GV CONVERGENT

VERSION 2.7.0

Release Notes

13-00952-010 AU

2020-10-21

Patent Information

This product may be protected by one or more patents.

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Part Number	13-00952-010 AU
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Table of Contents

Release Notes

The *GV Convergent Release Notes* guide includes lists of new features and enhancements, bugs fixed, as well as known issues and limitations associated with the latest version of the GV Convergent software.

Overview

GV Convergent version 2.7.0 is a major release many new features to GV Convergent. This release also contains new bug fixes (see New Features, Enhancements, and Bugs Fixed in GV Convergent, on page 5). See also Known Issues and Limitations, on page 59.

Before Upgrading GV Convergent

Backup the GV Convergent configuration to your local PC before you perform a GV Convergent software upgrade so that you can return to the previous GV Convergent software version if necessary. Refer to the *GV Convergent User Guide* for how to do this. See Related Documentation, on page 71.

Certain installation requirements must be met before upgrading; see Installation and Network Requirements, on page 71.

New Features, Enhancements, and Bugs Fixed in GV Convergent

The following is a list of GV Convergent features and enhancements. The most recent items are marked with a star (★) symbol.

GV Convergent Version 2.7.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

★ [Ref. #PEG-11323] **Support of NV9680 virtual/software panel:** GV Control Systems added the support for the new NV9680 panel (hardware and software), which has 4 rows of 20 relegendable buttons, with 2 RU.

As part of this integration, a new layout for Panel Configurator was added.

★ [Ref. #PEG-11300] **Ability to generate audio logical devices with selectable amount of channels per device:** GV Control Systems added the ability to specify the desired number of audio channels while creating audio logical sources/destinations, from AES-67 streams, from the *Channel Browser*.

★ [Ref. #PEG-11220] **Video/Audio/Metadata IP flow bandwidth report in GV control systems for GVOP devices:** GV control systems now dynamically reports the video, audio and metadata IP flow bandwidth of transmitters and receivers, for devices using GVOP, based on the flow presence and the standard reported by the cards.

★ [Ref. #PEG-11166] **Support of NV8500 hybrid router connected to a gateway:** Improvements were made to support a mix of (de)embedder and SDI cards in the NV8500 hybrid router by selecting ports which are connected or not to a (de)embedder. For example, path finding will use a disembedder if an audio breakaway is requested and will use a SDI port if a SDI take is requested. This was conditioned on the fact that the hybrid router is connected to another SDI router or to source/destination devices.

Now, this is also supported if the hybrid router is connected to a gateway which sends/receives in TR-04 or 2110 format.

★ [Ref. #PEG-11119] **Automatic detection of the router type and cards in slots for NV8500 hybrid routers:** The control system added the ability to detect automatically the router type once the router control ports are properly set.

Once the router type is detected, the internal wiring is built and the input/output slots are automatically and properly configured, including the slots number as well as the slots card type and the description.

No manual configuration is required anymore by the operator.

In case of card type change, the control system provides the ability to update the new card via an option on the control port called **Update Slotted cards**, that way the internal wiring is rebuilt to take into account the new updates for all slots cards. The update could be triggered from either the main or redundant control port and the user will be prompted to confirm the update.

Bugs Fixed

★ [Ref. #PEG-11313] **Take to a destination may affect another destination not part of the take:** A bug fix was done for an issue where takes to a specific destination may affect other destinations not part of the take.

★ [Ref. #PEG-11291] **Virtual IP now fails over properly when the operating system runs out of memory:** In the event of the GVC server's operating system running out of memory on an active server, the failover that follows now properly re-assigns the virtual IP to the new server instead of leaving it on the faulty server.

★ [Ref. #PEG-11229] **NMOS Senders/Receivers with no interface_bindings (empty) won't be mapped anymore to existing ports/interfaces:** In the early NMOS days, GV control systems were mapping NMOS senders/receivers with no *interface_bindings (empty),* to the existing ports/interfaces. This was done to accommodate some NMOS devices that were not properly reporting the *interface_bindings.*

This accommodation no longer makes sense and was removed from GV control systems. Now, any NMOS senders/receivers that are missing *interface_bindings* won't be listed under the existing ports/interfaces.

★ [Ref. #PEG-10959] **Latest Mac OS-X version support with NV Virtual Router Panels:** The latest Mac OS-X version is now supported with NV Virtual Router Panels. Note that the Gatekeeper must be disabled for NV virtual panels to run on MAC OS.

GV Convergent Version 2.6.0

This release adds the following enhancement(s) and corrects the following issue(s).

Bugs Fixed

- [Ref. #PEG-11291] **Virtual IP now fails over properly when the operating system runs out of memory:** In the event of the GV Convergent server's operating system running out of memory on an active server, the failover that follows now properly re-assigns the virtual IP to the new server instead of leaving it on the faulty server.

GV Convergent Version 2.6.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-11225] **Quick Connect now remembers last selection of IP/SDI network choices:** In the Topology Configurator, the Quick Connect option will now remember the IP connection, SDI device generation, and the choice of main and backup network settings.

  Note that this is saved on a per user basis in Windows. It is not system-wide to GV Convergent.

- [Ref. #PEG-11190] **DCNM v11.4(1) support:** The control system now supports Cisco DCNM v11.4(1).

Bugs Fixed

- [Ref. #PEG-11236] **Panel not coming online after upgrading to GV Convergent version 2.5.0:** If an NVision panel was in a state where a category was being displayed before an upgrade to GV Convergent version 2.5.0 was done, the panel would not come online after the update. It would be unaffected by the update if the current panel page had no categories displayed. This issue has been fixed in GV Convergent version 2.6.0.

GV Convergent Version 2.5.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #UCCM-1464] **The Sony NMOS registry becomes the default NMOS registry in GV Convergent:** GV Convergent has the ability to run a NMOS registry. In previous GV Convergent versions, the Grass Valley NMOS registry was used as the default registry. This version now uses the Sony NMOS registry in replacement for the Grass Valley NMOS registry.

  In use, this update is transparent and there are no changes in how to use GV Convergent.

- [Ref. #PEG-10915] **K-Frame switcher with 25G connections support in the control system:** K-Frame switcher 25G connections support was added to the control system.

- [Ref. #PEG-11103] **NV Hybrid routers support:** The NV Hybrid routers support has been added to GV Control Systems.

  A new virtual device called "NV Hybrid Router" was added to the list of virtual devices.

  Once added to the topology, the router type can be selected from the available list: NV8140, NV8144, NV8280, NV8576 or NV8576. Plus the relevant control ports.

  Once selected, the number of slots and ports are automatically adjusted based on the router type.

  Then, the card type should be manually selected, for each input slot (Disembedder, MADI, SDI, No card) as well as for each output slot (Embedder, MADI, SDI, No card), as the automatic detection is not supported yet but planned for a later release.

  Based on the card type, the ports are automatically enabled/disabled based on the expected card type configuration.

  For output slots, the Disembedder/Embedder card type, that is used for shuffling on the SDI input, is also not supported yet and planned for a later release.

  Also, MADI sources or destinations need to be directly connected to the same hybrid router.

  The user has the ability to push the Lock/Protect from the Control System to the router for destinations that are directly connected to the router. This requires enabling the "**In router Lock/Protect enabled**" property on the control port.

  Also, the router Lock/Protect status is displayed only for destinations directly connected to the router.

  If a specific router port is locked/protected but not linked to any destination within the Control System, the Lock/Protect status won't be exposed in the Control System and in fact they are not releasable.

  Destinations Lock/Protect is performed via the panel and if a destination is locked by another user, any take to this same destination will fail.

  A panel admin user has the ability to release locks made by another user where non-admin users could only release locks they made.

- [Ref. #PEG-11160] **Panel Exit mode for categories:** A new property named *Exit Page* for the Category button can now be used to indicate which page the panel should navigate to upon selection of a category item. The default return page of the Category button will still be applicable If the *Exit Page* property is not set or if the *Exit Mode* is set to never.

Bugs Fixed

- [Ref. #UCCM-1101] **Third party devices/controllers cannot subscribe to GV Convergent's NMOS registry websocket notifications as it is using "localhost" as its hostname:** There was an issue where third party devices/controllers that were not able to subscribe to GV Convergent NMOS registry websocket notifications as it uses "localhost" as a hostname.

  In GV Convergent version 2.5.0, the NMOS registry application was updated to use the Sony registry instead of the previous registry. The limitation is no longer an issue with the Sony registry and no workaround is required now.

- [Ref. #PEG-10769] **Unable to do more than one level breakaway to an IQUCP destination:** There was an issue where you were not able to do more than one level breakaway to an IQUCP destination. This issue is now fixed.

- [Ref. #PEG-10872] **K-Frame production switcher now able to fetch labels from GV Convergent:** In previous versions of GV Convergent, the K-Frame production switcher was unable to properly fetch source and destination labels from GV Convergent using the GVG NP protocol. This was because the labels that were returned were too many that were sent too quickly.

  This has now been correctly paced down and the K-Frame can now receive labels properly.

- [Ref. #PEG-11146] **GV Convergent Device Names reverting to defaults after a cluster failover:** There was an issue where GV Convergent Device Names were reverting to defaults names after a cluster failover. This issue is now fixed.

GV Convergent Version 2.4.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #UCCM-1421] **DCNM v11.3(1) support:** The control system now supports Cisco DCNM v11.3(1) and is backward compatible with DCNM v11.2(1).

- [Ref. #PEG-11104] **Categories that hold only one type of logical device now has a more specific icon:** When a category holds only sources, its icon now shows an embedded source graphic.

  When a category holds only destinations, its icon now shows an embedded destination graphic.

  The icon will change dynamically as sources and destinations are removed or added to a category. If a category is empty or contains both sources and destinations, the current icon with no extra graphic is displayed.

  The new graphics are available in the Category Configurator and Panel Configurator.

  The main use for this is to have two categories in the same name, one with sources only and the other with destinations only and still be able to differentiate between the two within the GUI.

- [Ref. #PEG-11100] **Sender/Receiver ports for NMOS devices with no streams attached are disabled by the control system:** The control system creates sender and receiver ports for NMOS devices based on the node interface property. If no senders/receivers are publishing the same interface in their *interface_bindings* property, the port is disabled by the control system.

- [Ref. #PEG-11042] **The property editor shows physical ports that are disabled:** The control system added the ability to display, in the property editor, physical input/output ports that are disabled.

  Disabled streams and gateways (for IPG devices) remain hidden in the property editor.

- [Ref. #PEG-11108] **Category items now display in the order in which they are sorted:** In the Category Configurator, items can be manually set in a specific order which is appropriate for a specific workflow.

  Prior to this version, when calling up a Category on a panel, the items of the Category would always be displayed in alphabetical order. Starting with this release, the order in which these items are displayed will now follow the same order in which they are displayed in the Category Configurator.

  Category panel button assignments now have a new property called "Sort Mode" which can change this behavior to sort alphabetically again if required. Three options are available: "Manual" which is the default and uses the order from the Category or "A-Z" or "Z-A" for alphabetical sort ascending or descending.

  The Category setting copy functionality was also enhanced so that a single setting can be applied to multiple Category button, this can be used to set the Sort Mode across multiple button assignments in bulk for a single panel behavior.

Bugs Fixed

- [Ref. #UCCM-1356] **Audio logical levels set on IQAMD or Audio Live are no longer reset when reconnecting:** If an AES-67 level on a stream is manually changed with an equivalent AES-67 level with a different amount of audio channels, the new level will no longer be overwritten when the control system reconnects to the device.

  For example, if a stream with level AES-67-64 ch is manually changed to AES-67-16 ch on an a Audio Live stream, the new level (16 ch) will stay the same regardless of the actual channel count on the device.

- [Ref. #PEG-11074] **Device control port's status may stay at _Unknown_ if the topology has a DCNM control port:** An issue was encountered when the topology has network switches with DCNM control port. Other control ports could be affected and could stay at _Unknown_ status if you deactivate and re-activate the topology within a few seconds. The issue does not happen if there is no DCNM control port.

  The workaround was to Deactivate the topology, wait until the DCNM control port goes offline and then activate the topology.

  This issue is now fixed and no workaround is needed.

- [Ref. #PEG-10846] **Receiver streams multicast IP address are set to 0.0.0.0 if the control system is not able to get the information:** In previous versions of the control system, when a new generic IP device was created with ports and their related streams, the multicast IP address of the sender and receiver streams were set using a specific pattern (224.x.x.x).

  Setting the multicast IP address, for receiver streams, using default values, could lead you to think that the receiver is actually joining a sender with the specified default multicast IP address. This was noticed especially with NMOS receivers where the _sender_id_ is set to null.

  In the new control system version, those **receiver** multicast IP addresses are set to 0.0.0.0 if the control system is not able to get them through the driver. This is applicable only for receiver streams.

- [Ref. #PEG-10791] **IPVU receivers video format automatically updated by the control system:** The control system now supports the control of the IPVU (joining streams) and also support the control of the IPVU parameters.

GV Convergent Version 2.3.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-11008] **Support of disconnecting NMOS flows via an IS-05 command:** The IS-05 connection management request sent by the control system will set the *master_enable* flag to false if the source IP address is 0.0.0.0.

- [Ref. #PEG-11007] **Display the status of NMOS devices that are not available for control via IS-05:** A new property has been added to NMOS control ports called *IS-05 Controllable*. This field indicates whether the corresponding node in the NMOS registry has devices that support being controlled via IS-05.

- [Ref. #PEG-10993] **DNS-SD NMOS registry redundancy support:** GV Convergent now supports NMOS registries redundancy with DNS-SD. If GV Convergent discovered a registry via DNS-SD, and that registry becomes unavailable, GV Convergent will automatically fail over to the next available registry listed in the DNS.

- [Ref. #PEG-10971] **Tielines refresh via the control system client:** The user has now the ability to refresh tielines via the Path Manager using the *Refresh Tielines* button available on the upper banner.

  This functionality allows the user to recompute the tielines usage given the crosspoints in each device, in case the tieline status in the control system has become out-of-sync with what's actually routed.

- [Ref. #PEG-10946] **Exposed streams setting management in the Stream Configurator:** Allow the user, using the Stream Configurator, to filter displayed streams by *exposed stream* property and also the ability to expose or unexpose streams via selection.

  This is useful when the user would like to expose only certain streams in a system (for instance, only the Audio streams of a specific device).

- [Ref. #PEG-10906] **GV Convergent System Status Page now displays Densité Manager memory usage:** In the GV Convergent Client application, the System Status Page now displays the memory usage of the local Densité Manager. The percentage reflects the memory used out of its allocated heap size of 8GB.

- [Ref. #PEG-10899] **New option for wide widgets in Router Control UI:** The Router Control UI has a new option for making the source and destination double their width to accommodate longer labels.

  The option is available independently for sources and destinations and is persisted for the currently logged in user, meaning that re-launching the Router Control UI or GV Convergent Client will remember the previously set value.

  Note that this preference is also saved on a per user basis in Windows, meaning the setting has to be set on every PC and user where the GV Convergent Client runs.

- [Ref. #PEG-10806] **NDAC NP0017: Lock and Protect destinations support:** The control system now provides support for *Lock* and *Protect* destinations.

  The user has the ability to lock/unlock and protect destinations via the *Router Control* using the *Lock*, *Release* and *Protect* available options.

  The control system stores the locks in its database and they are preserved after a restart/reboot. Destinations will remain locked/protected.

  In practice, the control system does not read a lock from a router and does not control it.

  If a configured panel in the control system is used, a user must be assigned and that prevents other users from removing the protect. An admin user can override other users.

  In the NP0017 protocol, Lock/Protect commands require a user ID. Currently, the control system northbound implementation does not take into account the user ID and simply considers all commands executed as the admin user. Lock for various users is not supported yet.

  Lock and protect currently affects all levels of the destination and does not consider individual levels. Locking one level locks all destination levels and the control system does not yet support specific lock levels.

- [Ref. #PEG-10733] **Warn user when GV Convergent client version and the connected server version do not match:** A warning is displayed to the user if the GV Convergent client version is different from the version of the connected server. If both versions are matching, no warning will be displayed.

  A confirmation is prompted. If the user selects *OK*, the client will continue to load as per normal. If *Cancel* is selected, the application will go back to the login screen.

- [Ref. #PEG-10588] **Unique custom level names on a panel:** On a panel, we are limited to 8 characters for a Tally: 3 lines of 8 characters.

  In the Logical Level Editor, a short name must have 8 characters or less. A custom level is built (by duplicating the factory ones) with the first 3 letters of the resulting short label and ".." and the last 3 letters from the resulting short label.

  The resulting short label is the concatenation of the a prefix given by the user, the short label of the copied logical level and a suffix given by the user (prefix and suffix can be empty).

  For example,

  if the Short Label Prefix is **Test** and the Factory level is **AES67-64**, the short name will be **Tes..-64**

  if the Short Label Suffix is **Test** and the Factory level is **AES67-64**, the short name will be **AES..est**

- [Ref. #PEG-10342] **DNS-SD Support for the NMOS registry discovery:** GV Convergent can now automatically discover an NMOS registry via DNS-SD given the DNS server and search domain. The DNS server and search domain are automatically retrieved via the OS (if available), but can be overridden by the user in the Area Configurator. If the DNS information is changed in the OS, GV Convergent must be restarted to retrieve the new values from the OS. As before, the user still has the option to set a static NMOS registry URL if desired.

- [Ref. #PEG-10150] **Control port added to a device by importing a spreadsheet:** The feature Spread Sheet Import/Export now supports ControlPorts in a specific sheet.

Bugs Fixed

- [Ref. #PEG-11010] **Random issue with GV Convergent failover mechanism:** An issue related to the failover mechanism was noticed where you could end-up with an active server or loss of the topology. This issue is fixed.

- [Ref. #PEG-10945] **Unable to reuse a discovered device if it was deleted from a device group instead of deleting the entire device group:** If there are multiple discovered devices in a single device group, and any individual device is deleted from the group, the discovered device does not become available in the discovered device library to be dropped on the topology again. This issue is now fixed.

- [Ref. #PEG-10927] **IS-05 bulk stage requests to NMOS receivers don't include transport_params anymore:** IS-05 sent by the control system won't include *transport_params* anymore, as allowed by NMOS specs to accommodate receivers that don't support *transport_params* with an empty list.

- [Ref. #PEG-10922] **GV Convergent database migration issue if upgraded from an old GV Convergent version to 2.1.2:** The issue was encountered while upgrading from an old GV Convergent version to GV Convergent version 2.1.2. The issue affects the migration module.
  Workaround: The fix is to upgrade to a more recent version.

- [Ref. #PEG-10890] **DCNM control port can be disabled on an active topology:** We added a feature to allow the user to disable/enable the DCNM driver on an active topology. This feature is a tool to help support teams to solve potential configuration issues on a live system without impacting the routing functionality or other control port devices. Some other useful troubleshooting data is also added to system snapshots.

- [Ref. #PEG-10855] **Routing requests done in parallel can lead to GV Convergent not being able to process routes anymore:** Prior to GV Convergent 2.1.3, if multiple routing requests were made (like issuing routes via Northbound API while a large Salvo is executing), it is possible the system could stop processing routes until a failover or restart of GV Convergent was done.

- [Ref. #PEG-10851] **Additional port/interface created for new added NMOS device to a device Group if all devices already connected:** If a device group does exist in GV Convergent topology, with few NMOS devices AND those devices are connected to/from network switch, then the user decides to add a new NMOS device to this existing device group, GV Convergent will add the new device but this device will have an extra port/interface (factory generated). This issue is now fixed.

- [Ref. #PEG-10618] **Sometimes Audit logs viewed from the web admin page in GV Convergent will not load and reports errors:** The web browser was unable to display the audit.log file if its size is too big. Now, the user has the option to download the audit.log file if its size is bigger than 10MB, otherwise the content will be shown in the web browser.

- [Ref. #PEG-10617] **All level takes failing from an IQMV (V, A) source to an IQUCP (V, A, ANC) destination:** If a take was requested from an IQMV output which has only Video and Audio (No ancillary) to an IQUCP destination which has Video, Audio and Ancillary, GV Convergent was failing the take with an error mentioning that the ancillary level is missing.

  With this new fix, GV Convergent will succeed the take with a warning message mentioning that only Video and Audio were taken.

  As long as Video (the highest ranking level) is carried successfully, the take will succeed.

  If not all levels are carried, GV Convergent will display a warning that not all levels were taken.

- [Ref. #PEG-10344] **Cannot select some MADI streams in the Logical Device Table:** The issue where we were not able to select / drag some streams of the Stream Browser of the Logical Device Table in a logical source level column, is now fixed.

GV Convergent Version 2.2.1

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-11008] **Support of disconnecting NMOS flows through an IS-05 command:** The IS-05 connection management request sent by the control system will set the *master_enable* flag to false if the source IP address is *0.0.0.0*.

- [Ref. #PEG-11007] **Display the status of NMOS devices that are not available for control through IS-05:** A new property has been added to NMOS control ports called *IS-05 Controllable*. This field indicates whether the corresponding node in the NMOS registry has devices that support being controlled via IS-05.

- [Ref. #PEG-10342] **DNS-SD Support for the NMOS registry discovery:** GV Convergent can now automatically discover an NMOS registry via DNS-SD given the DNS server and search domain. The DNS server and search domain are automatically retrieved through the operating system (if available), but can be overridden by the user in the *Area Configurator*. If the DNS information is changed in the operating system, GV Convergent must be restarted to retrieve the new values from the operating system. As before, the user still has the option to set a static NMOS registry URL if desired.

- [Ref. #PEG-10993] **DNS-SD NMOS registry redundancy support:** GV Convergent now supports NMOS registries redundancy with DNS-SD. If GV Convergent discovers a registry via DNS-SD, and that registry becomes unavailable, GV Convergent will automatically fail over to the next available registry listed in the DNS.

Bugs Fixed

- [Ref. #PEG-10927] **IS-05 requests do not include transport_params anymore:** IS-05 sent by the control system will not include *transport_params* anymore, as allowed by NMOS specifications to accommodate receivers that do not support *transport_params* with an empty list.

GV Convergent Version 2.2.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-10150] **Control port added to a device by importing a spreadsheet:** The SpreadSheet Import/Export feature now supports ControlPorts in a specific sheet.

- [Ref. #PEG-10588] **Unique custom level names on a panel:** On a panel, we are limited to 8 characters for a Tally for a total of 3 lines of 8 characters each.

    In the Logical Level Editor, a short name must have 8 characters or less. A custom level is built (by duplicating the factory ones) with the first 3 letters of the resulting short label and ".." and the last 3 letters from the resulting short label.

    The resulting short label is the concatenation of the a prefix given by the user, the short label of the copied logical level and a suffix given by the user (prefix and suffix can be empty).

    For example,

    if the Short Label Prefix is **Test** and the Factory level is **AES67-64**, the short name will be **Tes..-64**

    if the Short Label Suffix is **Test** and the Factory level is **AES67-64**, the short name will be **AES..est**

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    A confirmation is prompted. If the user selects "OK", the client will continue to load as per normal. If "cancel" is selected, the application will go back to the login screen.

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    The option is available independently for sources and destinations and is persisted for the currently logged in user, meaning that re-launching the Router Control UI or GV Convergent Client will remember the previously set value.

    Note that the preference is only saved on a per user basis in Windows, meaning that the setting will need to be set on every PC and for every user where the GV Convergent Client runs.

- [Ref. #PEG-10906] **GV Convergent System Status Page now displays Densité Manager memory usage:** In the GV Convergent Client application, the System Status Page will now display the memory usage of the local Densité Manager. The percentage reflects the memory used out of its allocated heap size of 8GB.

Bugs Fixed

- [Ref. #PEG-10344] **Cannot select some MADI streams in the Logical Device Table:** The issue where we were not able to select / drag some streams of the Stream Browser of the Logical Device Table in a logical source level column, is now fixed.

- [Ref. #PEG-10617] **All level takes failing from an IQ-MV (V, A) source to an IQUCP (V, A, ANC) destination:** If a take was requested from a MV output which has only Video and Audio (No ancillary) to an IQUCP destination which has Video, Audio and Ancillary, GV Convergent was failing the take with an error mentioning that the ancillary level is missing.

  With the new fix, GV Convergent will succeed the take with a warning message mentioning that only Video and Audio were taken.

  As long as Video (the highest ranking level) is carried successfully, the take will succeed.

  If not all levels are carried, GV Convergent will display a warning that not all levels were taken.

- [Ref. #PEG-10618] **Sometimes Audit logs viewed from the web admin page in GV Convergent will not load and reports errors:** The web browser was unable to display the audit.log file if its size is too big. Now, the user has the possibility to download the audit.log file if its size is bigger than 10MB, otherwise the content will be shown in the web browser.

- [Ref. #PEG-10851] **An additional port/interface is created for a newly added NMOS device to a device Group if all devices have already been connected:** if a device group currently exists in a GV Convergent topology:
  - with one or more NMOS devices AND,
  - the devices are connected to the network switch AND,
  - you add another new NMOS device to this existing device group THEN,

  GV Convergent will add the new device but this device will show an extra unneeded port/interface (factory generated).

  This issue has been fixed in GV Convergent version 2.2.0.

- [Ref. #PEG-10855] **Routing requests done in parallel can lead to GV Convergent not being able to process routes anymore:** Prior to GV Convergent version 2.2.0, if multiple routing requests were made (like issuing routes via Northbound API while a large Salvo is executing), it is possible the system could stop processing routes until a failover or restart of GV Convergent was done.

- [Ref. #PEG-10922] **GV Convergent database migration issue if upgraded from an old GV Convergent version to v2.1.2:** The issue was encountered while upgrading from an old GV Convergent version to GV Convergent version 2.1.2. The issue affects the migration module.

  The recommendation is to upgrade directly to GV Convergent 2.2.0 and bypass version 2.1.2.

GV Convergent Version 2.1.2

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-10745] **The default RTP values have been updated in GV Convergent as they were changed for GV Node:** the default RTP values have changed in GV Convergent as follows:
    - 2022-6 (Video), RTP = 98 (no change)
    - 2110-20 (Video), RTP = **97** (it was 96 with GV Convergent version 2.1.1 or lower)
    - 2110-30 (Audio), RTP = **96** (it was 97 with GV Convergent version 2.1.1 or lower)
    - 2110-40 (ANC), RTP = 100 (no change)

    These values are now used by GV Convergent to build stream SDP information for non-NMOS devices. These values can be changed in GV Convergent if necessary. Please contact Technical Support to do so. See Grass Valley Technical Support, on page 78.

- [Ref. #PEG-10663] **GV Convergent to update SDP files for non-NMOS devices dynamically:** GV Convergent generates SDP files for all streams of a non-NMOS device with updated parameters sent from the non-NMOS device such as IQ series cards and AudioLive in order to allow takes (IS-05 connection management) between non-NMOS senders and NMOS receivers.

    If the non-NMOS devices are not sending those parameters, GV Convergent uses default values and also allows you to edit the SDP files for the streams.

- [Ref. #PEG-10734] **GV Convergent Stream Configurator:**
    1. Ability to build SDP profile templates in GV Convergent and have the ability to apply them to multiple streams given search criteria per device, port and stream so that you can quickly change SDP information of streams in bulk instead of one by one.
    2. It is not possible to change the lane IP Address even though GV Convergent allows you to do it.

- [Ref. #PEG-10779] **Ability to configure port redundancy at Device Group level:** a new automation has been added to the Quick Config button, in the Topology Configurator stage, so that port redundancy can be activated by setting a checkbox.

    This only applies to IP devices and pairing is done sequentially by port number so that port1 is redundant with port2, port3 is redundant with port4, and so on. If the number of ports is uneven, then the last port will not be redundant. This automation ignores any port that is already redundant with another.

- [Ref. #PEG-10832] **Logical source/destination for NMOS devices have the full name of the group hint tags:** Logical source/destination labels created for NMOS devices are now using the entire grouping hint tags and are no longer truncated to 8 characters. For existing topologies with NMOS devices, GV Convergent will update the logical device short labels so they are no longer truncated versions of the labels.

- [Ref. #PEG-10834] **NMOS Logical sources/destinations labels are not overridden anymore with registry updates:** Once the logical source/destination is created, by using the grouping hint tags, GV Convergent will not change it anymore and will not keep it in sync with the registry. User can change the labels and they will not be overridden NMOS registry updates.

Bugs Fixed

- [Ref. #PEG-10689] **DCNM v11.2(1) limitations:** for the new DCNM version 11.2(1), there was a limitation where ports needed by GV Convergent Version 1.2.1 or higher for authentication (5672 and 15672) are blocked by default. With this issue, GV Convergent was not able to connect to DCNM.

- [Ref. #PEG-10789] **GV Convergent does not allow changing the logical level on NMOS senders/receivers:** when an NMOS discovered device is dropped on the topology, the device is populated based on the values in the NMOS registry. As GV Convergent receives update notifications from the registry, it updates the device accordingly.

  However, if you explicitly modify some fields/properties, in the GV Convergent device, GV Convergent will not update those property values to keep them in sync with the registry. The sender and receiver logical levels are now part of this exception and won't be in sync with the registry.

- [Ref. #PEG-10792] **Invalid NMOS destination tally if a non-NMOS source is routed to it:** if a non-NMOS source is routed to an NMOS destination, then the non-NMOS source does not populate the field *sender_id* field (null) in the subscription of the NMOS receiver. GV Convergent uses this field to establish the source routed to the destination and to display the tally.

  If GV Convergent is instructing the take, GV Convergent will associate the appropriate source to the destination and properly display the tally even if the *sender_*id is null.

  But if the take (Non-NMOS source to NMOS destination) is done outside GV Convergent, GV Convergent will keep the previous tally with the previous source because the *sender_id* is null.

GV Convergent Version 2.1.1

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-10400] **Panel preset behavior changes:** the way presets are show on panels has changed. Previously, panels were only displaying the presets of the actual takes that were sent to GV Convergent. Now all affected levels will display the resulting tally of the take even if the level is not affected by the current take or is not high tallied. In other words, following the take, if it succeeds, the tally for all of the level buttons, selected or not, will change to what was shown on the preset.

Bugs Fixed

- [Ref. #PEG-9888] **Some sources can't be switched with partial level:** in some cases, when performing a take from a source with only a Video stream to a destination with both Video and Audio streams, GV Convergent was randomly failing the take instead of succeeding the take for the available levels/streams.

  Now GV Convergent will succeed the take and display a warning that only some levels were taken.

- [Ref. #PEG-10682] **Slow takes or timeout failure if IP Clean Switch is enabled on the destination:** in some topologies, if IP Clean Switch is enabled on the destination, routing to this destination could cause slow takes or even a timeout failure if it takes more than 5 seconds.

  Some improvements were made to the pathfinding algorithm, while using IP Clean Switch, to fix this issue.

- [Ref. #PEG-9076] **Path manager does not refresh when something is routed to non-primary stream:** sometimes the Path manager did not refresh when something was routed to non-primary stream. Now the Path manager will refresh on any tally change.

- [Ref. #PEG-10694] **MADI takes are failing because we couldn't find path within 5 seconds:** in some cases, MADI takes were failing (timeout failure) because GV Convergent was not able to find a path within 5 seconds.

  Some improvements were made to the pathfinding algorithm for MADI to fix this issue.

- [Ref. #PEG-10697] **NMOS: GV Convergent uses stream multicast IP address to populate the unicast port IP address of a NMOS Sony device:** While evaluating/testing a NMOS Sony CCU device, we noticed that GV Convergent uses a multicast IP address, from an ancillary stream, to populate the unicast port IP address instead of using the port IP address from the same SDP file.

  The issue occurred because there was an extra space in the "source-filter" line of the SDP, which GV Convergent was not expecting. SDP parsing was improved in GV Convergent to handle this issue.

- [Ref. #PEG-10705] **Unable to log into GV Convergent server using GV Convergent client:** sometimes, GV Convergent client was not able to log into GV Convergent server because it was awaiting for background threads to become available.

- [Ref. #PEG-10706] **Selecting levels on panel which don't exist in the source causes take button to light up and do all level take:** when using a panel with level button, if you selects levels which don't exist in the source, the take button will light up. Pressing the take button will cause GV Convergent to perform an all level take, even though specific levels were selected. The problem was that previously, the take button would light up if an all level take was possible between source and destination, regardless of levels selected. The fix was to check if an all level take is possible only when we're actually doing an all level take.

- [Ref. #PEG-10372] **MCR operator was not able to make any route change from a router control panel:** in order to understand some network events/issues that happened recently at some customer sites, GV Convergent has implemented new logs to get more details on different network events to be able to better understand when an IP address conflict happens.

  The log improvement is a new special log for periodic "pings" between the two servers and between the servers and the reference address. The rate of this ping is around once per second.

- [Ref. #PEG-10418] **GV Convergent Cluster issue - Duplicate IP detected:** in order to understand some network events/issues that happened recently at some customer sites, GV Convergent has implemented new logs to get more details on different network events to be able to better understand when IP address conflict happens.

  The log improvement is a new special log for periodic "pings" between the two servers and between the servers and the reference address. The rate of this ping is around once per second.

- [Ref. #PEG-8040] **Topology in Path Manager does not show new tie line created at the output of the switch to the input of the gateway**
- [Ref. #PEG-8162] **While you add operations in a Salvo, the operations list can become locked**
- [Ref. #PEG-8223] **Physical Connections Table Reload button:** if you have selected a physical connection and then activated the topology, the Physical Connections table is stuck at loading.
- [Ref. #PEG-9825] **Changing a destination's logical level may cause takes to that destination to fail:** one you have created a logical destination and then, after performing takes to that destination, you change the logical level of that destination, takes to said destinations may fail.
- [Ref. #PEG-10205] **GV Convergent IP LDX Router Control issue:** the LDX team has deprecated the REST interface that GV Convergent used to implement the LDX driver. IS-04/IS-05 support is now available.

GV Convergent Version 2.1.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-5858] **GV Convergent has implemented the Salvo command for Northbound NP0017:** command 3022 was already supported in GV Convergent for sources and destinations, but now the mnemonic type for salvo 0x0005 has been implemented.

  This allows you to request the salvos configured within GV Convergent and then offer the ability to execute those with a separate command.

- [Ref. #PEG-9092] **Ability to filter streams that come from input or output ports in the stream browser of the logical device table:** while exposing streams on both input and output sides, if device streams are named the same at RX and TX, there was no way to filter them. Now, there is a filter option in the drop down to show only streams from input or output ports.

- [Ref. #PEG-9611] **Devices that use discovery are now provisioned for in DCNM by GV Convergent:** GV Convergent provisions host policies for devices that are created within the topology. However, until these devices are in the DCNM topology, they could not be provisioned for. This created an issue where devices that used discovery to be displayed within the topology configurator could not be discovered until they were provisioned for.

  To address this issue, GV Convergent now provisions a range to allow these devices to be discovered. The workaround had been to manually put the host policy into the DCNM UI.

- [Ref. #PEG-9623] **Automatic physical connections functionality for IP devices (Quick Connect) within topology is now available:** New Quick Connect button was added to the Topology Configurator. It automatically makes the physical connections for IP devices, within the topology, and also creates the SDI end-points for those IP devices.

  Physical connections for IP devices are generally very straightforward but time consuming to do. From the GV Convergent topology, it is easy to know where IP

physical connections should be done because there are always one or two network switch devices.

The UI allows you to identify which network switch(es) they want to connect their equipment on and all of the physical connections will be done in the background taking into account redundant ports.

Click on the new topology automation button in the Topology Configurator toolbar, and select the main and backup networks. Check the 'Do SDI' connections checkbox to begin the process. The progress of physical connections will be displayed.

- [Ref. #PEG-9832] **Alias selection for Category Editor:** Ability for you to see the alias names used to make categories in the GV Convergent Category Editor Stage.

  This is useful when you have created alias(es) and now want to create categories for use on the panels.

  Instead of using the generic device name generated by the system, you can use the alias to identify the device.

- [Ref. #PEG-10034] **Megasource: modify the pathfinding rule to match exact logical levels before applying best match logic:** you can now create logical sources where the same or different streams can be added to the logical level columns that share the different custom logical levels. Megasource only applies to sources with multiple stream/level pairings and the filtering happens when a normal destination is used in a route. See the *GV Convergent User's Manual* for more information about this feature.

- [Ref. #PEG-10035] **Optimize pathfinding for 4K devices:** Pathfinding improvements were made to make GV Convergent 4K takes faster.

- [Ref. #PEG-10223] **Default Category parameters and Copy Category Parameters feature added:** One of the more time-consuming aspects of panel configuration was the configuration of categories on the panel. You were required to enter a display mode, exit mode, and panel page where list items or keystrokes were to be utilized. This was needed for each category placed on the panel.

  This improvement offers a default setting of Display Mode - "List", and Exit Mode - "Preset". You would then only need to add the page of the list items for the first category. You then would have the ability to select to copy these parameters to all other categories. More information can be found in the GV Convergent User's Manual.

- [Ref. #PEG-10237] **Short name for the logical levels now returned through northbound interface:** Prior to this improvement, only the long name of the logical levels were returned in response to northbound command for mnemonic requests.

- [Ref. #PEG-10294] **Takes using complex logical devices that require crosspoints/joins on a single device in less than 1 frame:** The single hop performance optimization in GV Convergent currently applied only to sources and destinations that have a single stream and level.

  With more complex logical devices that have more levels and streams, the single hop algorithm was not used and fell back to the pathfinding instead. In many cases, like 4K or 2110 takes, the resulting commands are only simple crosspoints on a single device but because pathfinding was used, the takes happened within 2-4 frames.

  Now, the single hop restriction is more permissive. As long as all the destination level/stream pairs are satisfied by the source, GV Convergent attempts a single hop fast take before using full pathfinding.

- [Ref. #PEG-10347] **Support routing audio signals through an IQAMD card:** The IQAMD card is an audio-only gateway that can convert SDI MADI audio signals to AES-67 and vice-versa.

  Discovery of the IQAMD and its receivers is already supported since it's a DDS device and now GV Convergent is able to read the audio configuration so that the proper levels are set on the SDI and IP ports of the device for the multiple types of audio configurations for SDI and IP.

- [Ref. #PEG-10365] **Support IQAMD use case where the extended headers are not used:** If the extended headers are not used in the topology, GV Convergent must route the channel count from the audio IP source to the IQAMD card.

- [Ref. #PEG-10367] **Ability to rename automatically generated sources and destinations in bulk:** In the Logical Device Table and Alias Editor, sources and destinations labels are displayed but previously you were not allow to edit them. In the case of the Logical Device Table, only custom logical device labels are editable.

  In a system where there are thousands of logical devices, this limitation made it cumbersome to configure.

  Now automatic sources and destinations can be renamed and it is possible to do so by bulk pasting content from a spreadsheet into the alias editor as it is done for aliases.

- [Ref. #PEG-10420] **SDP field is editable for IQ devices:** the SDP field for IQ devices, including Audiolive, are editable should there be a need to update a parameter.

- [Ref. #PEG-10494] **Improve GV Convergent logs to get more details when duplicate Virtual IP address conflicts happens:** in order to better understand some network events/issues that have occurred at client sites, GV Convergent now has implemented a new log that shows more details about network events to be able to better understand when IP address conflict happens. Now there is a special log that captures the periodic "pings" between the two servers and between the servers and the reference address. The rate of this ping is around once per second.

- [Ref. #PEG-9768] **Ubuntu OS latest patches have been updated to the image for 2.1.0:** Due to security concerns, the Ubuntu OS patches have been updated in the production image for GV Convergent version 2.1.0.

- [Ref. #PEG-9818] **GV Convergent Power Supply Unit (PSU) status added to the System Status tab:** IPMI Tool was added to GV Convergent server to fetch the IPMI status and the old tool FreeIPMI was removed.

  The PSU status is reported like a Fan status on the System Status tab. You will need to reboot GV Convergent server once after upgrading to GV Convergent version 2.1.0 to activate the new driver and to see the correct the PSU status in GV Convergent. You also must ensure that a GV Convergent server equipped with redundant PSUs, in order for the server to do a one time detection for the redundant PSU configuration, has both PSUs installed and powered up in the server during the reboot for both PSUs to allow them to be detected.

Bugs Fixed

- [Ref. #PEG-9817] **Takes long time to load the router control tab:** in previous GV Convergent versions, if a topology has many sources/destinations (more than 2000), opening the router control tab took a long time before loading all the logical sources/destinations.

- [Ref. #PEG-9981] **Panels: Category Exit Mode not working properly:** In GV Convergent Panel Configurator, each Category property has an Exit Mode selection. The available options are Never, Preset or Take. When the Exit mode is set to Preset and the member of the category is a source, the Exit Mode works correctly after the selection of a source (preset). The panel returns to the state prior to entering the category. When the member of the category are destinations and a destination is selected, the panel destination changes to the selected destination. However the panel does not return to the state prior to entering the category. It remains in the member selected state. You need to select the "Previous" button to exit out of this state. For a category with large number of members, you will need to select the Previous button a number of times in order to exit. This behavior was seen in GV Convergent version 1.9.0.
- [Ref. #PEG-10202] **GV Convergent 4K Take is slow:** pathfinding improvements were made to make GV Convergent 4K takes faster.
- [Ref. #PEG-10217] **GV Convergent failed to take Quadlink 4K between K-Frame and IQUCP:** GV Convergent is no longer failing 4K takes between K-Frame and IQUCP.
- [Ref. #PEG-10230] **Random slow response time when VSM control GV Convergent for switching:** pathfinding improvements were made to make the switching faster.
- [Ref. #PEG-10292] **NV9647 list items were being duplicated when utilizing more than two rows:** This issue was found to exist in panels other than the NV9647, but has been resolved. The first two lines would display the correct device names in the list items for categories. However, if you configured more than two rows to be used for list items, the first two rows would be duplicated on the following two. This may have also been occurring with duplicated columns.
- [Ref. #PEG-10393] **Database restore timeout is now 10 minutes:** in order to accommodate larger configurations, the timeout that occurs when restoring a database via the administration web page has been increased from 3 minutes to 10 minutes. If there is a problem when loading the database, it will now take 10 minutes before falling back on the previous database and showing an error message.
- [Ref. #PEG-10414] **Incorrect Path Views in GV Convergent when routing the First Pair of MADI Audio tracks to MADI destinations:** improvements were made to Pathfinding while comparing level families. Now, the Path Manager shows the appropriate path.
- [Ref. #PEG-10419] **Route Error when routing from a Node SDI to an IPG-4901:** fixed an issue which could prevent takes from working when changing the logical level of an IPG's audio TX stream and using that stream as the take's destination.
- [Ref. #PEG-10440] **Sometimes takes timeout if there are too many different source streams for a destination:** improvements were made to the Pathfinding algorithm.
- [Ref. #PEG-10485] **GV Convergent and panels went down for about 3 minutes:** the issue occurred when a duplicate Virtual IP address conflict happens. This is now fixed in GV Convergent version 2.1.0.
- [Ref. #PEG-10490] **GV Convergent Does not provide status on all devices when asked via NDAC NP0017:** the response to the Get Simple Device Status (0x00003017) for "all levels" of more than one device would only return the information for the last one requested.
- [Ref. #PEG-10498] **GV Convergent client fails to complete the population of some windows:** some improvements were made to reduce GV Convergent client slowness and new logging to help investigation if it happens again in the future.

- [Ref. #PEG-10504] **Fixed server side performance degradation over time:** server side performance could degrade after a large number of configuration modifications were performed. This resulted in above normal server load leading to unresponsive clients and slower takes. Performance was only restored after a restart or fail over.

- [Ref. #PEG-10527] **MADI to MADI across Node routes not working:** Local MADI in to MADI out routes work but MADI to MADI across Node routes was returning an error. Now, MADI to MADI takes across nodes are working as expected.

- [Ref. #PEG-9593] **When dropping a discovered device on topology, the device group is not made unique:** any element on a topology must have a unique name. When dropping a discovered device on the topology, the label is now made unique.

- [Ref. #PEG-9900] **Creating a duplicate panel configuration can create a dysfunctional panel:** using buttons such as load pages and categories that jump to list or keystroke pages, and then copying that configuration to another panel may cause these listed buttons to not jump to the correct panel configuration. This has been corrected and the panel copy from an existing configuration functionality has been restored.

- [Ref. #PEG-10127] **Update to the GV Convergent Health Status made available to iControl:** iControl uses a REST interface to pull the Health Status information that is displayed on the System Status Stage in the GV Convergent Client. The interface was updated to accommodate the latest available status in GV Convergent.

- [Ref. #PEG-10175] **You can now rename Virtual Crosspoints in the Logical Device Table:** this improvement corrects a minor oversight with regards to virtual crosspoints - allowing you to rename them after they have been created.

GV Convergent Version 2.0.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-9544] **GV device to SAM device switching is now working:** an issue that found the flow type to not be appropriately set on SAM edge devices when joining 2110 senders from Grass Valley devices has been addressed. This allows for all supported SAM devices to correctly join Grass Valley devices.

- [Ref. #PEG-9551] **GPIO configuration and control are now available in GV Convergent:** there is a new stage - GPIO - that has been created in GV Convergent. This stage will allow you to configure GPI and GPO connectors on the NV Panels. The GPI closures can trigger Salvos and takes by transitioning from off to on and on to off. A boolean logic editor has been added with scripting to create the logic for GPO. More information is available in the GV Convergent User Guide version 2.0.0.

- [Ref. #PEG-9816] **Code migration has been improved to support the upgrade from versions that are earlier than just the previous software release:** prior to this release of GV Convergent, migration code that accommodated the upgrade from earlier releases was only able to upgrade from the most recent full software release of GV Convergent code. With the release of GV Convergent v2.0.0, you can now upgrade directly from version 1.3.0 and above without having to upgrade incrementally. Any migration issues that may have existed when upgrading incrementally have been addressed in the GV Convergent v2.0.0 release.

  The time it will take to re-connect to the GV Convergent server via the GV Convergent client may take a long time depending on the current size of the topology. In some cases it took up to 15 minutes for the migration code to complete it task.

- [Ref. #PEG-9851] **New AES-67 logical levels have been created to ease configuration:** in order to create devices with non-standard audio profiles, additional logical levels were created and are shown on the logical level editor. Upgrading to GV Convergent v2.0.0 will also migrate to these new logical levels. This means that if you have created additional logical levels, GV Convergent will create additional user-defined logical levels for the AES67 versions.

  The AES67-16 logical level is equivalent to the existing SDI Audio logical levels.

- [Ref. #PEG-9898] **iControl bundles added to support the version 3.0.0 of GV Node:** the bundles support the command changes that will allow GV Convergent to communicate with GVN 3.0.0.

- [Ref. #PEG-9988] **Update of NMOS grouping tags for creating and controlling devices:** final version of grouping tag:

```
"tags": {
    "urn:x-nmos:tag:grouphint/v1.0": [
        "{group-name}:{role-in-group}:{optional-group-scope}"
    ]
}
```

  More details can be found here: https://amwa-tv.github.io/nmos-parameter-registers/tags/grouphint.html

- [Ref. #PEG-10053] **Added ability to change the configuration of logical levels on Audio Live outputs:** by exposing the outputs of Audio Live for you to change the logical level, you can create paths for conversion to take place between audio profiles. The input of Audio Live can accept any AES67 audio profile. You can identify the logical level of the Audio Live output interface that will match a destination device. If the source does not have a compatible logical level, but the path is available, the GV Convergent Pathfinding with use a path through Audio Live to convert the audio to match the destination device.

- [Ref. #PEG-10222] **SDI logical levels can share common logical levels:** in order to create additional user-defined logical levels, you must duplicate the existing system-defined SDI logical level. This will create a copy of all of the child logical levels contained within the SDI logical level. You can now change the logical levels contained within the duplicate logical SDI levels. Use cases include creating video or audio logical levels for compatibility reasons (SD, 3G, audio profile C, audio profile A). The video logical levels could contain the same type of audio logical levels. This will require less level buttons on the control panels to perform breakaway and shuffling.

Bugs Fixed

- [Ref. #PEG-10096] **"No Tieline Available" error was displaying unnecessarily:** an issue with the pathfinding algorithm created the situation where not all paths were attempted prior to reporting back this failure. This issue was corrected.

- [Ref. #PEG-10097] **System Snapshot failure addressed for logs and configuration capture:**

  Resolution: The snapshot implementation was unreliable and could have random failures, especially when the process takes longer (for example, when database is large).

  There were multiple causes for these failures:

  1 The generation of the routerInfo.json file (router information in the database) can fail to complete because the output buffer was not consumed.

  2 The snapshot zip file was sent over http incrementally as it was built, increasing the chance of timeouts and download failures.

  3 The web page's periodic status check can give occasional failures (false positives), and when recovered, forces a reload of the home page, closing the current session and any pending downloads, causing them to fail. This applies to snapshots as well as backups.

  Fix Summary:

  - Build the snapshot zip file completely on the server before sending it for download.
  - Read the output buffer of executed shell commands to avoid blocking.
  - Don't force a home page reload by default when recovered from a status check failure.

- [Ref. #PEG-10136] **Tieline bandwidth usage now more active for exposed streams:** when you use exposed streams, the tieline associated with the path from the transmitter or receiver to/from the network switch would be displayed as utilized. The implemented improvement now only displays the path used when a take involving that path is used. This more accurately displays the bandwidth capacity that can be seen within the Path Manager Stage in GV Convergent.

- [Ref. #PEG-8716] **Unique bug involving missing physical connections after failover has been resolved:** after a failover, the topology may have missing physical connection information within the GV Convergent Client. This issue has been resolved in version 2.0.0.

- [Ref. #PEG-8830] **Stream browser now shows expected streams after deleting a destination edge device:** deleting a device group does update the table for that corresponding device. However, formerly, if we switch to the other tab (Sources or Destinations), the Stream Browser was empty. This issue has been resolved in the code and will no longer occur.

- [Ref. #PEG-9961] **Flow type is now no longer editable by you - it is now set by the logical level:** the flow type field that is used to define SDP information for IS-05 connection management, in the device properties, is now set only by editing the logical level of a device stream. The video flow type would be used for SDI or other video logical levels. Audio flow type will be utilized for SDI audio, AES-67, and other audio logical levels. Data flow type will display for ancillary and other ancillary logical levels.

GV Convergent Version 1.10.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-6891] **Control of Kaleido-IP (KIP) released:** GV Convergent now supports control of the Kaleido-IP receivers. Instruction on how to establish this communication through client configuration is found in the GV Convergent User Guide for version 1.10.0 under the topic *Adding NMOS Devices to a Topology*.

- The Kaleido IP offers 2022-6 and 2110 modes of operation that are now supported by GV Convergent.

- [Ref. #PEG-9622] **Support for 4K control of SAM devices now supported within GV Convergent:** SAM devices can be discovered within GV Convergent and can be controlled via the Rollcall+ protocol. The 4K use cases are now supported by configuring logical sources and destinations appropriate to 4xSDI logical levels.

    Configuration of 4K devices will be included within the GV Convergent User Guide under the topic *Configuring 4K / UHD Streams for use with an IQMix or IQUCP25 Device.*

- [Ref. #PEG-9746] **The Stream Browser filter menu was enhanced as shown below:**
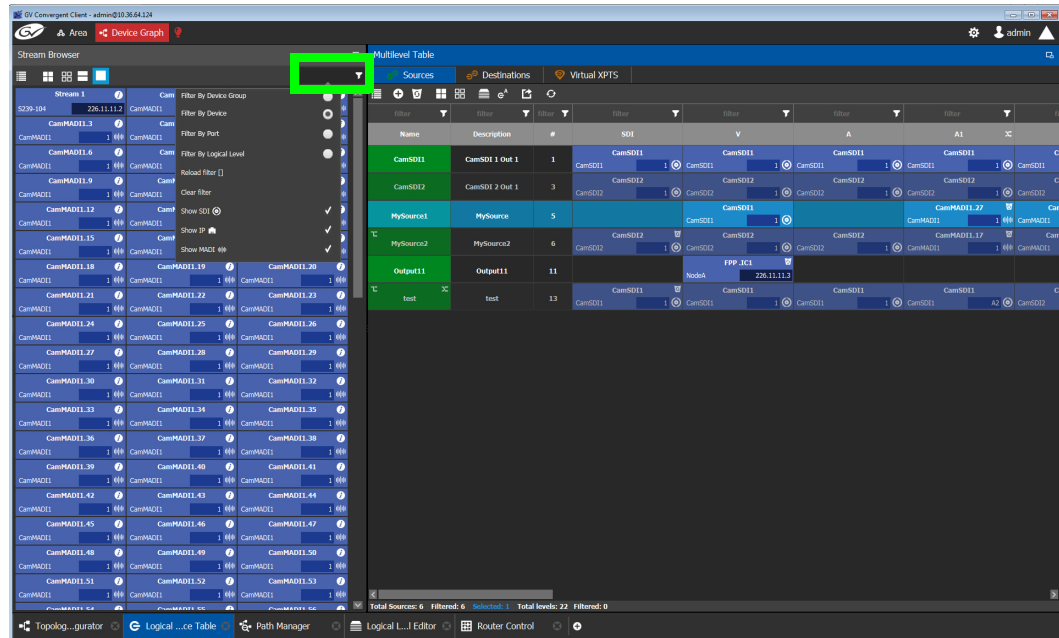
1. It is now possible for you to filter by device group, port or logical level in addition to being able to filter by device only.

    This will allow you to better search for streams when configuring sources/destinations.

2. The same new filtering options were added to the level columns.

    The Name and Description columns will have the filter options as before.

3 Clear all filters and reload all filters will be accessible from the main toolbar.
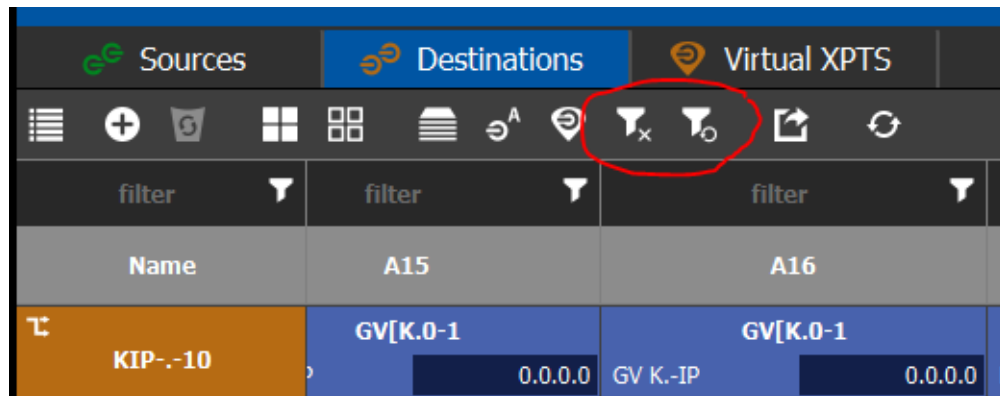
4 Clear filter: Prior to this fix we ONLY cleared the filter text.

This clears text AND restore all DEFAULT values to the other options.

5 Reload filter: Before we ONLY reloaded the last text filter. This was fixed to include all the options filter widget.

Note that only filter text is displayed in Reload filter[] in the menu due to space constraints.

- [Ref. #PEG-9755] **GV Convergent now has ability to control the K-Frame IP receivers:** The K-Frame team has provided the ability of GV Convergent to control the IP receivers of the switcher frame. This, coupled with the GVG Native Protocol external interface allows for the complete integration with the K-Frame switchers. The switcher operator can pull mnemonics from GV Convergent and issue commands to GV Convergent to join source streams to the K-Frame IP receivers. This supports 2022-6 and 2110 modes of operation with 2022-7 media network redundancy. The K-Frame switcher will be a virtual device that can be added to the GV Convergent topology and present its receivers as destinations, its transmitters (the output of the switcher) as sources.

  Configuration of the K-Frame switcher can be found in the GV Convergent User Guide for version 1.10.0 under the topic *Configuring a K-Frame Production Switcher*.

- [Ref. #PEG-9760] **SDP information generated for non-NMOS discovered devices:** In order to use IS-05 connection management, SDP information is required to be sent as part of the command. Most devices configured within GV Convergent were not discovered using NMOS IS-04, and therefore did not have native SDP information. Thus, GV Convergent needed to created that information for those devices that do not generate and publish their own information, in order to utilize the IS-05 connection management commands to discovered NMOS receivers.

  The SDP information is now generated by GV Convergent and is included in the connection management commands to allow discovered AMWA NMOS receivers to join non-discovered senders, or source devices created within the GV Convergent client.

  This SDP information is not currently published to the AMWA NMOS registry, but may be in the future.

- [Ref. #PEG-9891] **GV Convergent Control of Kaleido-IP supports both 2022-6 and 2110-20 modes:** NMOS video receivers are reported merely as "video". GV Convergent didn't know if the receiver was expecting 2022-6 or 2110-20. This caused an issue in regards to path finding and logical level assignment. NMOS receivers accept either a 2022-6 (that is, SDI logical level) or 2110-20 (that is, V logical level) signal. The GV Convergent pathfinding code was altered to allow either logical level sender to be joined by the Kaleido-IP receiver.

Bugs Fixed

- [Ref. #PEG-9773] **Logic was updated in the Web Admin to prevent access to directories on the Server:** The logic was updated in the Web Admin access to prevent you from accessing directories that you should not have access to. This will ensure that strict routed file paths are enforced.

- [Ref. #PEG-9774] **Improved security with regards to Apache Felix GoGo:** Development has disabled the OSGi debug console by default for production GV Convergent systems.

- [Ref. #PEG-9908] **Invalid shuffle takes no longer lock up system:** an issue that was found where you could attempt to shuffle audio, where there was not a demux/mux path to allow for this action to occur, that may cause the panel or client to lock up. This will be further optimized in a future release, but for now, the system should no longer lock up.

- [Ref. #PEG-8897] **The GV Node streams for audio and ancillary flow types default to video:** An issue within the code was corrected to correctly set the flow type device property. The device property was defaulting and remaining at video for all logical levels. The issue has been resolved by setting the appropriate flow type based on the logical level of the stream - video, data, or audio.

- [Ref. #PEG-9664] **Fixed an issue where wrong logical device configuration caused failed takes:** When configuring logical devices, if you configure streams under the incorrect logical level, in the logical device table, then attempting to execute takes with those devices was causing future takes to fail. This has been corrected in the code and while the initial take may fail with the incorrectly configured devices, it will not impact future takes of correctly configured devices. The failures will be indicated within the Audit log.

- [Ref. #PEG-9695] **Discovered NMOS devices may need to update audio depending on its grouping:** GV Convergent no longer treats the multiple streams of same type, from the Kaleido IP, as sub-levels. Only the first stream (sorted alphanumerical) will be assigned. For example, a KIP has a video and 4 audio streams (a1, a2, a3, a4) under the group tag <source name>. A logical destination named <source name> will be created with the video stream assigned to level V and "a1" assigned to level A (which is a composite logical level that contains all 16 channels of audio). You will no longer see any indication of breakaway on the name column in the logical device table.

  If the Kaleido IP's IP addresses is changed, this is updated within GV Convergent.

GV Convergent Version 1.9.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-6943] **DCNM Policies bulk update:** the latest testing showed that 2500 host policies were pushed to DCNM in under 10 seconds and removing the policies is happening in approximately the same amount of time.

- [Ref. #PEG-8660] **Improvement to System Status Stage of GV Convergent for Router Controllers:** the status of multiple controllers, or control cards within a router, southbound of GV Convergent are now displayed correctly for each GV Convergent server on the System Status Stage.

- [Ref. #PEG-9495] **Spine to Leaf aggregation link capacity displayed in GV Convergent Path Manger:** path manager un-managed topology now displays bandwidth usage percentages between spine and leaf. This information is resolved using an API call to the switches.

- [Ref. #PEG-9637] **Added support for redundant router support with Probel SW-P-08 southbound:** this functionality has been added and tested against the Sirius Router.

- [Ref. #PEG-9405] **XY status button added to panel button options:** the XY status button will display the status of the currently selected destination. This allows you to know what destination is selected as they navigate through pages on a panel that does not have a display. The XY status button displays the same data as a standard destination button, but only for the currently selected destination on the panel where the button has been placed.

Bugs Fixed

- [Ref. #PEG-8241] **DCNM v11 has addressed several issues that will improve GV Convergent path visualization:** several issues that existed in path visualization that were related to vendor specific issues have been addressed. One of these issues involved displaying duplicate network switches.

- [Ref. #PEG-9135] **DCNM v11 integration addressed an issue with DCNM redundancy:** an issue was addressed where GV Convergent failed to connect to the redundant DCNM controller in an HA (high availability) configuration.

GV Convergent Version 1.8.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-8606] **The border of the topology configurator was updated:** When a topology graph is set to be active, the canvas area now displays a 3px wide border around the edges to indicate that the currently displayed graph is active.

  In addition, the button used to activate the graph is red when active instead of selected blue.

  The active topology indication on the main client toolbar remains unchanged.
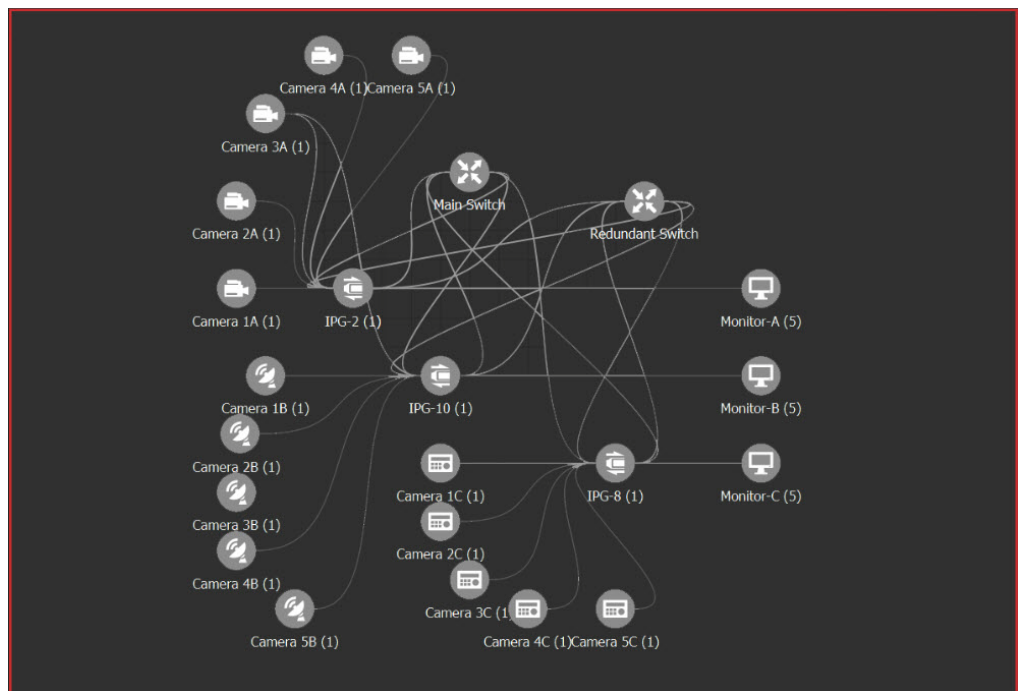
- [Ref. #PEG-8607] **Update to the Topology navigation tool bar:** The Topology Configurator now displays a navigation toolbar at the bottom of the canvas area that will be 34 px in height (shown below).

 The following information will be displayed on the navigation toolbar:

  - name of the currently visible layer at the far left
  - name of the current zoom factor at the far right
  - pan icon displayed right before the zoom factor
  - mouse/selected device coordinates
  - name of the library object selected on the canvas as well as the library where it can be found

Current Layer: **Overview**   Mouse: **X = 100, Y = 100** ▼   ✋   Zoom: **3**

- [Ref. #PEG-9420] **Virtual cross points now support 4K sources and destinations:** you can now route 4K sources to virtual destinations, and the corresponding virtual source can then be routed to 4K destinations.

  Virtual sources that have a 4K source routed to the corresponding virtual destination can not be routed to non-4k destinations.

- [Ref. #PEG-9448] **DCNM v11 integration now supported in GV Convergent:** The updating of the integration between GV Convergent and Cisco DCNM v11 has been completed. For more information on this integration, see the GV Convergent User Guide guide for v1.8.0.

- [Ref. #PEG-9490] **You can now create multiple virtual cross points at a time:** the Virtual Cross Point functionality, added in a previous version of GV Convergent, has been improved to allow you to create more than one virtual cross points at a time. You provide a prefix, an index starting value, and an ending index value for the virtual cross points, to create a series of virtual cross points. The ending index will allow for you to skip creation of virtual XPTs that already fall in between the range of indexes.
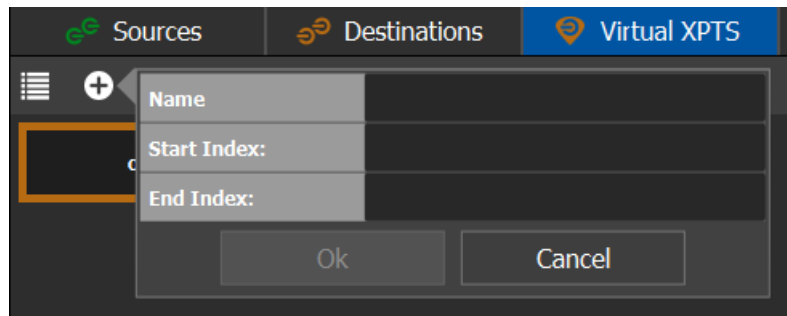
- [Ref. #PEG-9585] **Features now disabled in the Web Admin of GV Convergent that are not allowed to be done when a redundant cluster is intact:** Features that require a restart of the control software will now be disabled from the GV Convergent Web Admin pages if the GV Convergent servers are in a redundant cluster. These features are upgrades of the software and restoration of backup configurations.

  GV Convergent now supports making a back up without breaking the cluster or restarting the control software.

Bugs Fixed

- [Ref. #PEG-9229] **Improvement made to category list pages for NV panel configurations:** An issue has been addressed that created a situation where category list pages in NV Panel configurations did not display the total possible devices on the list page after selecting previous from a list page that did not utilize the total number of devices.

- [Ref. #PEG-9570] **Adjusted tolerance for discovering IS-04 devices that have improper header:** In order to support IS-04 AMWA NMOS devices, GV Convergent adjusted its tolerance to handle messages from devices publishing non-standard headers. This tolerance will allow GV Convergent to discover devices that have not followed the standard exactly with regards to content-type.

- [Ref. #PEG-9101] **Host Names now change when the Network Host Name is altered in GV Convergent:** This issue was resolved as part of the DCNM v11 integration.

- [Ref. #PEG-9298] **Issue where two host policies may have been created after modifying multicast IP resolved:** This issue was resolved as part of the DCNM v11 integration.

- [Ref. #PEG-9470] **Discovered SAM devices are now given a unique name when added to the topology:** Previously there was not a unique device name for the discovered devices. This fix will assign a unique identifier to each device. In future releases, GV Convergent will provide the means to assign unique names that will propagate to monitoring.

- [Ref. #PEG-9553] **Upgraded NMOS registry to the latest version 1.0.4 from 1.0.1:** GV Convergent has upgrade to the latest version 1.0.4 of the NMOS registry. The upgrade allows nodes running the latest code to be able to register on the GV Convergent registry.

GV Convergent Version 1.7.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-4812] **Removing a logical destination device from a virtual XPT changes the status to the logical source device:** while 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. Removing the logical destination device from a virtual XPT, will change the status of that destination to the logical source device.

- [Ref. #PEG-4843] **GV Convergent now supports the IPG-4901:** this feature introduces the IPG-4901 device in GV Convergent. The IPG-4901 is an IP gateway card that resides in the GV Node. This card allows you 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.

To configure the device:
  - Drop it on the topology from the Virtual Devices library
  - Configure the GV Node IP Address and Slot Number properties under Device Properties
  - When the topology is activated, the card configuration is read from Densite Manager and applied to the device.

To connect the device:
  - 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. It could be possible to use IPG-4901 like 3901 however this is not a valid use case.
- 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

- They are divided similar to IPG-3901
- 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 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.
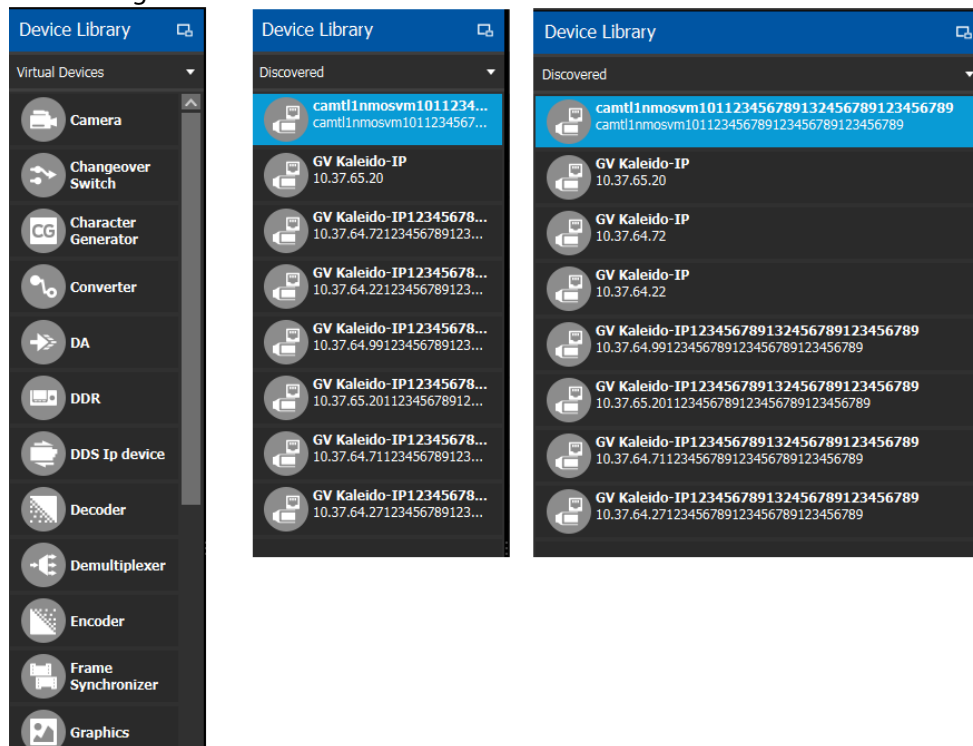
- Example of a Topology containing IPG-4901
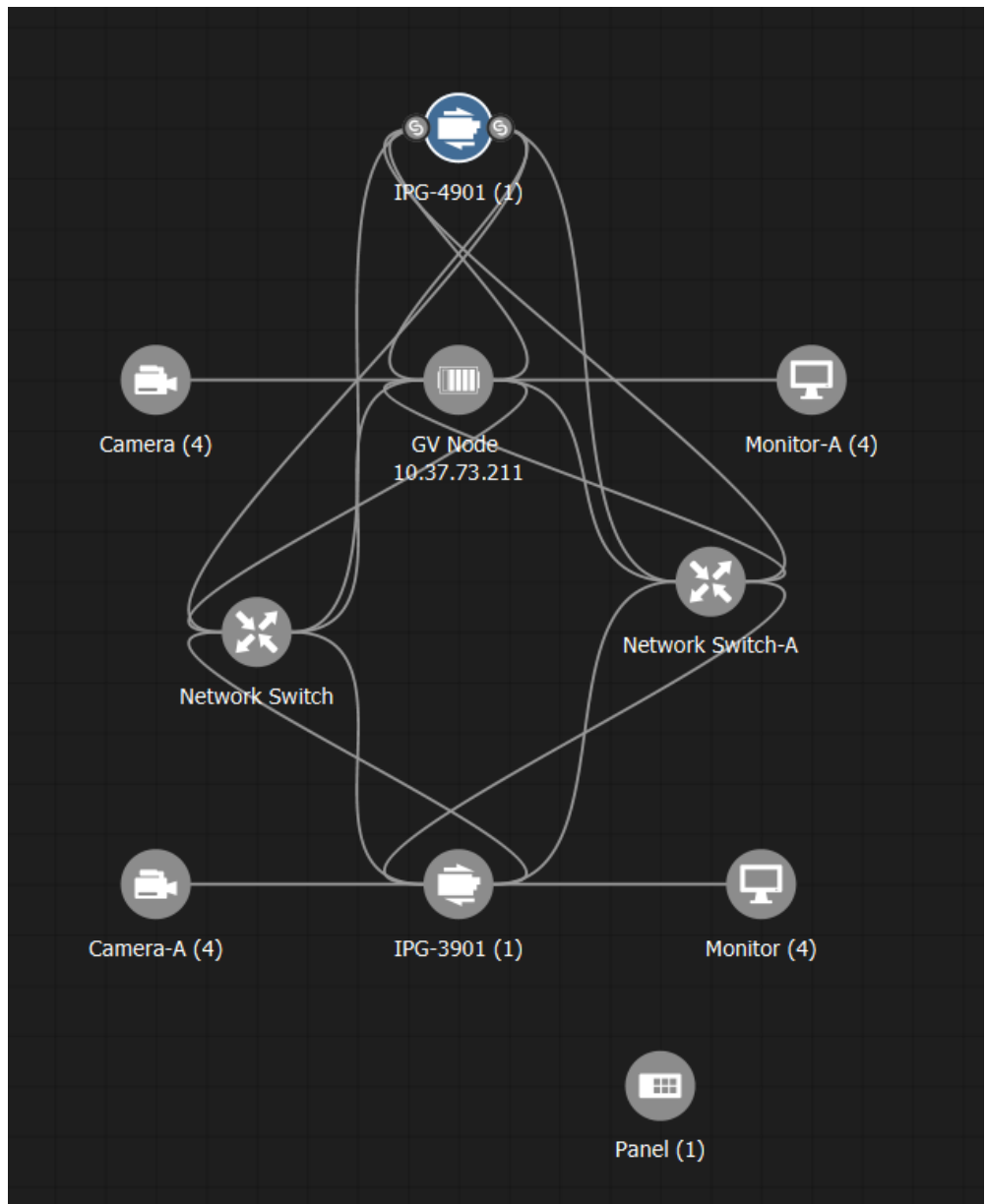
- [Ref. #PEG-9052] **Actual and GV Convergent reserved memory now displayed in System Status stage:** prior to 1.7.0, only the reserved memory resources of the GV Convergent server were displayed in the System Status stage. The actual memory usage is now displayed, as well as the reserved memory.
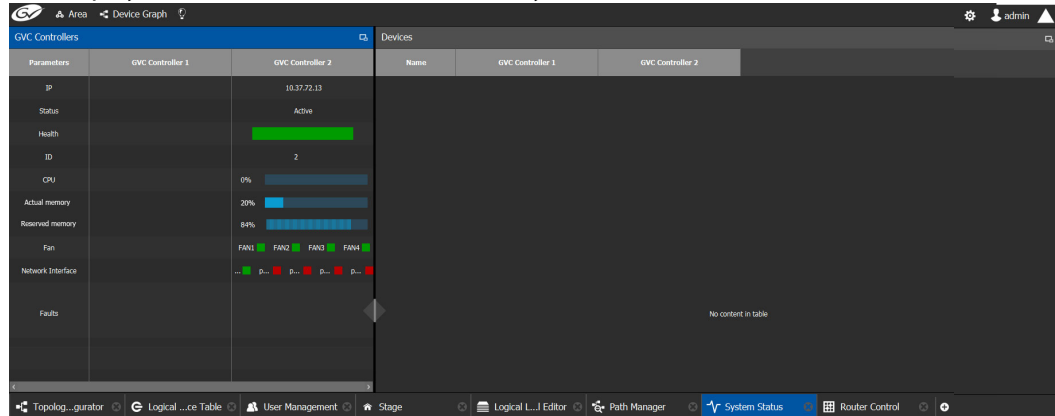

- [Ref. #PEG-9078] **Densite Conrol Ports are now active on the inactive GV Convergent server:** on the system status page inside the GV Convergent Client, the Densite Gateway control points would status as 'Standby' on the inactive controller. They were standby until the release of GV Convergent 1.7.0. Those control points are now active on the inactive controller and will status accordingly. This improvement will allow for shorter fail over times between GV Convergent controllers.

- [Ref. #PEG-9132] **Discovered Devices expanded to support SAM product integration:** the SAM devices will now be displayed in Discovered Devices section of the Topology Configurator. The discovered devices that were created to display IS-04 discovered devices, was expanded to support SAM devices discovered with development performed for SAM product integration. Once you drag the discovered device into the topology and creates the physical connection link, the configuration for the device will be complete. You would then only need to create the edge devices (SDI and IP devices) that are connected to the SAM product. The integration will support the IQMIX card for 1.7.0. Integration with IQUCP and MV-820 will be forthcoming in 1.8.0 of GV Convergent.

Device Library — Virtual Devices
- Camera
- Changeover Switch
- Character Generator
- Converter
- DA
- DDR
- DDS Ip device
- Decoder
- Demultiplexer
- Encoder
- Frame Synchronizer
- Graphics

Device Library — Discovered
- camtl1nmosvm1011234... camtl1nmosvm1011234567...
- GV Kaleido-IP 10.37.65.20
- GV Kaleido-IP12345678... 10.37.64.72123456789123...
- GV Kaleido-IP12345678... 10.37.64.22123456789123...
- GV Kaleido-IP12345678... 10.37.64.99123456789123...
- GV Kaleido-IP12345678... 10.37.65.20112345678912...
- GV Kaleido-IP12345678... 10.37.64.71123456789123...
- GV Kaleido-IP12345678... 10.37.64.27123456789123...

Device Library — Discovered
- camtl1nmosvm10112345678913245678912345678 camtl1nmosvm10112345678912345678912345678
- GV Kaleido-IP 10.37.65.20
- GV Kaleido-IP 10.37.64.72
- GV Kaleido-IP 10.37.64.22
- GV Kaleido-IP123456789132456789123456789 10.37.64.99123456789123456789123456789
- GV Kaleido-IP123456789132456789123456789 10.37.65.20112345678912345678912345678
- GV Kaleido-IP123456789132456789123456789 10.37.64.7112345678912345678912345678
- GV Kaleido-IP123456789132456789123456789 10.37.64.2712345678912345678912345678

- [Ref. #PEG-9133] **Initial SAM integration added to GV Convergent:** SAM IQMIX can now be discovered and added to the topology within GV Convergent. For the 1.7.0 release, only SAM devices can be routed to other SAM devices to accommodate other integration efforts that are forthcoming in future releases.

  You can discover the IQMIX and add it to the topology, creating the physical connections with the network and other devices to control the edge device.

- [Ref. #PEG-9276] **Updated mapping of NMOS devices:** improvements of the NMOS mapping include grouping parameters and interface bindings to create ports - assigning senders/receivers to those ports.

- [Ref. #PEG-9336] **TCP/UDP port property of router drivers for southbound control are now configurable:** the hard-coded ports of southbound routers and router control systems has been amended to allow for configuration. Sometimes a vendor may use a protocol, but not utilize the default port. This will allow you to change the configuration to match the port specified by the southbound router.

- [Ref. #PEG-9337] **Virtual XPT reset button added to the Router Control UI stage in GV Convergent:** the virtual XPT reset button is now available in the Router Control UI that allows you to reset the virtual XPTs. This will essentially replace the salvo for the initialization of the virtual XPTs. The procedure is to select the virtual XPT and click on the reset button. This will route the appropriate virtual source to the real destinations statically configured in the virtual XPT tab of the logical device table.
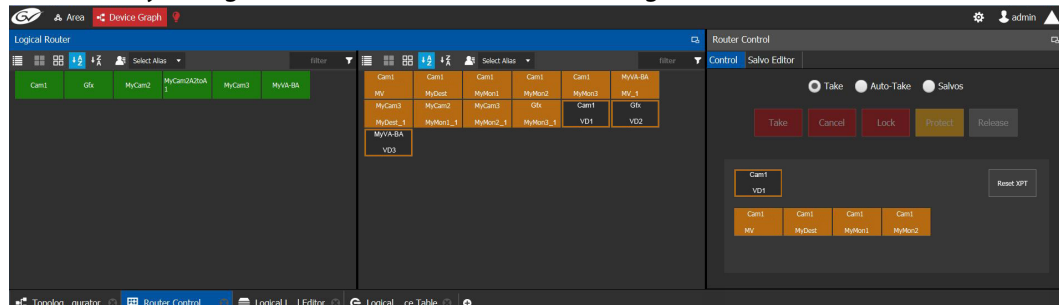
- [Ref. #PEG-9338] **Virtual source and destination filters have been added to GV Convergent:** this will allow you to filter on virtual XPTs when configuring the panel, categories, and the router control UI.

- [Ref. #PEG-9408] **Logical destination can only be added to one virtual XPT:** a real destination can only be added to 1 virtual destination. Once added, it should no longer be available to other virtual destinations.

A Pop up confirmation message is exposed if you are trying to add a logical destination that has already been added to a virtual XPT. The toaster popup will be part of the selector window.

If you select 'OK', the logical destination is removed from the previous and added to the new virtual XPT.
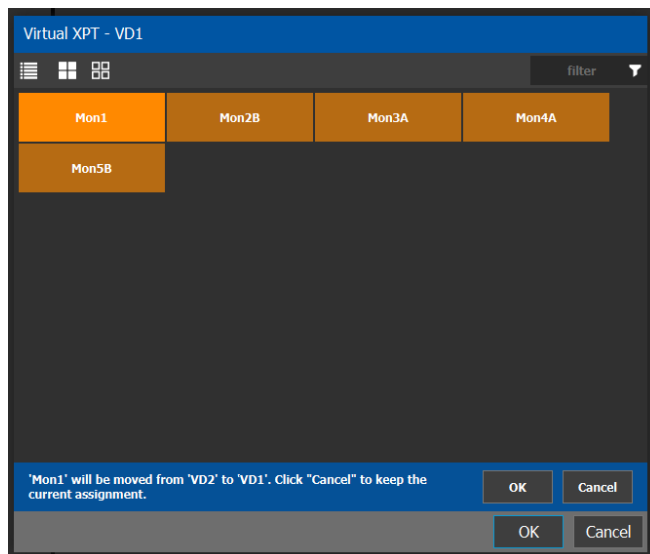
- [Ref. #PEG-9419] **Virtual Sources can be routed to unrelated virtual destinations:** you can route virtual sources to virtual destinations that are not associated with the same virtual XPT. This allows you to increase the number of logical destinations devices that can be switched with a single route. Routing a logical source device to the virtual destination of a virtual XPT will route said source to all logical destinations 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.

- [Ref. #PEG-9421] **Adding a destination to a virtual cross point in the logical device table should automatically trigger a take:** there is a new configuration in 1.7.0 for Virtual XPTs within the logical device table. Once you create a virtual XPT, you have the option to add a logical destination device to the virtual XPT. Doing this will route the virtual source of that virtual XPT to the real destination(s) that were configured for said virtual XPT. This replaces the need to have a salvo to initialize the virtual XPTs.

- [Ref. #PEG-9422] **Deleting virtual XPTs updates status of logical destination to the logical source device routed to the virtual destination:** the logical destination devices that have the virtual source routed to them are updated to the logical source device when the corresponding virtual XPT is deleted.

- [Ref. #PEG-9424] **Limit of static configuration of real destinations related to a single virtual XPT is 100 devices:** you are able to establish static relationship between the virtual source and up to 100 real logical destinations in the logical device table. Once the logical destination is placed in the virtual XPTs list, the virtual source related to the virtual XPT will be routed to the real logical destination(s).

  This functionality replaces the need for the virtual XPT initialization salvo.

- [Ref. #PEG-9458] **Virtual XPT status will be displayed in the Path manager:** the status of the virtual XPTs will be displayed in the Path Manager.

- [Ref. #PEG-9547] **Northbound Controller Client Maximum default set to 100 clients:** the GV Convergent can now accept a maximum of 100 clients of northbound control. The value was defaulted to 16. This value is also configurable through ssh interface, if necessary. GV Convergent recommends not exceeding the number of clients above 300 for any reason.

Bugs Fixed

- [Ref. #PEG-9074] **Native Client Installer not downloading from Web Admin after upgrade:** after changing the management IP address of a server, the client installer did not work. You receive a connecting... message at the bottom of the browser and nothing happened after that. This is no longer the case and this works correctly.

- [Ref. #PEG-9228] **Broken Path Manager when executing a salvo take (one source to all destinations) while selecting Destinations:** this is no longer the case and this works correctly.

- [Ref. #PEG-9380] **No Duplicate IP message in the GV Convergent UI:** this was a regression where GV Convergent was logging the warning, but not displaying it properly in the UI. This has been addressed and will display in the UI for duplicate IP addresses.

- [Ref. #PEG-9493] **TICO logical level is being removed and replaced with SDI:** you can still create a TICO logical level if they need to for compatibility reasons, but the TICO logical level will be replaced by the SDI logical level for existing configurations. The logical level, TICO, was creating compatibility issues for customers that did not want to differentiate between SDI and TICO signals. The migration of TICO to SDI logical levels should be automatic.

GV Convergent Version 1.6.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-5910] **Aliases can be utilized on the panel configurations to display up to 24 characters:** 24 character name sets are now available in GV Convergent for the NV panels. See the GV Convergent User Guide for more information.

- [Ref. #PEG-6544] **Utilization of the panel display now available for Level Status for the NV9640, NV9642, and NV9647:** the implementation of the display for level status of selected destinations is now available for the NV9640, NV9642, and NV9647 control panels. Multi-selection display functionality will be available in a future GV Convergent release.

- [Ref. #PEG-6673] **A new device property has been added to display MADI ports on port 8 and 9 of XIO-4901 card for GV Node:** see the GV Convergent User Guide for more information.

- [Ref. #PEG-7412] **NMOS IS-05 Connection Management is now available:** the IS-05 Connection Management standard allows control of receivers to join senders that have been discovered utilizing the IS-04 standards for discovery and configuration. The IS-04 discovered devices are available to be placed onto the topology configurator from a Discovered Devices list that is now available next to the Virtual Devices list. Once you select a discovered device to be added to the topology and makes the physical connections for that device, the configuration will be completed based on that AMWA devices SDP information. Receivers that have implemented connection management can then issue IGMP joins based on connection management messages sent to this receiver.

- [Ref. #PEG-7749] **GV Convergent External Native Protocol from GV Stratus is now available:** GV Status can now communicate with the GV Convergent system to pull names from the GV Convergent database to establish router control. Stratus can then send take commands to cause GV Convergent to make routes feeding media servers also controlled by Stratus.

- [Ref. #PEG-8462] **Filter on MADI port type in the physical connections editor:** MADI has been added to the SDI and IP port types in the physical connections editor. This will allow you to filter on the MADI port type to display only those connection types when making physical connections on the physical connections editor.

- [Ref. # PEG-9046] **Create a panel configuration from an existing panel configuration:** a duplicate button has been added in the panel configuration 'add panel' management stage. This will allow you to create a new panel configuration based on an existing panel configuration of the same type. The new panel configuration will have a new name and any changes to that configuration will not affect the original panel configuration that you based its configuration on.
You can use the exact same configuration for a panel by selecting the existing panel behavior in the topology manager for the panel Device Group Properties under *# Devices*. Changes to this configuration will affect all panels that share the behavior.

- [Ref. # PEG-9111] **Streams can now be filled in horizontally and vertically on Logical Device Table:** selecting numerous streams and then dragging them onto the logical device table would fill those streams vertically under a single logical level. However, when dragging audio streams, you may want to fill in the streams horizontally for a single device. This is now available by selecting the single row, you can fill in the selected streams horizontally for a single device. Selecting a number of rows will still allow you to define streams under a single logical level, or fill them in vertically. This latter functionality differs only slightly from 1.5.0, where you did not need to first select the rows to drag streams into.

- [Ref. #PEG-9165] **Can now set MADI ports on port 8-9 of GV Node XIO cards in topology:** this is part of the MADI implementation. Once set, these will allow for SDI devices to be connected using the MADI connector type. The MADI streams can then be assigned to logical sources under the audio logical levels

- [Ref. #PEG-9224] **Disable automatic sources and destination as default for MADI port streams:** MADI port streams will not have automatic source or destinations by default. The ports defined as MADI will create MADI streams that can be placed within manually created logical devices.

- [Ref. #PEG-9227] **MADI is now supported on a GV Node operating in 2022-6 mode:** by defining the disembedders and embedders as enabled/disabled, the pathfinding has been evolved to allow for switching of audio in a GV Node that is operating in 2022-6 mode. It was the case that the embedders and disembedders were assumed to be always off, prior to this release.

- [Ref. #PEG-9231] **GV Node Router Standby issue resolved:** an issue that presented itself with the active or inactive control system displaying a GV Node router connection as standby - when this connection should always be active - has been resolved. A minor change to the GV Convergent code was implemented to accommodate a state where GV Convergent found itself in a state of receiving the response from GV Node, but not processing the message.

- [Ref. #PEG-9244] **Fixed 4K logical device takes regression:** An issue that only saw one of the 4 video logical levels taking in a 4K logical device take, has been resolved with this release. See Creating a 4K Switching Setup in the GV Convergent User Guide.

- [Ref. #PEG-9324] **NMOS IS-04 Discovery must be enabled in the Area Configurator:** When clicking on the System Controller within the Area Configurator, you must click to enable the IS-04 discovery. This feature is defaulted to off.

Bugs Fixed

- [Ref. #PEG-7879] **Get HTTP 401 Unauthorized when connecting on DCNM server during startup**

- [Ref. #PEG-7967] **Deleting an alias column in the Alias Editor is not reflected in the Router Control UI:** After you delete an alias column in GV Convergent Client > Alias Editor while the Alias is selected in Router Control UI, the alias is still shown in Router Control UI although expanding the list will not show it as a list item.

- [Ref. #PEG-7994] **Aliases disappear after an alias column is deleted:** When you delete Alias columns, then add aliases on a new column, and then add another Alias column, the alias labels disappear from the cells.

- [Ref. #PEG-8763] **IP validation: DCNM policies are not created for a valid IP port:** DCNM-Managed network switch connections must be made on the same device. When you create physical connections between a device and a DCNM-controlled network switch, ensure that the matching in and out ports of a switch are connected to the same device. For instance, in1 and out1 of a network switch cannot be connected to different devices because, in reality, there is only a single port and it cannot be connected to two places.

- [Ref. #PEG-9074] **Cannot download client after modifying the server IP address:** After changing the management IP address of a server, the client installer does not work. You get a connecting... message at the bottom of the browser and nothing shows up after that.

- [Ref. #PEG-9215] **Data entry may not display on the alias editor fields after deleting an alias:** If after deleting an alias column, a new one is created to take its place, entering aliases in the cells may not show the text.

GV Convergent Version 1.5.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

- [Ref. #PEG-7528] **SDP for Redundant Streams Merged into One Message:** This option will allow for SDP information for redundant streams to be included within one message. This option should cover more use cases than other options. This follows the RFC 7104 section 4.2 standard.

- [Ref. #PEG-7783] **NMOS IS-04 Query Service Implemented in GV Convergent:** In version 1.4.0 of GV Convergent, you were given the option of selecting a registry to query or utilize the GV Convergent registry. You could also define the GV Convergent registry priority for use in a multiple registry environment. This issue supports the ability to query the highest priority registry for changes in AMWA devices. Those changes will be reflected in the GV Convergent topology.

- [Ref. #PEG-7796] **GV Convergent now supports DCNM 10.4(2) with AMQP v2:** DCNM 10.4(2) introduced the AMQP v2 messages for asynchronous reporting from the DCNM network controller. GV Convergent now utilizes these messages for quicker status updates of the network controller state changes. This will limit the polling required by GV Convergent of the DCNM network controller.

- [Ref. #PEG-8271] **Refresh button, for DCNM flow status, removed from the Path Manager stage:** With version 10.4(2) of DCNM, Cisco has provided the use of AMQP v2 messages that will provide flow status and other updates without polling the network controller. This has deprecated the need to refresh that status and poll for changes.

- [Ref. #PEG-8434] **There is a new pop out window for selection of logical levels:** The selection of logical levels now uses a pop out window rather than a drop down selection.

- [Ref. #PEG-8499] **Additional stream information is now available in the Logical Device Table:** Every stream in the stream browser will display the info icon (i) in the top right that, when selected, will reveal the following additional information about that stream:
  - Short Name
  - Name
  - Port
  - Device
  - Device group
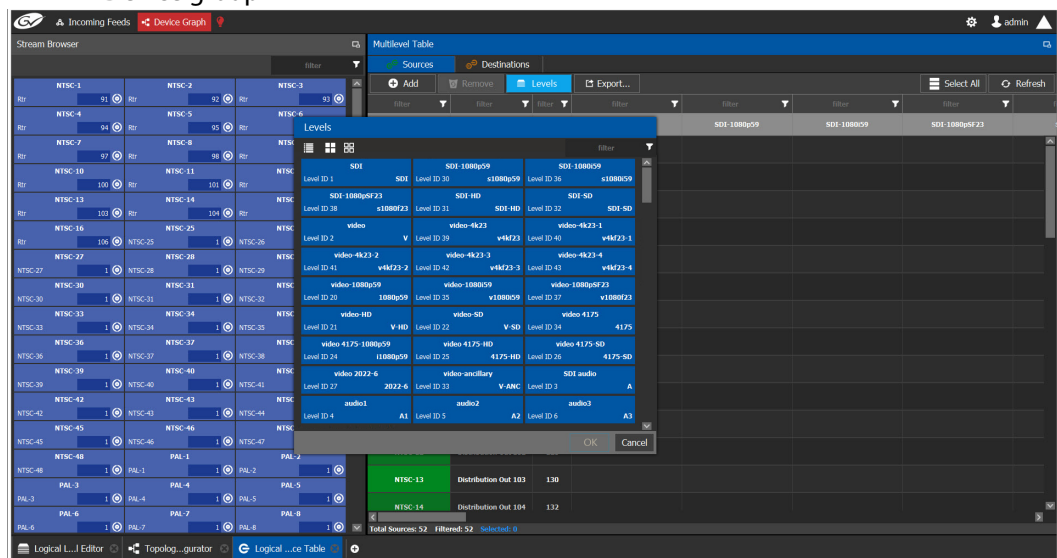
- [Ref. #PEG-8559] **GV Node support of TR-03 X6 redundant mode:** With GV Node firmware 2.2.x, the TR-03/2110 mode will be enhanced to support 6 streams(X6) per Ethernet lane (10GB interface). Firmware 2.0.x and 2.1.x supported only 3 streams(X3) per port in TR-03 mode.

- [Ref. #PEG-8813] **GV Convergent updates the DCNM visualization to reflect changes in flow due to failed links:** If a link between spine and leaf goes down, DCNM should migrate flows that are using the down aggregation links to other available aggregation links. In Cisco DCNM 10.4(2) we have a notification that the flow migration happened. GV Convergent should update the DCNM visualization to reflect the change in Path manager.

- [Ref. #PEG-8889] **Audio Shuffle in Configuration is Now Available in the Logical Device Table:** Simple steps to create a logical source with embedded shuffle:
  1 Open Logical Device Table.
  2 Add a new source "MySrc1" (note that by default, the new row is selected).
  3 Drop Cam1 stream to SDI column for MySrc1.
  4 Scroll to the right to view audio1 column.
  5 See the little shuffle icon appear in the column headers for audioX.
  6 Click the shuffle icon in the audio1 column header.

7   The logical level selector appears.

8   Select audio3 then OK.

9   See the little shuffle icon appear in the cell for audio1 for MySrc1, and that the text in the box now shows A3 (the shuffled source).

10 If you do a take from MySrc1 to Mon1 destination, you should see one to one match for all levels except that A3 from the source should be brought to A1 for the destination:

   • Cam1/SDI-V-ANC -> Mon1/SDI/V-ANC

   • Cam1/SDI/A3 -> Mon1/SDI-V/A1

   • Cam1/SDI/A2 -> Mon1/SDI-V/A2

   • Cam1/SDI/A3 -> Mon1/SDI-V/A3

   • ...

Create logical source with embedded breakaway and shuffle:

1   Add a new logical source "MySrc2".

2   Drop Cam1 stream to SDI column for MySrc2.

3   Drop Cam2 stream to audio1 column.

4   Click shuffle for audio1 column and select audio3. Since there is a breakaway at this level, the shuffle will apply to this breakaway source.

5   If you do a take from MySrc2 to Mon1 destination, you should see:

   • Cam1/SDI-V-ANC -> Mon1/SDI/V-ANC

   • Cam2/SDI/A3 -> Mon1/SDI-V/A1

   • Cam1/SDI/A2 -> Mon1/SDI-V/A2

   • Cam1/SDI/A3 -> Mon1/SDI-V/A3

   • ...

The logical level selector (when click on the shuffle icon in the column headers):

   • The title of the logical level selector includes the name of the level column that the icon was clicked on.

   • When opened, if there was already a shuffle defined for that column, the shuffled level is pre-selected.

   • The OK button is disabled if there is no change in value.

      • If the column had no shuffle defined, there is nothing pre-selected, and the OK button is disabled until a level is selected.

      • If the column had a shuffle to audio3 defined, then audio3 is pre-selected, and the OK button is enabled if audio3 is deselected or another level is selected, but it is disabled again if audio3 is re-selected.

When editing logical source/destination:

   • The shuffle icon only appears in the column header if the selected row:

      • is a custom source/destination (not a factory generated source/destination)

      • there is a stream (either explicit or inherited) at that level (i.e. the cell is not an empty black square)

- the column is a level that supports shuffling (i.e. audio1, audio2, ..., audio16)
- Once a shuffle is configured for a source/destination for a given level, you can remove the shuffle by selecting the source/destination and clicking the shuffle icon in the column header again to show the logical level selector. Then you can do one of the following:
  - Deselect the preselected level so that there are no levels selected then click OK
  - Select the same level as that of the column (i.e. the one that is mentioned in the title of the popup selector). For example, if shuffle is defined on audio1 column to audio3, then click on icon in audio1 column again, and select audio1 level.
- If a shuffle is defined for audioX, and the stream associated with the source/destination for that level **CHANGES**, then the shuffle remains (but it will now apply to the new stream).
  - Example: Drop Cam1 on SDI. Configure shuffle on audio1 column. Drop Cam2 on audio1. See the shuffle icon remains. Click the garbage can to delete Cam2 from audio1. See the shuffle icon remains (because the stream inherited is now Cam1.
- If a shuffle is defined for audioX, and the stream associated with the source/destination for that level is **REMOVED** (i.e. the cell becomes a black square), the shuffle is deleted.
  - Example: Drop Cam1 on SDI. Configure shuffle on audio1 column. Click the garbage can to delete Cam1 from SDI. See the audio1 cell is empty. Drop Cam2 on SDI (or SDI audio or audio1) and verify there is no shuffle icon for audio1.

Batch update
- If desired, you can select multiple sources/destinations (using Ctrl+click or select+click on rows) and then click the shuffle icon on a given column to define a shuffle for all selected sources/destinations simultaneously.
  - When click on the shuffle icon, the logical level selector will pre-select the shuffled source level if all selected sources/destinations had the same shuffled source.
  - If the selected sources/destinations had varying shuffled sources, the logical level selector will not be able to pre-select anything. Any selection at that point will update all selected sources/destinations.

Performing takes with logical sources/destinations that have embedded shuffles:
- Since embedded shuffles can be defined in both logical sources and destinations, it is possible to perform a take between a logical source and a logical destination that both have embedded shuffles. In such a case:
  - Take should FAIL when both the source and destination have a shuffle defined to the same destination, but using different sources. For example: source shuffles A3 -> A1, and destination shuffles A4 -> A1.
    - Error: Invalid shuffle configuration defined in devices X and Y. Multiple sources shuffled to level audioZ.
  - Take should PASS when both the source and destination have a shuffle defined to the same destination, and use the same sources. For example: source shuffles A3 -> A1, and destination shuffles A3 -> A1.
- If a shuffle refers to level that has no stream, then the take should FAIL with error "No path from sourceX to destY in current configuration."

- Example1: Create a logical source. Drop Cam1 stream on audio1. Add shuffle on audio1 to audio3. See that there is no stream in audio3 column. Try to take this logical source to Mon1. It should fail because the result should be that Cam1/A3 -> Mon1/A1, however there is no stream at Cam1/A3.

- Example2: Create a logical destination. Drop Mon1 stream on SDI. Add shuffle on audio1 to audio3. Create a logical source. Drop Cam1 on audio1. Take the logical source to logical destination. It should also fail because the destination is requesting audio3 from the source, but the source does not have a stream there.

- If the logical source defines a shuffle to a level (for example A3 -> A1) and that source is routed to a destination that does not have that destination level (A1), then the take should still complete successfully because it still performs the best take possible.

- Example: Create logical source, drop Cam1 on SDI, shuffle A3 -> A1. Create logical destination, drop Mon1 on video-ancillary level. When take source to destination, only video-ancillary level will be matched, and the shuffles will be ignored.

- [Ref. #PEG-8981] **External ID now utilized for physical and device control:** The NP0017 ID was deprecated with the release of GV Convergent 1.5.0. This allows you the flexibility to edit and re-index the external ID, but also warns you of the implications of this action.

- [Ref. #PEG-9020] **Changed row selection color on Logical Device Table:** The color had been too similar to the color in the cells. The new color is closer to a teal color to differentiate between the cell color and the row selection.

- [Ref. #PEG-9062] **DHCP leases for control panels are now set to not expire by default:** This is what happens when a panel is power cycled or freshly connected:

  - The panel, having forgotten its previous IP, sends out a DHCP_REQUEST with its MAC address.

  - The GV Convergent server responds:

    - If it's a newly connected panel (doesn't have any record of the panel MAC address), the GV Convergent server issues a new IP right away.

    - If the GV Convergent server does have a record of the MAC address because the GV Convergent server previously gave it an IP, the GV Convergent server refuses connection until the lease/MAC address combination is purged.

    - This can take as long as a 2 minutes.

Bugs Fixed

- [Ref. #PEG-8448] **Northbound Controller Status is made accurately to the GV Convergent client:** Found and fixed a problem where the cached labels in the GV Convergent database would be wrong after performing a re-index on the alias editor. Also, added De-bouncing before notifying clients of label changes.

- Some changes in GV Convergent will cause client connections to be closed to force a client to reconnect. The update in the client side might take some time based on their polling and how quickly they detect the loss of connection.

- [Ref. #PEG-8991] **User-defined logical levels can be integrated with system defined logical levels:** Compatibility is now available between the system defined logical levels and the user-created logical levels. The system defined logical levels have been reduced to a very basic set. This will allow you to only identify and set compatibility rules when absolutely necessary dependent on the necessities of their environment.

- [Ref. #PEG-8214] **Unnecessary field for Master Controller removed from the Area Configurator:** The Master Controller property was for future use and did not affect any use in the database. This property was removed from the System Controller Properties.

- [Ref. #PEG-8427] **Short label or device name is now displayed on the logical level button for control panels:** This addressed an issue where the longer, more descriptive, name was displayed on the logical level buttons of the control panels. This was usually truncated to the 8 character limit, and not useful to users.

- [Ref. #PEG-8760] **Logical Level selector pop-up window is now independent of screen resolution:** There was an issue where a low screen resolution prevented you from seeing the entirety of the pop-up window for selecting logical levels. This has been addressed in the code to allow users with lower screen resolution to view the entire pop-up.

- [Ref. #PEG-8794] **When gateway communication is offline, joins and leaves will not occur:** There was a race condition between the notification of the offline state and the actual offline state. When the race condition happened, the control port was set to offline before the monitoring thread detected that it was offline. When the monitoring saw the offline state it didn't notify the listeners since it was the current state.

- The fix added a new local variable that keeps the last state sent to the listeners, that way the listeners will always be notified when the control port goes offline.

- [Ref. #PEG-8826] **Time out value for NP0016 communication with the GV Node set to 500ms:** The original time out value was set to 200ms, but with the further processing from TR04 and 2110 work flows, GV Convergent has changed that default to 500ms to accommodate the processing of the response in GV Node.

- [Ref. #PEG-8879] **Tieline paths are now cleared when setting Transmitter stream to 0.0.0.0:** In the past to free the tieline path, you could enter 0.0.0.0 into the receiver multicast IP group IP. However, doing the same on the transmitter side did not free the tielines for the redundant path. This has been corrected in the code.

- [Ref. #PEG-8906] **NP0017 device-based status available at initialization:** Improvements were made to the code that addressed an issue where known status within GV Convergent was not being related to northbound controllers. This is no longer the case.

- [Ref. #PEG-8908] **You must unlock a destination prior to protecting the same destination:** You must now unlock a destination prior to protecting the same destination.

- [Ref. #PEG-8921] **NP0016 IP command has the ability to push format change to GV Node:** The new NP0016 IP implementation that allows GV Convergent to send commands to the GV Node on port 5195, includes the format type index. Based on what is in the field, the receiver can be changed to the logical level that relates to the correlating format type index.

  This created an issue for 50Hz signal types, as GV Convergent had not yet implemented these as system defined logical levels. This shortcoming was addressed by sending the

unknown format type index that directed the GV Node to not alter the current format of the receiver.

- [Ref. #PEG-8954] **Corrected issues with NP0017 Northbound retrieval of mnemonics commands:** The following problems were found and corrected with some of the NP0017 device based messages returned through the northbound interface:
  - The GetMnemonicsResponse have a byte count value higher than needed. This causes the message to be padded with hundreds of 0 value bytes.
  - The GetDeviceLevelsResponse 0x8000 3018 does not contain the correct value in its 'Number of Devices' field. It actually has the first device ID of the GetDeviceLevel 0x0000 3018 request.
  - The GetDeviceLevelsResponse 0x8000 3018 does not contain any level data.

- [Ref. #PEG-8961] **External ID must be 1 or greater to work with NDAC:** There may an offset dependent on the northbound protocol used - where external ID 1 in GV Convergent equals zero to the northbound controller. However, GV Convergent will have a limitation of 1 being the lowest external ID that you can set.

  External ID of -1 may be set by GV Convergent if you enter a duplicate external ID against the advice of the client interface. The duplicated external ID will become -1 to be easily identified by the individual making configuration changes.

- [Ref. #PEG-8964] **You can set a logical level to have no level:** Once selecting a logical level on a stream or device, you could not deselect a defined logical level. This has been addressed in the code.

- [Ref. #PEG-9025] **All levels take if appropriate level buttons not placed on the control panel:** Prior to this improvement, if the level buttons placed on the panel were not correct for the logical devices selected, then the Take button would not become enabled, or high tally when selecting the logical devices. This addressed that issue by allowing you to perform an all levels take, that will process a take between the source and destination logical devices on all levels that match between the devices regardless of the level buttons defined on the panel.

- [Ref. #PEG-9028] **Adjustments to the Logical Device Table for a more intuitive UI:** Breakaway icon is displayed on the source/destination if at least 1 stream is a breakaway.
  - Shuffle icon is now displayed on the source/destination if at least 1 stream is shuffled. It is no longer displayed on individual cell.
  - Too long Source destination labels are now "..." in the middle of the label.
  - Port number is now only displayed in the dark blue box for non shuffle-able streams. This is to not confuse you when an audio stream set its shuffle level.
  - The breakaway icon indicates that a stream level has been overridden.

- [Ref. #PEG-9160] **User-defined levels will be needed to create rules for compatibility:** GV Convergent has simplified the logical levels that are assigned by default to the devices. The idea is the assumption that all of user signals are interchangeable within the topology. If this is not the case, then you will need to define logical levels and/or manage the compatibility rules of the logical levels to limit what source logical levels the destination can have routed to them. As an example, an SD signal made to be compatible with an HD logical level, to allow an SD signal to be routed to an HD destination.

GV Convergent Version 1.4.1

This release corrects the following issue(s).

Bugs Fixed

- [Ref. #PEG-5101] **Support of TICO signals:** see TICO IPG-3901 support in GV Convergent, on page 51.

- [Ref. #PEG-7574] **Asynchronous message from GV Node improves on clean switch take times:** The GV Node driver in GV Convergent has been modified to communicate using the NP0016 streaming protocol when the GV Node has firmware version 2.2.0 or higher.

  If the logical destination being switched to is configured as 'clean switch', GV Convergent will wait for the GV Node to report all IP streams to be locked before performing the last video switch in the chain. If a stream doesn't reported locked within 2 seconds, the last video router will then be switched.

  This 'lock wait time' is configurable. The default value is currently 2000 ms.

- [Ref. #PEG-8690] **NP0016 driver polling frequency improved: The NP0016 driver has been updated to mimic the polling behavior of the NV9000**.

  For compact routers (UDP) the polling cycle still occurs every 1000 ms and is as follows:

  1 Check if a take command needs to be resent.
  2 Check if a lock/protect command needs to be resent.
  3 Request output status(0x00000052) of the next 64 router outputs.
  4 If supported, request the destination status change(0x00000053) for EACH of the configured levels.

  For enterprise routers (TCP), the polling cycle has been changed from 500 ms to 300 ms and is as follows:

  1 Send a 0x00005000 message to get the frame status.
  2 Request output status(0x00000052) of the next 64 router outputs.
  3 If supported, request the destination status change(0x00000053) for EACH of the configured levels.

  Prior to these changes, each poll cycle would send in a single batch the (0x00000052) commands for all the outputs of all the levels of the router. This would generate a large burst of requests to the router.

- [Ref. #PEG-8781] **GV Node exposed streams are now configurable as a source and destination:** Prior to this fix, the output lane streams were only able to be exposed - with the sources displaying in the stream browser of the sources on the logical device table. Similar to that, the exposed streams of the receiver will display in the stream browser of the destination logical devices. This is no longer the case and the streams will display in the source and destination side to cover the use cases of Transmitter as a destination, and Receiver as a source.

- [Ref. #PEG-8898] **Loopback accommodation for GV Node while using exposed streams:** GV Convergent accommodates the requirement to not receive the same content that is transmitted from the same interface - this is referred to as "loopback." This feature was not working when exposing the streams on the transmitters and causing the GV Node receivers to join those streams. This has been corrected in version 1.4.1.

TICO IPG-3901 support in GV Convergent

TICO Support in GV Convergent introduced in version1.4.1

Supported versions

GV Convergent supports TICO on IPGs version 1.3.x and 2.3.0

TICO in GV Convergent

Property Editor

When first connecting to an IPG that has TICO activated, two "extra" gateways will appear in the property editor. These gateways will not appear if TICO option is not activated or if TICO mode is "No TICO".
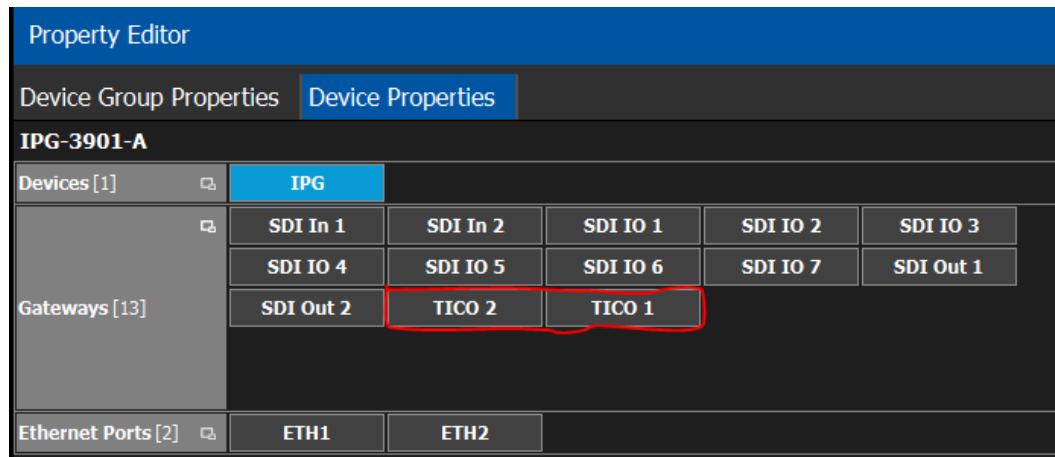
In this screen shot, TICO 1 and TICO 2 are disabled (TICO Configuration). When they are enabled, the gateways used for TICO are then disabled. This is also reflected in the property editor:

Here, the IPG is configured in ENC 1 - DEC 2 mode. SDI In 1 gateway was renamed to TICO 1 MON, as it is used to stream a monitor feed version of the TICO feed from TICO 1 - ENC. Gateways 2-4 and 8-11 have been disabled and are not visible anymore in the property editor.

- TICO gateways will be in SDI to IP direction if configured as an encoder (ENC 1 - DEC 2, ENC 1- ENC 2 modes) and be IP to SDI if configured as a decoder (ENC 1 - DEC 2, DEC 1 - DEC 2 modes)

Physical Connections Table

Once the topology containing TICO enabled IPGs is activated, the SDI ports to be used with TICO will be renamed.

- TICO 1 MON
  - Available when TICO - ENC 1 is ON.
  - Connect sources with 3G logical level to this port to use the Monitoring feed.
- TICO 1
  - Available when TICO ENC 1 or TICO DEC 1 is on (depending on the mode).
  - Connect sources with **TICO** logical level to this port to use TICO sources
- TICO 2 MON
  - Available when TICO - ENC 2 is ON
  - Connect sources with 3G logical level to this port to use the Monitoring feed.
- TICO 2
  - Available when TICO ENC 2 or TICO DEC 2 is on (depending on the mode).
  - Connect sources with **TICO** logical level to this port to use TICO sources

Port Type	Input Label	Input Port Id	Device Name
● ◉	TICO 1 MON	1	IPG
▥	ETH1	1	IPG
● ◉	TICO1	2	IPG
▥	ETH2	2	IPG
◉	SDI IO 1	3	IPG
◉	SDI IO 2	4	IPG
● ◉	TICO 2 MON	5	IPG
● ◉	TICO2	6	IPG
◉	SDI IO 5	7	IPG
◉	SDI IO 6	8	IPG
◉	SDI IO 7	9	IPG

If a TICO configuration is disabled (or enabled) the ports labels are updated
In the screen shot, the IPG is in ENC 1 ENC 2 mode, with ENC 1 OFF and ENC 2 ON.

	Port Type	Input Label	Input Port Id	Device Name
●	⊙	SDI In 1	1	IPG
	▥	ETH1	1	IPG
●	⊙	SDI In 2	2	IPG
	▥	ETH2	2	IPG
	⊙	SDI IO 1	3	IPG
	⊙	SDI IO 2	4	IPG
●	⊙	TICO 2 MON	5	IPG
●	⊙	TICO2	6	IPG
	⊙	SDI IO 5	7	IPG
	⊙	SDI IO 6	8	IPG
	⊙	SDI IO 7	9	IPG

For TICO destinations, simply connect SDI destinations to TICO 1 and TICO 2 ports.
The IPG must be in ENC 1 DEC 2 mode or DEC 1 DEC 2 mode.

	Device Name	Output Port Id	Output Label	Port Type
	IPG	1	ETH1	▥
	IPG	2	ETH2	▥
●	IPG	3	TICO1	⊙
	IPG	4	SDI IO 2	⊙
	IPG	5	SDI IO 3	⊙
	IPG	6	SDI IO 4	⊙
	IPG	7	SDI IO 5	⊙
●	IPG	8	TICO2	⊙
	IPG	9	SDI IO 7	⊙
	IPG	10	SDI Out 1	⊙
	IPG	11	SDI Out 2	⊙

Logical Levels

TICO sources must be configured with the TICO logical level.

TICO	
Level ID 52	TICO

Related articles

- TICO IPG-3901 support in GV Convergent

- GV Convergent Guides
- 2022-7 Generic IP device support

GV Convergent Version 1.4.0

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

GV Convergent 1.4.0 adds the following new features and enhancements.

- [Ref. #PEG-6325] **GV IP LDX Router Control support:** GV Convergent now supports the ability to cause the LDX receivers to join send streams.
    1 Add a camera with a REST API Control port to your GV Convergent topology.
    2 Enter the IP Address of the LDX.
    3 Activate the topology for the camera to retrieve the information from the XCU and create its ports.
    4 There is one input port and one output port.
    5 Connect the camera to the network switch, via its physical connections.
    6 Use the automatically created logical devices to control the receivers. Alternatively, you can create the logical devices manually.
- [Ref. #PEG-7367] **Device properties for IPG-3901 have been updated:** GV Convergent Client device properties for the IPG-3901 have been updated to simply the control characteristics of GV Convergent Client in the topology.
- [Ref. #PEG-7434] **Version 9.0 support for IPG-3901 - 4 audio receivers:** The gateways for the IPG-3901 now offer up to four receivers to join AES-67 streams in a TR04 workflow. These act as tie lines, allowing you to join additional streams in order to retrieve audio channels for a breakaway to be embedded on the SDI output. Once the four receivers have been caused to join four streams, takes, requiring additional audio, will fail unless they can reuse an existing tie line or replace previously joined streams.
- [Ref. #PEG-7584] **Version 2.2 of the IPG-3901 can now operate in TR04 mode:** GV Convergent supports the control of IPG-3901 version 2.2 operating in TR04 mode - with video and audio streams to or from SDI ports. The IPG-3901 is now a virtual device that can be added to a topology. It replaces the Gateway virtual device. This migration is automatic during upgrade.

  Known issue: The embedders of the SDI output on the IPG-3901 are always on and can only be disabled completely during configuration in iControl. In the next release of IPG-3901 (v2.3), you will be able to configure a source without audio, or with free source audio, on the audio logical levels to disable the embedders.
- [Ref. #PEG-6087] **Support of 'Loopback' on the IPG-3901:** The GV Convergent IPG-3901 driver was updated to support the loopback functionality. You can now route an SDI input of an IPG-3901 from GV Convergent to an SDI output on the same IPG.

- [Ref. #PEG-8444] **Safety added for re-index button on Alias Editor:** If you hit the **Re-Index** button after the External ID column is shown, you are asked for confirmation via a toaster pop-up. You cannot press the Re-index button again until you have confirmed your intent.

  If you enter a conflict in the External ID column, the old error message is now displayed in a toaster pop-up, instead of the dialog. The table cannot be changed until you have confirmed your intent.

  If you attempt to show the External ID column, and do not have the required security permissions, a warning is displayed as a toaster, instead of a dialog, pop-up.

Bugs Fixed

- [Ref. #PEG-6303] **Two automatic logical sources are created for Redundant Generic IP devices:** Only one logical device will be automatically created for a redundant (2022-7) device.

  A correction was made in the code to prevent the automatic creation of a logical device for each port of a redundant-defined device in a 2022-7 architecture. One logical device is now automatically created and both streams are displayed in the stream browser. If you include one of these streams in a logical device, both streams will switch when the logical device is switched.

- [Ref. #PEG-7265] **Replaced outdated label "Source Table" with "Logical Device Table":** The source table stage, in the GV Convergent, was replaced with the Logical Device Table, where you can select between logical sources and destinations.

- [Ref. #PEG-7307] **DCNM hosts are not named correctly because GV Convergent does not support bidirectional ports:** The DCNM host represents a physical Ethernet interface.

  GV Convergent does not have the concept of a host.

  For example, in GV Convergent, you could define multiple input physical interfaces, of type IP, using the same IP address and then define other output physical interfaces, of type IP, using different names.

  This creates issues in the DCNM driver because the DCNM API assumes that a host can have only one IP address and only one name.

  Workaround:

  - Use the same IP address for the input port and output port that share the same number on a device.
  - Distinguish between the ports labels using "In" and "Out;" for example, Eth1Out and Eth1In.

- [Ref. #PEG-7694] **Panel Status no longer stays offline after the configuration is restored.** This bug was addressed within the code to properly update the status of the panel after a system restoration.

- [Ref. #PEG-7766] **The DCNM system status is no longer displayed incorrectly as Online:** The behavior is as follows:

  Case 1: We disconnect ETH (uncheck "connected" in ESX Host).

  Case 2: We power off the VM completely.

  In both cases, the DCNM information disappears from the System Status page (Active, Standby and HA Status), and the actual status changes to red after a few seconds.

- [Ref. #PEG-8161] **Operations added to a salvo are displayed in the order they were selected:** Previously, operations were not displayed in the correct order.
- [Ref. #PEG-8283] **Streams were not updated correctly on the IPG in aggregation mode:** Device Properties on the IPG-3901 are now updated properly when you switch between aggregation and redundant mode.
- [Ref. #PEG-8481] **An invalid IP conflict message was received when RX and TX IPGs had the same multicast IP:** The invalid IP conflict message is no longer received when an IPG's RX and TX have the same multicast IP. This was addressed in a redesign of the IPG data model.
- [Ref. #PEG-8485] **Synchronization of XPTs now occurs between GV Convergent controllers in a reasonable amount of time:** Takes occurring in less than 30 seconds after a failover were not synchronizing between controllers in a previous build of the code. This has been addressed in the redundancy mode.
- [Ref. #PEG-8578] **The NP0016 was sending unnecessary responses to clients on a crosspoint change:** The sending of 0x80000050 messages was removed for crosspoint changes, which were not requested by the NDAC NP0016 client.
- [Ref. #PEG-8604] **The Force Active button now appears 30 seconds after a failover:** The Force Active button appeared 2-3 seconds after a failover even if the system was not ready. This has been addressed in the code.
- [Ref. #PEG-8671] **Devices were missing in the status page with a specific DB following a force active:** This issue was addressed in the code and the missing information on the status page will now display.
- [Ref. #PEG-8710]**The Video + ANC button is now required for TR04 routing:** In TR04 mode of operation, the ancillary is embedded in the video and you cannot route the ancillary data separately. GV Convergent is still monitoring the ancillary and looking to route that stream as part of our pathfinding. This created the need for a Video + Ancillary level button. This level button can be used in conjunction with the audio (AES-67) logical level button(s) for routing TR04 signals and performing a breakaway.
- [Ref. #PEG-8754]**Takes are causing DCNM host policies to be removed incorrectly:** Previously, when a take changed a receive stream IP address from an old value to a new value, the DCNM driver (and NMOS driver) interpreted that as a change in send stream IP address. That triggers the removal of flow policies associated with the old IP address. This issue was addressed in the code, and no longer occurs.
- [Ref. #PEG-8757]**Database migration from 1.3.0 to 1.4.0.**
    1. When migration is complete, the GV Node's gateway connection state may stay at "unknown," until you deactivate and reactivate the topology.
    2. The logical levels of the devices connected to the GV Node may need to be changed to be consistent and compatible.
- [Ref. #PEG-8774] **Pegasus service now starts after a version 1.3.0 database is restored:** Restoring a database backup from 1.3.x takes longer than restoring one from the current version (1.4.0). In fact, it could take up to seven minutes.

GV Convergent Version 1.3.1

This release adds the following enhancement(s) and corrects the following issue(s).

New Features and Enhancements

GV Convergent 1.3.1 adds the following enhancements:

- [Ref. #PEG-8594] **GV Convergent restarts the active controller on failover:** When you click the Force Active button on the standby controller, GV Convergent restarts the currently active controller. This allows for a cleaner transfer of the services to the newly active controller. This also serves the purpose of severing the synchronization between controllers until the inactive system is back online, a very short time later.

- [Ref. #PEG-8453] **Active and standby states are redefined in the GV Convergent Controller redundancy model:** This ensures that the controller and database are valid and can provide the required factors to set the active or standby state on a GV Convergent controller at startup. Previously, the cluster could be in an inconsistent state when network interruptions occurred. For example, the standby controller may not have fully started or data may not have been synced between the active and standby controllers.

Bugs Fixed

- [Ref. #PEG-8465] **Invalid configuration files can no longer be restored:** Functionality to ensure that invalid configuration files cannot be uploaded and restored has been migrated to the new GV Convergent Admin.

- [Ref. #PEG-8583] **GV Nodes migrated from unreleased versions of GV Convergent must be manually deleted:** If you added GV Nodes to a topology created prior to GV Convergent 1.3.0 Build 810, you need to perform the following fix. Open the topology in the GV Convergent Client > Topology Configurator. Delete the GV Nodes. Add new GV Nodes to the topology and redo the physical connection.

- [Ref. #PEG-8440] **Undo functionality is now completely removed.** Previously, you could use the keyboard shortcut Ctrl + Z to reverse an action, even though the Undo button was removed. This is no longer possible.

- [Ref. #PEG-8424] **System Controllers can now be removed from the Area Configurator stage task in all deployments:** A unique bug, logged by a user who was unable to remove a system controller in the Area Configurator, was fixed. The user's database had been corrupted due to redundancy testing.

- [Ref. #PEG-8380] **Incorrect warning of IP address conflict is no longer displayed:** Previously, a warning message was displayed incorrectly because the IP address validation did not detect the last Ethernet port pair as the same port. This has been resolved.

- [Ref. #PEG-8379] **Disabled streams on the IPG's incorrectly displayed:** Based on the configuration of an IPG, certain streams will be disabled, but will maintain their multicast group IP. The process that warns you of duplicate IP's identifies those as duplicates. They should be ignored due to the fact that those streams are disabled.

- [Ref. #PEG-7768] **Some host policies, created from the DCNM web interface were not removed when GV Convergent was in exclusive mode:** Previously, the GV Convergent cache that contained the DCNM host policies was not cleared. The cache is updated before the synchronization with the DCNM host policies and after a host policy delete.

  On the Cisco DCNM, the host ID is not always reliable between queries.

  Therefore, in case the host policy ID has changed since the last query was executed, GV Convergent verifies that the last and correct host ID is present before executing the delete query.

- [Ref. #PEG-8450] **Buttons on panels are no longer flashing:** This was reported during some on-site testing, but a fix was introduced to resolve the issue. The panel buttons should no longer flash on fail over of the GV Convergent servers.

- [Ref. #PEG-8484] **Initial third party updates slow down takes in the first minutes after failover:** The fix was to consider the port direction while doing the initialization of all ports and streams, only enabling the streams and ports of the proper direction. It no longer takes an excessive amount of time before 3rd party takes are allowed after failover.

- [Ref. #PEG-8473] **IPG3901 port labels are now updated dynamically in GV Convergent:** At one point when you modified the port label of a port on an IPG-3901 card, the changes are were not being dynamically reflected in GV Convergent. This has been addressed in the code.

Known Issues and Limitations

The following is a list of known issues and limitations associated with GV Convergent. The star (★) symbol indicates a new issue in GV Convergent version 2.7.0.

- [Ref. #PEG-3498] **A refresh of the Router UI may be needed to reflect changes in the Alias table:** If you update the Aliases while the Router Control UI stage is open in the GV Convergent Client, you may need to reopen the Router Control UI to reflect those changes.

- [Ref. #PEG-4269] **Adding logical devices while panel configurator is open may not display the devices sorted correctly:** when adding sources and destinations in a Topology while the Panel Configurator is open and the Sources or Destinations view is exposed, the created sources or destinations adds them into an unsorted order in the Panel Configurator view. Also applies to salvos and other items.
  Workaround: Closing and reopening the stage in GV Convergent will address the sorting issue.

- [Ref. #PEG-6457] **"ERROR - GUI panel not found" is displayed when launching client:** if this message is displayed, close and reopen the client.

- [Ref. #PEG-6646] **No keystroke duplicate warning is displayed when setting the same keystroke more than once:** within the Category Configurator Stage, if you set the keystrokes of more than one device to the same keystroke assignment, they can create an issue where the desired device may not be selected from a panel whilst using the keystroke selection option from a category button.
  Workaround: Take care to provide unique keystroke selection for each device.

- [Ref. #PEG-6749] **GV Convergent Client does not automatically reconnect when changing the management IP address**
  Workaround: If this occurs, close and relaunch the client. Then, log in with the new IP address.

- [Ref. #PEG-6958] **Physical Connections Builder may not reflect disconnected ports:** if you disconnect physical connections for the Connected tab in the physical connections editor, on the topology configurator stage, the now disconnected ports, may not display in the builder section. If this occurs, you may need to click off the physical connection and then back onto it to see the ports available for connection.

- [Ref. #PEG-7159] **Phantom buttons on hardware panels can be cleared by changing pages:** Changing the location of a level button on an active panel can create a button with text, but no color. The label of the old button may remain. Changing the page, or opening a list page, to re-legend this button will refresh the button. This only affects the panels with the LED buttons.

- [Ref. #PEG-7283] **The keystroke does not work when the suffix is composed of both a letter and a number**
  Workaround: If this occurs, either use only numbers or use only a single letter for the suffix/keystroke to select devices within a category.

- [Ref. #PEG-7815] **Takes may fail on redundant IP sources with inverted connections:** when using a redundant (2022-7) network, if you connect the first output port to the B network and the redundant port to the A network (invert the connection), you might see a take failure if the connection on the other side of the network fabric is not inverted.

  Similarly, having a non redundant IP device connected only to A network will allow us to do a take, but having it connected only to B network will not.

  Connect first port to the A network and redundant port to B network to resolve this.

- [Ref. #PEG-7830] **Black screen appears when you open the Panel Configurator stage** *Workaround:* if you receive the black screen when opening or selecting the Topology Configurator stage, close and reopen the stage.

- [Ref. #PEG-7922] **Software panel configuration may not reflect panel behavior change when the topology is not active:** if the GV Convergent topology is not active, and you switch the panel behavior to a different panel, and then activate it, the changes will not be reflected on soft panels.

  However, if the topology is active, you can switch the panel behavior and it will do the switch on the fly as expected.

- [Ref. #PEG-8009] **Tie lines view is not updated dynamically when a short name is changed:** when you change the short name of a device, the Path Management (Tie lines view) is not dynamically updated.
  Workaround: Click the Refresh button.

- [Ref. #PEG-8018] **Ports appearing in "Other" physical connections table are not updated dynamically after changes are made to the device:** when changing the device short name or device count for the corresponding ports appearing in the "Other" table, the table is not dynamically updated.
  Workaround: If this occurs, deselect/select the link.

- [Ref. #PEG-8096] **Category Configurator is very slow to assign and delete large numbers of sources and destinations:** if you are experiencing a delay, then as soon as you see the sources are deleted from the screen, close GV Convergent Client and reopen it. This way you skip the unnecessary delays.

  As for the creation of the category, you can do the same thing. Close GV Convergent Client after a while and reopen it.

- [Ref. #PEG-8097] **Logs fill with stack traces when an external controller is configured with an incorrect matrix ID**
  Workaround: if this occurs, fix the matrix ID or stop the external control system from accessing NDAC, or change log level for this module. This may well hide other important errors in this same module.

- [Ref. #PEG-8235] **Deleting devices by decreasing the device count is faster when all other GV Convergent Client stage tasks are closed**: if the device count is changed when only the Topology Configurator stage task is open, the deletion is much faster. As soon as you open the Router Control or Path Manager stage task, it starts to slow down.

- [Ref. #PEG-8251] **Google Chrome is the supported browser for operating the GV Convergent Admin Web Stage:** issues have been found with Internet Explorer 11 and the upgrade feature from the GV Convergent Admin page. We recommend using the Google Chrome web browser.

- [Ref. #PEG-8255] **System Status page displaying routers that have been deleted:** after deleting dummy routers on the loaded topology, the System Status UI was still showing the statuses of the deleted routers without their labels.
  Workaround: Close/reopen the System Status UI.

- [Ref. #PEG-8284] **The Alias Editor are not updated dynamically when physical connections are deleted in the topology:** if the Alias Editor stage task is open and you sever physical connections in the Topology Configurator task, switching back to the Alias Editor may not reflect the deletion.
  Workaround: If this occurs, click on the refresh button on the Alias Editor.

- [Ref. #PEG-8317] **The GV Convergent Admin Backup and Restore does not display the correct host name when the host name has a hyphen in it:** it is not recommended to use a hyphen in the host name.

- [Ref. #PEG-8328] **Take should fail with an incorrect physical level configured on a router:** if you have configured a router, but has the incorrect physical level value, GV Convergent attempts to perform the take. If the physical level does not exist on the router, no actual XPTs are switched.

- [Ref. #PEG-8332] **Router Control UI not updated after multi-select take on NV9654 hardware panel**
  Workaround: If this occurs, then close and reopen the GV Convergent Client.

- [Ref. #PEG-8449] **Changing the standby server IP without breaking the cluster is not possible**
  Workaround: If you have to change the IP address of the standby server in a redundant cluster, then it is necessary to break the cluster. To do so, set the number of controllers in the Area Configurator to 1 and press enter. Then, change the number of controllers back to 2 and enter a new IP address for Controller 2 in the Properties Editor.

- [Ref. #PEG-8469] **The virtual IP address cannot be the same as the IP address of either the active or standby controller:** also, you cannot use the same IP for both the active and standby controllers. If this is the case, then you will need to edit one, or both controller IP addresses in the area configurator.
  Workaround: If the virtual IP address is the same as the IP address of a controller, or if the both controllers have the same IP address, open the GV Convergent > Area Configurator > Property Editor and edit the IP address of one controller or both controllers.

- [Ref. #PEG-8520] **Hosts/flow policies are not being re-created in DCNM after a DCNM HA failover**. If the active DCNM in a HA availability DCNM configuration goes offline, DCNM will fail over to the standby DCNM, but it will not have the hosts/flow policies that were currently available on the previously active DCNM. To fix this issue we have to deactivate and activate the topology one more time.

- [Ref. # PEG-8542] **A Bad Device Graph Is Loaded After A Switch Of Area:** the original area may be displayed when you create a new topology, make it active, and then create a new area. If this occurs, then click on the new area to display it.

- [Ref. #PEG-8585] **Ethernet NIC ports on GV Convergent Admin > Network Settings are listed in reverse order:** currently, only the em1 interface is enabled on startup of GV Convergent Client. When you edit the configuration of the interfaces in the web stage, it is important to note that, from the rear, the right most network port actually relates to p6p1. These interfaces also need to be manually enabled using the command, "ifconfig [interface] up" (i.e. ifconfig em2 up) through SSH to GV Convergent, or on the Linux command line interface.

- [Ref. #PEG-8602] **The last take operation added to a salvo can appear incorrectly at the beginning:** when you add take operations to a salvo, the last take operation added should appear at the bottom of the list. However, it appears at the beginning of the list. If this occurs, then delete the unsorted operation and add it again.

- [Ref. #PEG-8708] **Underscores are ignored in topology naming:** it is recommended that you replace underscores with another character when naming the GV Convergent topology.

- [Ref. # PEG-8782] **Refresh issue in the logical device table while exposing stream:** while exposing streams and having the logical device table opened, the logical device table can become out of sync when you navigate between the Source and Destination tab of the table. Sometimes the stream will not appear immediately, or sometimes they will not update after changes in the topology.
  Workaround: Refreshing, or reopening the table, can fix this issue.

- [Ref. #PEG-8820]**The Web stage login button is not enabled when using remembered login and password:** the web-stage login button is not enabled when you select the remembered user and password.
  Workaround: If this occurs, press the enter key in one of the two fields, or press the tab key in the user field.

- [Ref. #PEG-8834] **Checking Automatic Sources on Outputs does not assign the streams on some Logical Sources:** if the logical device table is open when editing the device properties on the topology, and you choose to automatically create sources on Outputs, then you may need to press the refresh (recycle) icon to refresh the devices.

- [Ref. #PEG-8840] **Logical Device Table streams are still shown after deleting a physical connection link:** deleting a physical connection link on the active topology should remove the logical devices that may have been created for a device. However, if the devices are still seen on the logical device table, then pressing the refresh (recycle) icon on the logical device table, will refresh the table.

- [Ref. #PEG-8859] **Redundant port device property displayed with improper format:** after editing the device property # Output connectors to 2 and setting the Redundant port on Out 1, the redundant port was shown as follows. The workaround is to deselect/re-select the Out 1 port tab.
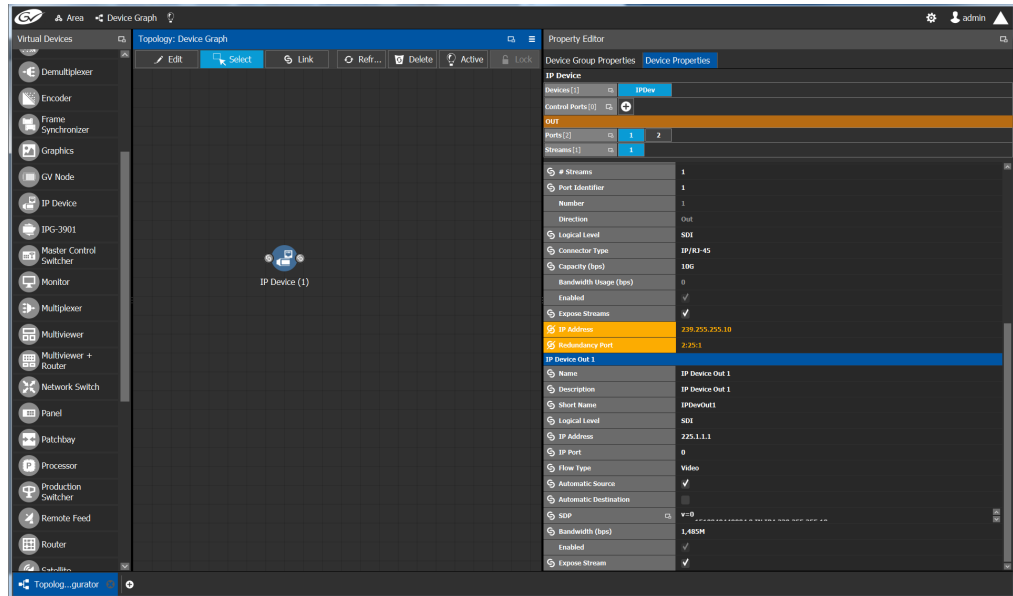
- [Ref. #PEG-8860] **Takes to an exposed destination will fail due to missing logical level assignment:** if you expose streams at a port of a router, but that port does not have a defined logical level, then placing that stream in a logical device and performing a take on/to that device will fail. You must manually configure the logical level on the device properties in the topology.

- [Ref. #PEG-8871] **Using Exposed Streams May Create Inaccuracies in Path Manager:** utilizing the exposed streams functionality in the GV Convergent topology, may create instances where the path manager will not show complete status.

- [Ref. #PEG-8882] **Multicast IP group address changes made to XCU are not applied to GV Convergent:** in the case that you edit the multicast group IP address in the XCU for GV Cameras, there is a chance that these changes will not propagate to the GV Convergent Topology. The workaround is to deactivate and reactivate the GV Convergent Topology.

- [Ref. #PEG-8962] **External ID's less than 1 will not return status to northbound controller:** when the assigns a duplicate external ID in the Alias Editor, the other device with the duplicate external ID, will receive an external ID of -1 to identify an issue. External ID's less than the value of 1 or greater than the total number of names on the sources or destinations, will not report status to the northbound controller.

- [Ref. #PEG-9163] Entering characters in all caps into the Alias editor requires a workaround:

    1 Click on a cell

    2 Press *Enter* first

    3 Start entering the characters in all caps

- [Ref. #PEG-9174] **Topology name limited to 256 characters:** creating a topology in GV Convergent with a name longer than 256 characters causes UI issues.
  Workaround: You must limit the name to less than 256 characters.

- [Ref. #PEG-9176] **Clicking on another Physical Connections link while making connections on another link will interrupt process:** while in the process of connecting the physical connections of a link within the topology, if you click on another link, all of the connections may not be processed for the former link. You will need to click on the former link and process the remaining connections.

- [Ref. #PEG-9180] **Keystroke Creator option from separator does not work properly in the Category Configuration Stage:** if the suffixes of your logical device names have less than 2 characters (1, 2, ...), then the automatic keystroke editor may not automatically assign the correct keystroke when using the "From Separator" option.

- [Ref. #PEG-9373] **Router Control UI may not update if one of shared control servers is rebooted during takes:** when 2 servers are controlling the same router and one of the servers is rebooted while takes are being performed on the client connected to the other server, the Router Control UI of the clients connected to the rebooted server may not refresh Router Control UI when the server comes back.
  Workaround: reopen another Router Control UI task.

- [Ref. #PEG-9389] **Deleting an NMOS device may leave a ghost device in System Status stage:** when we add an NMOS device to an active topology we show the status of that device in the system status page. When we delete the device the system status page does not refresh properly and we end up with an empty slot showing "Unknown".
  Workaround: Closing and reopening the System Status stage will address this issue.

- [Ref. #PEG-9435] **Discovered Devices control ports may stay online when you deactivate a topology:** if a discovered device is added to an active topology, its control port will come online. If you deactivate the topology then the control port remains online when it should go offline. Reactivating and deactivating the topology again gets the control port to go offline.

- [Ref. #PEG-9439] **You may not be notified when timeout has been reached is a large configuration:** currently, with the default timeout and polling method for the restoration of the database through the Web Interface, larger configurations may not completely be restored and may revert to their previous database without notifying you.

  The default values must be edited to accommodate larger configurations (>2GB). The current default values from /var/lib/tomcat7/webapps/admin/WEB-INF/classes/admin.properties:

  ```
  #Timeout values for backup and restore.

  # serverStatusRetries: Number of retries when checking for server
  readiness before giving up.

  # serverStatusInterval: Interval in milliseconds between server
  readiness check retries.

  # Total timeout for service to restart after a backup or restore is
  serverStatusRetries * serverStatusInterval

  # When restoring a backup from an older version, multiply the timeout
  time by the factor migrationMultiplier.

  serverStatusRetries=36

  serverStatusInterval=5000
  ```

```
migrationMultiplier=5
```

This currently allows only 3 minutes to restore a configuration, and up to 15 minutes for legacy configurations. Changing the serverStatusRetries to 60 would allow up to 5 minutes and 25 minutes, respectively. The issue is that if there is a problem with the database, GV Convergent will wait the total of this timeout prior to giving up and reverting.

- [Ref. #PEG-9456] **Streams may no longer be completely mapped after changing the GV Node Mode:** when using exposed streams on GV Nodes and changing the card mode from TR03 to TR04 for example, the stream assigned in the ANC cell is not removed. Since TR04 does not have ANC, we should remove the streams in that cell since the stream no longer exists in the system.
  Workaround: manually remove the stream.

- [Ref. #PEG-9508] **Do not use loopback IP in the controller properties:** using the loopback IP address for the system controller in the controller properties of the Area Configurator will cause a loop of restarts, as the controller attempts to create a cluster with itself. Utilize the physical IP of the system controllers.

- [Ref. #PEG-9529] **Adding a destination to a virtual XPT when topology is inactive will not route virtual source to the destination:** part of the GV Convergent implementation of Virtual XPTs is the freedom to not require you to manually create a salvo to initialize the virtual source to real destination path. This is accomplished when a real logical destination is added to a virtual XPT. However, when the GV Convergent topology is not active, this will not occur. You would then be required to route the virtual source to that real logical destination once the topology is active.
  Workaround: only add real logical destinations to the virtual XPT when the topology is active.

- [Ref. #PEG-9583] **Creating a duplicate panel configuration may not display that panel in the configurator:** when creating a panel configuration by duplicating an existing configuration, then it may be necessary to open the newly created panel, as it may not be displayed upon creation.

- [Ref. #PEG-9587] **Discovered Devices properties may be overwritten on reactivation of GV Convergent:** the unaffected attributes are logical level, # input connectors, # output connectors, # Streams per input, # Streams per output, automatic Destinations on Inputs, Automatic Sources on Inputs. All other fields will be overwritten on reactivation of the GV Convergent topology.

- [Ref. #PEG-9600] **Clearing a database via ssh while the GV Convergent Client is connected may present an issue with editing configuration:** when the clearing the database while the client is connected, the area and topology will not be editable. You will need to close and reopen the client and create a new topology.

- [Ref. #PEG-9762] **Unchecking exposed streams may affect pathfinding:** when third party changes are processed, GV Convergent figures out the list of sources/destinations which go through each tieline that is affected by the change, and then recomputes the tallies. When finding the sources/destinations, we only look at streams which are exposed. Therefore, if a stream has logical sources/destinations assigned to it, but is not exposed, we'll consider there is no source/destination, and free the tielines when they should be busy.

  This situation can happen in the following scenarios:
    - You add an edge device to the topology (for example, a camera or a monitor) and de-select the "Exposed Streams" property.
    - You select the "Automatic Source/Destination" property, without selecting the "Exposed Streams" property.

  Workaround: always leave the "Exposed Streams" check box checked.

- [Ref. #PEG-9763] **Newly created logical device is not highlighted in the Logical Device Table:** when you manually create a logical source or destination device in the logical device table, it is currently not highlighted and you may be required to scroll to the device.

- [Ref. #PEG-9765] **Severing many links at once can cause the responsiveness of the user interface to slow down:** in Topology Configurator, when cutting links with many physical connections, the user interface becomes unresponsive while the task is being executed.
  Workaround: cut fewer links at a time.

- [Ref. #PEG-9893] **Changing the mode of a K-Frame from 2022-6 to 2110 may cause extra ports to display in Client:** changing the K-Frame mode of operation in the Switcher Menu application from 2022-6 to 2110 may cause additional ports to display in the GV Convergent Client topology, under the device properties for the Production Switcher. This issue occurred 1 out of 3 times during testing.
  Workaround: close and reopen the Topology Manager stage in the GV Convergent Client.

- [Ref. #PEG-9935] **Manually assigned keystrokes in the Category editor may not work on a panel:** Once you have manually added keystrokes to the devices within a category (rather than using the automatically add feature), this may cause these devices to not be selected with keystrokes on a panel. Pressing the category jumps to the keystroke page, but the keystrokes do not light up to indicate what keystrokes are available.
  Workaround: use automatically generated keystrokes.

- [Ref. #PEG-9943] **Taking a backup/snapshot while performing large operations may corrupt database:** deleting or creating large numbers of devices, physical connections, and then taking a backup while this is still taking place in the background can be hazardous to the health of the database. Monitoring the database activity via the SSH logging, or the resource usage on the System Status page prior to taking the backup/snapshot should allow you to avoid this issue.

- [Ref. #PEG-9950] **You may be unable to add any destinations to a virtual destination once they have attempted to add incompatible destinations:** as the virtual XPTs take on the characteristic logical levels of the actual destinations that are associated to the virtual XPT, or the virtual source is routed to; attempting to associate a real destination, that does not have logical levels compatible with the other destinations already associated to a virtual XPT, to said virtual XPT may create a situation where you can no longer associate any compatible logical destinations.
  Workaround: You must delete the virtual XPT and then only associate compatible logical destinations after recreating the virtual XPT.

- [Ref. #PEG-9955] **Deleting a salvo when that salvo is assigned to a panel configuration may cause the panel to freeze:** deleting a salvo when the salvo is on a panel configuration may cause the panel to freeze if you attempt to execute said salvo on the panel.
  Workaround: remove the salvo button on the panel in Panel Configurator, or recreate the salvo button on the panel.

- [Ref. #PEG-9965] **Logical Device Table Filter is missing some values:** if you open the logical device table and have not scrolled through the devices, and then try to use the filter, some of the devices that should be displayed when using the filter may not be shown. If you encounters this, you need to scroll down through all of the devices prior to using the filter.

- [Ref. #PEG-9971] **Exposing streams on a router may not properly reserve the bandwidth:** whilst using the exposing streams feature on GV Convergent, you are essentially removing the exposed streams from the tieline pool to create a source/destination at the port stream. Typically this would utilize bandwidth and that used bandwidth would be displayed on the Path Manager Stage. When exposing streams of the port streams connecting two routers, the bandwidth usage may not be displayed properly in path manager.
  Workaround: reactivate the topology to properly display the bandwidth.

- [Ref. #PEG-10064] **You must not sever the link between the Area and System Controller in Area Configurator:** severing the existing link between the System Controller and the Default area may create a situation where the configuration does not become active after a restart. If this occurs, you may need to load a backup configuration to restore activity.

- [Ref. #PEG-10218] **Discovered devices may not display secondary device name:** if the secondary device name is not displayed in the discovered devices pane, then it may be necessary to reopen the Topology Configurator stage.

- [Ref. #PEG-10251] **An alias may not be applied dynamically to GPIO editor:** in the GPIO editor, if you select an alias for sources and destinations, you can enter the alias or system defined name for the destination and the editor logic can accommodate this. If you type in the system defined name for the source with the alias selected, the logic does not accommodate this. You will need to take the following steps:
    4 In the GPIO stage task, Select None for the Source Alias.
    5 Delete the GPI configuration.
    6 Select Route a source to a destination.
    7 In the source text field, enter the source name, not the alias.
    8 In the destination text field, enter the destination name, not the alias.
    9 Validate the rule.

10　In GPIO stage task, Select Alias for Source.

11　Now you will the see alias name for the source.

12　Validate the rule.

- [Ref. #PEG-10388] **DDS discovery devices added to the topology while activated do not appear in the System Status task:** DDS discovery devices added to the topology while activated do not appear in the System Status Page, unless you de-activate and then activate the topology.
Workaround: Close and then re-open the System Status task.

- [Ref. #PEG-10466] **GV Convergent Cluster cannot be created if a DNS server is configured but is not reachable:** If a DNS server is configured on a pair of GV Convergent servers and the DNS server is not reachable (as they cannot be pinged), GV Convergent will be unable to create a cluster when creating the cluster configuration via the Area Configurator. The result is both servers to come back as master and kick each other out of the network in a loop.
Workaround: Remove the bad DNS entries and restart GV Convergent on both servers.

- [Ref. #PEG-10492] **Unable to break the link between a router and a monitor:** Sometimes you may encounter an issue where they will not be able to disconnect the link between an SDI router and a monitor, using the cutting tool after disconnecting the physical connection. The link gets stuck.
Workaround: Close and re-open the Topology Configurator stage.

- [Ref. #PEG-10501] **Failed to find redundant path error when doing breakaway on IQUCP that is not set in redundancy mode:** When doing audio breakaway or video breakaway using IQUCP cards that is not set in redundancy mode, the logs show "Failed to find redundant path" errors and the panel flashes red even though the breakaway is successful.

- [Ref. #PEG-10589] **Changing source or destination short name is not reflected in the Category Configurator and Panel Configurator:** changing source or destination short name is not reflected in Category Configurator and Panel Configurator.
Workaround: Close and then re-open either the Category Configurator or Panel Configurator stages.

- [Ref. #PEG-10590] **Virtual XPTS in Router Control UI is empty when removing a destination from Virtual XPT:** if you have one Virtual XPT with 4 destinations configured in Logical Device Table, you see 4 destinations in the Virtual XPTS Area in the router control UI. If you remove one of the destinations from the Virtual XPT configured in Logical Device Table, all destinations in the Virtual XPT Area in the router control UI will be removed.
Workaround: Deselect and select again the Virtual XPT destination in Router Control UI.

- [Ref. #PEG-10593] **Third party equipment doesn't handle source/destination with streams that have no logical level:** when 3rd party equipment updates tielines and tallies, and the streams that are used for the logical source/destination have no logical level, then tallies and tielines will be cleared.
Workaround: Set a logical level on the stream.

- [Ref. #PEG-10622] **Deleting a device removes it from the NMOS registry, however the Logical source for the device's NMOS sender in the Logical Device Table are not being removed:** Logical source for NMOS sender are not being removed when the device is deleted. The device itself is no longer in the NMOS registry.
Workaround: Delete the logical source manually.

- [Ref. #PEG-10624] **Third party notification broken when a GV Convergent server controls another GV Convergent server using NP17:** Third party notifications may not work when a GV Convergent server is controlling another GV Convergent server using NP0017. *Workaround:* Deactivate and then activate the topology.

- [Ref. #PEG-10642] **Changing connector type does not change stream type anymore:** The stream type (e.g. SDI stream, IP stream) created for a device is based on the connector type (for example, SDI, or IP). However, if we change the connector type, the stream type does not change accordingly.
  Workaround: Set the stream count to 0 and back to it's desired value. The will cause streams to be deleted and recreated, now with the correct type.

- [Ref. #PEG-10737] **Virtual XPTS - Destinations selection not sorted properly:** in the Virtual XPTS tab, the real destinations as part of the virtual destination are not sorted properly.

- [Ref. #PEG-10808] **Audio Live path discrimination does not work if there are factory levels on one or more ports:** The path finding will not use the specific ports with custom levels to convert the signal and instead will use any port that matches the required channel count.

- [Ref. #PEG-10842] IQUCP cards connection status off-line if the eth2 configuration is blank: The IQUCP card's connection status is shown off-line if the eth2's configuration is left blank.
  Workaround: Configure eth2 with a valid IP Address and restart the card.

- [Ref. #PEG-10873] **Missing tables in database when creating a cluster with a clean database:** Creating a cluster from a GV Convergent server that has a clean GV Convergent database could trigger issues with the control port of the devices added in the topology.
  Workaround: Restart the GV Convergent server before building a cluster with another controller OR failover right after creating the cluster.

- [Ref. #PEG-10874] **GV Convergent controllers switched in the System status page (first controller shown on the second column):** For GV Convergent, this issue could occur if the user decides to restore a backup from Controller-2 to Controller-1.
  Workaround: With both servers in a standalone mode, check each server's position in the controller columns. Do this by opening a GV Convergent for each server and re-creating the cluster from the server with the correct ID. See *Configuring a Controller Group* in the GV Convergent User's Manual.

- [Ref. #PEG-10883] **Discovered device stays on-line the first time the topology is disabled:** For GV Convergent, a discovered device stays on-line the first time a topology is disabled. The control port status is accurate whether the GV Convergent topology is on-line or off-line. This has no effect on the GV Convergent system.

- [Ref. #PEG-10958] **NDAC: NP0017 port-based commands do not work properly if there are gaps in the external IDs:** For GV Convergent, if there are gaps in the external IDs of the logical sources or destinations, the NDAC NP0017 port-based commands do not work properly. If the external Ids are sequential, the commands all work properly.

  There are checks made which expect that the provided port IDs to be lower than the amount of sources/destinations. This is not true when there are gaps in the external id assignments.
  Workaround: Use the NP0017 device-based commands, where gaps are supported properly.

- [Ref. #PEG-10976] **GPIO rules are validated and saved without using the check box if the user switches to another rule:** GPIO rules are validated and saved without using the check box if the user switches to another rule.
  Workaround: Do not change to another rule if the current rule is not already validated.

- [Ref. #PEG-10977] **Adding or updating Aliases is not reflected in an open "Router Control" tab:** Adding or updating Aliases is not reflected in an open "Router Control" tab.
  Workaround: Close and re-open the "Router Control" tab.

- [Ref. #PEG-10981] **GPIO - Takes executed once the GPI rule is activated:** For a new rule, if the rule is not activated and the user switches the GPI input from either On-to-Off or Off-to-On, there will be no take executed. However, if the user activates the rule, then Takes related to the last transition are executed.

- [Ref. #PEG-10983] **Source/Destination short label updates not reflected in open "Category Configurator" and "Panel Configurator" tabs:** When the short label of a device is changed using the Topology Configurator, the labels are not automatically updated in the "Panel Configurator" or "Category Configurator" tabs, if they are already open.
  Workaround: Close and re-open the respective tab to see updated labels.

- [Ref. #PEG-10984] **GPIO - Rule is not executed when it is created during an activated topology with a new database:** GPIO rules are not executed when starting a new topology with a new database.
  Workaround: To execute those GPIO rules, deactivate the topology and then re-activate it.

- [Ref. #PEG-11182] **NMOS senders/receivers from the same port should all be redundant or all non-redundant:** Sender/Receiver streams from the same port should all be redundant or all non-redundant, otherwise pathfinding issues may occur. For NMOS senders/receivers, the interface_binding property should have the same interfaces for all streams that are part of the same device/node.
  Workaround: Set NMOS streams to be all either redundant or not redundant as a source/destination is either redundant or not but not a mix of both.

- [Ref. #UCCM-1647] **Routing issues using IQUCP with version 15.5.97 firmware:** Routing issues in the control system may occur while using an IQUCP with version15.5.97 firmware. When upgrading from an IQUCP card version with 4 spigot streams to the version 15.5.97 (with 3 spigot streams), the IQUCP card "Default Settings" should be reset and the card rebooted before any IP configuration. Please refer to the best practice section in the Havant Core release notes for this product.

Installation and Network Requirements

This section details the requirements that must be met prior to installing or upgrading a system with the current version of GV Convergent. It also provides upgrading and configuration guidelines, as well as tips to improve performance.

Related Documentation

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

Part Number	Document Title
GVB-1-0491F-EN-DS	GV Convergent Datasheet
13-00952-010	GV Convergent Release Notes
13-00952-040	GV Convergent Quick Tour of Admin Tasks
13-00952-030	GV Convergent User's Manual

Hardware Requirements

System Requirements for running GV Convergent Client

The client platform must meet the following system specifications for optimal performance:

Operating system	Microsoft Windows 10, Windows 8.1, Windows 8, or Windows 7
Processor	Intel Core i3, the minimum required by the operating system, or better
Memory	8 GB RAM minimum, the minimum required by the operating system, or more
Disk Space	The minimum required by the operating system plus one GB, or more
Supported Web Browser	Google Chrome only (most recent version)

Supported Servers

GV Convergent version 2.7.0 is supported on the following server only: A 1-RU SuperMicro© SYS-6018R-MTR server built and configured to Grass Valley specifications.

Network Requirements

Users can access the GV Convergent Controller from a client PC using a standard Web browser (Google Chrome). When a client logs in and launches an GV Convergent module, the software is automatically downloaded from the Controller. Consequently, no other application software is needed. This greatly simplifies installation and system maintenance.

It is recommended that the GV Convergent Controller (as well as the associated equipment it controls) be installed on a dedicated LAN, using the existing security infrastructure. A qualified system administrator should verify that the setup follows the security standards of your organization. Refer to the *GV Convergent User Guide* for software installation information.

TCP/UDP Port Usage

The various GV Convergent communication protocols require access to specific ports. In networks where a firewall is present between device A and device B, the ports used to communicate from device A to device B must be open on the incoming (external) side of the firewall.

The following network ports must be open on PCs running GV Convergent Client:

Port Number	Application / Protocol
5001 to 5010 Inbound and outbound	GV Convergent Client replication engine. This is needed so that the client can receive updates from the server and other currently open clients connected to the same server.
80 Outbound	Web port needs to be available on GV Convergent server in order to access the web administration page. Communication with some devices and services is done via REST (Cisco DCNM, Densité Manager, AMWA NMOS).

The following network ports must be open inbound and outbound for GV Convergent servers:

Port Number	Application / Protocol
5001 to 5010	GV Convergent Client replication engine. This is needed so that the client can receive updates from the server and other currently open clients connected to the same server.
80	Web port needs to be available on GV Convergent server in order to access the web administration page. Communication with some devices and services is done via REST (Cisco DCNM, Densité Manager, AMWA NMOS).
5100	Port used by Densité Manager to control Densité cards and GV Node.
4040	Port used for NMOS discovery.

Port Number	Application / Protocol *(continued)*
Northbound Communications	
12345	GVG Native protocol northbound communication port.
5194+Area External ID	NP0016 protocol northbound communication port. The Area External ID can be looked up in the GV Convergent client Area Configurator by selecting the area that needs to be controlled and looking at the External ID property.
9193+Area External ID	NP0017 protocol northbound communication port. The Area External ID can be looked up in the GV Convergent client Area Configurator by selecting the area that needs to be controlled and looking at the External ID property.
14000	Probel SW-P-08 protocol northbound communication port.
Southbound Communications	
User configurable Default: 5194	NP0016 protocol southbound communication port.
User configurable Default: 9193	NP0017 protocol southbound communication port.
User configurable Default: 14000	Probel SW-P-08 protocol southbound communication port.
User configurable Default: 37800	Sony NS-BUS protocol southbound communication port.

Software Component Compatibility

Grass Valley recommends you use the following software components and the stated versions for optimal performance and compatibility with GV Convergent version 2.7.0:

GV Convergent Inter-Operation System Component Compatibility

Product	Requirement for GV Convergent Compatibility
GV Node	Software Versions 1.3.1, 2.2.7, 2.3.0, 3.0.0, 3.1.0
IPG-3901 (Densité 3 Frame IP Gateway)	Software Versions 1.3.4, 2.2.x, v9.0, 2.4.0.BUNDLE-3, 2.5.0
IPG-4901 (GV Node Frame IP Gateway)	Software Versions 1.1.0, 1.2.0
IQMix (IQEDGE Frame)	Software Version 11.30.62
External Control Interface Protocols (Northbound)	NP0016 NP0017 SW-P-08 GVG Native Protocol (names-based for K-frame switcher)
Router protocols (Southbound)	NP0016 Compact Router NP0016 Enterprise Router NS-BUS (Sony LSM) NV9000 TCP/IP Ex-SAM SW-P-08 TCP/IP Subset of CPL to interface with K-Frame Production Switcher running software version 14.3.0 or higher
Panel protocols	NV96XX Panel Control
RCP-200 Remote Control Panel	Software versions 1.7 or later
Kaleido-X	Software versions 6.70 or later
Kaleido-IP	Software versions 6.70 or later
Densité CPU-ETH2	Software versions 2.0.4 or later
EdgeVision	Software versions 1.21 or later
NV9000	Software versions 6.3.0 build 1873 or later

Cisco DCNM Network Switch	• GV Convergent Version 2.1.2 to version 2.3.0:
	  • DCNM build 11.1(1), with switch firmware: NX-OS 9.2(3)
	  • DCNM build 11.2(1), with switch firmware: NX-OS 9.3(2)
	• GV Convergent Version 2.4.0 or higher.
	  • DCNM build 11.2(1), with switch firmware: NX-OS 9.3(2)
	  • DCNM build 11.3(1), with switch firmware: NX-OS 9.3(3)

GV Fabric	Firmware versions onyx-X86_64-3.8.2008 or later
IPVU	Software versions 21.86 or later

Equipment Interoperability Incompatibility

While GV Convergent can control a wide range of equipment, this does not guarantee interoperability between controlled equipment. Always consult product datasheets to ensure that common signal types and protocols are supported by both pieces of equipment for interoperability.

Installing GV Convergent on a GV Convergent Controller

IMPORTANT

• Before you install version 2.7.0 onto a GV Convergent Controller that has an older version of GV Convergent, make sure to review the latest hardware requirements (see Hardware Requirements, on page 71).

Installing GV Convergent Software

REQUIREMENTS

Make sure you meet the following conditions before beginning this procedure:

• Your GV Convergent Controller meets the minimum hardware requirements (See Hardware Requirements, on page 71).

• When you upgrade a GV Convergent Controller, Grass Valley strongly recommends that you upgrade all other GV Convergent Controllers in your network to the same version, as well.

• You have made a backup of your GV Convergent Controller's configuration data. See the *Back Up and Restore* section of the *GV Convergent Quick Tour of Admin Tasks* User Guide.

• You have the GV Convergent software version 2.7.0 upgrade package (see Grass Valley Technical Support, on page 78).

• You have logged on to the GV Convergent Admin interface. See the *GV Convergent Quick Tour of Admin Tasks* User Guide.

To upgrade the GV Convergent Controller, see the *Upgrading GV Convergent Server Software* section of the *GV Convergent Quick Tour of Admin Tasks* User Guide.

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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