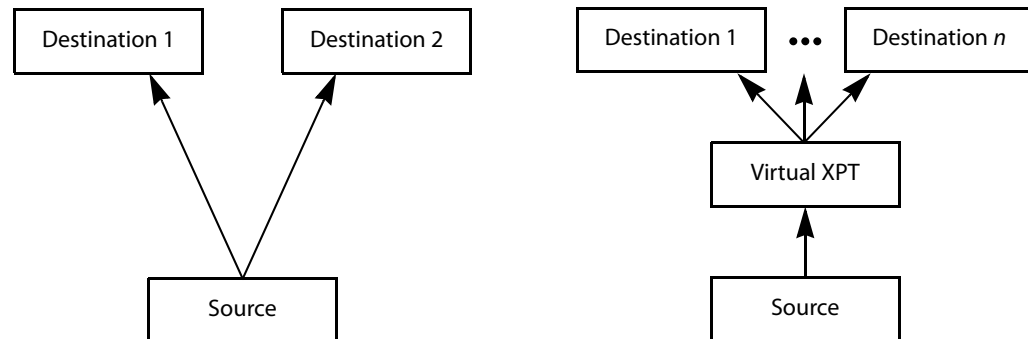


- 4 Select a new level to assign to the stream. If for example, the stream is on audio1 and you want to change it to audio9, select the **audio9** level from the stream. Click **OK**. The shuffle icon  will appear next to the name for the row to indicate that one or more audio levels have been shuffled.



Configuring Virtual Crosspoints (XPTs)

Without virtual XPTs, only one route can be made for each task. Virtual XPTs are used when multiple outputs are required to be switched to the same source *in a single take*.



Virtual XPTs can be used to:

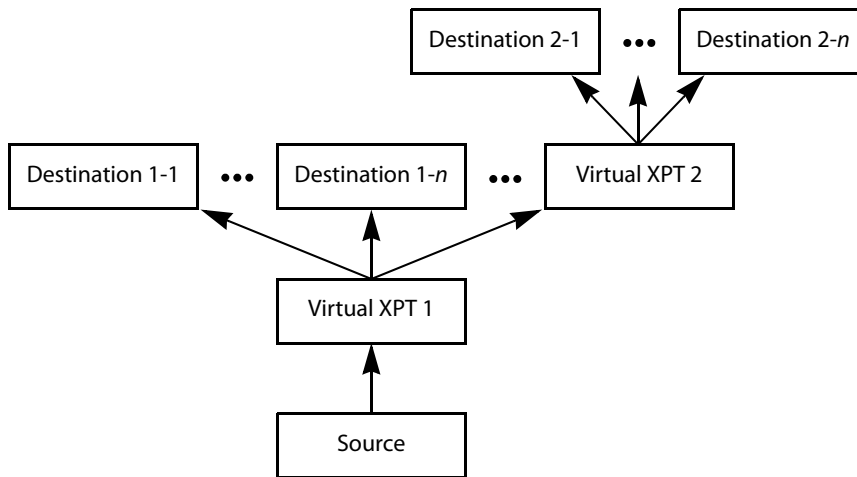
- Show user-friendly device names on the operators' control panels. For example, the name of the virtual XPT is shown on control panels when used.
- Hide implementation details from the operator(s). For example, in a transparent fashion, an output signal is also sent to a monitor.

Virtual XPTs are used for the following two primary applications:

- Monitoring: to follow the source routed to a given destination and to route that same source to other destinations as needed.
- Utility DA (distribution and amplifier): to allow for a configurable virtual destination/source that can be routed to other real destinations.

The following virtual XPT functional behaviors are by design:

- A take with a virtual XPT will fail if the path to the source does not exist and as a consequence the virtual source will fail. The status (Tally) will not reflect this.
- A take with a virtual XPT's destination will be ignored if the take fails.
- A logical destination can only be added to one virtual XPT destination at a time. Once a real destination has been added to a virtual XPT, it is no longer available to be used with other virtual destinations. A pop-up message is shown if you try to add a logical destination that has already been added to another virtual XPT. Click **OK** to remove the logical destination from the previous virtual XPT and add to it the new virtual XPT.
- You can only route virtual sources to unrelated virtual destinations that are not associated with the same virtual XPT. This allows you to increase the number of logical destination devices that can be switched with a single route. Routing a logical source device to the virtual destination of another virtual XPT will route said source to all logical destination devices that the virtual source is routed to. Routing that virtual source to another virtual destination, will mean routing the original logical source device to all destination devices that the corresponding virtual source was routed to, as well.

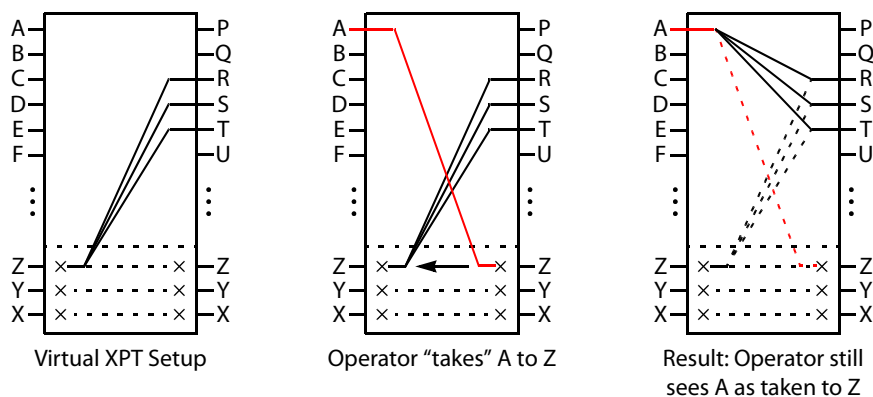


Routing a logical source device to the virtual destination of another virtual XPT

- A virtual XPT can have up to 100 real logical destinations.
- The status of a virtual XPT is shown in the Path Manager. See [Accessing the Path Manager](#), on page 112.
- Adding a logical destination device to a virtual XPT changes the status of the destination to the virtual source - with the logical source device content being routed to the logical destination device(s). Removing the logical destination device from a virtual XPT, will change the status of that destination to the logical source device.

Virtual XPT Use Scenario 1

In this scenario, the physical level is set up so that any source routed to destination Z will be taken to the following destinations: R, S, and T.



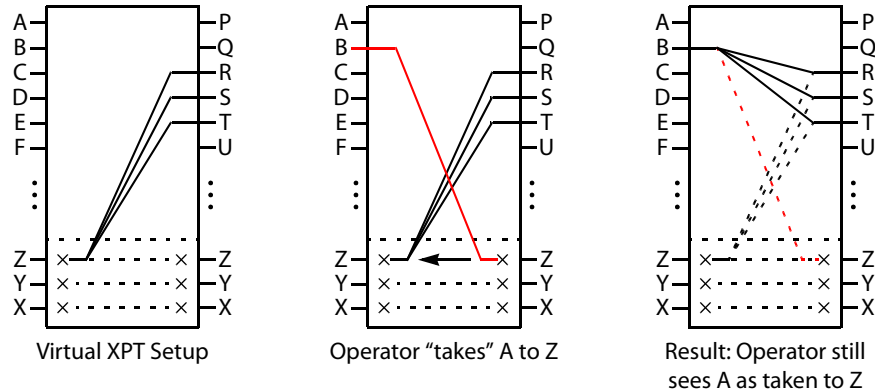
If the operator takes A to Z, the software “discovers” that source Z is virtually routed to R, S, and T. Therefore, it routes A to R, S, and T as real routes.

Here, a source was taken to multiple destinations with a single take, and that fact was concealed from the operator. The operator’s control panel reports that A was taken to Z. The Path Manager can be used to know the actual path that was internally used by the router; see the [Path Manager Tasks](#), on page 112.

Other inputs can be taken to Z with a similar result: that source will be taken to destinations R, S, and T.

Virtual XPT Use Scenario 2

In this scenario, the virtual XPT setup is the same as for scenario 2.



If the operator takes B to Z, the software "discovers" that source Z is virtually routed to R, S, and T. Therefore, it routes B to R, S, and T as real routes.

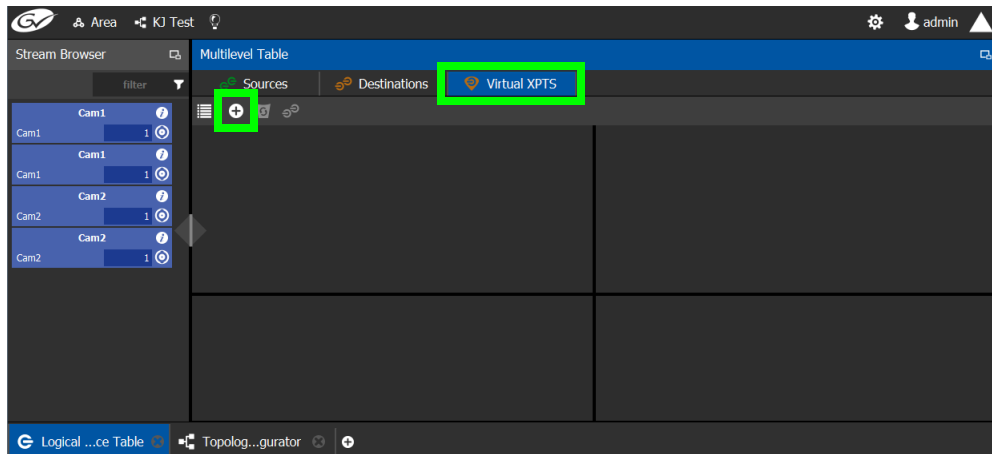
The operator's control panel reports that A was taken to Z. The operator executed a single take.

This scenario illustrates that any time an operator takes a source to virtual XPT destination *n*, the router actually takes the source to the real destinations "connected" to virtual XPT source *n*.

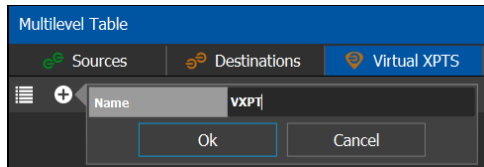
To create Virtual XPTs

Virtual XPTs are created in the Logical Device Table task.

- 1 In the Topology Configurator, activate the topology. See [Activating a Topology](#), on page 49.
- 2 Open the Logical Device Table task. See [Accessing the Logical Device Table task](#), on page 54.
- 3 Select the **Virtual XPTs** tab.

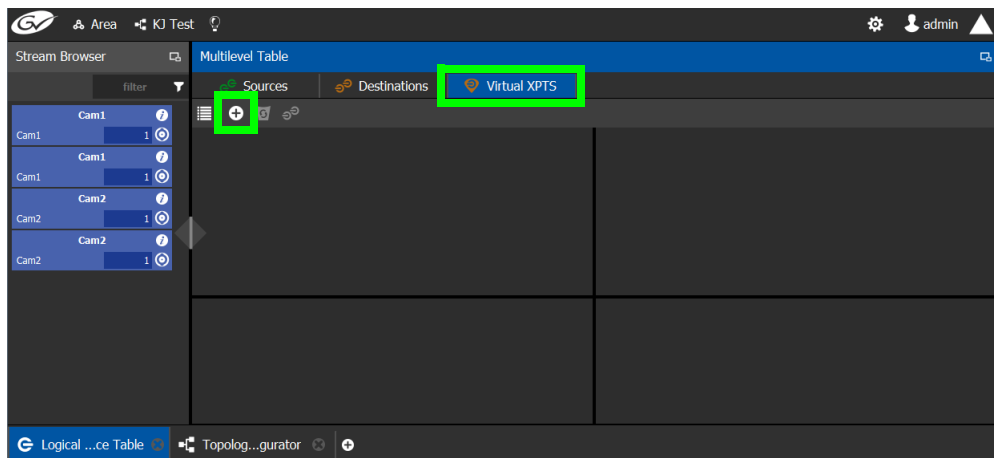


- 4 Click **Add** (+).



- 5 Enter a name for the new virtual XPT and click **OK**.


The new virtual XPT is added to the **Multilevel Table** under the **Virtual XPTS** tab.

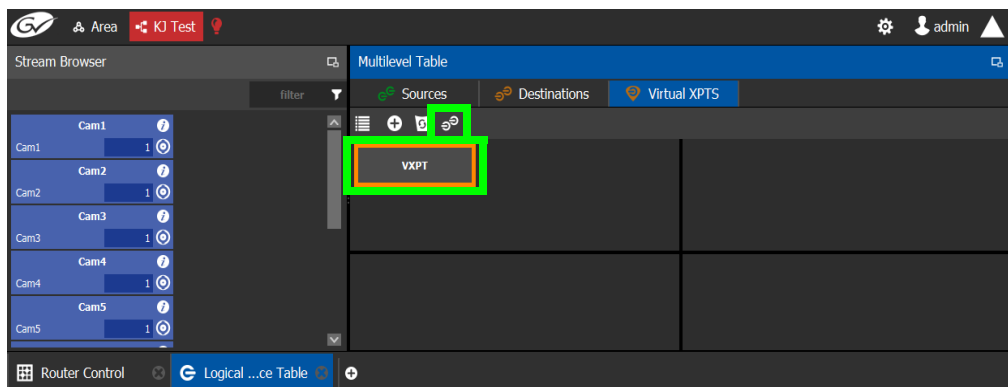


A new logical source and a new logical destination are created automatically in the system with the name of the virtual XPT.



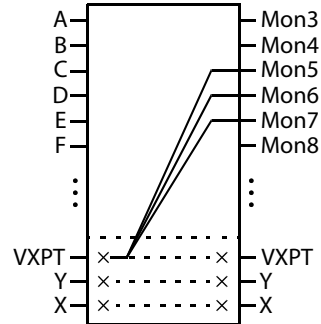
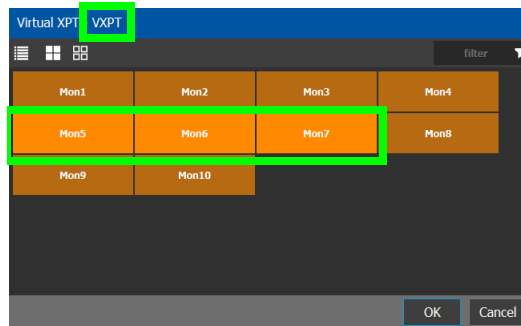
Virtual source and destination filters are available for you to filter on virtual XPTs when configuring the panel, categories, and router control user interfaces. See [Filtering Sources and Destinations](#), on page 68

- 6 Add the default destinations for the virtual XPT. Select the virtual XPT and then click Destinations .



A list of all currently available destinations appears.

- 7 Select the default destinations the virtual XPT will use and click **OK**.



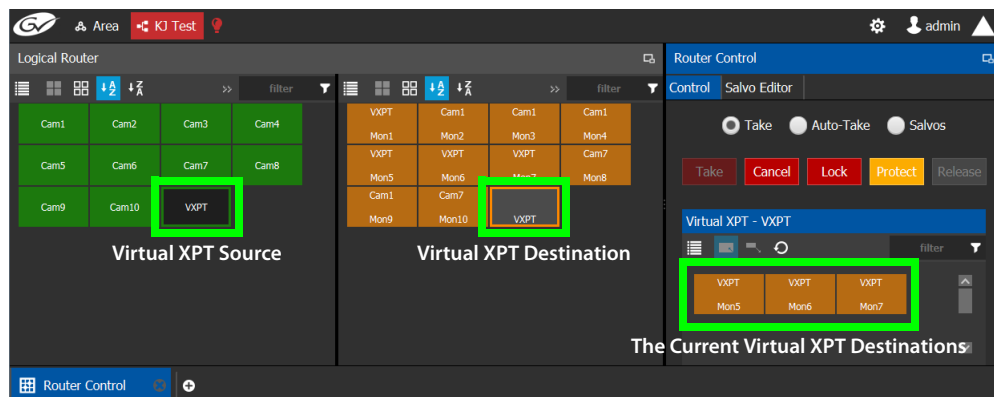
In this scenario, the physical level is set up so that any source routed to destination **VXPT** will be taken to the following destinations: **Mon5, Mon6, and Mon7**.

Once you have created one or more Virtual XPTs, you can start using them in Router Control.

To perform a take with a Virtual XPT

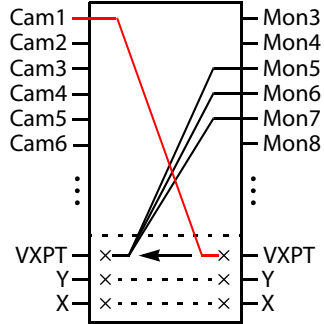
You must first create and activate the topology in the Topology Configurator. You perform takes with a Virtual XPT in Router Control. See also [Performing Actions in Router Control](#), on page 124.

- 1 In the Topology Configurator, activate the topology. See [Activating a Topology](#), on page 49.
- 2 Create a virtual XPT in the Logical Device Table task. See [To create Virtual XPTs](#), on page 63. As an example, in this procedure, the name of the virtual XPT is **VXPT**.
- 3 Open Router Control. See [Accessing the Router Control Task](#), on page 124.

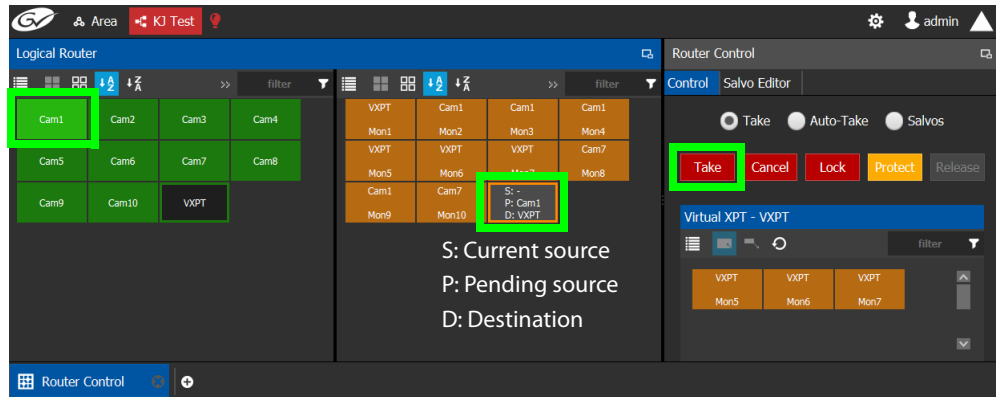


The default virtual XPT destinations that were configured in the Logical Device Table are shown by selecting the virtual XPT destination. See [To create Virtual XPTs](#), on page 63.

- 4 To route Cam1 to Mon5, Mon6, and Mon7 using the virtual XPT **VXPT**, perform a take **Cam1** to destination **VXPT**.



First click the destination virtual XPT **VXPT** and then click **Cam1** and finally click **Take**.



The destination virtual XPT **VXPT** button shows the current source.

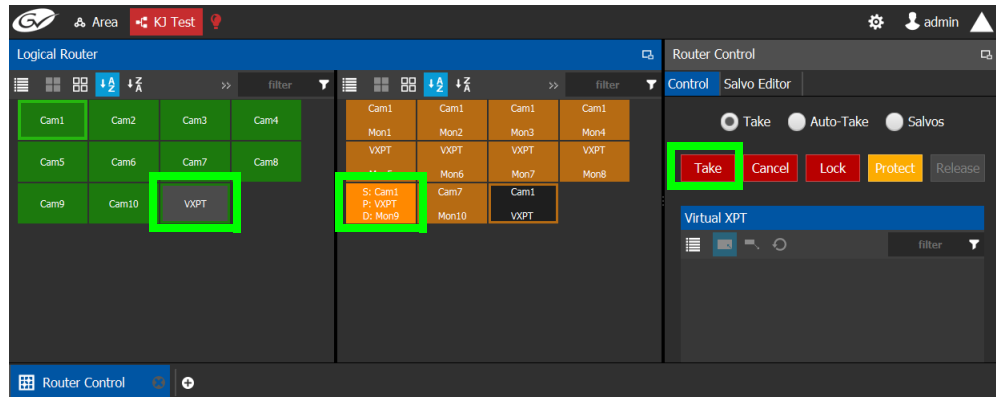


The Path Manager can be used to know the actual path that was internally used by the router; see the [Path Manager Tasks](#), on page 112.

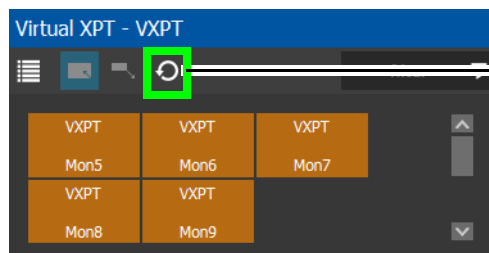
To dynamically add a Virtual XPT destination

Destinations can dynamically be added to a virtual XPT. In this example, **Mon8**, and **Mon9** are added to the virtual XPT **VXPT**'s destination.

- 1 In the Topology Configurator, activate the topology. See [Activating a Topology](#), on page 49.
- 2 First click the source virtual XPT and then click **Mon8** and finally click **Take**.
- 3 First click the source virtual XPT and then click **Mon9** and finally click **Take**.



The current destinations for the selected virtual XPT are updated.



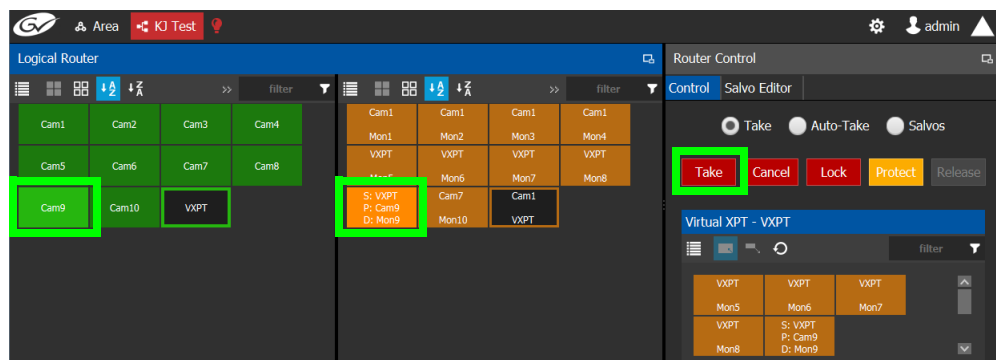
Click to revert to the default virtual XPT destinations configured in the Logical Device Table

See also [Performing Actions in Router Control](#), on page 124 for more information about how to use the controls available in this window. The Path Manager can be used to know the actual path that was internally used by the router; see the [Path Manager Tasks](#), on page 112.

To dynamically remove a Virtual XPT destination

Destinations can dynamically be removed from a virtual XPT. In this example, **Mon9** is removed from the virtual XPT **VXPT**'s destinations. This is done by assigning the destination to be removed to another source.

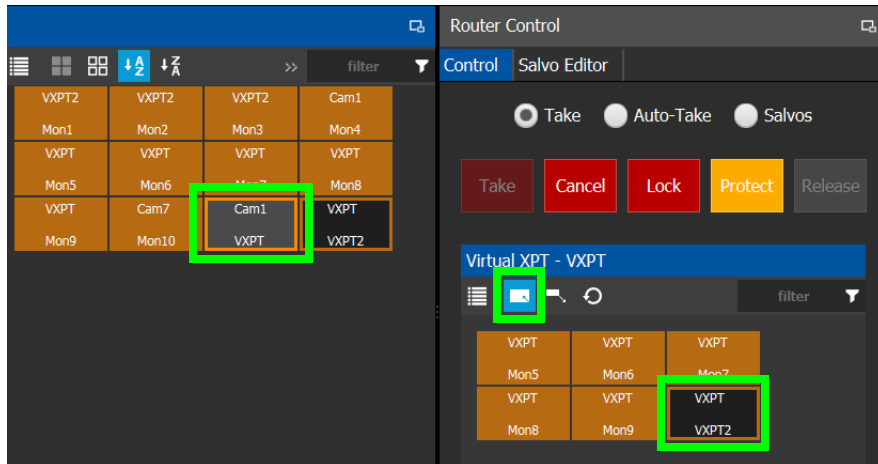
- 1 In the Topology Configurator, activate the topology. See [Activating a Topology](#), on page 49.
- 2 First click the destination **Mon9** then click **Cam9** and finally click **Take**.



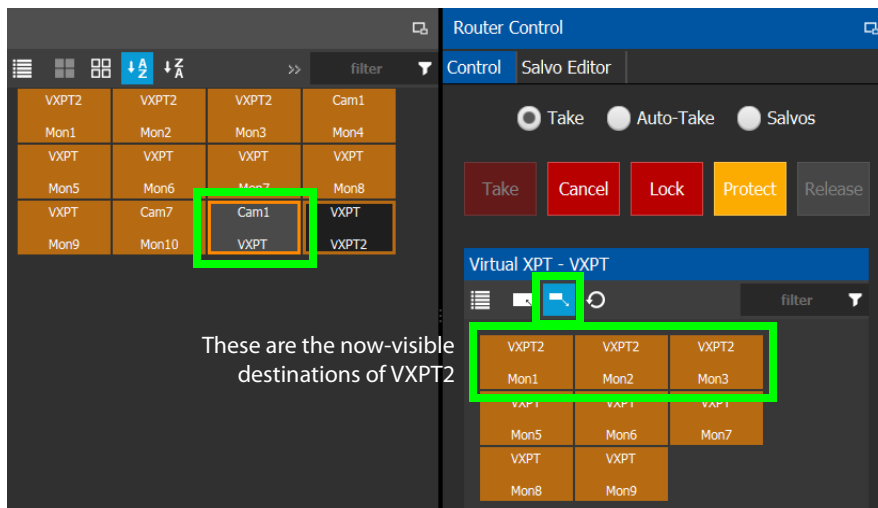
Minimize and Expand Virtual XPT Destinations

In the Router Control Task, when a virtual XPT is routed to another virtual XPT, the second virtual source is nested in the first virtual XPT. See [Routing a logical source device to the virtual destination of another virtual XPT](#), on page 62.

As shown below, when **Minimize Virtual XPT**  is selected, the VXPT2 virtual XPT is shown minimized.



As shown below, when **Expand Virtual XPT**  is selected, all destinations are shown, including the nested destinations of all other virtual XPTs.

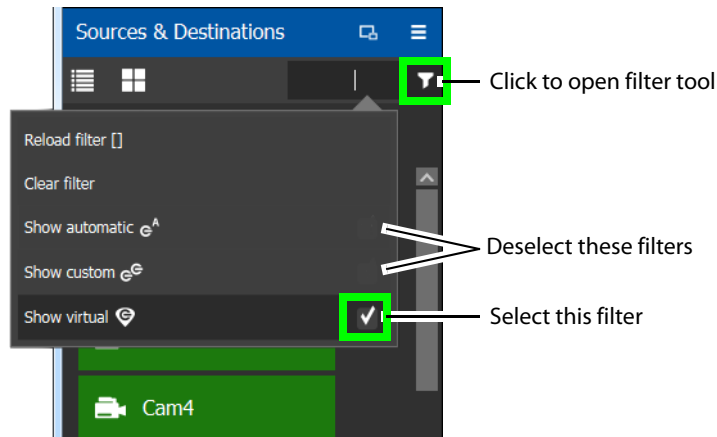


These are the now-visible destinations of VXPT2

See also [Performing Actions in Router Control](#), on page 124 for more information about how to use the other controls available in this window.

Filtering Sources and Destinations

Virtual source and destination filters are available for you to filter on virtual XPTs when configuring the panel and category configurator user interfaces. To show virtual XPT sources or destinations only, enable the **Show virtual** setting in the filters dialog only.



Category Configurator Tasks

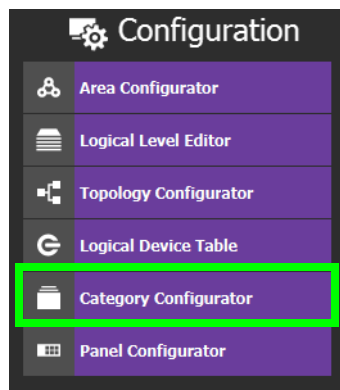
Use the Category Configurator to make it easier to manage the sources in your topologies. Creating groups or categories, based on type or use, is useful when you have multiple resources.

Categories are used to group sources and destinations together thereby allowing them to be accessed quickly on a panel, either by adding a category button or by using keyboard shortcuts.

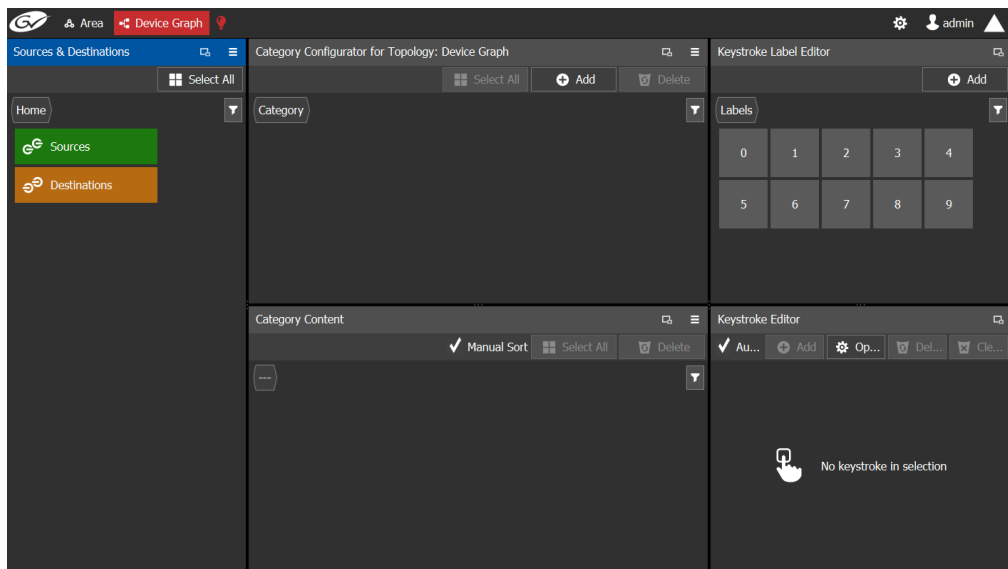
Accessing the Category Configurator

To access the Category Configurator Task

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select an area. See [Selecting an Area](#), on page 23.
- 3 Select a topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Configuration > Category Configurator**.



The Category Configurator task opens:



The Category Configurator has three columns and two rows. The Sources and Destinations column on the left. See:

- [Creating a Category for the Sources in Your Topology](#), on page 70
- [Assigning a Keystroke Label to a Source or Destination](#), on page 72
- [Creating a Keystroke Label](#), on page 73

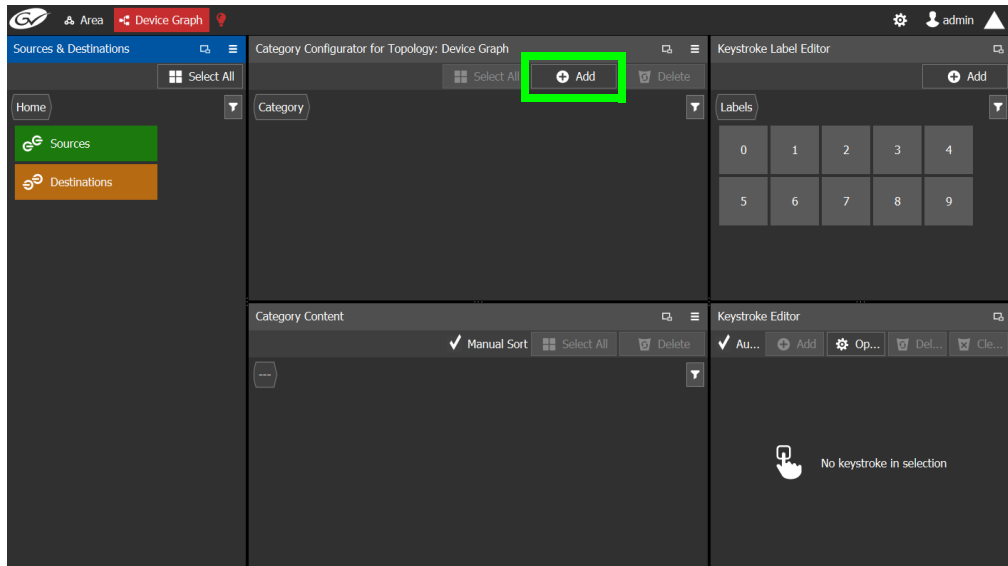
Creating a Category for the Sources in Your Topology

When you first open the Category Configurator, the Home tab appears in the Sources and Destinations tab.

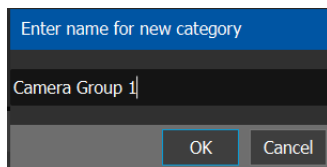


To create a category for your sources

- 1 Open the Category Configurator task for the required topology. See [Accessing the Category Configurator](#), on page 69.
- 2 Click **Add**.



3 The **Enter a name for the new category** window appears:



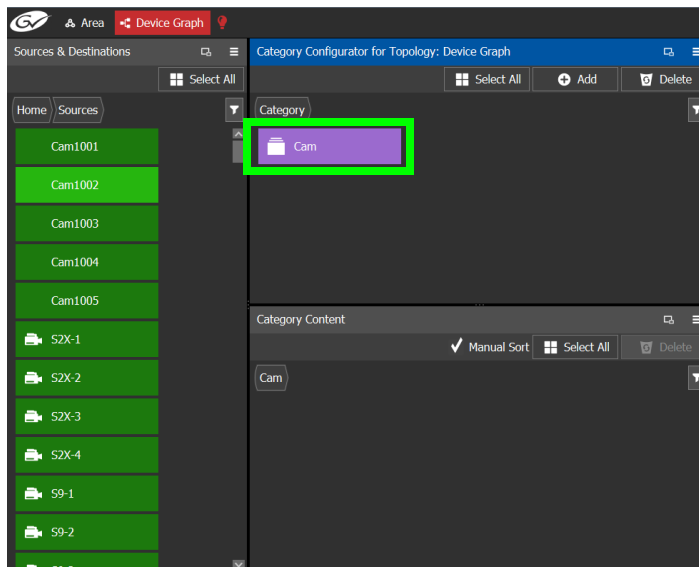
4 Enter a name for the new category and click **OK**.

The new category is added to the top of the **Category Configurator** column.

5 Click **Sources** or **Destinations** to view the available sources / destinations.

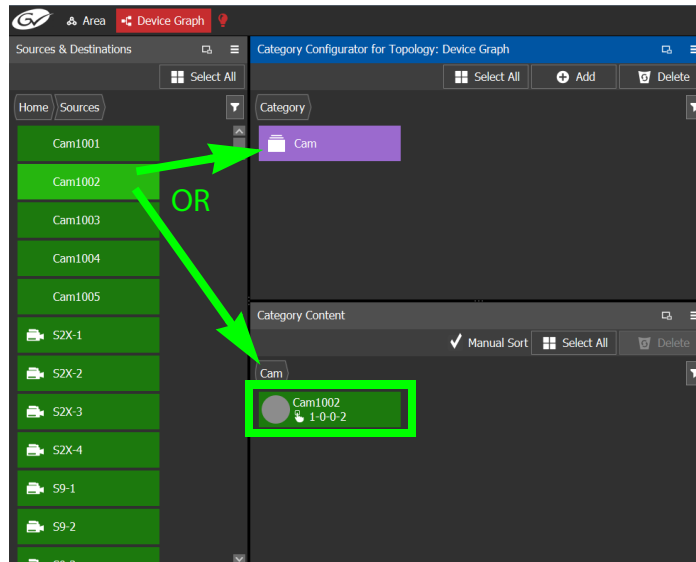
All the sources / destinations in the selected topology are displayed. This includes the logical sources you created in the Logical Device Table task. See [Logical Device Table Tasks](#), on page 54.

6 Select the newly created category.



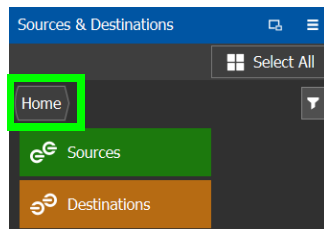
The category is added to the lower part of the center column under Category Content.

- 7 Drag the sources / destinations from the **Sources & Destinations** column to the **Category Content** area.



Alternatively, you can drag a source/destination to the created Category button.

- 8 Click Home to toggle between **Sources** (Green) or **Destinations** (Orange) as necessary.

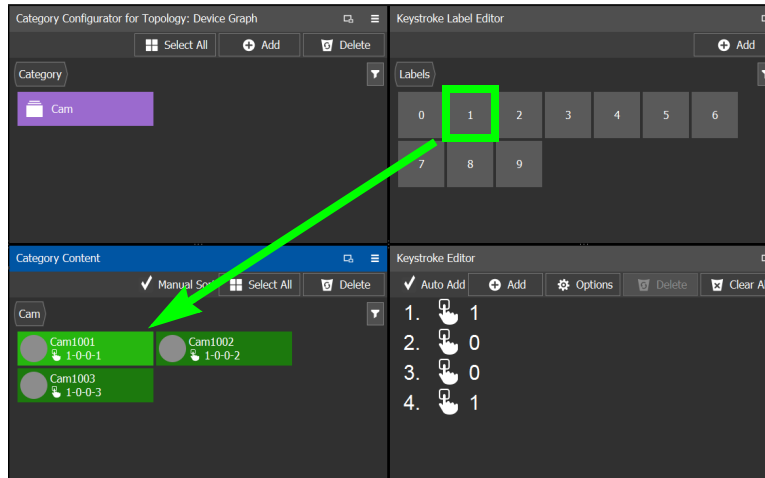


Assigning a Keystroke Label to a Source or Destination

A keystroke label can be added to sources and destinations once they have been added to a category. Assigning a keystroke label to a source or destination allows a user to bring up categories by using a keypad on a panel. For example, if you have 100 categories in your system, a panel can bring up category 37 by pressing 3 then 7 instead of browsing through dozens of panel pages. This also applies to selecting sources or destinations. For instance, Cam17 can be directly accessed by pressing 1 then 7 on the panel instead of searching for the Cam17 button.

To add a keystroke label to a source or destination

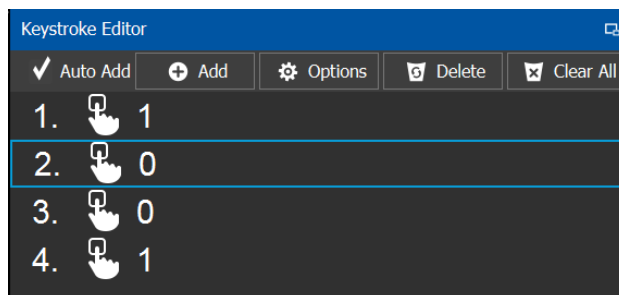
- 1 Open the Category Configurator task for the required topology. See [Accessing the Category Configurator](#), on page 69.
- 2 Click a **Category** to show sources and destinations that have been configured for that category, shown in **Category Content**.
- 3 From the Keystroke Label Editor drag one or more labels onto a source or destination to create a unique sequence for that source or destination.



The **Keystroke Editor** shows the current keystroke label for the selected source or destination.

Edit a Source or Destination Keystroke Sequence

The **Keystroke Editor** allows you to change the selected source or destination's keystroke label. Setting for automatically assigning keystroke labels to a source or destination can also be set.



Set **Auto Add** to automatically assign a keystroke to a source or destination as it is added to a category. Click **Options** to configure this feature.

Proceed as follows to delete a keystroke.

- 1 Select a source or destination shown in **Category Content**.
- 2 Select a keystroke in the **Keystroke Editor** and click Delete.

Proceed as follows to delete all keystrokes.

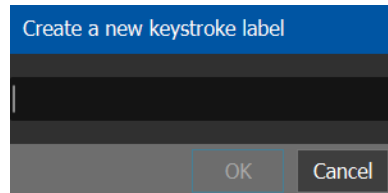
- 3 Select a source or destination shown in **Category Content**.
- 4 Click **Clear All** in the **Keystroke Editor**.

Creating a Keystroke Label

You can assign custom keystrokes to a source or destination. Create a keystroke label to do so.

To creating a keystroke label

- 1 Open the Category Configurator task for the required topology. See [Accessing the Category Configurator](#), on page 69.
- 2 In the Keystroke Label Editor, click **Add**.
The Create a new keystroke label window opens.



- 3 Set the keystroke label as required and click **OK**.

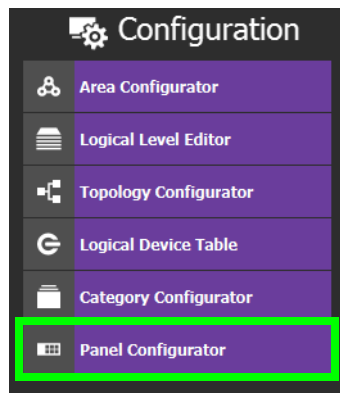
Panel Configurator Tasks

This allows you to add buttons and behaviors to a panel. Those buttons represent sources, destinations, levels, groups and various operations that can be saved under specific configurations and then pushed to a software or hardware panel.

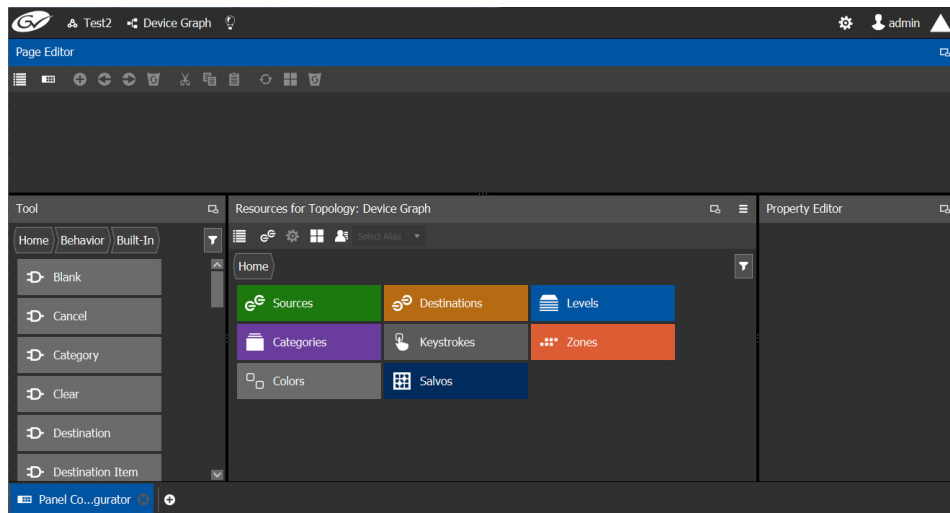
Accessing the Panel Configurator

To access the Panel Configurator Task

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select an area. See [Selecting an Area](#), on page 23.
- 3 Select a topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Configuration > Panel Configurator**.



The Panel Configurator task appears:

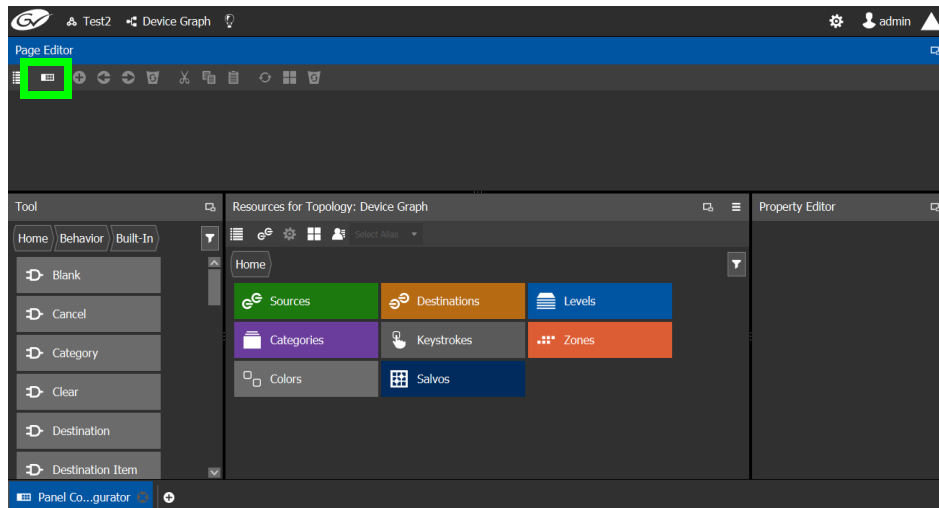


Creating a New Panel

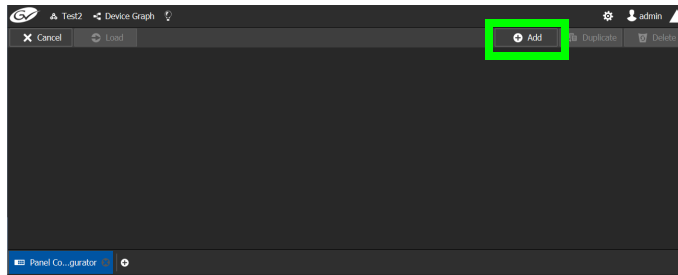
You can create multiple templates for hardware or software panels of various models. Then, you can add the template to a panel that you have added to the topology. A pre-existing panel can be duplicated; see [Duplicating a Pre-Existing Panel](#), on page 77.

To create a new panel

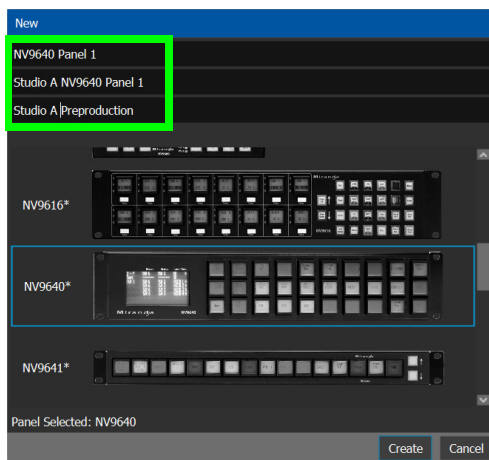
- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select an area. See [Selecting an Area](#), on page 23.
- 3 Select a topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Configuration > Panel Configurator**.



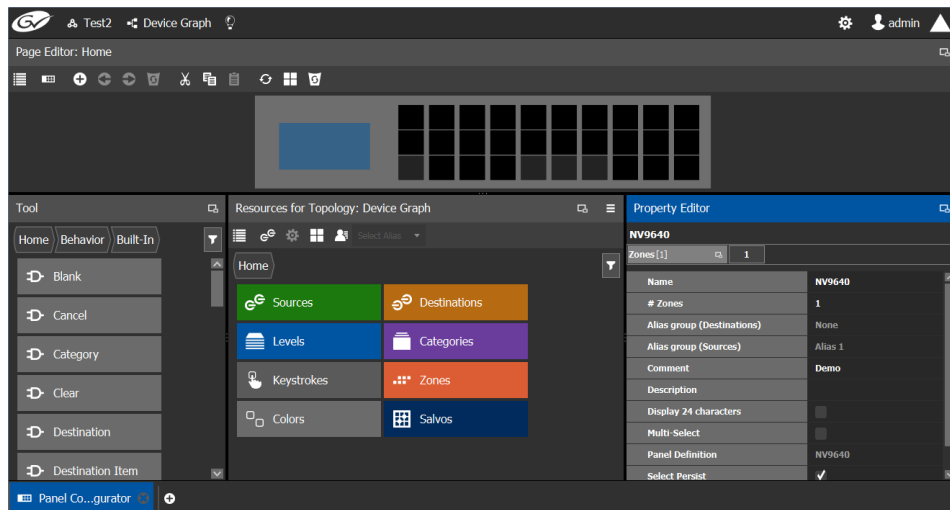
- 5 Click **Manage**.
A secondary window opens.



- 6 Click the **Add** button.
The **New** window appears.



- 7 Enter meaningful text in the **Name**, **Summary**, and **Description** fields to identify the panel.
 - 8 Select the required model from the list.
 - 9 Click **Create**.
- The new panel is added to GV Convergent.



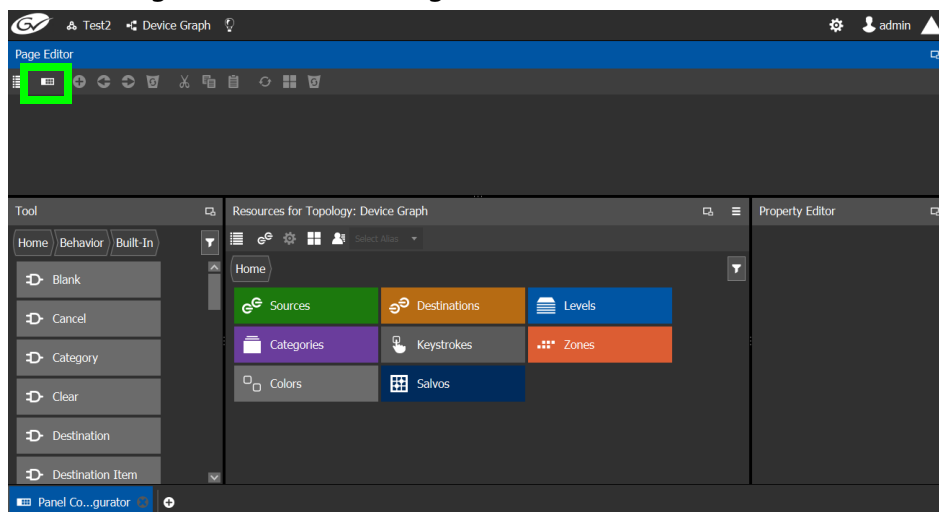
- 10 Configure the panel's properties; see [Configuring a Panel's Properties](#), on page 78.

Duplicating a Pre-Existing Panel

A pre-existing panel can be copied to reuse that panel's configuration properties and then you only need to modify the necessary panel properties as required for the new application. The new panel configuration will have a new name and any changes to that configuration will not affect the original panel configuration that you chose to base its configuration on.

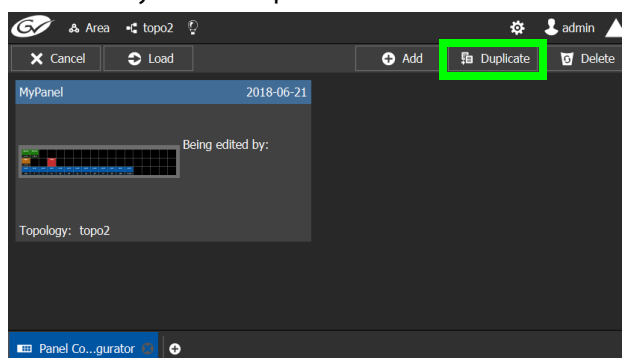
To duplicate a Pre-Existing Panel

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select an area. See [Selecting an Area](#), on page 23.
- 3 Select a topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Configuration > Panel Configurator**.



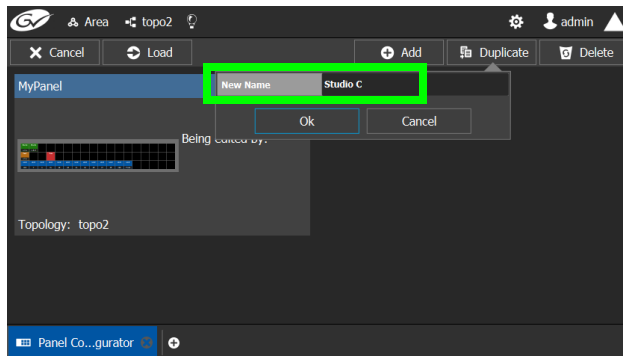
- 5 Click **Manage**.

A secondary window opens.



- 6 Click on a pre-existing panel that you want to duplicate and then click the **Duplicate** button.

The **New Name** window appears.

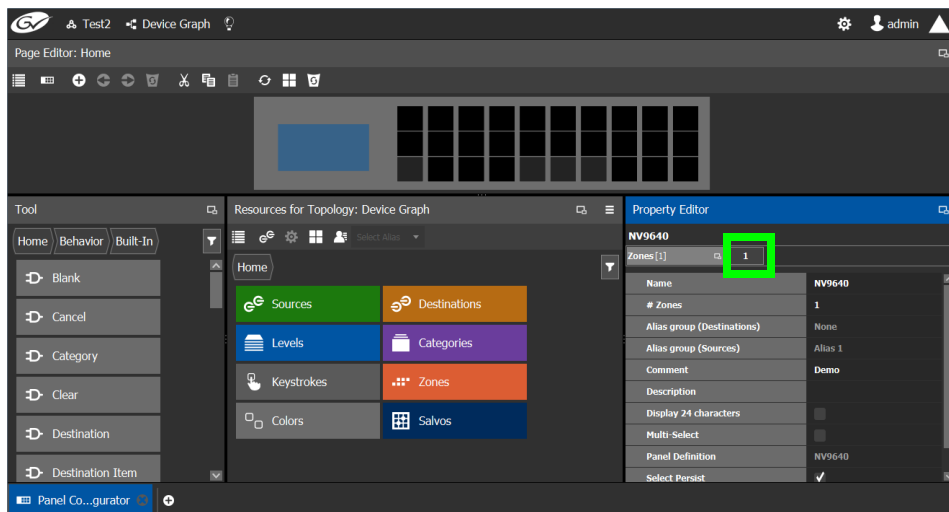


- 7 Enter a name to identify the panel.
- 8 Click **Ok**.
- 9 Configure the panel's properties; see [Configuring a Panel's Properties](#), on page 78.

Configuring a Panel's Properties

Set the basic parameters to configure the panel.

To Configure a Panel's Properties



- 1 Click 1 next to **Zones [1]**.

The following properties can be configured for the panel. See also [Description of Common Device Properties](#), on page 88.

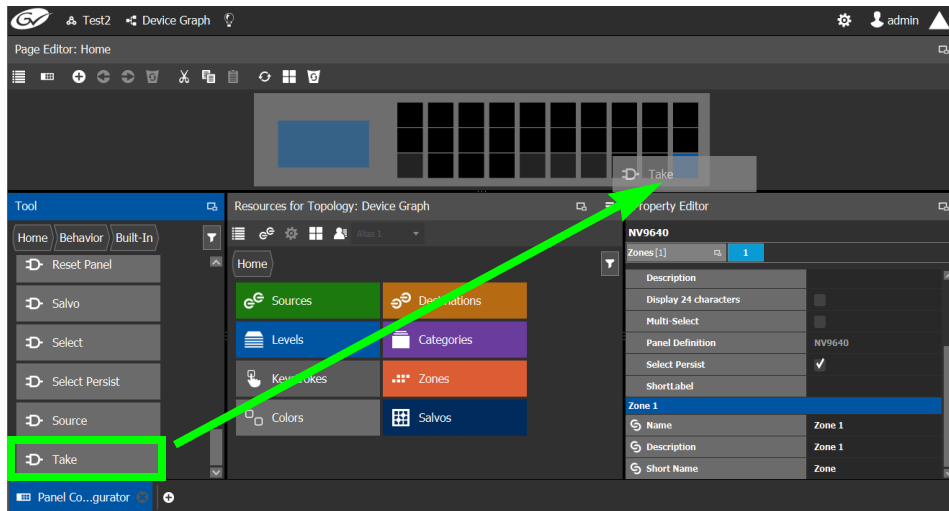
Parameter	Description
Name	The name or identifier for this panel
# Zones	Sets the number of zones available for the selected panel. The default is 1, however you can add more as needed.
Alias group (Destinations)	Shows the currently selected destination / source alias to use on the panel button's / interface to use in place of the short labels. See Using Source and Destination Aliases with a Panel , on page 81.
Alias group (Sources)	
Comment	An optional comment about this panel.

Parameter	Description
Description	An optional description for this panel.
Display 24 characters	When deselected, panel button labels are limited to a maximum length of 8 characters. When selected, panel button labels are limited to a maximum length of 24 characters. This option is useful when using source / destination aliases that usually are longer than 8 characters. This will disable the destination status on the destination buttons. The display will only show the system names. The level buttons will only show the system names. To create source / destination aliases, see Alias Editor Tasks , on page 122. See also Using Source and Destination Aliases with a Panel , on page 81.
Multi-select	When deselected, the panel will allow multiple selection of destination buttons. This enables an operator to take a single source to multiple destinations at once. When selected, only one destination can be selected at a time.
Panel Definition	The current panel's model number that was added in step 6 on page 76.
Select Persist	When deselected, the source and destination selections are cleared when a take is complete. When selected, the source and destination selections are maintained when a take is complete. This parameter is selected by default. This parameter is not zone-specific.

Adding Actions to a Panel

A panel can support a number of actions that must be added to it before the action becomes available to the user. For example, add a Take button to a panel as follows.

- 1 Open the Panel Configurator task for the required topology. See [Creating a New Panel](#), on page 75.
- 2 Select the required Panel.
- 3 Drag the **Take** tool from the **Tools** column onto a panel button.



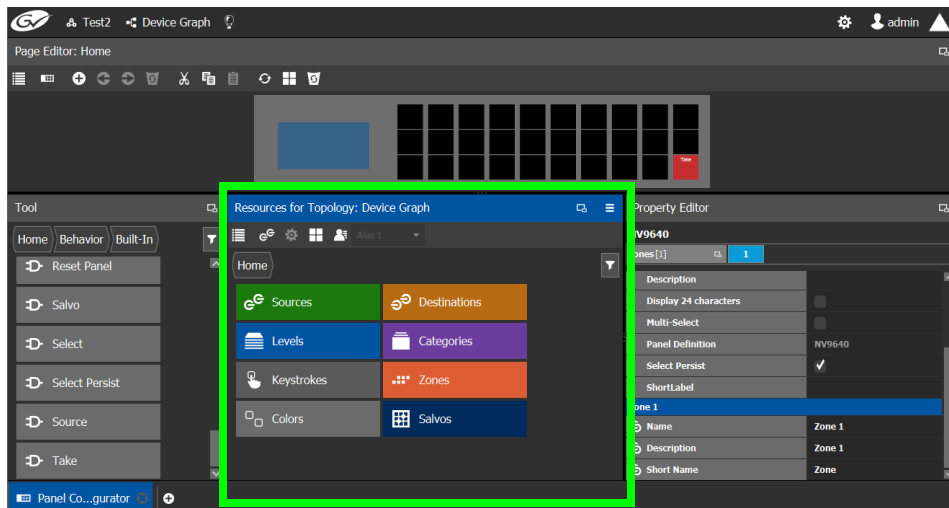
- 4 If the panel has a display, drag the **Page Up** and **Page Down** tools from the **Tools** column onto panel buttons (some panels have two dedicated buttons set apart for this purpose next to the display).

Adding Resources to the Panel

Now add the resources to the panel.

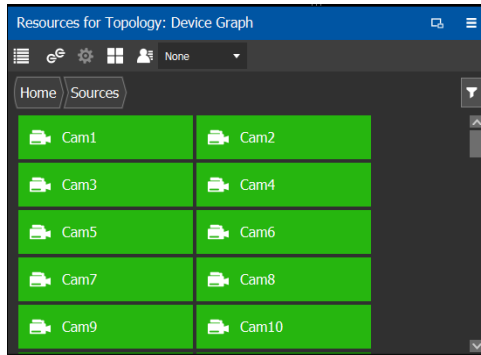
To add panel resources

- 1 Open the Panel Configurator task for the required topology. See [Creating a New Panel](#), on page 75.
- 2 Select the required Panel.



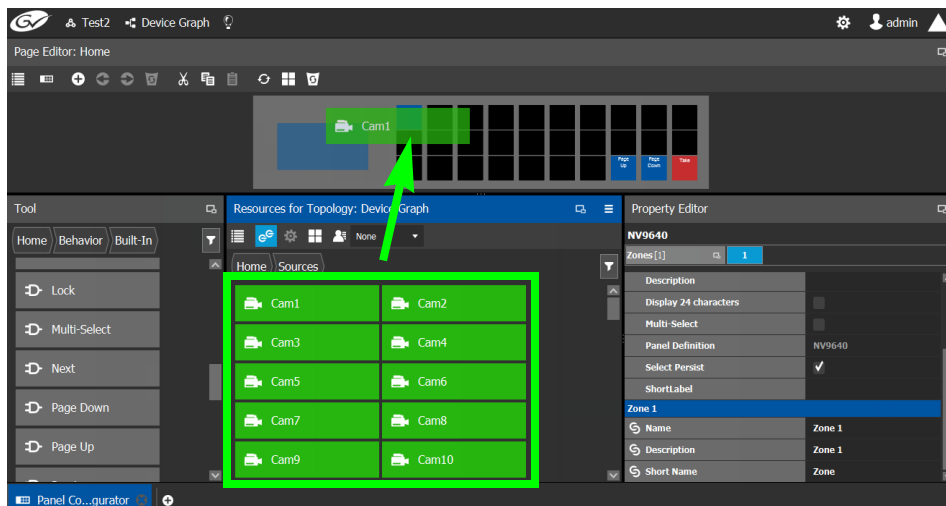
The resources that can be added to the panel are displayed in the lower section of the center column under **Resources for Topology**.

- 3 Click on resource type to begin adding individual resources to the panel such as **Sources**, **Destinations**, or **Levels**.
For example, click **Sources** to add cameras and other types of sources.



All the sources available in the topology are listed. This includes the logical sources you created in the Logical Device Table task. See [Logical Device Table Tasks](#), on page 54.

- 4 Select a resource and drag it to one of the panel buttons at the top of the column. More than one resource can be added at a time; to add to a selection, use *Shift* or *Ctrl* to select a range of resources or to add another resource to the selection.

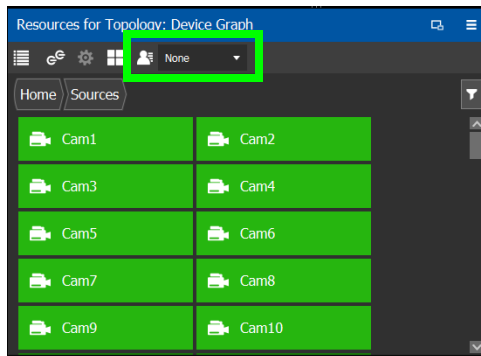


- 5 Add resources from **Destinations**, **Levels**, and **Keystrokes** to the panel as required.

Using Source and Destination Aliases with a Panel

Aliases can be used for a panel to change the name of sources and destinations from short labels to the labels of the corresponding alias. First you must create one or more source and destination aliases; to create an alias, see [Alias Editor Tasks](#), on page 122.

- 1 Under **Resources for Topology**, click **Sources** or **Destinations**.
- 2 Select from the **Select Alias** drop-down list the alias to use for this panel instance.

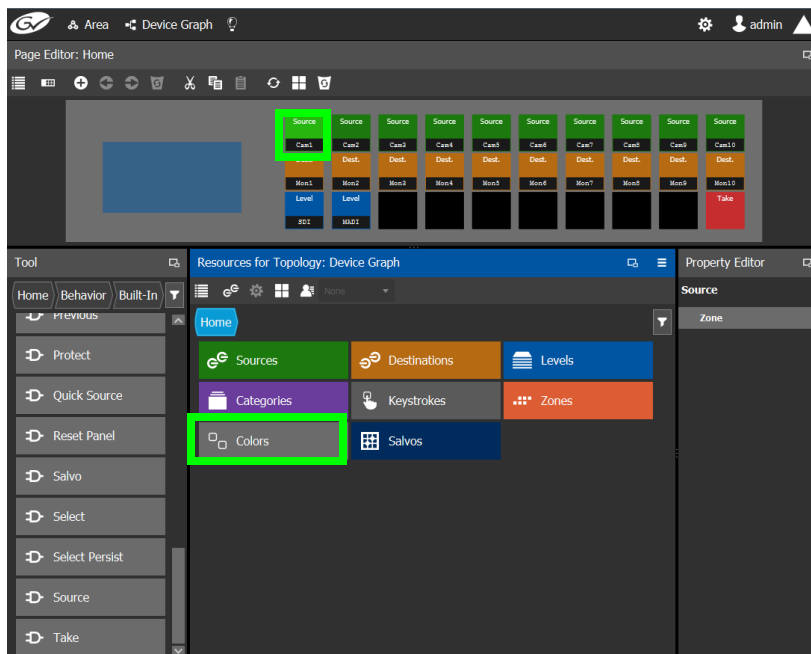


- 3 If the aliases are longer than 8 characters, consider setting the **Display 24 characters** option for the panel in the Panel's **Property Editor**. See [Creating a New Panel](#), on page 75.

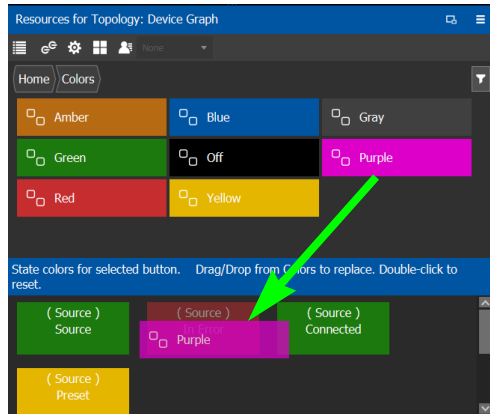
Changing a Button's Color used to Represent a State

Some panel buttons support the display of more than one color. For buttons that support colors, the button's color is used to show the current operating state. The color used for a button to represent any one of the given states can be changed as follows.

- 1 Click a button that has a behavior previously associated to it (a blank button will not work). See [Adding Actions to a Panel](#), on page 79 and [Adding Resources to the Panel](#), on page 80.

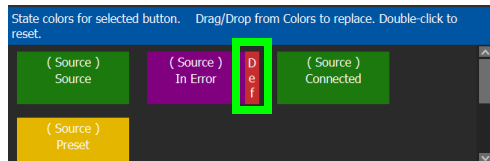


- 2 Click on the **Colors** resource type.



All available state colors for the selected button are shown on the lower half.


- 3 Drag a color from the color pallet (shown on the upper half) onto any one the state colors on the lower half.

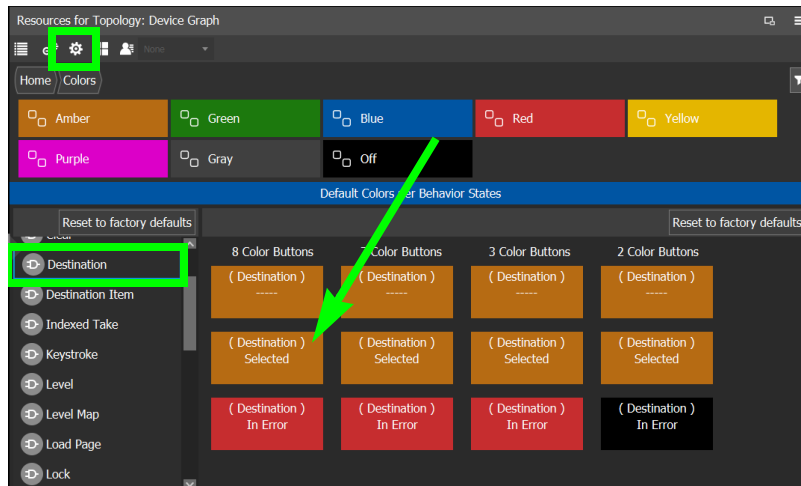


A *Def* bar appears on the state color which indicates the default color. Double-click the state color to revert to this default color.

Changing a Button's Default Color used to Represent a State

The default color used by all buttons for a behavior state can be changed when an across the system change is necessary.

- 1 Click the Custom Color Settings icon .
- 2 Click a behavior that you want to configure, for example, *Destination*.



- 3 Drag a color from the color pallet (shown on the upper half) onto any one the state colors on the lower half.

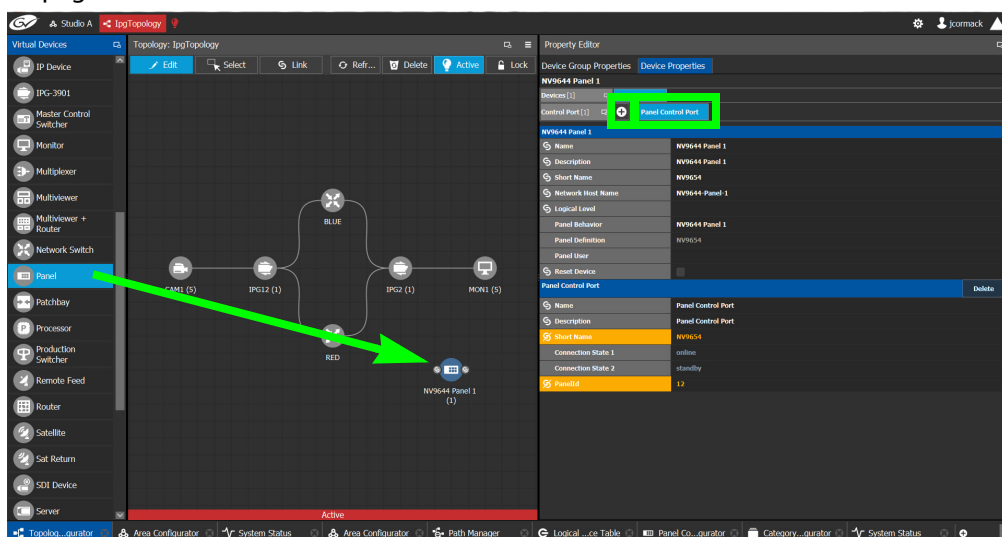
Certain panel buttons support fewer colors. The 7, 3, and 2 Color Buttons columns will show how your color choice will be implemented for these reduced color-range buttons.

Adding the New Panel to the Topology

After you have configured one or more templates for your software or hardware panels, you can add a panel to your topology.

To add a panel to the topology

- 1 Open the Topology Configurator task for the selected panel. See [Selecting a Topology](#), on page 34.



- 2 Select the Panel from the **Virtual Devices** on the left and drag it to the Device Graph.
- 3 Select the bubble for the panel device to configure the panel's Device Group Properties in the **Property Editor**. See also [Description of Common Device Properties](#), on page 88.

Parameter	Description
Name	The name or identifier for this panel instance.
# Devices	The number of panel instances in this device group.
Network Host Name	When one or more panels are managed by DCNM through the media network, set a unique network identifier for these panels so as to be able to push policies to them.
Advanced > Description	An optional description for this panel's control port.
Advanced > Logical Level	The logical level for this panel. See Logical Level Editor Tasks , on page 24.
Advanced > Default Connector Type	The panel's connector type.

- 4 Select **Device Properties** and click **Add**  next to **Control Port** at the top of the **Property Editor** and select **NV96XX Panel Control** from the list.

The **Panel Control Port** tab appears. See also [Description of Common Device Properties](#), on page 88.

Parameter	Required ^a	Description
Name		The name or identifier for this panel instance.
Description		An optional description for this panel instance.
Logical Level		The logical level for this panel. See Logical Level Editor Tasks , on page 24.
Panel Behavior	•	Select the panel's model from the drop-down list.
Panel Definition		This is the panel's model number. It is read-only and is set when the <i>Panel Behavior</i> parameter is set.
Panel User	•	Select the panel's user name from the drop-down list. For further information, see Administration Tasks , on page 129.
Reset Device		When the topology is inactive (see Making an Active Topology Inactive , on page 50), click to reset the device.

a. This parameter must be configured in order for the panel to become functional.

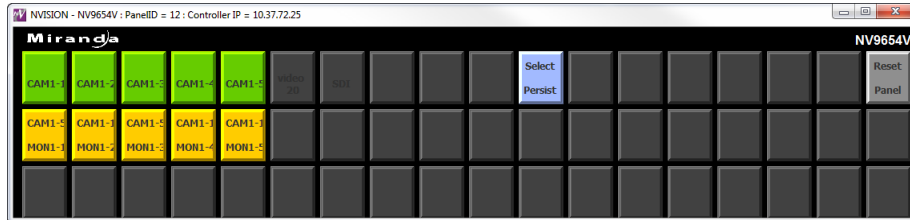
5 Select **Panel Control Port** tab to make the following properties visible. See also [Description of Common Device Properties](#), on page 88.

Parameter	Required ^a	Description
Panel Control Port > Name		The panel's control port name.
Panel Control Port > Description		An optional description for this panel's control port.
Panel Control Port > Connection State 1 / 2		Connection State 1 shows the connection status of the panel with the primary server of a server group. Connection State 2 shows the connection status of the panel with the secondary server of a server group. See Configuring a Controller Group , on page 19. unknown: the topology is inactive (see Activating a Topology , on page 49) or the panel does not have network connectivity to the GV Convergent server(s). offline: the panel does not have network connectivity to the GV Convergent server(s). online: the panel is connected to the GV Convergent server(s).
Panel Control Port > Panel ID	•	Each control panel must have been configured with a unique Panel ID number. Enter the Panel ID that corresponds with the physical panel that is to be used with this panel instance.

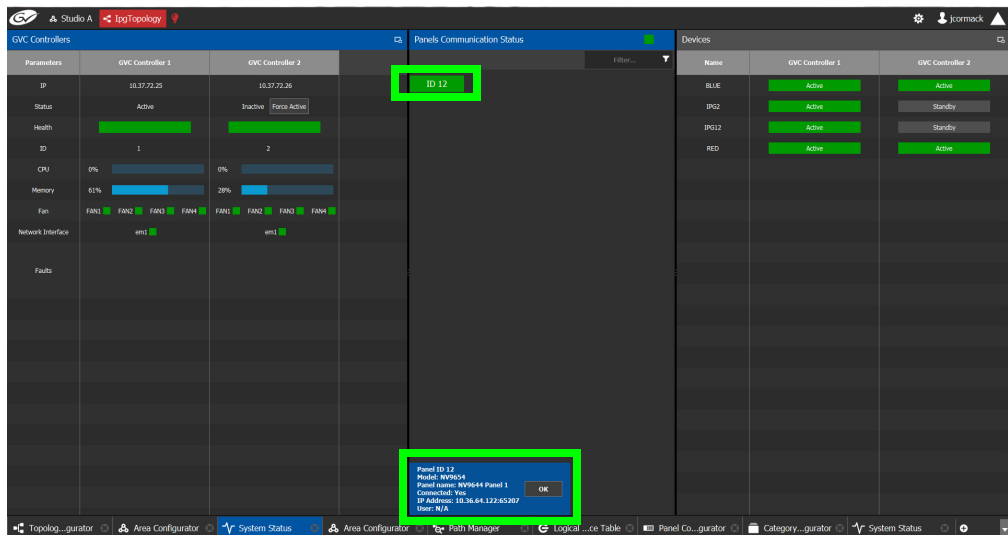
a. This parameter must be configured in order for the panel to become functional.

- 6 In the hardware or software panel, ensure you have configured the Panel ID number and the Controller 1 IP address.

When the panel is online, you can control GV Convergent from the panel.



You can view the health of the panel in the System Status task. See [System Status Task](#), on page 115.



The green bar indicates the health of the panel is good.

- 7 Click the Panel ID at the top of Panel Communication Status column to view data on the panel. This appears at the bottom of the interface.

4 Special Device Configuration Tasks

The configuration of certain features for a specific device require an in depth explanation which is provided here.

These special device are described under the following headings:

- [Configuring a GV Node Device](#), on page 89
- [Configuring an IPG-3901 / IPG-4901 Device](#), on page 100
- [Configuring an IQMix Device](#), on page 106
- [Adding NMOS Devices to a Topology](#), on page 109

Description of Common Device Properties

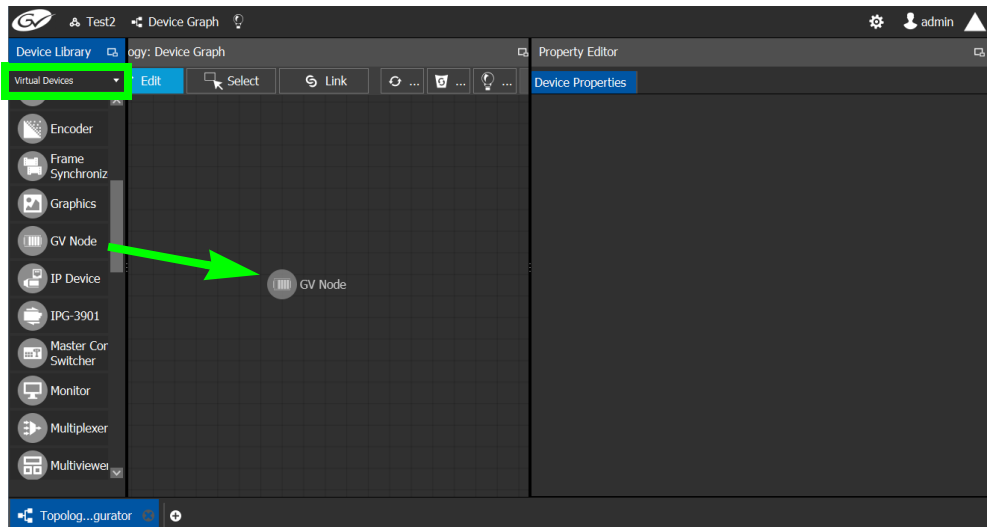
The description for certain device properties are universal.

Parameter	Description
Name	The name or identifier for this device instance.
Short Name	The nickname by which the device is referred to everywhere in the system.
Description	An optional description for the related input, output, or device.
Logical Level	The logical level for this input or output. See Logical Level Editor Tasks , on page 24.
Expose Streams	When set, it displays the streams of this device in the Logical Device Table. See Logical Device Table Tasks , on page 54.
SSM Address Enabled	Shows if the source specific multicast address is enabled.
Automatic Destination Automatic Destinations on Inputs Automatic Destinations on Outputs	Set to automatically create a destination by the system using the specified stream.
Automatic Source Automatic Sources on Outputs Automatic Sources on Inputs	Set to automatically create a source by the system using the specified stream.
Enabled	The current status for information purposes.

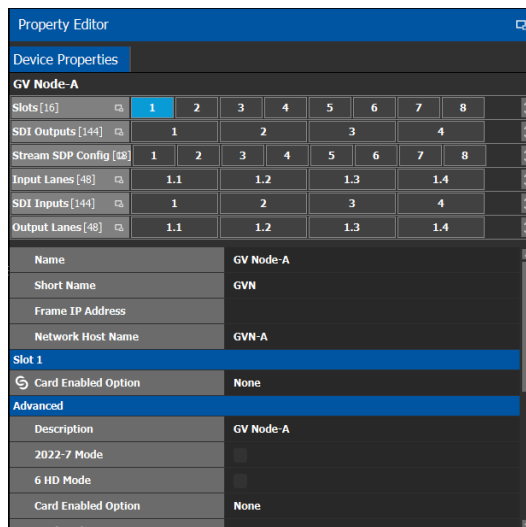
Configuring a GV Node Device

To configure a GV node Device

- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.



- 3 From the **Device Library**, **Virtual Device** select the GV Node device bubble and drag it into position on the Device Graph and release the mouse button.
- 4 Click on the name of the device underneath the bubble to enter a meaningful name to identify this GV Node in the **Name** field.
- 5 Click **OK**.

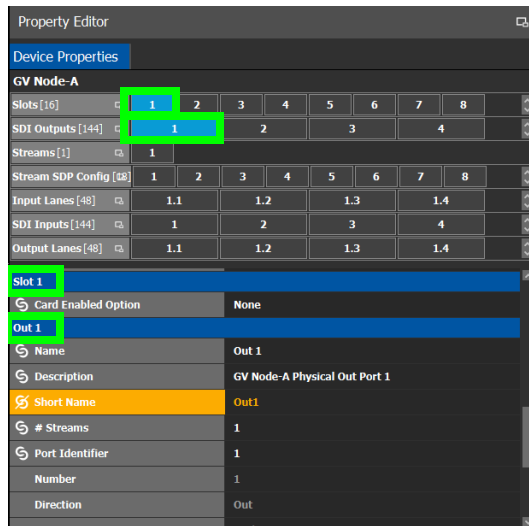


- 6 Select the GV Node bubble and configure the Device Properties in the **Property Editor**. See also [Description of Common Device Properties](#), on page 88.

Parameter	Description
Frame IP Address	The network IP address for the associated GV Node frame.
Network Host Name	The hostname is the unique name by which the associated GV Node CPU-ETH3 is known on the network.
Advanced > Description	An optional description for this GV Node's control port.
Advanced > 2022-7 Mode	When the IFM-2T-OPT-40G-6 option is active, you can choose to enable 2022-7 Low Latency redundant, high-bit-rate streams on the aggregation ports, using the GV Node manager. If this option has been enabled in the GV Node Manager, then enable it here.
Advanced > 6 HD Mode	This no redundancy, low bitrate option reduces each channel from 3Gbps to 1.5Gbps, allowing all 144 channels to be sent on aggregation ports 1-6, and leaving aggregation ports 7-12 unused. If this option has been enabled in the GV Node Manager, then enable it here.
Advanced > Card Enabled Option	This option controls audio embedding / de-embedding. For example, the XIO-4901 3G/HD/SD SDI input/output card supports audio embedding/de-embedding, as a software option (MDX): MDX: the GV Node Manager allows you to enable or disable audio embedding/de-embedding on a card's SDI inputs and outputs. None: if your system is monitoring MADI signals (supported at the XIO-4901 card's inputs/outputs 8 and 9), then disabling the MDX option lets you select MADI at the inputs and outputs matching your physical configuration. See Configuring MADI support with a GV Node Device , on page 96 for more information.
Advanced > Card Mode	Set the signal type.
Advanced > Gateway Connection State 1	Gateway Connection State 1 shows the connection status of the GV Node frame with the primary server of a server group.
Advanced > Gateway Connection State 2	Gateway Connection State 2 shows the connection status of the GV Node frame with the secondary server of a server group. See Configuring a Controller Group , on page 19. unknown: the topology is inactive (see Activating a Topology , on page 49) or the GV Node frame does not have network connectivity to the GV Convergent server(s). offline: the GV Node frame does not have network connectivity to the GV Convergent server(s). online: the GV Node frame is connected to the GV Convergent server(s).

Parameter	Description
Advanced > Gateway NP16 Connection State	<p>This shows the NP16 connection status of the GV Node frame with a server of a server group.</p> <p>unknown: the topology is inactive (see Activating a Topology, on page 49) or the GV Node frame does not have network connectivity to the GV Convergent server(s).</p> <p>offline: the GV Node frame does not have network connectivity to the GV Convergent server(s).</p> <p>online: the GV Node frame is connected to the GV Convergent server(s).</p>
Advanced > IFM-2T Version	The IFM-2T Fabric Module User Interface version number.
Advanced > Internal Wiring Done	Shows if the internal modeling of the GV Node is complete.
Advanced > Join Timeout (ms)	When GV Convergent is used with a GV Node version 1.3.0, to allow a clean switch that will not be reported as a fail, we recommend this parameter to be set to 2 ms.
Advanced > Router Connection State 1	Router Connection State 1 shows the connection status of the router with the primary server of a server group.
Advanced > Router Connection State 2	<p>Router Connection State 2 shows the connection status of the router with the secondary server of a server group. See Configuring a Controller Group, on page 19.</p> <p>unknown: the topology is inactive (see Activating a Topology, on page 49) or the router does not have network connectivity to the GV Convergent server(s).</p> <p>offline: the router does not have network connectivity to the GV Convergent server(s).</p> <p>online: the router is connected to the GV Convergent server(s).</p>

- 7 Configure the card in each slot and configure the inputs and outputs for each card by making a selection at the top to make the related parameters become available below.



Select the	To configure the properties exposed below under
Card by its slot number in Slots	Slot #
Card's SDI output number in SDI Outputs . Then select the Card's SDI Output Stream Configuration number in Streams	Out # GV Node-[instance] Out #
Card's Stream SDP Configuration number in Stream SDP Config	IP Stream Prototype #
Card's Input Lanes number in Input Lanes . Then select the card's stream number in Streams .	Eth In #.# GV Node-[instance] Eth In#.# Stream #
Card's SDI Input number in SDI Inputs . Then select the card's stream number in Streams .	In# GV Node-[instance] In#
Card's Output Lanes number in Output Lanes . Then select the card's stream number in Streams .	Eth Out #.# GV Node-[instance] Out#.# Stream #

Configure the GV Node Card Properties in the **Property Editor**. See also [Description of Common Device Properties](#), on page 88.

Parameter	Description
Slot #	
Card Enabled Option	This option controls audio embedding / de-embedding. For example, the XIO-4901 3G/HD/SD SDI input/output card supports audio embedding/de-embedding, as a software option (MDX): MDX: the GV Node Manager allows you to enable or disable audio embedding/de-embedding on a card's SDI inputs and outputs. None: if your system is monitoring MADi signals (supported at the card's inputs/outputs 8 and 9), then disabling the MDX option lets you select MADi at the inputs and outputs matching your physical configuration. See Configuring MADi support with a GV Node Device , on page 96 for more information.
Out #	
Name	The name or identifier for this SDI output.
# Streams	The number of streams for this SDI output.
Port Identifier	An input lane is specified as QSPFport.lane which in turn corresponds to a physical port on the router. The number property specifies which physical port it is. The port identifier is how you name it so that you can refer to it.
Number	Set the port number on the router.
Direction	The current status for information purposes.
Connector Type	
Capacity (bps)	The stream data rate.
IP Address	The stream's network IP address.
Mods-Out to IFM	This option sets the expected output signal type: SDI: the output signal is a standard SDI video signal with embedded audio. MADI: the output signal is a MADi signal (supports 64 audio channels). See Configuring MADi support with a GV Node Device , on page 96 for more information.
Redundancy Port	This output can be duplicated onto another output port for redundancy.
GV Node-[instance] Out #	
Name	The name or identifier for this SDI output.
Automatic Source	Set to automatically create a source by the system using the specified stream.
Bandwidth (bps)	The stream data rate.
IGMPv3 SSM Address	Source Specific Multicast address as per IGMPv3 (Internet Group Management Protocol) protocol.

Parameter	Description
IP Stream Prototype #	
Name	The name or identifier for this SDI output.
Flow Type	Set the content type for this stream: Audio , Data , or Video .
SDP	The Session Description Protocol is a format for describing streaming media communications parameters.
Eth In #.#	
Name	The name or identifier for this IP input.
# Streams	The number of streams for this IP input.
Port Identifier	An input lane is specified as QSPFport.lane which in turn corresponds to a physical port on the router. The number property specifies which physical port it is. The port identifier is how you name it so that you can refer to it.
Number	Set the port number on the router.
Direction	The current status for information purposes.
Connector Type	
Capacity (bps)	The stream data rate.
GV Node-[instance] Eth In#.# Stream #	
Name	The name or identifier for this IP input.
Flow Type	Set the content type for this stream: Audio , Data , or Video .
Automatic Source	Set to automatically create a source by the system using the specified stream.
SDP	The Session Description Protocol is a format for describing streaming media communications parameters.
IGMPv3 SSM Address	Source Specific Multicast address as per IGMPv3 (Internet Group Management Protocol) protocol.
IP Address	The stream's network IP address.
IP Port	Port number for the stream.
In#	
Name	The name or identifier for this IP input.
# Streams	The number of streams for this IP input.
Port Identifier	An input lane is specified as QSPFport.lane which in turn corresponds to a physical port on the router. The number property specifies which physical port it is. The port identifier is how you name it so that you can refer to it.
Number	Set the port number on the router.
Direction	The current status for information purposes.
Connector Type	
Capacity (bps)	The stream data rate.

Parameter	Description
Bandwidth Usage (bps)	The stream data rate.
IP Address	The stream's network IP address.
Mods-In to IFM	This option sets the expected input signal type: SDI: the input signal is a standard SDI video signal with embedded audio. MADI: the input signal is a MADI signal (supports 64 audio channels). See Configuring MADI support with a GV Node Device , on page 96 for more information.
Redundancy Port	This input can be received on a second input port for redundancy.
GV Node-[instance] In#	
Name	The name or identifier for this IP input.
Automatic Source	Set to automatically create a source by the system using the specified stream.
IGMPv3 SSM Address	Source Specific Multicast address as per IGMPv3 (Internet Group Management Protocol) protocol.
Eth Out #.#	
Name	The name or identifier for this IP input.
# Streams	The number of streams for this IP input.
Port Identifier	An input lane is specified as QSPFport.lane which in turn corresponds to a physical port on the router. The number property specifies which physical port it is. The port identifier is how you name it so that you can refer to it.
Number	Set the port number on the router.
Direction	The current status for information purposes.
Connector Type	
Capacity (bps)	The stream data rate.
Bandwidth Usage (bps)	The stream data rate.
IP Address	The stream's network IP address.
Redundancy Port	This input can be received on a second input port for redundancy.
GV Node-[instance] Out#.# Stream #	
Name	The name or identifier for this IP input.
IP Address	The stream's network IP address.
IP Port	Port number for the stream.
Flow Type	Set the content type for this stream: Audio , Data , or Video .
Automatic Source	Set to automatically create a source by the system using the specified stream.

Parameter	Description
SDP	The Session Description Protocol is a format for describing streaming media communications parameters.
Bandwidth (bps)	The stream data rate.
IGMPv3 SSM Address	Source Specific Multicast address as per IGMPv3 (Internet Group Management Protocol) protocol.

Configuring MADI support with a GV Node Device

To support a MADI input on a GV Node frame, this option must be configured both in GV Convergent and the MADI input must have been previously configured in iControl Navigator; locate the GV Node Manager associated with your GV Node and double-click its icon. For example, the following figure shows the 9th input XIO-4901 card in slot 16 is set to accept a MADI input. Within GV Convergent, the same setting must be made wherever a MADI input has been configured in iControl Navigator for a GV Node frame.

Slot#	Main Module	Rear panel	Enabled Options	Module Inputs (Mod-In) to Internal Fabric Module (IFM)										
				1	2	3	4	5	6	7	8	9		
1	XIO-4901	XIO-4901-4SRP-D	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX
2	KMX-4911	KMX-49N1-9x2-4...	MDX	SDI	SDI									
3	KMX-4911	KMX-49N1-9x2-4...	MDX	SDI	SDI									
4	XIO-4901	XIO-4901-4SRP-D	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX
5	Empty													
6	Empty													
7	Empty													
8	Empty													
9	SME-1911													
10	Empty													
11	XVP-3901													
12	Empty													
13	HDA-3931													
14	XIO-4901	XIO-4901-4SRP-D	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX	MDX
15	Empty													
16	XIO-4901	XIO-4901-4SRP-D	None	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	SDI	IMADI

Module Inputs (Mod-In) to Aggregation Ports (Agg-Tx)					
Video Streams		Ancillary Data Streams		Audio Streams	
Mod-In	Agg-Tx	Mod-In	Agg-Tx	Mod-In	Agg-Tx
39	72	27	72	31	72

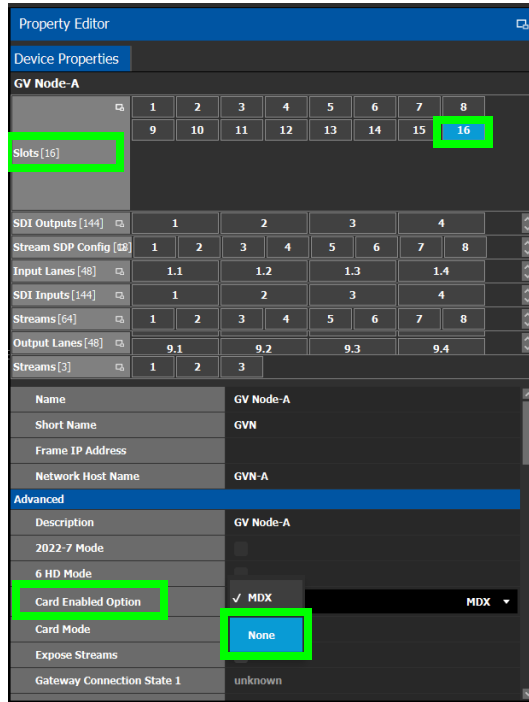
Fig. 4-1: A GV Node in iControl Navigator

The above iControl Navigator configuration is used as an example configuration for the following procedure.

To configure a GV node MADI input in GV Convergent

- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.
- 3 Add and configure a GV Node device. See [Configuring a GV Node Device](#), on page 89.

- In the **Property Editor** for the GV Node device, make the same setting as in GV Node Manager for **Enabled Options** for the card: in the GV Node's properties, in **Slots**, select **16**, then set **None** in **Card Enabled Option**.

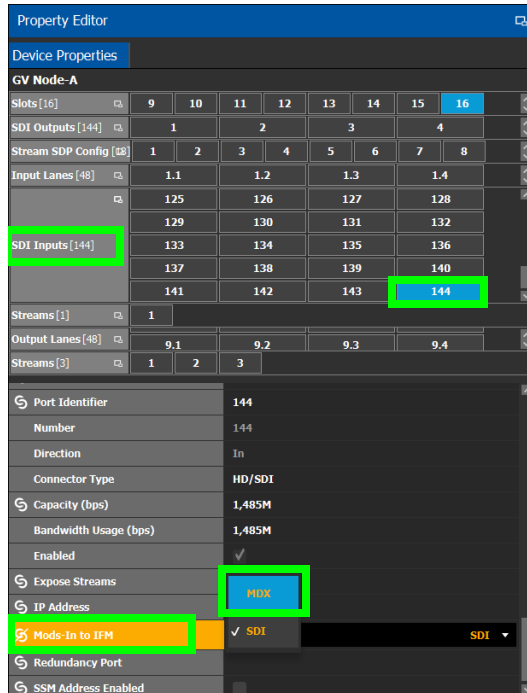


- Use the following table to identify the SDI input number used by GV Convergent from the card's slot and input number for the next step. Only the eighth and ninth inputs of each slot support MAD1 input signals. For example, the ninth input of the card in slot 16 is **144**.

Matrix Input from Fabric Number for each GV Node Frame Slot

Card's Input from GV Node Fabric	GV Node Frame Slot Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
First Input	1	10	19	28	37	46	55	64	73	82	91	100	109	118	127	136
Second Input	2	11	20	29	38	47	56	65	74	83	92	101	110	119	128	137
Third Input	3	12	21	30	39	48	57	66	75	84	93	102	111	120	129	138
Fourth Input	4	13	22	31	40	49	58	67	76	85	94	103	112	121	130	139
Fifth Input	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140
Sixth Input	6	15	24	33	42	51	60	69	78	87	96	105	114	123	132	141
Seventh Input	7	16	25	34	43	52	61	70	79	88	97	106	115	124	133	142
Eighth Input	8	17	26	35	44	53	62	71	80	89	98	107	116	125	134	143
Ninth Input	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144

- In the **Property Editor** for the GV Node device, make the same setting as in GV Node Manager for the card's input: in the GV Node's properties, in **SDI Inputs**, select **144**, then set **MADI** in **Mods-In to IFM**.



For each MADI input, 64 audio streams are shown in **Streams** and the logical level is MADI for each stream. These 64 streams are made available within the Logical Device Table for use on manually created logical devices. If you choose the Automatic source/destination option for the MADI, then 4 devices of 16 channels of audio are created in the Logical Device Table on the appropriate tab. See [Logical Device Table](#)

Tasks, on page 54.

The screenshot displays the 'Property Editor' window for 'GV Node-A 10.37.73.211'. The interface is divided into several sections:

- Slots [16]:** A grid with columns 1-16. Slot 6 is highlighted in blue.
- Stream SDP Config [48]:** A grid with columns 1-18.
- SDI Outputs [144]:** A grid with columns 1-9.
- Input Lanes [48]:** A grid with columns 1.1-3.1.
- SDI Inputs [144]:** A grid with columns 109-135.
- Streams [64]:** A grid with columns 1-18. The entire row is highlighted in red.
- Output Lanes [48]:** A grid with columns 3.2-12.1.
- Configuration Section:**
 - Redundancy Port:
 - SSM Address Enabled:
 - GV Node-A 10.37.73.211 In 144 Stream 1** (Section Header)
 - Name: GV Node-A 10.37.73.211 In 144 Stream 1
 - Description: GV Node-A 10.37.73.211 In 144 Stream 1
 - Logical Level: **MADI** (highlighted in blue)
 - Automatic Source:
 - Automatic Destination:
 - Enabled:
 - Expose Stream:
 - IGMPv3 SSM Address: 0.0.0.0
 - SSM Address Enabled:

Configuring an IPG-3901 / IPG-4901 Device

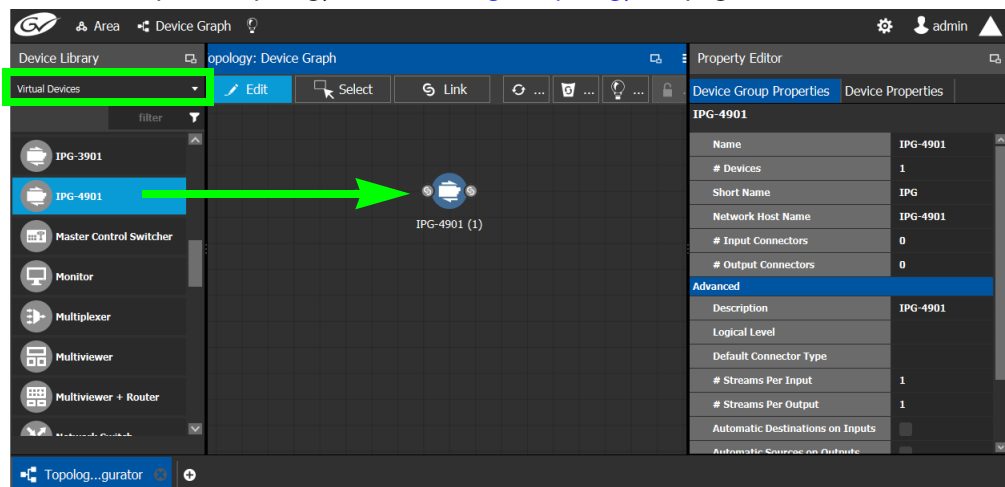
The Densité IP Gateway (IPG-3901) plug-and-play module is a 3 RU module for the Densité 3 frame, which provides bidirectional IP/SDI conversion. The Gateway operates with 10 GigE audio/video video-over-IP, supporting 4K UHD/3G/HD/SD-SDI formats.

The GV Node IP Gateway (IPG-4901) plug-and-play module is a 3 RU single slot module for the GV Node frame, which provides bidirectional fiber IP connectivity to provide conversion to and from other equipment that cannot be handled directly by the GV Node aggregation ports (GV Node's receivers and transmitters). This card allows the user to expand the receivers available on the GV Node, as well as it brings more flexibility to the allowed audio profiles that can be accepted through the IPG-4901

PREREQUISITES: All IPG-3901 and IPG-4901 devices must have been previously configured in iControl Navigator. GV Convergent reads this configuration information from iControl through the GV Node / Densité Manager.

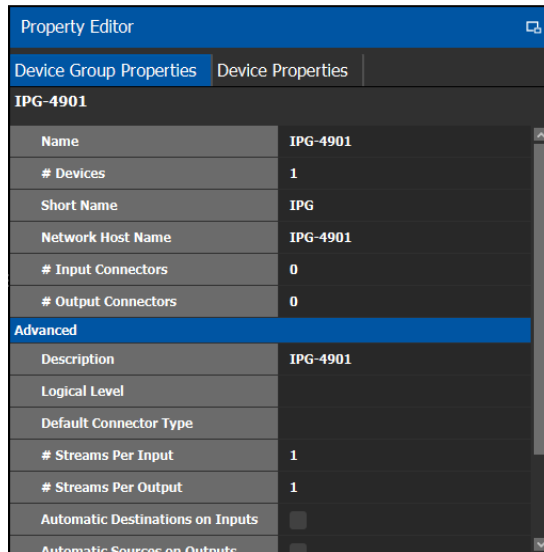
To configure an IPG-3901 / IPG-4901 Device

- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.



- 3 From the **Device Library**, **Virtual Device** select an IPG-3901 or IPG-4901 device bubble and drag it into position on the Device Graph and release the mouse button.
- 4 Click on the name of the device underneath the bubble to enter a meaningful name to identify this device in the **Name** field.

5 Click **OK**.



6 Select **Device Group Properties**. Configure the **GV Node IP Address / Frame IP Address** and **Slot Number** properties. See also [Description of Common Device Properties](#), on page 88.

Parameter	Applies to		Description
	IPG-3901	IPG-4901	
# Devices	•	•	The number of panel instances in this device group.
Network Host Name	•	•	The hostname is the unique name by which the associated IPG-3901 or IPG-4901 is known on the network.
# Input Connections	•	•	The current status for information purposes, once the GV Node IP Address and Slot Number parameters are configured and the topology is activated. See Activating a Topology , on page 49.
# Output Connections	•	•	
Advanced > Default Connector Type	•	•	
Advanced > # Streams Per Input	•	•	
Advanced > # Streams Per Output	•	•	
Advanced > Receive Stream IP Pattern	•	•	
Advanced > Send Stream IP Pattern	•	•	

7 Activate the topology.

The card configuration is read from Densite Manager and applied to the device.

8 Select the **Device Properties** tab and then select **IPG** next to **Devices**. See also [Description of Common Device Properties](#), on page 88.

Parameter	Applies to		Description
	IPG-3901	IPG-4901	
Network Host Name	•	•	The hostname is the unique name by which the associated IPG-3901 or IPG-4901 is known on the network.
GV Node IP Address		•	IP Address of the CPU-ETH3 for the GV Node frame into which the IPG-4901 card is installed.
Frame IP Address	•		IP Address of the CPU-ETH3 for the Densité frame into which the IPG-3901 card is installed.
Slot Number	•	•	The slot in which the IPG-3901 or IPG-4901 device is located in the GV Node frame.
Connection to Controller 1	•	•	Connection to Controller 1 shows the connection status of the IPG device with the primary server of a server group.
Connection to controller 2	•	•	Connection to Controller 2 shows the connection status of the IPG device with the secondary server of a server group. See Configuring a Controller Group , on page 19. unknown: the topology is inactive (see Activating a Topology , on page 49) or the IPG device does not have network connectivity to the GV Convergent server(s). offline: the IPG device does not have network connectivity to the GV Convergent server(s). online: the IPG device is connected to the GV Convergent server(s).
Firmware Version	•	•	Shows the firmware version installed on the IPG-3901 or IPG-4901 card for information purposes.
Internal Wiring Done	•	•	Shows if the internal modeling of the IPG-3901 or IPG-4901 is complete.
Operation Mode	•	•	Shows the operation mode of the ETH2 port of the IPG-3901 or IPG-4901 card for information purposes: Redundancy: ETH 2 is redundant to ETH 1. Aggregation: Both ETH 1 and ETH 2 are available simultaneously. OFF: ETH 2 is disabled.

9 Select **ETH#** next to **Ethernet Ports**. These are the network configuration parameters for the IPG-3901 or IPG-4901 card's Ethernet ports. See also [Description of Common](#)

[Device Properties](#), on page 88.

Parameter	Applies to		Description
	IPG-3901	IPG-4901	
IP Address	•	•	The network IP address for this Ethernet port.
Gateway	•	•	The network gateway IP address.
Subnet Mask	•	•	The IP network's subnet mask.

- 10 Select one of the streams next to **Gateways** (by default labelled as **OUT#** or **IN#**). See also [Description of Common Device Properties](#), on page 88.

Parameter	Applies to		Description
	IPG-3901	IPG-4901	
Direction	•	•	The current status for information purposes.
Logical Level on SDI Stream	•	•	To force a stream to use the IPG-3901 or IPG-4901 device, create a new level (see Duplicating a Logical Level , on page 27) that you will use to select these specific streams at the source and destination ports. Set the logical level that will be used for this here. For example, create a logical level called IPG-SDI from the SDI logical level. Now use this level to send and receive streams to and from this device.

- 11 Select **1** or **2** next to **Streams**. See also [Description of Common Device Properties](#), on page 88.

Parameter	Applies to		Description
	IPG-3901	IPG-4901	
Ethernet Port	•	•	The Ethernet port this gateway is assigned to (ETH 1 or ETH 2), shown for information purposes.
Format	•	•	The gateway format: SD, HD, or 3G for video streams, or AES 67 profile for audio streams. Shown for information purposes.
IGMPv3 Source	•	•	For a receiver gateway, this is the address of the joined stream's port when SSM Address is enabled on the device.
IP Address	•	•	The stream's network IP address.
Logical Level on ETH stream	•	•	The Logical level to apply on the ETH side of the gateway. By default for the video stream, this value is SDI and for the audio stream, this value is SDI audio.
Port	•	•	The stream's network port.

Parameter	Applies to		Description
	IPG-3901	IPG-4901	
Redundant IGMPv3 Source	•	•	When the IPG-3901 or IPG-4901 card is in Redundancy mode: for a receiver gateway, this is the address of the joined stream's port when SSM Address is enabled on the device.
Redundant IP Address	•	•	When the IPG-3901 or IPG-4901 card is in Redundancy mode: the stream's network IP address.
Redundant Port	•	•	When the IPG-3901 or IPG-4901 card is in Redundancy mode: the stream's network port.

Connecting an IPG-4901 device

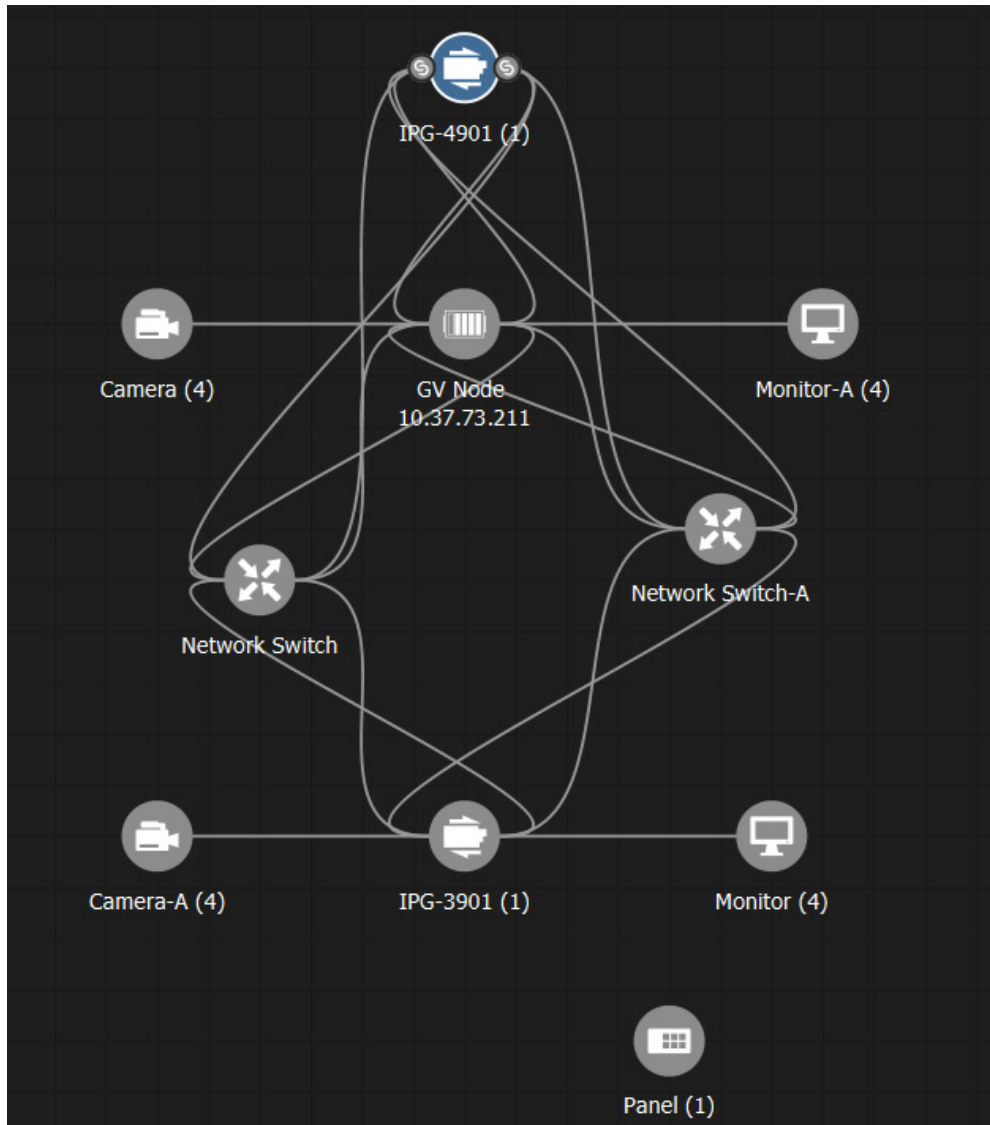
The IPG 4901 has 9 SDI input ports, 9 SDI output ports, and 2 bidirectional ETH ports. The SDI ports must be connected to the SDI ports of the GV Node in which the IPG-4901 is slotted in. This rule is not enforced in GV Convergent. GV Convergent allows you to use an IPG-4901 like an IPG-3901, however this is not a valid use case and will not work.

The 9 SDI input ports short labels are called OUT for OUT from fabric, and the 9 SDI output ports short labels are called IN for In to fabric to follow iControl's behavior.

Device properties

- It is possible to assign a logical level to SDI ports by changing the Logical Level of SDI stream at the Gateway level.
- It is possible to assign a logical level to IP streams by changing the Logical Level on ETH stream on Stream level, under the Gateway.
- It is possible to change the multicast address for SDI to IP gateways (called OUT) by changing the IP Address, Port, Redundant IP Address and Redundant Port properties on Stream level, under Gateway. These changes are propagated to iControl.
- In OFF or Redundancy mode, gateways OUT 6 to 9 and IN 6 to 9 are disabled and not visible in property editor. They become visible only if card is in Aggregation mode.

Example Topology Using an IPG-4901



Configuring an IQMix Device

The IQMIX series is a range of multi-channel video over IP transceiver modules developed for use within low latency, high bandwidth Ethernet IP networks, capable of encoding / decoding multiple SDI signals. They provide both compressed and uncompressed modes of operation.

There is no offline configuration of the IQMix device. It must first be discovered on the network by GV Convergent.

The inputs and outputs of an IQMix are called *spigots*. There are a variety of spigot configurations that are available; for example, 6 inputs / 6 outputs, 12 inputs / 0 outputs, 0 inputs / 12 outputs, 8 inputs / 0 outputs.

WARNING

The spigot configuration is set through Orbit and then GV Convergent reads it from the IQMix card. For any given spigot, you must know which mode (input or output) has been configured to connect the spigots correctly in GV Convergent.

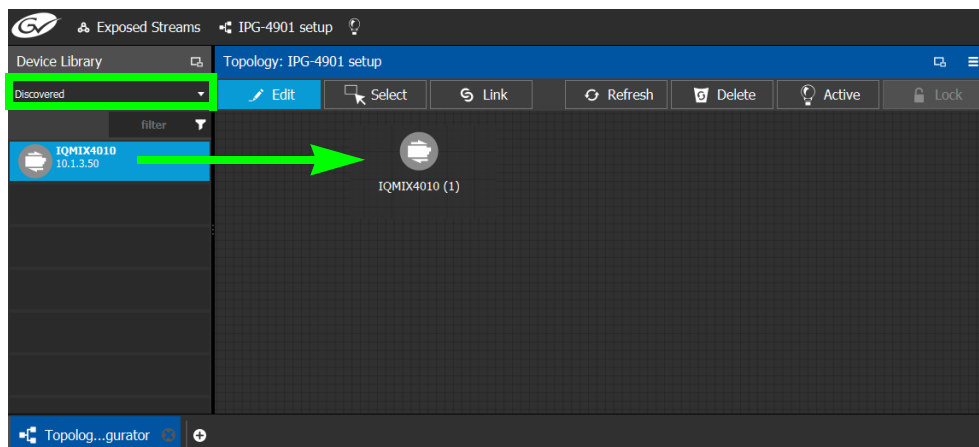
The IQMix device should be first configured with Orbit before being integrated into GV Convergent as most configuration parameters shown in GV Convergent are shown for information purposes only.

PREREQUISITES: The Domain ID of the IQMix device(s) must be set in the System Controller Group Properties under **Domain Ids**. See [Configuring a Controller Group](#), on page 19. These devices must be on the same subnet that the GV Convergent server is connected to.

Note: An IQMix using VC2 video compression format is not currently supported by GV Convergent.

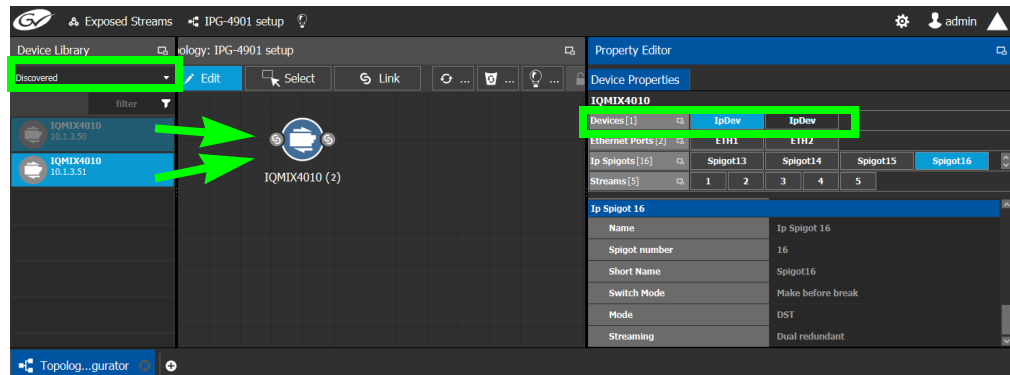
To configure an IQMix Device

- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.
- 3 From the **Device Library**, on the left, select **Discovered** from the drop-down list.



- 4 From the **Device Library, Discovered** find a device that you want to control: select the device bubble and drag it into position on the Device Graph and release the mouse button.

The device pulled from the **Device Library, Discovered** becomes greyed out and another instance of the same device instance cannot be added again to the Device Graph. However, multiple device instances found in the Device Library can be used to create a device group.



- 5 To create a device group:
 - a From the **Device Library, Discovered** find a device that you want to control: select the device bubble and drag it into position on the Device Graph and release the mouse button.
 - b From the **Device Library, Discovered** find another device that you want to control: select the device bubble and drag it on top of the first device instance already on the Device Graph and release the mouse button.

The two device instances are shown and can be individually configured in the **Property Editor**, under **Devices**, by clicking an instance.

- 6 Click on the name of the device underneath the bubble to name the device or device group.

A configuration window appears.



- 7 Enter meaningful names to identify the device group in the **Name** and **Short Name** fields. These parameters can also be set in the Property Editor.
- 8 Click **OK**.
- 9 Repeat [step 4](#) to [step 8](#) until you have added all the required devices to the topology.
- 10 Configure the IQMix properties. See also [Description of Common Device Properties](#), on page 88. The IQMix device should be first configured with Orbit before being

integrated into GV Convergent as most configuration parameters shown in GV Convergent are shown for information purposes only.

Parameter	Description
Network Host Name	The hostname is the unique name by which the associated IQMix is known on the network.
Domain ID	Set the same Domain IDs on all IQMix devices that are to communicate with each other on the network. The default value for Grass Valley equipment is 101 . Valid range: 0 to 232. See also Configuring a Controller Group , on page 19.
Internal wiring	Shows if the internal modeling of the IQMix is complete.

- 11 Create and connect the edge devices (SDI and IP devices) that are connected to the IQMix. See [Linking the Devices in a Topology](#), on page 41.

Adding NMOS Devices to a Topology

GV Convergent supports AMWA IS-04 Networked Media Open Specifications (NMOS) for device discovery and registration.

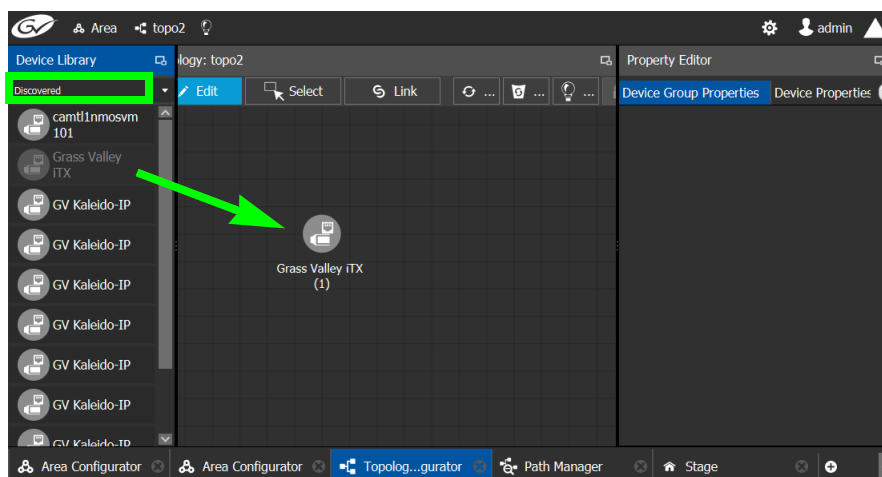
PREREQUISITES: A working NMOS registry must be available on the same subnet that the GV Convergent server is connected to. If multiple NMOS registries are found, then the registry with highest priority (the lowest number) is used. This NMOS registry must have been configured with the NMOS resources GV Convergent is going to work with. This automatic discovery of the registry is disabled by default. Contact technical support for more information for how to enable this configuration. If the NMOS media server is not on the same subnet as the GV Convergent server, contact technical support for more information for how to support this configuration.

Notes

- GV Convergent listens for changes to any of the nodes in the registry. As it receives updates, it automatically updates any device that is dropped onto any topology that is associated with that node.
- If the registry is shut down, or the node is stopped and is removed from the registry, the devices will disappear from the device list. The devices you already have dropped will remain on the topology, but will no longer receive updates.
- If the registry is restarted or the node is restarted, GV Convergent will continue to update the devices on the topology (assuming the devices have the same UUID).

To add an NMOS device to a topology

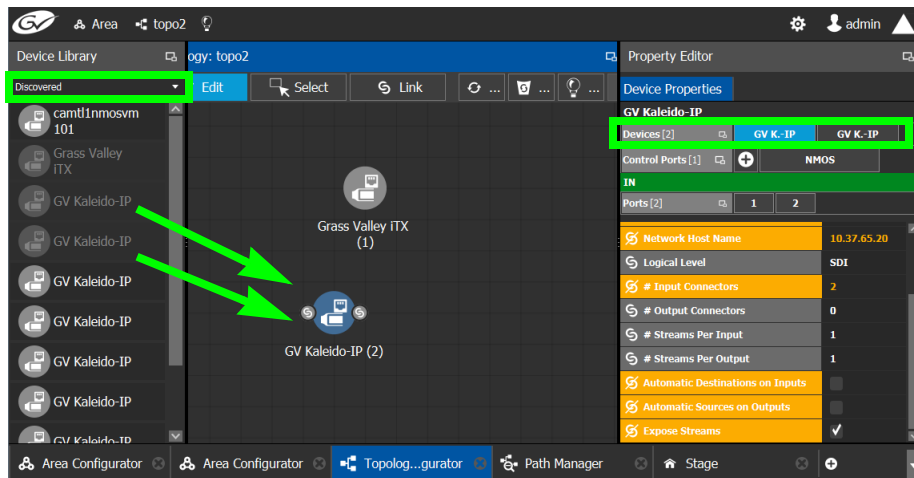
- 1 Select the required Area. See [Selecting an Area](#), on page 23.
- 2 Select the required topology. See [Selecting a Topology](#), on page 34.
- 3 From the **Device Library** on the left, select **Discovered** from the drop-down list.



- 4 From the **Device Library**, **Discovered** find a device that you want to control: select the device bubble and drag it into position on the Device Graph and release the mouse button.

The device pulled from the **Device Library**, **Discovered** becomes greyed out and another instance of the same device instance cannot be added again to the Device

Graph. However, multiple device instances found in the Device Library can be used to create a device group.



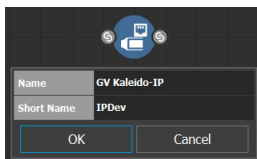
5 To create a device group:

- a From the **Device Library, Discovered** find a device that you want to control: select the device bubble and drag it into position on the Device Graph and release the mouse button.
- b From the **Device Library, Discovered** find another device that you want to control: select the device bubble and drag it on top of the first device instance already on the Device Graph and release the mouse button.

The two device instances are shown and can be individually configured in the **Property Editor**, under **Devices**, by clicking an instance.

6 Click on the name of the device underneath the bubble to name the device or device group.

A configuration window appears.



7 Enter meaningful names to identify the device group in the **Name** and **Short Name** fields. These parameters can also be set in the Property Editor.

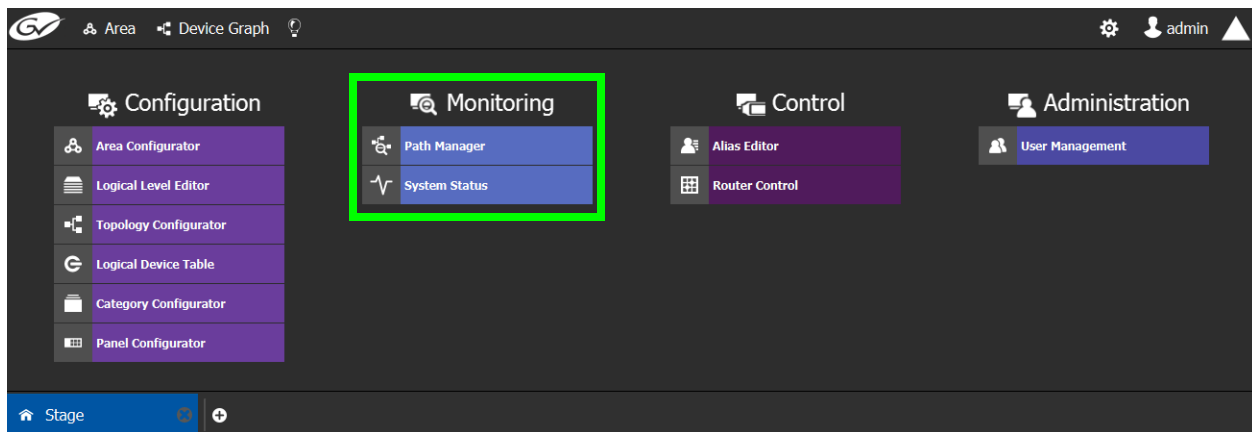
8 Click **OK**.

9 Repeat [step 4](#) to [step 8](#) until you have added all the required devices to the topology.

5 Monitoring Tasks

Overview

The Monitoring tasks in GV Convergent Client are used to view information about tie line use and the source to destination path of the streams and to monitor the health of the GV Convergent Controllers and the devices in the selected topology



The GV Convergent Monitoring Tasks include:

- [Path Manager Tasks](#), on page 112
- [System Status Task](#), on page 115

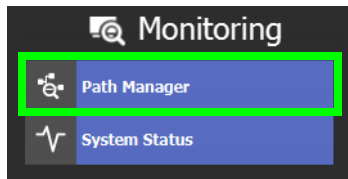
Path Manager Tasks

Use the Path Manager task to view information about the tie line use and the source to destination path of the streams.

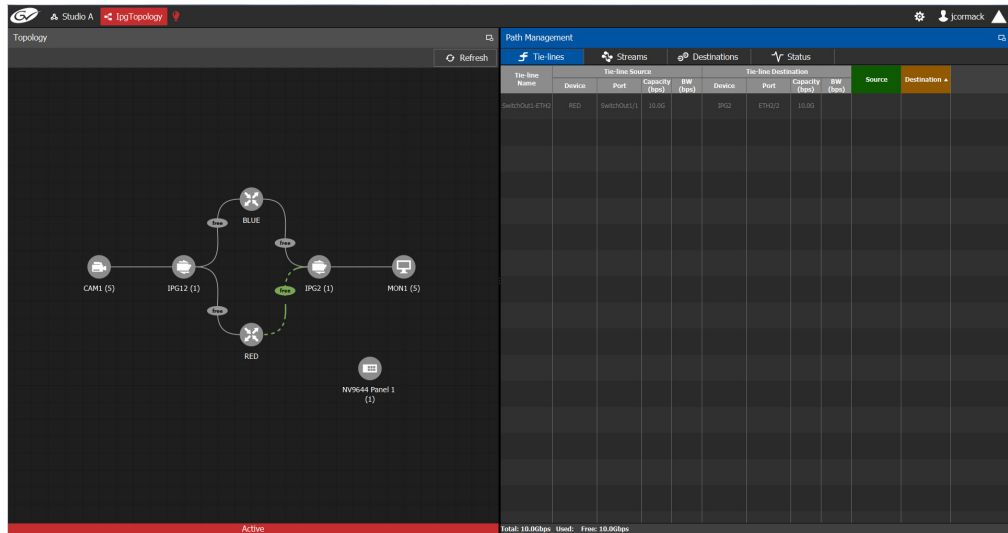
Accessing the Path Manager

To access the Path Manager Task

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.
- 3 Select the required topology. See [Selecting a Topology](#), on page 34.
- 4 Make the topology active. See [Activating a Topology](#), on page 49.
- 5 Select **Monitoring > Path Manager**.



The Path Manager task opens:



Under Path Management, click any of the following tabs for more information:

- Tie lines
- Streams
- Destinations
- Status

Viewing Information about the Tie Lines

To view information about the tie lines

- 1 Open the Path Manager for the selected topology. See [Accessing the Path Manager](#), on page 112.

- 2 Click Overview .
- 3 Select a tie line in the topology on the Device Graph.




Tie-line Name	Device	Port	Capacity (bps)	BW (bps)	Device	Port	Capacity (bps)
Switch-Out25-4.1	blue	Switch-Out25/25	10,000		GV Node-A	10.37.80.239	4.1/13
Switch-Out26-4.2	blue	Switch-Out26/26	10,000		GV Node-A	10.37.80.239	4.2/14
Switch-Out27-4.3	blue	Switch-Out27/27	10,000		GV Node-A	10.37.80.239	4.3/15
Switch-Out28-4.4	blue	Switch-Out28/28	10,000		GV Node-A	10.37.80.239	4.4/16
Switch-Out29-5.1	blue	Switch-Out29/29	10,000		GV Node-A	10.37.80.239	5.1/17
Switch-Out30-5.2	blue	Switch-Out30/30	10,000		GV Node-A	10.37.80.239	5.2/18
Switch-Out31-5.3	blue	Switch-Out31/31	10,000		GV Node-A	10.37.80.239	5.3/19
Switch-Out32-5.4	blue	Switch-Out32/32	10,000		GV Node-A	10.37.80.239	5.4/20
Switch-Out33-6.1	blue	Switch-Out33/33	10,000		GV Node-A	10.37.80.239	6.1/21
Switch-Out34-6.2	blue	Switch-Out34/34	10,000		GV Node-A	10.37.80.239	6.2/22
Switch-Out35-6.3	blue	Switch-Out35/35	10,000		GV Node-A	10.37.80.239	6.3/23

The source and destination information is displayed under the following headings:

- Tie line Name
- Tie line Source: Device, Port, Capacity (bps), BW (bps)
- Tie line Destination: Device, Port, Capacity (bps), BW (bps)
- Source
- Destination

Viewing Information about the Streams

To view information about the streams

- 1 Open the Path Manager for the selected topology. See [Accessing the Path Manager](#), on page 112.
- 2 Click Overview .
- 3 Select a tie line in the topology on the Device Graph.
- 4 Select the **Streams** tab.
- 5 Select a Tie-line under **Path Management**.

The information is displayed under the following headings:

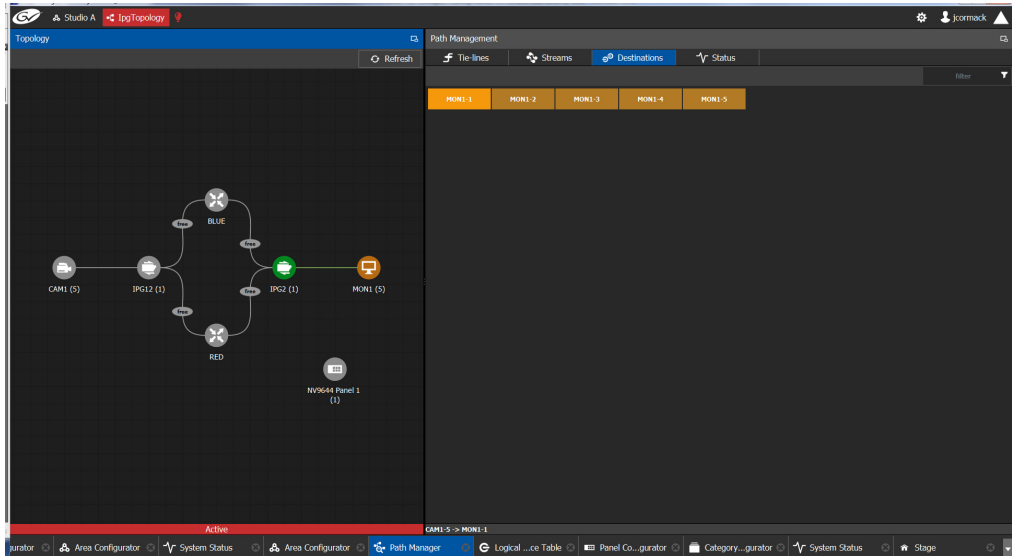
- Stream
- IP address
- BW (bps)
- Source
- Destination

Viewing Information about the Destinations


To view information about the destinations

- 1 Open the Path Manager for the selected topology. See [Accessing the Path Manager](#), on page 112.

- 2 Select the **Destinations** tab.



All the destinations are listed on the right.

- 3 Select a destination. The path details are shown. Click **Overview**  to view a highlighted path between the source, shown in green, and destination, shown in brown.

Viewing Information about the Status

To view information about the status

- 1 Open the Path Manager for the selected topology. See [Accessing the Path Manager](#), on page 112.
- 2 Select the **Status** tab.
The flow status of the DCNM is displayed, if applicable.

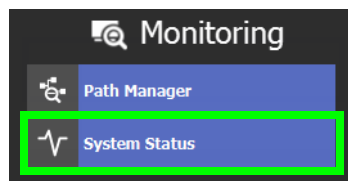
System Status Task

Use the System Status Task to monitor the health of the GV Convergent Controllers and the devices in the selected topology. You can also perform a manual failover from this task.

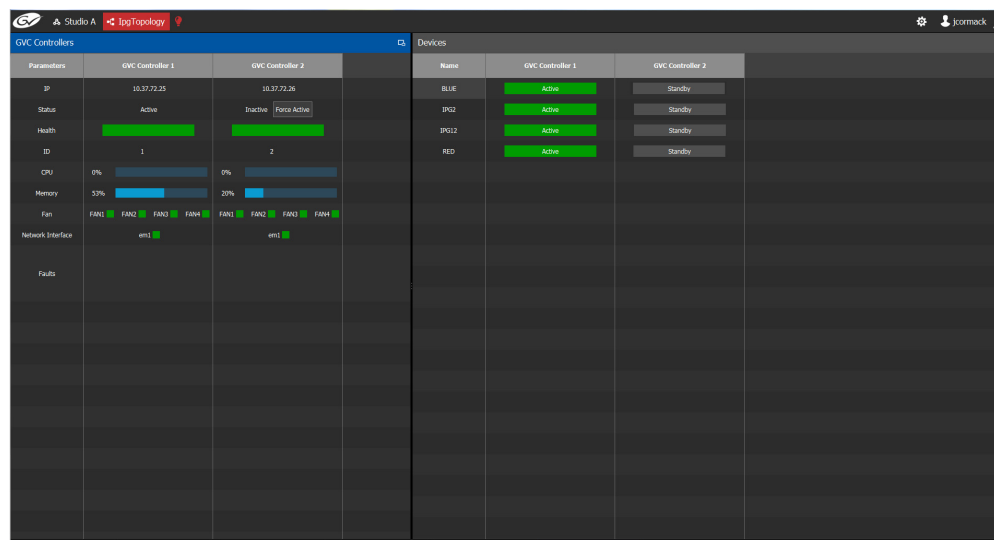
Accessing the System Status Task

To access the System Status Task

- 1 Open GV Convergent Client Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.
- 3 Select the required topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Monitoring > System Status**.



The System Status task opens



In this configuration, Controller 1 is the active controller and Controller 2 is inactive.

The System Status task displays the following information:

- The **status** of **Controller 1** is now **Active**.
- The **status** of **Controller 2** is now **Inactive**.
- The **health** field for both controllers displays a **green bar** indicating it is good.
- The **CPU** and **Memory** fields for both controllers show the current level of activity.
- The **fans** for both controllers show **green** boxes indicating health.
- The **Network Interface** port of both controllers is displayed, **em1**.
- The **status** of the devices on **Controller 1** is **active**.
- The **status** of the devices on **Controller 2** is **standby**.

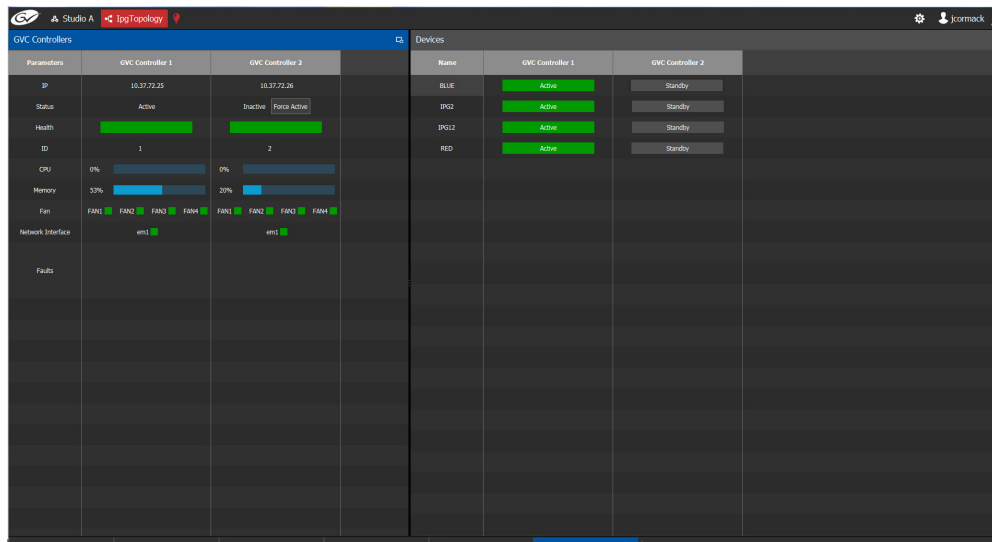
Forcing the Inactive Controller to be the Active Controller

If two controllers are configured in a redundant configuration, then during the normal course of operations, one controller is active and the other is inactive at all times.

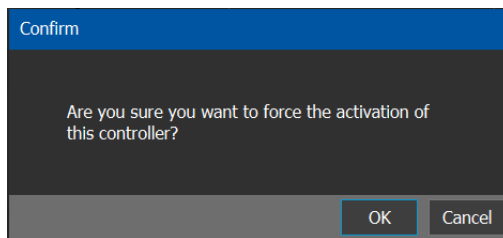
If a problem occurs, such as network loss or connectivity issues, the inactive controller (Controller 2) becomes the active controller. The controller that was formerly active (Controller 1) reboots. This is an automatic failover. You can perform a manual failover if you have administrator rights in the selected Area. See [Viewing Permissions by Role](#), on page 136.

To perform a manual failover

- 1 Open the System Status task for the required topology. See [Accessing the System Status Task](#), on page 115.

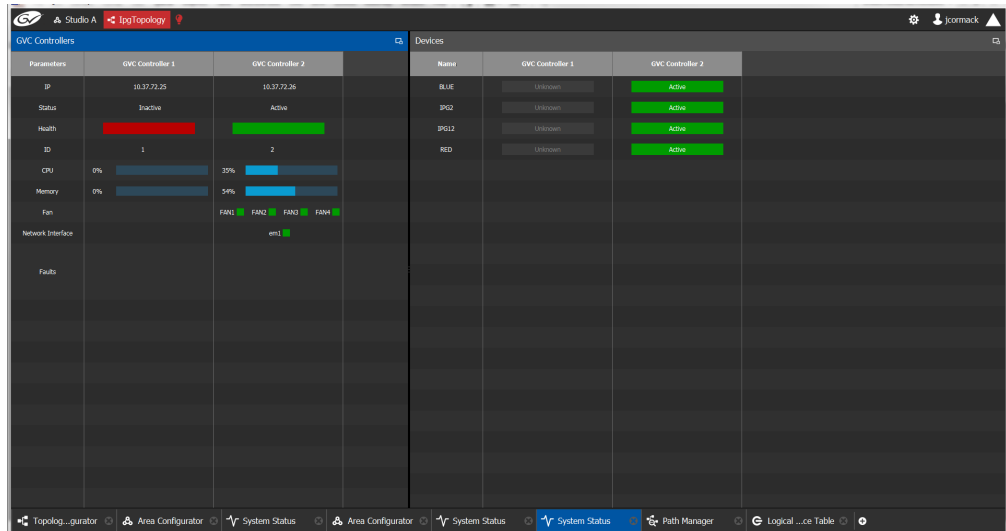


- 2 Click the **Force Active** button for the Inactive Controller.
A confirmation message appears.



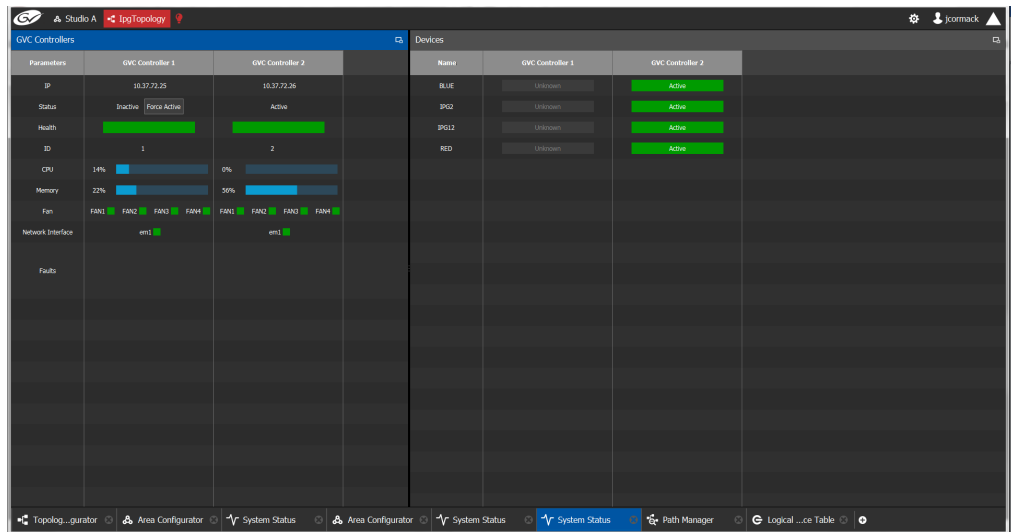
- 3 Click **OK** to continue.

The controllers switch states. The formerly inactive controller (Controller 2) becomes active. The formerly active controller (Controller 1) reboots. As it shuts down, the following changes occur and are reflected on the System Status task.



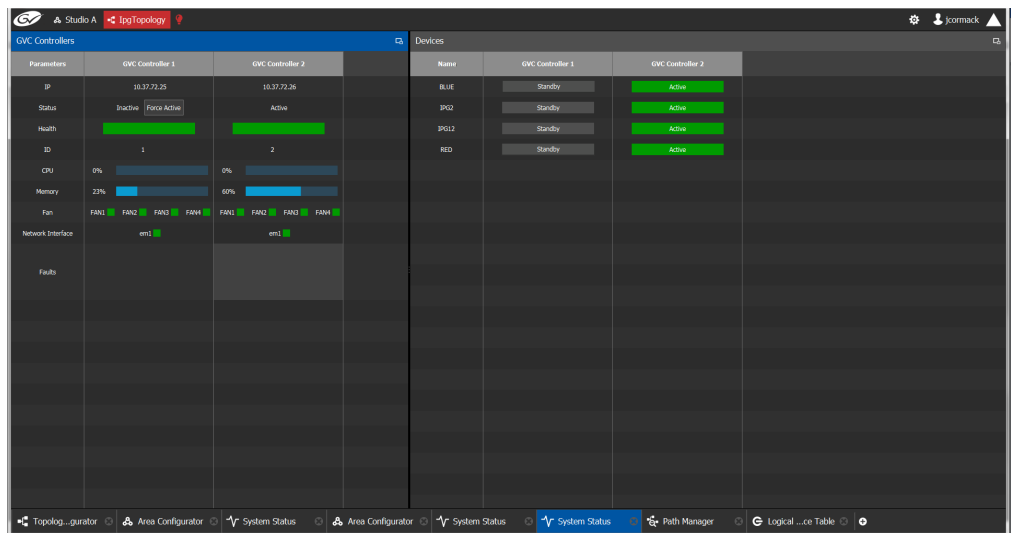
- The **Status** of the **Controller 1** is now **Inactive**.
- A **red bar** is displayed for the **Health** of Controller 1, indicating it is not good.
- The **CPU** and **Memory** are at **0%**.
- The **Fans** and **Network Interface** are blank.
- The **Status** of the **Controller 2** is now **Active**.
- A **green bar** is displayed for the **Health** of Controller 1, indicating it is good.
- The **CPU** and **Memory** fields show their level of activity.
- The **Fans** are green, indicating health.
- The **Network Interface** displays the Management Interface port name (em1).
- The status of all **devices** controlled by **Controller 1** is **unknown**.
- The status of all **devices** controlled by **Controller 2** is **active**.

When Controller 1 comes back, the following changes occur and are reflected in the interface.



- The **status** of **Controller 1** is now **Inactive**.
- The **health** field for Controller 1 displays a **green bar** indicating it is good.
- The **CPU** and **Memory** fields for both controllers show the current level of activity.
- The **fans** for both controllers show **green** boxes indicating health.
- The **Network Interface** port of both controllers is displayed, **em1**.
- The **status** of the devices on **Controller 1** is **unknown**.
- The **status** of the devices on **Controller 2** is **active**.

Finally, when Controller 1 is fully rebooted, the following changes occur:



- The **status** of the devices on **Controller 1** is **standby**.

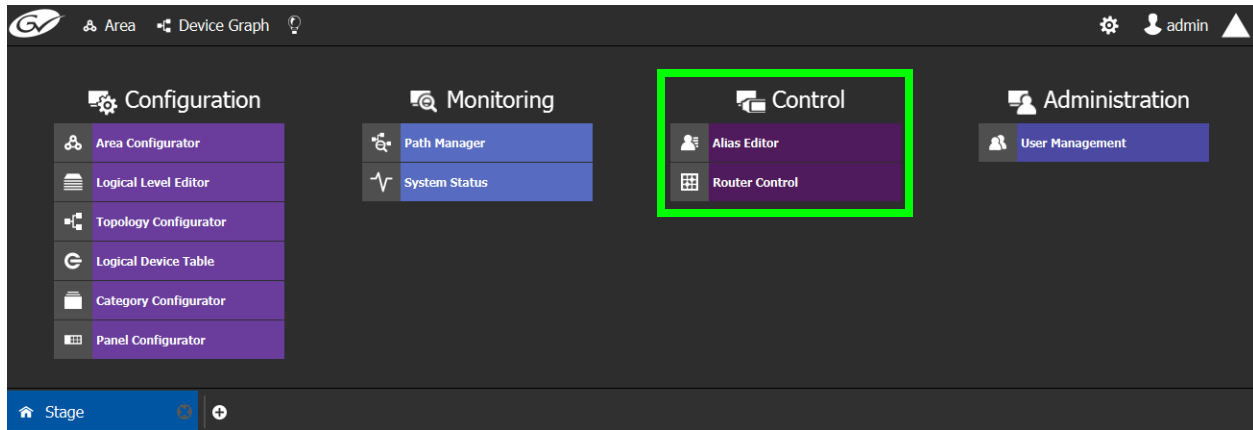
Permissions

Only users who are assigned to Administrators role in the selected area have View, Edit, and Delete permissions in the System Status task. Users who are assigned to Engineers, Operators, and Maintenance roles have view rights only. See [Viewing Permissions by Role](#),

on page 136.

6 Control Tasks

Overview



The GV Convergent Monitoring Tasks include:

- [Alias Editor Tasks](#), on page 122
- [Router Control Tasks](#), on page 124

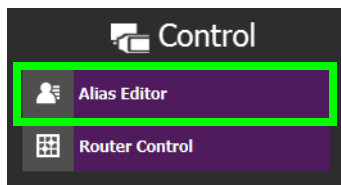
Alias Editor Tasks

Use the Alias Editor to assign aliases to sources and destinations. More than one set of aliases can be created to allow the source / destination naming conventions to be changed on the fly, for example, to change the interface for different programmes or production staff, or to support another language(s).

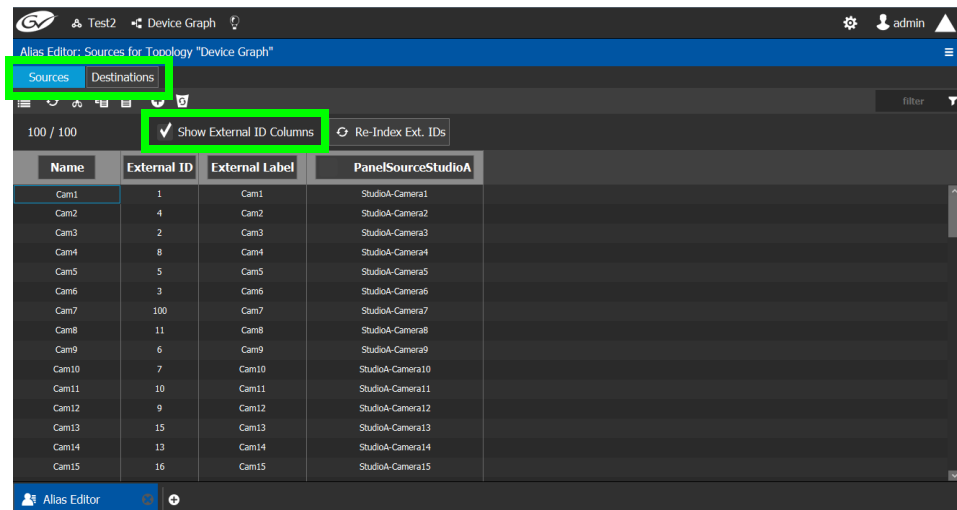
Accessing Alias Editor Tasks

To access the Alias Editor

- 1 Open GV Convergent Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.
- 3 Select the required topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Control** > **Alias Editor**.



The Alias Editor task opens.



The Alias Editor has tabs for Source and Destination IDs.

About External IDs and Northbound Control Interfaces

External IDs are shown by setting **Show External ID Columns**. External IDs are used for Northbound control interfaces that use ID-based protocols.

Certain control protocols require that the numbering of external IDs must be contiguous. In this case, if they are not sequential, click **Re-Index Ext. IDs**.

External IDs that are larger than the total number of sources or destinations will not status northbound.

GV Convergent must have status for all destinations within GV Convergent or they will not report northbound for that external ID. For example, if a take has never been made to a destination, that destination will not have its status set. This behavior is different from a physical router where all destinations have a status set by default.

Adding Aliases

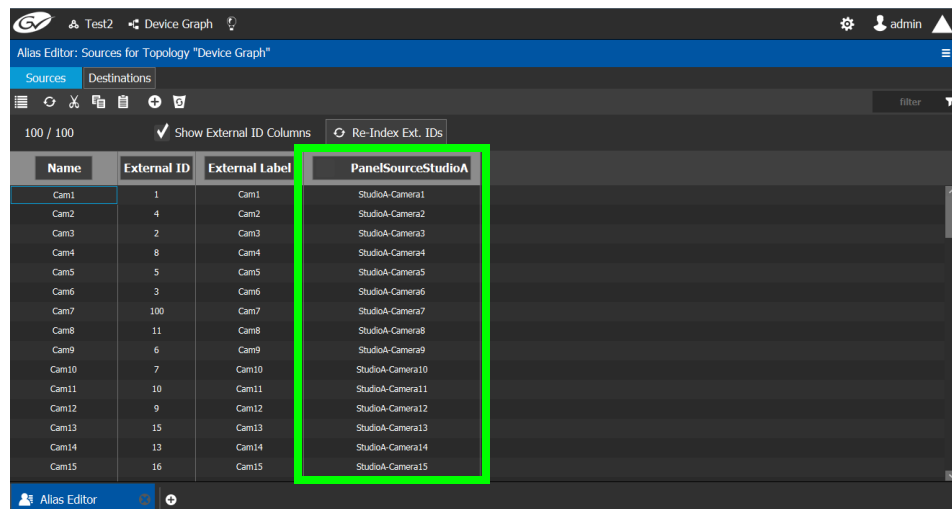
These aliases can be used in router control to change the name of sources and destinations from short labels to the labels of the corresponding alias. The alias can be composed of up to 24 characters to create a more descriptive name than its equivalent short label. Aliases can also be used with panels; see [Creating a New Panel](#), on page 75. See also [Using Source and Destination Aliases with a Panel](#), on page 81.

Once an alias column has been added, you can also copy/paste a list of values from an Microsoft Excel spreadsheet column into the alias column to bulk name the sources and destinations.

To Add Aliases

- 1 Open the Alias Editor. See [Accessing Alias Editor Tasks](#), on page 122.

The Alias Editor task opens.



The Alias Editor has tabs for Source and Destination IDs.

- 2 Select **Show External ID Columns** columns if necessary.
- 3 You can add one or more columns to create an aliases for the sources. Click **Add Column** at the top of the UI to add a column for the aliases. Enter the corresponding aliases in this column or paste a list of values from an Microsoft Excel spreadsheet column into the alias column to bulk name the sources.

The aliases are now available to be used with router control and panels. If aliases are used with a panel and they are longer than 8 characters, consider setting the **Display 24 characters** option for the panel in the Panel's **Property Editor**. See [Creating a New Panel](#), on page 75.

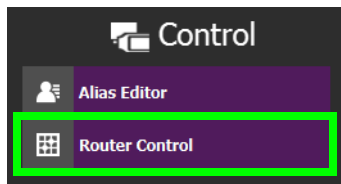
Router Control Tasks

Use the Router Control task to control the sources and destination in an active topology.

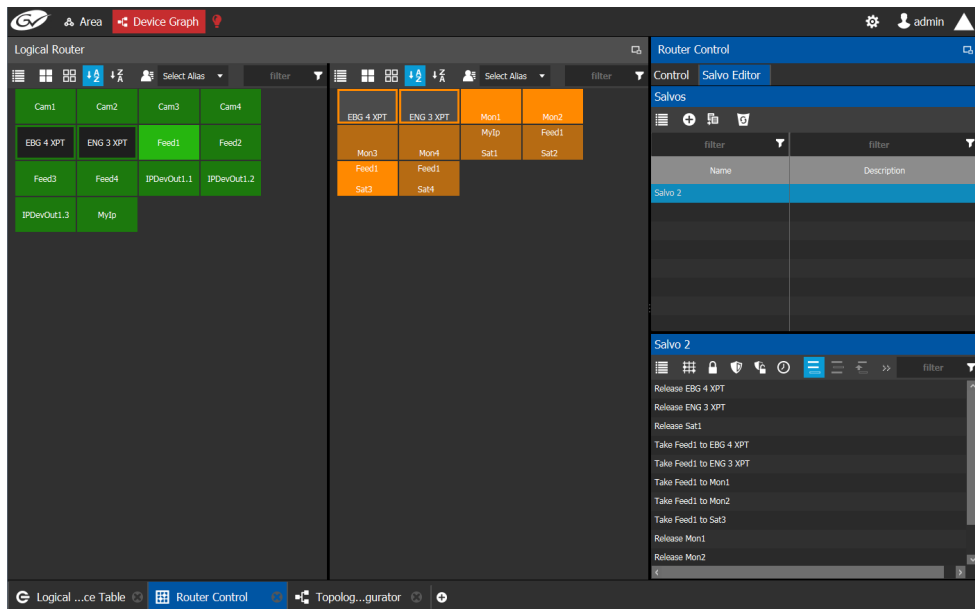
Accessing the Router Control Task

To access the Router Control task

- 1 Open GV Convergent Stage. See [Navigating Back to Stage](#), on page 12.
- 2 Select the required Area. See [Selecting an Area](#), on page 23.
- 3 Select the required topology. See [Selecting a Topology](#), on page 34.
- 4 Select **Control** > **Router Control**.



The Router Control task opens

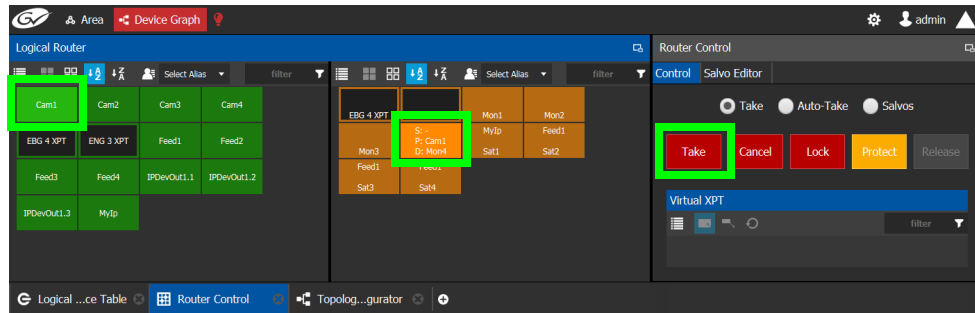


The sources are listed on the left under Logical Router. The destinations are listed in the center. The right hand column displays the actions you can perform.

Performing Actions in Router Control

You can perform a take in Router Control as follows.

- 1 Under **Logical Router**, select a source, shown in green.
- 2 Select a destination, shown in brown.
- 3 Under **Router Control, Control tab**, click **Take**.




Parameter	Description
Take / Auto-Take / Salvos radio buttons	Sets the router control mode: <ul style="list-style-type: none"> Take: Once the source and destination has been selected, you then click Take to make the take. Auto-Take: Once the source and destination has been selected, the take is automatically made. Salvos: Trigger previously-configured salvos. See also Creating Salvos, on page 125.
Take button	Makes the connection between the currently selected source and destination. In salvo mode, it triggers the selected salvo.
Cancel button	Cancels the current selection.
Lock button	Will lock the current destination to not allow the source to be changed by any user. High Tally when enabled on selected destination.
Protect button	Will protect the current destination to not allow the source to be changed by a user other than the current user. High Tally when enabled on selected destination.
Release button	Releases lock or protect on the selected destination.
Virtual XPT > Minimize Virtual XPT ^a	To minimize the destinations within the selected virtual XPT ^b .
Virtual XPT > Expand Virtual XPT ^a	To show all the destinations within the selected virtual XPT, including the nested destinations of all other virtual XPTs ^b .
Virtual XPT > Reset XPT ^a	Initialize the selected virtual XPT. This will route the appropriate virtual source to the logical destinations that were configured for the virtual XPT in the logical device table.

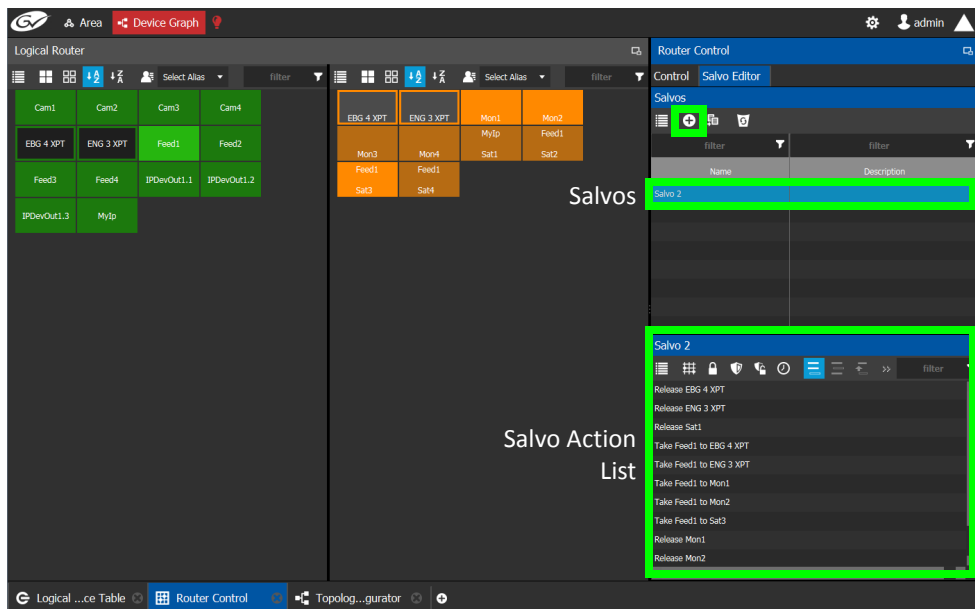
a. This becomes available when virtual XPTs have been previously configured (see [Configuring Virtual Crosspoints \(XPTs\)](#), on page 61). You must select a destination that is part of a virtual destination in the router control grid or select a virtual destination in the router control grid.

b. See [Minimize and Expand Virtual XPT Destinations](#), on page 67 for more information.




Creating Salvos

You can create a salvo as follows.

- 1 Under **Router Control, Salvo Editor** tab, click **New** .
- 2 Enter a name and description for the salvo in the **Salvos** list.



Icon	Description
	New Create a new salvo and associated salvo action list.
	Duplicate Make a copy of the currently-selected salvo.
	Delete Remove the currently-selected salvo / take.
	Take Add the currently-selected source and destination as a take action to the salvo list. The following functional behaviors are by design: <ul style="list-style-type: none"> • If multiple destinations are selected, then there will be multiple take actions added to the salvo list. • If there is only one source and multiple destinations selected, then that source is routed to all destinations. • If multiple sources are selected (for example, Source1, Source2, Source3) and multiple destinations are selected (for example, Destination1, Destination2, Destination3, and Destination4), then the takes added to the salvo list are Source1 to Destination1, Source2 to Destination2, Source3 to Destination3.
	Lock Lock the currently select destination.
	Protect Protect the currently select destination.
	Release Release the currently select destination.
	Pause The wait time in milliseconds that can be added to the list of operations.
	Append In this mode, any new salvo operation will be added to the end of the salvo action list.
	Insert In this mode, any new salvo operation will be inserted at the currently selected spot in the salvo action list.

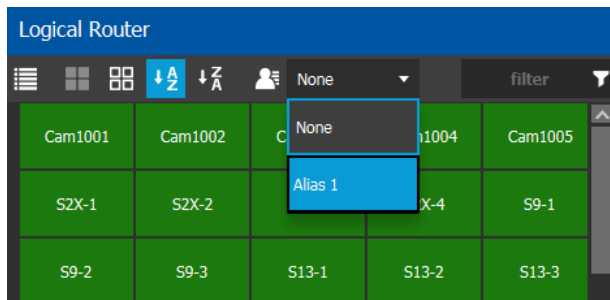
Icon	Description
	Replace In this mode, any new salvo operation will replace the currently-selected salvo action from the salvo action list.
	Move Up Move the selected salvo action up in the salvo action list.
	Move Down Move the selected salvo action down in the salvo action list.

- 3 Under **Logical Router**, select a source, shown in green.
- 4 Select a destination, shown in brown.
- 5 Under the salvo action list, click **Take**.

Selecting the Name of Sources and Destinations

When a source or destination has been assigned an alias, you can select the alias to be shown through the Alias drop-down menu. To create aliases, see [Alias Editor Tasks](#), on page 122.

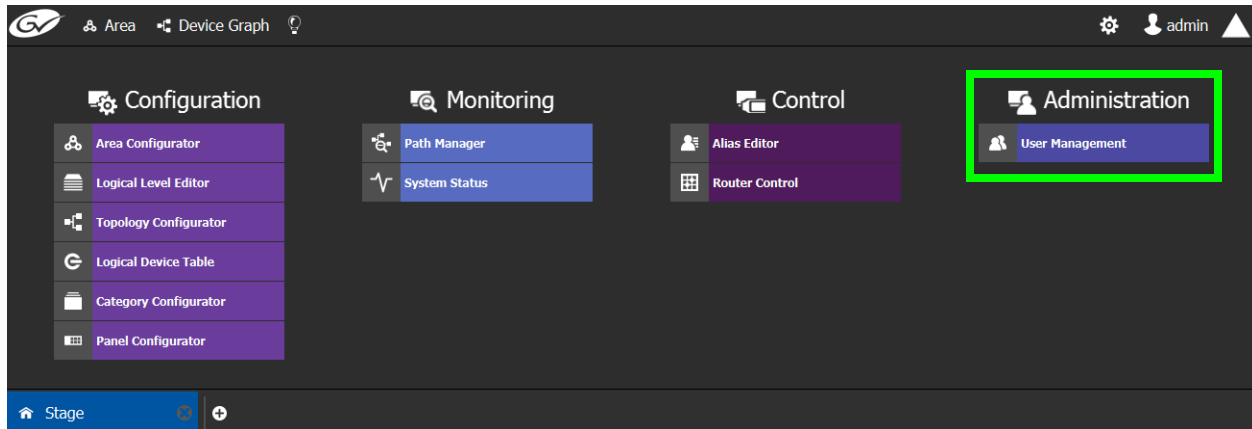
- 1 Select a source or destination under **Logical Router**.
- 2 Click the alias drop-down menu and select an alias option.



The label for the selected source or destination changes to the selected option.

Administration Tasks

User Management is the only Administration task. Only administrators have access to it.



User Management Task

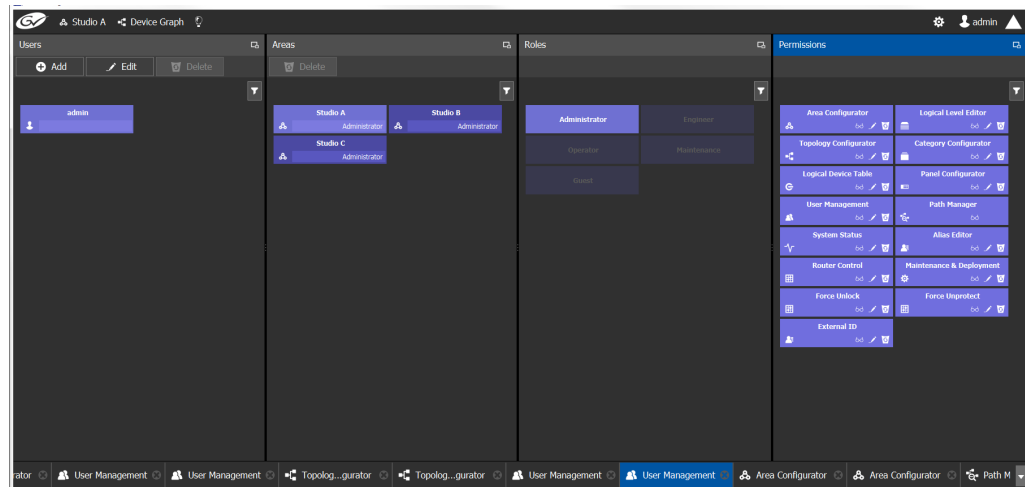
As an administrator, you have access to the User Management Task. This is used for:

- Creating, editing, and deleting user profiles. See [Creating User Profiles](#), on page 131.
- Managing access rights to the areas in your system. See [Granting Access Permissions to an Area](#), on page 133.
- Viewing and assigning permissions according to predefined user roles. See [Viewing Permissions by Role](#), on page 136.

The User Management Task Overview

Note: Before you assign access permissions, you must create areas in your system. For details, see [Area Configurator Tasks](#), on page 17.

When you first log in to the User Management Task, the admin tile appears in the **Users** section.



The User Management Task UI has four columns:

- **Users:** The column displays a tile for each user who has access to your system. See [Creating User Profiles](#), on page 131.
- **Areas:** The column displays a tile for each area defined in your system. See [Granting Access Permissions to an Area](#), on page 133.
- **Roles:** The column displays a tile for each of the predefined roles: Administrator, Engineer, Operator, Maintenance, and Guest. Permissions to view, edit, and delete within each client task vary by role. These permissions can be seen when you select the role in the Roles column; i.e., **Administrator** is selected in the screen shot above. The permissions granted to the administrator role are shown in the **Permissions** column. (Members of the administrator role have full access permissions to all areas in the system). See [Viewing Permissions by Role](#), on page 136 for a list of the permissions available to each role.
- **Permissions:** The column displays a tile for the tasks that users can perform within the areas in your system according to the selected User, Area, and Role. View, edit and delete icons show the current user's rights for the task.

Creating User Profiles

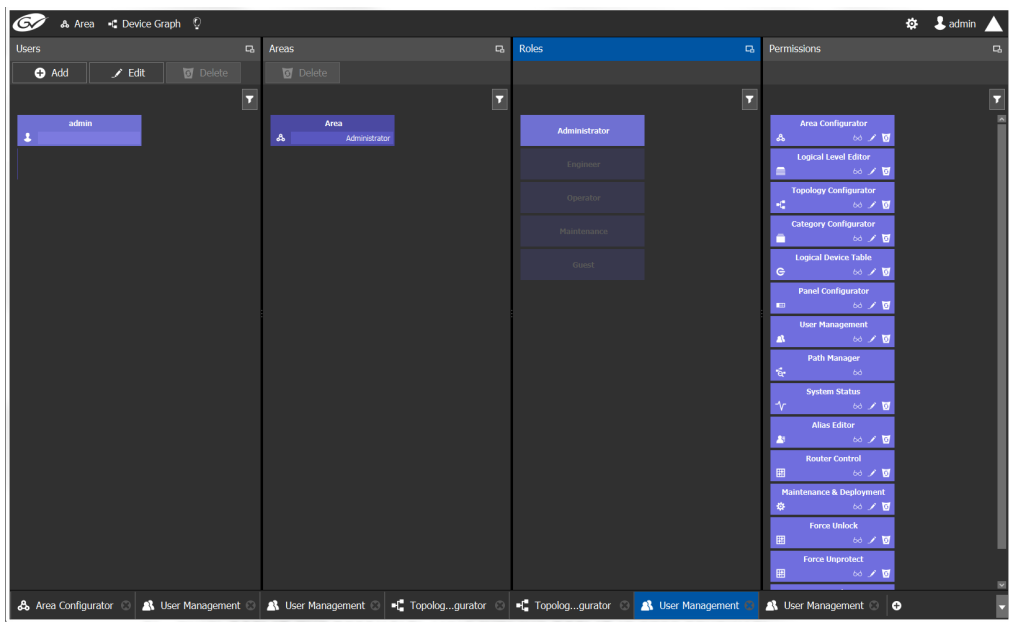
The first step is to create your user profiles.

Note: To access the user profiles, you must belong to the administrator role. Otherwise, Administration tasks are not visible in GV Convergent Client Stage.

To create a new user account:

- 1 Launch GV Convergent Client.
- 2 Log in as an administrator.
- 3 Select **Administration > User Management**.

The User Management window appears.



- 4 Click the **Add** button  in the top left corner.

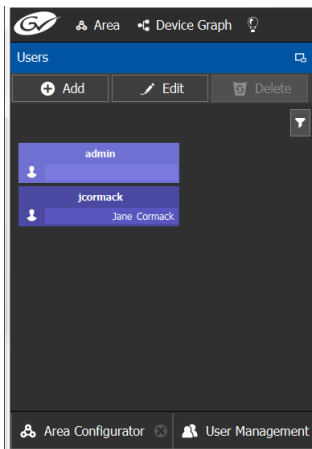
The user configuration window appears.

User ID	jocormack
First Name	Jane
Last Name	Cormack
Password	•••••
Confirm Password	•••••
<input type="button" value="Ok"/> <input type="button" value="Cancel"/>	

- 5 Enter the required information in the **User ID**, **First Name**, **Last Name**, **Password**, and **Confirm Password** fields.

- 6 Click **OK**.

A new tile representing the new user account appears in the **Users** section.



In addition, you can perform the following procedures in the **Users** section:

- **Edit:** Select the icon for the user and click **Edit** to modify the user's credentials.
- **Delete:** Select the icon for the user and click **Delete** to remove the user account. There is no confirmation when you click **Delete**. The user profile is immediately removed.

See also

- [Switching User Profiles](#), on page 13

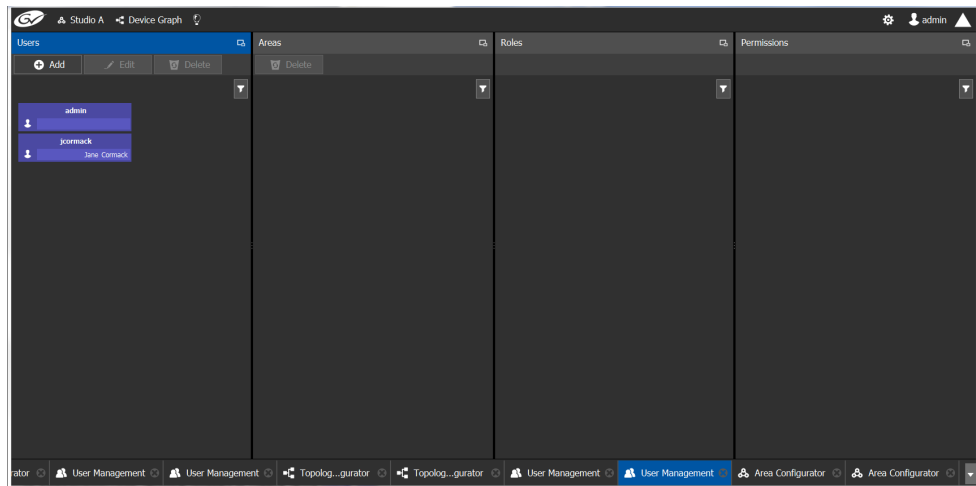
Granting Access Permissions to an Area

Users are granted access to each area via a predefined role. The procedure is as follows:

To grant access to an area

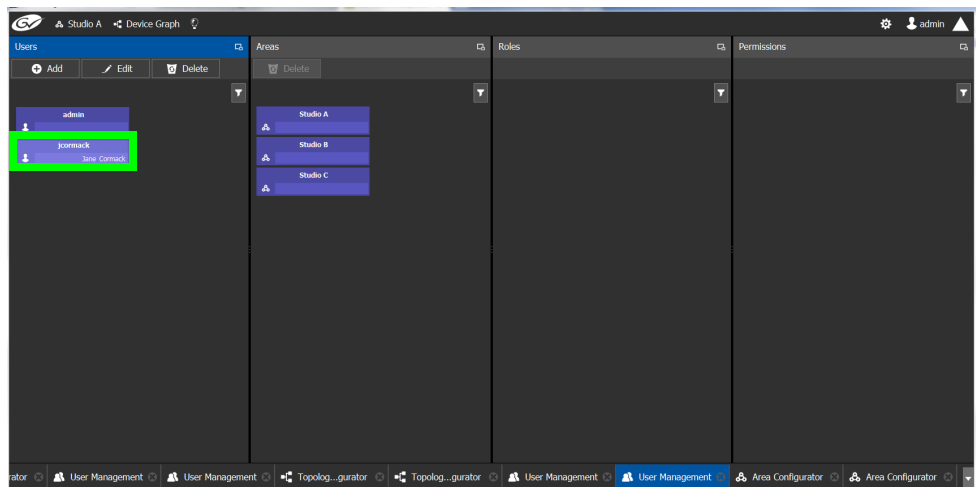
- 1 Launch GV Convergent Client.
- 2 Log in as an administrator.
- 3 Select **Administration > User Management**.

The User Management task appears.

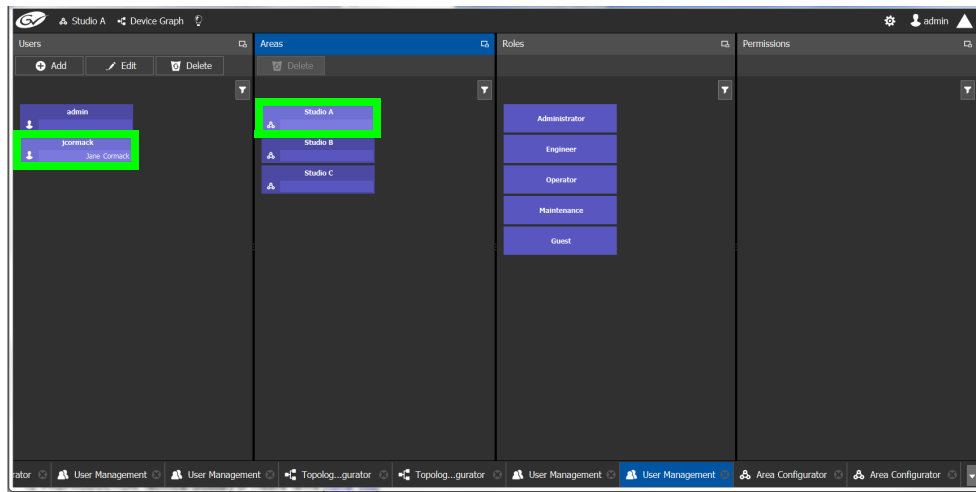


The **Users** column displays tiles for all the users who have access to the system.

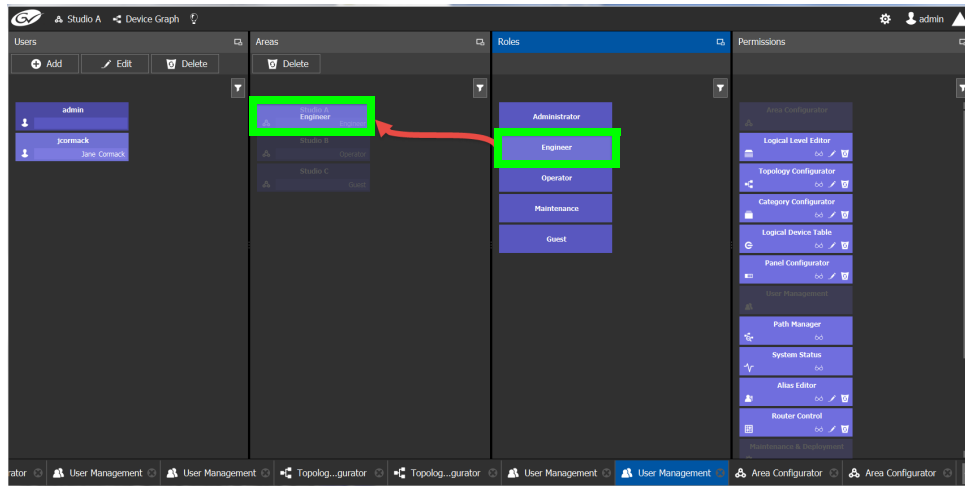
- 4 Select the applicable user tile in the **Users** section.



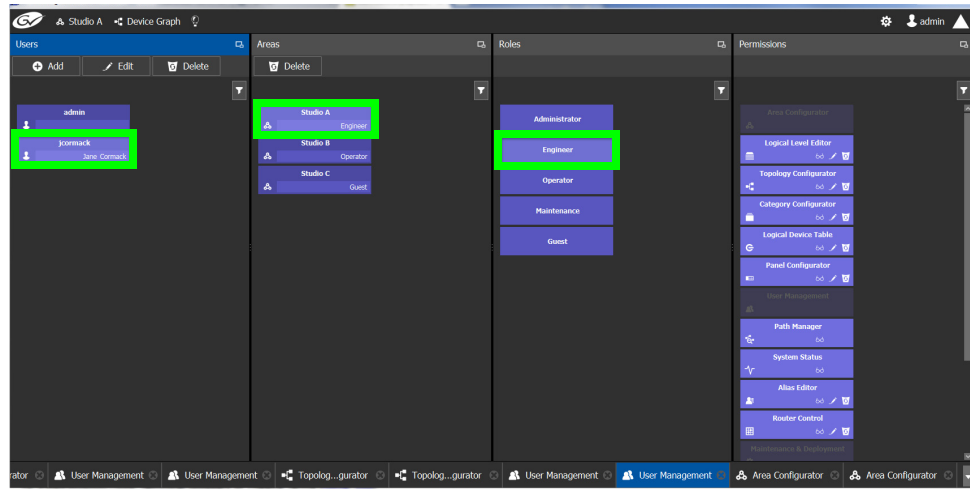
The **Areas** column displays tiles for all the areas defined in your system.



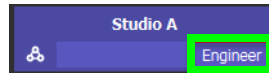
- 5 Select an area tile in the **Areas** section while keeping the user tile selected.
The **Roles** column displays tiles for all the roles when both the user tile and the area tile are selected, at the same time.
- 6 Select a role tile and drag it on top of the area tile.



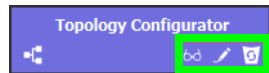
This action gives the user all the permissions defined for the role in the selected area.



When you select the user tile in the Users section, the user's role in the area is displayed at the bottom right of the Area tile.



The permissions granted to the selected role; i.e., view, edit, delete, are displayed on the Permissions tile in the **Permissions** column.



These are listed in the next section.

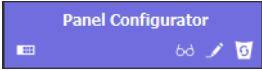
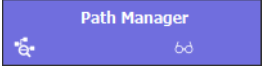
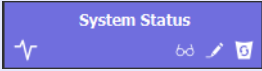
Viewing Permissions by Role

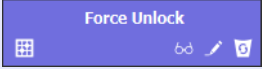
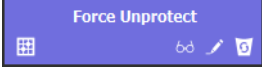
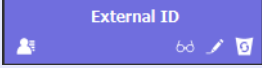
Users are granted access to the areas in the system via their assigned roles. The following rules apply:

- Users can be assigned to different roles in different areas.
- Users cannot be granted permissions as individuals, only according to role.
- The roles are predefined, as follows: Administrator, Engineer, Operator, Maintenance, and Guest. The roles cannot be modified.
- Administrators have full access to all tasks in all areas. Guests have the least permissions. The Engineer, Operator, and Maintenance roles have various permissions, as listed in the following table:

The permissions granted to each role can be viewed on the tiles in the Permissions list book of the User Management task. These can be viewed when the user, the area, and the role are all selected at the same time.

Task	Role	Permissions
Area configurator 	Administrator	View, Edit, Delete
	Engineer	No access
	Operator	No access
	Maintenance	No access
	Guest	No access
Logical Level Editor 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	No access
	Maintenance	No access
	Guest	No access
Topology Configurator 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	View
	Maintenance	No access
	Guest	No access
Category Configurator 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	No access
	Maintenance	No access
	Guest	No access
Logical Device Table 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	No access
	Maintenance	No access
	Guest	No access

Task	Role	Permissions
Panel Configurator 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	No access
	Maintenance	No access
	Guest	No access
User Management 	Administrator	View, Edit, Delete
	Engineer	No access
	Operator	No access
	Maintenance	No access
	Guest	No access
Path Manager 	Administrator	View
	Engineer	View
	Operator	View
	Maintenance	No access
	Guest	No access
System Status 	Administrator	View, Edit, Delete
	Engineer	View
	Operator	View
	Maintenance	View
	Guest	No access
Alias Editor 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	View, Edit, Delete
	Maintenance	No access
	Guest	No access
Router Control 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	View
	Maintenance	No access
	Guest	No access
Maintenance & Deployment 	Administrator	View, Edit, Delete
	Engineer	No access
	Operator	No access
	Maintenance	View
	Guest	No access

Task	Role	Permissions
Router Force Unlock 	Administrator	View, Edit, Delete
	Engineer	No access
	Operator	View, Edit, Delete
	Maintenance	No access
	Guest	No access
Router Force Unprotect 	Administrator	View, Edit, Delete
	Engineer	No access
	Operator	View, Edit, Delete
	Maintenance	No access
	Guest	No access
External ID 	Administrator	View, Edit, Delete
	Engineer	View, Edit, Delete
	Operator	No access
	Maintenance	No access
	Guest	No access



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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