Grass Valley
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AMS EXPRESS

Network Attached Storage

Topic Library

Version 1.5
2022-04-29

www.grassvalley.com

FCC Compliance

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

Patent Information

This product may be protected by one or more patents.

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

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Title	AMS Express Topic Library
Version	1.5
Revision	2022-04-29, 09:58:17

About the AMS Express

The *AMS Express* shared storage solution is designed for small to medium-size Media & Entertainment (M&E) companies utilizing Grass Valley workflows in standalone or remote production environments. The system is designed to be simple, scalable, and tuned for use with Grass Valley solutions, along with associated Service and Support.

The systems consist of a Primary Chassis and Expansion Chassis and associated software. It is a hyperconverged storage solution, meaning it combines storage, networking, and computing into a single system. In addition, the system utilizes a hyperconvergence layer with software-based virtual machines running on top of it to enable services.

Note: The image shown is for illustrative purpose only and may differ from the actual product.

Release Notes

AMS Express Version 1.5.3

- **Bug Fixes** — Upgrading from AMS Express version 1.5.2 to version 1.5.3 primarily provides bug-fix changes for the hypervisor software component running on each AMS Express controller. This upgrade does not make any changes to the Grass Valley VM and StorNext VM software version. There are no software upgrade steps required for external clients of the AMS Express unit.
- Known Problem **AMS-41 / BLK-6678** "unexpected missing disk message" issue has been addressed.

AMS Express Version 1.5.2

- **System Manager High Availability (HA)** — New AMS Express units with software version 1.5.2 or later will have a Grass Valley VM on each controller. If one controller fails, the AMS Express unit will automatically fail over to using the Grass Valley VM on the other controller.

  Note: Older AMS Express units that have been upgraded from AMS Express 1.4.0 to AMS Express 1.5.2 or later will still need to use the *Manual GV VM Failover* on page 133 process.

- **StorNext 7.0.1** — StorNext VMs are implemented using StorNext 7.0.1 software.
- **Alerts** — The AMS-GUI has been enhanced to add an Alerts page that can be used to view and manage RAS Tickets.
- **Logs** — The AMS-GUI has been enhanced to add an Logs page that can be used to view and export log files for trouble shooting purposes.
- **NVD Firmware** — AMS Express units now ship with NVD firmware rev 081321V1, reducing the risk of controllers going into a fenced state.
- **Power Button** — A momentary press of the front panel power button does not power off the controller. This change was made to reduce the risk of unintentional power off events.

Not supported in this AMS Express release

The following functionality is not supported with this version of AMS Express software. Check with your Grass Valley representative regarding availability.

- **System Manager High Availability (HA) for older units** — Older AMS Express units that have been upgraded from AMS Express 1.4.0 to AMS Express 1.5.2 or later will still need to use the *Manual GV VM Failover* on page 133 process.

Changes and features in the previous release

The following section describes changes and features in the previous release.

AMS Express Version 1.4.0

- **NAS (Network Attached Storage)** — AMS Express appears to network clients as a NAS (Network Attached Storage), thereby simplifying the network infrastructure and access.
- **Client SMB support** — AMS Express supports SMB version 2 and 3.

- **Client DLC support** — Allows SNFS clients to connect to StorNext volumes through clustered gateways of a VM on AMS Express.

AMS Express Known Problems

The following limitations are present in this release of software. If you wish to obtain more information about each limitation, please mention the reference number.

AMS-39	Description:	Unable to configure network adapter settings for StorNext System.
	Workaround:	Execute steps at: *Patch NIC firmware* on page 39
AMS-41	Description:	The AMS Express unit spontaneously reported missing disk drive units. However, a check of the AMS Express unit revealed that all of the relevant disk drive units are still present and healthy.
	Workaround:	Quantum is tracking this issue as BLK-6678 and the issue is expected to be resolved in a 1.5.3 build of the software.
AMS-55	Description:	Specifying IP addresses that are unreachable for DNS server entries will cause adverse side effects in the AMS-GUI and can also cause multiple other issues.
	Workaround:	Enter an IP address that is reachable from the AMS Express unit, such as using the IP address for the network switch's control interface.

Hardware Overview

The *AMS Express* storage arrays provide a high performance, large-capacity hybrid storage tier and deployed in StorNext shared storage environments.

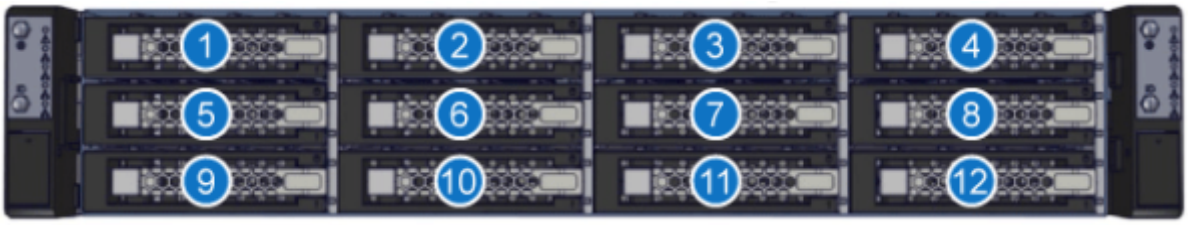
Primary Chassis

The front and rear views of the Primary Chassis are as below:

Front View

AMS Express with front bezel. The front bezel should be installed after rack mounting the server and remain installed for proper cooling of the unit.

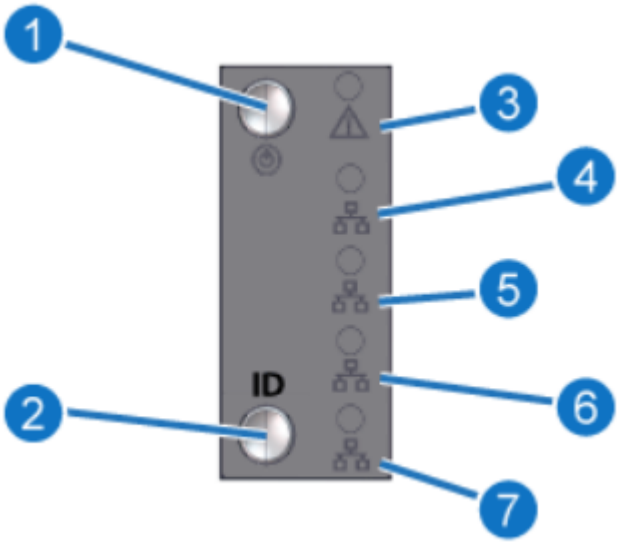
A fully loaded system is shown below with the front bezel removed. The unit contains 12 drive bays that are numbered as shown.



The Control Panels on either side of the system contain LEDs and Buttons correspond to their respective controllers and each drive bay has LEDs described below.

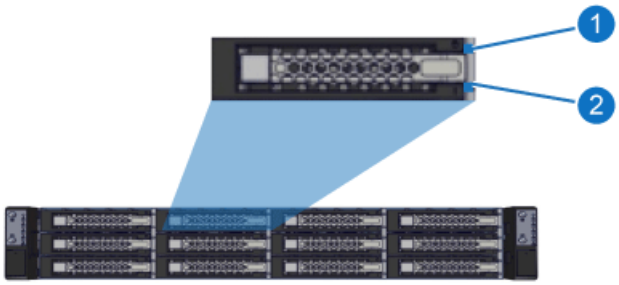
ID	Component
1	Left Front Control Panel (Controller A)
2	Right Front Control Panel (Controller B)

Control Panel LEDs and Buttons (both control panels)



ID	LED/Button*	Indication/Function
1	Controller Power Status (LED/button)	• Blue: Power on • Off: Power off
2	Controller ID (LED/button)	• Blue: Controller ID enabled • Off: ID not lit
3	Controller Status (LED)	• Red: Controller degraded • Off: Controller healthy
4	LAN Port 1 Activity	• Yellow: LAN1 (10 GbE) network activity • Off: LAN1 link is down
5	LAN Port 2 Activity	• Yellow: LAN2 (10 GbE) network activity • Off: LAN2 link is down
6	NVD Save/Restore Activity	Blinking: NVD is saving or restoring data
7	NVD PCIe Up/Ready	On = NVD is healthy and connected to the PCIe interfaces
*LED/button displayed is specific to each controller's panel: Controller A - left control panel; Controller B - right control panel		

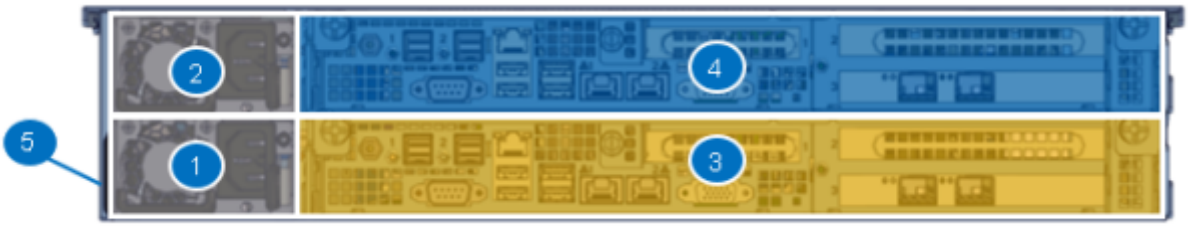
LEDs for each drive



ID	LED location	LED State
1	Top Drive LED	• Off: System off or drive not fully-seated • Solid Blue: Online/Healthy status • Blinking Blue: Drive access detected
2	Bottom Drive LED	• Off: Healthy; no drive failure detected • Solid Red: Drive error

Rear View

The rear of the system is composed of two redundant controllers.



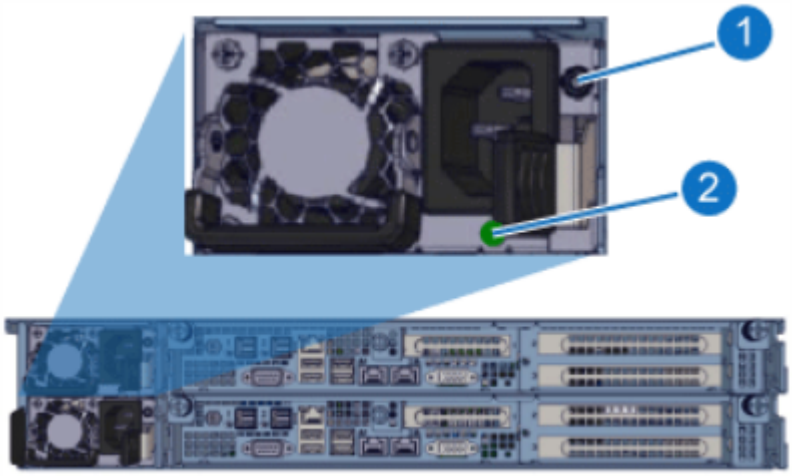
ID	Component
1	Power Supply Unit (PSU 1)
2	Power Supply Unit (PSU 2)
3	Controller A (bottom); redundant / failover operations supported with Controller B
4	Controller B (top); redundant / failover operations supported with Controller A
5	Serial Number / Asset Tag / BMC Default Password

The connections and ports for the back panel are outlined below. For simplicity sake, the drawing only calls out connections on Controller A.

ID	Component
1	Power Supply Connector (male C14)
2	12G SAS ports
3	10GbE inter-controller communication ports

ID	Component
4	10/25GbE adapter port for connecting to network

Power Supply Unit (PSU) LEDs



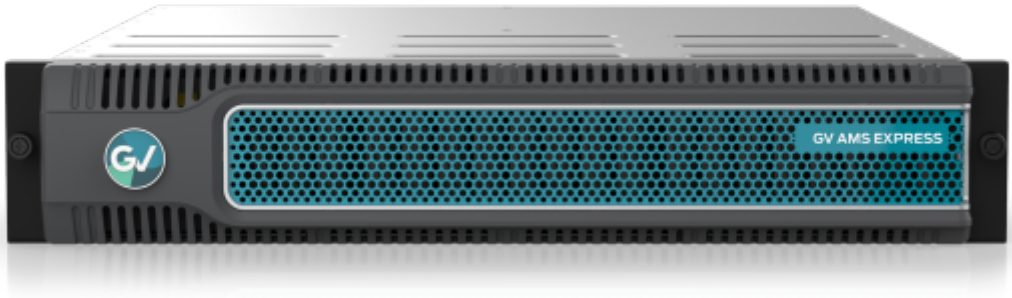
ID	LED/Button	Action
1	PSU Alarm Silence Button	Push to silence when alarm is sounding
2	PSU Status	• Green solid: PSU is powered on • Orange solid: PSU is not powered on

Expansion Chassis

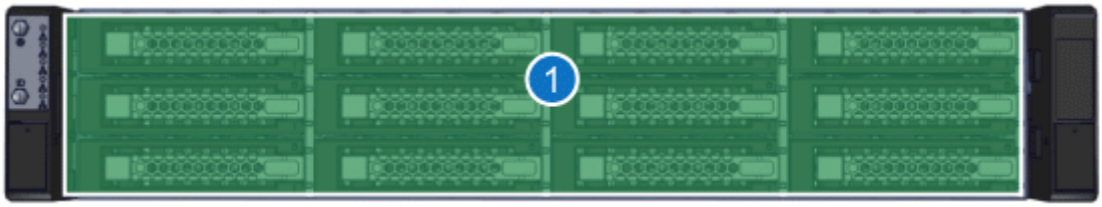
The front and rear views of the Expansion Chassis are as below:

Front View

AMS Express with front bezel. The front bezel should be installed after rack mounting the server and remain installed for proper cooling of the unit.

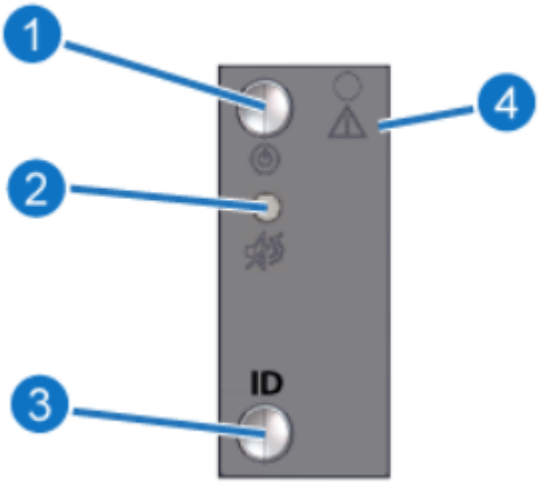


A fully loaded system is shown below with the front bezel removed. The unit contains 12 drive bays that are numbered as shown. The drives and the LED control panel are identified the same as the Primary Chassis.



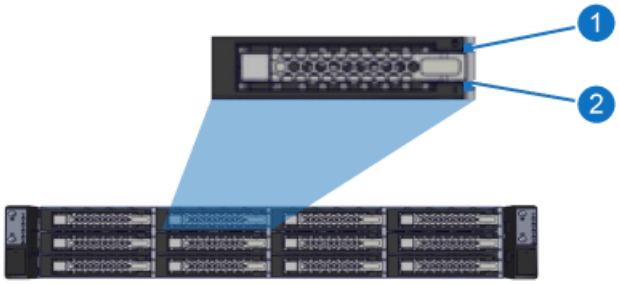
The Control Panel on the left side of the system contains LEDs and Buttons correspond to the respective controller and each drive bay has LEDs described below.

Control Panel LEDs and Buttons (control panel on left ear only)



ID	LED/Button*	Indication/Function
1	JBOD Power Status (LED/button)	• Blue: Power on • Off: Power off
2	JBOD Alarm Mute (button)	Mute audible system alarms
3	JBOD ID (LED)	• Blue: JBOD ID enabled • Off: ID not lit
4	System Status LED	• Off: System healthy • Red: System degraded

LEDs for each drive

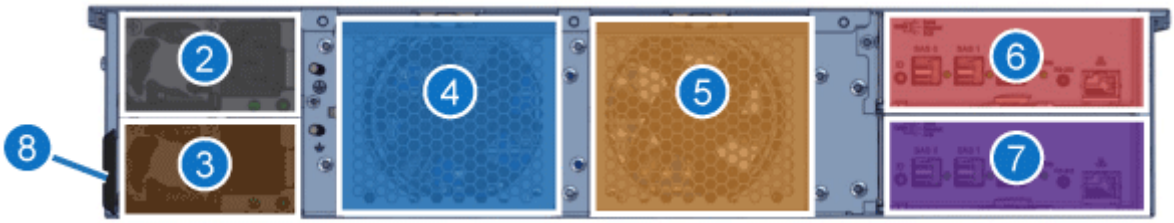


ID	LED location	LED State
1	Top Drive LED	• Off: System off or drive not fully-seated

ID	LED location	LED State
2	Bottom Drive LED	• Solid Blue: Online/Healthy status • Blinking Blue: Drive access detected • Off: Healthy; no drive failure detected • Solid Red: Drive error

Rear View

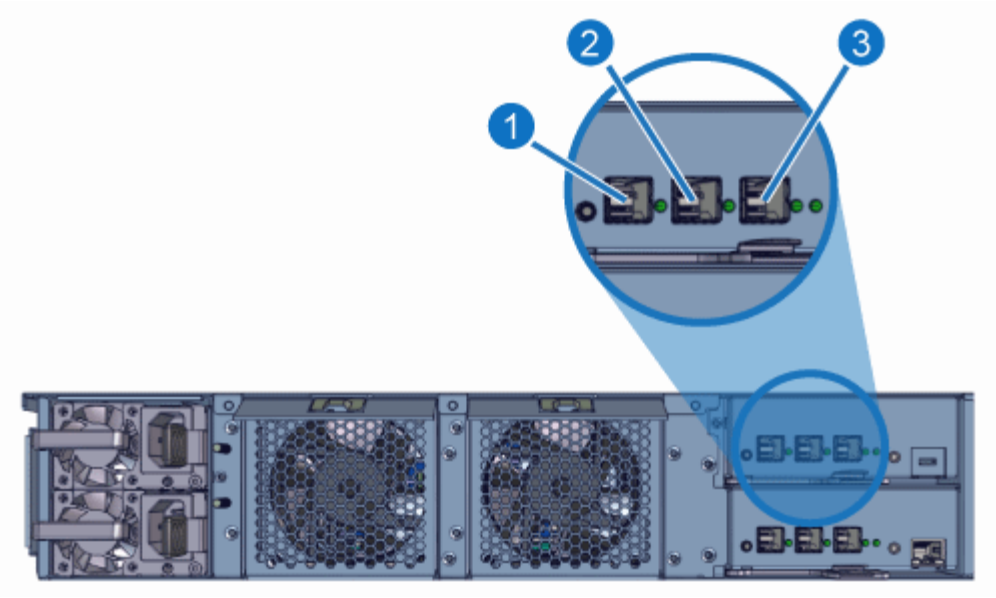
The rear view of the Expansion Chassis is as below:



ID	Component
2	Power Supply Unit (PSU 2)
3	Power Supply Unit (PSU 1)
4	Left fan assembly; Fan 1 is located at the back; Fan 3 is located in front
5	Right fan assembly; Fan 2 is located at the back; Fan 4 is located in front
6	Secondary Expansion Chassis I/O module (top); redundant/failover operations supported with the primary Expansion Chassis I/O module (bottom)
7	Primary Expansion Chassis I/O module (bottom); redundant/failover operations supported with the secondary Expansion Chassis I/O module (top)
8	Serial Number/Asset Tag

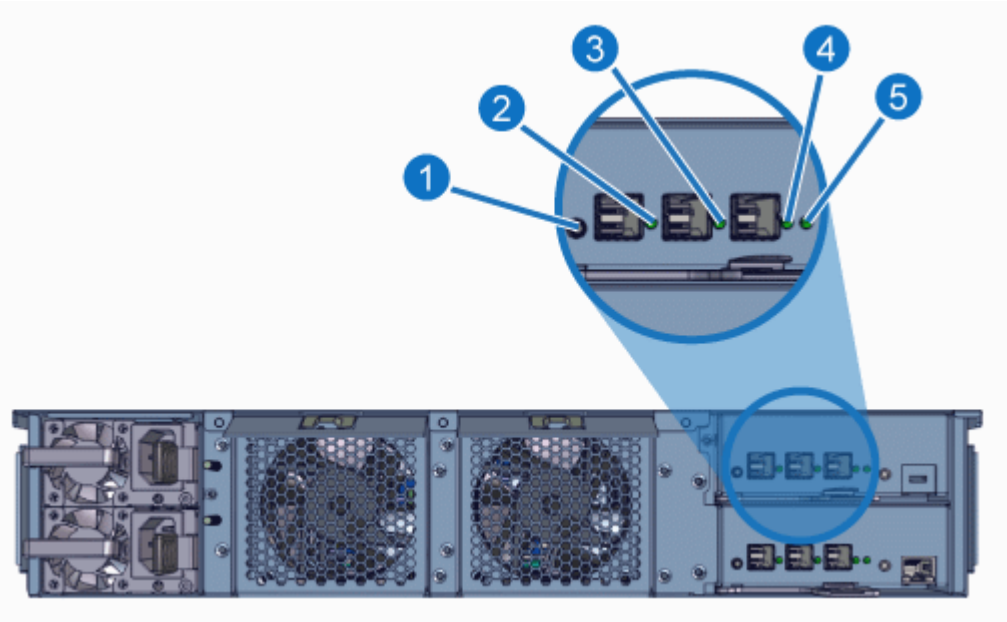
The rear view of the Expansion Chassis with I/O module port connections are as below:

Note: These apply to both I/O modules.



ID	Component
1	SAS 0 Port
2	SAS 1 Port
3	SAS Expansion Port

I/O module LEDs

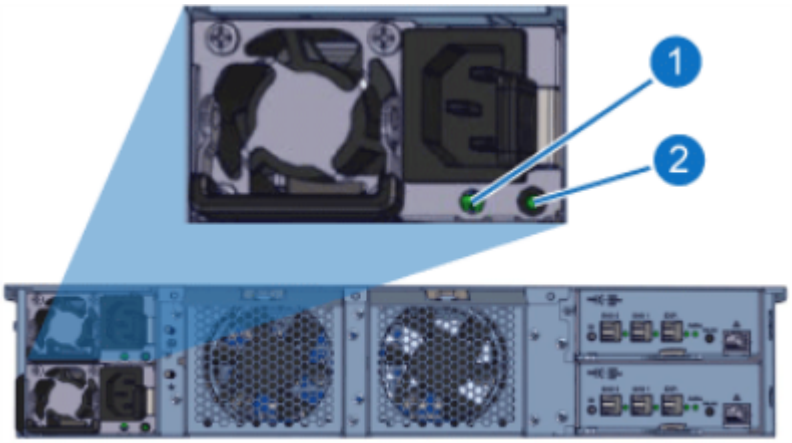


ID	LED	Action
1	ID LED/Button	• Off: Normal state; I/O Module identification not illuminated • Blue solid: I/O module identification illuminated
2	SAS 0	• Off: No SAS activity • Green blinking: SAS activity

ID	LED	Action
3	SAS 1	
4	SAS Connection	• Green solid: SAS connection on • Green blinking: SAS activity
5	I/O module	• Off: I/O module not functioning • Green blinking: I/O module active

Power Supply Unit (PSU) LEDs

The PSU LEDs are located in the same position on PSU 1 and PSU 2. Location and description of the LEDs are as below:



ID	LED	Action
1	PSU Power	• Off: PSU is not plugged in • Green solid: PSU is plugged in; has power
2	PSU Status	• Green solid: PSU is powered on • Orange solid: PSU is not powered on

Installing the Hardware

Prerequisites

Before starting the hardware installation process, make sure that you understand the safety information about the product and the documentation. Then, ensure the following general environment prerequisites have been met.

1. Understand how to configure the ethernet switch. See switch product documentation.
2. By default, clients accessing AMS Express will do so using the SMB protocol. Version 3 is highly preferred due to performance and stability.
3. For those clients requiring QoS (Quality of Service), the StorNext client software must be installed (sold separately) and be within one (1) version of the host StorNext software running on AMS Express (for example, StorNext 6.x will support back to 5.x).

   To identify the StorNext version, log in to the StorNext GUI and select **Help | About | Software**. The version will be listed under Xcellis.

Specifications

The following chart outlines the key physical and operational specifications:

	Primary Chassis	Expansion Chassis
Form Factor	2U	
Drives per Chassis	12	
Drive Capacity (Raw TB)	96	
Chassis Connectivity	12G SAS	
Network Connectivity	Dual 10/25 GbE	n/a
Physical Dimensions	87mm	87mm
Height	450mm	450mm
Width	614mm	518mm
Depth	29kg	22kg
Weight		
Power Supplies	1300W AC redundant 1300W DC 48V redundant	550W AC Redundant
Power Supply Input	100 - 140 Vac / 12.5 A /1000 W Max / 50-60 Hz 200 - 240 Vac / 8.5 A / 50-60 Hz	100 - 240 Vac / 7 A / 50-60 Hz
Operating Temperature	0 ° to 35 ° C	
Non-Operating Temperature	-20 ° to 70 ° C	
Operating Relative Humidity	5-95% non-condensing	

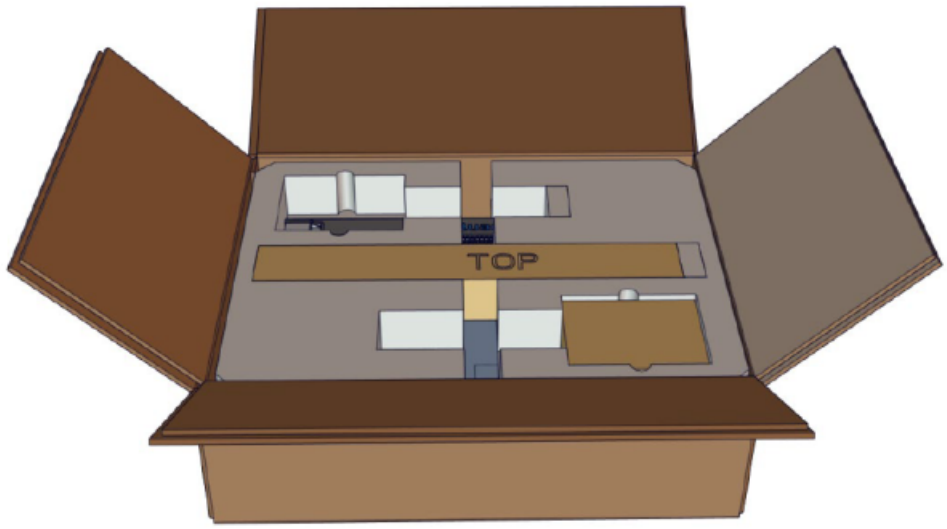
Unpacking the system

- A set of box cutters is required to complete this procedure.
- Verify that all components were included in the box.

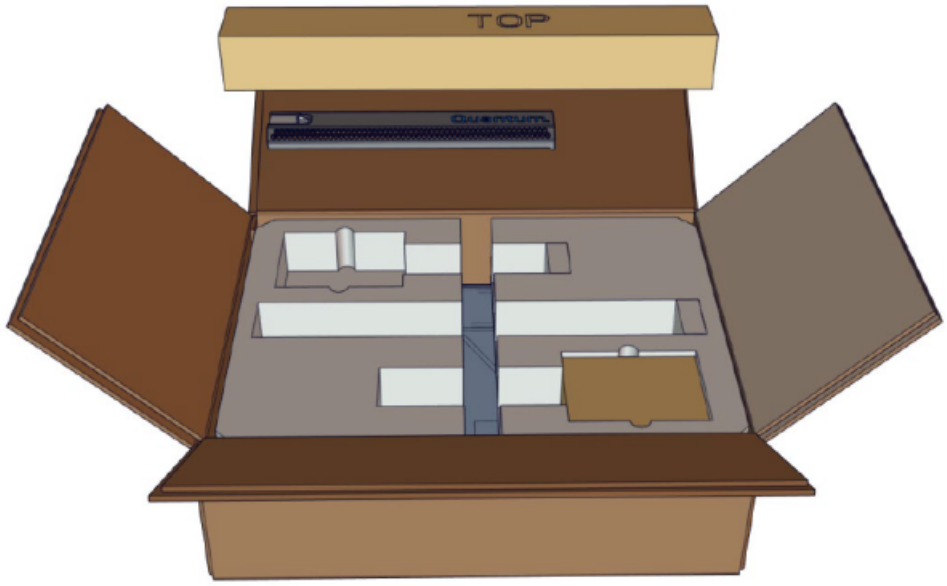
Note: Make sure to retain all packing materials, as well as the documentation and other items included in the shipping box. The packaging materials must be used if the system is relocated.

Caution: Two people are needed to lift and move the system. Use care to avoid injury.

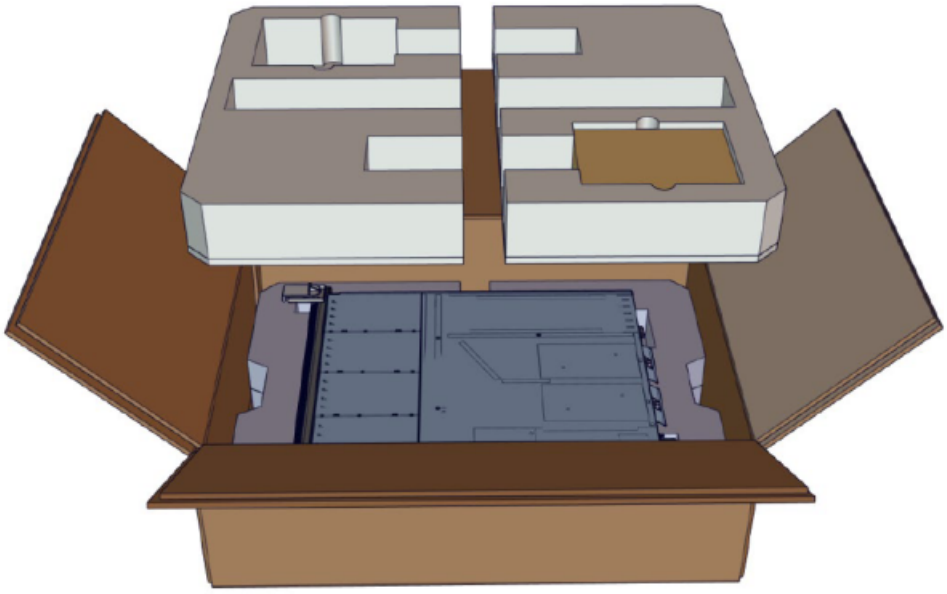
1. Cut the tape and open the box top cover to remove the system enclosure from the box.



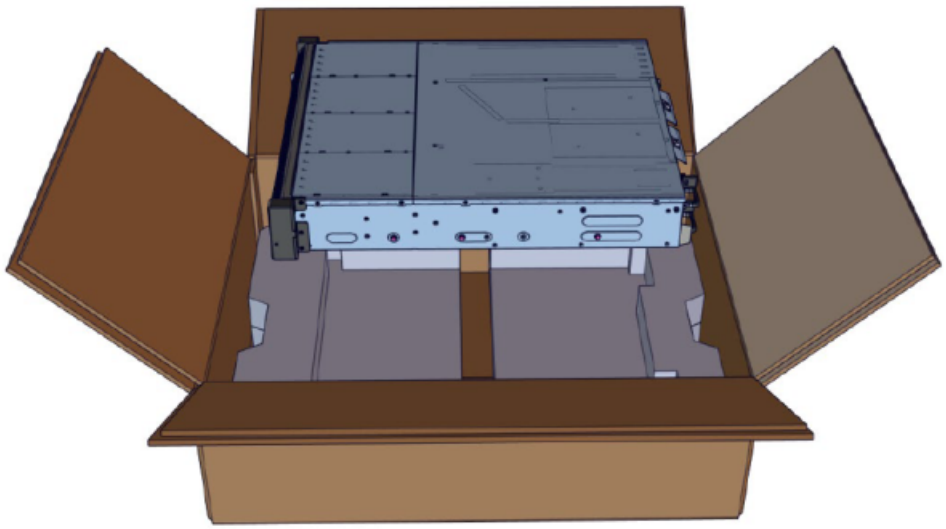
2. Remove rail kit and bezel from the top foam layers.



3. Remove the top foam layers.



4. Set aside the drives in a secure location.
5. Remove the system from the box and set aside on an electro-static mat for later installation.



Rack mounting

Prerequisites

- Make sure the installation meets the detailed physical and environmental requirements for the installation site.
- A #2 Phillips screwdriver is required to install Phillips head screws for the rack rails.
- A standard flat-head screwdriver is required to install flat head screws for the rack rails.
- Ensure adequate air flow around the chassis to provide sufficient cooling. Operating ambient temperature will affect the amount of air circulation required to keep the system within its temperature limitations.
- Ensure that safety labels located on the top of the unit are visible after installation. This requires sufficient open space over the unit without cables or other devices impeding the view.

- If the system is installed with its ventilation intakes near another system's exhaust or in a closed or multi-unit rack assembly, the operating ambient temperature inside the chassis may be greater than the room's ambient temperature. Install the system in an environment compatible with this recommended maximum ambient temperature.
- Ensure that the power socket-outlet is installed near the equipment and is easily accessible.
- Ensure the rack is anchored to the floor so that it cannot tip over when the system is extended out of the rack.
- Be sure to mount the system in a way that ensures even weight distribution in the rack. Uneven mechanical loading can result in a hazardous condition. Secure all mounting bolts when installing the chassis to the rack.

Installing the rack rails

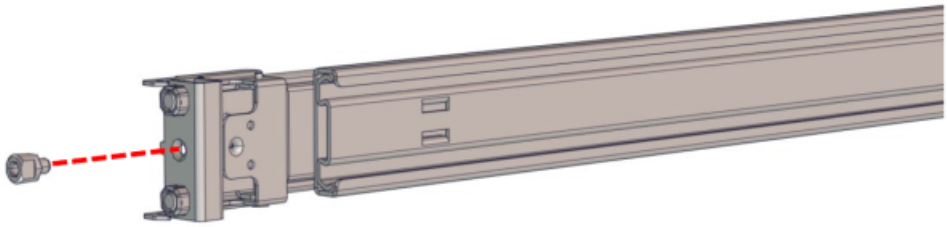
Rail kit contents:

Quantity	Description
1 set	Rails (left and right)
1	Accessories bag
2	Inner rail screws
2	Spacers
5	Front and rear rack screws

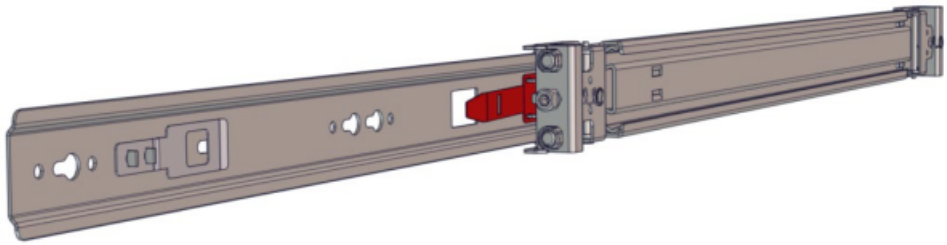
The *AMS Express* rack rails should be installed into the rack at the lowest possible U height available to help keep the rack's center of gravity low.

1. Remove the rails from the box.

2. Install spacers in the front of the left and right rails.

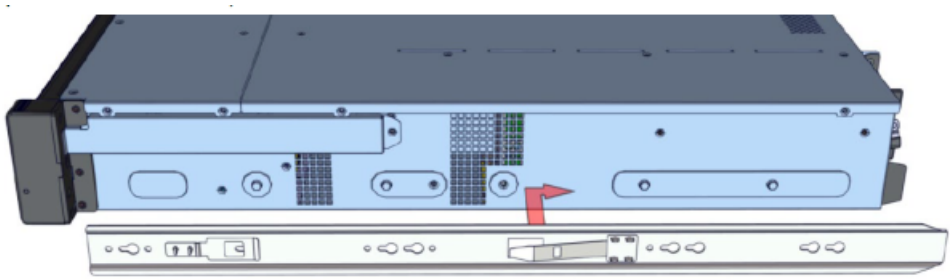


3. Separate the inner rails from the main rail assembly. Press the latch when the inner rail is halfway out for complete removal.

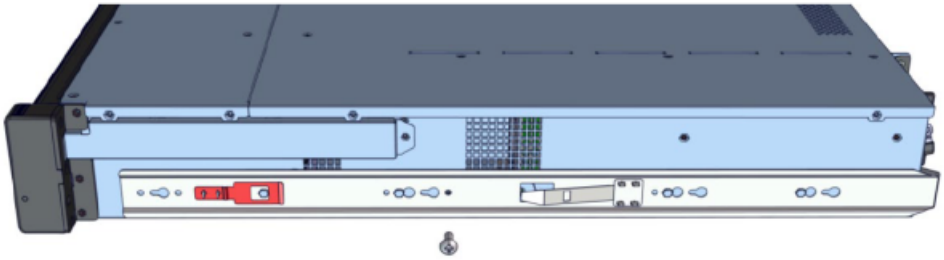


4. Repeat for other rail.

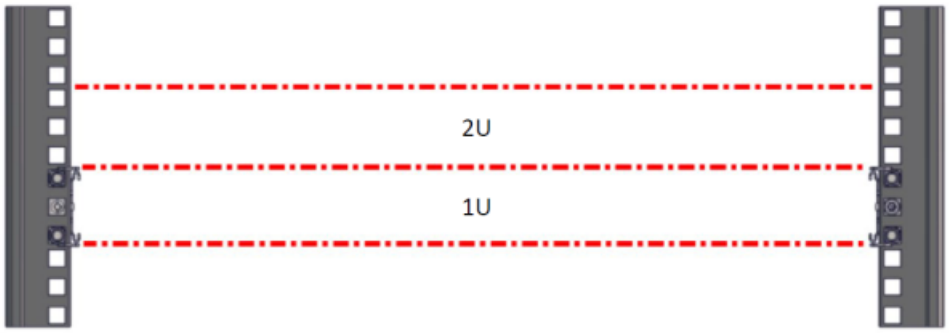
5. Install the inner rail to the sides of the enclosure. Align the holes of the inner rail to the pins of the enclosure, and slide it towards the back.



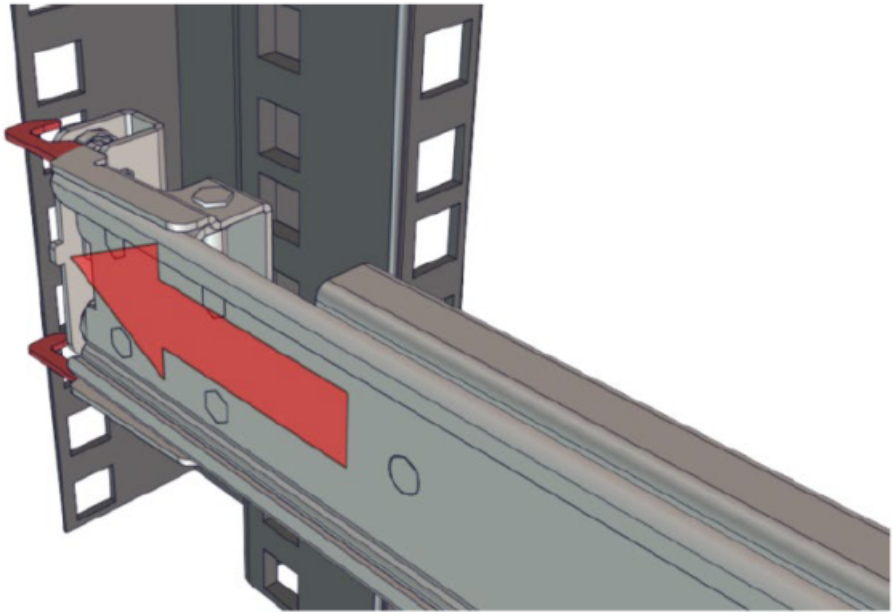
6. Ensure the retaining clip (red) is latched onto the enclosure's pin. Optionally, secure the inner rail with the provided screw.



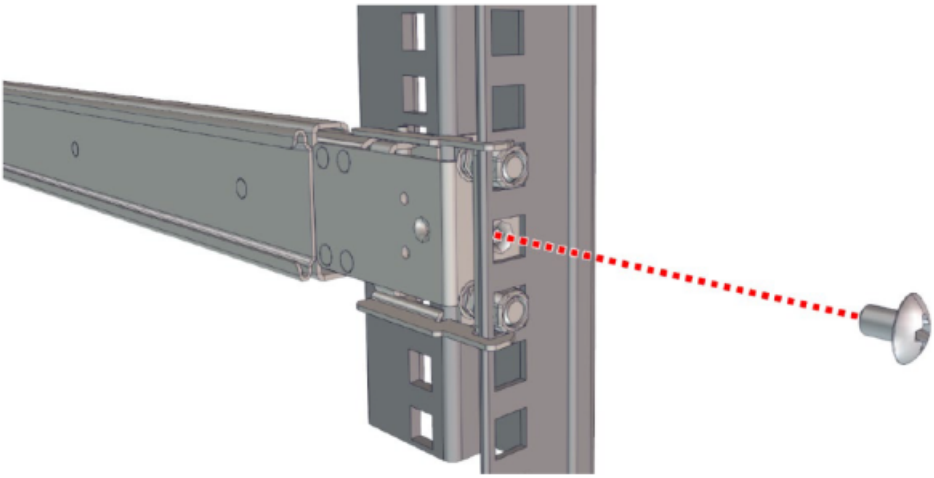
7. Repeat for other rail.
8. Note the location where the rail will be installed in the rack (each enclosure requires 2U rack height).



9. Mount the rails into the rack. Locate the desired "U" space and align the guide pins through the rack flange. The clamp hooks will ramp around the flange and hook on automatically.



10. Move to the back of the rack to complete the installation. Adjust the rails to the appropriate rack depth and align the guide pins through the rack flange in the same U location in the back as was used in the previous step for the front of the rails. The clamp hooks will wrap around the flange and hook on automatically.
11. Secure the rail to the rear posts with provided screws.



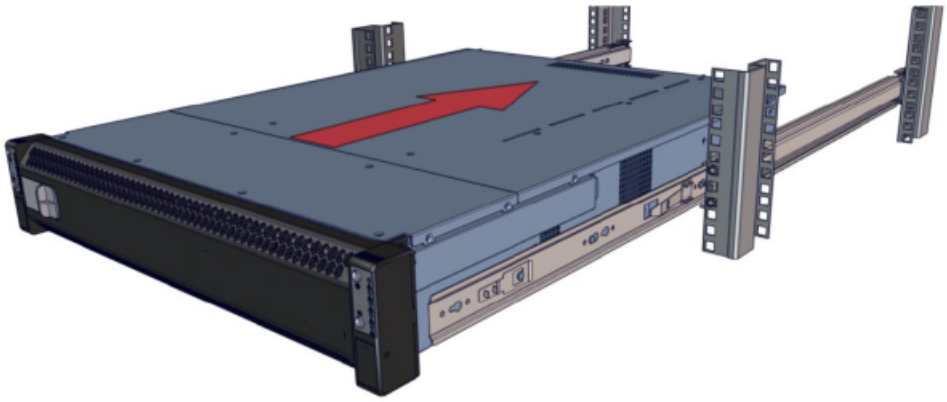
12. Repeat for the other rail.

Securing the system

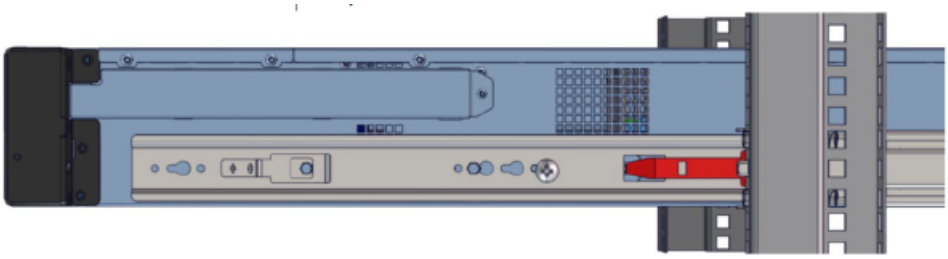
1. Install the bezel on the front of the server.
2. Lift the enclosure and align it toward the front of the installed outer rail.

   Caution: Two people are needed to lift and move the system. Use care to avoid injury.

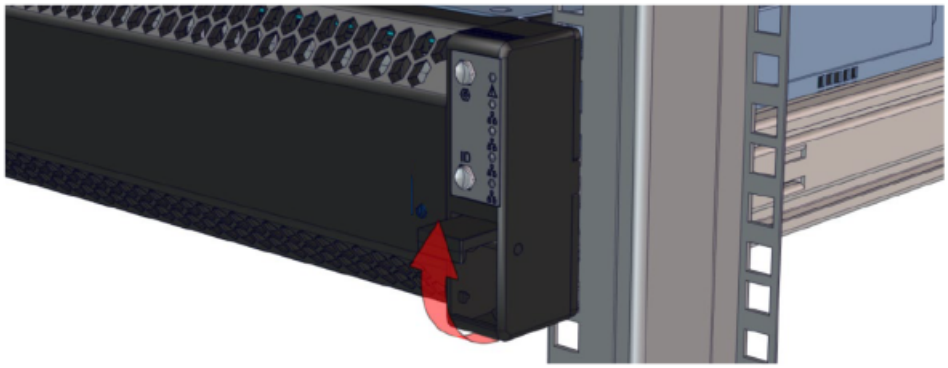
3. Slide the enclosure toward the back of the rack.



4. Press the inner rail latch while pushing the server to complete the installation.



5. Open the covers of the enclosure's ears.



6. Secure the enclosure to the rack by using provided M5 screws.

Cabling the system

When there are multiple AMS Express units at a single site, please be careful to power on only one AMS Express unit at a time when first starting to work with the units if they are all connected to the same LAN. Each AMS Express unit has the same default address configuration. If you power on multiple units with the default IP address configuration, these default IP addresses will conflict and make it challenging to diagnose problems.

From the rear of the enclosure, cable the system by doing the following:

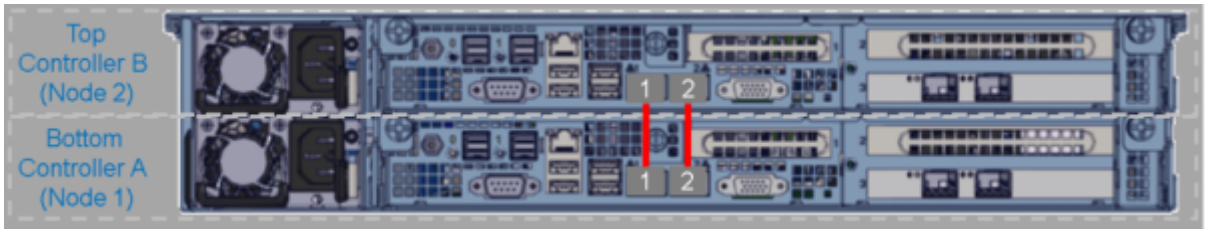
Cabling: Primary Chassis

The primary chassis is delivered with the following cables need for installation:

Quantity	Description
2	.3M Cat6e ethernet cables
4	2M SFP28 DAC cables
2	1M Mini-SAS cables (only used if have expansion chassis, see next section)
0	AC power cords (customer supplied) see below for details

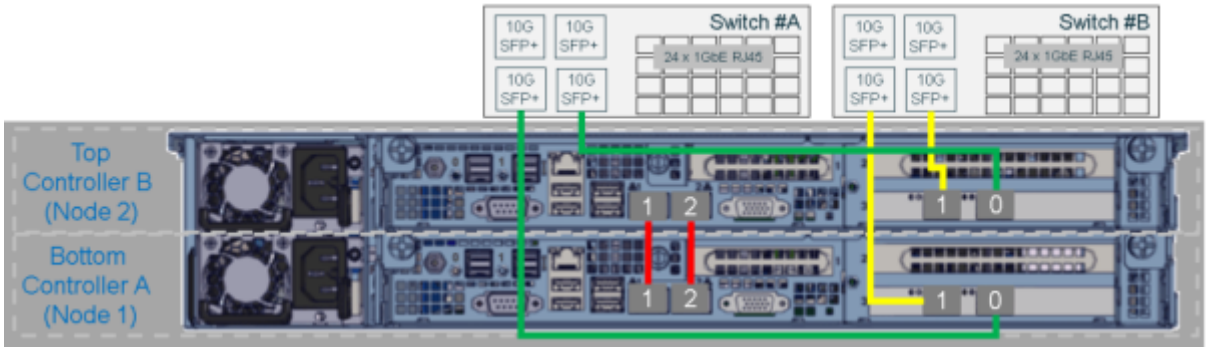
From the rear of the system, attach the cables as follows:

1. Inter-controller communication - Connect the two .3M Cat6e ethernet cables from the bottom Node 1 **port 1** to the top Node 2 **port 1**. Do the same for port 2.
   - Must be connected as shown, don't cross 1 & 2
   - Crossover cables will not work



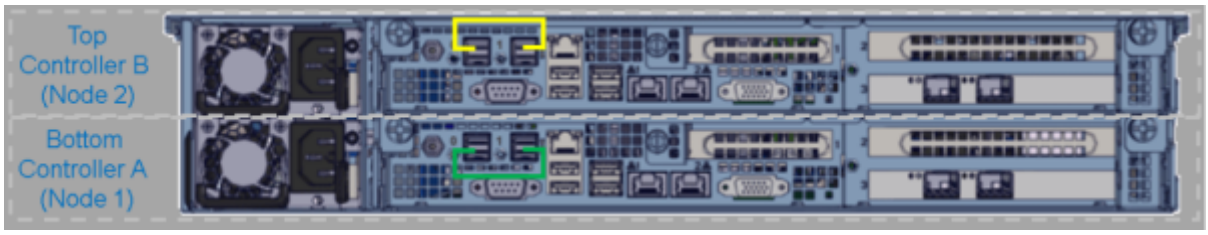
2. Network Switches - Connect the four (4) 2M SFP28 DAC cables to the 10GbE ethernet ports on switches.

   It is important to cable as shown to maximize system performance and enable redundancy.

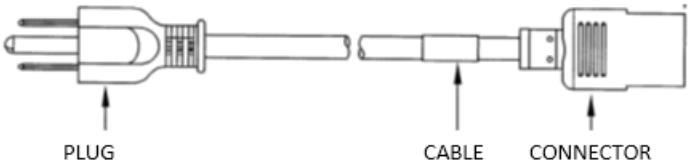


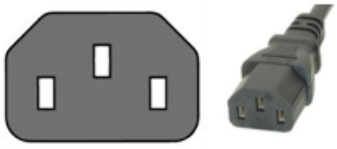
3. Optional SAS cables - If not connecting to Expansion Chassis in your configuration, connect the SAS cables on bottom Node 1 from port 0 to port 1. Repeat for top Node 2.

- This is the location to ‘store’ the cables so they will not be misplaced or lost.
- No functionality provided in this configuration.
- These cables will be utilized when you add Expansion Chassis in future.



4. AC Power Cords - Two (2) AC line cords are required per chassis for redundancy purposes. These are not supplied with the units. Customer must supply a certified power cord with its country of destination approval marking on the cable, plug or connector. The AC line cords must support 250V-10A, and be a minimum of 18AWG. The length of the power cord is determined by the customer’s rack space and cable routing requirements. The unit accepts C13 connector. Use the attached straps to secure the power cords to the enclosure.





Connector C13 (10A, 15A)

Plug: Represents the male end of the AC line cord which is dependent on the destination country as outlined below.

China, Australia and Argentina plug

These three countries have similar but not equal power cord plugs:

- The power cord for China is certified CCC under GB2099 Standard.
- For Australia / New Zealand the power cord complies with AS / NZS 3112 Standard.
- Argentina power cord conforms to regulations of IRAM 2073 Standard.

Europe and Korea plug

The European continental plug (CEE 7/7 type) is also similar to that for Korea but not equal. The European plug complies with the European Standards that are not recognized in Korea. For the Korean power cord it is mandatory to comply with national rules for that country. Ensure the appropriate power cord for Korea by verifying the KC approval logo is present on the power cord (plug and connector).

Japan 12A 125VAC plug

The Japanese plug and socket, at first glance, look identical to the North American NEMA 5-15 standard. However, the Japanese type, which is specified in JIS 8303 Standard, incorporates tighter dimensional requirements, different marking requirements (PSE) and mandatory testing and approval by the Japanese testing agency.

North America 10-15A plug

The US/Canada/Mexico plug is the same for the three countries (Canada, United States and Mexico) and complies with NEMA 5-15 standard. Approval UL/CSA is mandatory.

Cabling: Expansion Chassis

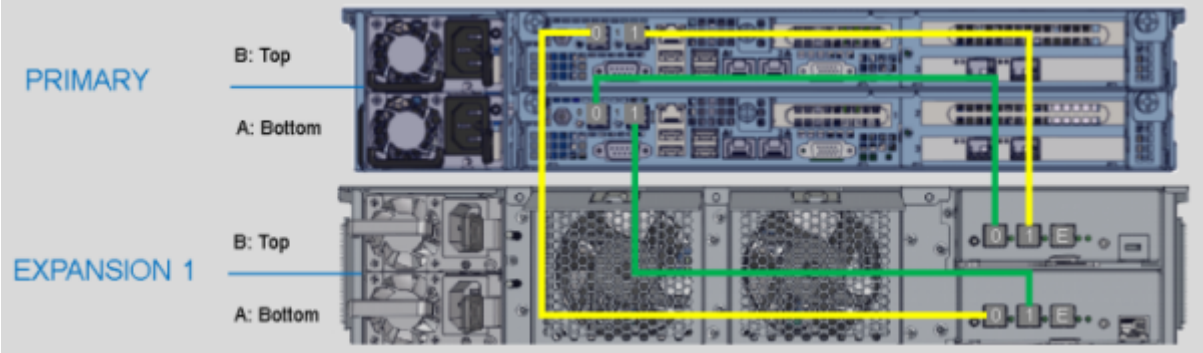
The *AMS Express* supports up to 3 expansion chassis per primary chassis. Each expansion chassis is delivered with the following cables needed for installation.

Quantity	Description
2	1M Mini-SAS cables
0	AC power cords (customer supplied) see below for details

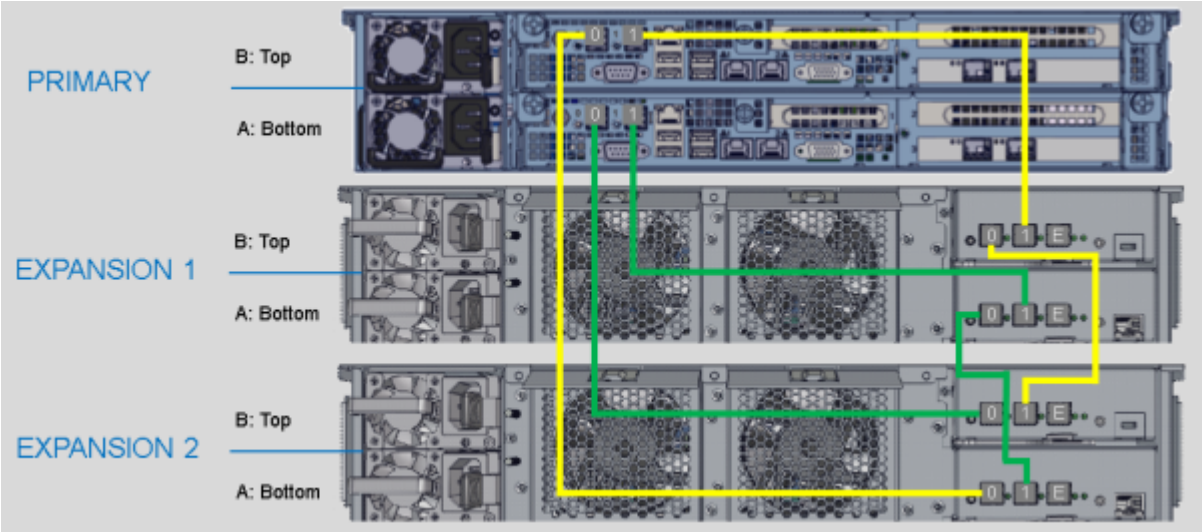
1. From the rear of the system, attach the cables as shown in the following step.
2. SAS Expansion - Connect the Expansion chassis to the Primary chassis using the following diagrams depending on the number of chassis.

   Each connection scheme maximizes redundancy.

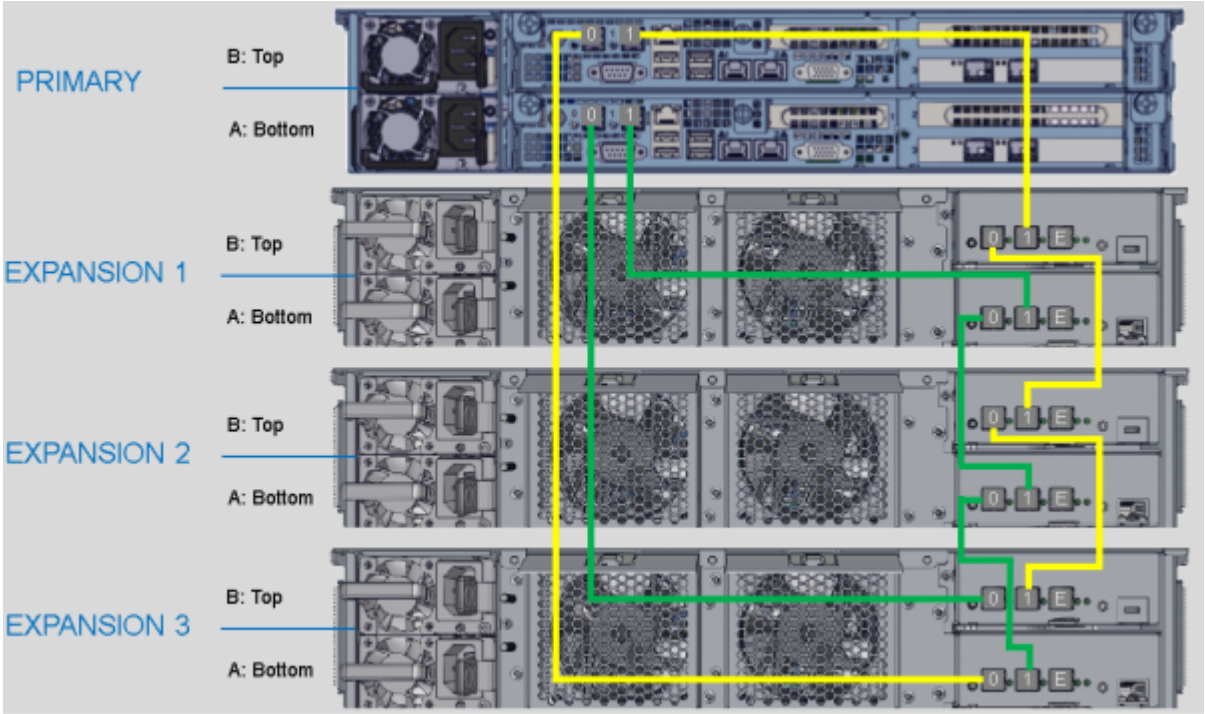
   - **SAS Cabling: 2 chassis stack**



   - **SAS Cabling: 3 chassis stack**



   - **SAS Cabling: Full stack**



3. AC Power Cords - Two (2) AC line cords are required per chassis for redundancy purposes. These are not supplied with the units. Customer must supply a certified power cord with its country of destination approval marking on the cable, plug or connector. Please see plug specifications in *Cabling: Primary Chassis* on page 22.

Cabling: Connecting Power Cables and Powering On

When there are multiple AMS Express units at a single site, please be careful to power on only one AMS Express unit at a time when first starting to work with the units if they are all connected to the same LAN. Each AMS Express unit has the same default address configuration. If you power on multiple units with the default IP address configuration, these default IP addresses will conflict and make it challenging to diagnose problems.

Attention: Expansion Chassis must be powered on before the Primary Chassis. So, power cables should be connected to Expansion Chassis units (if present) before power cables are connected to the Primary Chassis unit.

Powering Expansion Chassis units (if present) before the Primary Chassis unit is required to maintain the integrity of the data stored on the AMS Express unit.

When commissioning a new AMS Express unit, there may not be any data on the Expansion Chassis units, so this detail is less critical in that situation. However, if an AMS Express unit that has one or more Expansion Chassis units and that AMS Express system has been powered off, disconnected from power, etc., it is important for the Expansion Chassis units to be powered on before or simultaneously with the Primary Chassis unit in order to maintain the integrity of the data stored on the AMS Express unit.

Note: Grass Valley recommends powering AMS Express units via suitably sized battery backed, uninterruptible power supply (UPS) units.

1. Connect the power cable to Expansion Chassis units.

   If multiple Expansion Chassis units are present, it does not matter which Expansion Chassis unit has power connected first.

   An Expansion Chassis unit is expected to power on immediately when a power cable is connected to it. If the Expansion Chassis unit does not power on immediately after power cables have been connected, it may be an

indication that the Expansion Chassis unit has an older revision BIOS/firmware loaded to it. If this is the case, please escalate the situation with the Grass Valley Service/Support personnel.

2. After power cables have been connected to all Expansion Chassis units, use the front panel on each Expansion Chassis unit to review that all Expansion Chassis units are powered on before proceeding.
3. Use the front panel power button on the Expansion Chassis unit to power on any Expansion Chassis units that are not already powered on.

   There is no requirement to power on multiple Expansion Chassis units within a time duration of other Expansion Chassis units being powered on. Each Expansion Chassis unit is effectively idle until the Primary Chassis unit is powered on.

   Note: Since there is no BMC-GUI for Expansion Chassis units, so there is no way to remotely power on the Expansion Chassis units.

4. After reviewing that all Expansion Chassis units (if present) are powered on, connect power cables to the Primary Chassis unit.

   Both controllers in the Primary Chassis unit are expected to power on immediately when power cables are connected to the Primary Chassis unit.

   If either controller does not power on immediately after power cables have been connected, it may be an indication that the controller module has an older revision BIOS/firmware loaded to it. If this is the case, please escalate the situation with the Grass Valley Service/Support personnel.

Caution: It is critical to wait at least 15 minutes after connecting power to an AMS Express unit before powering off the AMS Express unit.

This is due to the following:

- The AMS Express unit requires this time to fully boot and for software running on the unit to reach a steady state.
- An internal SuperCap module needs time to fully charge.
- Powering off an AMS Express unit too quickly after having powered it on can result in the AMS Express unit getting into a bad state and risks data loss.

Powering the system

Powering Off an AMS Express Unit

Note: Primary Chassis must be powered off before the Expansion Chassis.

- It is important to power off both controllers of an AMS Express unit before powering off any Expansion Chassis units (if present). This strategy is required to maintain the integrity of the data stored on the AMS Express unit.
- Just as it is important to power on both AMS Express controller simultaneously, it is important to power off both controllers simultaneously, or within at least 15 seconds of each other. If there is too much time difference between powering off the two controllers, then the AMS Express unit may transition to a "fenced" state to protect against data loss.
- **If the AMS Express unit has recently been powered on, it is critical to wait at least 15 minutes after powering on an AMS Express unit before powering off the AMS Express unit.**
  - The AMS Express unit requires this time to fully boot and for software running on the unit to reach a steady state.
  - An internal SuperCap module needs time to fully charge.
  - Powering off an AMS Express unit too quickly after having powered it on can result in the AMS Express unit getting in to a bad state and risks data loss.

To power off the AMS Express unit, follow these steps below:

1. Use SSH to connect to the hypervisor for each controller and access the command line interface.
2. At each command line, enter the command `"sudo -i"` to change to the root user.
3. At each command line, type but do not yet press `"Enter"` for the command `"poweroff"`.
4. After both command lines have the `"poweroff"` command typed, press the `"Enter"` key for each command line to execute the command.

   Example text is as below:

   ```
   [admin@dvt3-hv-n1 ~]$ sudo -i
   [root@ddvt3-hv-n1 ~]# poweroff

   [admin@dvt3-hv-n2 ~]$ sudo -i
   [root@ddvt3-hv-n2 ~]# poweroff
   ```

   The SSH session will immediately disconnect once the `"poweroff"` command has been entered. However, each controller will take on the order of 5 or more minutes to completely shut down as the various software components of the AMS Express unit are stopped gracefully.

5. Use the web browser based BMC-GUI to monitor the power status for each controller.

   You won't be able to power on the controller again until the BMC-GUI updates to show that the controller is **"off"**.

   Note: Older AMS Express documentation advised the use of BMC-GUI features to power off the controllers. Using this BMC-GUI based approach has proven to be unreliable. Please avoid using the BMC-GUI to power off the controllers. Using the power buttons on the front panel of the Primary Chassis unit to power off AMS Express controllers is also discouraged.

6. After both controllers in the Primary Chassis have fully powered off, use the front panel power buttons on the Expansion Chassis units (if present) to power off each Expansion Chassis unit.

   Take note of the following:

   - If multiple Expansion Chassis units are present, it does not matter which Expansion Chassis unit is powered on first.
   - There is no requirement to power off multiple Expansion Chassis units within a time duration of other Expansion Chassis units being powered off. Each Expansion Chassis unit is effectively idle once the controllers in the Primary Chassis unit have been powered off.
   - There is no BMC-GUI for Expansion Chassis units, so there is no way to remotely power off the Expansion Chassis units.

7. If power is to be disconnected from the AMS Express unit, unplug power cables from the Primary Chassis unit and then from each of the Expansion Chassis units (if present).

Powering On a powered-off AMS Express Unit

In this case, we are assuming that power cables are connected to the Expansion Chassis units (if present) and the Primary Chassis unit and the suitable power is present in the cables. The AMS Express unit has been intentionally powered off for some reason.

Note: Expansion Chassis must be powered on before the Primary Chassis.

Powering Expansion Chassis units (if present) before the Primary Chassis unit is required to maintain the integrity of the data stored on the AMS Express unit.

1. Verify that power cables are connected to all of the Expansion Chassis units (if present).

2. Use the front panel power button on each Expansion Chassis unit to power on any Expansion Chassis units that are not already powered on.

   Take note of the following:

   - If multiple Expansion Chassis units are present, it does not matter which Expansion Chassis unit is powered on first.
   - There is no requirement to power on multiple Expansion Chassis units within a time duration of other Expansion Chassis units being powered on. Each Expansion Chassis unit is effectively idle until the Primary Chassis unit is powered on.
   - There is no BMC-GUI for Expansion Chassis units, so there is no way to remotely power on the Expansion Chassis units.

3. After reviewing that all Expansion Chassis units (if present) are powered on, review that power cables are connected to the Primary Chassis unit.

   Note that each controller in the Primary Chassis unit has its own front panel power button.

4. Press the power buttons for each controller simultaneously or within 15 seconds of each other to power on the AMS Express unit.

   If there is too much time difference between the two controllers booting and initializing, then the AMS Express unit may transition to a "fenced" state to protect against data loss.

   An alternative approach is to use the BMC-GUI to remotely power on the controllers. Refer to *System Power-On* on page 143 for the detailed steps.

Caution: It is critical to wait at least 15 minutes after powering on an AMS Express unit before powering off the AMS Express unit.

This is due to the following:

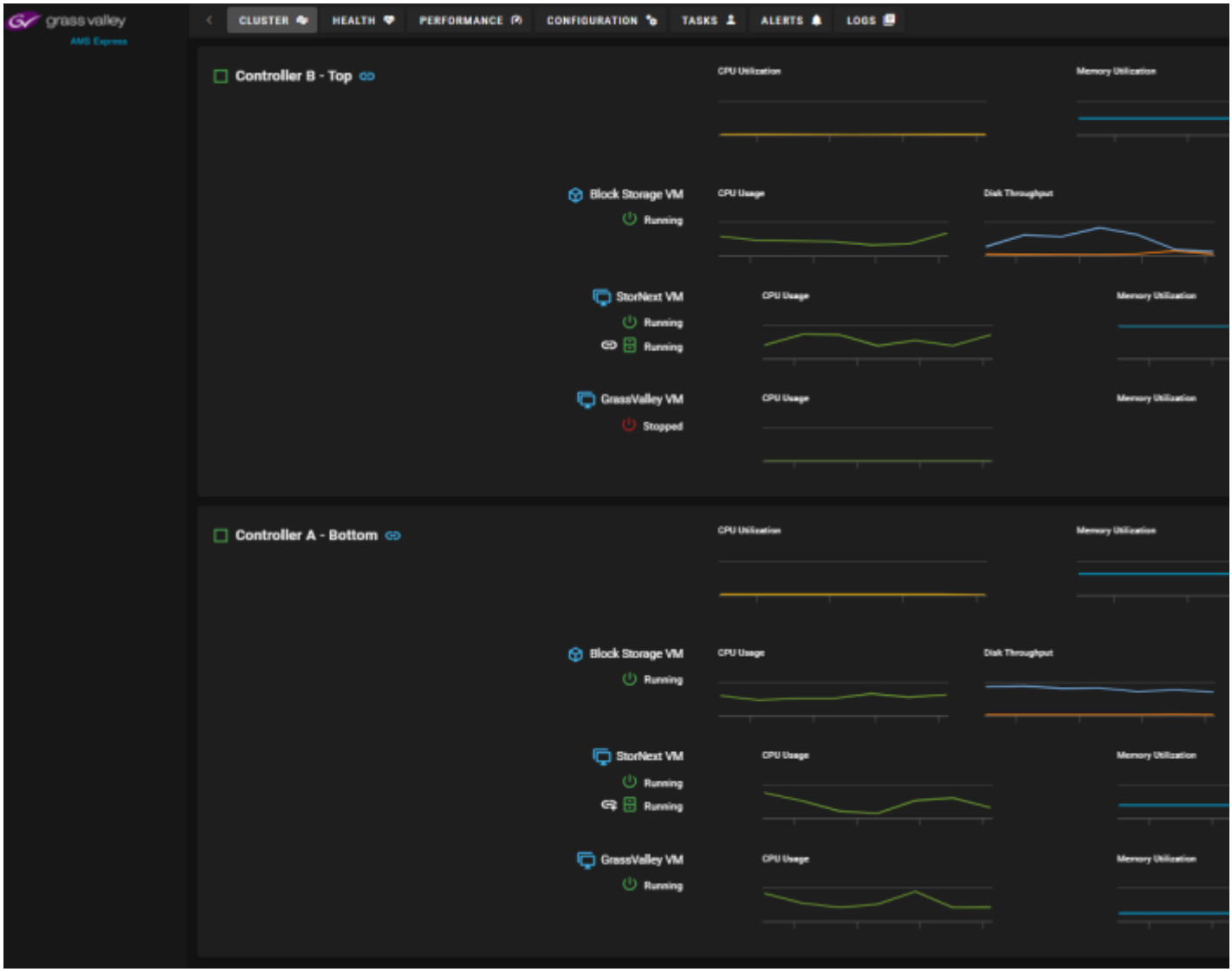
- The AMS Express unit requires this time to fully boot and for software running on the unit to reach a steady state.
- An internal SuperCap module needs time to fully charge.
- Powering off an AMS Express unit too quickly after having powered it on can result in the AMS Express unit getting into a bad state and risks data loss.

Software Overview

Multiple software interfaces are utilized to maximize the system's potential. The majority of steps will utilize graphical user interfaces (GUI). For specific configuration or troubleshooting purposes, a command line interface (CLI) may be utilized. These interfaces are outlined below and referred to throughout the remainder of the documentation.

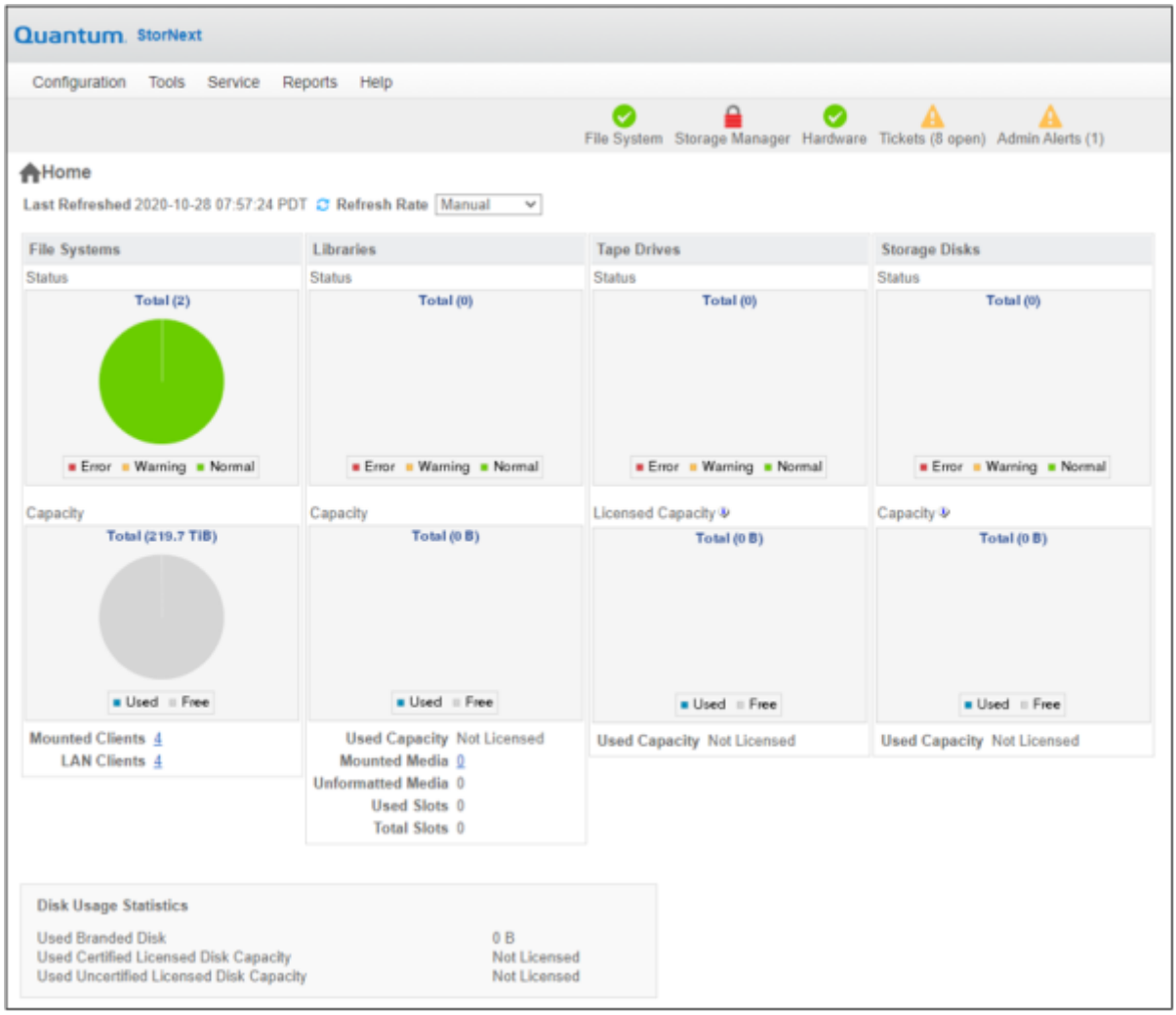
AMS Express GUI (AMS-GUI)

This is the primary interface for setup and monitoring the system.



StorNext GUI (SN-GUI)

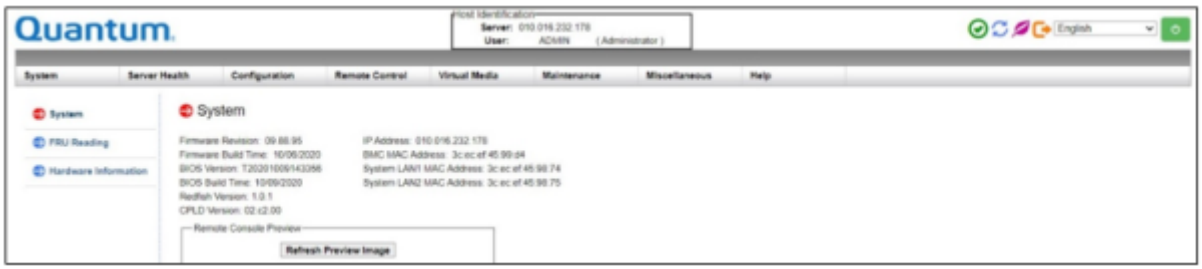
AMS Express utilizes the StorNext operating system running in a VM as shown below.



Baseboard Management Controller GUI (BMC-GUI)

The BMC-GUI is typically used for low-level troubleshooting or accessing the system via the IPMI interfaces.

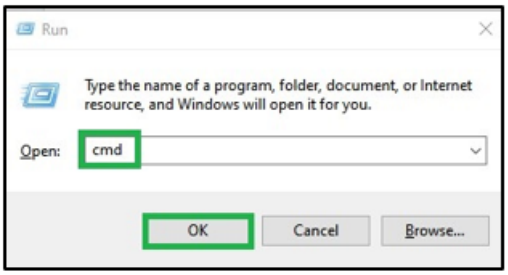
To launch the BMC-GUI on a supported web browser, such as Google Chrome or Mozilla Firefox, use the following web address template: http://<BMC_IP_address>



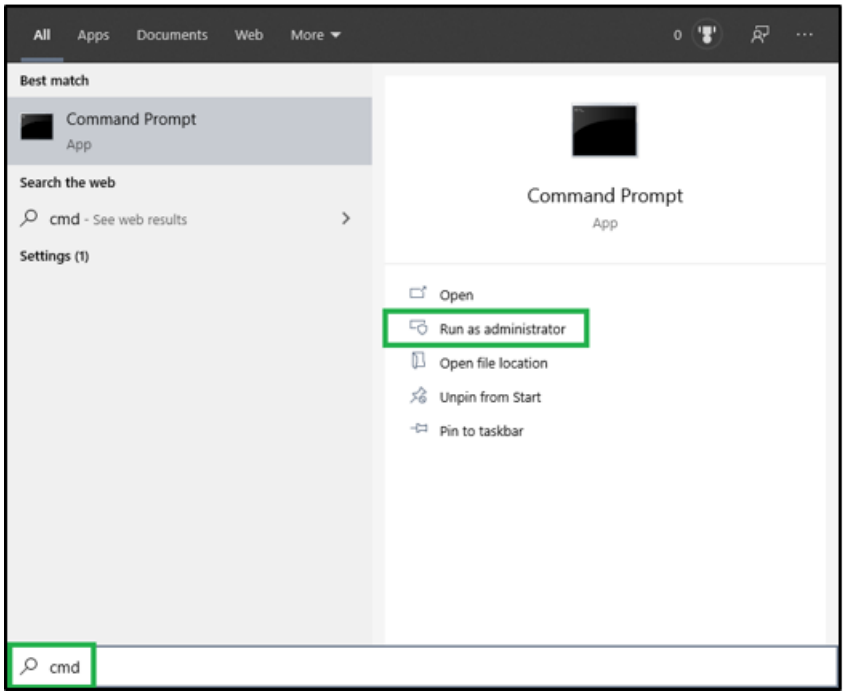
Command Line Interface (CLI)

The CLI will be utilized for configuration, testing, or verification.

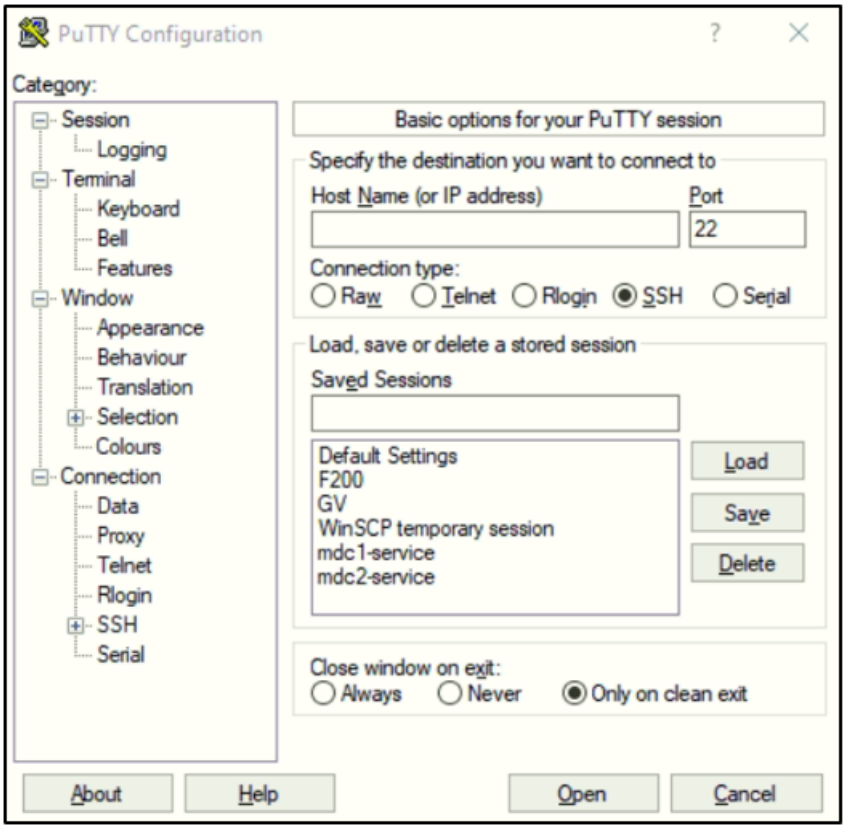
- To reach the command line in Windows, do one of the following:
  - Press **Windows+R** keys to open the **Run** box.
  - Type **cmd** and then click **OK** to open a regular Command Prompt.
  - Type **cmd** and then press **Ctrl+Shift+Enter** to open an administrator Command Prompt.



- Alternately, click the Cortana search box and type in **cmd** then click **Run as administrator**.



- Or users may prefer the PuTTY interface.


PuTTY Configuration
Category:
Session
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
Telnet
Rlogin
SSH
Serial
Basic options for your PuTTY session
Specify the destination you want to connect to
Host Name (or IP address)
Port
22
Connection type:
Raw
Telnet
Rlogin
SSH
Serial
Load, save or delete a stored session
Saved Sessions
Default Settings
F200
GV
WinSCP temporary session
mdc1-service
mdc2-service
Load
Save
Delete
Close window on exit:
Always
Never
Only on clean exit
About
Help
Open
Cancel

Commissioning the System

The following steps follow a typical installation scenario where the *AMS Express* and network switches are cabled as in the *Installing the Hardware* on page 15 section.

The documentation assumes the user is familiar with Windows operating system, networking fundamentals, and comfortable with the command line interface.

When there are multiple AMS Express units at a single site, please be careful to power on only one AMS Express unit at a time when first starting to work with the units if they are all connected to the same LAN. Each AMS Express unit has the same default address configuration. If you power on multiple units with the default IP address configuration, these default IP addresses will conflict and make it challenging to diagnose problems.

Preparation

Before starting, ensure the following is accessible and prepared:

- Laptop computer with Windows 10 or higher. (For older Windows versions, you will have to search for comparable solutions)
- Two Ethernet cables. These are temporary and will be removed when finished configuring the system.
  1. For attaching the PC to network switch
  2. For attaching network switch to *AMS Express*
- Read and understood the *Software Overview* on page 29 section.
- Ensure power cord is plugged in and power on for the PC, network switch, and *AMS Express*.

Note: When connecting multiple new AMS Express units to a single network environment, please make sure to power on and configure one AMS Express unit at a time. Failing to do so risks causing conflicts between the AMS Express units since all AMS Express units will be using the same default IP addresses.

IP addresses & passwords

Multiple IP addresses are required to ensure the *AMS Express* system functions correctly. Complete the chart below prior to installing the system. It can then be saved for future reference.

Where appropriate, a Primary (Bottom) or Secondary (Top) Controller is specified. The credentials (user / password) are case-sensitive and recommended for long-term support needs.

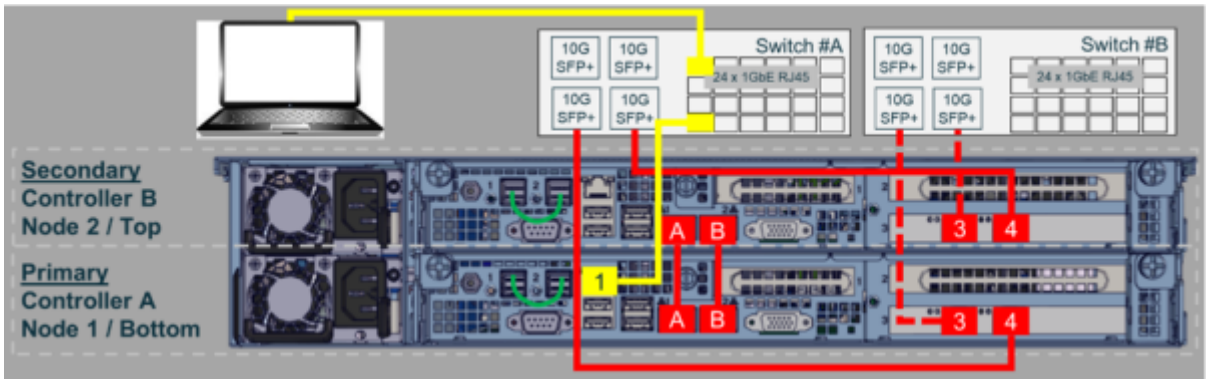
Target	Credentials	Controller	Factory 192.168.21	Documentation 10.16.232	Customer yyy.yyy.yyy
AMS-GUI	admin / adminGV!	Top-*Secondary* — Node 2	.2	.171	
(Hypervisor)		Bottom-**Primary** — Node 1	.1	.170	
SN-GUI	admin / adminGV!	Top-*Secondary* — Node 2	.22	.174	
(StorNext)		Bottom-**Primary** — Node 1	.21	.173	
StorNext SSH/CLI	stornext / adminGV!				
StorNext SSH/CLI	root / adminGV!				

Target	Credentials	Controller	Factory 192.168.21	Documentation 10.16.232	Customer yyy.yyy.yyy
BMC/IPMI GUI	ADMIN / default BMC password **Note:** Default BMC passwords are printed on the back of the serial number tab, located in the lower left back-panel of Primary Chassis.	Top-*Secondary* — Node 2 Bottom-**Primary** — Node 1	.42 .41	.179 .178	
GV VM	n/a	Top & Bottom	.31	.176	
NAS VIP	n/a	Top & Bottom	.23	.177	
Netmask	n/a	Top & Bottom	n/a	.255.0	
Gateway				10.16.232.1	
Default Gateway				10.16.232.1	
DNS Primary				10.16.212.23	
DNS Alternate				10.16.212.24	
Domain				gvservice.com	

Connect the PC to the *AMS Express*

Network switch method (preferred)

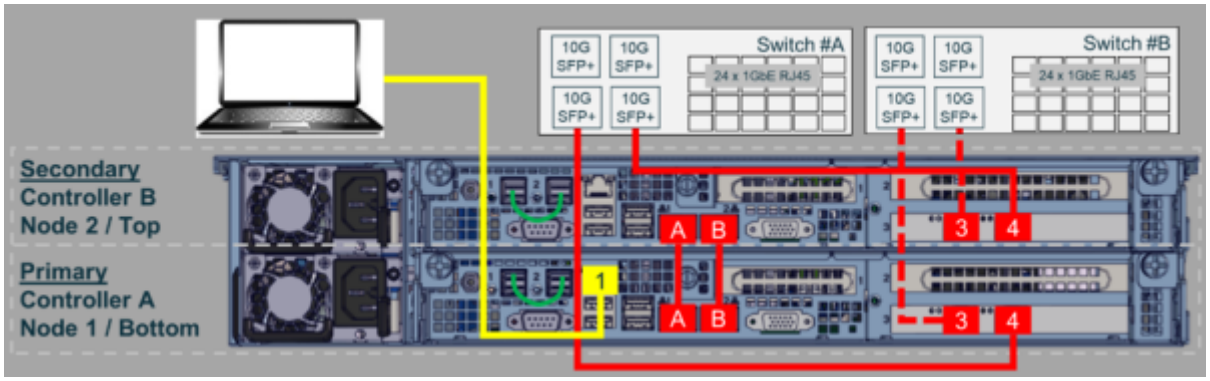
1. Plug the 1st Ethernet cable into the Primary Controller IPMI port (#1) and the other end into **Switch #A** (the same switch that ports #4 were plugged into) as shown in the yellow line below.



2. Plug the 2nd Ethernet cable into **Switch #A** and the other end into Ethernet port of the PC as shown in the top yellow line.

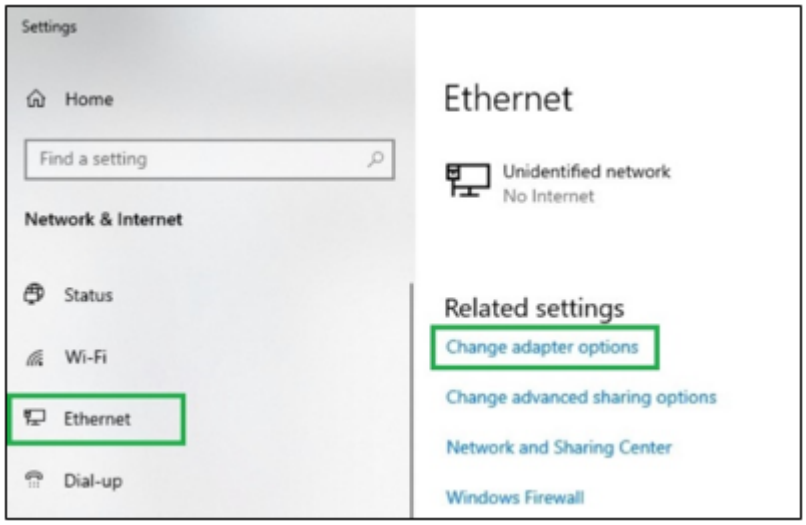
Direct Connection

Plug an Ethernet cable into the Primary Controller IPMI port and the other end into the PC as shown in the yellow line below.



Configure the PC Network Settings

1. Access the Network Connections setting on your PC using one of the following:



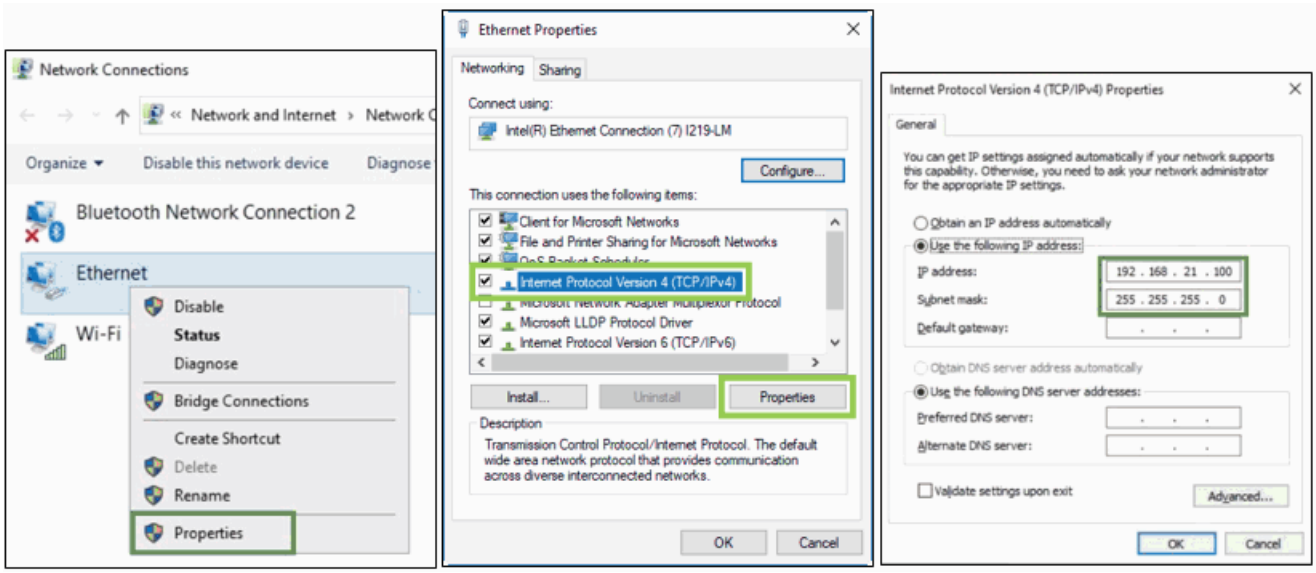
- For Windows 10 (method 1), right-click the **Start menu** icon, click **Network Connections,** choose **Ethernet** in left-hand pane, click **Change Adapter Options** in the right dialog pane.
- For Windows 10 (method 2), open the Cortana search, and enter **View network status and tasks**, choose **Ethernet** in left-hand pane, click **Change Adapter Options** in the right dialog pane.
- For older Windows versions, click the Start menu, search for and open the **View Network Connections** dialog.

2. Right-click the connection corresponding to Ethernet port that is connected to the switch, something like **Ethernet** or **Local Area Connection**, and select **Properties**.
3. From the list of connections, select **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties** to display the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box.

   Note: It is highly recommended to write down the settings before changing. You can refer to this information later when you set the settings back to their original values — after you are finished using this network connection.

4. Select **Use the following IP address:** and enter the following information exactly as shown below, ensuring **Validate settings upon exit** box is not checked.

These are the default settings.



5. If already using a static IP, click **Advanced** and add a second IP address as noted above.
6. Click **OK**.
7. Close the remaining Network dialog boxes.

Note: It may take several minutes to enable the connections.

Primary Chassis Setup

The following steps utilize the AMS–GUI for setup. Carefully enter the information exactly as shown.

Configure Networks

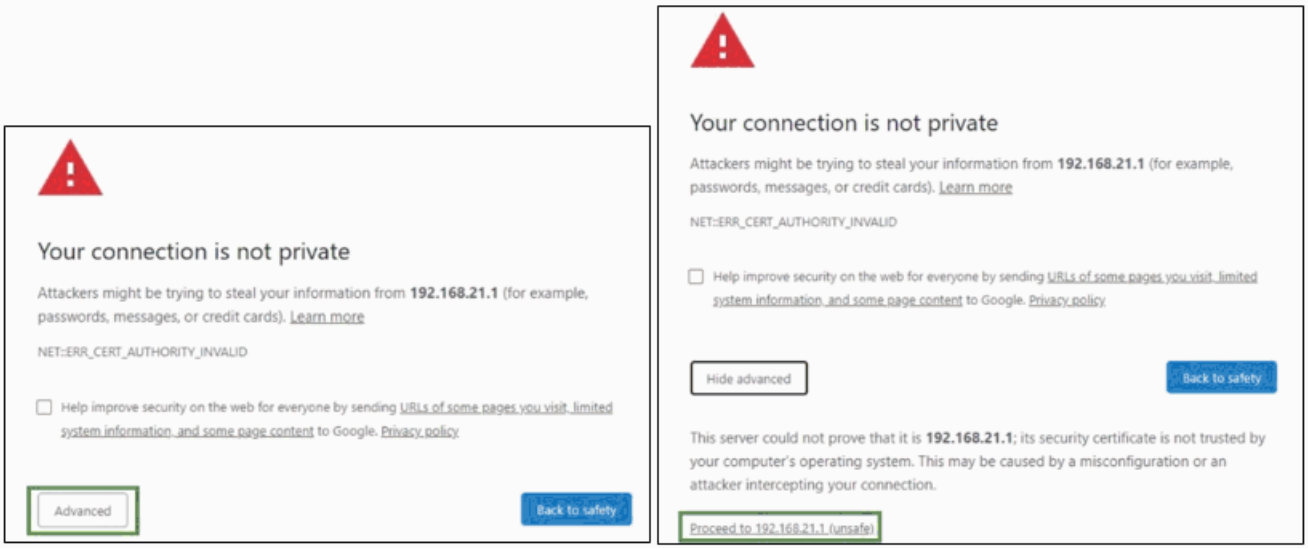
Utilizing the AMS-GUI

The following steps utilize the AMS–GUI for setup.

Important: Carefully enter the information exactly as shown, replacing this documentation's IP address / names with your company's information.

1. Open a browser and navigate to the initial interface URL: **192.168.21.1** (it may take a minute to find the system)

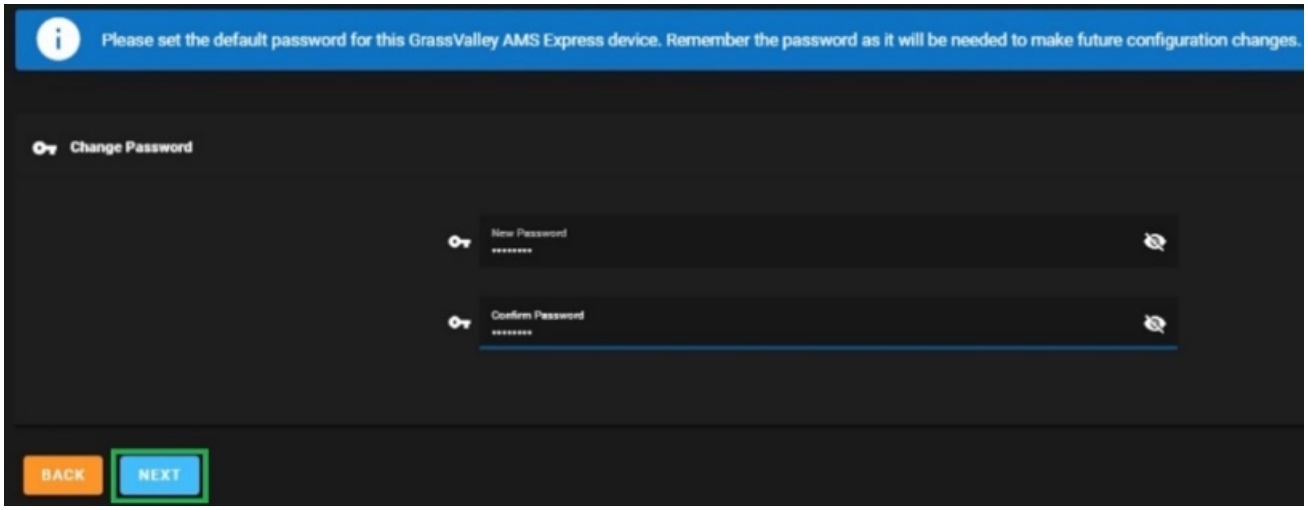
   If the following warning appears, click **Advanced**, then click **Proceed to 192.168.21.1 (unsafe)**.



The EULA (End-User License Agreement) displays.

2. Click **AGREE** to accept the EULA.
3. Enter **adminGV!** as new password when prompted for both **New Password** and **Confirm Password**.

   Note: The password entered will be used for the **root** user account to access the AMS-GUI and the CLI.

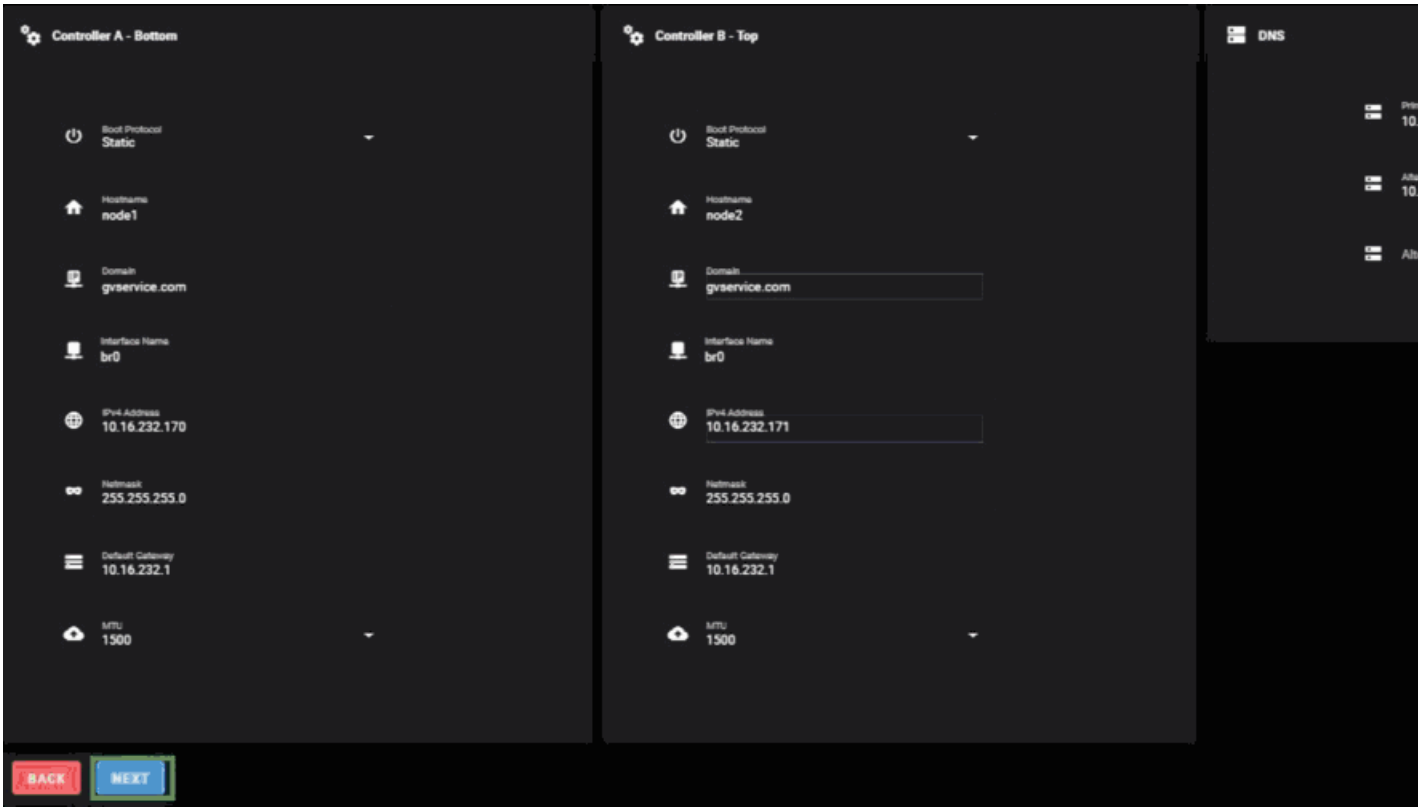


4. Click **NEXT** to accept the password changes.
5. Proceed to the next task: *Configure the Management Network (Hypervisor)* on page 38

Configure the Management Network (Hypervisor)

Leave the following items unchanged as any changes will impact workflow performance.

- Boot Protocol = Static
- Interface Name = br0
- MTU = 1500



1. Enter the remaining items with company-specific substitutions.

   Note: For DNS server entries, please make sure to enter an IP address that is reachable from the AMS Express unit, such as using the IP address for the network switch's control interface.

2. Click **NEXT**.

   The following displays.

3. Click **APPLY**.

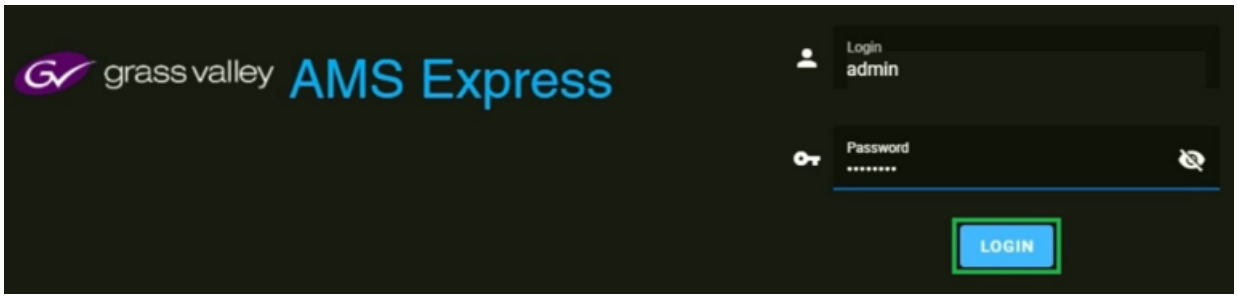
   When successful, a green pop-up message appears at the top of the screen.

   Configuration Successful. In a moment you will be forwarded to login.

   Several tasks will be scheduled, including a network restart **PENDING** message below.

Since the IP address has been changed, the system may appear stopped or hung.

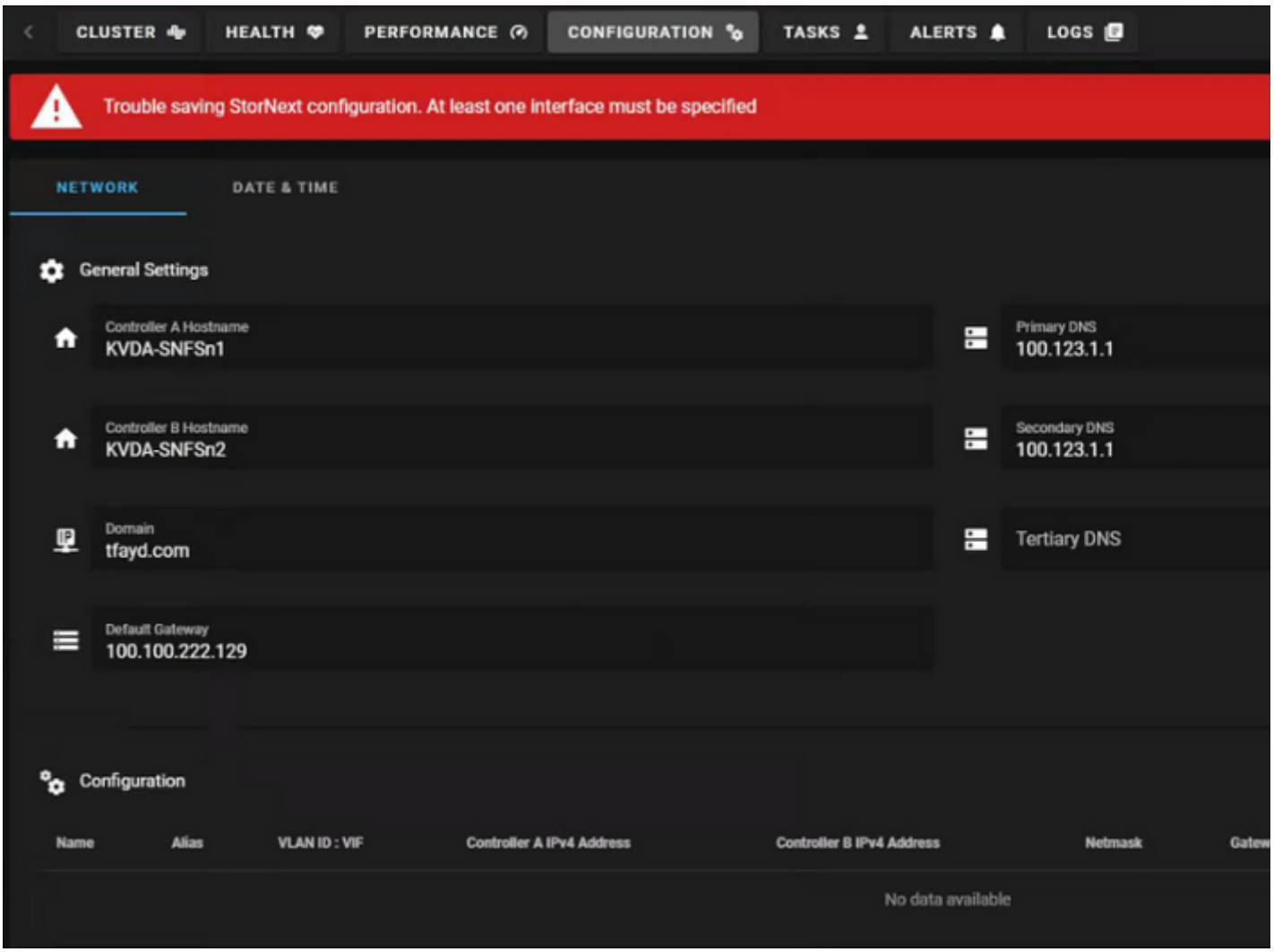
4. After 5 minutes, do the following:
   a) Close the browser.
   b) Open the browser and navigate to **10.16.232.170** (the IP address entered for Controller A -Bottom).
5. Login to the AMS-GUI: **admin \ adminGV!**



6. Click **LOGIN**.
7. Select the **CONFIGURATION** tab from the top, then click **Management Network** on the left side of the screen and ensure all settings are accurate.
8. Proceed to the next task: *Configure StorNext Network* on page 41

Patch NIC firmware

A script must be executed to fix a problem when StorNext VMs are not recognizing the onboard NIC ports which causes the StorNext networking page on the GUI to not allow configuration of the StorNext IPs. In the screen shot below, the **"No data available"** notification displays under the **Configuration** section where fields are supposed to be present for entering network configuration details. This GUI detail is a symptom of not having executed the script described below.



The following must be run on hypervisor node 1 as a root user, after the system is booted and the StorNext VMs are up and running. The script will automatically transfer itself to node 2 and run on that node as well so both StorNext VMs are updated.

1. Download the **autoconfigpatch.sh** script from the ProDev FTP site: **ftp://prodev@ftp.grassvalley.com/GV-AMS-Express/AMS-39**
2. Place the script in `/tmp` directory on the AMS Express unit's hypervisor node 1.
3. Log in to hypervisor node 1 and get root access.
4. Verify that both StorNext VMs are online by viewing the VM status on the GUI.
5. Run the patch script on hypervisor node 1 as below.

   [root@d3-hv-n1 /tmp]$ chmod +x /tmp/autoconfigpatch.sh

   [root@d3-hv-n1 /tmp]$ sh /tmp/autoconfigpatch.sh

Successful run will result in the following messages being displayed:

```
Transferring patch script to node 2
```

```
Running patch script on node 2
          Successfully applied patch on node 2
          No autoconfig errors found on node 2
```

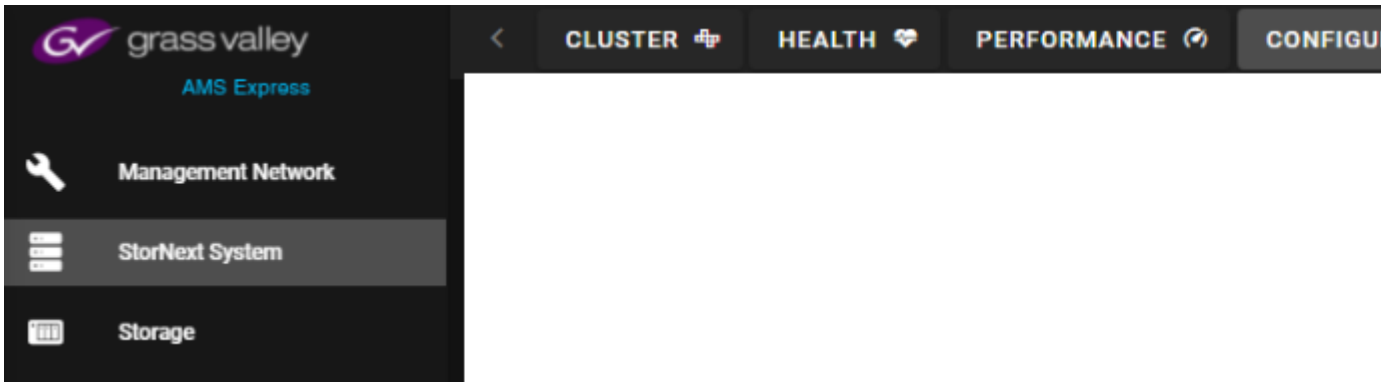
```
Running patch script on node 1
          Successfully applied patch on node 1
          No autoconfig errors found on node 1
```

6. Proceed to the next task: *Configure StorNext Network* on page 41

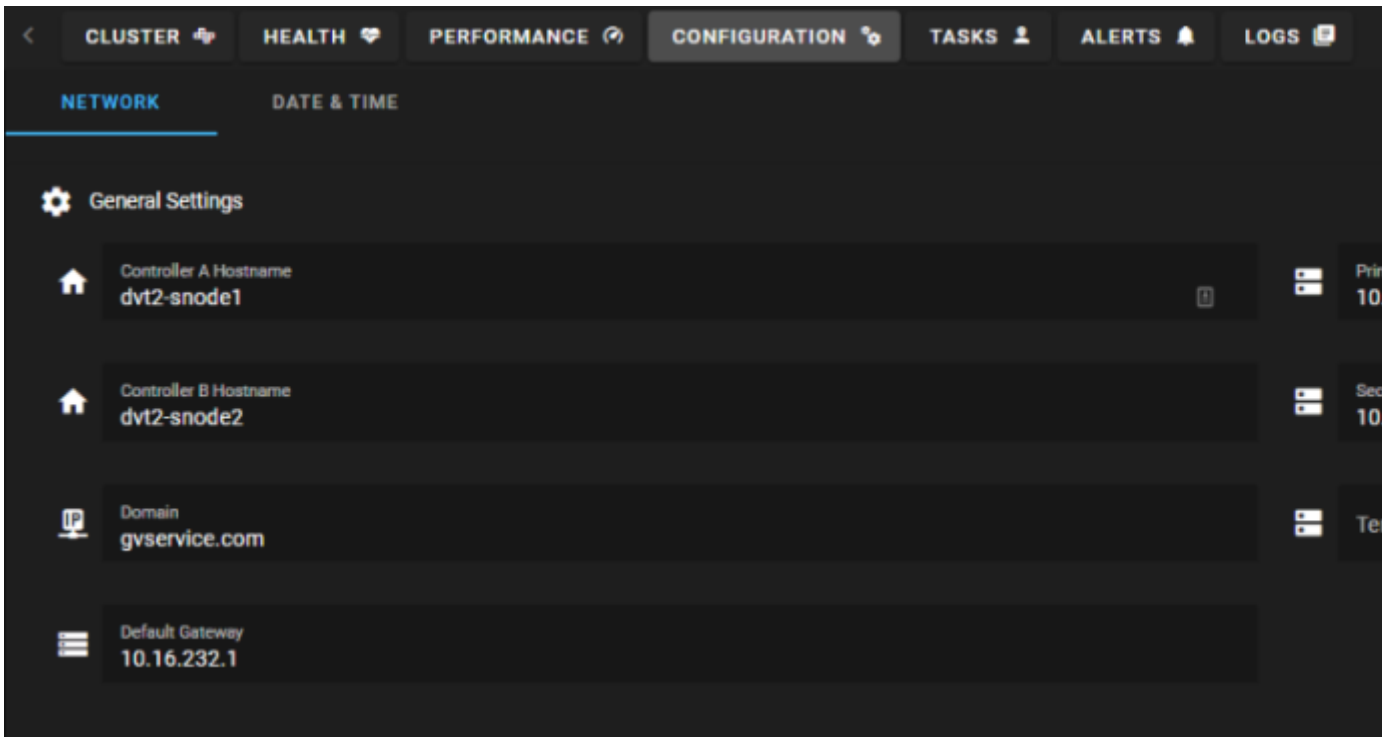
Configure StorNext Network

Before proceeding with those steps below, this procedure must be executed: *Patch NIC firmware* on page 39

1. Click **StorNext System** on the left-side menu.



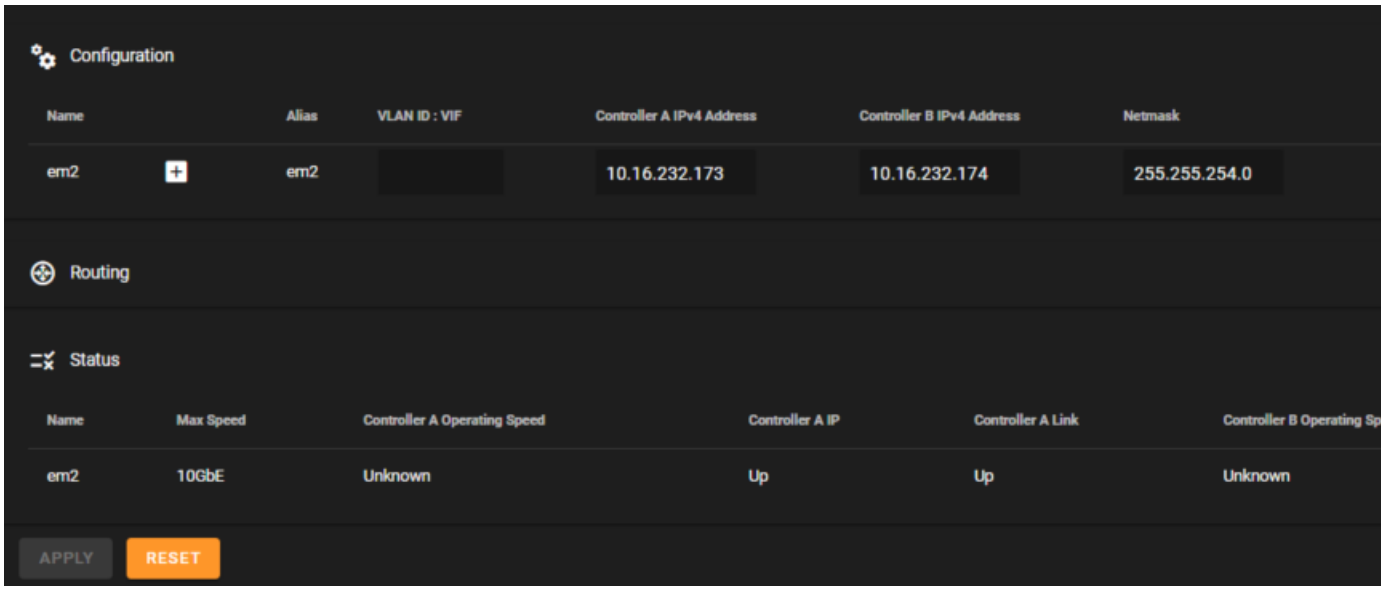
2. For DNS server entries, please make sure to enter an IP address that is reachable from the AMS Express unit, such as using the IP address for the network switch's control interface.



3. Enter the remaining items with company-specific substitutions.
4. Leave the following items below unchanged as any changes will impact workflow performance.
   - Interface Name = em2, do not add any aliases
   - Leave VLAN ID blank

     Note: The use of the VLAN setting is not supported for the AMS Express product. Entering a VLAN ID can cause the AMS Express unit to malfunction.

   - Leave Metadata and Jumbo Frame unchecked
   - Leave Routing settings with their default blank values



If the Configuration section above shows **"No data available"** instead of **"em2"** and fields to enter network configuration details, please execute the *Patch NIC firmware* on page 39 steps to be able to enter this information.

5. Click **APPLY** to complete the configuration.

   Note: A change to either the NETWORK tab or the TIME & DATE tab will reboot both StorNext VMs, so it's better to complete the settings for both the NETWORK and TIME & DATE tabs before you click APPLY, so the reboot is only required once.

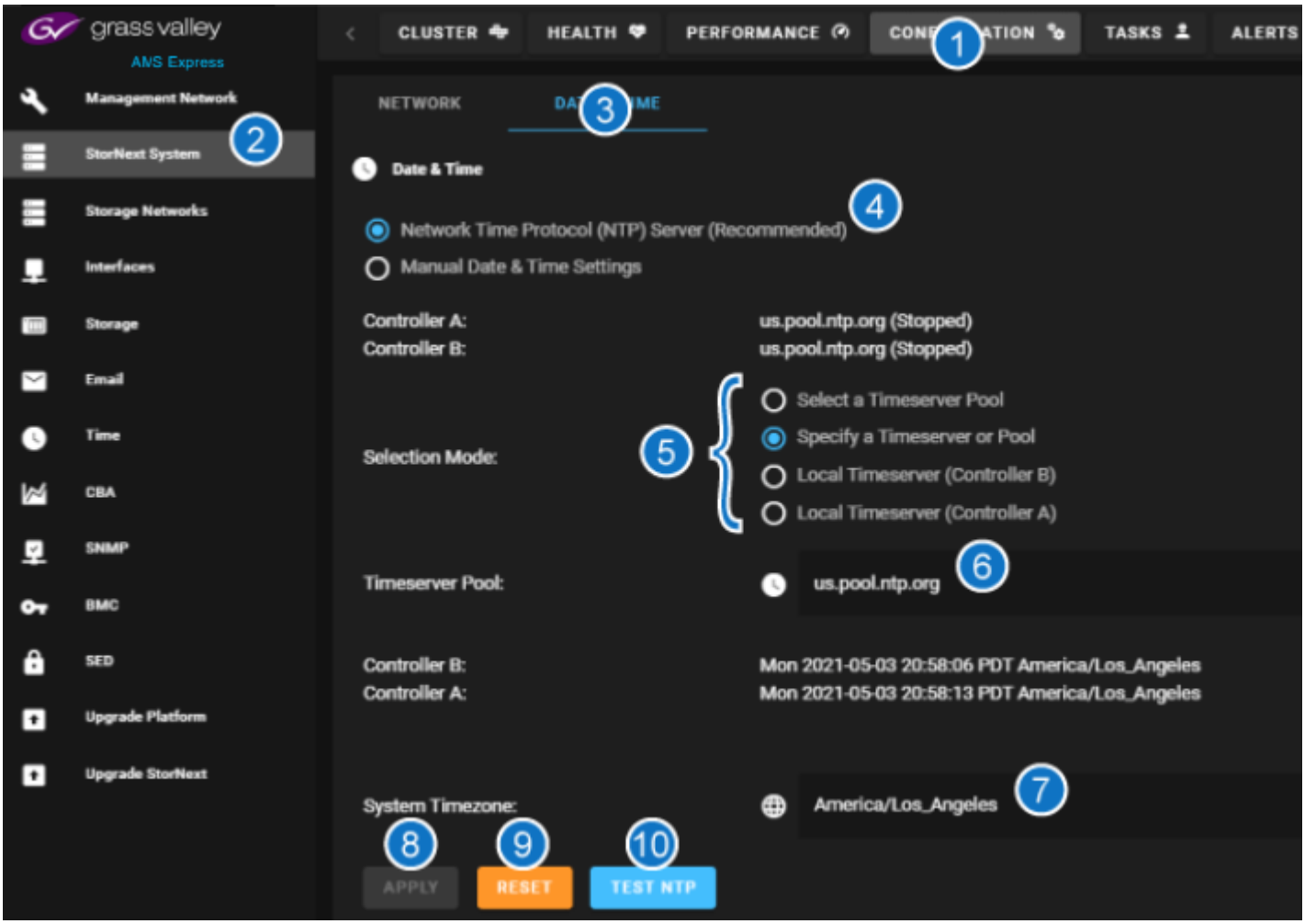
   When successfully finished, a green pop-up message appears as below.

   StorNext settings saved successfully.

6. Proceed to the next task: *Configure StorNext VM NTP Time/Date Settings* on page 43

Configure StorNext VM NTP Time/Date Settings

Before proceeding with those steps below, this procedure must be completed: *Configure StorNext Network* on page 41



1. Select **CONFIGURATION** in the AMS Express UI top navigation bar (item 1 above).
2. Select **StorNext System** in the AMS Express UI left navigation menu (item 2 above).
3. Click the **DATE & TIME** tab (item 3 above).
4. Click **Network Time Protocol (NTP) Server (Recomended)** (item 4 above).
5. Select one of the NTP time server **Selection Modes** to use (item 5 above).
6. Enter an address for the NTP **Timeserver Pool** (item 6 above).

Note: Grass Valley strongly encourage using a NTP time server that is on the same local network as the AMS Express unit.

7. Select the **System Timezone** from the available geographical locations (item 7 above).

   Note: This time and date should be set to those used for the AMS Express **Time** setting (found on the **Time** page; select **CONFIGURATION > Time**) for accurate timestamps across the different system interfaces and data. Refer to *Enable Network Time Protocol* on page 63 to enable NTP settings.

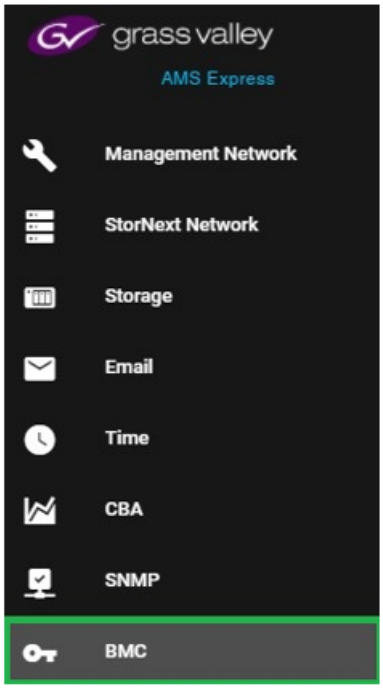
8. Click **APPLY** (item 8 above) to apply the new settings, click **RESET** (item 9 above) to reset settings, or click **TEST NTP** (item 10 above) to test whether the NTP server will work for the AMS Express unit.

   Note: A change to either the **NETWORK** tab or the **TIME & DATE** tab will reboot both StorNext VMs, so it's better to complete the settings for both the **NETWORK** and **TIME & DATE** tabs before you click **APPLY**, so the reboot is only required once.

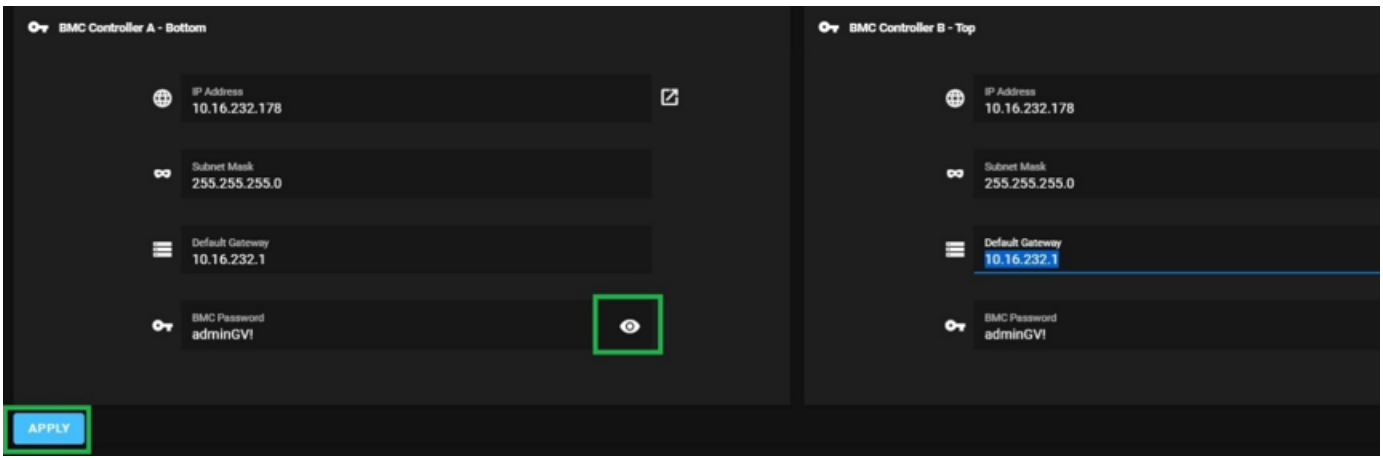
9. Proceed to the next task: *Configure BMC Settings* on page 44

Configure BMC Settings

1. Select **BMC** on the left-side bar.



2. Enter the items with company-specific substitutions.



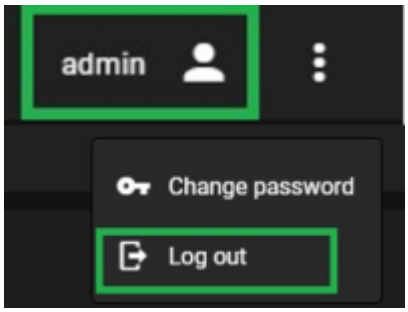
For the BMC password, use the 'eye' icon and set it **adminGV!**.

There is no verification step so you need to get it right the first time. If you have issues, the default BMC passwords are on the back of the serial number tab, located in the lower left back-panel of Primary Chassis.

3. Click **APPLY** to complete the configuration.

   When successfully finished, a green pop-up message appears as below.

4. Log out from the AMS-GUI by clicking the user profile icon on top-right of the application and select **Log out**.



File System Naming

This step only applies if your company has standardized computer and server naming conventions or adding multiple *AMS Express* Primary Chassis' and need a new database name to ensure no conflicts.

It is highly recommended to perform this step now. Renaming a file system after system configuration and attached clients is *significantly more complex*. If default values are fine, skip this step and proceed to the next one.

The default Grass Valley file system name is **gvfs_sysman1**. The default Grass Valley VM is **sysman1**.

The file system must start with **gvfs_** while the suffix-name and the VM names must match (i.e. **sysman1**).

For example, Big Data Television uses **bd** as a prefix so the file system name could be **gvfs_bdnew** and the VM name **bdnew**. If a naming convention is required, proceed replacing **gvfs_bdnew** and **bdnew** in the examples that follow with company specified names (use the chart below and keep it for reference).

Name	Default GV	Example	Company Specified
File System	gvfs_sysman1	gvfs_bdnew	
VM / Server	sysman1	bdnew	

Determine StorNext node

Important: Enter commands below exactly as shown including upper/lower case; example output shown below the steps.

1. Using the CLI, open a shell on **StorNext VM Controller A - Bottom**.

```
C:\> ssh root@10.16.232.173
        root@10.16.232.173's password: adminGV!
        Last login: Wed Nov  4 10:53:57 2020 from lanclient01.gvservice.com
```

2. Check the status of the StorNext node. You must ensure the status is **primary**.

```
[root@qnode1 ~]# snhamgr status
        LocalMode=default
        LocalStatus=primary
        RemoteMode=default
        RemoteStatus=running
```

3. If **LocalStatus=primary** then you are on the primary StorNext node. Proceed to the next topic: *Rename the file system* on page 46
4. If **LocalStatus=running** then you are not on the primary StorNext node. Perform the following and make necessary adjustments throughout remainder of documentation.

```
[root@qnode1 ~]# exit
        Logout
        Connection to 10.16.232.173 closed
C:\> ssh root@10.16.232.174
        root@10.16.232.174's password: password
        Last login: Wed Nov  4 10:53:57 2020 from lanclient01.gvservice.com
[root@qnode2 ~]# snhamgr status
        LocalMode=default
        LocalStatus=primary
        RemoteMode=default
        RemoteStatus=running
```

Rename the file system

1. Shutdown StorNext services on the non-primary node: (it could take several minutes to complete)

```
[root@qnode1 ~]# snhamgr config
        LocalMode=default
        LocalStatus=primary
        RemoteMode=locked
        RemoteStatus=stopped
```

2. Unmount the gvfs_sysman1 file system: (note the spelling is umount not unmount)

```
[root@qnode1 ~]# umount  gvfs_sysman1  -v
        umount: /Volumes/gvfs_sysman1 (gvfs_sysman1) unmounted
```

3. Stop the gvfs_sysman1 file system.

```
[root@qnode1 ~]# cvadmin  -e  "stop  gvfs_sysman1"
        Select FSM "none"
        Stop FSS "gvfs_sysman1"
        FSS 'gvfs_sysman1' on Qnode1-MDC-ClusterNetA stop initiated.
        FSS 'gvfs_sysman1' stopped.
```

4. Rename directory and file system on the secondary (non-primary) node from initial step.

```
[root@qnode1 ~]# ssh  10.16.232.174  "mv  /usr/cvfs/data/gvfs_sysman1   /usr/cvfs/data/gvfs_bdnew
```

5. If prompted to continue, enter **yes**.
6. Rename the file system to **bdnew**.

```
[root@qnode1 ~]# cvupdatefs  -R  gvfs_bdnew  gvfs_sysman1
        Checked Build disabled - default.
        Buf_init: L1 size 512 MB, L2 size 7680 MB
        Attempting to acquire arbitration block... successful.
        Updating ICB information...
        Updating SuperBlock information...
        Rename succeeded.
        Filesystem gvfs_sysman1 renamed to gvfs_bdnew.
        Writing Configuration Information Block of 65536 bytes.
        Config Info Block contains 2650 bytes (compressed) of 7326 bytes of config info
```

7. Delete the old mount point directory and create a new directory reflecting the new file system name:

```
[root@qnode1 ~]# rmdir  /Volumes/gvfs_sysman1
[root@qnode1 ~]# mkdir  -m  777  /Volumes/gvfs_bdnew
```

8. Using the nano editor, modify the fstab file to reflect the new file sytem name and new mount point as shown in bold below. Utilize arrow keys to move locations.

```
[root@qnode1 ~]# nano  /etc/fstab
```

```
  GNU nano 2.3.1                File: ./snfs_configure.conf
#
# /etc/fstab
# Created by anaconda on Sat Aug 22 04:25:23 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
UUID=a0cb0e38-2000-413c-97b8-d952bf311059 /           ext3    defaults,noatime,nodiratime        1 1
UUID=8e4e4044-1673-47d4-b296-3804b75e460f /boot       ext3    defaults,noatime,nodiratime        1 2
UUID=46c7aa03-6edb-4358-a493-e93a90eadf0c /scratch    ext3    defaults,noatime,nodiratime        1 2
UUID=efffd85c-fff4-4835-93b5-16186e4e839d /var        ext3    defaults,noatime,nodiratime        1 2
#UUID=f46e8f32-a647-459e-8a2d-43248983b4ca swap        swap    defaults,noatime,nodiratime        0 0
shared-QTM202000002 /usr/adic/HAM/shared cvfs defaults,rw 0 0
gvfs_bdnew /Volumes/gvfs_bdnew cvfs rw,diskproxy=server 0 0
```

9. To exit nano and save changes, type: **<CTRL-X> Y <Enter>**

10. Confirm the edited configuration is correct. If not, repeat previous step.

```
[root@qnode1 ~]# cat /etc/fstab
# /etc/fstab
# Created by anaconda on Sat Aug 22 04:25:23 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info

#
UUID=a0cb0e38-2000-413c-97b8-d952bf311059 /          ext3    defaults,noatime,nodiratime       1 1
UUID=8e4e4044-1673-47d4-b296-3804b75e460f /boot      ext3    defaults,noatime,nodiratime       1 2
UUID=46c7aa03-6edb-4358-a493-e93a90eadf0c /scratch   ext3    defaults,noatime,nodiratime       1 2
UUID=efffd85c-fff4-4835-93b5-16186e4e839d /var       ext3    defaults,noatime,nodiratime       1 2
#UUID=f46e8f32-a647-459e-8a2d-43248983b4ca swap       swap    defaults,noatime,nodiratime       0
shared-QTM202000002 /usr/adic/HAM/shared cvfs defaults,rw 0 0
gvfs_bdnew /Volumes/gvfs_bdnew cvfs rw,diskproxy=server 0 0
```

11. Next step could take several minutes. Start the new file system:

```
[root@qnode1 ~]# cvadmin -e "start gvfs_bdnew"
Select FSM "none"
Starting FSS locally.
Start FSS "gvfs_bdnew"
FSS 'gvfs_bdnew' start initiated.
FSS 'gvfs_bdnew' started.
Attempt start of FSS on HA peer 10.17.22.22.
Start FSS "gvfs_bdnew"
Could not start FSS on ha peer node.
```

12. Activate the new file system.

```
[root@qnode1 ~]# cvadmin -e "activate gvfs_bdnew"
Select FSM "none"
Activate FSM "gvfs_bdnew"
Created            :    Mon Nov 16 11:43:23 2020
 Active Connections:    1
 Fs Block Size     :    4K
 Msg Buffer Size   :    8K
 Disk Devices      :    4
 Stripe Groups     :    2
 Fs Blocks         :    14707186944 (54.79 TB)
 Fs Blocks Free    :    14706104064 (54.78 TB) (99%)
```

13. Ensure the file system is mounted.

```
[root@qnode1 ~]# mount gvfs_bdnew
mount.cvfs: according to mtab, gvfs_bdnew is already mounted on /Volumes/gvfs_bdne
```

Rejoin the cluster

The last step will restart the node to rejoin the cluster.

👉 **Note:** This command can take up to 10 minutes to finish and the shell may be disconnected.

When finished, the secondary node will be running StorNext services again. Its configuration files will automatically synchronize with the primary node and create the new mount point.

1. To start, enter as below in the shell.

   ```
   [root@qnode1 ~]# snhamgr start
   ```

   If shell remains connected, the following output indicates all services are running on both nodes.

2. If shell disconnects, press **<Enter>** then the following to indicate all services are running on both nodes:

   ```
   # snhamgr status
           LocalMode=default
           LocalStatus=primary
           RemoteMode=default
           RemoteStatus=running
   ```

3. Exit the Shell and the command line interface.

   ```
   # exit
   C:\> exit
   ```

Create NAS Share

This will allow *AMS Express* to appear as a NAS device as well as creating the Grass Valley file system name (default: gvfs_sysman1).

- *Add Entries to StorNext Hosts File* on page 49

The next steps must be performed from the Top Controller B / Secondary.

- *Access StorNext VM on Top Controller B / Secondary* on page 51
- *Edit NAS configuration file* on page 52
- *NAS configuration* on page 53
- *Map a network drive* on page 56

Add Entries to StorNext Hosts File

1. Log in as root on StorNext Node 1.

   ```
   [admin@dvt2-n1 ~]$ sudo -i
   ```

   ```
   [root@dvt2-n1 ~]# ssh 10.17.22.21
   ```

   ```
   [root@dvt2-snode1 ~]#
   ```

2. Use the nano editor to edit the `/etc/hosts` file by adding entries for the **StorNext Node 2** IP address and the NAS virtual IP address.

   ```
   [root@dvt2-snode1 ~]# nano /etc/hosts
   ```

```
# External static node IP
10.16.232.173   dvt2-snode1.gvservice.com dvt2-snode1
10.16.232.174   dvt2-snode2.gvservice.com dvt2-snode2
10.16.232.177   gvnas2.gvservice.com gvnas2
```

3. To exit the nano editor and save changes, type: **<CTRL-X> Y** and press **Enter**.
4. Confirm the edited file is correct.

```
[root@dvt2-snode1 ~]# cat /etc/hosts
#
# created by Base OS Installer
#


# External static node IP
10.16.232.173   dvt2-snode1.gvservice.com dvt2-snode1
10.16.232.174   dvt2-snode2.gvservice.com dvt2-snode2
10.16.232.177   gvnas2.gvservice.com gvnas2

# Internal IPs
10.17.21.21 Qnode1
# not physically present, but referenced by e.g. noded
10.17.21.22 Qnode2
10.17.21.254 Qgateway
10.17.21.1 node1-private
10.17.21.2 node2-private
10.17.22.1 node1-ClusterNetA
10.17.22.2 node2-ClusterNetA
10.17.22.11 Qnode1-ESOS-ClusterNetA
10.17.22.12 Qnode2-ESOS-ClusterNetA
10.17.22.21 Qnode1-MDC-ClusterNetA
10.17.22.22 Qnode2-MDC-ClusterNetA
10.17.30.11 Qnode1-ESOS-ISCSIA
10.17.31.11 Qnode1-ESOS-ISCSIB
10.17.30.12 Qnode2-ESOS-ISCSIA
10.17.31.12 Qnode2-ESOS-ISCSIB
10.17.30.21 Qnode1-MDC-ISCSIA
10.17.31.21 Qnode1-MDC-ISCSIB
10.17.30.22 Qnode2-MDC-ISCSIA
10.17.31.22 Qnode2-MDC-ISCSIB
# Local IP
127.0.0.1 localhost.localdomain localhost
[root@dvt2-snode1 ~]#
```

5. Log in as root on StorNext Node 2.

```
[admin@dvt2-n2 ~]$ sudo -i
```

```
[root@dvt2-n2 ~]# ssh 10.17.22.22
```

```
[root@dvt2-snode2 ~]#
```

6. Use the nano editor to edit the `/etc/hosts` file by adding entries for the **StorNext Node 1** IP address and the NAS virtual IP address.

```
[root@dvt2-snode2 ~]# nano /etc/hosts
```

```
# External static node IP
10.16.232.174   dvt2-snode2.gvservice.com dvt2-snode2
10.16.232.173   dvt2-snode1.gvservice.com dvt2-snode1
10.16.232.177   gvnas2.gvservice.com gvnas2
```

7. To exit the nano editor and save changes, type: **<CTRL-X> Y** and press **Enter**.
8. Confirm the edited file is correct.

```
[root@dvt2-snode2 ~]# cat /etc/hosts
#
# created by Base OS Installer
#


# External static node IP
10.16.232.174   dvt2-snode2.gvservice.com dvt2-snode2
10.16.232.173   dvt2-snode1.gvservice.com dvt2-snode1
10.16.232.177   gvnas2.gvservice.com gvnas2

# Internal IPs
10.17.21.21 Qnode1
# not physically present, but referenced by e.g. noded
10.17.21.22 Qnode2
10.17.21.254 Qgateway
10.17.21.1 node1-private
10.17.21.2 node2-private
10.17.22.1 node1-ClusterNetA
10.17.22.2 node2-ClusterNetA
10.17.22.11 Qnode1-ESOS-ClusterNetA
10.17.22.12 Qnode2-ESOS-ClusterNetA
10.17.22.21 Qnode1-MDC-ClusterNetA
10.17.22.22 Qnode2-MDC-ClusterNetA
10.17.30.11 Qnode1-ESOS-ISCSIA
10.17.31.11 Qnode1-ESOS-ISCSIB
10.17.30.12 Qnode2-ESOS-ISCSIA
10.17.31.12 Qnode2-ESOS-ISCSIB
10.17.30.21 Qnode1-MDC-ISCSIA
10.17.31.21 Qnode1-MDC-ISCSIB
10.17.30.22 Qnode2-MDC-ISCSIA
10.17.31.22 Qnode2-MDC-ISCSIB
# Local IP
127.0.0.1 localhost.localdomain localhost
[root@dvt2-snode2 ~]#
```

Access StorNext VM on Top Controller B / Secondary

- Access the command line interface.
- Ensure the StorNext Top Controller B/Secondary controller is accessible by entering the following:

```
C:\>ping 10.16.232.174
    Pinging 10.16.232.174 with 32 bytes of data:
    Reply from 10.16.232.174: bytes=32 time=1ms TTL=64
    Reply from 10.16.232.174: bytes=32 time=2ms TTL=64
    Reply from 10.16.232.174: bytes=32 time=1ms TTL=64
    Reply from 10.16.232.174: bytes=32 time=4ms TTL=64
    Ping statistics for 10.16.232.174:
        Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 4ms, Average = 2ms
```

- Open an SSH Session.

```
C:\>ssh root@10.16.232.174
    root@10.16.232.174's password: adminGV!
    Last login: Wed Nov  4 10:53:57 2020 from lanclient01.gvservice.com
```

- Change Directories.

```
[root@qnode2 ~]# cd /opt/quantum/ovfconfig
```

Edit NAS configuration file

Before editing, take note of the following:

- Ensure no spaces between any characters entered
- Pay attention to upper & lower case
- MGMT-NODE1=IP address of StorNext Bottom A / Primary
- MGMT-NODE2=IP address of StorNext Top B / Secondary
- MGMT_NAS_VIP=virtual IP address for the NAS
- If renamed file system in previous step, use **gvfs_bdnew** instead

1. Use nano editor to modify configuration file by adding the IP addresses and to change each instance of “sysman1” to the desired file system name if the file system has been renamed in the previous step.

```
[root@qnode2 ovfconfig]# nano  ./snfs_configure.conf

GNU nano 2.3.1                    File: ./snfs_configure.conf
NODENUM=2
MGMT_NODE1=10.65.167.96
MGMT_NODE2=10.65.168.235
MGMT_NAS_VIP=10.65.167.197
MGMT_PORT=em2
HA_PEER=10.17.22.21
RESERVED_SPACE=true
SOFTWARE_CONFIG=GrassValley
PLATFORM_ID=H4012
ESOS_ID="18edfc"
GVFS_FSNAME=gvfs_sysman1
GVFS_NASSHARENAME=gvfs_sysman1
GVFS_MNTPNT=/Volumes/gvfs_sysman1
```

2. To exit the nano editor and save changes, type: **<CTRL-X> Y <Enter>**
3. Confirm the edited configuration file is correct. If not, repeat step 1.

```
[root@xwd-gv1b ovfconfig]# cat snfs_configure.conf
NODENUM=2
MGMT_NODE1=10.65.167.96
MGMT_NODE2=10.65.168.235
MGMT_NAS_VIP=10.65.167.197
MGMT_PORT=em2
HA_PEER=10.17.22.21
RESERVED_SPACE=true
SOFTWARE_CONFIG=GrassValley
PLATFORM_ID=H4012
ESOS_ID="18edfc"
GVFS_FSNAME=gvfs_sysman1
GVFS_NASSHARENAME=gvfs_sysman1
GVFS_MNTPNT=/Volumes/gvfs_sysman1
[root@xwd-gv1b ovfconfig]#
```

NAS configuration

Note: This step will take up to 10 minutes to complete. Be patient as it will appear as nothing is happening or 'UNHEALTHY' text will show. This is normal.

1. Run the NAS configuration script which utilizes the information from the configuration file.

```
[root@xwd-gv1b ovfconfig]# ./nas_configure.sh
Logging to /var/log/DXi/nas_configure.log
Wed Dec  1 15:46:52 CST 2021 [28315]: Running ./nas_configure.sh
```

```
Wed Dec  1 15:46:52 CST 2021 [28315]: Running ./nas_configure.sh
NAS cluster not configured for this node
Wed Dec  1 15:46:53 CST 2021 [28315]: Enabling NAS
/usr/lib64/python2.7/getpass.py:83: GetPassWarning: Can not control echo on
the terminal.
  passwd = fallback_getpass(prompt, stream)
Warning: Password input may be echoed.
Password:
Warning: Password input may be echoed.
Enter password again:
NAS services will take over the following config
files. Custom modification will be lost:
/etc/exports
/etc/samba/smb.conf
/etc/nsswitch.conf
/etc/sssd/sssd.conf
/etc/ldap/ldap.conf
Set password for 'sysadmin' user
Enabling NAS services
Nas enable registry set
Waiting for NAS to be runnable
NAS services are now enabled and running.
Wed Dec  1 15:47:26 CST 2021 [28315]: Configuring NAS
Wed Dec  1 15:47:26 CST 2021 [28315]: Setting master to 10.65.168.235
Updating NAS cluster configuration ...
Verifying NAS cluster configuration for 10.65.168.235 ...
NAS cluster enable node 10.65.168.235 starting...
Updating system NAS cluster configuration ...
NFS: services (v4=no, v3=yes, HA=no)
Setting master local auth config ...
Applying local configuration settings ...
Master node successfully enabled for NAS cluster using 10.65.168.235
Wed Dec  1 15:47:39 CST 2021 [28315]: Enabling node 10.65.167.96
Updating NAS cluster configuration ...
Verifying NAS cluster configuration for 10.65.167.96 ...
Node 10.65.167.96 successfully enabled for NAS cluster
Wed Dec  1 15:47:40 CST 2021 [28315]: Setting VIP to 10.65.167.197
NAS Cluster preparing to set virtual IPs: 10.65.167.197 ...
Verifying virtual IPs: 10.65.167.197 ...
NAS Cluster setting paused state ...
NAS Cluster updating virtual IP addr list to: ['10.65.167.197'] ...
NAS Cluster applying virtual ipaddr settings ...
Updating system NAS cluster configuration ...
NFS: services (v4=no, v3=yes, HA=no)
NAS Cluster clearing paused state ...
Virtual IP addresses ['10.65.167.197'] successfully stored
Wed Dec  1 15:47:56 CST 2021 [28315]: Doing cluster join on
/Volumes/gvfs_sysman1
NAS Cluster join starting ...
NAS Cluster ID 46e71f7c-52f0-11ec-96f4-00308c7b610f found ...
Preparing for NAS cluster join as ID 10.65.168.235
Applying NAS cluster join settings ...
Updating system NAS cluster configuration ...
NFS: services (v4=no, v3=yes, HA=no)
Check for master takeover ...
Publish master configuration ...
Cluster verification for 10.65.168.235 in-progress ...
Node state: pnn:0 10.65.168.235    UNHEALTHY (THIS NODE), waiting ...
Node state: pnn:0 10.65.168.235    OK (THIS NODE)
Cluster verification of 10.65.168.235 successful ...
```

```
Waiting for NAS Master VIP 10.65.167.197 to be reachable ...
Successfully joined NAS cluster
```

```
Wed Dec  1 15:48:39 CST 2021 [28315]: Doing cluster join on
/Volumes/gvfs_sysman1 for node 10.65.167.96
Waiting for config already in-progress ...
wait complete
NAS Cluster join starting ...
NAS Cluster ID 46e71f7c-52f0-11ec-96f4-00308c7b610f found ...
Proxy join to 10.65.167.96 ...
[10.65.167.96]: NAS Cluster join to cluster ID
46e71f7c-52f0-11ec-96f4-00308c7b610f starting ...
[10.65.167.96]: NAS enabling ...
[10.65.167.96]: Preparing for NAS cluster join as ID 10.65.167.96
[10.65.167.96]: Verifying local configuration with master 10.65.168.235 ...
[10.65.167.96]: Synchronization of local configuration with master
10.65.168.235 starting...
[10.65.167.96]: Applying local auth config sync settings ...
[10.65.167.96]: Applying local configuration settings ...
[10.65.167.96]: Applying NAS cluster join settings ...
[10.65.167.96]: Updating system NAS cluster configuration ...
[10.65.167.96]: NFS: services (v4=no, v3=yes, HA=no)
[10.65.167.96]: Verifying local configuration with master 10.65.168.235 ...
[10.65.167.96]: Cluster verification for 10.65.167.96 in-progress ...
[10.65.167.96]: Node state: pnn:1 10.65.167.96     UNHEALTHY (THIS NODE),
waiting ...
[10.65.167.96]: Node state: pnn:1 10.65.167.96     OK (THIS NODE)
[10.65.167.96]: Cluster verification of 10.65.167.96 successful ...
Successfully joined NAS cluster
```

```
Wed Dec  1 15:49:46 CST 2021 [28315]: Doing share change smb global named
streams
Broadcasting share config-sync to NAS cluster ...
Waiting for nascluster_share_config_sync to complete on node 10.65.167.96
Share global successfully changed
Wed Dec  1 15:49:48 CST 2021 [28315]: Checking if share gvfs_sysman1 exists
Wed Dec  1 15:49:48 CST 2021 [28315]: Share gvfs_sysman1 not found, creating..
Adding share to existing directory
Broadcasting share config-sync to NAS cluster ...
Waiting for nascluster_share_config_sync to complete on node 10.65.167.96
Share gvfs_sysman1 successfully added
Wed Dec  1 15:49:50 CST 2021 [28315]: Setting cifs.allow_trusted_domains in
the registry
Registry key 'cifs.allow_trusted_domains' set to '1'.
Wed Dec  1 15:49:57 CST 2021 [28315]: Adding local user gvadmin
NAS Cluster IP: 10.65.168.235/em2, Master: Yes, SNFS Root:
/Volumes/gvfs_sysman1, Joined: Yes
ID: 46e71f7c-52f0-11ec-96f4-00308c7b610f
Cluster Hostname:
DNS Enabled: No
Load balancing: Proxy-Disabled
NFS-HA: Disabled
Cluster VIP: 10.65.167.197 (active) nas-test-gv1b.mdh.quantum.com
Nodes: 2
  *1: 10.65.168.235 (Joined, MDC) xwd-gv1b
   2: 10.65.167.96 (Joined, MDC) xwd-gv1a
Wed Dec  1 15:49:59 CST 2021 [28315]:  complete, RC=0
[root@xwd-gv1b ovfconfig]#
```

2. Exit the shell.

```
[root@qnode2 ovfconfig]# exit
    logout
    Connection to 10.16.232.174 closed.
```

3. Ping the NAS VIP to ensure it is accessible.

```
C:\>ping 10.16.232.177
    Pinging 10.16.232.177 with 32 bytes of data:
    Reply from 10.16.232.177: bytes=32 time=7ms TTL=64
    Reply from 10.16.232.177: bytes=32 time=1ms TTL=64
    Reply from 10.16.232.177: bytes=32 time=19ms TTL=64
    Reply from 10.16.232.177: bytes=32 time=2ms TTL=64
    Ping statistics for 10.16.232.177:
        Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 19ms, Average = 7ms
```

4. Exit the CLI.

```
C:\> exit
```

Map a network drive

To verify the NAS share created successfully, utilize Windows File Explorer and do the following:

1. Enter the NAS Mount VIP UNC: **10.16.232.177** in the address bar.
2. Right click on the file system that you just created: **gvfs_sysman1**
3. Choose **Map network drive…**
4. Map to an unused drive (typically V: for Grass Valley).

> **Note:** If you have issues or need to sign in with WORKGROUP/gvadmin, use additional step below and see the NAS section in troubleshooting or SFDC Knowledge Base articles.

Additional NAS Step

The following step <u>might</u> be needed depending on customer workflow and complexity. Please read through the items and make the applicable choices. These steps use the CLI StorNext Appliance Controller Shell.

1. Login as root on StorNext Node1.

```
> ssh root@10.16.232.173
[stornext@qnode1 ~]$ sudo rootsh
```

2. Run following to see if Node1 is the master node.

```
[root@qnode1 ~]# su sysadmin -c "nascluster show"
        NAS Cluster IP: 10.16.232.173/em2, Master: No, SNFS Root: /Volumes/gvfs_sysman2, Joined:
        Yes
        ID: e1d5e3a2-9daf-11eb-9a16-00308c0374d5
        Cluster Hostname:
        DNS Enabled: No
        Load balancing: Proxy-Disabled
        NFS-HA: Disabled
        Master IP: 10.16.232.174
        VIP: 10.16.232.177 (active, node:master) nas2.gvservice.com
        Nodes: 2
        1: 10.16.232.174 (Joined, MDC)
        2: 10.16.232.173 (Joined, MDC) qnode1.gvservice.com
```

The above output shows Master: No and the Master IP: 10.16.232.174. If that is the case, ssh to .174 to be on the master node.

Workgroup / gvadmin

The SAMBA NAS system may not enable the GVADMIN user, so to login would require using WORKGROUP/gvadmin.

To avoid that situation, do as follows:

1. From the Master Node, perform the following:

```
[root@qnode1 ~]# pdbedit -L
        sysadmin:993:SN-NAS Sysadmin Account

[root@qnode1 ~]# su sysadmin
        Last login: Fri Apr 16 06:09:56 PDT 2021 on pts/0
        Welcome to Quantum BHM Appliance Controller Console
        ---------------------------------------------------
        *** Type 'help' for a list of commands.


BHM:qnode1> auth show local users
        2 local users:
        1: uid=993(sysadmin) gid=0(root)
        2: uid=1001(gvadmin) gid=1000(aiware)
```

If output following the command is missing **gvadmin**, then you have an issue.

Note: If gvadmin: appears in the output, then the SAMBA database is correct and you can skip this section.

2. If you received this error message *"This operation can only be run when local authentication is enabled. (E-5035)"*, then run the following and wait up to 10 minutes for NAS cluster to reconfigure.

```
BHM:qnode1> auth config local
```

3. After configuration completes, continue with following:

```
BHM:qnode1> auth show local users
BHM:qnode1> auth change local password gvadmin
        gvadmin adminGV!
        Enter password again: adminGV!
        Modified password for user gvadmin
BHM:qnode1> exit
[root@qnode1 ~]# pdbedit -L
gvadmin:1001:gvadmin
sysadmin:993:SN-NAS Sysadmin Account
[root@qnode1 ~]# exit
```

If you are still having NAS issues, see the NAS section in Troubleshooting or SFDC Knowledge Base articles.

GV VM IP Addressing

Starting with the AMS Express 1.5.2 release, each AMS Express controller has one Grass Valley VM instance. This means that there are two Grass Valley VM instances per AMS Express unit. Only one Grass Valley VM at a time is running on each AMS Express unit. Each of these Grass Valley VMs must be configured one at a time with identical configuration details.

This section provides guidance starting with the configuration of the Grass Valley VM on Controller A. After completing the configuration of the Grass Valley VM on Controller A, the process will provide instructions for repeating a portion of the process with the Grass Valley VM on Controller B.

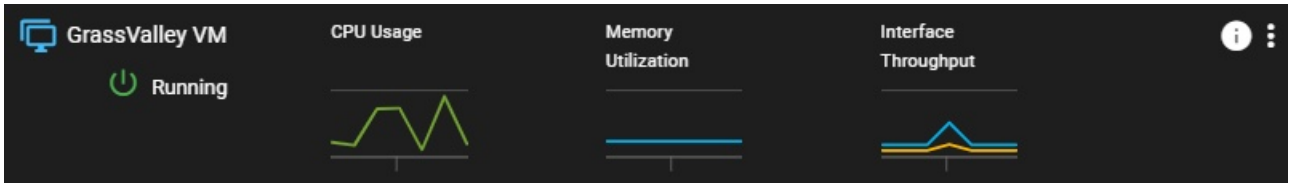
Note: Adding the Grass Valley VMs to an Active Directory (AD) domain is not recommended. In general, it is sufficient to add just the NAS share to the AD domain. If the AMS Express unit is being deployed to a network environment where there is a desire to add the Grass Valley VM to an AD domain, please escalate the details with the Grass Valley support organization.

Configure IP address settings for the Grass Valley VM on Controller A using Remote Desktop Connection (RDP).

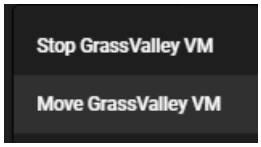
- *Start Remote Desktop* on page 59
- *Provide IP Address for the VM* on page 60
- *Verify IP is Operational* on page 61

After the Grass Valley VM on Controller A has been configured, shut down the Grass Valley VM on Controller A and start the Grass Valley VM on Controller B using the AMS-GUI as described below.

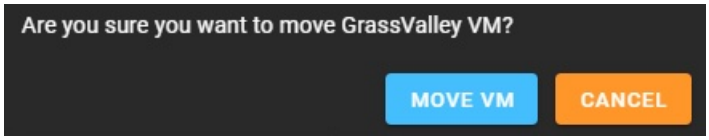
1. Log in to the AMS-GUI and access the Cluster tab.
2. Click on the three vertical dots on the right side of the Grass Valley VM entry.



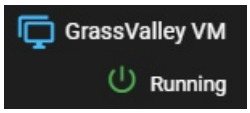
3. Select **Move Grass Valley VM** from the pop-up menu.



4. Click the **Move VM** button on the confirmation pop-up message.



5. Then, the AMS-GUI shows a status of Grass Valley VM on Controller B as "running".



6. Repeat these steps below using exactly the same IP addresses as for the Grass Valley VM on Controller A.

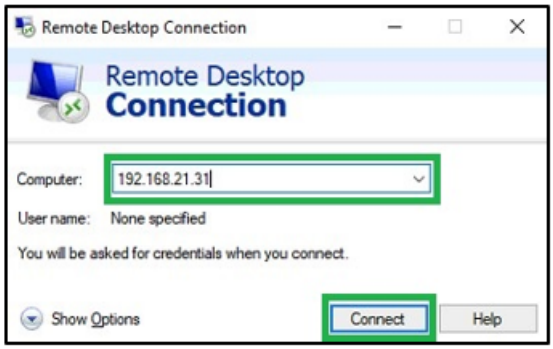
- *Start Remote Desktop* on page 59
- *Provide IP Address for the VM* on page 60
- *Verify IP is Operational* on page 61

7. After the Grass Valley VM on Controller B has been configured, use the Cluster tab in the AMS-GUI as documented above to execute another "Move Grass Valley VM" process to make it so that the Grass Valley VM is running on Controller A.

Start Remote Desktop

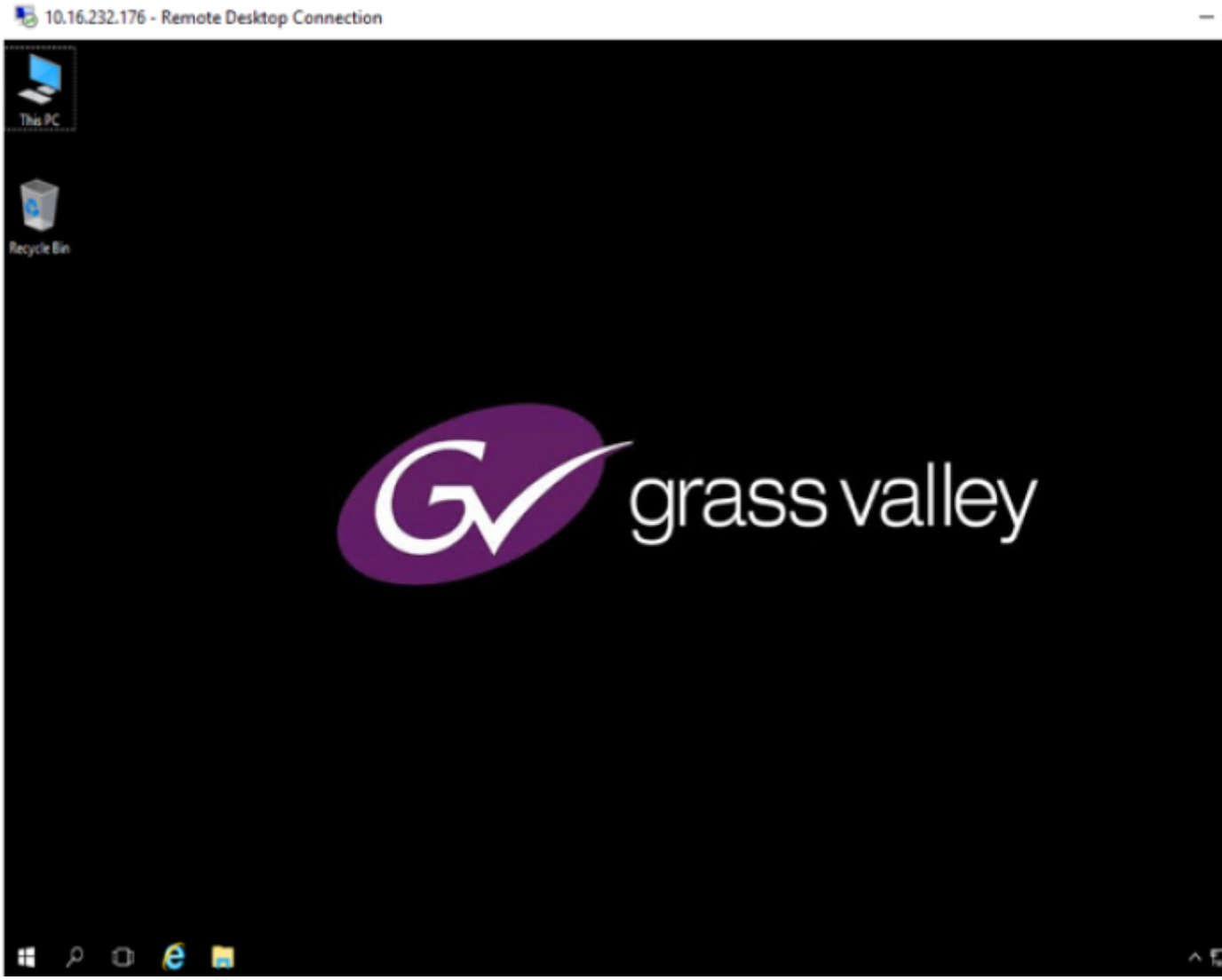
1. Open Remote Desktop app by clicking Start and entering **RDP**.

   The following dialog appears.



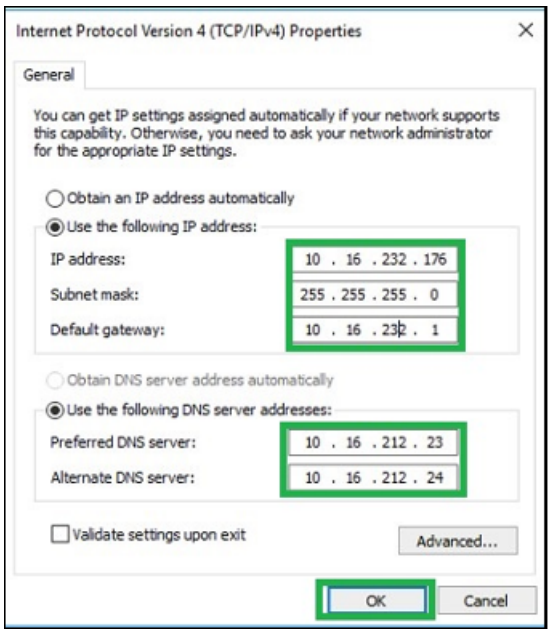
2. Enter **192.168.21.31** and click **Connect**.
3. If it doesn't connect first time, try again. If prompted, answer **Yes** to the security question.
4. When prompted, login as **adminstrator** using **adminGV!** as password.

   A Grass Valley log screen appears.



Provide IP Address for the VM

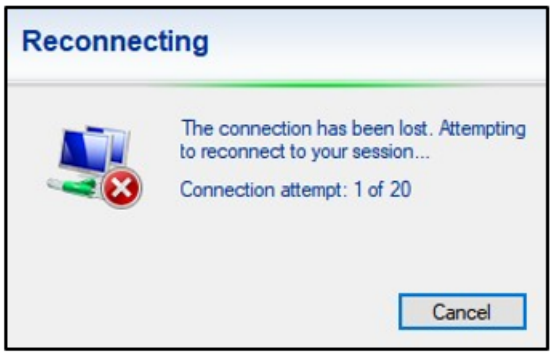
1. As shown previously, access the TCP/IPv4 network setting properties.
2. Assign the VM an IP address (utilize the same Default Gateway and DNS server IP for the Bottom-Primary controller).



3. Click **OK**, then **Close**.

   The RDP connection will be lost since the IP address was changed.

   Then the following error message appears.

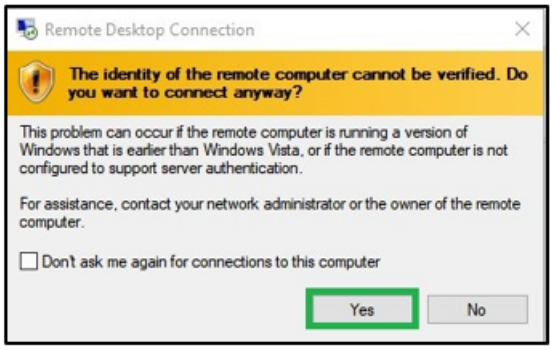


4. Click **Cancel**.

Verify IP is Operational

1. Restart an RDP connection with the newly supplied VM IP address.

2. When prompted, answer **Yes** to the security question.



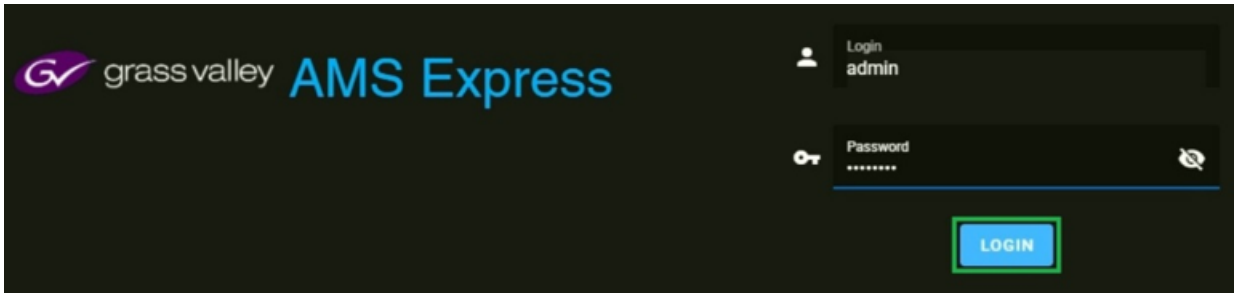
3. Finish login process to ensure IP addressing was completed.
4. Exit the VM.
5. Exit RDP.

Optional Settings

The following optional steps are not required for the system to function but may simplify system management.

To begin, do the following:

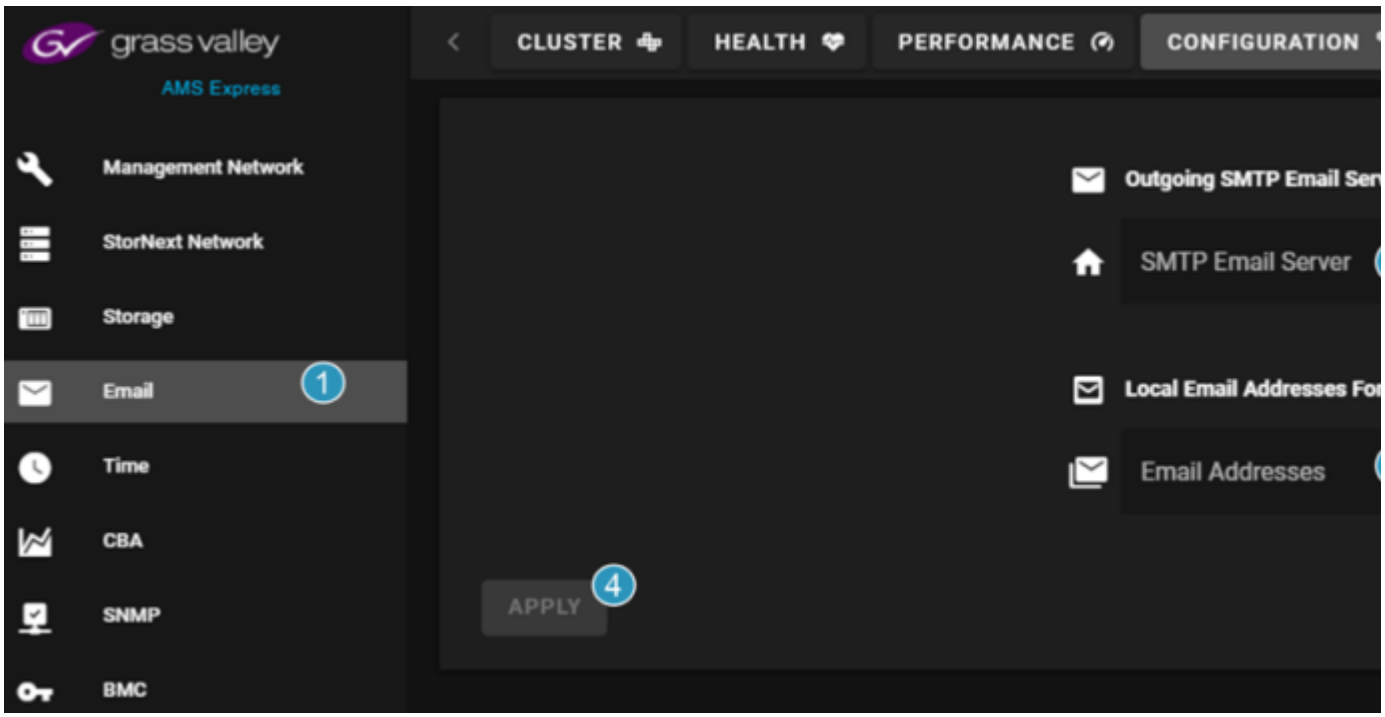
- Open a browser and log into the AMS-GUI.



- Select **Configuration** tab in the top navigation menu then use the left-panel navigation to make changes.

Enable email health alerts

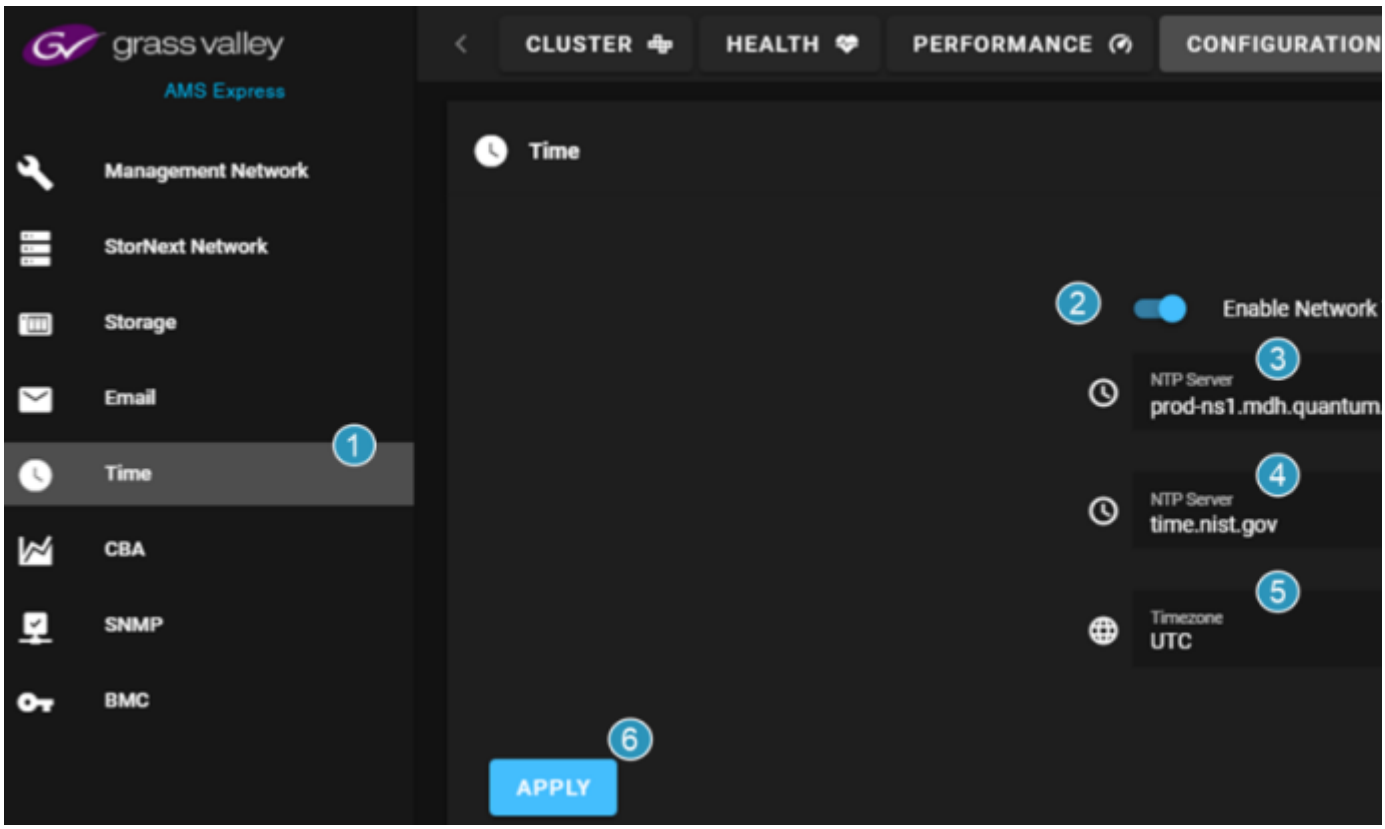
1. Select **Email** in the left navigation menu.



2. Enter the **Outgoing SMTP Email Server** name for the server to use for outgoing email.
3. Enter one or more email addresses in the **Local Email Addresses for Alerts (RAS Tickets)** field. Separate multiple email addresses with a comma **“,”**.
4. Click **Apply** to confirm the changes.

Enable Network Time Protocol

1. Select **Time** in the left navigation menu.



2. Click the gray (disabled) **Enable Network Time Protocol (NTP)** toggle. It will turn blue (enabled).
3. Enter the NTP server to use in the **NTP Server** field.

   Note: Grass Valley strongly encourage using a NTP time server that is on the same local network as the AMS Express unit.

4. Enter an additional **NTP server** such as: **time.nist.gov**
5. Enter your local **Timezone**.
6. Click **APPLY** to confirm the changes.

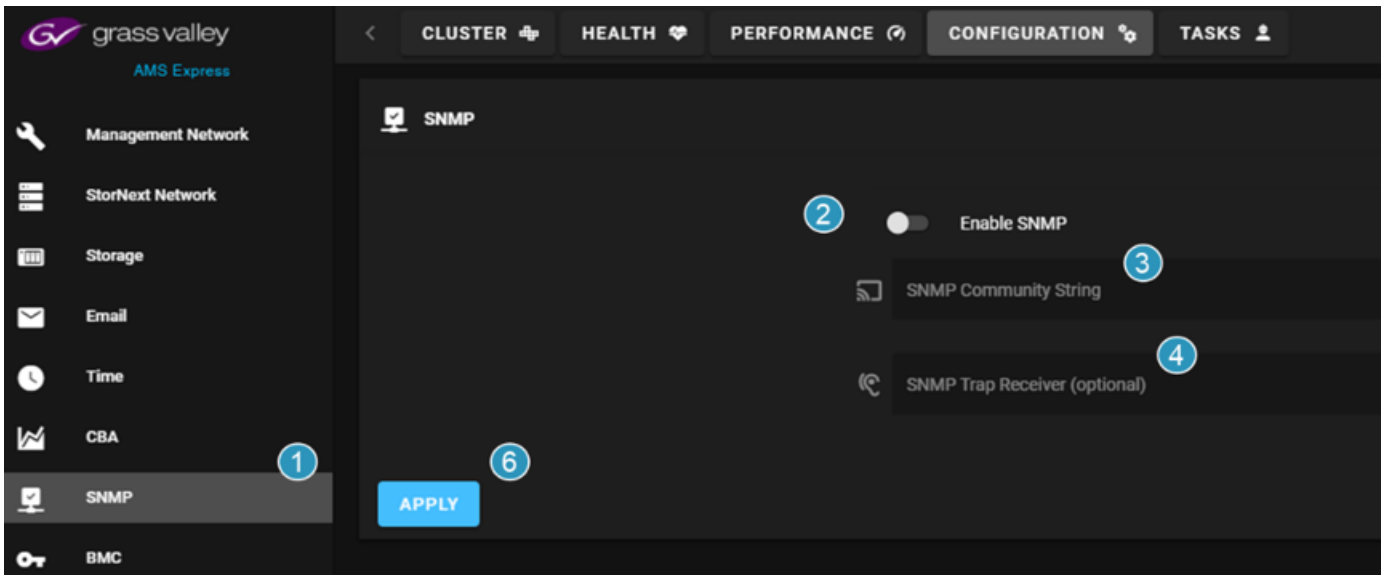
Enable Cloud-Based Analytics

At this time, cloud-based analytics is a simple tool that partially replicates what can be seen via the AMS-GUI. Grass Valley recommends not using this feature at this time.

Enable the Simple Network Management Protocol (SNMP)

SNMP MIBs for an AMS Express unit are available via the **/usr/share/snmp** path that can be accessed via the command line for either hypervisor. Use WinSCP or a similar tool to copy the files from the AMS Express unit to another location if needed.

1. In the left navigation menu, select **SNMP**.



2. Click the gray (disabled) **Enable SNMP** toggle. It will turn blue (enabled).
3. Enter the **SNMP Community String**.
4. Enter the **SNMP Trap Receiver (optional)** if needed.
5. Enter the **Port** for the SNMP Trap Receiver.
6. Click **Apply** to confirm the changes.

Expansion Chassis Setup

Expansion Chassis Overview

The following steps provide for a typical installation where the AMS Express Primary Chassis is operational and the user is increasing capacity and/or performance with additional Expansion Chassis(s).

Before starting users should be familiar with and/or document the following:

- Read and understood the *Software Overview* on page 29 section.
- The system is in a 'quiet' state meaning no ingest or playout or use of the system is happening besides adding the expansion chassis. No performance testing or system loading should take place until 24 hours after successfully adding the Expansion Chassis.
- Ensure the Expansion Chassis is correctly connected and cabled as shown in the *Cabling: Expansion Chassis* on page 24 section.
- Ensure Expansion Chassis power cord(s) are plugged in and power is turned on.
- Example IP addresses used in this setup are shown in `grey`. Customers should replace these IP addresses with the ones used during configuration.

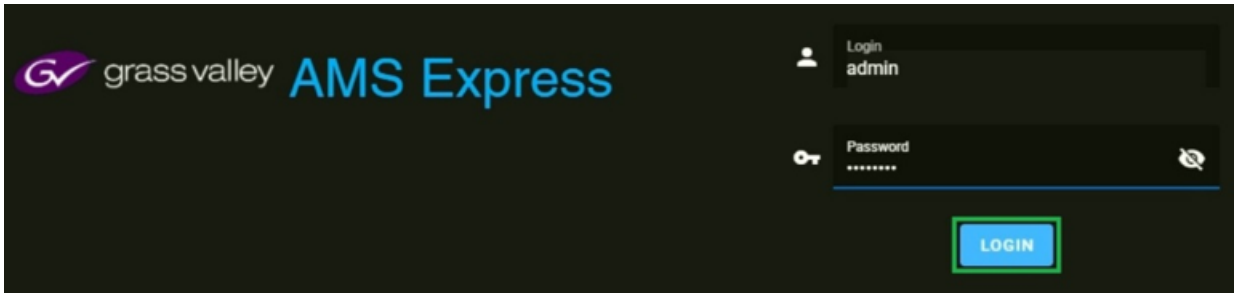
Expansion Chassis Setup

The following steps utilize the AMS –GUI for setup. Carefully enter the information exactly as shown.

Open a browser and navigate to the AMS-GUI.

Log in

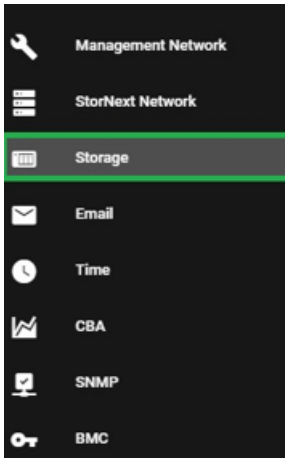
1. Log in to the AMS-GUI with these credentials: **admin \ adminGV!**



2. Click the **LOGIN** button.

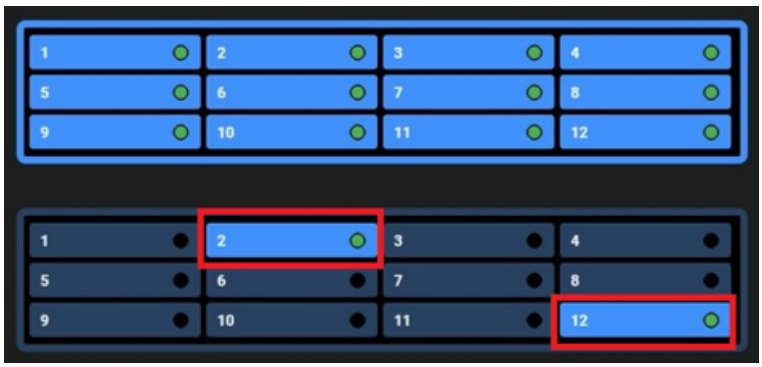
Add RAID Sets

1. Click **CONFIGURATION** on the top bar, then select **Storage** on the left-side bar.



The graphic will show the Primary Chassis and any attached Expansion Chassis.

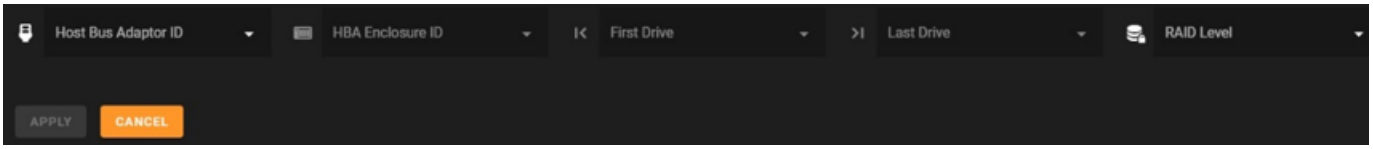
Note: If Expansion Chassis has drives that look configured already (shaded same blue as Primary Chassis shown in red below), the expansion will not work. See the Troubleshooting section or SFDC knowledge base articles for potential fix.



Under Expansion Chassis, the status should be '**Unconfigured**' as shown in the yellow box below.

2. Click the **ADD RAID SET** button.

   A series of dropdowns appears.

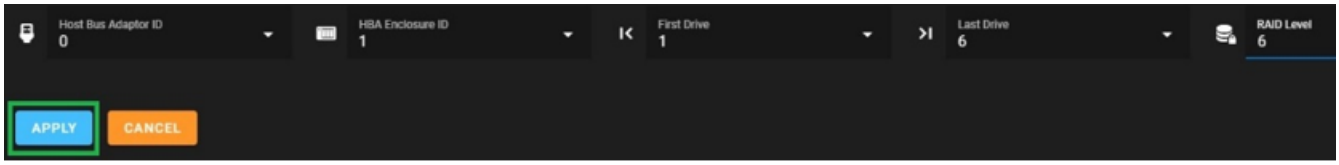


3. Enter the following values to add the first six drives (#1-6) to the LUN:

   - Host Bus Adaptor ID: 0
   - HBA Enclosure ID: 1

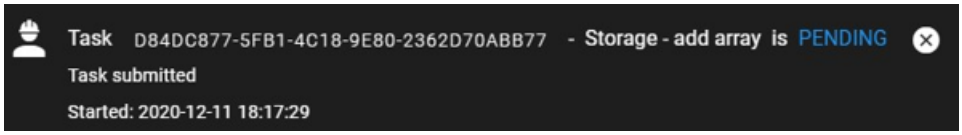
     Note: This is the first Expansion Chassis attached, not the same as Enclosure Number.

   - First Drive: 1
   - Last Drive: 6
   - RAID Level: 6



4. Click **APPLY**.

   A provisioning task will be generated and shown with a **PENDING** status. (it could take up to 5 minutes)



   Once executed successfully, the status will change to **SUCCESS** and the graphic will show the added drives.

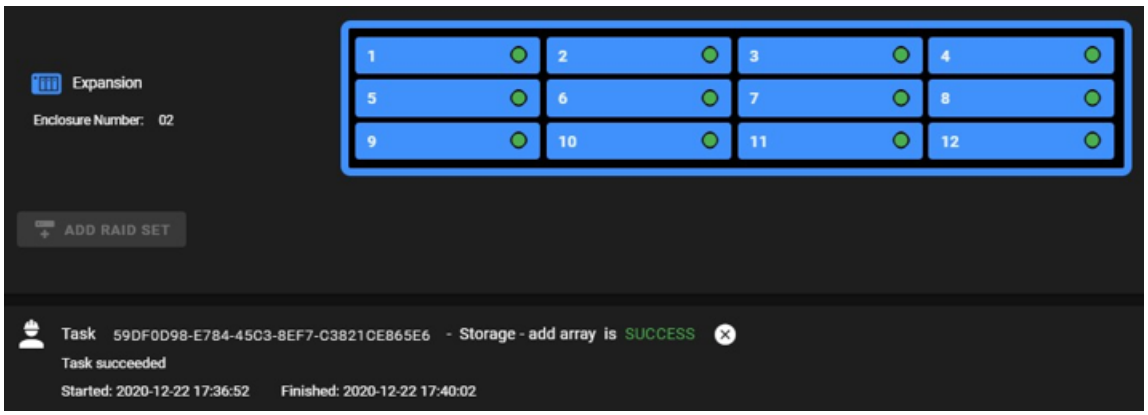
5. Next, add the second six drives (#7-12) to the same array by clicking the **ADD RAID SET** button again.
6. Enter the following values to add the second six drives (#7-12) to the LUN:
   - Host Bus Adaptor ID: 0
   - HBA Enclosure ID: 1

     Note: This is the first Expansion Chassis attached, not the same as Enclosure Number.

   - First Drive: 7
   - Last Drive: 12
   - RAID Level: 6
7. Click **APPLY**.

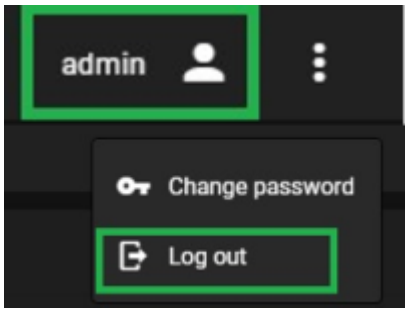
   A provisioning task will be generated and shown with a **PENDING** status.

   Once executed successfully, the status will change to **SUCCESS** and the graphic will show all drives added.



This concludes the provisioning of the first Expansion Chassis. If more than one Expansion Chassis is attached to the Primary Chassis, repeat the steps above to add additional RAID sets, being careful to change the HBA Enclosure ID each time to be in the order attached to the Primary Chassis.

When finished adding Expansion Chassis, log out of the AMS-GUI from the upper right-hand corner (click the user profile icon).



Label LUNs

Using the Command Line interface, perform the following steps:

1. Open a shell as root, using the primary StorNext Node1 on **Controller A – Bottom**.

```
> ssh root@10.16.232.173
    root@10.16.232.173's password: adminGV!
    Last login: Tue Nov  3 21:50:50 2020 from 192.168.21.100
```

2. Run the following command to label the LUNs.

   When prompted to continue labeling, press **Y <Enter>**.

   Note: Depending on the # of LUNs created in the previous steps, more or less LUNs will appear than what the example output is showing below which is adding a single Expansion Chassis. If adding three Expansion Chassis, then we will have 18 source lines & labels.

```
[root@qnode1 ~]# cd /opt/quantum/ovfconfig
[root@qnode1 ~]# ./label_H4012.sh
    The following labels will be created:
    snfs_meta_H4012_10cccd_LM03210 /dev/mapper/mpathg
    snfs_combo_H4012_10cccd_LH03210 /dev/mapper/mpathh
    snfs_data_H4012_10cccd_LD03210 /dev/mapper/mpathi
    snfs_meta_H4012_10cccd_LM04210 /dev/mapper/mpathj
    snfs_combo_H4012_10cccd_LH04210 /dev/mapper/mpathk
    snfs_data_H4012_10cccd_LD04210 /dev/mapper/mpathl

    Continue with labeling the LUNs? <N/y> y

    Done.  6 source lines.  6 labels.
    Requesting disk rescan .
```

Labeling of the new LUNs is now complete.

Stop File Systems

To ensure the expansion happens correctly, you need to stop the file systems. The following directions assume Node1 is primary and Node2 is secondary.

This can be verified by the following:

```
[root@qnode1 ~]# snhamgr status
      LocalMode=default
      LocalStatus=primary     ← qnode1 is primary
      RemoteMode=default
      RemoteStatus=running    ← qnode2 is secondary
```

1. Run the following commands on Node2 to stop StorNext & NAS services (assuming still logged in as root on StorNext Node1).

   Use appropriate IP address if Node2 is not the secondary node.

```
[root@qnode1 ~]# ssh 10.16.232.174
[root@qnode2 ~]# /usr/cvfs/lib/snnas_control  stop
      Shutting down NAS services
[root@qnode2 ~]# service  cvfs  stop
      Stopping cvfs (via systemctl):   [  OK  ]
[root@qnode2 ~]# exit
```

2. Run following commands on Node1 to stop NAS Services.

```
[root@qnode1 ~]# /usr/cvfs/lib/snnas_control  stop
      Shutting down NAS services
```

3. Exit the Shell and the command line interface.

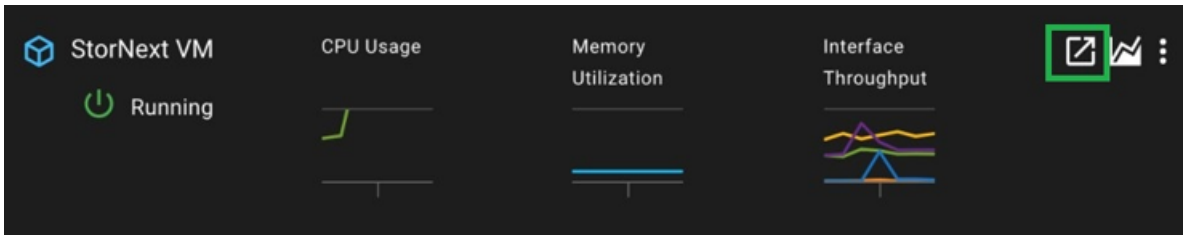
```
[root@qnode1 ~]# exit
```

Configure StorNext File System

The following steps will create the file system and add it to the existing stripe group.

Open & Login to StorNext GUI (SN-GUI)

1. Launch the SN-GUI by doing one of the following:
   - Option 1: Via **AMS-GUI**. Click on the external link icon on **Controller A – Bottom**



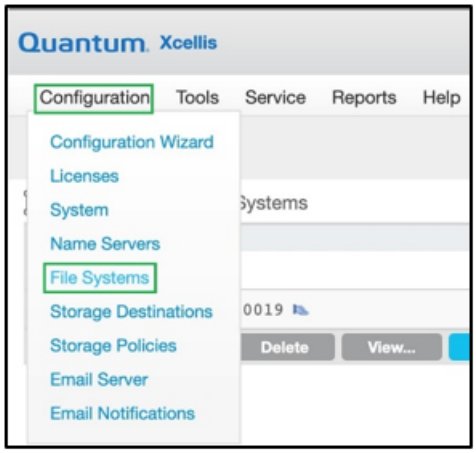
   - Option 2: Open a web browser and type **https://10.16.232.173**

   The Quantum login dialog appears.

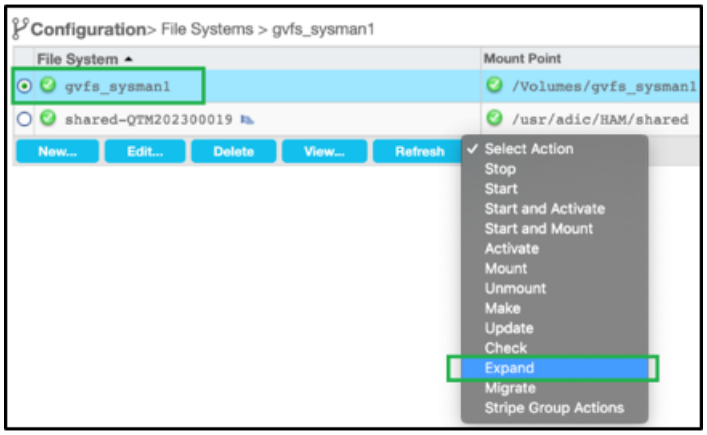
2. Login to the SN-GUI. (Accept the license agreement if prompted)

Configure the File System(s)

1. Click **Configuration**, then **File Systems**.

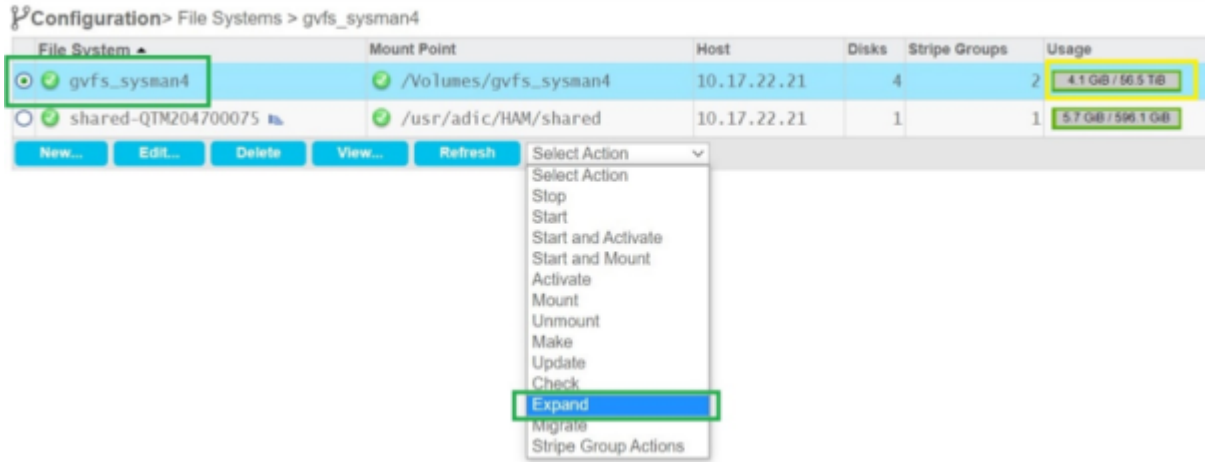


2. Select the **gvfs_sysman1** file system radio button.

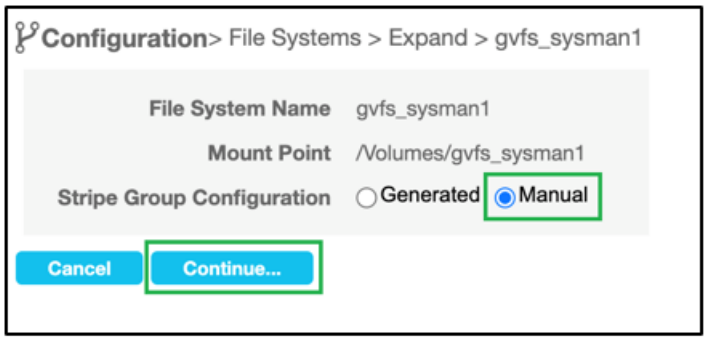


3. Then in **Select Action** drop-down menu, choose **Expand**.

> **Note:** The Usage at this point should show the Primary Chassis of approximately 56.5 TiB since you have not added the Expansion Chassis. After adding, the amount will increase based on number of expansions.



4. At the window below, select the **Manual** radio button and click **Continue**.



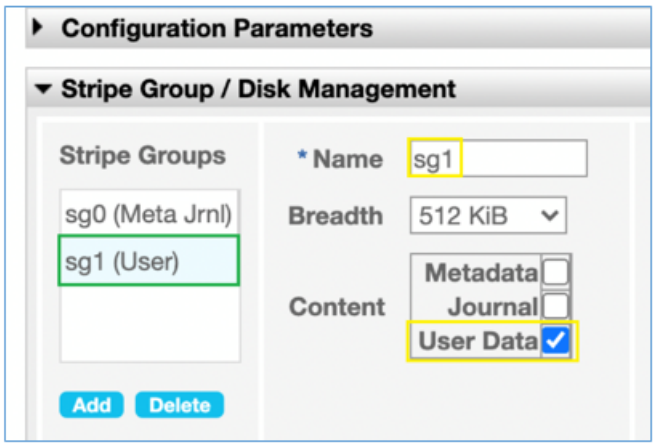
Add Drives to Stripe Group

The next step adds the Expansion Chassis drives to the stripe group. Grass Valley has chosen to simplify this process by enabling a single stripe group to spread across all chassis.

sg1 = stripe group 1

1. Under **Stripe Group / Disk Management** section, highlight by clicking **sg1 (User)**.

The remainder of the columns will appear.



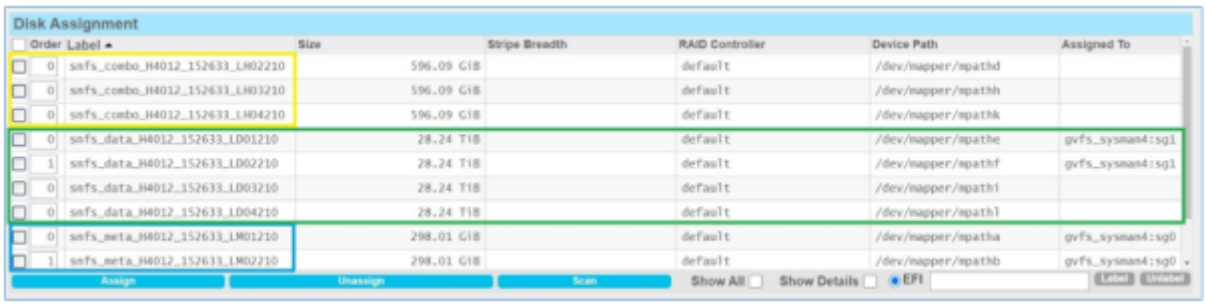
2. Ensure the *Name is set to **sg1** and Content = **User Data** is checked.

Important: Do not click the **Add** button as that will create an additional stripe group.

Disk Assignment

This part is potentially confusing so read the process first before continuing. The examples show adding a single expansion chassis. If adding multiple then more rows will appear.

The disk assignment section will look similar to the following. Use scroll bar on the right to see all information.



There are three types of labels:

- **snfs_combo_** : used for High Availability StorNext cluster information. DO NOT MODIFY.
- **snfs_data_** : data LUNs we will be modifying.
- **snfs_meta_** : used for Metadata. DO NOT MODIFY

For the snfs_data LUNs, note the following:

- LUNs start ordering at 0 and then increase sequentially. The first two LUNs are for the Primary Chassis and ordered "0" & "1". Expansion Chassis will start ordering with the number “2”.
- Label format is **Prefix = “snfs_data_” Identifier = “H4012_10zzzz_” Suffix = “LDyyyyy”**
- Each LUN size is approximately 28.24TiB which is equivalent of six 8TB RAID6 drives.
- On far right in the **Assigned To** column, the **gvfs_sysman4:sg1** is the stripe group which will be expanded.

Each chassis has 12 drives. Each LUN uses 6 drives so 2 LUNs per chassis.

Chassis	Order #
Primary	0, 1
Expansion #1	2, 3

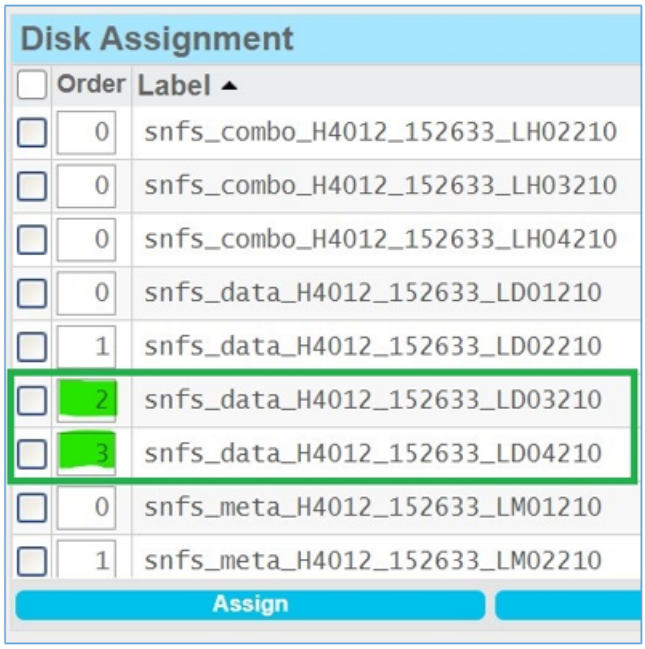
Chassis	Order #
Expansion #2	4, 5
Expansion #3	6, 7

1. In the **Disk Assignment** section, navigate to the first snfs_data LUN for adding to **sg1**.

   Important: Only modify the unassigned snfs_data entries as outlined with green rectangle below.

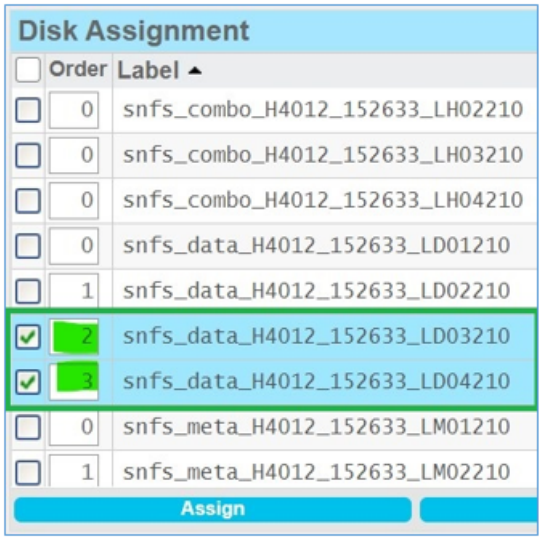
2. Double-click on the number 0 to the left of the first unassigned snfs_data LUN.
3. Enter **2**.
4. Continue with the next LUN, sequentially increasing the numbers until you reach the last snfs_data LUN.

   For this example, we are adding 1 Expansion Chassis so screen will look as follows:

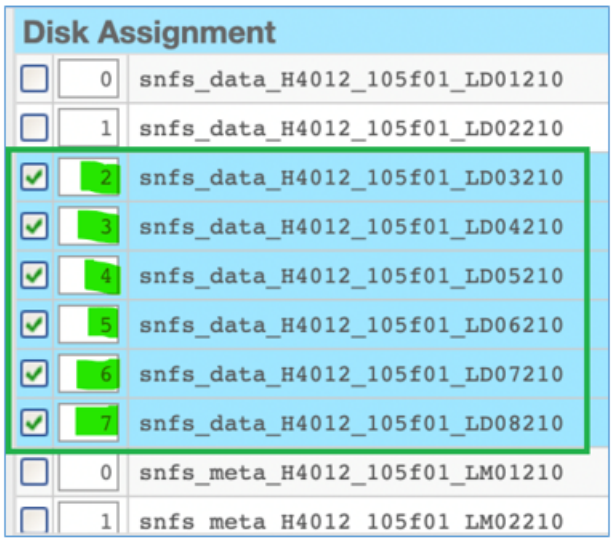


5. Once complete, click the left checkbox of all the LUNs you just added. (Hold down CTRL while clicking for multiple checkboxes)

   - *Example A: One Expansion --> 2 LUNS*



- *Example B: Three Expansions --> 6 LUNs*

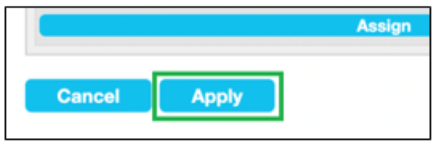


6. Click the **Assign** box.

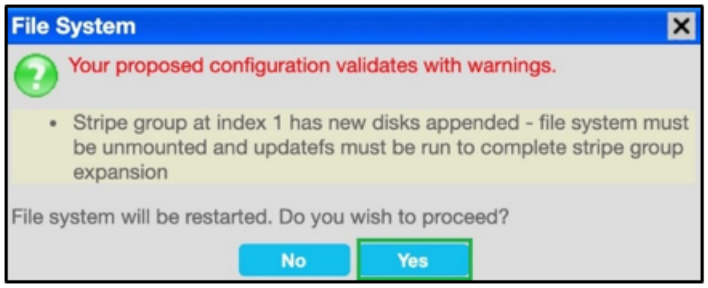
   The snfs_data LUNs will now be associated with sg1 as shown on the right side of the viewing pane.

Apply Changes

1. Click **Apply** at the bottom of the page.



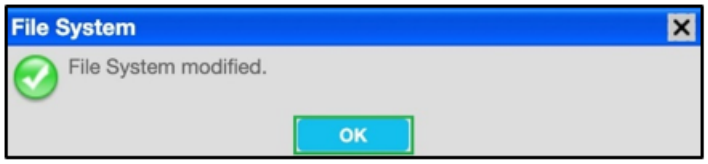
   A confirmation dialog appears to verify the expansion of the file system and stripe group.



2. Click **Yes** to proceed.

   The file system will now be expanded.

3. Once the expansion is complete, click **OK**.

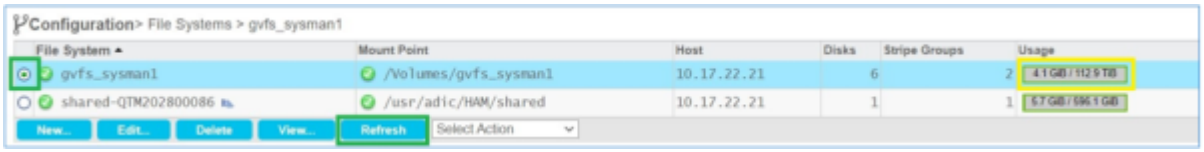


Confirmation

1. Select the **gvfs_sysman1** file system radio button.
2. Then, click the **Refresh** button in the File System list to display the new file system addition.

   Important: After initial system configuration, the RAID arrays will be building and synchronizing. Performance may be impacted for up to 24 hours.

   Note: The Usage at this point will show the increase of the Expansion Chassis to approximately 112.9 TiB if adding a single Expansion Chassis.



3. Log off the SN-GUI by clicking in the upper right corner.

Start File Systems

You need to restart both the SNFS and NAS file systems previously stopped.

Perform the following:

1. Using the command line interface, open a shell as root, using the primary StorNext Node1 on Controller A – Bottom.

```
> ssh root@10.16.232.173
      root@10.16.232.173's password: adminGV!
      Last login: Tue Nov  3 21:50:50 2020 from 192.168.21.100
```

2. Run following commands on Node1 to start NAS Services.

```
[root@qnode1 ~]# /usr/cvfs/lib/snnas_control start
      Starting NAS services
```

3. Run the following commands on Node2 to start StorNext & NAS services.

```
[root@qnode1 ~]# ssh 10.16.232.174
[root@qnode2 ~]# service cvfs start
      Starting cvfs (via systemctl):  [  OK  ]
[root@qnode2 ~]# /usr/cvfs/lib/snnas_control start
      Starting NAS services
[root@qnode2 ~]# exit
```

4. Exit the Shell and the command line interface.

```
[root@qnode1 ~]# exit
```

Configure System Manager

Starting with the AMS Express 1.5.2 release, each AMS Express controller has one Grass Valley VM instance. This means that there are two Grass Valley VM instances per AMS Express unit. Only one Grass Valley VM at a time is running on each AMS Express unit. Each of these Grass Valley VMs must be configured one at a time with identical configuration details.

This section provides guidance starting with the configuration of the Grass Valley VM on Controller A. After completing the configuration of the Grass Valley VM on Controller A, the process will provide instructions for repeating a portion of the process with the Grass Valley VM on Controller B.

Obtain StorNext Software installers

StorNext software installers are provided via the Grass Valley ProDev FTP site at *ftp://prodev@ftp.grassvalley.com/GV-AMS-Express/StorNext-for-N.N.N* where the "N.N.N" corresponds to an *AMS Express* software release number such as "1.5.2".

Please download both installers from this FTP site location.

The installer with file name like AMS_Express_SysManCfg-N.N.N.zip is to be used only for deploying software to each of the Grass Valley VMs on the AMS Express unit. This installer is always used when commissioning an AMS Express unit.

The installer with file name like AMS_Express_ClientCfg-N.N.N.zip is to be used only for deploying software to external clients of the AMS Express unit, such as K2 Summits, GV I/O units, etc. This installer is only used when clients are to be connected to the AMS Express unit via LAN Connect (aka DLC) protocol and appropriate StorNext client licensing such as via GVIO-SW-SN-LAN is present for the client devices.

Do not use the AMS_Express_ClientCfg-N.N.N.zip installer with client devices when connecting to the AMS Express unit's NAS share via the Server Message Block (SMB) protocol. In this situation, there is no StorNext software deployed to the client devices.

K2 System Addition

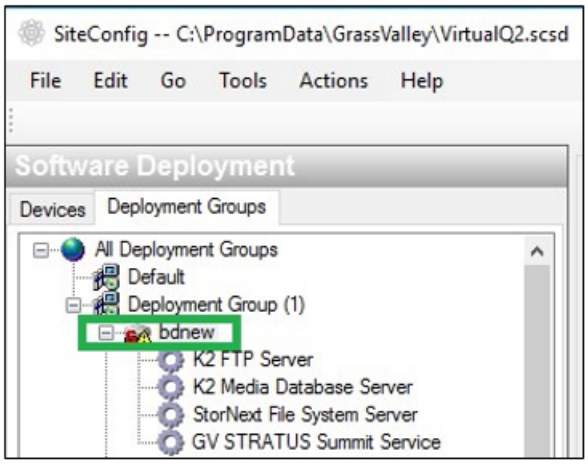
The following directions are a typical installation scenario for adding the AMS Express into a K2 system.

The documentation assumes the user is familiar with the K2 system and software. The example media server name is **bdnew**. If name has been changed in previous installation steps, utilize the preferred name.

SiteConfig Preparation

This section ensures SiteConfig is prepared for installation.

1. Add a host file entry on the Control Point PC for the new K2 Media Server **(bdnew)**.
2. In SiteConfig, create a new Site and add a K2 Server with the name **bdnew** with the following Roles:

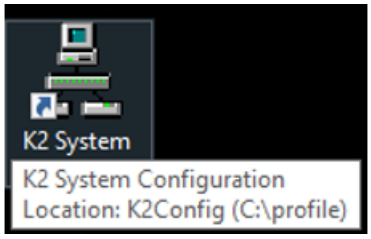


3. Right click and check software for *AMS Express*.
4. Except for StorNext SNFS, add the latest cabs and deploy all software.
5. Restart K2 Server. (SiteConfig should prompt to restart)

Adding *AMS Express*

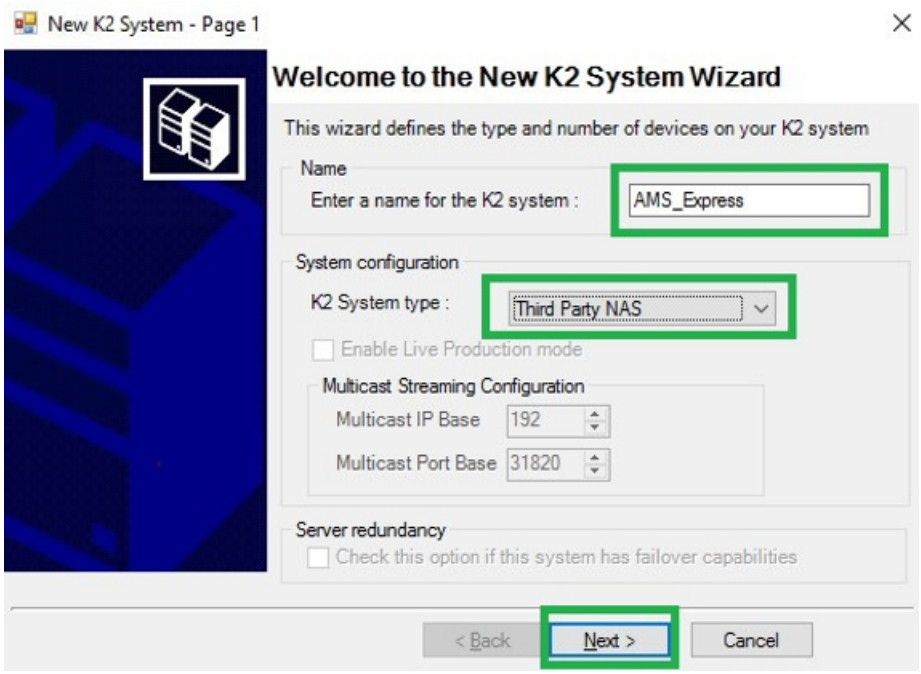
This section adds the *AMS Express* to a Grass Valley system.

1. On the Control Point PC, run the **K2 System Configuration**.

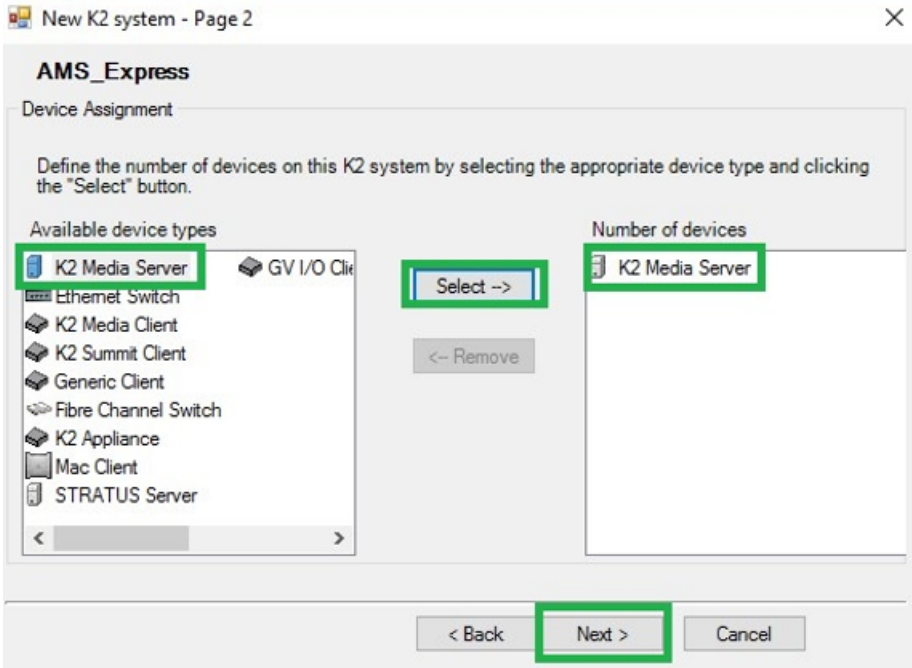


2. Select **New K2 System**.

3. Add the new AMS Express by entering the following information in the K2 System wizard.

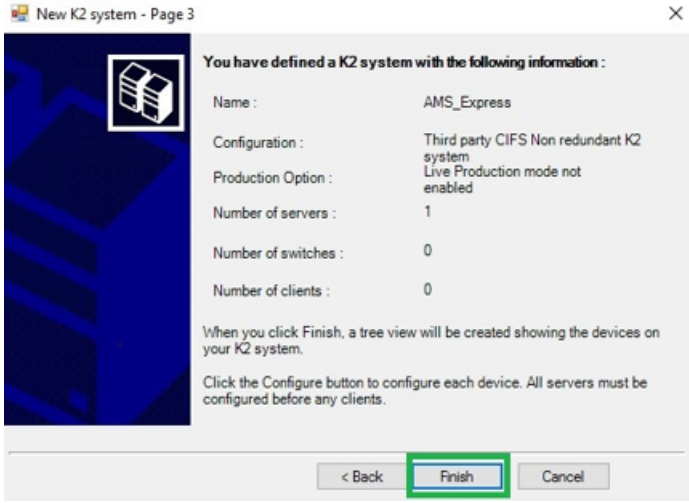


4. Click **Next**.
5. Add a K2 Media server by entering the following information.



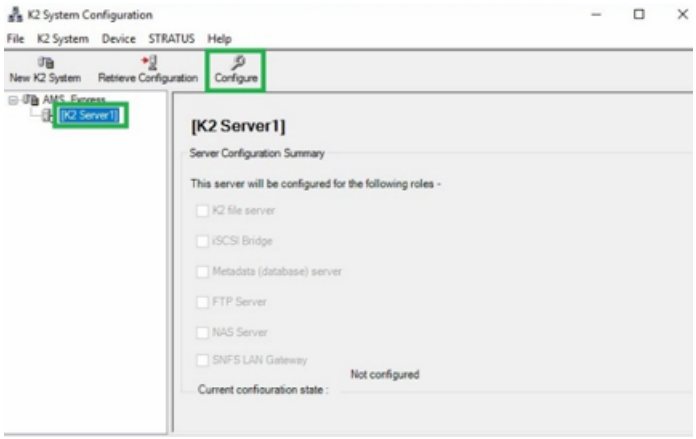
6. Click **Next**.

   The following confirmation page appears.

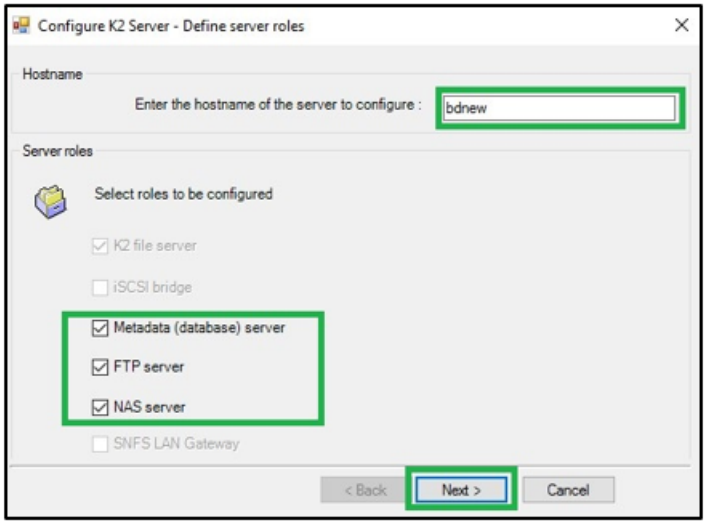


7. Click **Finish**.

   The K2 system configuration tree diagram appears.

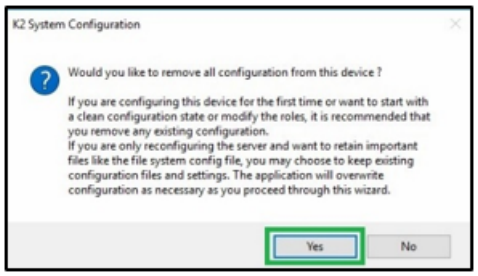


8. Select **[K2 Server1]** and click **Configure**.
9. Enter following information to define server roles.



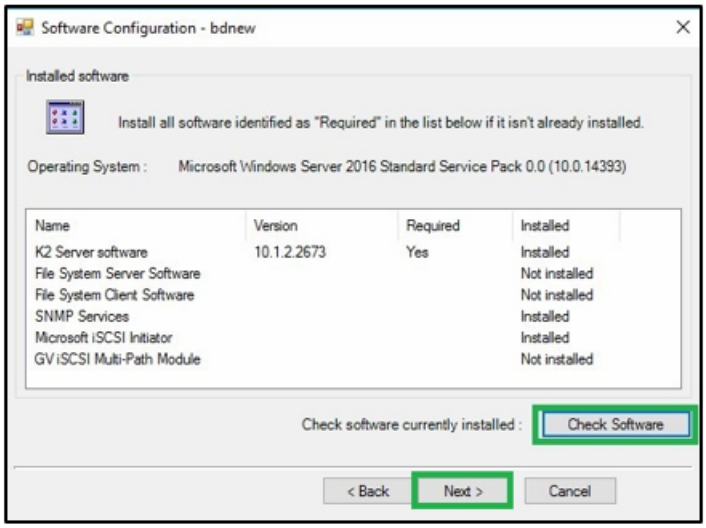
10. Click **Next**.

    The confirmation dialog appears.



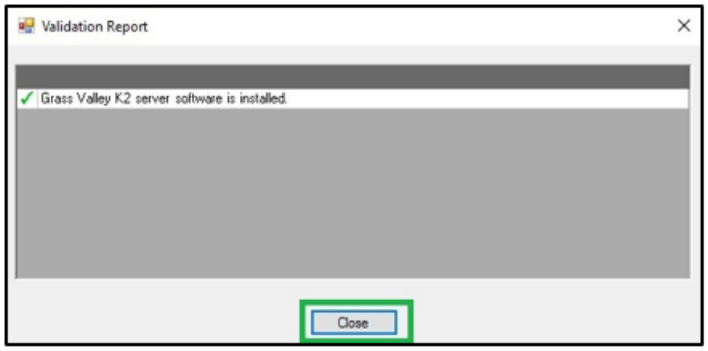
11. Click **Yes**.

    The Software Configuration window appears.



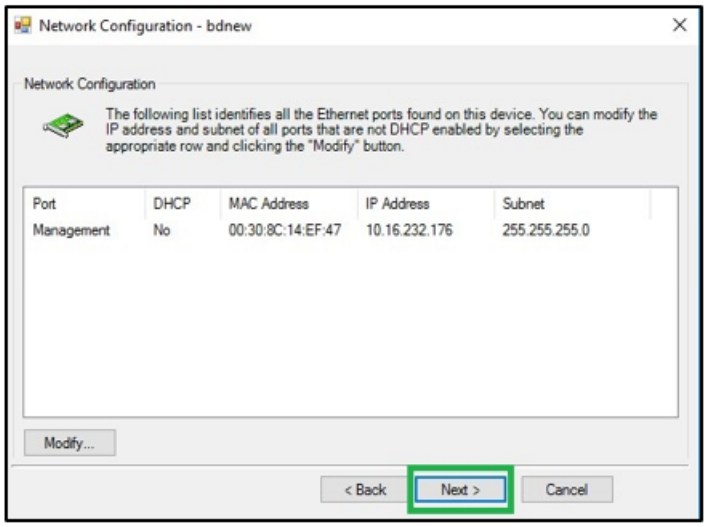
12. Click **Check Software**.

The Validation Report appears after the Check Software process is completed.

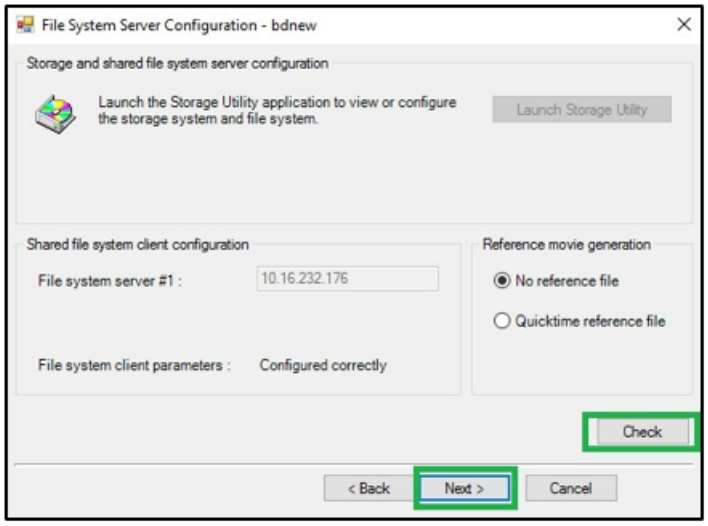


13. Click **Close** and click **Next** on the Software Configuration window.

14. Click **Next** for network configuration.



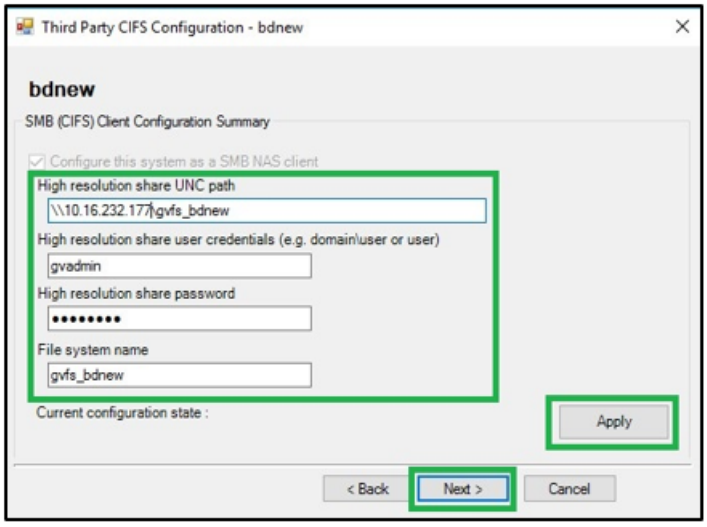
15. Click **Check** on file system configuration.



The Validation Report appears after the process is completed.

16. Click **Close** and click **Next** on the File System Server Configuration window.

The Third Party CIFS Configuration window appears.



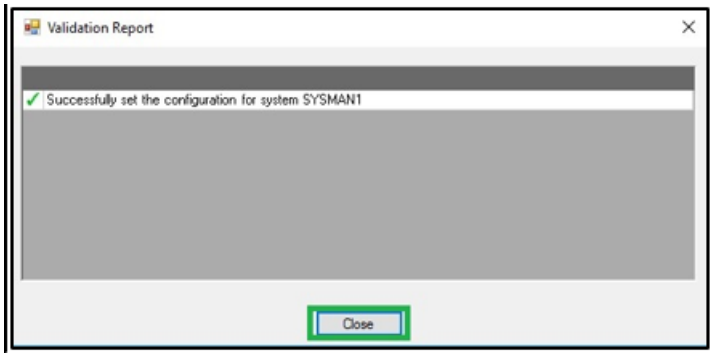
17. For the SMB Configuration, enter the following information:

- For the high resolution share UNC path, use the NAS Mount VIP address and the file system name
- For credentials, use **gvadmin/adminGV!**

Caution: The tab sequence is out of order after password.

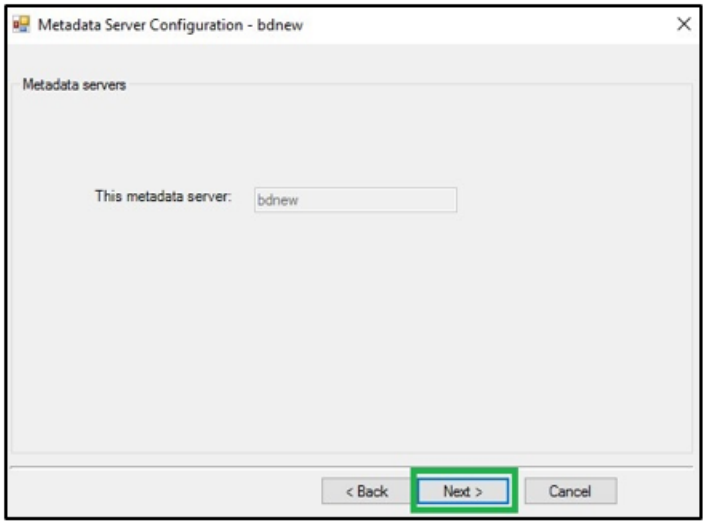
18. Click **Apply**.

The Validation Report appears.

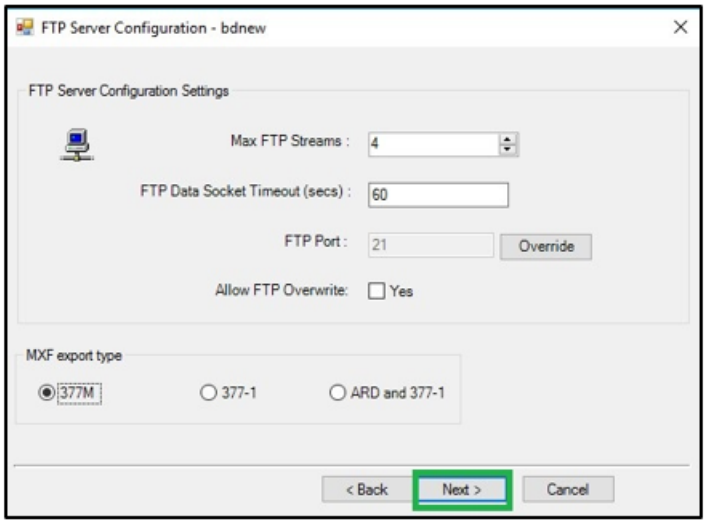


19. Click **Close** and click **Next** on the Third Party CIFS Configuration window.

20. For Metadata server, click **Next**.

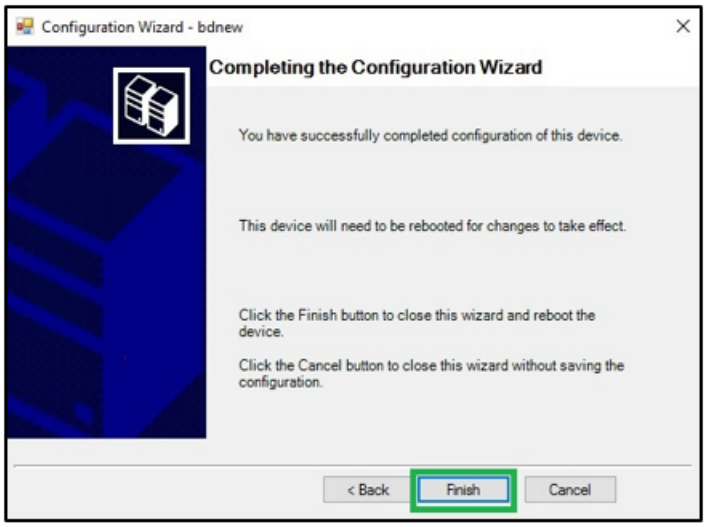


21. For FTP Server configuration, enter the following information.



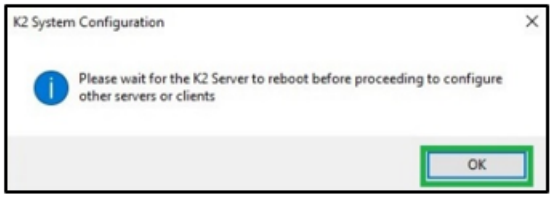
22. Click **Next**.

The Configuration Wizard appears.



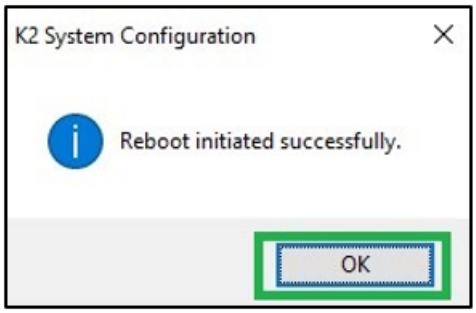
23. Click **Finish**.

The reboot notification dialog appears.



24. Click **OK**.

The reboot confirmation dialog appears.

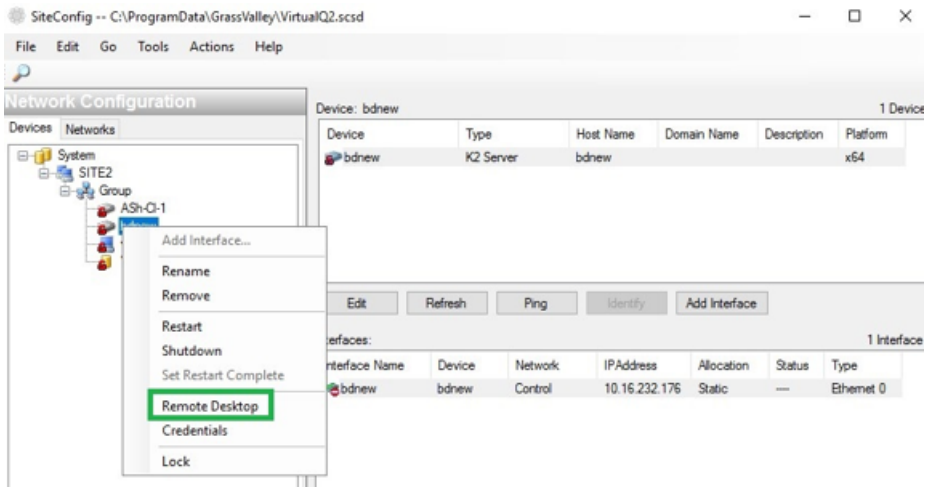


25. Click **OK** to reboot.

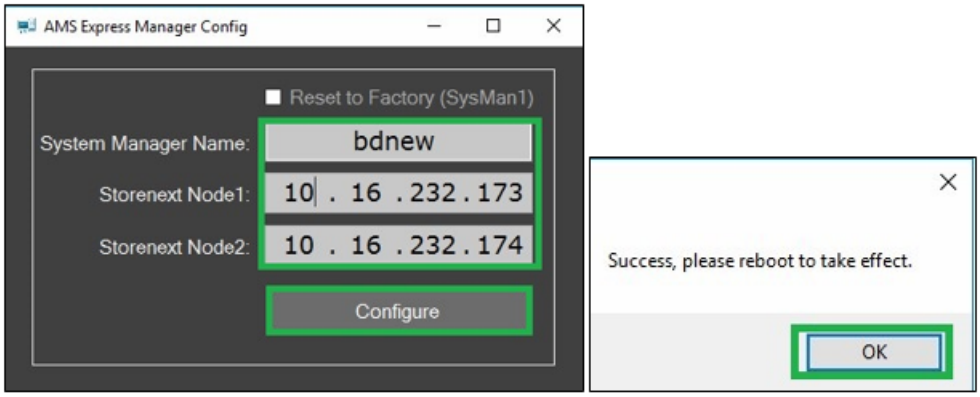
Verification

This final step verifies the V:drive is working correctly.

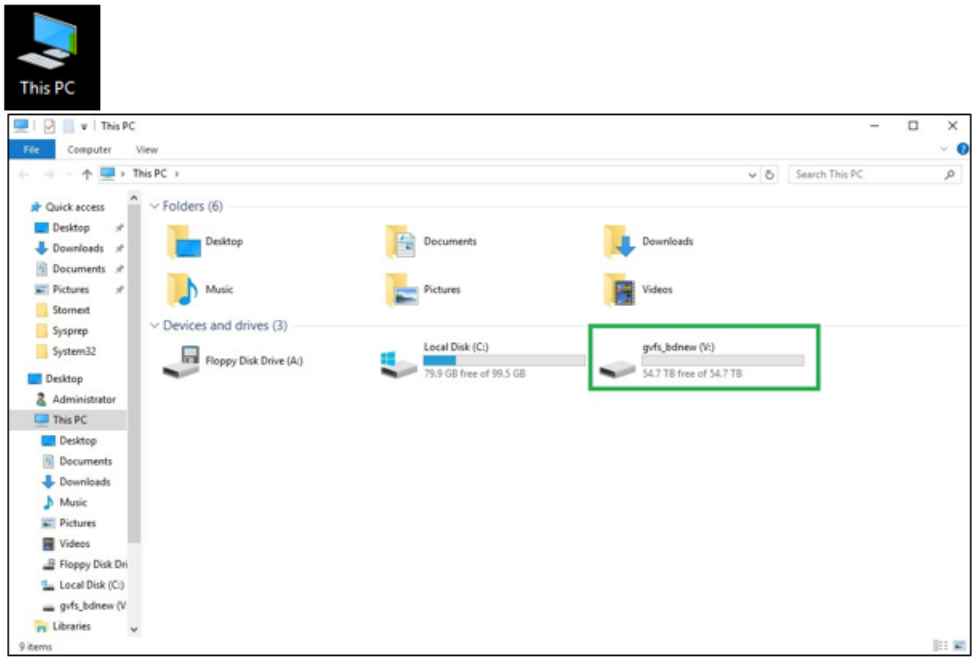
1. Using SiteConfig, Remote Desktop into the recently created System Manager: **bdnew**



2. Copy the **AMS_Express_SysManCfg-N.N.N.zip** file to the Grass Valley VM.
3. Extract the contents of the .zip file to a directory like **c:\temp**
4. Execute **AMS_Express_SysManCfg\RunMeSysManCfg.bat** and wait for the configuration tool to open.
5. Enter the information as shown below and click **Configure**.



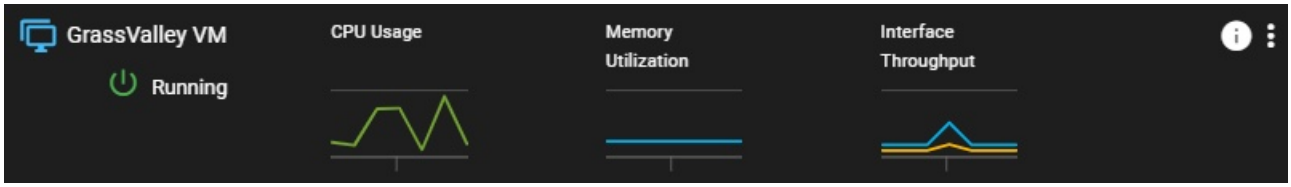
6. Click **OK** on the confirmation dialog.
7. Restart the server then wait 2-3 minutes for it to come back up.
8. After the Grass Valley VM has rebooted, Remote Desktop again into the System Manager VM: **bdnew**
9. Click on **This PC** and ensure **V: drive** is mapped and operational.



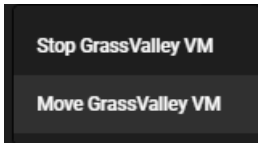
Repeat process steps for Grass Valley VM on Controller B

After the Grass Valley VM on Controller A has been configured, shut down the Grass Valley VM on Controller A and start the Grass Valley VM on Controller B using the AMS-GUI.

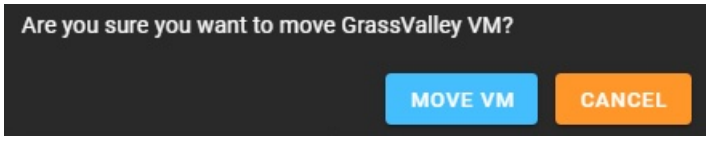
1. Log in to the AMS-GUI and access the Cluster tab.
2. Click on the three vertical dots on the right side of the Grass Valley VM entry.



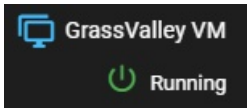
3. Select **Move Grass Valley VM** from the pop-up menu.



4. Click the **Move VM** button on the confirmation pop-up message.



5. Then, the AMS-GUI shows a status of Grass Valley VM on Controller B as "running".



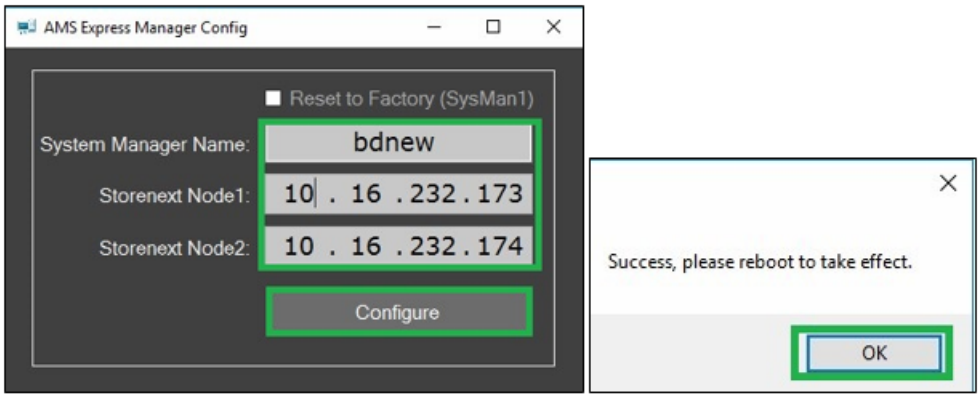
6. After that, access SiteConfig as described in *SiteConfig Preparation* on page 78 but do not add a new entry to SiteConfig for the second Grass Valley VM.
7. Use the entry added to SiteConfig earlier to right-click and select **Check software** for the K2 Media server (bdnew in the example).
8. Follow the subsequent steps to install software via SiteConfig (except for StorNext) and restart the K2 Server.
9. After the Grass Valley VM has rebooted, proceed with the K2 Config steps as described in *Adding AMS Express* on page 78.
10. After an additional reboot has completed, proceed with the steps described in *Verification* on page 85, including the steps to install the StorNext software.
11. Once the *Verification* on page 85 steps have been completed for the Grass Valley VM on Controller B, use the Cluster tab in the AMS-GUI as documented above to execute another "Move Grass Valley VM" process to make it so that the Grass Valley VM is running on Controller A.

Adding K2 Summits, GV I/O's, GVRE's or Core servers

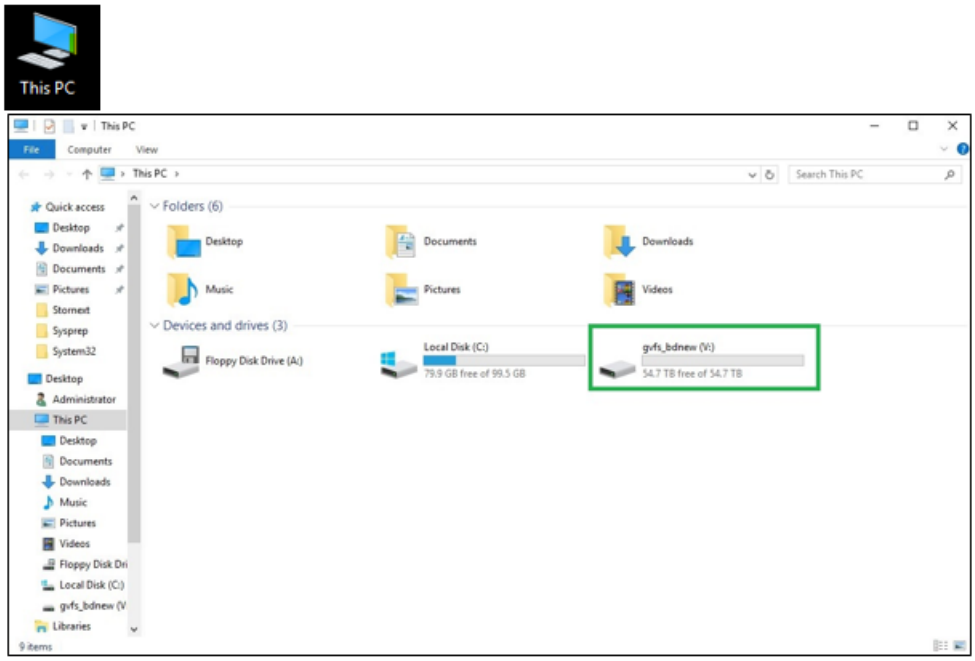
As DLC clients

1. Before installing StorNext software to client devices such as K2 Summit units, GV I/O units, GVRE units, etc., please make sure that StorNext client licensing such as via GVIO-SW-SN-LAN is present for each of the client devices.
2. Use K2 Config to add client devices, choosing **Third Party NAS** for the shared storage type. Go through the process and use K2 Config to fully configure those clients.
3. After the K2 Config process has been completed for the client device, copy the **AMS_Express_ClientCfg-N.N.N.zip** file to the client device.
4. Extract the contents of the .zip file to a directory like **C:\temp**
5. Execute **AMS_Express_ClientCfg\RunMeClientCfg.bat** and wait for the configuration tool to open.

   The AMS Express Manager Config window appears.



6. Enter the System Manager's name.
7. Enter the IP addresses of the StorNext nodes and click **Configure**.
8. Wait for a success message, click **OK** and then reboot.
9. After the restart, Remote Desktop via SiteConfig into the client.
10. Click on **This PC** and ensure **V: drive** is mapped and operational.



As SMB clients

- If you want to add the devices as SMB clients, you will need to map the V drive to SMB path of the system (VIP).
- If you are setting up a GVRE, make sure you map the Drive first, then go into the XRE adminConsole and then plugin to make sure the V drive is listed. If not, add it manually.

Monitoring the System

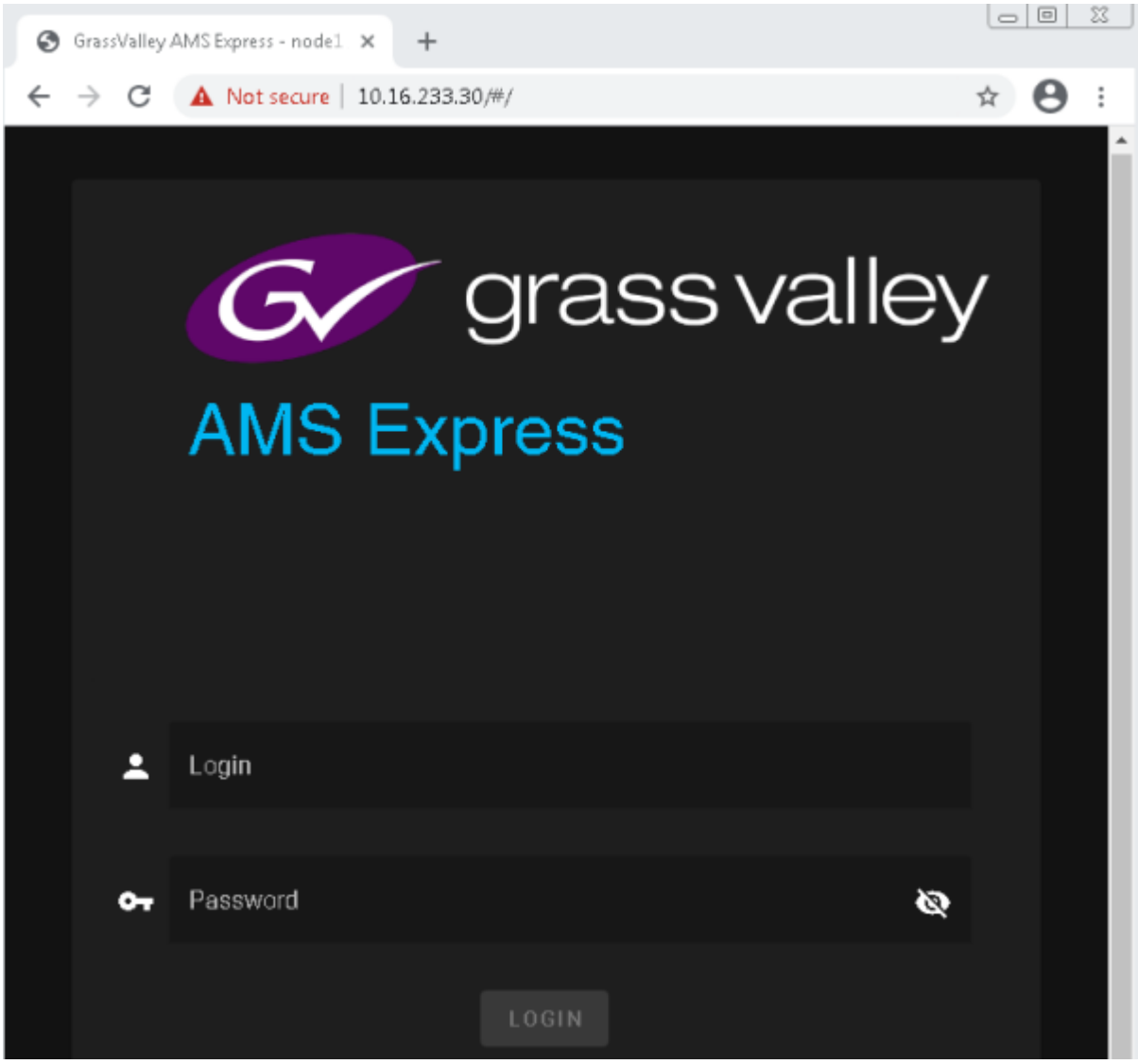
Utilize this section after the *AMS Express* is operational to manage and monitor the system.

Logging on to the AMS Express system

To set up and monitor the AMS Express system, you can launch the application on a supported web browser, such as Google Chrome or Mozilla Firefox, using the following web address template: **http://<AMSexpress_IP_address>**

1. On the *AMS Express* system, launch your web browser and enter the web address as above.

   A Login dialog displays.



2. Enter your login name.
3. Enter your password.
4. Click the **LOGIN** button.

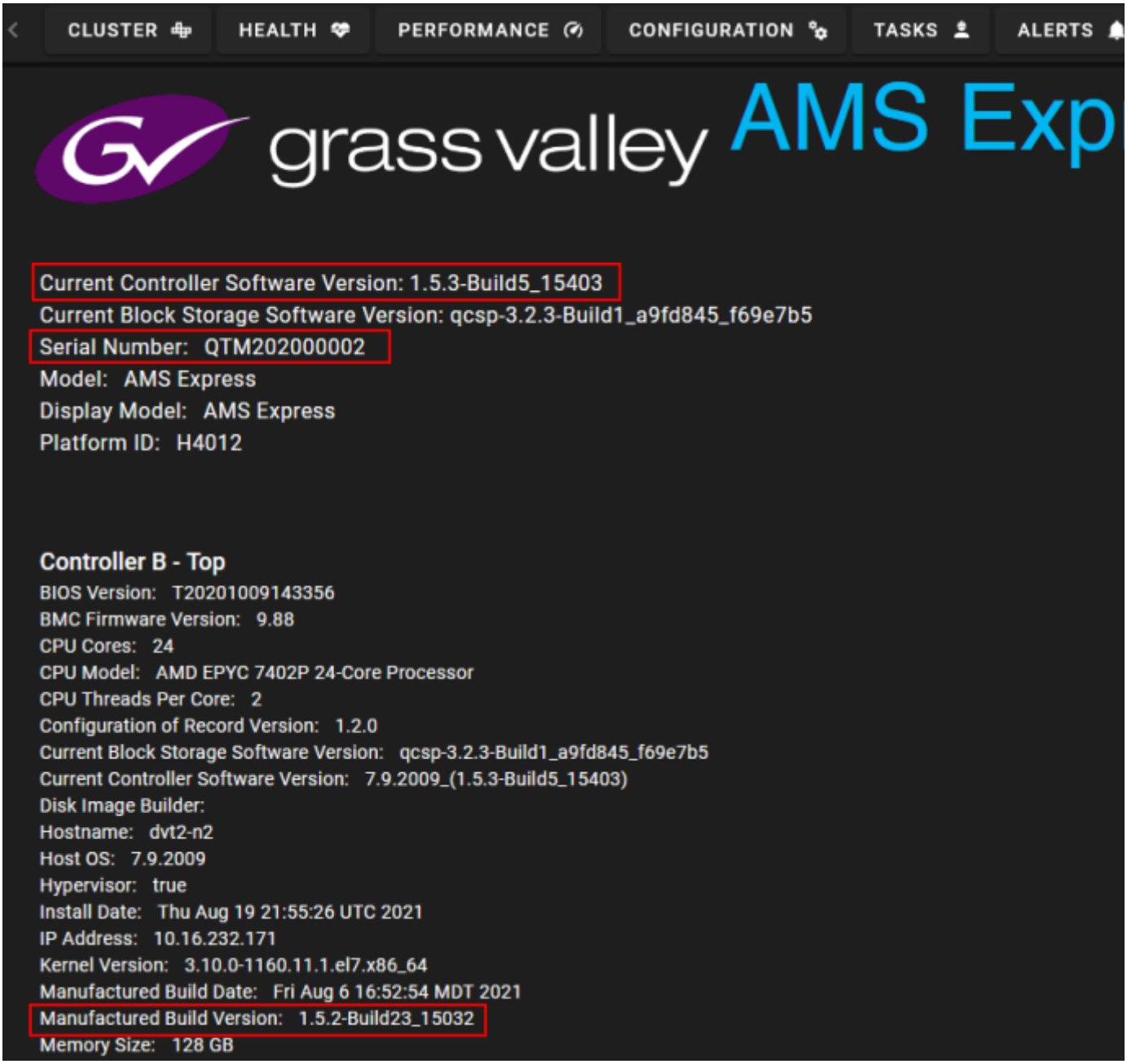
The *AMS Express* application opens and displays the **Cluster** tab.

Retrieving the *AMS Express* system information

1. Click the ⋮ icon on top-right of the *AMS Express* GUI and select **About**.

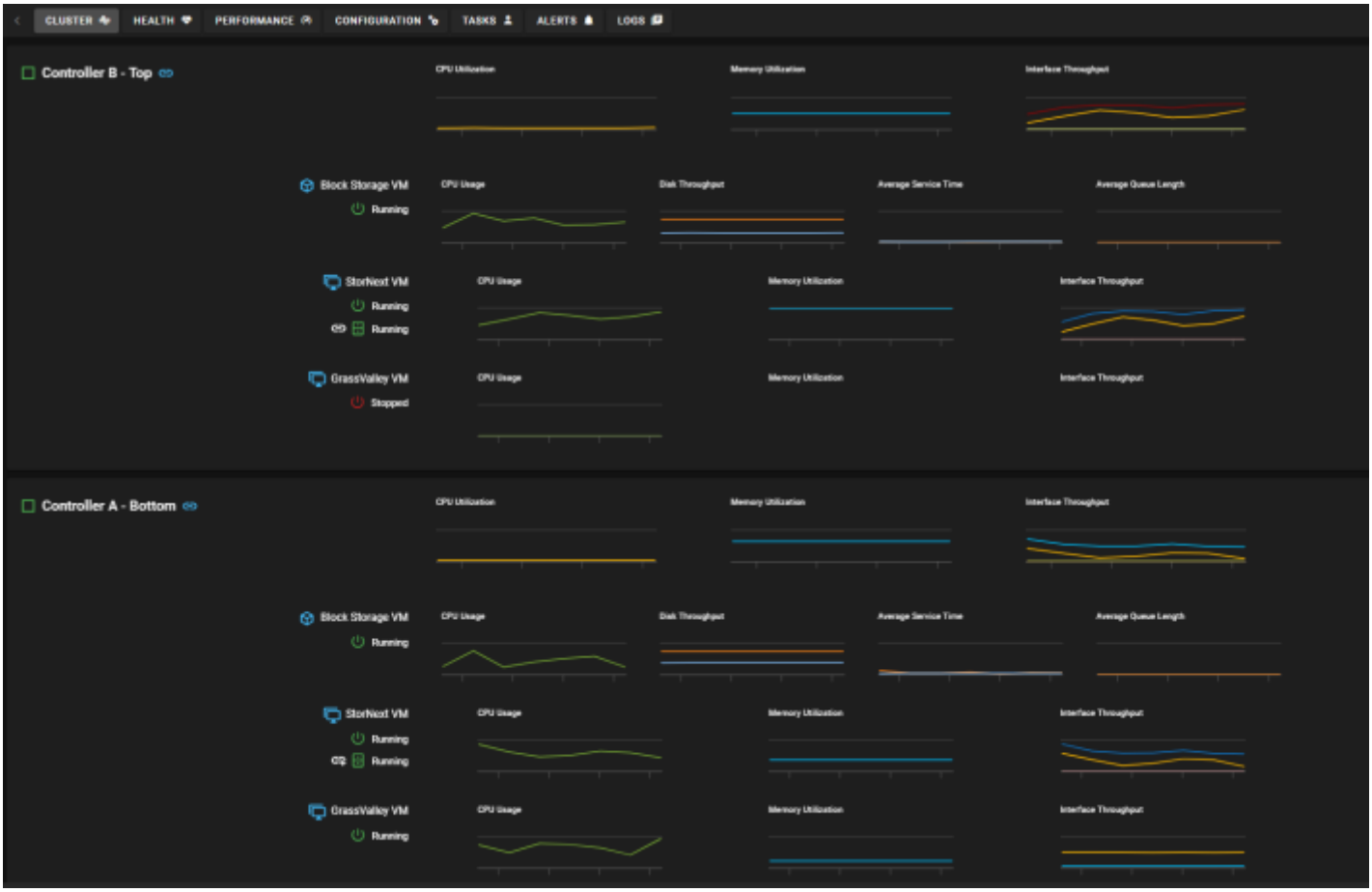
   The **About** page for *AMS Express* system displays.

2. Retrieve system information as below:
   - **Current Controller Software Version** — The software version currently operating on the unit.
   - **Serial Number** — Used to identify the hardware for all support requests.
   - **Manufactured Build Version** — The software version as shipped from the factory or after having re-imaged the AMS Express unit via the *Factory Reset* on page 136 process.

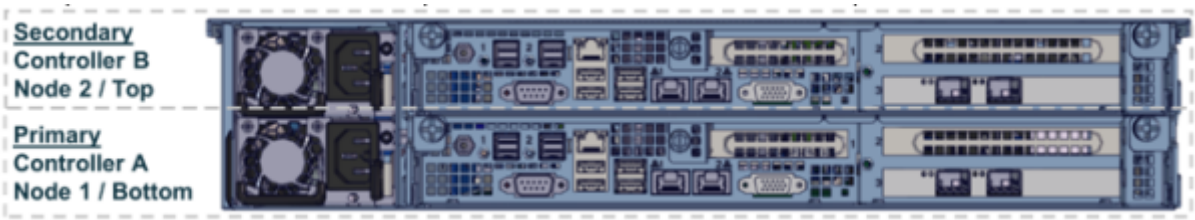


Managing Cluster

The Cluster page provides a snapshot of the system's current operating parameters.



The layout is consistent with the Primary Chassis where Controller B is on the Top and Controller A is on the Bottom of the system as can be seen below.



Key component definition

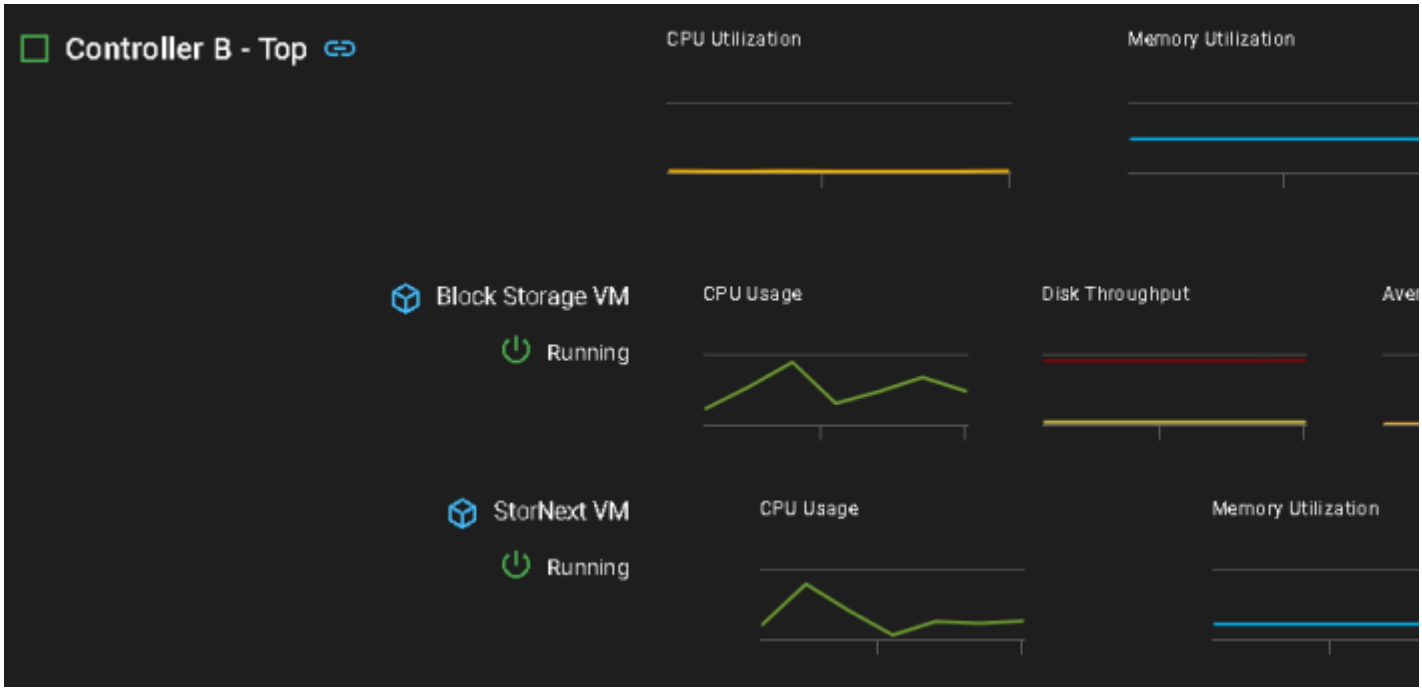
The definition of each key component is as follows:

- **Controller**: This is the hypervisor which coordinates the VMs.
- **Block Storage VM**: Virtual Machine that manages the 'blocks' of data that are stored/striped across the disks. Also referred to by acronym QCSP (Quantum Cloud Storage Platform).
- **StorNext VM**: StorNext operating system virtual machine.

- **Grass Valley VM**: Grass Valley virtual machine running STORMGR database software that controls interactions with other GV products and controls media assets.

Viewing Graphs

The graphs can be clicked on, enlarged, data downloaded to various formats for further analysis, then closed by clicking on the original graph again.

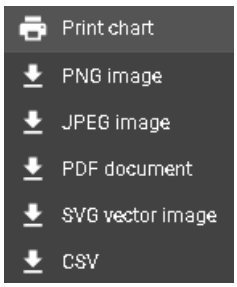


You can click on each graph to view the enlarged version as below.

To view the graph in full screen, click the **View in full screen** icon.

To exit the full screen view, click to close.

To print the graph in various formats, click the **Print chart** icon and select one format from these options below:



Icons

The right side of the page has several icons that can be clicked to access version information, stop/start VMs, or launch the StorNext GUI in a separate window.

These icons let you perform various functions as described below.

Information: Displays information of the Controller or the Virtual Machines.

Launch StorNext UI: Opens the StorNext GUI in a separate window. You must know the user name and password to launch the StorNext GUI.

Stop/Start VM: Stops the Virtual Machine, or start the Virtual Machine if it had been stopped.

Monitoring Health

The Health section provides a visual representation of current operating state.

Monitoring System Components

The System page provides an overview. The following example has a Primary Chassis with three Expansion Chassis

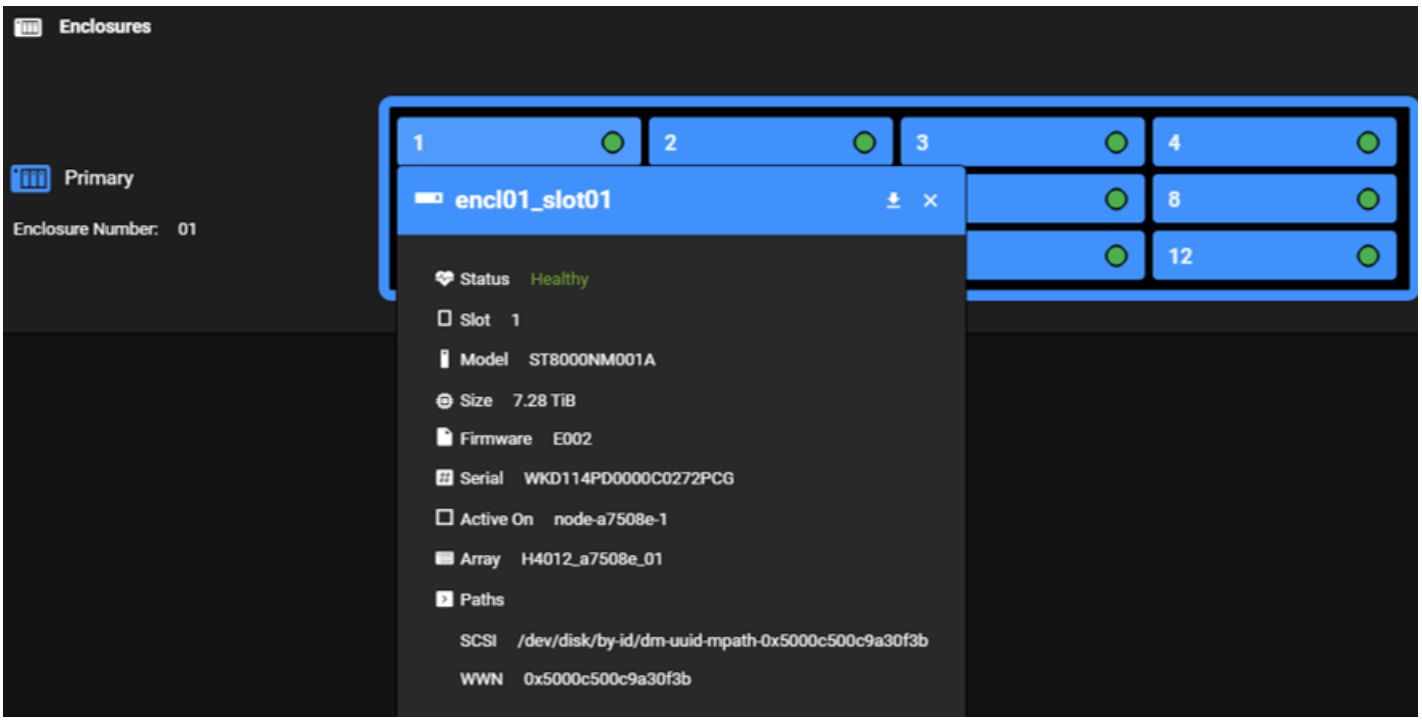
Components

Component	Count	Degraded Count	Non-Degraded Count	Status
Boot Drives	4	0	4	OK
Fans	28	0	28	OK
NVD Drives	2	0	2	OK
Power Supplies	8	0	8	OK
Storage Drives	48	0	48	OK
SW RAID Devices	14	0	14	OK

Component	Count	Description
Boot Drives	4	Primary Chassis = 4 (quantity = 2 M.2 SSD per controller) Expansion Chassis = n/a
Fans	28	Primary Chassis = 16 (8 per controller) Expansion Chassis = 12 (4 per chassis)
NVD Drives	2	Primary Chassis = 2 (quantity = 1 M.2 SSD per controller) Expansion Chassis = n/a
Power Supplies	8	Primary Chassis = 2 (1 per controller) Expansion Chassis = 6 (2 per chassis)
Storage Drives	48	Primary Chassis = 12 (12 per chassis) Expansion Chassis = 36 (12 per chassis)
SW RAID Devices	14	User storage utilizes RAID-6 so one RAID set = 6 drives Primary Chassis = 2 Expansion Chassis = 6 (2 per chassis) Boot Drive RAID = 4 (RAID-1) NVD Drive RAID = 2 (RAID-1) **Note:** • If one drive is bad in a RAID, the whole SW RAID is viewed as “degraded” • When a RAID is rebuilding / sync’ing, the RAID is viewed as “degraded”

Monitoring Storage

The Storage page provides an image of the system and the health of the individual drives. Clicking on a numbered drive provides further information for that particular drive.

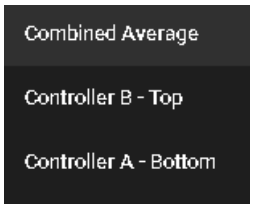


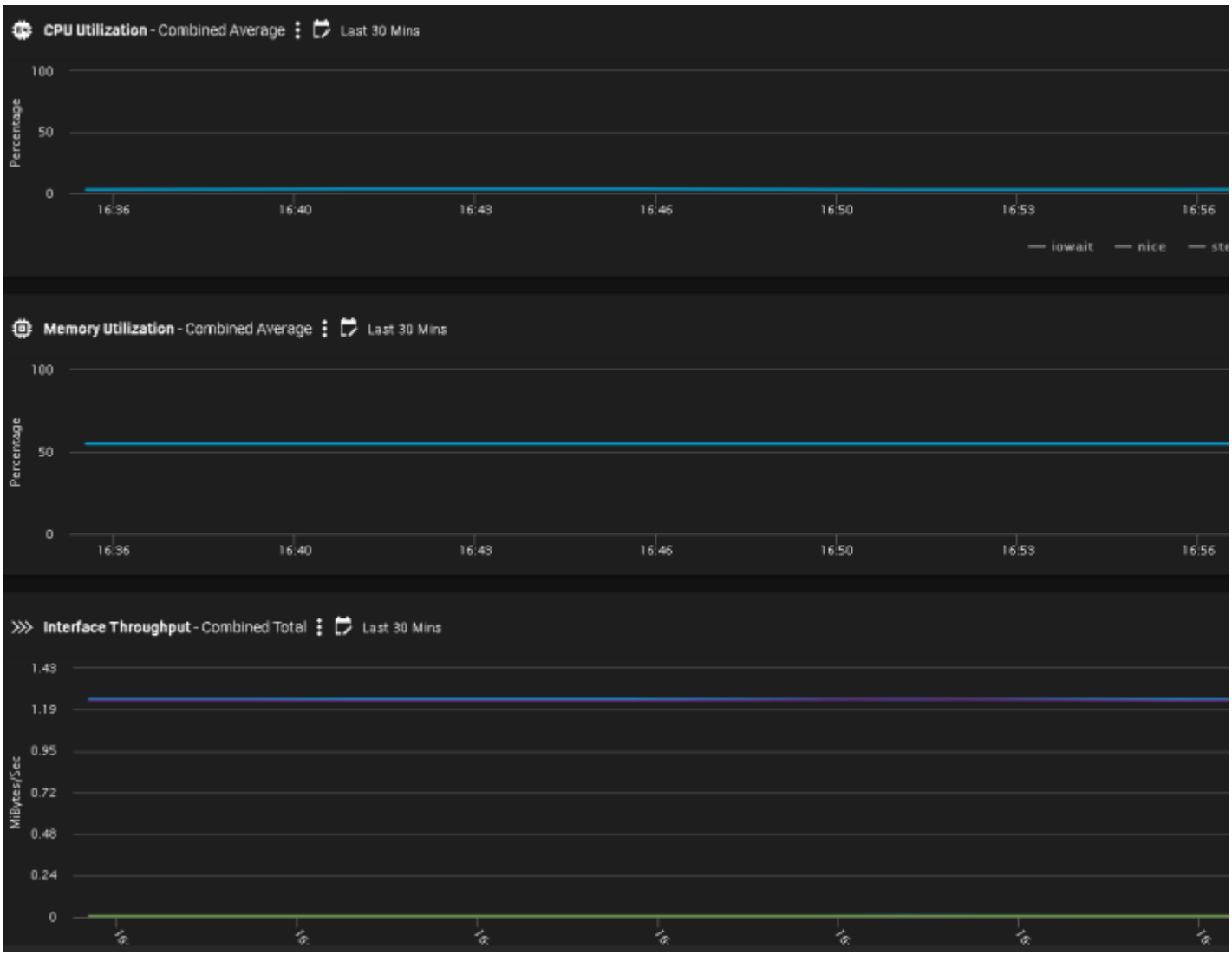
Monitoring Performance

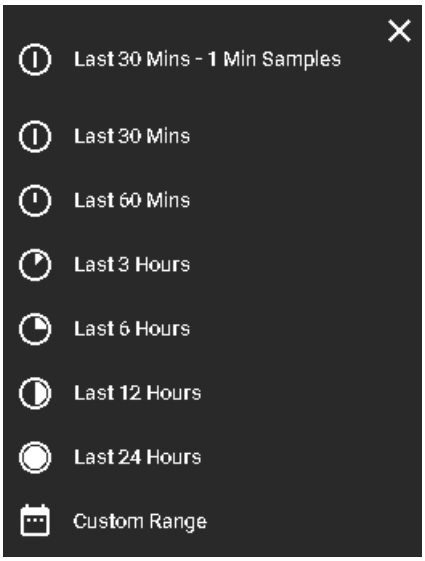
The Performance section provides graphical data for the various system components. As on the Cluster section, graphs can be chosen, enlarged, and data downloaded for further analysis.

Viewing System

This page provides a snapshot of the entire solution. You can choose which controller to view (either Top / Bottom / Combined) and the refresh rate.

To select which controller to view, click and pick one from these 3 options: 

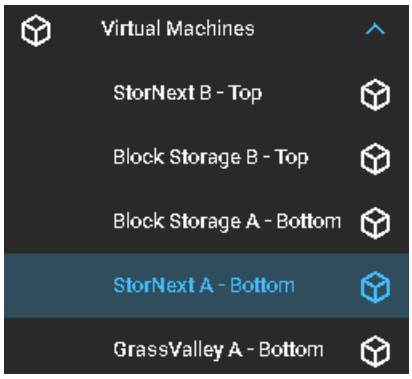


To select the refresh rate, click and choose the time range that you need. 

Viewing Virtual Machines

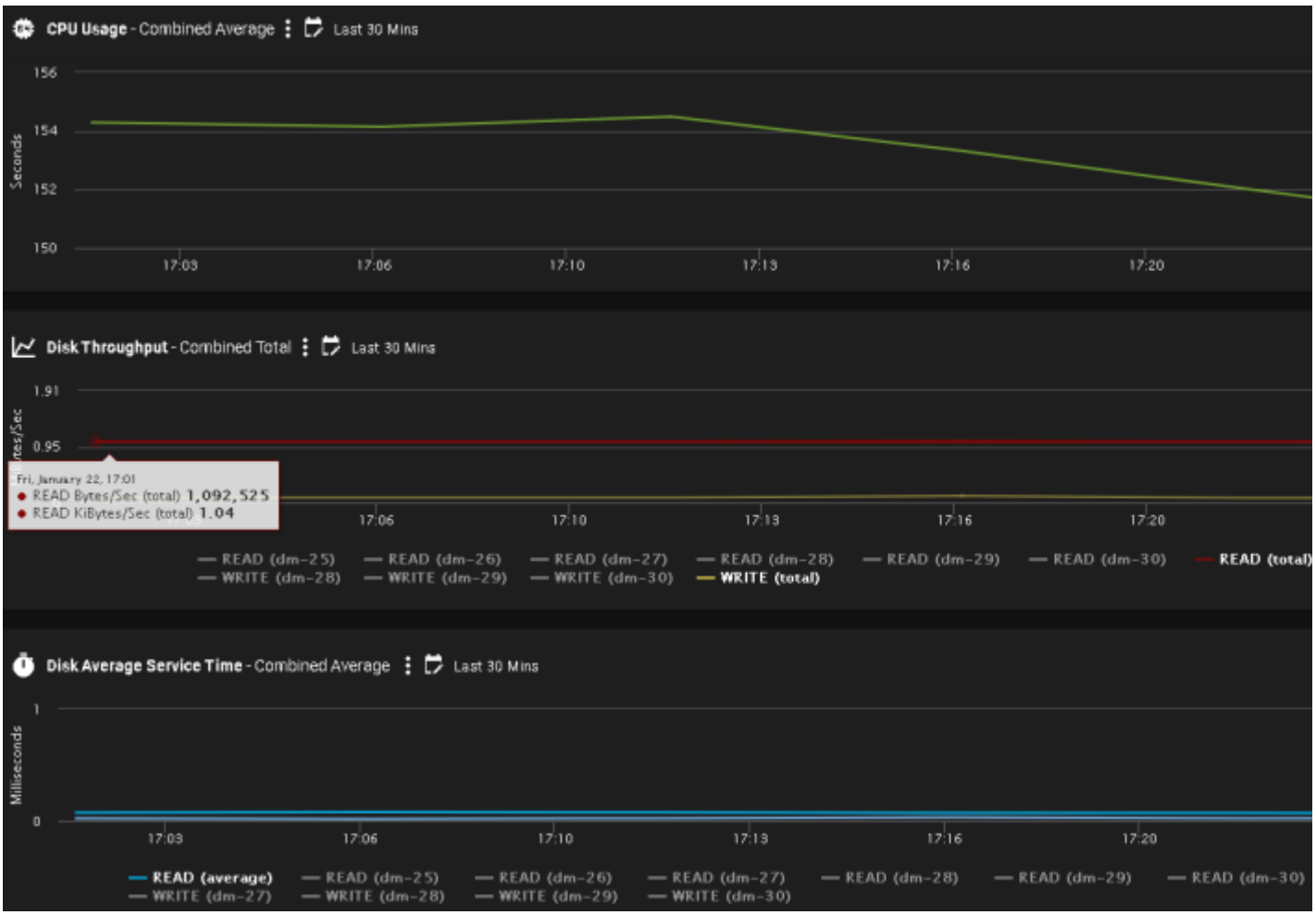
This page provides ability to examine the performance of each individual component.

On the left column, click **Virtual Machines** and select one of these options:



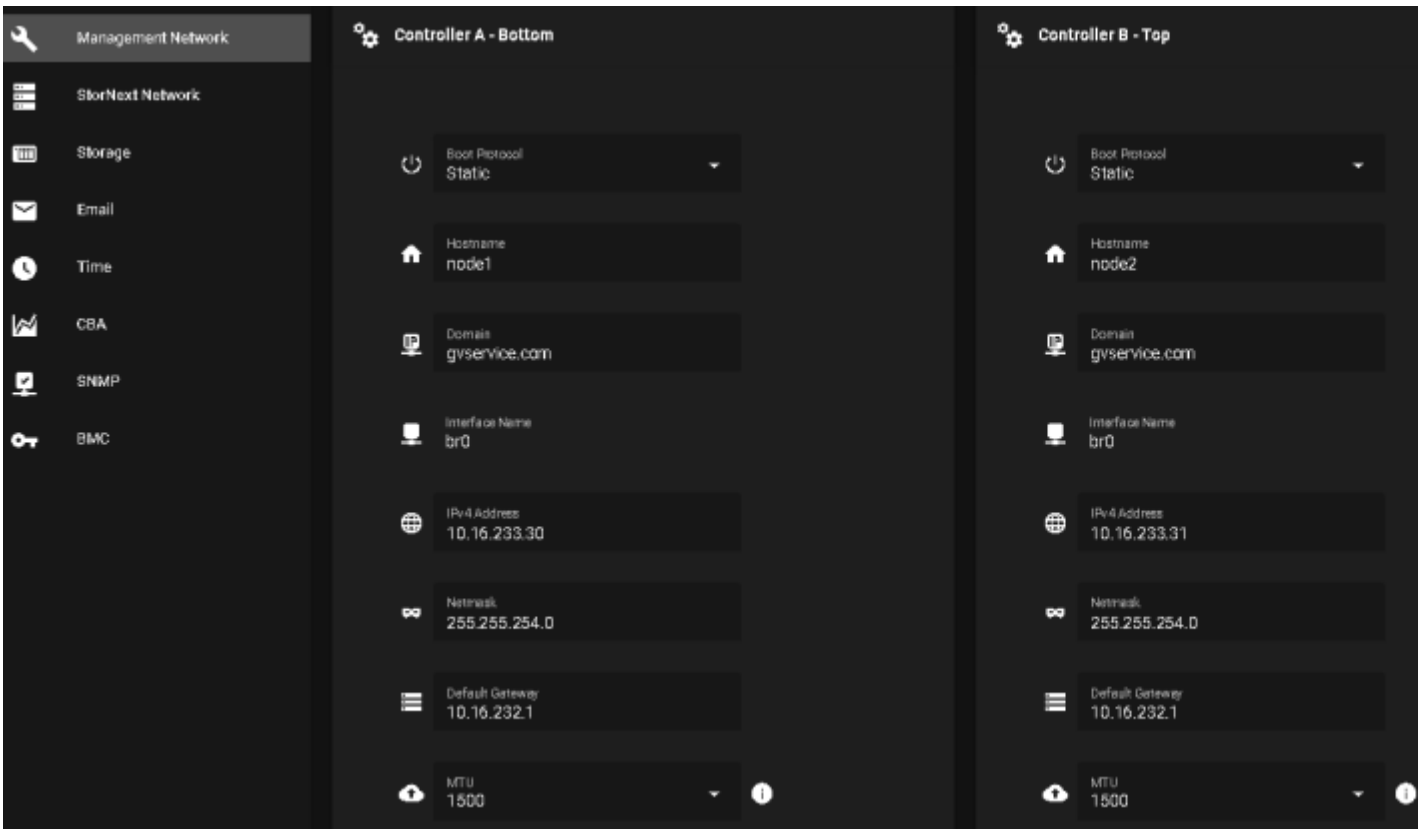
Viewing Storage

This page provides ability to examine statistics regarding overall storage performance.



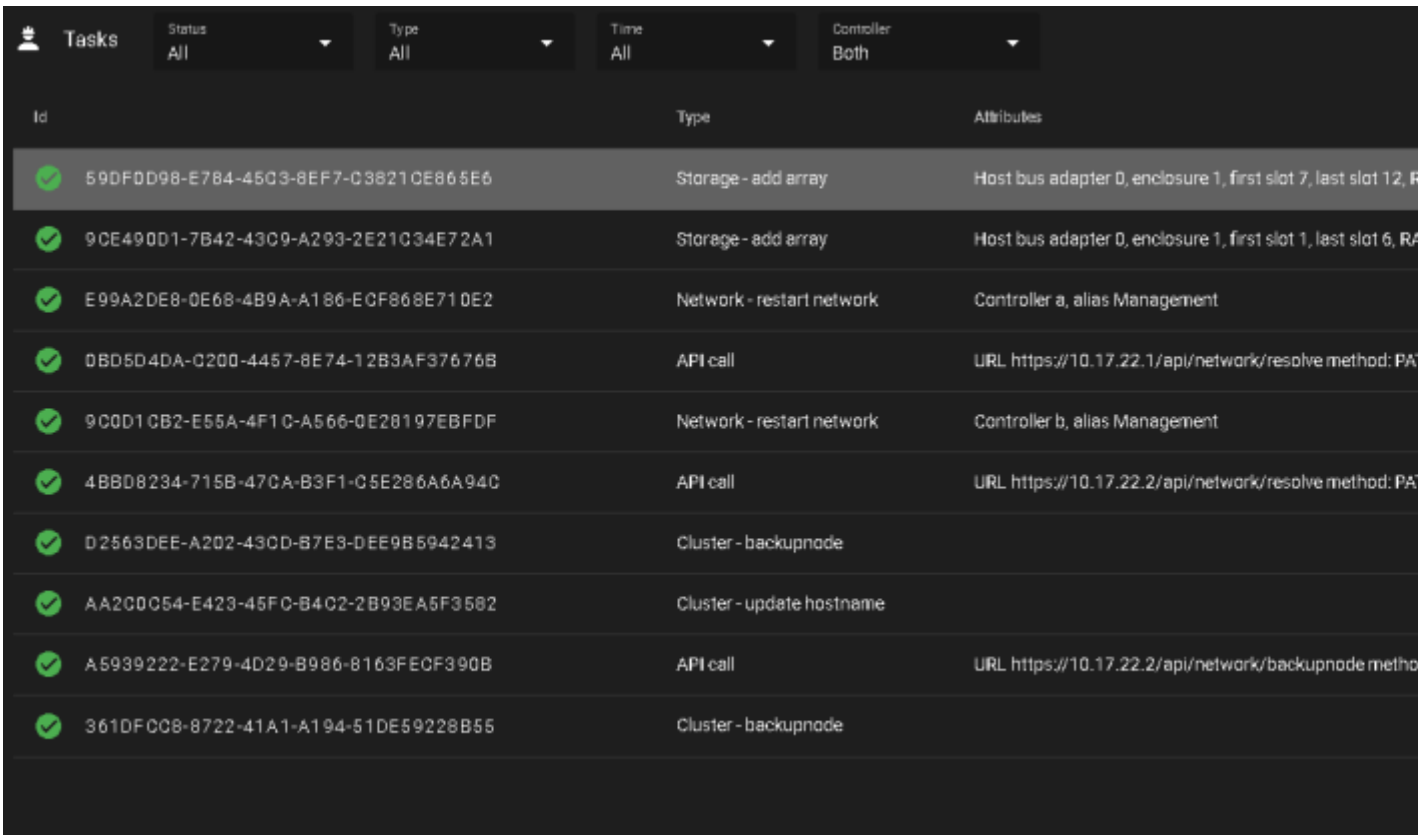
Configuration

The Configuration section allows changes to various settings as utilized when initially setting up the system. The details of this section were covered in the initial configuration description.



Tasks

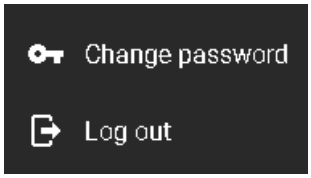
The Tasks section provides a listing of the activities the system has been performing. The tasks can be filtered by Status, Type, Time, and Controller.



Logging out from *AMS Express* system

1. On the *AMS Express* system, click the user profile icon on top-right of the application.

   A dialog box opens with these options below.

2. Click **Log out** to log off from the system.

   The window closes and the Login page automatically appears.

3. Enter the user credential if you want to log on as another user.

Upgrading the System

Upgrading AMS Express system from version 1.5.2 to version 1.5.3

The AMS Express server must already be running AMS Express version 1.5.2 of the software. Upgrading directly from version 1.4.x software to 1.5.3 software is not supported.

These upgrade instructions assume that current software is at version 1.5.2. If you have a lower version such as the 1.4.x software, first follow the appropriate upgrade instructions for version 1.4.x to upgrade to version 1.5.2. Then, follow topics in this section to upgrade to version 1.5.3 of the AMS Express software.

Note: This upgrade does not make any changes to the Grass Valley VM and StorNext VM software version. There are no software upgrade steps required for external clients of the AMS Express unit.

Follow all topics in the section sequentially to perform the upgrade.

Preparing for upgrade

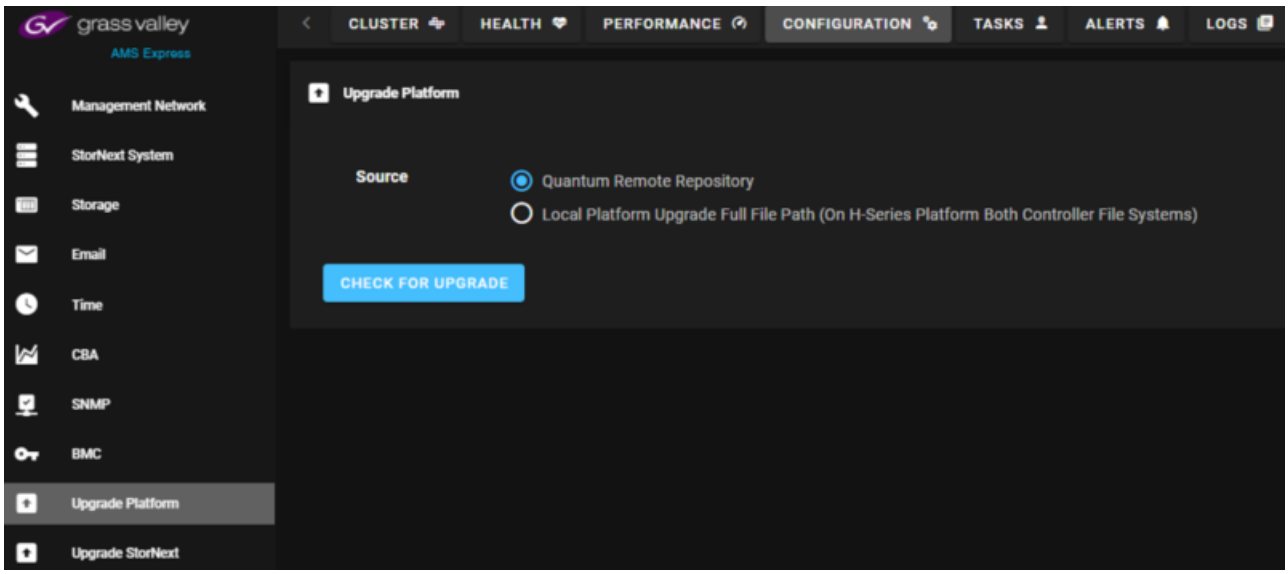
Before upgrading, do the following:

- **AMS Express Version Review** — Refer to *Retrieving the AMS Express system information* on page 92 topic for each controller to review that both controllers are running version 1.5.2 of the software.
- **Health Check Review** — Refer to *Monitoring Health* on page 95 section to use AMS-GUI to review the unit's system health.
- **Health Check Script** — Refer to *Health Check Script* on page 147 section to execute health check script for the AMS Express unit.
- **Procure Software Upgrade Files** — Get AMS Express software upgrade files from: `ftp://prodev@ftp.grassvalley.com/GV-AMS-Express/1.5.2b31-to-1.5.3-b5-upgrade`
- **Copy files** — Copy software upgrade files to each hypervisor in /tmp/dir directory. Upgrade files must be at same path on each hypervisor.
- **Checksum Review** — Review checksum information for the upgrade files as follows:
  - At the CLI in the directory on the hypervisor where the upgrade files have been copied to, execute "sha256sum -c *checksum-filename*", providing the filename of the checksum file and review that the output of the command shows "**OK**".
- **Designate AMS Express unit as “out of service”** — "Out of service" is primarily via usage policy for the site. There is no "out of service" mode that the AMS Express system can be transitioned to via UI, etc. Therefore, designate AMS Express unit to be “out of service” by executing the following:
  - Stop recording and playout operations
  - Stop import/export operations
  - Stop editing operations

Upgrading the AMS Express

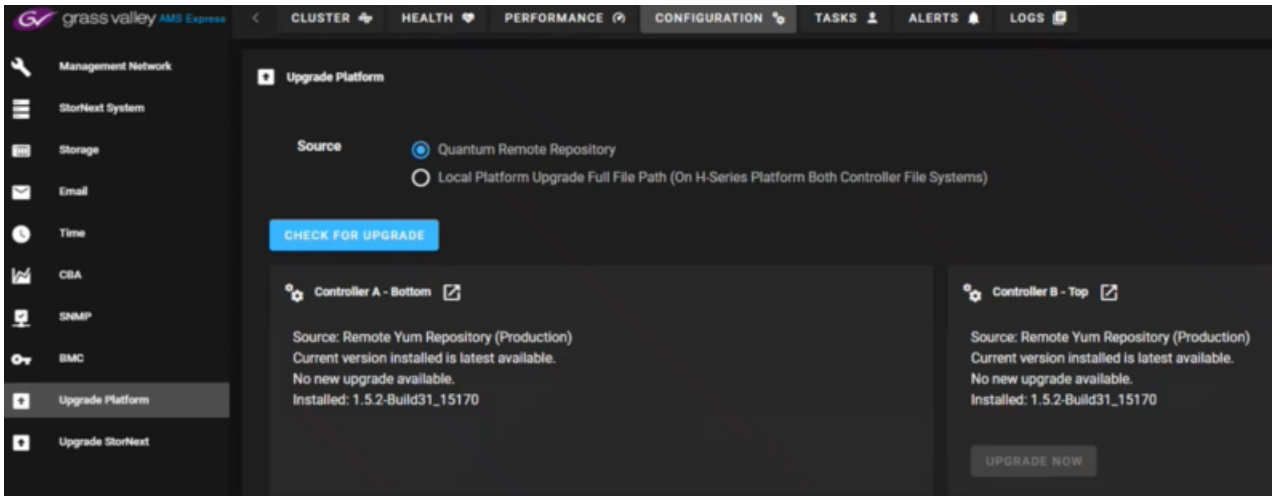
To upgrade the system, do the following:

1. Access AMS-GUI on Controller A.
2. Select the **CONFIGURATION** tab and click **Upgrade Platform** on the left menu.

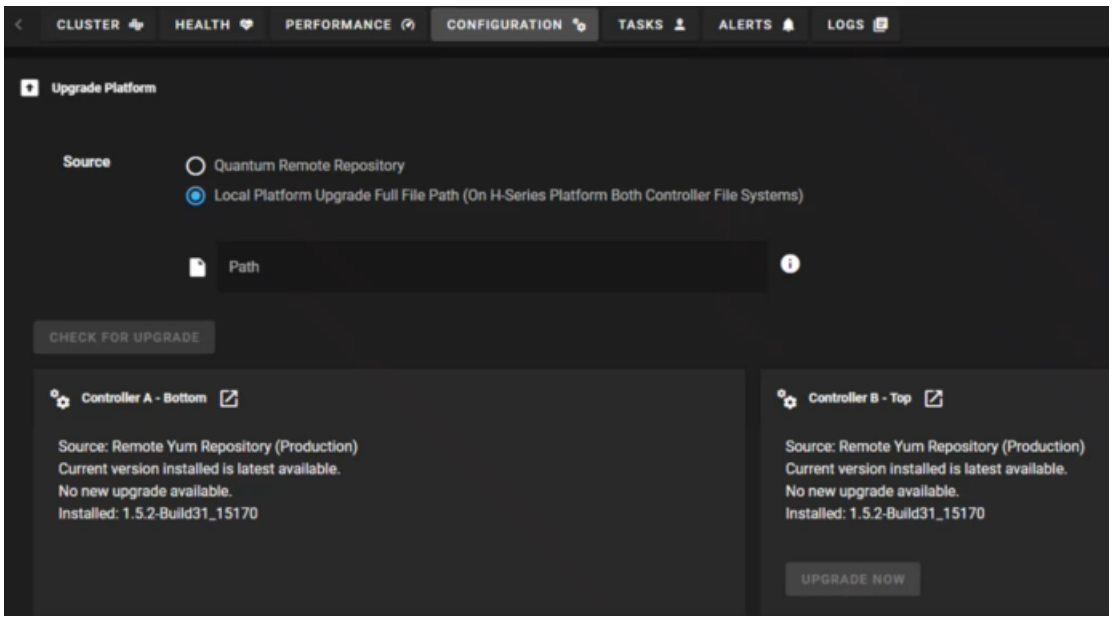


3. If the AMS Express unit is connected to Internet, click the **Check For Upgrade** button.

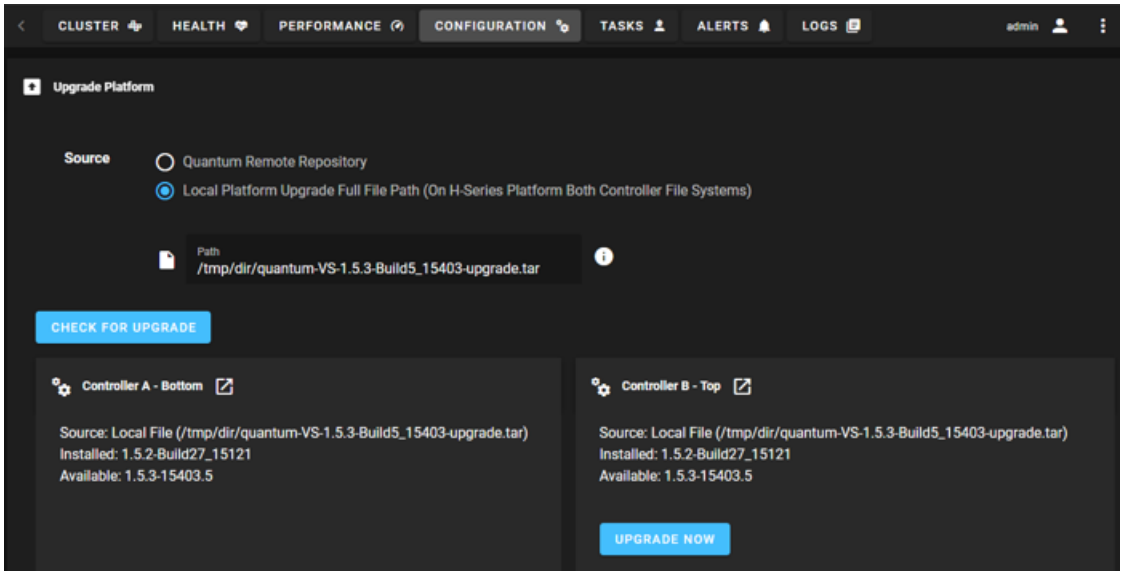
   The following details appear for both Controller A and Controller B.



4. To proceed, select the **Local Platform Upgrade** option as shown below.

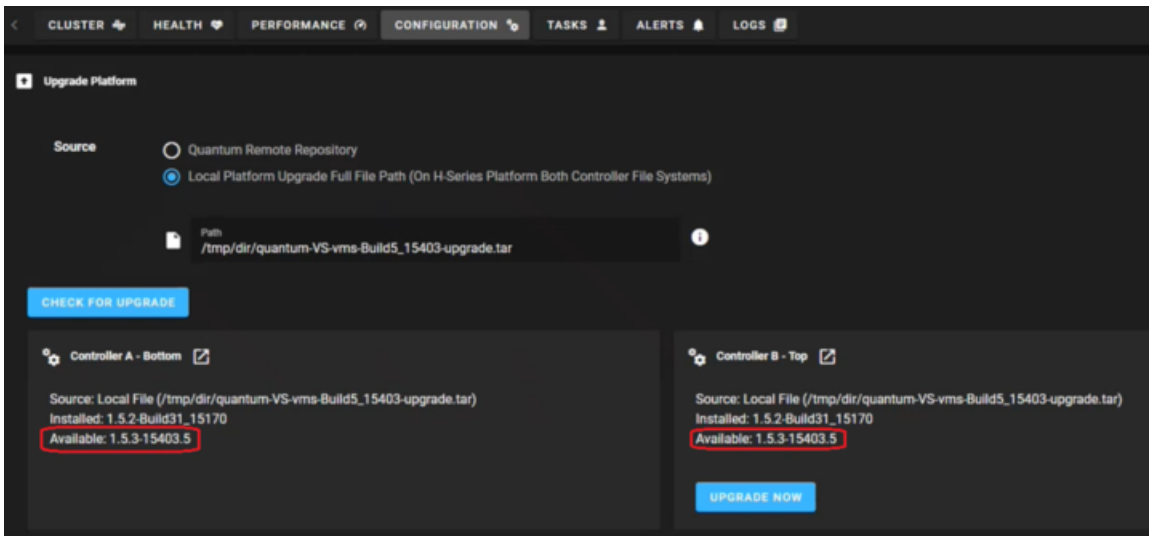


5. Then, enter the path and name of the upgrade file.



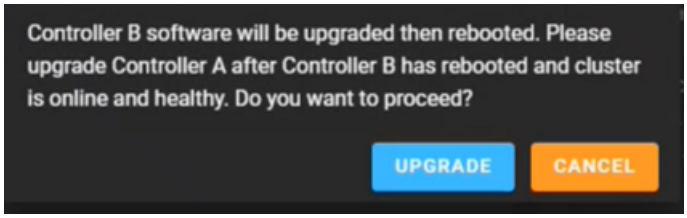
6. Click the **Check For Upgrade** button.

   After the check for upgrade process completes, review that version 1.5.3 software is available for both controllers as shown in red circles below.



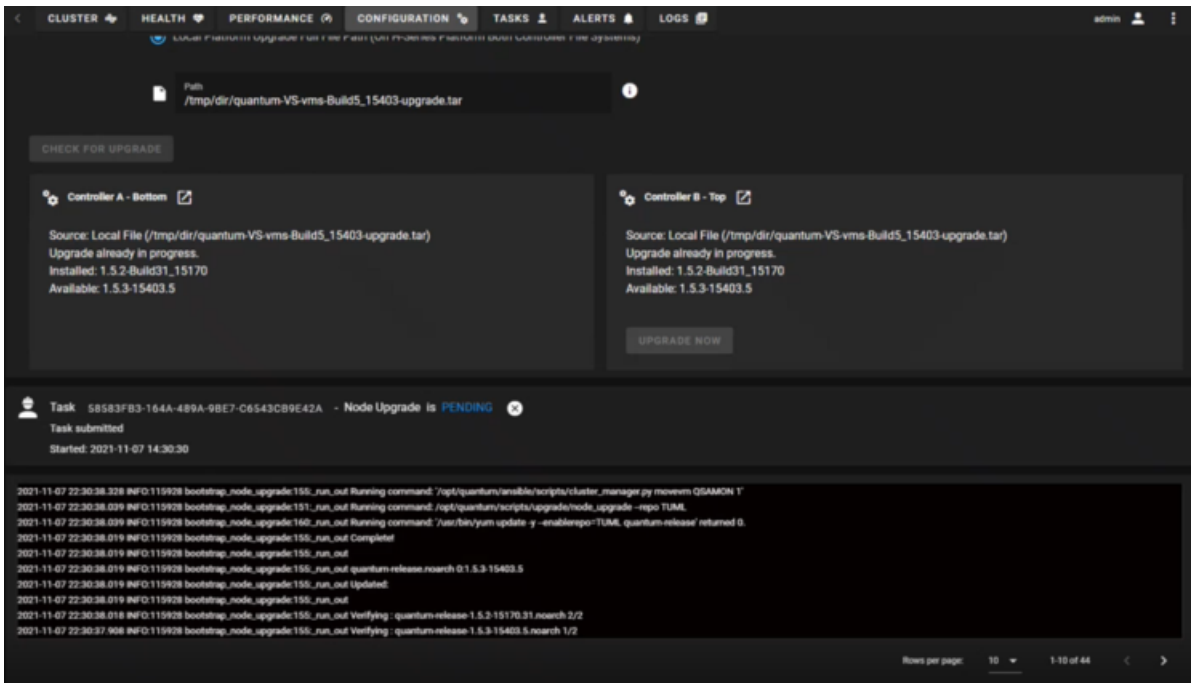
7. Check that web browser is connected to AMS-GUI on Controller A, and click the **Upgrade Now** button to start the upgrade process on Controller B.

   The confirmation dialog appears as below.

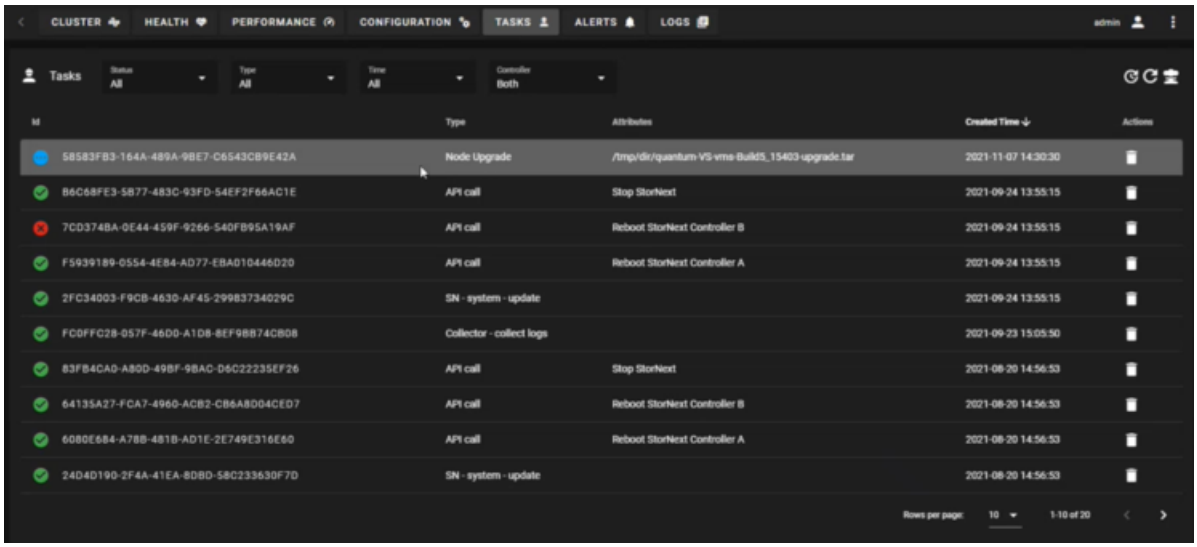


8. Click the **Upgrade** button to proceed.

   Wait for some time. Controller B will most likely reboot in less than 15 minutes and be ping-able, but we will still need to wait for some time after that reboot before additional steps can be taken to upgrade Controller A. It should take less than 30 minutes before user interaction is required again. While the Controller B upgrade is in progress, the AMS-GUI will display as below.

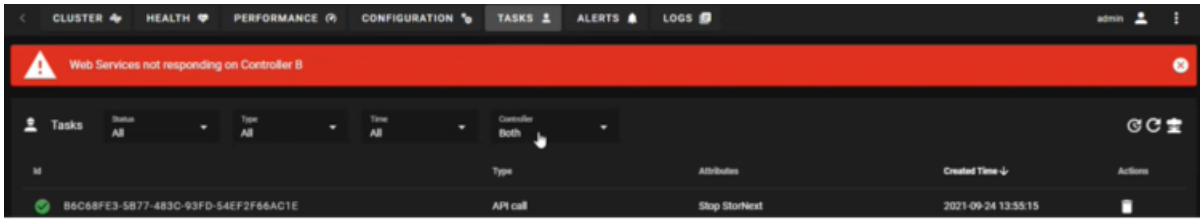


9. Select the **TASKS** tab to view the progress in the Tasks page, if desired.



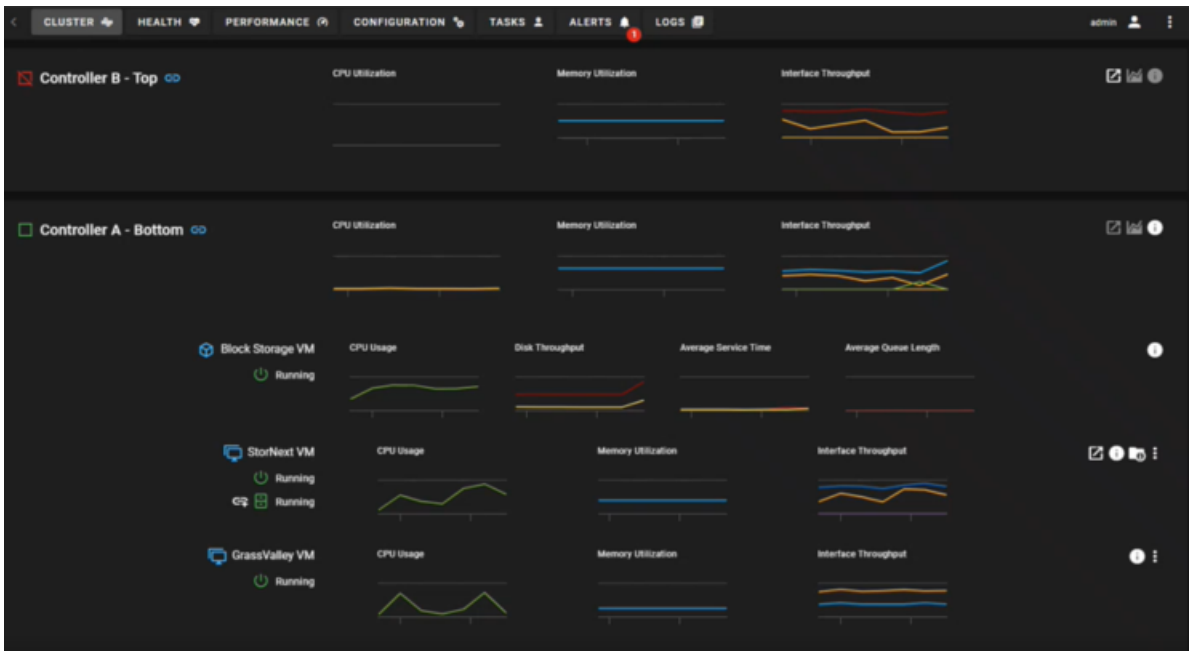
10. If you click **Upgrade Platform** on the left menu, the upgrade task status displays as **PENDING**.

    Red status messages like below may be observed on the **TASKS** tab during the upgrade.

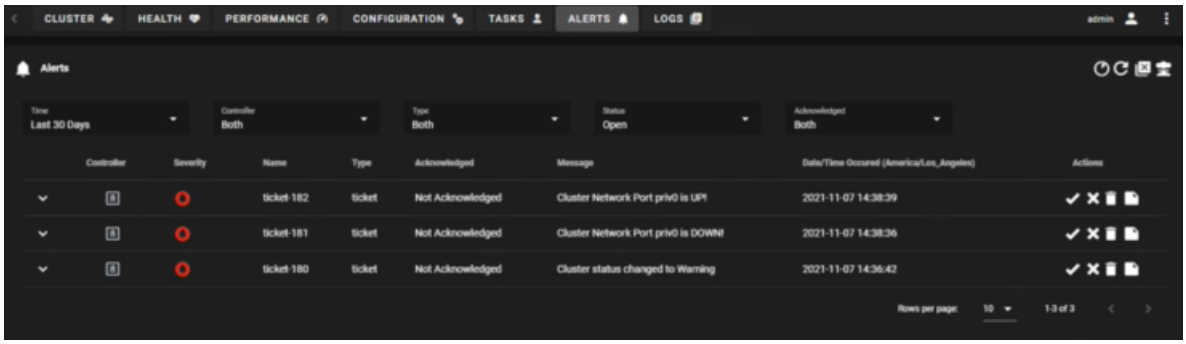


    This is normal, and expected while Controller B is offline during the upgrade process executing on that controller.

11. If you click the **CLUSTER** tab, the AMS-GUI may not show much information for Controller B while it is upgrading.

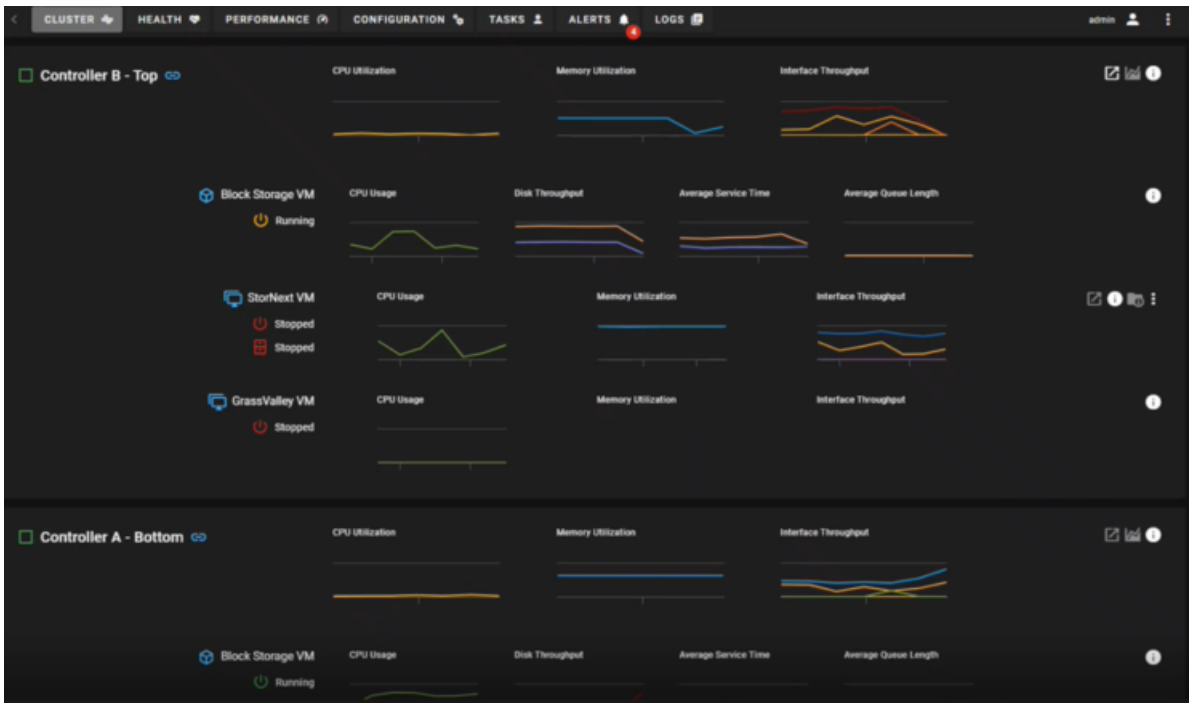


12. If you click the **ALERTS** tab, these items below appear on the Alerts page and this is expected during the upgrade process.

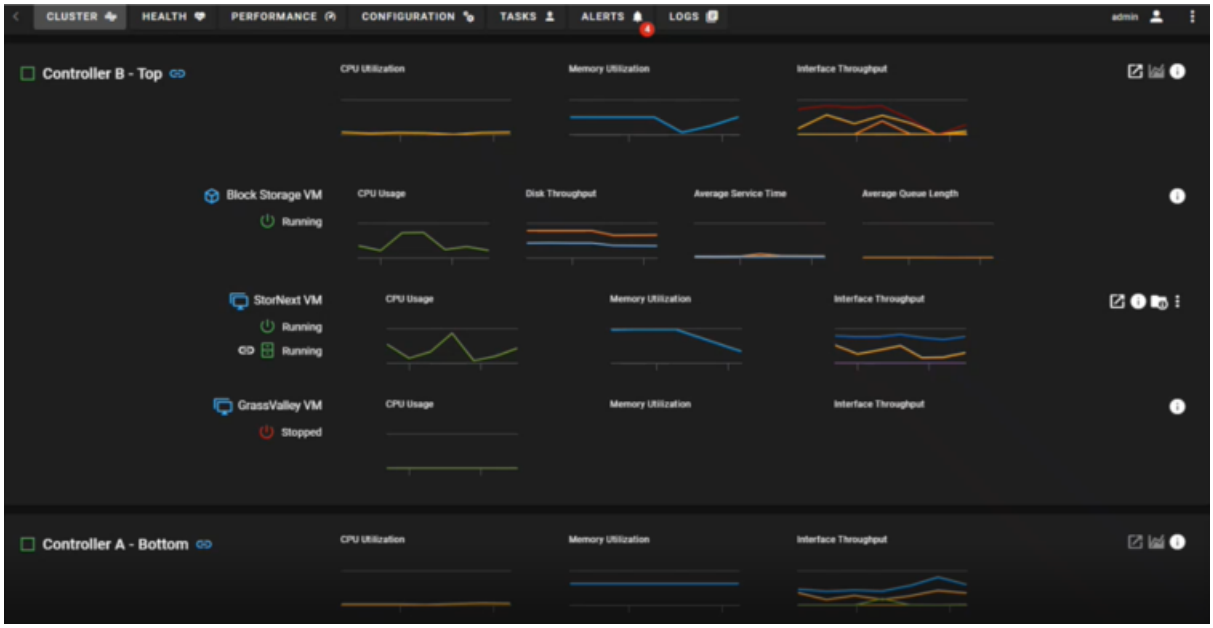


13. If you ping the hypervisor/AMS-GUI IP address for Controller B after less than 15 minutes, you will still need to wait until the AMS-GUI on Controller A shows Controller B to be fully operational again.

In the screen shot below, Controller B is running but has not yet fully initialized after the upgrade process was started.

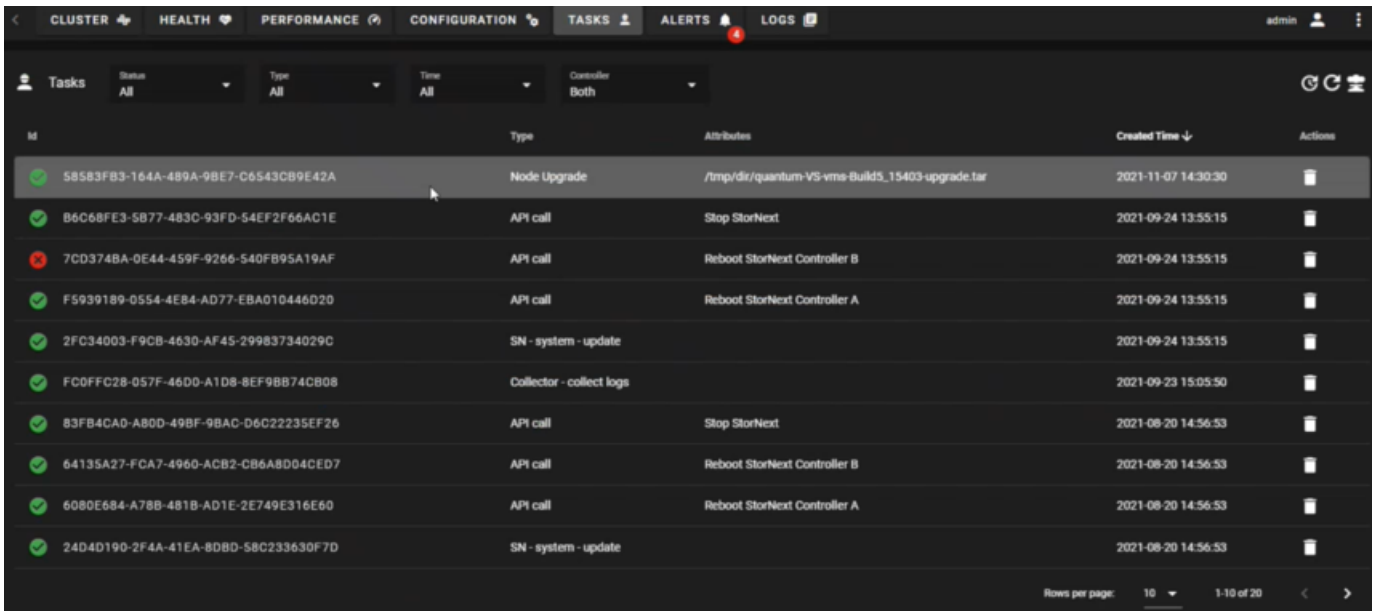


14. You must wait an additional 15 minutes, for Controller B to finish initializing after the upgrade and has reached a steady state as shown in the screen shot below.

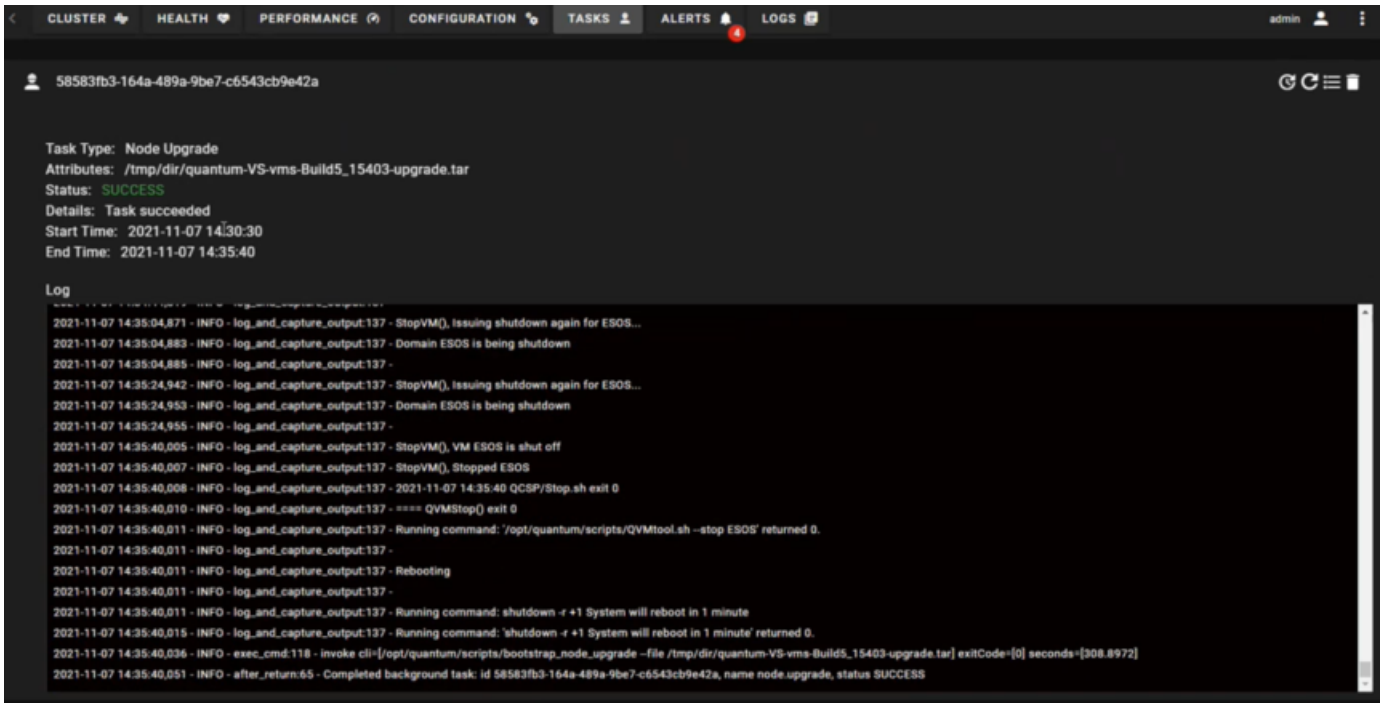


15. Refer to *Monitoring Health* on page 95 section to review health of AMS Express unit via the AMS-GUI.

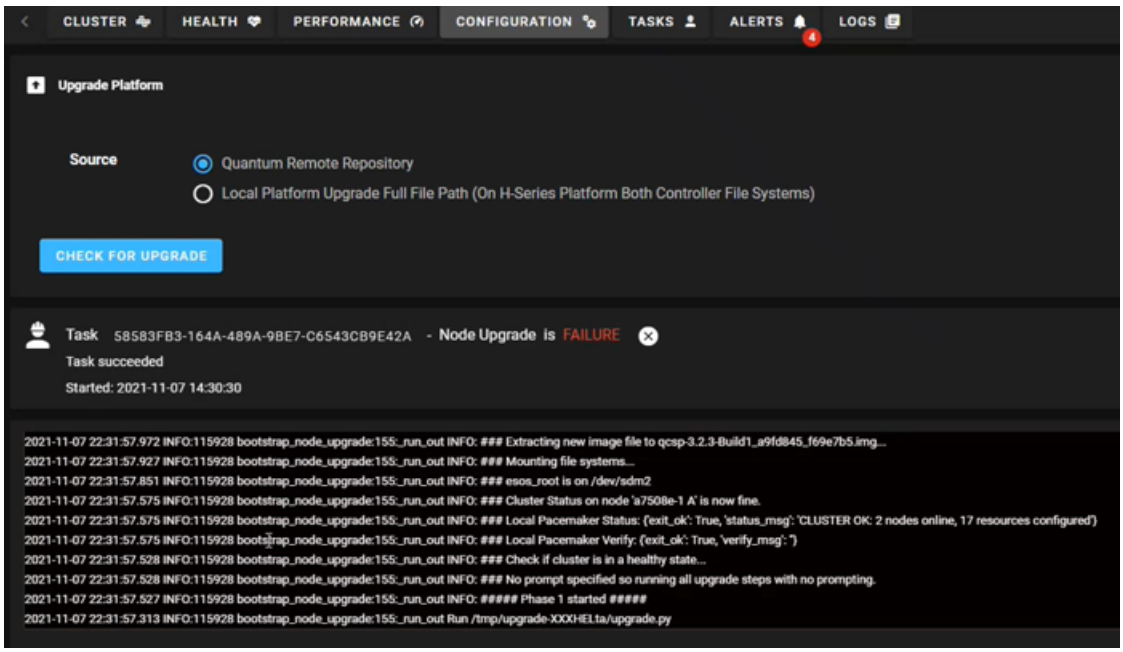
16. On the **TASKS** page, check that upgrade Task shows completed as below.



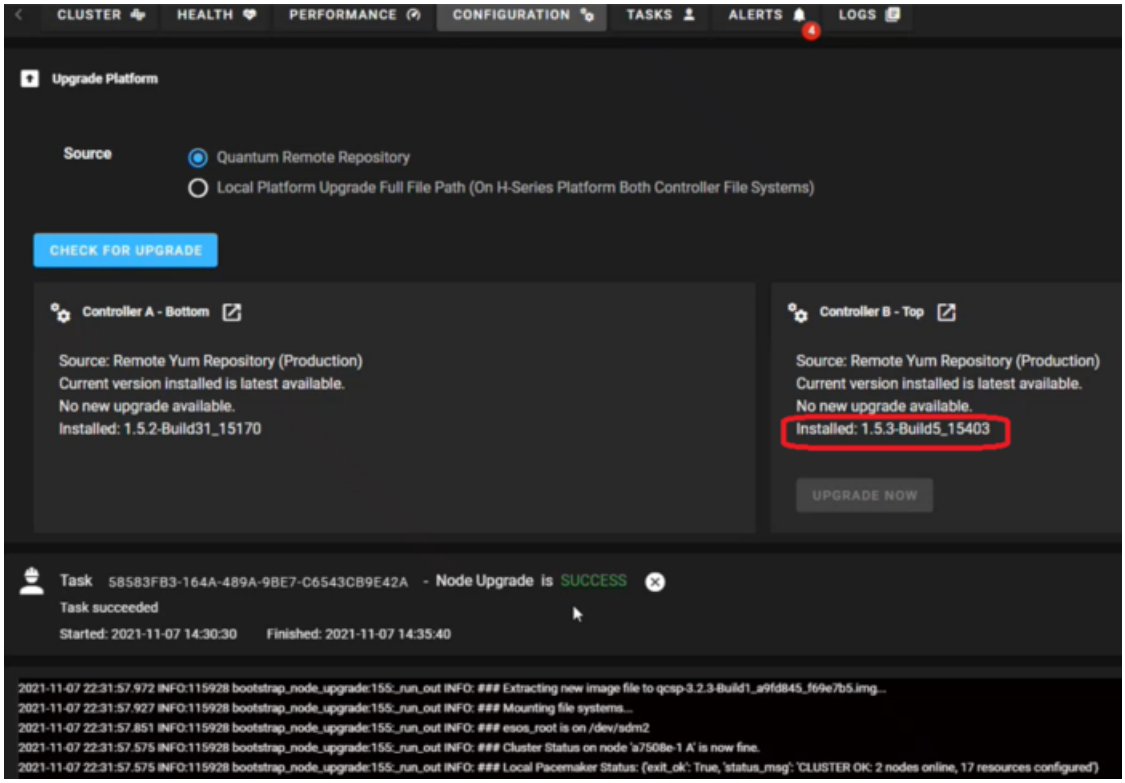
17. Double-click on the selected task to show messages output by the Task.



18. If you click **Upgrade Platform** on the left menu, the tab may simultaneously show success and failure if the page has not yet had a chance to refresh after Controller B has been fully initialized after the upgrade.



19. Eventually the AMS-GUI will transition to show a success status as shown in the screen shot below.

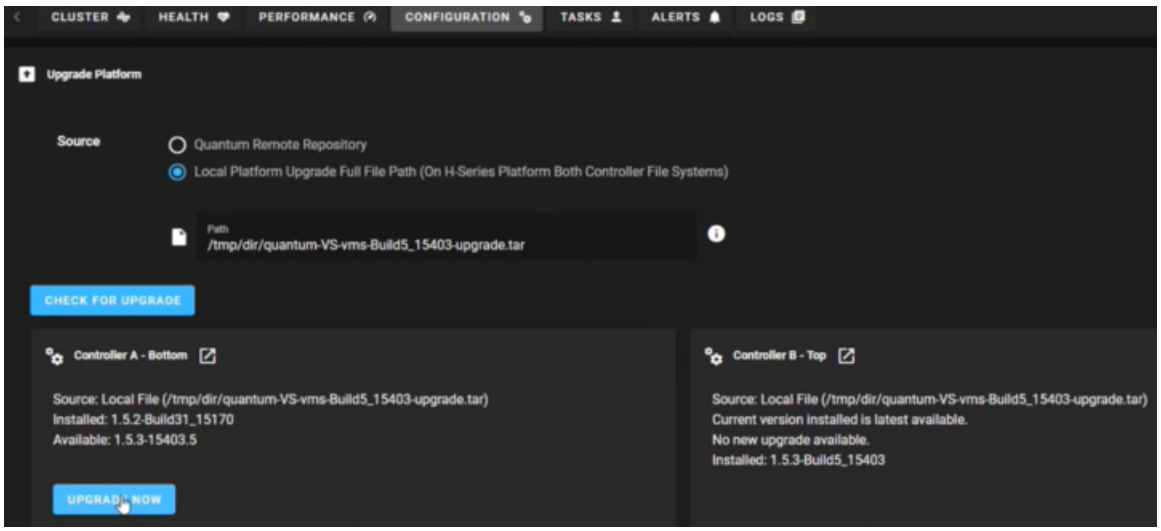


Note that Controller B now shows version 1.5.3 of the software installed.

20. Now access AMS-GUI via Controller B.

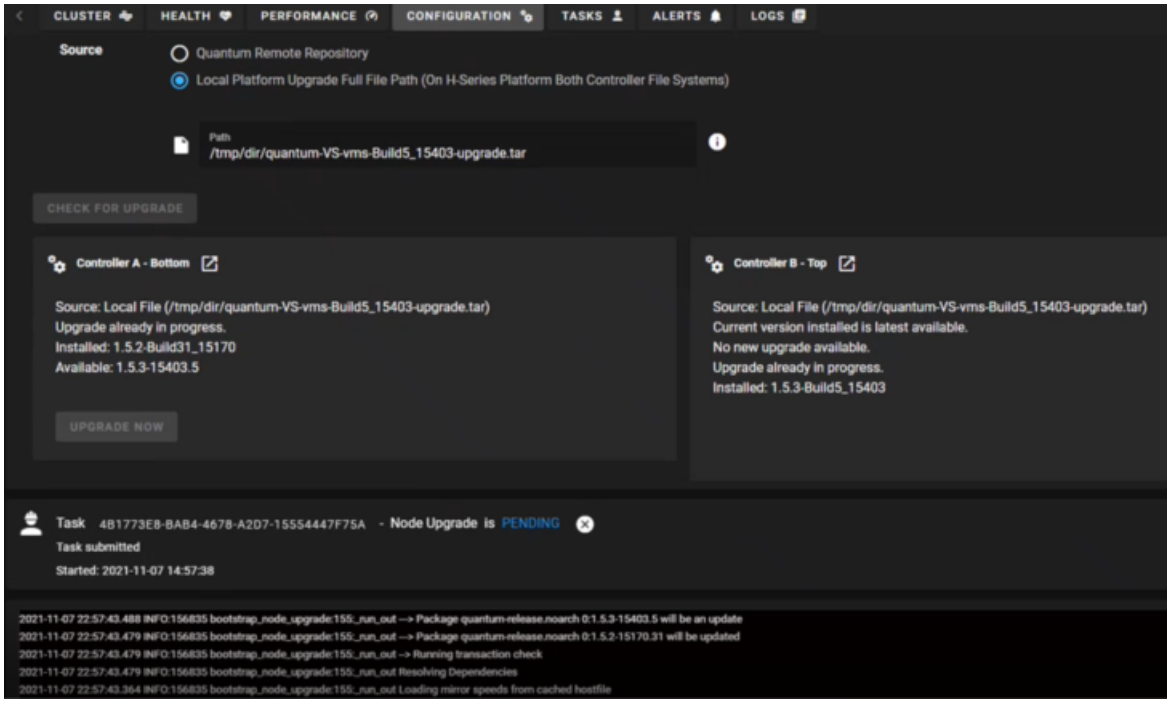
21. Repeat all steps as performed earlier from step 2 above to select **Local Platform Upgrade** and enter path to upgrade file, then click the **Check For Upgrade** button.

The upgrade check shows that Controller B has version 1.5.3 software installed, and that Controller A has version 1.5.3 software available for upgrading.



22. Click the **Upgrade Now** button to start the process of upgrading Controller A.

You can view the progress as below.



23. Wait for all status on the controller to fully initialize and reach a steady state. This may take on the order of 15 minutes.

Note that Controller A may reboot quickly enough that the Grass Valley VM will still be running on Controller A after the process has completed. The StorNext Primary will most likely have failed over to Controller B.

Verifying the upgrade

To verify the upgrade, do the following:

- **AMS GUI Review** — Check AMS-GUI for health status and that upgrade tasks have been completed as expected.
- **AMS Express Version Review** — Refer to *Retrieving the AMS Express system information* on page 92 topic for each controller to review that both controllers are running version 1.5.3 of the software.
- **Execute Health Check Script** — Refer to *Health Check Script* on page 147 section to execute health check script for the AMS Express unit.
- **Manual Fail over** — Manually fail over StorNext VM Primary to Controller A, leaving NAS Cluster Master on Controller B.
- **Set AMS Express status back to "in service"** — Set the AMS Express unit to be "in service" by doing the following:
  - Make sure NAS is accessible and operational.
  - Use Windows Explorer to access the AMS Express unit's shared files from a Control Point PC or other devices on the local area network with access to the AMS Express shared storage location. Create/edit/delete a small text file to validate that read/write operations are successful.
  - Execute smoke testing of basic Grass Valley News Production work flows.
  - Resume editing, import/export, recording/playout operations.
- **Remove notifications** — Close all the Alerts.
- **Remove upgrade files** — Delete upgrade files from /tmp directory on each controller.

Servicing the System

This section provides replacement procedures for supported AMS Express FRUs (Field Replaceable Units).

These procedures will typically be performed because a component has failed and needs to be replaced at a customer site in the field.

Removing and replacing FRUs

Field Replaceable Units (FRUs) are modular hardware components that can be serviced without disturbing other components in the system.

The procedures in the following topics show how to disassemble and replace components. Unless otherwise documented, re-assembly is the reverse.

Note: Do not discard any hardware unless specifically instructed to do so.

Danger: To avoid serious injury from high currents, ensure that power cables are disconnected prior to removing or replacing any parts.

Caution: This system contains board-level components that must be protected from static discharge and physical shock. Wear a wrist strap grounded to the system chassis when handling system components.

Taking ESD precautions

The chassis is designed to dissipate all electrostatic discharge (ESD) to the chassis base. Ensure that there is sufficient electrical and mechanical connection from the chassis base to the rack rails, and that the rack itself is tied to earth ground. The unit must be grounded in accordance with all local/regional and national electrical codes.

Some components within the *AMS Express* array contain static-sensitive parts. Precautions must be taken to ensure that the system is not exposed to ESD while handling components or servicing the unit.

To avoid damaging these parts while performing maintenance procedures, always observe the following precautions:

- Keep static-sensitive parts in their original shipping containers until ready for installation.
- Do not place static-sensitive parts on a metal surface. Place them inside their protective shipping bag or on an anti-static mat.
- Wear anti-static wrist bands when unpacking and handling the units, and avoid touching connectors and other components.
- Dry climates and cold-weather heating environments have lower relative humidity and are more likely to produce static electricity.

Servicing FRUs in Primary Chassis and Expansion Chassis

Procedures in this section apply to both Primary Chassis and Expansion Chassis.

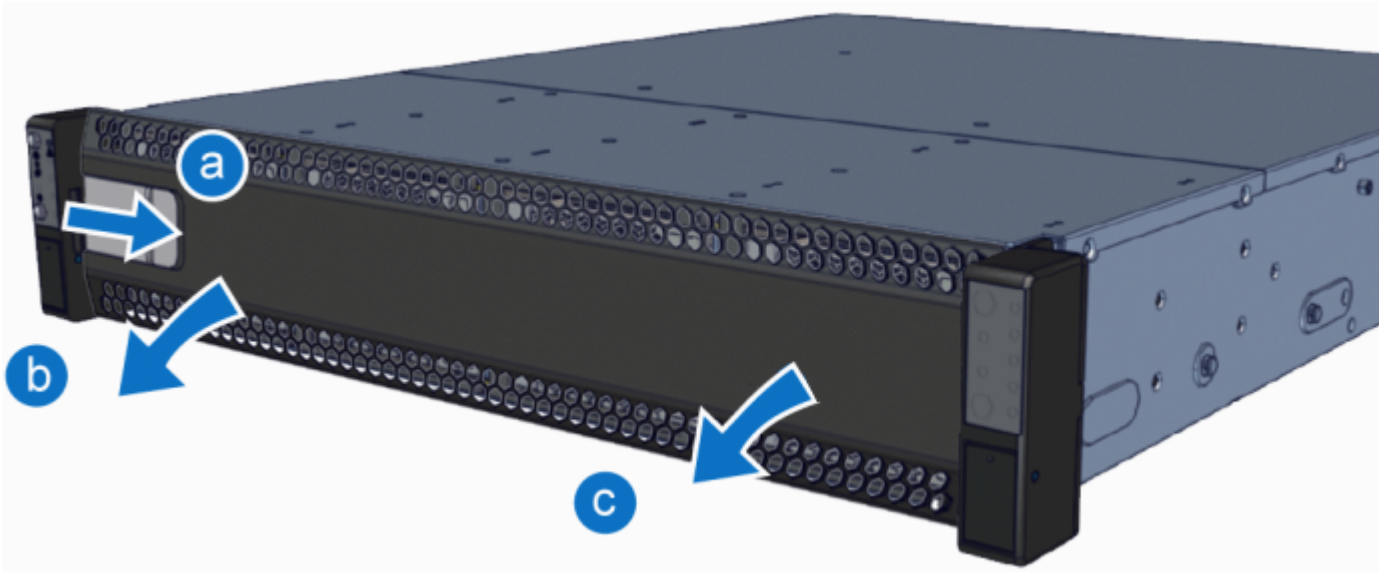
Removing the Bezel

You can remove the front bezel while the *AMS Express* unit is operating. If you do so, make sure you replace it within three minutes to ensure that the correct operating temperature is maintained.

Note: There are no tools required for this procedure. This component is hot-swappable. You do not need to stop all I/O from clients or remove power from both controllers to replace this component.

To remove the front bezel, proceed as illustrated.

1. Push the bezel latch **(a)** to the right.



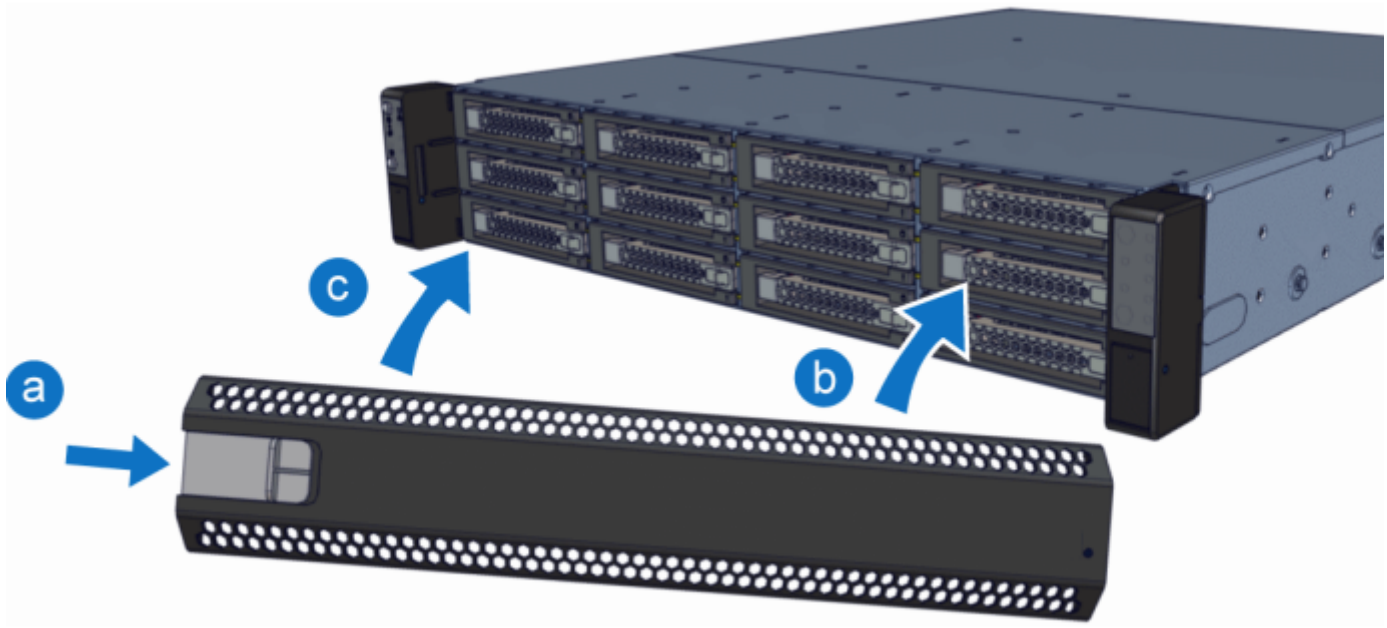
2. Remove the left side of the bezel **(b)** from the left side of the chassis.
3. Remove the right side of the bezel **(c)** from the right side of the chassis.
4. Remove the whole bezel from the chassis, and release the bezel latch.

Installing the Bezel

Note: There are no tools required for this procedure. This component is hot-swappable. You do not need to stop all I/O from clients or remove power from both controllers to install this component.

To install the front bezel, proceed as illustrated.

1. Push the bezel latch **(a)** to the right.



2. Insert the right side of the bezel **(b)** to the right side of the chassis.
3. Insert the left side of the bezel **(c)** to the left side of the chassis and release the latch.

Replacing the Data Drive

- You must have system access from a browser to see data status in the *AMS Express* UI.
- You must have a laptop to detach the drive from the Primary Chassis and reattach the drive to the Primary Chassis using command-lines.

Important: Mixing SED and non-SED drives is not supported.

Note: This component is hot-swappable. You do not need to stop all I/O from clients or remove power from both controllers to replace this component.

Replace a failed data drive only with a drive of the same capacity. Smaller-capacity drives are not compatible, and larger drives will only use the amount of data provisioned on the other drives in the array, so you will not be able to use the additional storage capacity of larger drives.

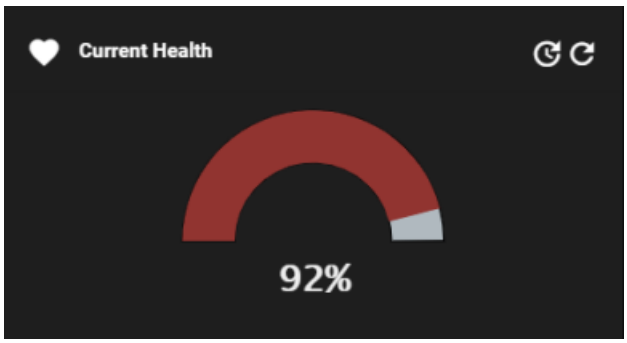
The *AMS Express* system contains 12 data drives in each Primary Chassis and Expansion Chassis.

Detecting failed data drives

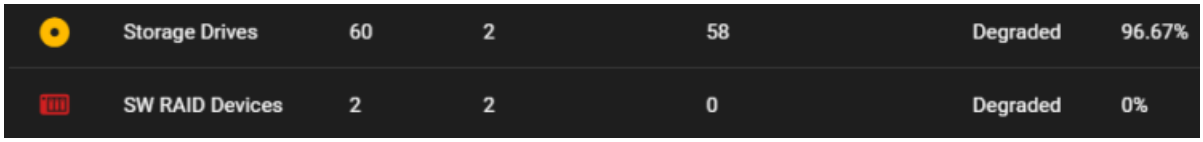
There are several ways to determine if a drive has failed, as follows:

- A failed data drive will display a solid red LED light on the drive (in front of the chassis).

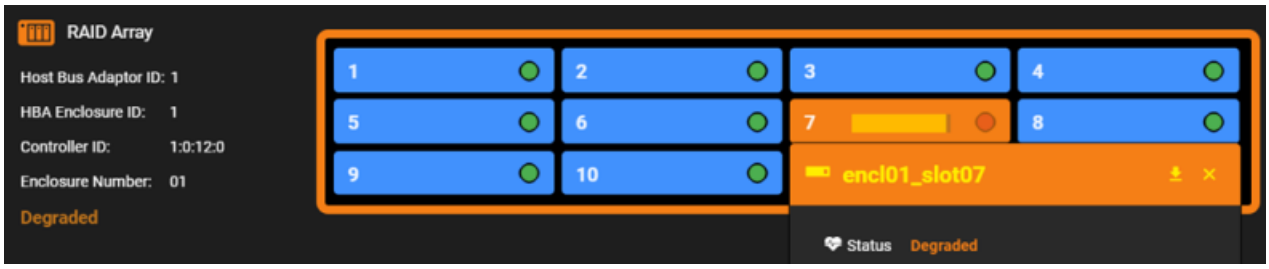
- In the GUI, on the **Health > System** page, the **Current Health** pie chart will display less than 100%.



- In the GUI, on the **Health > System** page, under **Components**, the **Storage Drives** and **SW RAID Devices** will show a status of **Degraded** along with a healthy percentage.



- In the GUI, on the **Health > Storage** page, the Primary Chassis or Expansion Chassis with the failed drive will show a degraded array, and the **Status** of the drive will also display a **Degraded** drive in its drive slot.



Preparing to remove failed data drives from the software array

1. Open an SSH session using the management IP address of the controller you want to access using a PuTTY/Terminal client.
2. Use the admin user name and password for the admin account on the *AMS Express* system.
3. Detach the failed drive(s) from the software array by entering as below:

```
[admin@h2000-2 ~]$ sudo qsacli --detach_drive auto
```

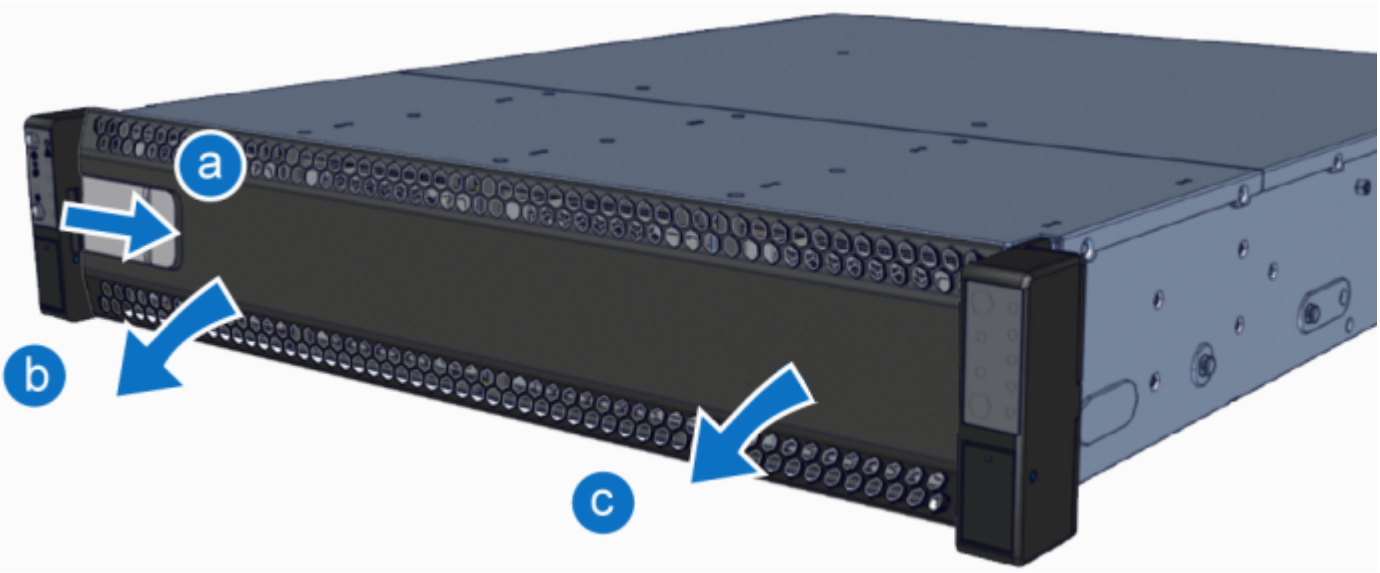
This will automatically detect any failed members of the array and detach them.

Removing drive tray from the chassis

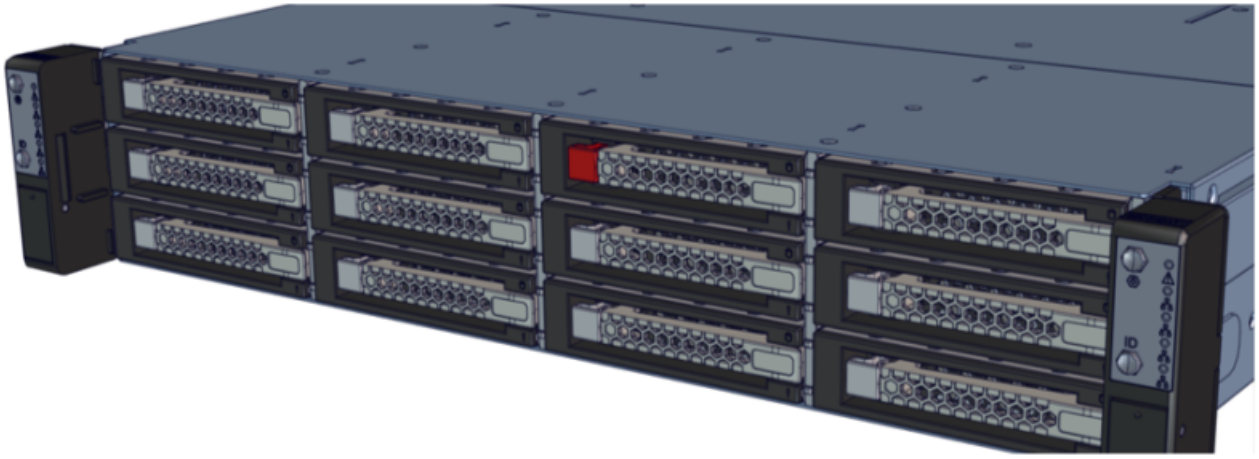
Follow ESD guidelines in *Taking ESD precautions* on page 115 when replacing the component.

To remove a drive tray, proceed as illustrated.

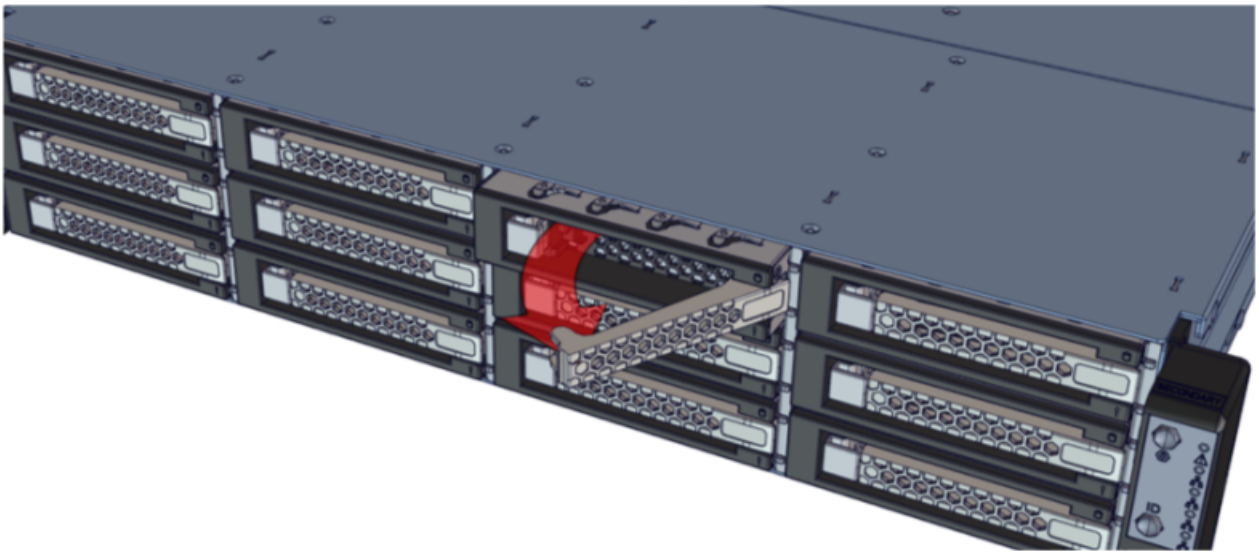
1. Push the bezel latch **(a)** to the right to remove the front bezel first.



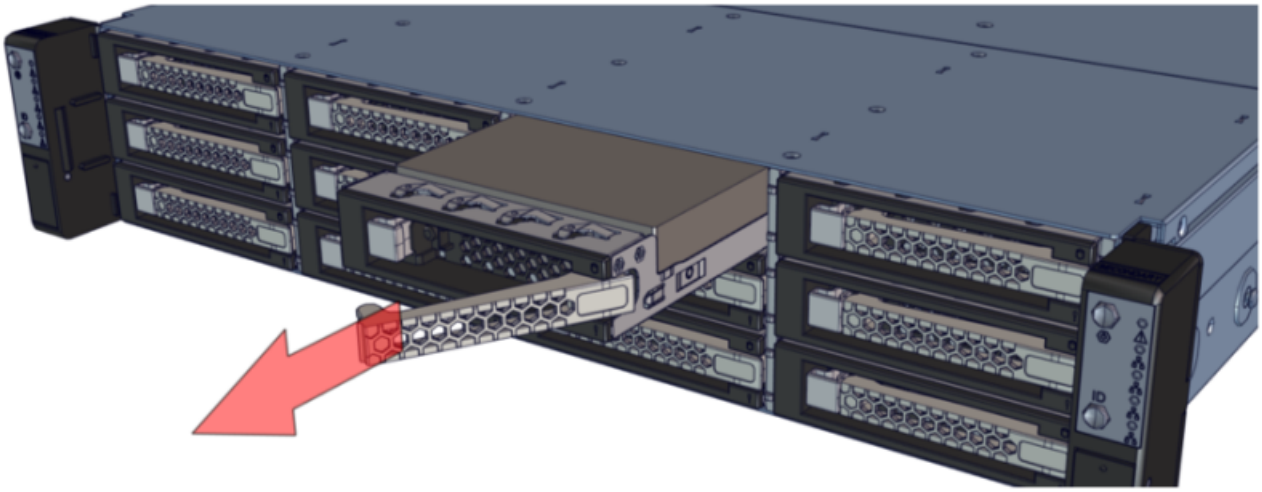
2. Remove the left side of the bezel **(b)** from the left side of the chassis.
3. Remove the right side of the bezel **(c)** from the right side of the chassis.
4. Remove the front bezel from the chassis, and release the bezel latch.
5. Press the latch key (highlighted in red below) to release the tray handle.



6. Pull the handle out (as shown by the red arrow below).



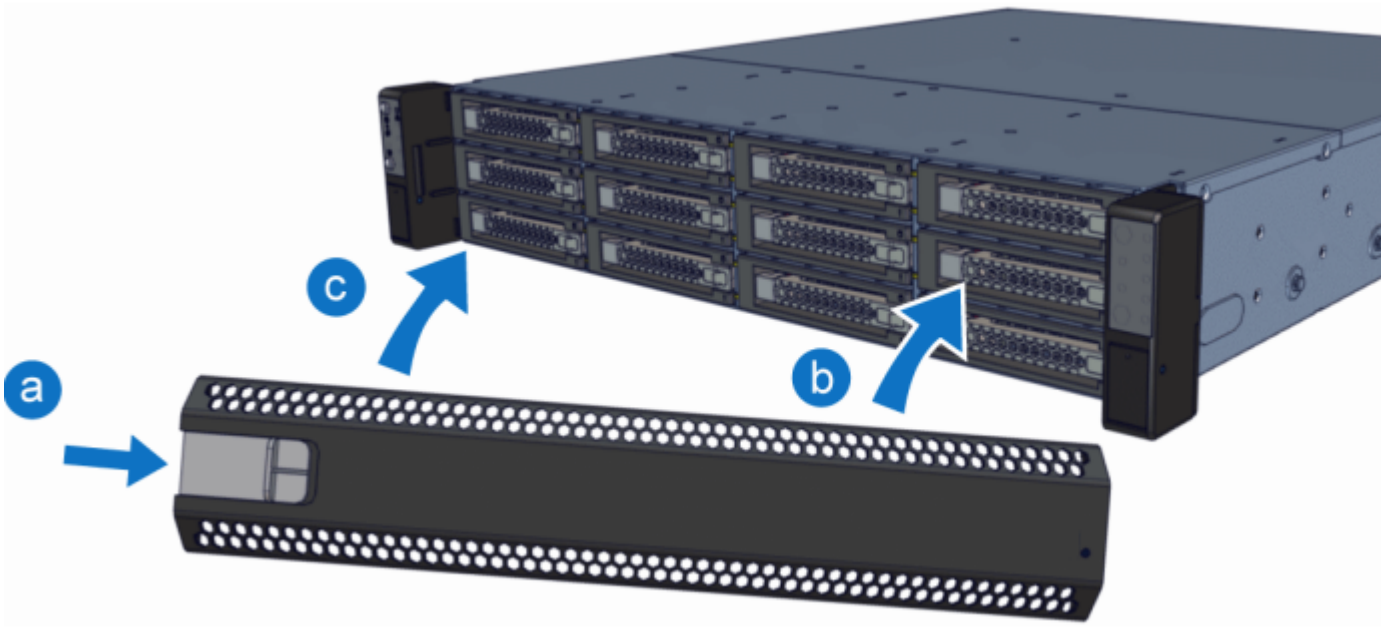
7. Pull the drive tray out from the slot by the handle.



8. Repeat for additional drives, if needed.

Inserting drive tray into the chassis

1. Insert the replacement drive tray into the chassis in the reverse order as it was removed in this topic: *Removing drive tray from the chassis* on page 118.
2. Repeat for additional drive trays, if needed.
3. Install the front bezel of the chassis by pushing the bezel latch **(a)** to the right.



4. Insert the right side of the bezel **(b)** to the right side of the chassis.
5. Insert the left side of the bezel **(c)** to the left side of the chassis and release the latch.

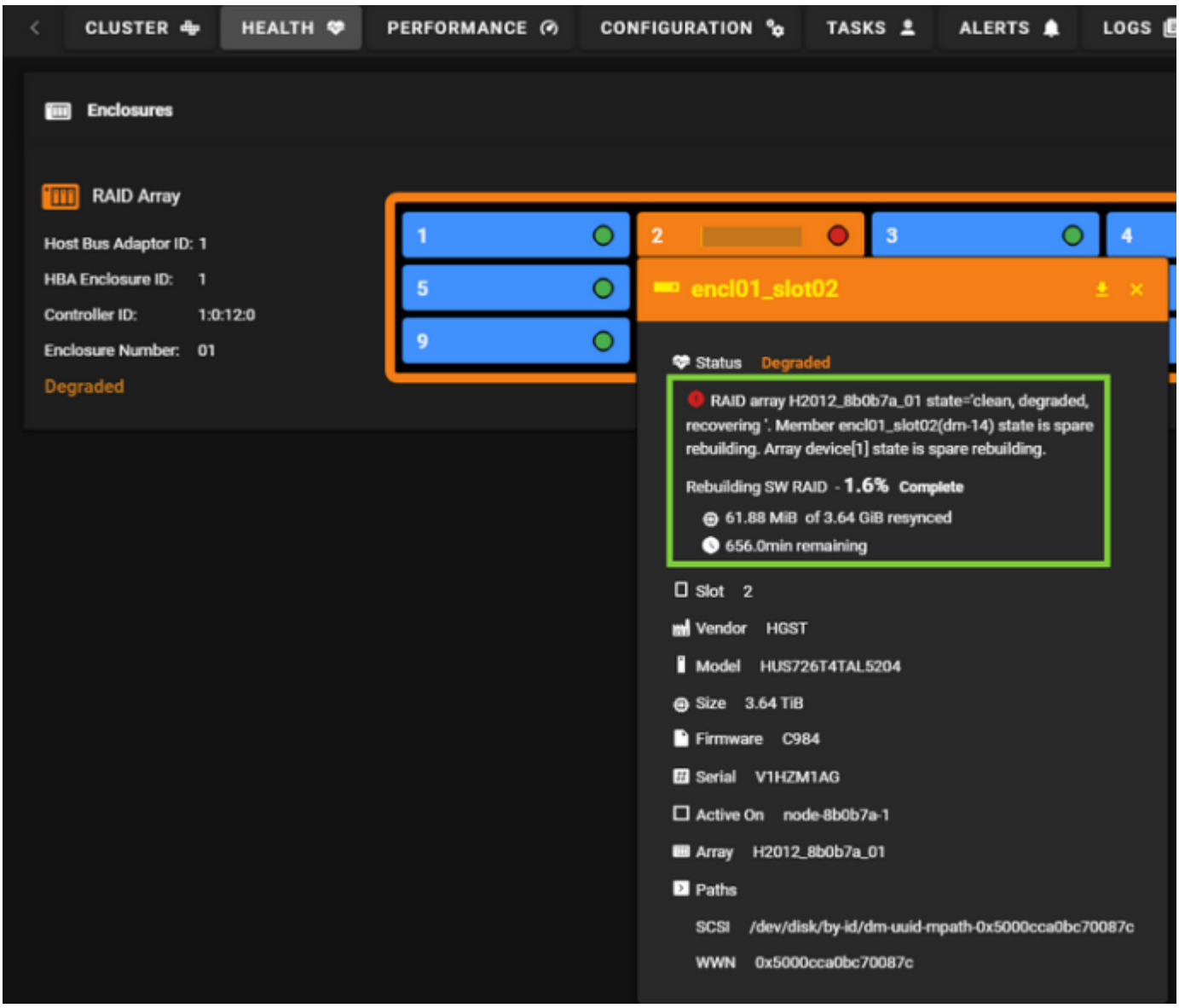
Configuring data drive(s) to rebuild

1. Open an SSH session using the management IP address of the controller you want to access using a PuTTY/Terminal client.
2. Use the admin user name and password for the admin account on the *AMS Express* system.
3. Attach the new drive(s) to the system by entering as below:

```
[admin@hseries-2 ~]$ sudo qsacli --attach_drive
    auto
```

   This will automatically attach, format, partition, and rebuild all data drive(s) in the *AMS Express* system (which includes reconstructing the degraded volume).

4. Click **Health > Storage** tabs to view the detail about the status of the rebuild process as below.



The drive(s) being rebuilt/resynchronized will be displayed in orange (indicating a degraded state), but you could view the detailed status of the rebuild process, as shown in the green box above (information about the drive "recovering"and "rebuilding", along with the percent complete, the synchronizing status, and time remaining are included as a reference for the state of the drive rebuild/re-synch)

5. You may have to click the **Refresh** button on the upper-right hand corner of the screen to show the rebuild status (depending on your screen refresh interval).

After finishing this procedure, the Data Drive replacement process is complete.

Servicing FRUs in Primary Chassis only

Procedures in this section apply to Primary Chassis only.

Replacing the Power Supply Unit (PSU)

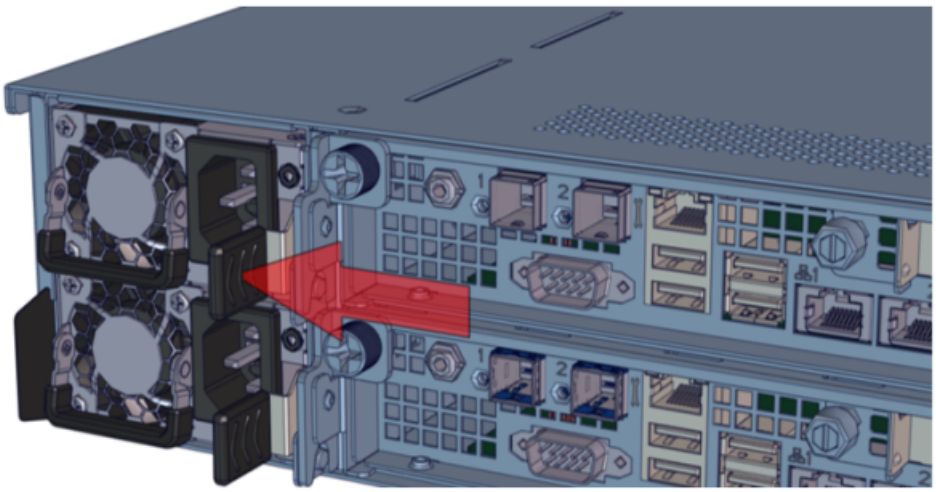
There are no tools required for this component replacement.

Note: While the Primary Chassis and Expansion Chassis PSUs (Power Supply Units) may look similar and are the same size, they are not compatible. **DO NOT** use a Primary Chassis PSU in an Expansion Chassis, and **DO NOT** use an Expansion Chassis PSU in a Primary chassis.

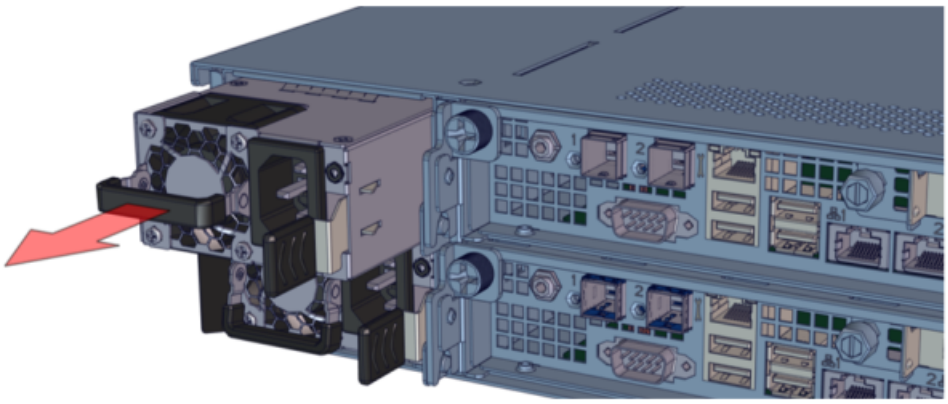
Caution: Follow ESD guidelines in *Taking ESD precautions* on page 115 when replacing the component.

Removing a PSU from the Primary Chassis

1. Locate the power supply module at the back of the unit.
2. Remove AC power cable from the PSU.
3. Press the latch to the left with the thumb (as indicated by the red arrow below).



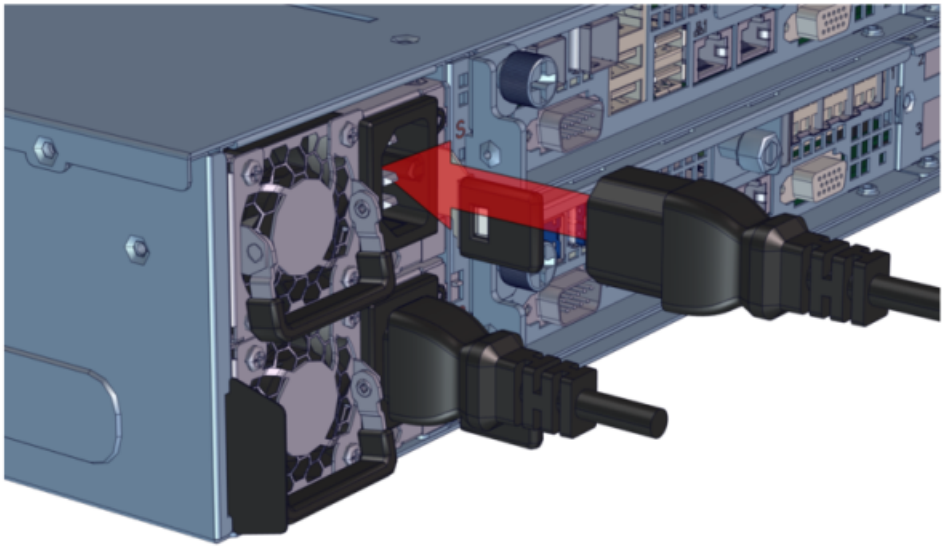
4. Then, pull out the PSU by the handle on the left.



5. Remove the PSU from the chassis.

Installing the PSU

1. Insert the PSU into the slot and push it firmly until the latch clicks.
2. Attach the AC power cable to the PSU as shown below.



Note: The image above is from a Primary Chassis. Power cords for an Expansion Chassis are at the same location.

Servicing FRUs in Expansion Chassis only

Procedures in this section apply to Expansion Chassis only.

Replacing the Power Supply Unit (PSU)

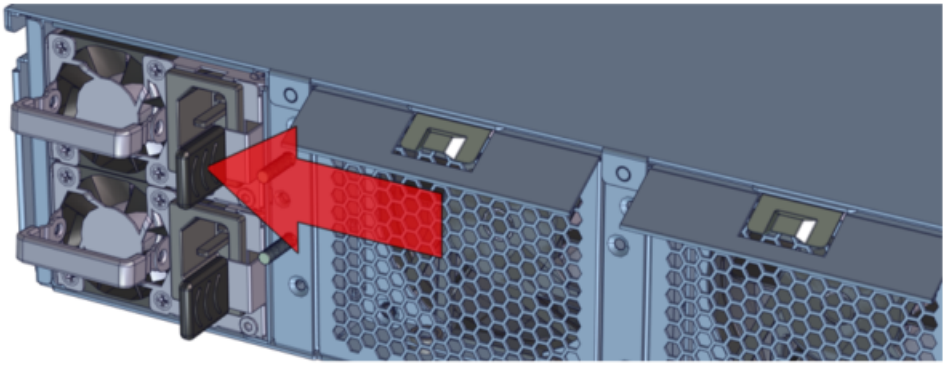
There are no tools required for this component replacement.

Note: While the Primary Chassis and Expansion Chassis PSUs (Power Supply Units) may look similar and are the same size, they are not compatible. **DO NOT** use a Primary Chassis PSU in an Expansion Chassis, and **DO NOT** use an Expansion Chassis PSU in a Primary chassis.

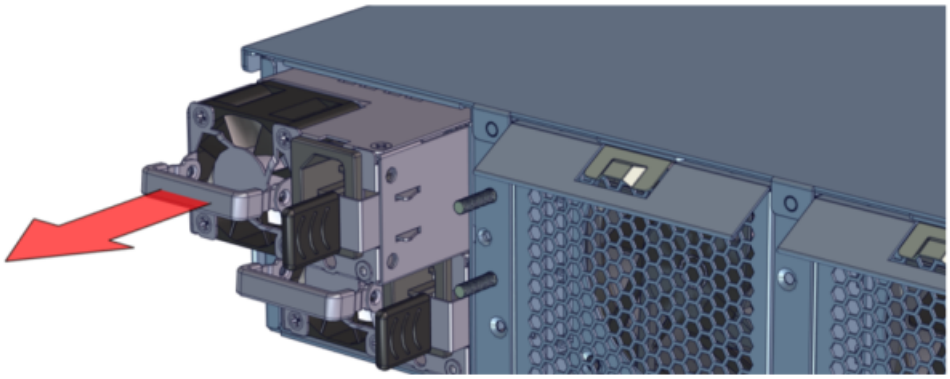
Caution: Follow ESD guidelines in *Taking ESD precautions* on page 115 when replacing the component.

Removing a PSU from the Expansion Chassis

1. Locate the power supply module at the back of the unit.
2. Remove AC power cable from the PSU.
3. Press the latch to the left with the thumb (as indicated by the red arrow below).



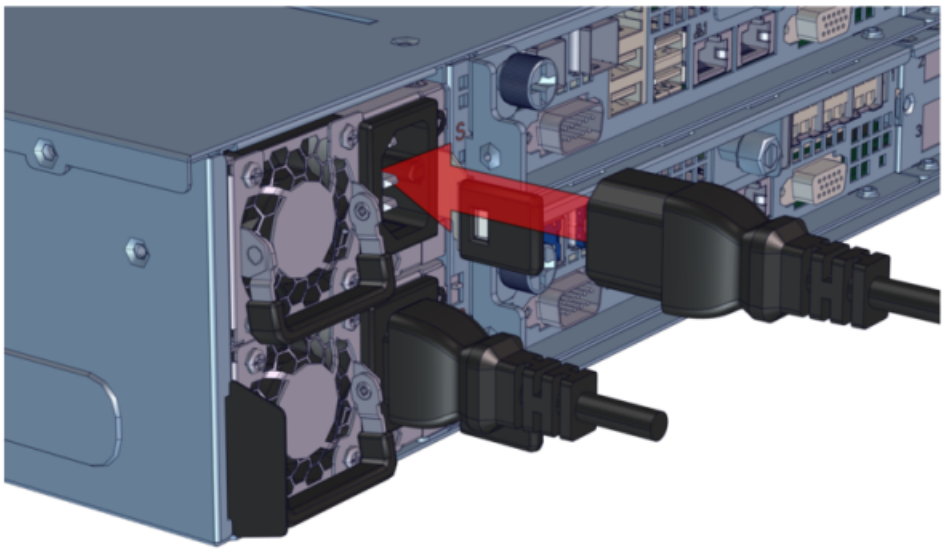
4. Then, pull out the PSU by the handle on the left.



5. Remove the PSU from the chassis.

Installing the PSU

1. Insert the PSU into the slot and push it firmly until the latch clicks.
2. Attach the AC power cable to the PSU as shown below.



Note: The image above is from a Primary Chassis. Power cords for an Expansion Chassis are at the same location.

Replacing the Fan Module

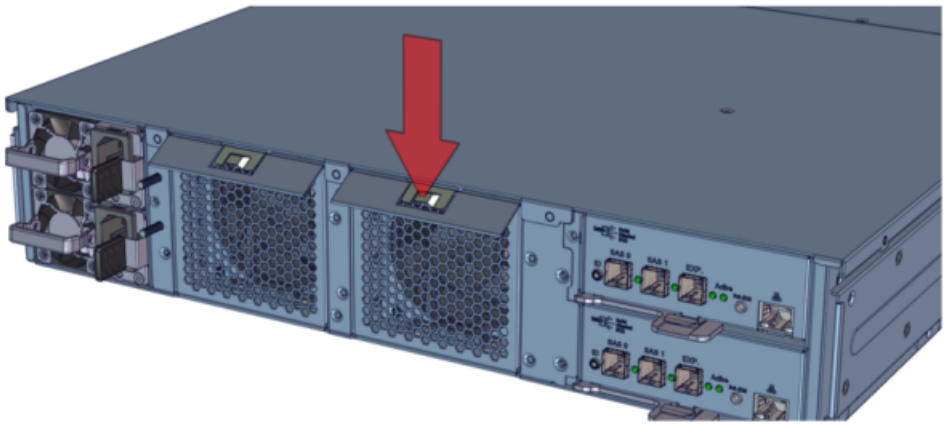
There are no tools required for this component replacement.

Note: This component is hot-swappable. You do not need to stop all I/O from clients or remove power from both controllers to replace this component.

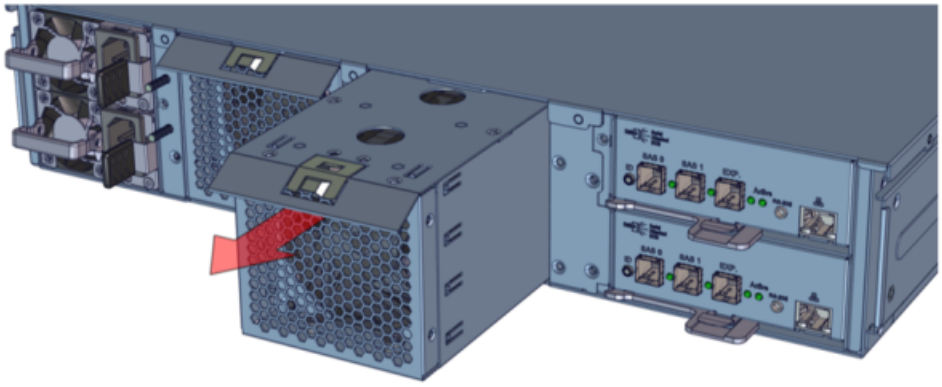
Caution: Follow ESD guidelines in *Taking ESD precautions* on page 115 when replacing the component.

Removing a Fan Module from the Expansion Chassis

1. Press the latch key downward (as shown by the red arrow below) to release and unlatch fan module from its slot.



2. Pull the fan module out by the handle and remove it from the chassis.



Installing a Fan Module into the Expansion Chassis

Insert the fan module into the chassis in the reverse order as it was removed in this topic: *Removing a Fan Module from the Expansion Chassis* on page 126.

Note: Make sure the latch clicks when inserted into the enclosure.

Replacing the I/O Module

There are no tools required for this component replacement.

Caution: Follow ESD guidelines in *Taking ESD precautions* on page 115 when replacing the component.

Removing I/O Module from the Expansion Chassis

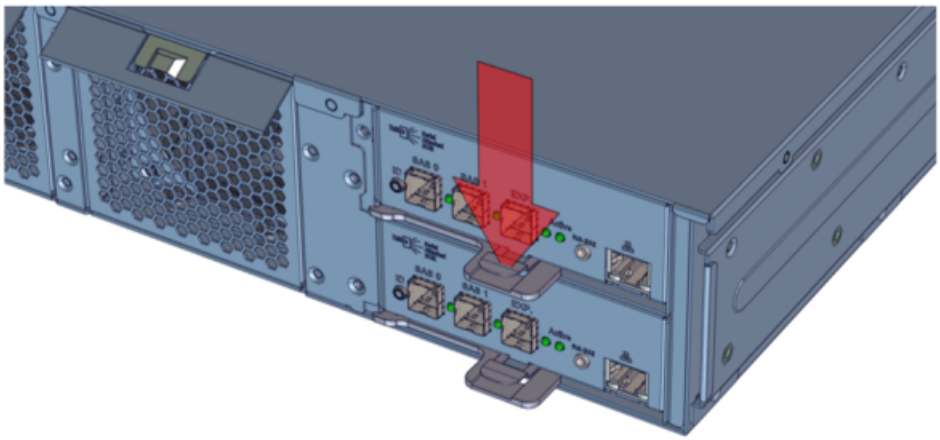
There are no tools required for this component replacement.

To remove the I/O Module, proceed as illustrated.

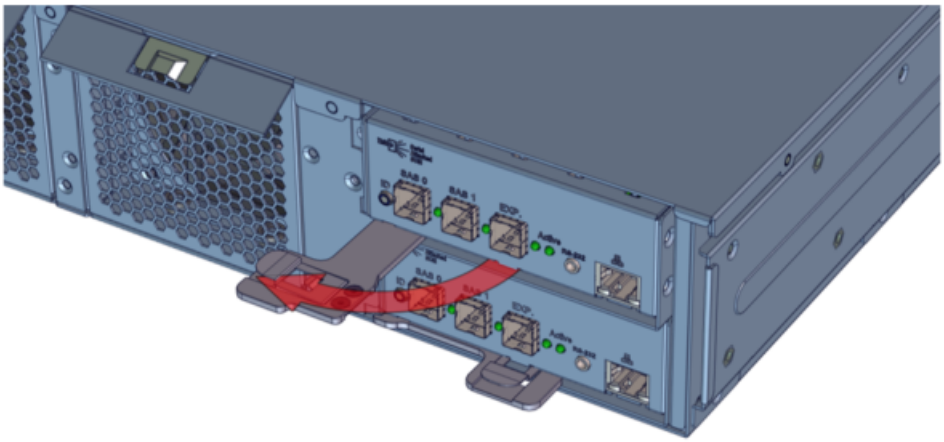
1. Remove any cables attached to the I/O Module.

   Note: Mark the port location before removing attached cables for re-attachment after the I/O Module is replaced.

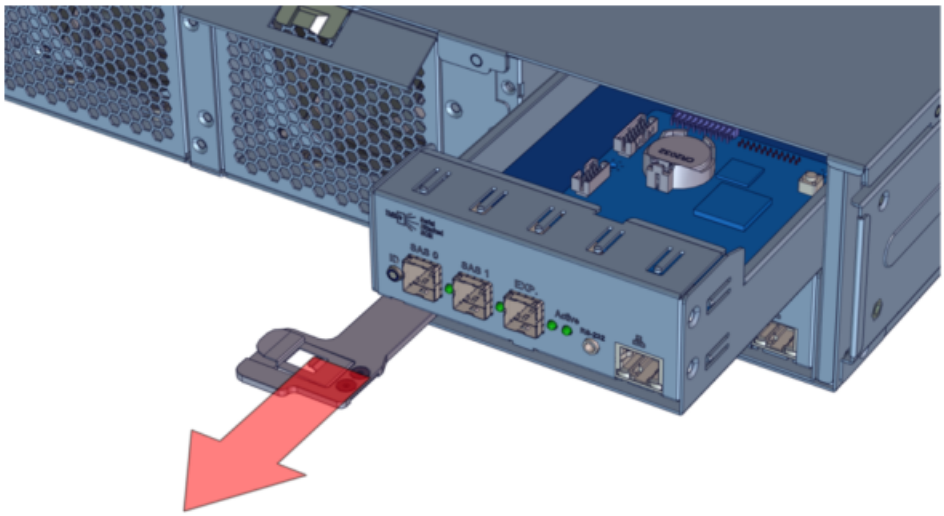
2. Press the latch key downward (as shown by the red arrow below) to release the handle.



3. After that, pull the latch key handle outward.



4. Then, pull the I/O Module from its slot.



Installing I/O Module into the Expansion Chassis

1. Insert the I/O Module into the chassis in the reverse order as it was removed in this topic: *Removing I/O Module from the Expansion Chassis* on page 127.
2. Attach cables to the I/O Module in the same ports they were installed into previously in the failed I/O Module of the Expansion Chassis.

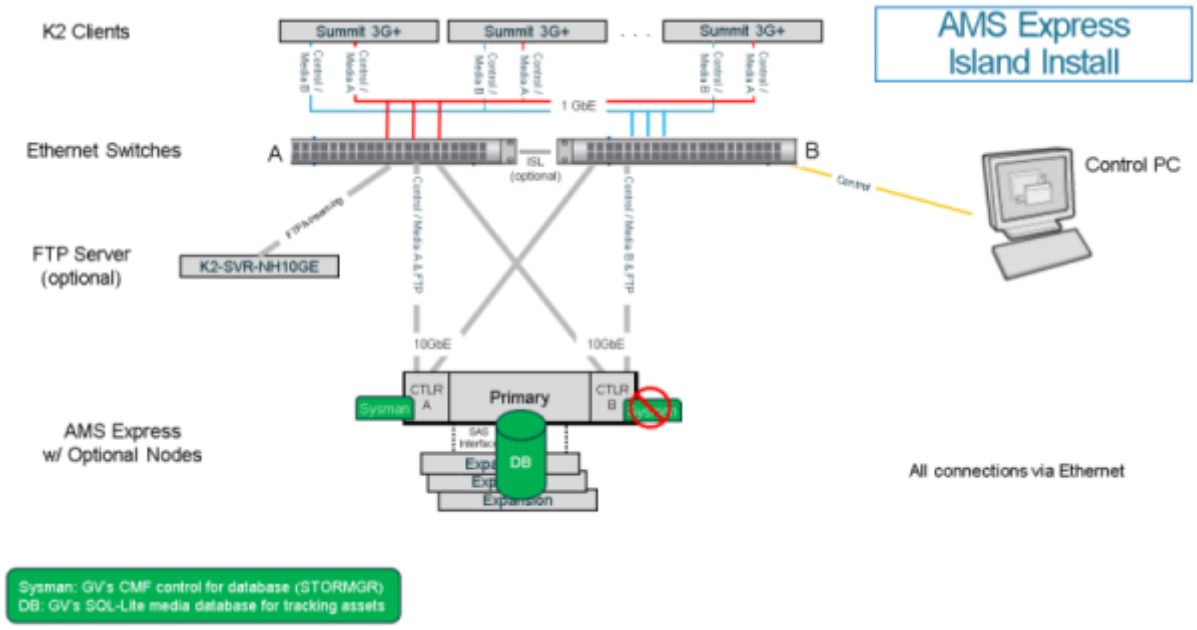
Network Diagrams

If you have received your *AMS Express* from the factory, it has been installed with all the necessary software and server functionality.

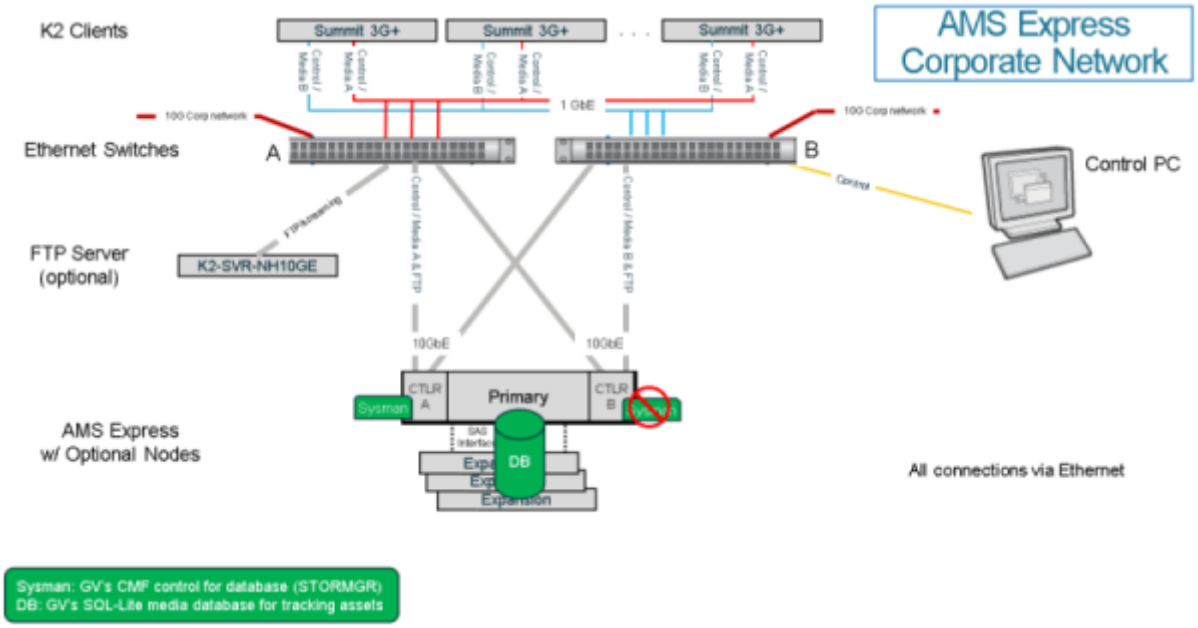
Note: When connecting multiple new AMS Express units to a single network environment, please make sure to power on and configure one AMS Express unit at a time. Failing to do so risks causing conflicts between the AMS Express units since all AMS Express units will be using the same default IP addresses.

Refer to these topics for further installation information in your network.

Island Install



Corporate Network



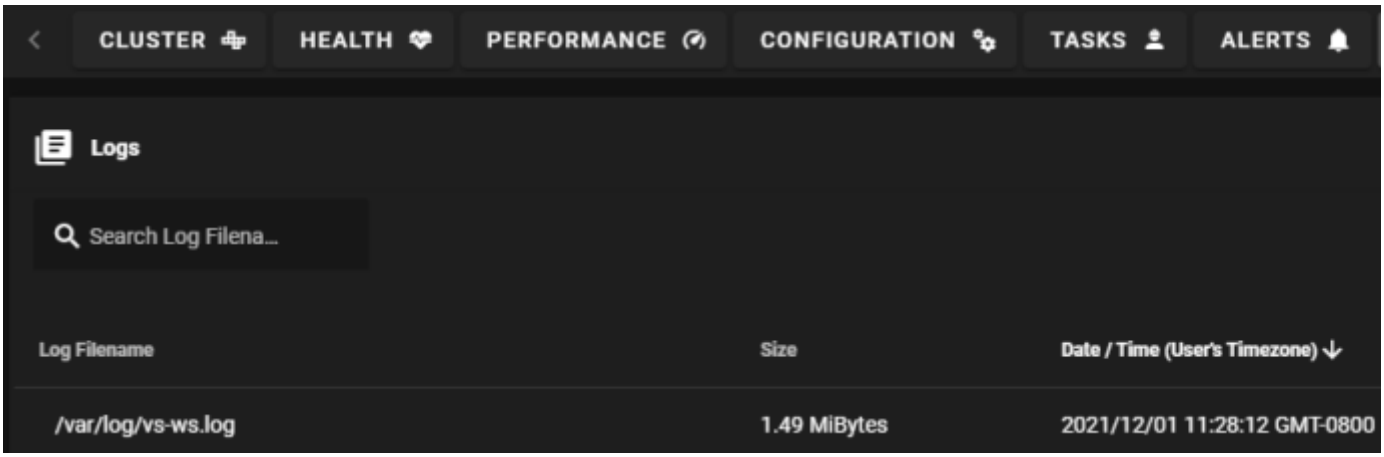
Troubleshooting

Collect Logs

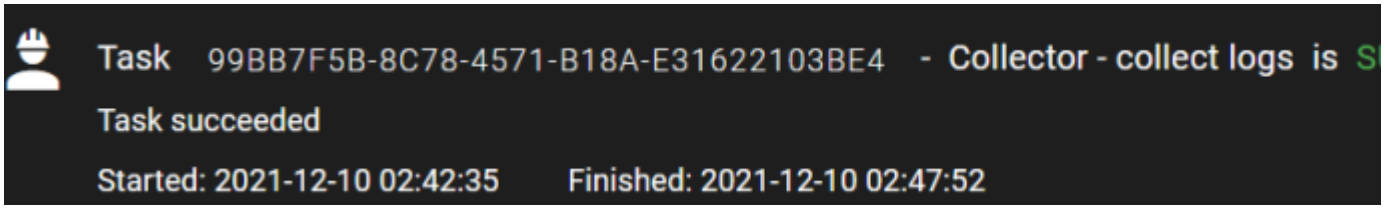
Collecting logs

AMS Express provides the capability for users to collect logs to get the system information.

1. Select the **LOGS** tab.
2. Click the **Collect Logs** button on the right of the GUI.



The Collect Logs task starts and the status shows as **PENDING**. After the task is completed, the status changes to **SUCCESS**.



3. Scroll down the log list to find the collected logs in a zip file.

4. Click to download the zip file.

Redeploy System Manager

Overview

The following describes a scenario where the Grass Valley VM has an issue, a virus, or needs to be re-imaged. For the purpose of documentation, same example IP addresses will be utilized as previous. Please replace with appropriate customers' IP addresses.

Remove and Reinstall VM

1. Using the CLI, SSH into the Bottom/Node1 hypervisor (AMS UI).

```
# ssh admin@10.16.232.170
      Password: adminGV!
```

2. Become root.

```
[admin@node1 ~]$ sudo bash
```

3. Change directory.

```
bash-4.2# cd /opt/quantum/scripts
```

4. Delete GV VM.

```
bash-4.2# ./VM_manager.py --remove --vmname GrassValley
```

5. Reinstall GV VM.

```
bash-4.2# ./VM_manager.py --create --vmtype GrassValley
```

6. Exit the root shell.

```
bash-4.2# exit
```

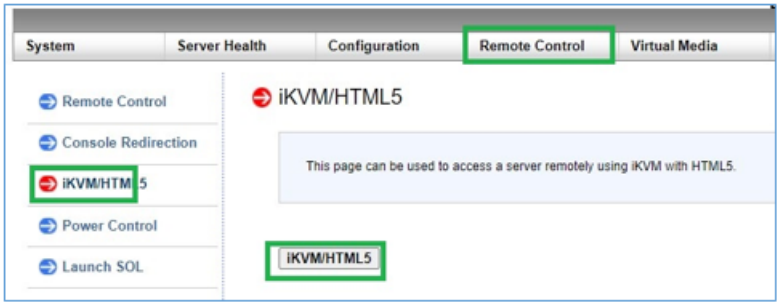
7. Exit the hypervisor Node1 shell & CLI.

```
[admin@node1 ~]$ exit
```

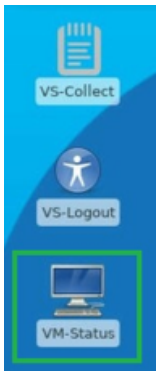
Configure

The final step of the process is to reconfigure the new VM.

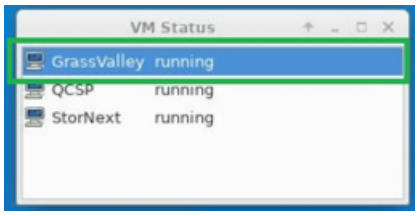
1. Login into the BMC GUI on the Bottom/Node1 from browser: **10.16.232.178**
2. Open iKVM/HTML5 console, select **Remote Control** and click **iKVM/HTML5**.



3. Typically on the bottom-right corner of the screen is a VM Status box. If not visible, then click the **VM-Status** icon below.



4. Double click on the Grass Valley line then login and configure as usual.



5. Once the IP **10.16.232.176** is assigned it can be connected to via Remote Desktop.

Manual GV VM Failover

This section applies to AMS Express units with version 1.4.0 software on them, or for units that have been upgraded from version 1.4.0 to version 1.5.2 software. For AMS Express units that shipped from the factory with version 1.5.2 software, there is now an automated fail-over process for the GV VM.

Overview

The following process describes how to deploy System Manager on Top Controller-Node2 if the Bottom Controller-Node1 has a catastrophic failure. This should only be used to keep the customer running while doing further troubleshooting and waiting for replacement parts.

- Time to implement < 2 hours.
- The customer will have data loss during the down-time.

This section will use IP addresses as documented in *IP addresses & passwords* on page 33. Substitute with customer or site-specific information where appropriate.

Failover Process

The following will create then start a GV VM on Node2 assuming Node1 is down.

Copy Script

1. Start WinSCP.
2. Login to the Node2 AMS/Hypervisor (.171) using admin credentials.
3. Login as prodev on `ftp.grassvalley.com` and enter as below.

```
cd /"GV AMS Express"
get VG_GM_Node2.sh
```

4. Copy the **GV_VM_Node2.sh** file to the AMS Express Node2 /tmp directory.
5. Exit WinSCP.

Start GV VM

1. Using CLI on Node2 AMS-Hypervisor to create GV VM and deploy script just copied.

```
> ssh admin@10.16.232.171
[admin@node2 ~]$ cd /tmp
[admin@node2 /tmp]$ chmod +x ./GV_VM_Node2.sh
[admin@node2 /tmp]$ sudo bash
bash-4.2# ./GV_VM_Node2.sh
Uncompressing GrassValley VM image
Creating GrassValley VM on node 2
Starting GrassValley VM on node 2
bash-4.2# exit
```

2. Confirm GV VM is running on Node2. For example, type:

```
[admin@node2 /tmp]$ sudo su -c "virsh list --all"
Id    Name                           State
----------------------------------------------------
 1     ESOS                           running
 2     Xcellis                        running
 3     GrassValley                    running
[admin@node2 /tmp]$ exit
```

3. Alternately, the AMS UI will show Controller B - Top running with Controller A - Bottom empty.

GV VM IP

1. Provide the Node2 GV VM the same IP address as it had previously using the standard commissioning instructions.

   Remember: The GV VM will default back to factory settings of: 192.168.21.31

2. It may take a couple of tries to load.

K2 Config

K2Config the system manager now running on Node2 using the standard commissioning instructions.

Failback Process

Note: Step not required.

Use the following process once the system has gone through troubleshooting and/or a replacement controller has been provided.

Node2 GV VM Shutdown

Before Node1 is installed and powered on:

Use CLI on Node2 AMS/Hypervisor to shutdown the GV VM.

```
> ssh admin@10.16.232.171
[admin@node2 ~]$ sudo bash
bash-4.2# cd /opt/quantum/ansible/scripts
bash-4.2# ./cluster_manager.py unmanagevm GrassValley
bash-4.2# virsh shutdown GrassValley
```

Node1 GV VM Start

1. After installing replacement controller in Node1, bring up as normal. Expect about 20 minutes to complete.
2. After Block Storage & StorNext VMs are running, use the CLI on Node1 AMS/Hypervisor.

```
> ssh admin@10.16.232.170
[admin@node1 ~]$ sudo bash
# cd /opt/quantum/ansible/scripts
# ./cluster_manager.py managevm GrassValley
# ./cluster_manager.py startvm GrassValley
# exit
[admin@node1 ~]$ exit
```

3. Lastly, remove the GV VM from Node2 AMS/Hypervisor.

```
> ssh admin@10.16.232.171
[admin@node2 ~]$ sudo bash
# cd /opt/quantum/scripts/
# ./VM_manager.py --remove --vmname GrassValley
```

Factory Reset

Overview

The following process resets a system back to factory defaults. This should only be considered after all other troubleshooting steps have been tried. Depending on interaction with Quantum, this process could take several days and need licenses from them to complete the process.

- Reset to factory default: 4-6 hours
- Licensing: hours to days depending on responsiveness
- Load latest released software build and recommission system: 3-4 hours

The following chart explains the implications for Factory Resetting.

Warning: Factory reset will cause 100% DATA LOSS.

Chassis Configuration	Implication
Primary only	None. Reset chassis per instructions.
Primary with attached Expansion	After resetting Primary using instructions, Expansion will appear as unconfigured. Process with normal commissioning.
Primary with de-attached Expansion	**AVOID THIS SITUATION.** If remove the SAS cables before resetting Primary, the Expansion will think it is still attached to the pre-reset Primary and won't be able to re-connect. It's a very long and risky process to recover from.

This section will use IP addresses as documented in *IP addresses & passwords* on page 33. Substitute with customer or site-specific information where appropriate.

Preparation

- Ensure to download the factory reset images and latest software build. Check with Engineering for current versions. Store in a location on the PC where you have access.

Typically at **C:\apache\Apache24\htdocs**

- If Expansion Chassis are attached, KEEP THEM ATTACHED AND POWERED ON.

System Shutdown

Refer to *Powering Off an AMS Express Unit* on page 26 to shutdown the system.

Copy latest build images

Method 1

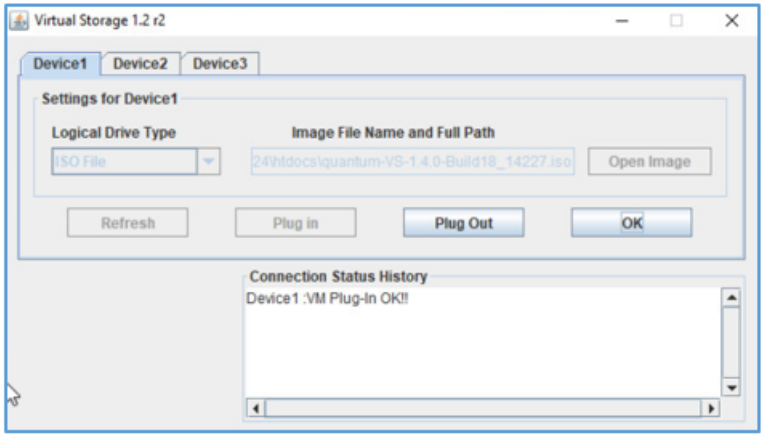
For BMC Node 1:

1. Select: **Remote Control | Console Redirection | Launch Console**
2. In the lower left corner: **Keep** then click **launch.jnlp** once to run the Java applet (lower left corner).

   Then select: **Continue | Run | Yes**

   Depending on the system state, you may have to cycle through steps a second time.

3. Inside the Java iKVM Viewer, select: **Virtual Media | Virtual Storage**
   - In the **Logical Drive Type** drop-down list, select: **ISO File**
   - Click **Open image** and navigate to: `C:\apache\Apache24\htdocs\` or where you stored your files
   - Click on the .iso file with the desired release. The file name will have the form "quantum-VS-**N**.**N**.**N**-Build**N**_**N**.iso".
   - Click **Plug in** and **OK**.



4. On Java iKVM Viewer, select: **Power Control | Set Power Reset**
5. Repeat all steps above for BMC Node 2.

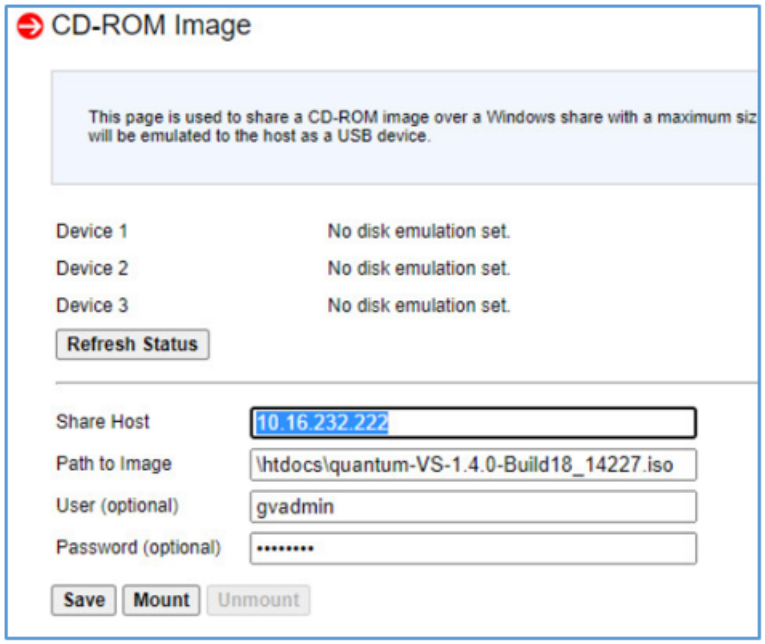
If it doesn't work try *Method 2* on page 137.

Method 2

For BMC Node 1:

1. Select: **Virtual Media | CD-ROM Image**

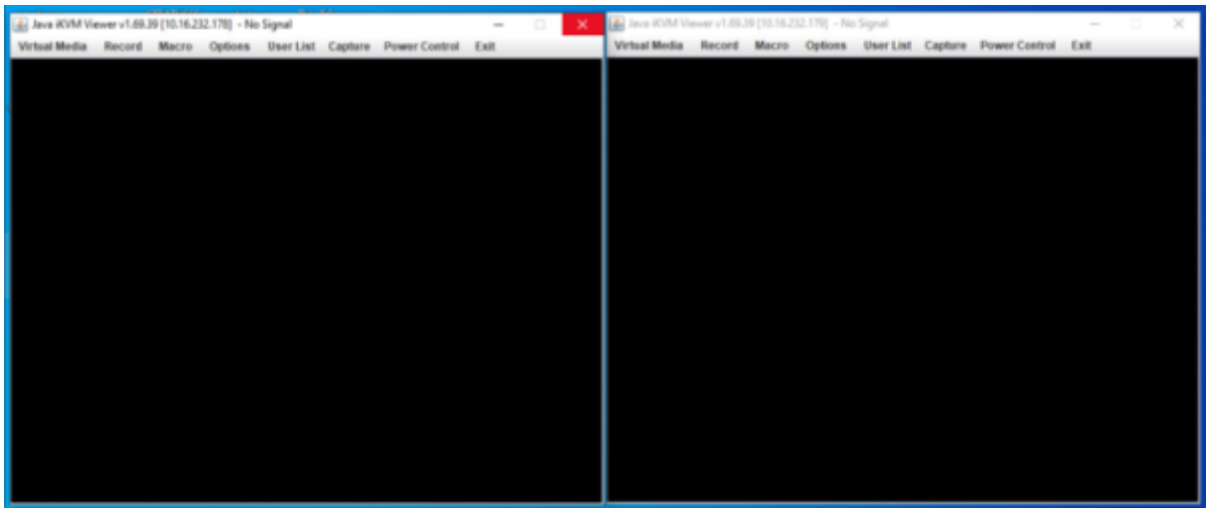
   The window below appears.



2. Ensure **Share Host** has the IP address of the PC with downloaded files.
3. Change **Path to Image** to correct path with the desired release. The file name will have the form "C:\apache\Apache24\htdocs\quantum-VS-**N.N.N**-Build**N_N**.iso"
4. Click **Save** and **Mount**.

Power Cycle

1. If not already in Java iKVM mode:
   - On both Nodes, select: **Remote Control / Console Redirection / Launch Console**
   - In lower left corner: **Keep** then click once to run the Java applet then select **Continue | Run | Yes**
2. Set up screen so you can see both Java iKVM screens.

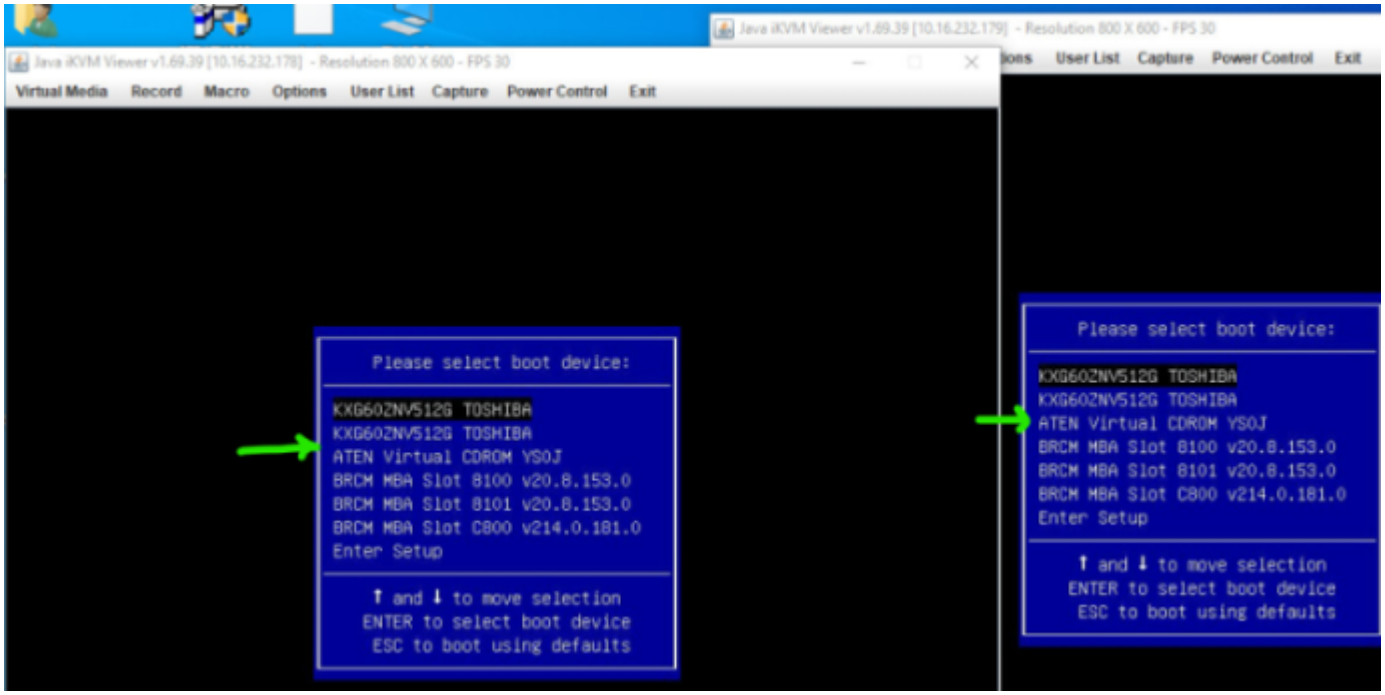


Caution: Next steps may take several iterations to achieve success as depends on timing.

3. On Node1, select: **Power Control | Set Power On**

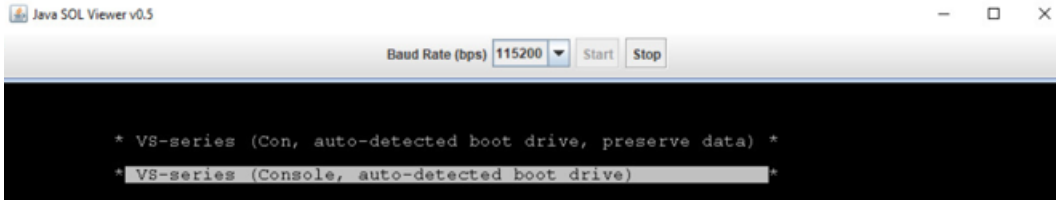
Watch carefully for the next 1-2 minutes.

4. When white splash screen appears, mouse click on it and press **F11** key multiple times until you get the boot device screen as shown below. Screen may appear several times so be ready.
5. Once Node 1 is done, do the same process on Node 2.
6. If the **F11** key doesn't work and system boots, select **Power Control | Set Power Reset** on both screens and retry.
7. Success looks like the following with the **ATEN Virtual CDROM YSOJ** option. Failure won't have that option.

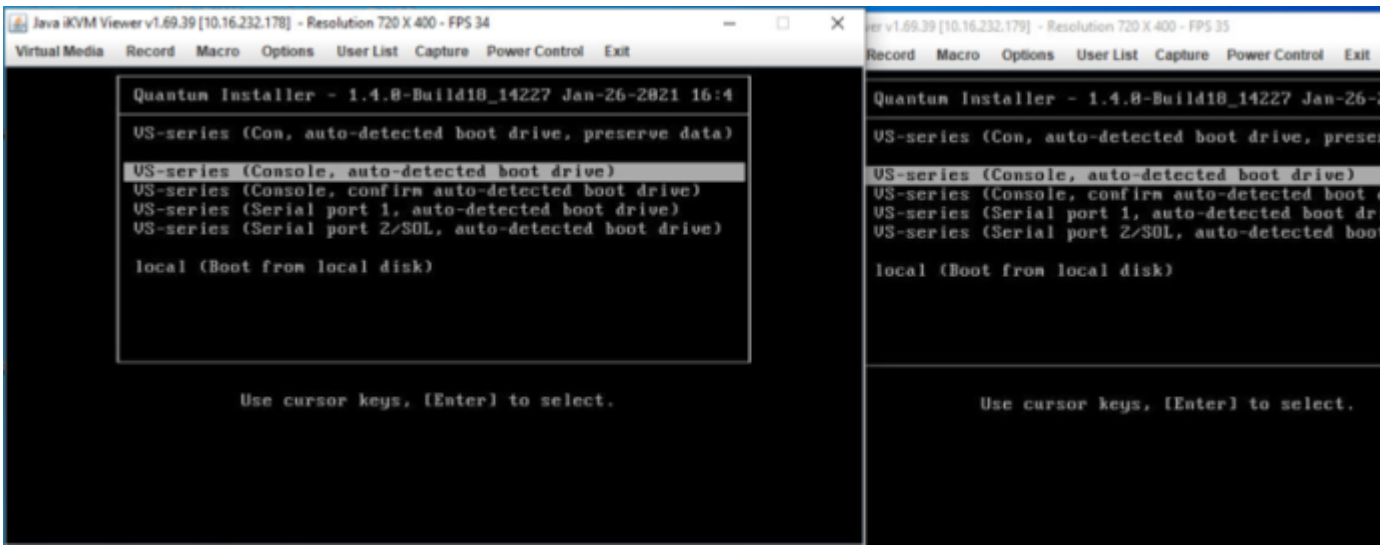


Verify and load Build

1. On both Nodes, use down arrow keys to select **ATEN Virtual CDROM** then press **[Enter]**.
2. Verify Node 2 down arrow keys work. If not, then it's a timing issue. Perform the following:
   - Click on the Chrome window for Node 2.
   - Select **Remote Control / Launch SOL** which launches Java applet.
   - In lower left corner: **Keep** then click once to run the Java applet and select **Continue | Run | Yes**
   - DON'T PRESS ENTER.
   - Press down arrow key to highlight **VS-series (Console, auto-detected boot drive)**.



3. Within 3 seconds of each other, use arrow keys to select **VS-series (Console, auto-detected boot drive)** then press **[Enter]**.



Node 1 will run off bunch of commands, Node 2 will show ‘Loading initrd.img…..ready’.

The process will take up to 60-90 minutes and looks like stalled several times. Be patient and do other things while waiting for the process to complete.

StorNext Download

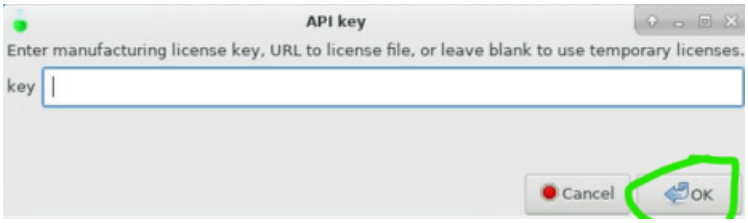
The Java iKVM will shut down and both Nodes will reboot and come up to the following image.

1. For Product Selection, choose **H-Series H4012 HCI storage server** and click **OK**.

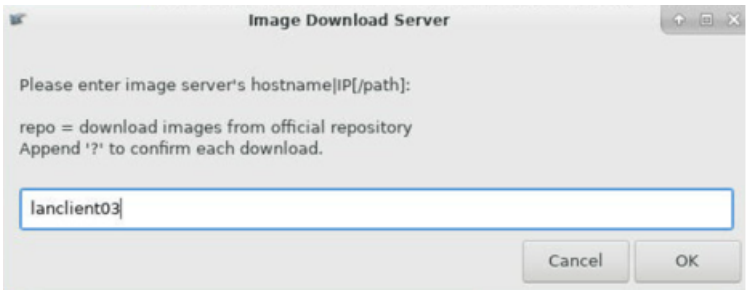
2. On Product Configuration Selection, choose **Grass Valley** and click **Done**.

Wait up to 60 seconds as sometimes you have to reset network speeds at this time to autoneg off (See *Ethernet Speed Override* on page 144). If not, continue with the next step.

3. For API Key dialog, leave blank and click **OK**.

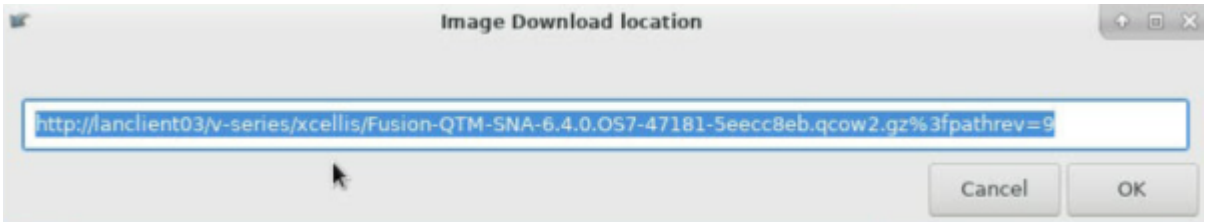


4. Backspace over repo and enter IP address of client (you may have to use virtual keyboard to enter "." in IP address) or use hostname of client PC to resolve as in the example below.



5. Click **OK**.

   The Image Download location window appears.



👉 **Important:** You will need to edit this location so do not delete the entire address. Do for both Nodes.

If you lose the location, you can see it in the terminal window above the dialog box. It will say something like:
`H4012 requires Fusion-QTM-SNA-yyyyyy`

6. Double click and remove the red items below. (Use arrow keys and [Backspace] key)

   - http://lanclient03/v-series/xcellis/Fusion-QTM-SNA-6.4.0.OS7-47181-5eecc8eb.qcow2.gz%3fpathrev=9
   - http://lanclient03/v-series/xcellis/Fusion-QTM-SNA-6.4.0.OS7-47181-5eecc8eb.qcow2.gz

   You should end up with a line like http://lanclient03/Fusion-QTM-SNA-**N.N.N.OS7-N-N**.qcow2.gz_**revN**

7. Click **OK**.
8. Repeat steps 1-7 for Node 2.

These are multi-GB files so the process could take up to 30 minutes to complete.

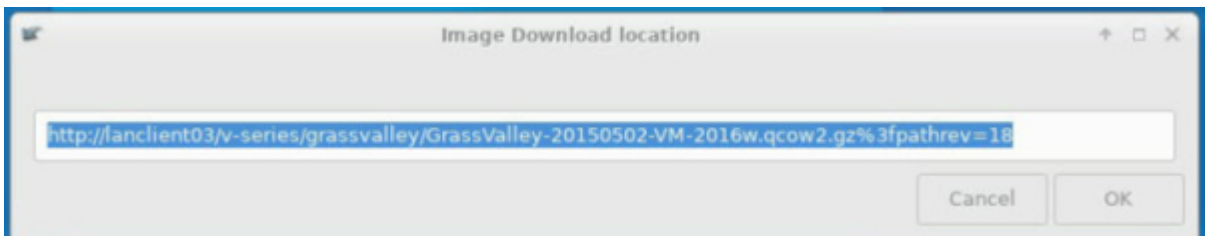
It is completed when similar messages appear on both Nodes.

```
baseos.log
2021-03-03 00:44:42 gennettemplate.sh: Generated new MAC 00:30:8c:7b:49:04
2021-03-03 00:44:42 using slot='0x13 for br1 mapping
2021-03-03 00:44:42 serialnum:QTM202000002 cvfsid:00308c3ea46b nodenum:1
2021-03-03 00:47:10 using temporary licenses
2021-03-03 00:47:10 Found 0 preinstalled OS images.
2021-03-03 00:47:10 ==== Downloading missing VM images if necessary.
2021-03-03 00:47:11 H4012 doesn't need this centos image: http://10.20.184.21/viewvc/projects
/win-bin/centos.7.6.1810.raw.gz?pathrev=10250.
2021-03-03 00:47:11 H4012 requires Fusion-QTM-SNA-6.4.0.OS7-47181-5eecc8eb.qcow2.gz?pathrev=9
.
2021-03-03 00:47:11 H4012 requires GrassValley-20150502-VM-2016w.qcow2.gz?pathrev=18.
2021-03-03 00:47:11 H4012 doesn't need this windows image: http://10.20.184.21/viewvc/project
s/win-bin/win2k19datacenter.qcow2.gz?pathrev=12131.
2021-03-03 00:47:11 H4012 doesn't need this windows image: http://10.20.184.21/viewvc/project
s/win-bin/win2k19standard.qcow2.gz?pathrev=12443.
2021-03-03 00:47:11 H4012 doesn't need this win-extra image: http://10.20.184.21/viewvc/proje
cts/win-bin/MilestoneInstaller.iso.gz?pathrev=11311.
2021-03-03 00:47:46 Downloading http://lanclient03/Fusion-QTM-SNA-6.4.0.OS7-47181-5eecc8eb.qc
ow2.gz -> /xcellis/factory/Fusion-QTM-SNA-6.4.0.OS7-47181-5eecc8eb.qcow2.gz
```

GV VM Download

1. Continue with the next download.

   The Image Download location window appears.



   Important: You will need to edit this location so do not delete the entire address. Do for both Nodes.

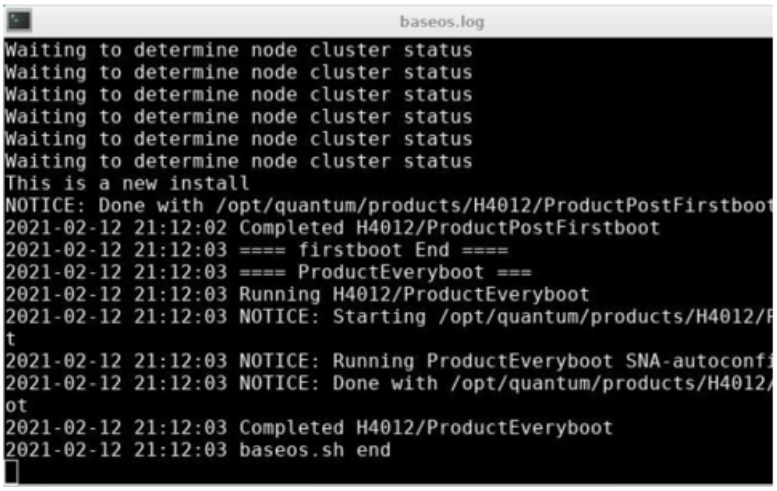
2. Double click and remove the red items below. (Use arrow keys and [Backspace] key)

   - http://lanclient03/v-series/grassvalley/GrassValley-20150502-VM-2016w.qcow2.gz%3fpathrev=18
   - http://lanclient03/v-series/grassvalley/GrassValley-20150502-VM-2016w.qcow2.gz

   You should end up with a line like http://lanclient03/GrassValley-**N-VM-N**.qcow2.gz_**revN**

3. Click **OK**.
4. Repeat steps 1-3 for Node 2.

This process could take up to 1 hour. Node 1 will take longer than Node 2 as it is the primary node and with more to do. You will know it is done when this appears on both nodes.



Close the logs by clicking **X** in the upper right corner.

Clear to ship script

- These commands must be done within 10 seconds of each other
- If lose ability to type "." use Virtual Media / Virtual Keyboard
- Prepare both Nodes before pressing **[Enter]**

1. Still inside the Java iKVM viewer, open terminal windows (right-click open space, choose **Open Terminal Here**)
2. On Node 1 open a new terminal window and prepare the following:

```
[admin@node1 ~/Desktop]$ sudo su -
[root@node1 ~]#cd /opt/quantum/scripts/
IMPORTANT: DON'T PRESS [ENTER] after typing next command
[root@node1 ~]#./ClearToShip.sh --poweroff
```

3. On Node 2 open a new terminal window and prepare the following:

```
[admin@node2 ~/Desktop]$ sudo su -
[root@node2 ~]#cd /opt/quantum/scripts/
IMPORTANT: DON'T PRESS [ENTER] after typing next command
[root@node2 ~]#./ClearToShip.sh --poweroff
```

4. Verify both Nodes are ready and the commands are typed in properly (ensure "." are in command as well as upper/lower case).
5. Go back to Node 1 and press **[Enter]** then immediately go to Node 2 and press **[Enter]**.

   This clears the IP addresses and other items. However, it maintains the BMC IP addresses (.178/.179) instead of reverting to factory defaults which makes it easier to access the Nodes and start the systems.

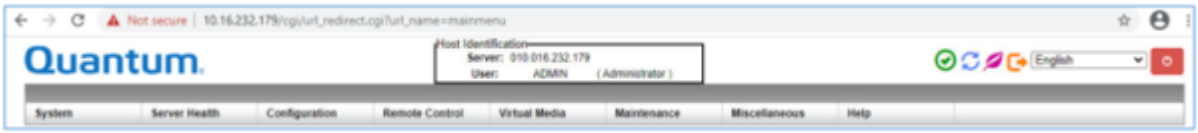
The process takes about 10 minutes. When finished, it will have blank/black Java iKVM Viewer screens. Close both Node screens.

System Power-On

Important: Both Nodes must be powered on within 15 seconds of each other. Prepare both Nodes before turning power on. Not doing so results in fenced nodes and an unstable system.

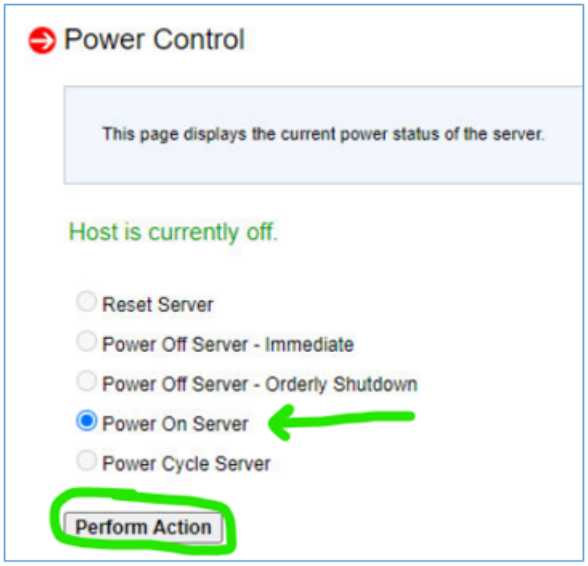
1. Login to both BMC Nodes.

   You will see power logo red/off in upper-right corner.



2. On both Nodes, select **Remote Control | Power Control**.

   The Power Control window appears.



3. Ensure radio-button is set to **Power On Server** on both Nodes.
4. On Node1, click **Perform Action**. Then immediately on Node 2, click **Perform Action**.

   Systems will now power on in the next 15 minutes.

When both VM Status windows show all VMs running, proceed to *Ethernet Speed Override* on page 144.

Ethernet Speed Override

In some instances you won't be able to ping or access the system. This is due to a bug in StorNext. You have to manually override the Ethernet port settings to communicate with the switch.

Perform the following:

1. For the BMC Node 1, select **Remote Control | iKVM/HTML5**.
2. Access terminal emulator at the bottom mini-bar or hidden above blue background upper-left and select **Applications | Terminal emulator**.
3. Then, enter as below in the terminal emulator.

```
[admin@node1 ~]$ sudo bash
bash-4.2# ethtool -s p258p1 speed 10000 autoneg off
bash-4.2# ethtool -s p258p2 speed 10000 autoneg off
```

4. Verify that the link is up for that interface:

```
bash-4.2# ethtool p258p1 | grep Link
Link detected: yes
bash-4.2# ethtool p258p2 | grep Link
Link detected: yes
bash-4.2# exit
[admin@node1 ~]$ exit
```

5. Repeat all steps above for BMC Node 2.

NAS Licensing

Now at a factory state, you will need to retrieve a NAS license for both Nodes. Reminder: This will use the default IP addresses.

Obtain File System IDs

Each Node has a unique file system ID that a NAS license is associated with. Since there was a system reset, you need to obtain a new license for each Node.

1. On Node 1 BMC, use iKVM/HTML to open a terminal.

```
$ ssh stornext@10.17.22.21
```

2. Go through password change process from **password** to **adminGV!**
3. Relogin with:

```
$ ssh stornext@10.17.22.21 /usr/cvfs/bin/cvfsid
password:
00308C29CE56 linux 0 qnode1
$ exit
```

4. On Node 2 BMC, use iKVM/HTML to open a terminal.
5. Go through password change process from **password** to **adminGV!**
6. Relogin with:

```
# ssh stornext@10.17.22.22 /usr/cvfs/bin/cvfsid
password:
00308C540B3C linux 0 qnode2
$ exit
```

7. Send the output to Quantum to generate a license.

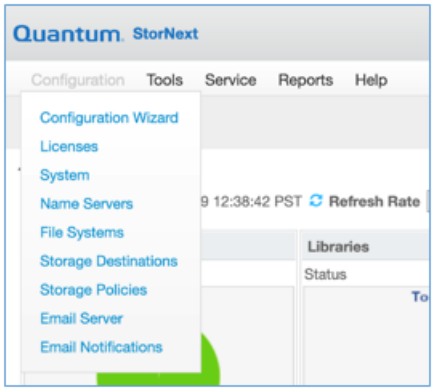
   You can also do a screen capture to send if it's easier and you won't make typing mistakes.

   Make sure to identify Node 1 & Node 2.

Install Licenses

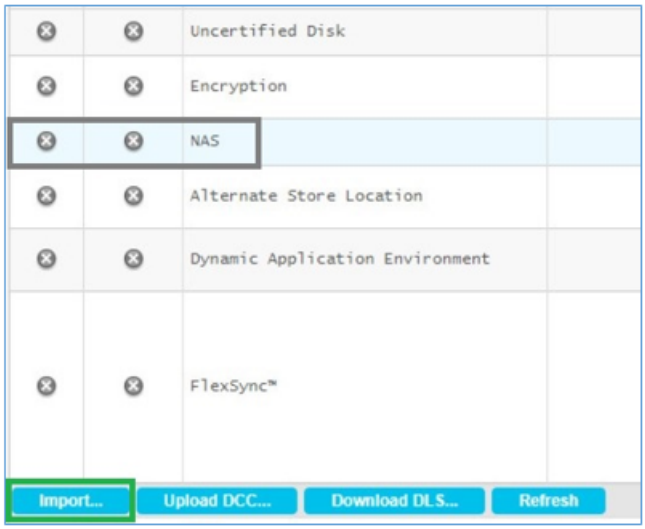
Ensure you have the NAS license files from QTM downloaded to the PC attached to AMS Express.

1. Using the StorNext GUI, use a browser to login on Node1.
2. Login as **https://192.168.21.21** or **http://192.168.21.21:81**
3. Accept the license agreement.
4. Navigate to **Configuration | Licenses**.

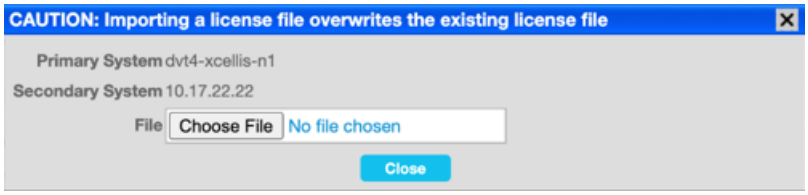


5. Scroll down toward the bottom and you will see NAS is grayed out.

   Ensure these license are green/checked: SAN Client, LAN Client, Failover (HA), Maintenance

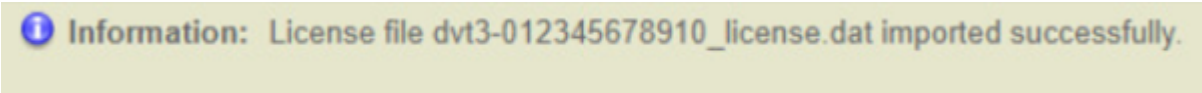


6. Click the **Import** button.
7. Proceed to choose the license file in the dialog where you stored the downloaded file.



8. Click **Close**.

   You will see a banner like below when the import is successful.



All done. The system will apply license to both Nodes.

Health Check Script

A health check script can be executed to automate gathering of commonly reviewed status information for an AMS Express unit. The script has negligible performance impact on the AMS Express unit and so it is safe to execute the script on an AMS Express unit while the AMS Express unit is in active use for customer workflows. The script is only reading information from the AMS Express unit and is not making any modifications.

Obtaining The Script

The most recent version of the script can be downloaded from the Grass Valley ProDev FTP site.

1. Download the most recent version of the .zip file at:
   ftp://prodev@ftp.grassvalley.com/GV-AMS-Express/gv-amse-health/
2. Extract the contents of the .zip file, and copy the contents to the AMS Express unit's hypervisor in the /tmp directory.
3. Do one of the following according to the software version number of your AMS Express unit.
   - For an AMS Express version 1.5.x, the contents only need to copied to the hypervisor on Controller A.
   - For an AMS Express version 1.4.x, the contents need to be copied to the hypervisors on each controller.

Usage - AMS Express 1.5.x

For AMS Express 1.5.x systems, only one script is used to gather information from both Controllers. The script must always be executed from Controller A.

1. Access the hypervisor CLI on Controller A.
2. Type the following to change to the root user and navigate to the directory where the contents of the .zip file were copied.

```
[admin@dvt2-n1 ~]$ sudo -i
```

```
[root@dvt2-n1 ~]# cd /tmp
```

```
[root@dvt2-n1 /tmp]#
```

3. Make the scripts from the .zip file executable by entering the following:

```
[root@dvt2-n1 /tmp]# chmod +x *.sh
```

```
[root@dvt2-n1 /tmp]#
```

4. Execute the gv-amse-health.sh script and redirect the output from the script to a text file. Choose your own name for the text file.

```
[root@dvt2-n1 /tmp]# ./gv-amse-health.sh > dvt2-n1-20220422-health.txt
```

```
     <possible messages>
```

```
[root@dvt2-n1 /tmp]#
```

Usage - AMS Express 1.4.x

For AMS Express 1.4.x systems, scripts must be executed individually for Controller A and for Controller B. There are **-A** and **-B** versions of the script that go with each controller.

1. Access the hypervisor CLI on Controller A.
2. Type the following to change to the root user and navigate to the directory where the contents of the .zip file were copied.

```
[admin@dvt2-n1 ~]$ sudo -i
```

```
[root@dvt2-n1 ~]# cd /tmp
```

```
[root@dvt2-n1 /tmp]#
```

3. Make the scripts from the .zip file executable by entering the following:

```
[root@dvt2-n1 /tmp]# chmod +x *.sh
```

```
[root@dvt2-n1 /tmp]#
```

4. Execute the gv-amse-health-**A**.sh script and redirect the output from the script to a text file. Choose your own name for the text file.

```
[root@dvt2-n1 /tmp]# ./gv-amse-health-A.sh > dvt2-n1-20220422-health.txt
```

```
     <possible messages>
```

```
[root@dvt2-n1 /tmp]#
```

5. Access the hypervisor CLI on Controller B.
6. Repeat steps 2-4 above, but this time execute the gv-amse-health-**B**.sh script.

Analysis Steps

The script should typically take less than 1 or 2 minutes to execute. Messages, including warning or error messages may be output to the CLI during the execution of the script. The messages may indicate that the AMS Express unit is in an unexpected state. Messages are typically not output to the CLI and with all script output typically being output to the text file. Even if messages are output to the CLI during script execution, the contents of the text file are still valuable. Review the contents of the text file at the CLI or copy the text file to PC for review using a text editor, etc.

It can be desirable to execute the health check script prior to making changes to the AMS Express unit, executing trouble shooting steps, etc. as a way to capture the current state of the AMS Express unit's status. Then, after the work has been executed, execute the health check script again to capture the status of the AMS Express unit after the work has been completed. One can then use a file comparison tool such as WinMerge to compare the two sets of health check script output to review for expected and unexpected status changes.

System, Safety, and Regulatory Information

Read the following for important safety information.

General Information

This section contains general information on important system, safety, and regulatory information for all products. System, safety, or regulatory information that applies only to a specific product is provided in that product's user documentation.

Notational Conventions

This section uses the following conventions:

- **Notes**: emphasize important information related to the main topic.
- **Cautions**: indicate potential hazards to equipment and are included to prevent damage to equipment.
- **Warnings**: indicate potential hazards to personal safety and are included to prevent injury.

Explanation of Symbols

This product has several safety related symbols. Please familiarize yourself with their meaning:

This is the general warning sign. It is used to alert the user to potential hazards. All safety messages that follow this sign shall be obeyed to avoid possible harm.

This symbol is used to alert the user to an electric shock hazard. All safety messages that follow this sign shall be obeyed to avoid possible harm.

The protective conductor (PE) must be connected first to main protective earthing terminal before connecting the line and neutral to avoid shock hazard, and that a PE connection to the main PE terminal is essential before connecting the mains to avoid electric shock.

This symbol identifies a terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth (ground) electrode.

This symbol indicates that the product has multiple power cords, and all power sources shall be disconnected before servicing to avoid shock hazard.

or

This symbol instructs the user to refer to instruction manual/booklet for guidance.

or

This symbol indicates to the user that the object is heavy, and is usually accompanied by the item's weight.

This symbol indicates that there is an unguarded fan blade present. Take caution and keep body parts away from fan blades.

or

This symbol indicates that there is a hazard from a moving part present. Take caution and keep body parts away from moving parts.

Safety Information

Safety issues are clearly distinguished from all other product issues. Safety issues affect the health or life of the operator. They are not data integrity issues. If the unit operates incorrectly, even though you are following the operating instructions exactly, disconnect it from all power sources and contact Technical Support.

- In addition to the safety instructions in this section and the product documentation, local, national, and professional safety rules apply.
- Do not introduce any objects or liquids into the product enclosure. If interior components short out, fire or electric shock can result.
- Do not drop or damage the unit or damage any of its components; for example, its power cables, extension cables, or plugs.

Safety Precautions

Follow these guidelines to avoid damage to the product or injury to yourself:

- Pay attention to all cautions and warnings on the equipment or in the manuals.
- This equipment is intended for installation in a Restricted Access Location. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. Allow only trained and qualified personnel should be allowed to install, replace, service, or operate this equipment.

- There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- Installation of the equipment must comply with local and national electrical codes.
- Always use properly grounded, unmodified electrical outlets and cables, capable of supplying the proper voltage and current.
- If an AC power cord was not provided with your system components, purchase one that is approved for use in your country or region.
- Be aware of the ampere limit on any power supply or extension cables being used. The combined total ampere rating of all devices on a circuit may not exceed 80% of the maximum limit for the circuit.
- Maintain reliable grounding of rack-mounted equipment. Pay attention to supply connections other than direct connections to the branch circuit (e.g., use of power distribution units). Failure to properly ground the rack may result in electric shock and injury.
- The power supply cord(s) is / are the main disconnect device to AC power. The socket outlet(s) must be near the equipment and readily accessible for disconnection.
- Whenever you are servicing the unit, completely power down the unit by turning off all power and unplugging all power cables. The power switch is not the main power disconnection device.
- When installing a hot-swappable power supply into your system, make sure that the power supply is fully installed before you connect power cables to it. When uninstalling a hot-swappable power supply from your system, unplug the power cable before removing the power supply.
- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer’s instructions.

Warning: All service actions appropriate to end-users are described in the product documentation. Refer all other servicing to an authorized service technician.

Safety and Rack-Mountable Systems

Read and follow all cautions, warnings, labels, and instructions on the rack and the systems to be stored in the rack. In addition to what is written there, follow the provided rack-mount instructions and these guidelines:

- Never pull more than one component out of the rack at a time. Doing so can cause the rack to tip over, which could cause bodily injury.
- The full weight of the rack must rest evenly on the floor, and the rack must be anchored mechanically, to ensure stability in the event of an earthquake.
- When installing the equipment in a rack, ensure that the amount of air flow required for safe operation of the equipment is not compromised.
- When mounting the equipment in the rack, be careful that a hazardous condition is not achieved due to uneven mechanical loading.
- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Install the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reliable earthing of rack-mounted equipment should be maintained.

Electrostatic Discharge (ESD)

Caution: Electrostatic discharge can harm components inside the product.

Electrostatic discharge (ESD) is a sudden flow of electric current through a material that is normally an insulator. Some components of the product are ESD sensitive. If you are not sure whether a particular component is ESD sensitive or not, consult the applicable product documentation.

- Keep ESD-sensitive parts in a static-protective bag until you are ready to install the part into the machine.
- If possible, keep all ESD-sensitive parts in a grounded metal case.
- When handling ESD-sensitive parts, make the fewest possible movements with your body to prevent increasing the potential for ESD.
- If instructed to do so, switch off the machine power before you remove ESD-sensitive parts.
- Wear an ESD wrist strap. Or if that is not practical, just before touching the ESD-sensitive part, discharge to the machine any static electricity in your body by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when you install or remove an ESD-sensitive part.
- Do not place any ESD-sensitive parts on the machine cover or on a metal table, because large metal objects can become discharge paths if they are not grounded. If you must set aside an ESD-sensitive part, first place it into the ESD static-protective bag.
- Prevent ESD-sensitive parts from being accidentally touched by other personnel.
- Be very careful when you work with ESD-sensitive parts in cold weather. Interior heating leads to low humidity and an increase in static electricity.

Battery Disposal

Your system may use a nickel-metal hydride (NiMH) and/or lithium-ion battery. The NiMH and lithium-ion batteries are long-life batteries, and it is very possible that you will never need to replace them. However, if you do need to replace them, refer to your product documentation for instructions.

Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

Note: Your system may also include circuit cards or other components that contain batteries. These batteries must also be disposed of in a battery deposit site. For information about such batteries, refer to the documentation for the specific card or component.

Product Regulatory Information

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. This product is designed, tested, and classified for the intended electromagnetic environment.

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE Notices (European Union)

Marking by this symbol indicates compliance of this system to the applicable Council Directives of the European Union at the time of manufacture, including the EMC Directive and the Low Voltage Directive. A “Declaration of Conformity” in accordance with the applicable directives has been made and is on file at Quantum Europe.

VCCI Notice (Japan Only)

この装置は、クラスA機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI — A

English translation of the VCCI Notice:

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

BSMI Notice (Taiwan Only)

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾， 在這種情況下，使用者會被要求採取某些適當的對策．

English translation of BSMI Notice:

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Trademarks and Agreements

Patent Information

This product may be protected by one or more patents.

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

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