NetApp

Hardware procedures

StorageGRID appliances

NetApp
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Hardware procedures

Verify component to replace in the SG6000-CN

If you are unsure which hardware component to replace in your appliance, complete this procedure to identify the component and the location of the appliance in the data center.

Before you begin

- You have the serial number of the storage appliance where the component needs to be replaced.
- You are signed in to the Grid Manager using a supported web browser.

About this task

Use this procedure to identify the appliance with failed hardware and which of the replaceable hardware components is not operating properly. Components that might be identified for replacement can include:

- Power supplies
- Fans
- Solid state drives (SSDs)
- Network Interface Cards (NICs)
- CMOS battery

Steps

1. Identify the failed component and the name of the appliance that it is installed in.

   a. In Grid Manager, Select **ALERTS** > **Current**.

      The Alerts page appears.

   b. Select the alert to see the alert details.

      > ⓘ Select the alert, not the heading for a group of alerts.

   c. Record the node name and unique identifying label of the component that has failed.

Appliance NIC fault detected

A problem with a network interface card (NIC) in the appliance was detected.

Recommended actions

1. Reseat the NIC. Refer to the instructions for your appliance.

2. If necessary, replace the NIC. See the maintenance instructions for your appliance.

Time triggered

2023-02-17 13:36:31 EST *(2023-02-17 18:36:31 UTC)*

Status
Active (silence this alert ☑)

Site / Node
Data Center 1   SGF6112-032-X6606A

Severity
❌ Critical

Description
ConnectX-6 Lx EN adapter card, 25GbE, Dual-port SFP28, PCIe 4.0 x8, No Crypto

Firmware Version
26.33.1048 (MT_0000000531)

Device
hic3

Part number
X1153A

2. Identify the chassis with the component that needs to be replaced.

   a. From the Grid Manager, select **NODES**.

   b. From the table on the Nodes page, select the appliance Storage Node name with the failed component.

   c. Select the **Hardware** tab.

   Check the **Compute controller serial number** in the StorageGRID Appliance section. Check if the serial number matches the serial number of the storage appliance where you are replacing the component. If the serial number matches, you have found the correct appliance.

   - If the StorageGRID Appliance section in Grid Manager does not display, the node selected is not a StorageGRID appliance. Select a different node from the tree view.

   - If the serial numbers don't match, select a different node from the tree view.

3. After you locate the node where the component needs to be replaced, write down the appliance BMC IP address listed the StorageGRID Appliance section.

   To help you locate the appliance in the data center, you can use the BMC IP address to turn on the appliance identify LED.

Related information

Turn on the appliance identify LED

Add expansion shelf to deployed SG6060

To increase storage capacity, you can add one or two expansion shelves to an SG6060 that is already deployed in a StorageGRID system.

Before you begin

- You must have the provisioning passphrase.

- You must be running StorageGRID 11.4 or later.

- You have the expansion shelf and four SAS cables for each expansion shelf.

- You have physically located the storage appliance where you are adding the expansion shelf in the data center.

  Locate controller in data center

About this task

To add an expansion shelf, you perform these high-level steps:

- Install the hardware in the cabinet or rack.

- Place the SG6060 into maintenance mode.

- Connect the expansion shelf to the E2860 controller shelf or to another expansion shelf.

- Start the expansion using the StorageGRID Appliance Installer

- Wait until the new volumes are configured.

Completing the procedure for one or two expansion shelves should take one hour or less per appliance node. To minimize downtime, the following steps instruct you to install the new expansion shelves and drives before placing the SG6060 into maintenance mode. The remaining steps should take approximately 20 to 30 minutes per appliance node.

Steps

1. Follow the instructions for installing 60-drive shelves into a cabinet or rack.

2. Follow the instructions for installing the drives.

3. From the Grid Manager, place the SG6000-CN controller into maintenance mode.

4. Connect each expansion shelf to the E2860 controller shelf as shown in the diagram.

   This drawing shows two expansion shelves. If you have only one, connect IOM A to controller A and connect IOM B to controller B.
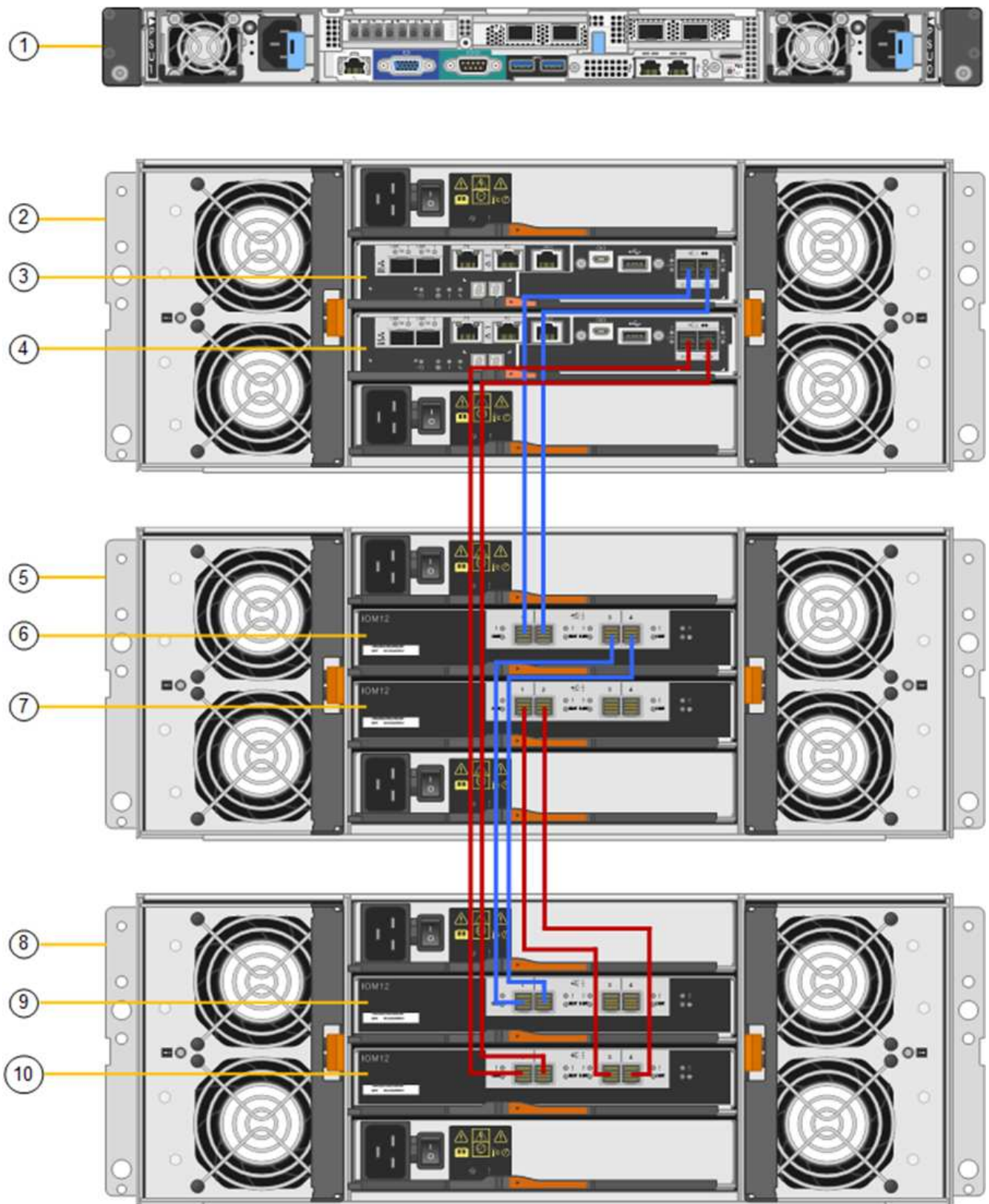
Callout	Description
1	SG6000-CN
2	E2860 controller shelf

Callout	Description
3	Controller A
4	Controller B
5	Expansion shelf 1
6	IOM A for expansion shelf 1
7	IOM B for expansion shelf 1
8	Expansion shelf 2
9	IOM A for expansion shelf 2
10	IOM B for expansion shelf 2

5. Connect the power cords and apply power to the expansion shelves.

   a. Connect a power cord to each of the two power supply units in each expansion shelf.

   b. Connect the two power cords in each expansion shelf to two different PDUs in the cabinet or rack.

   c. Turn on the two power switches for each expansion shelf.

      ▪ Don't turn off the power switches during the power-on process.

      ▪ The fans in the expansion shelves might be very loud when they first start up. The loud noise during start-up is normal.

6. Monitor the Home page of the StorageGRID Appliance Installer.

   In approximately five minutes, the expansion shelves finish powering up and are detected by the system. The Home page shows the number of new expansion shelves detected, and the Start Expansion button is enabled.

   Examples of the messages that could appear on the Home page, depending on the number of existing or new expansion shelves:

   ◦ A banner that displays at the top of the page indicates the total number of expansion shelves detected.

      ▪ The banner indicates the total number of expansion shelves, whether the shelves are configured and deployed or new and unconfigured.

      ▪ If no expansion shelves are detected, the banner will not appear.

   ◦ A message at the bottom of the page indicates that an expansion is ready to be started.

      ▪ The message indicates the number of new expansion shelves StorageGRID detects. "Attached" indicates that the shelf is detected. "Unconfigured" indicates that the shelf is new and not yet configured using the StorageGRID Appliance Installer.

> ⓘ Expansion shelves that are already deployed aren't included in this message. They are included in the count in the banner at the top of the page.

▪ The message will not appear if new expansion shelves aren't detected.

7. As necessary, resolve any issues described in the messages on the Home page.

   For example, use SANtricity System Manager to resolve any storage hardware issues.

8. Verify that the number of expansion shelves displayed on the Home page matches the number of expansion shelves you are adding.

   > ⓘ If the new expansion shelves have not been detected, verify that they are properly cabled and powered up.

9. Click **Start Expansion** to configure the expansion shelves and make them available for object storage.

10. Monitor the progress of the expansion shelf configuration.

    Progress bars appear on the web page, just as they do during initial installation.

    When configuration is complete, the appliance automatically reboots to exit maintenance mode and rejoin the grid. This process can take up to 20 minutes.

    > ⓘ To retry the expansion shelf configuration if it fails, go to the StorageGRID Appliance Installer, select **Advanced** > **Reboot Controller**, and then select **Reboot into Maintenance Mode**. After the node reboots, retry the expansion shelf configuration.

    When the reboot is complete, the **Tasks** tab displays with selections to reboot the node or place the appliance in maintenance mode.

11. Verify the status of the appliance Storage Node and the new expansion shelves.

    a. In the Grid Manager, select **NODES** and verify that the appliance Storage Node has a green check mark icon.

       The green check mark icon means that no alerts are active and the node is connected to the grid. For a description of node icons, see Monitor node connection states.

    b. Select the **Storage** tab and confirm that 16 new object stores are shown in the Object Storage table for each expansion shelf you added.

    c. Verify that each new expansion shelf has a shelf status of Nominal and a configuration status of Configured.

Replace storage controller in the SG6000

You might need to replace an E2800 series controller or an EF570 controller if it is not functioning optimally or if it has failed.

Before you begin

- You have a replacement controller with the same part number as the controller you are replacing.
- You have labels to identify each cable that is connected to the controller.
- You have an ESD wristband, or you have taken other antistatic precautions.
- You have a #1 Phillips screwdriver.
- You have physically located the storage appliance where you are replacing the controller in the data center.

> (i) Don't rely on the E-Series instructions to replace a controller in the StorageGRID appliance, because the procedures aren't the same.

About this task

You can determine if you have a failed controller in two ways:

- The Recovery Guru in SANtricity System Manager directs you to replace the controller.
- The amber Attention LED on the controller is on, indicating that the controller has a fault.

> (i) If both controllers in the shelf have their Attention LEDs on, contact technical support for assistance.

If your appliance contains two storage controllers, you can replace one of the controllers while your appliance is powered on and performing read/write operations, as long as the following conditions are true:

- The second controller in the shelf has Optimal status.
- The **OK to remove** field in the Details area of the Recovery Guru in SANtricity System Manager displays **Yes**, indicating that it is safe to remove this component.

> (i) When possible, place the appliance into maintenance mode for this replacement procedure to minimize the potential impact of unforeseen errors or failures.

> (i) If the second controller in the shelf does not have Optimal status or if the Recovery Guru indicates that it is not OK to remove the controller, contact technical support.

When you replace a controller, you must remove the battery from the original controller and install it in the replacement controller. In some cases, you might also need to remove the host interface card from the original controller and install it in the replacement controller.

> (i) The storage controllers in most appliance models don't include host interface cards (HIC).

Step 1: Prepare the replacement controller

Prepare the replacement E2800A or E2800B controller.

Steps

1. Unpack the new controller, and set it on a flat, static-free surface.

   Save the packing materials to use when shipping the failed controller.
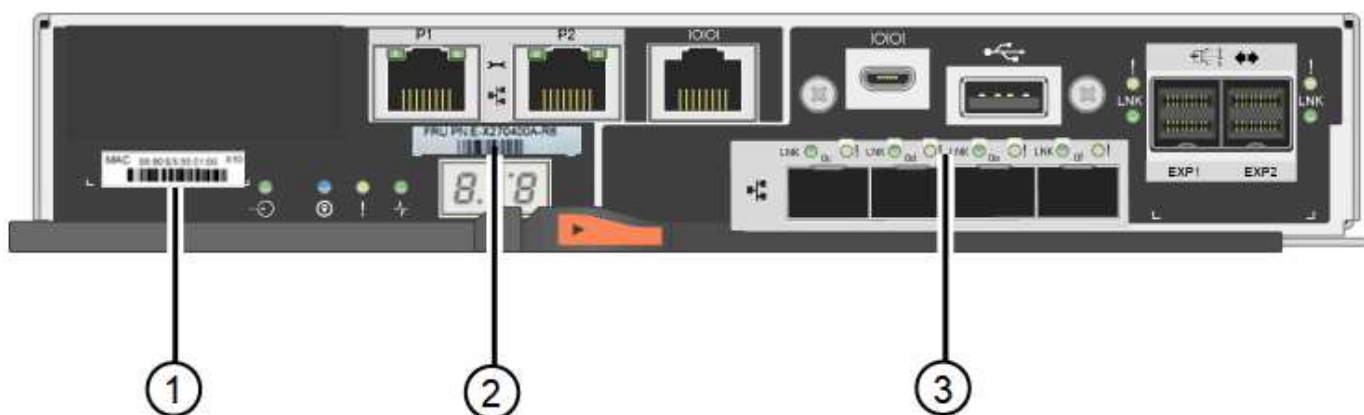
2. Locate the MAC address and FRU part number labels on the back of the replacement controller.

These figures show the E2800A controller and the E2800B controller. The procedure for replacing the E2800 series controllers and the EF570 controller is identical.

E2800A storage controller:
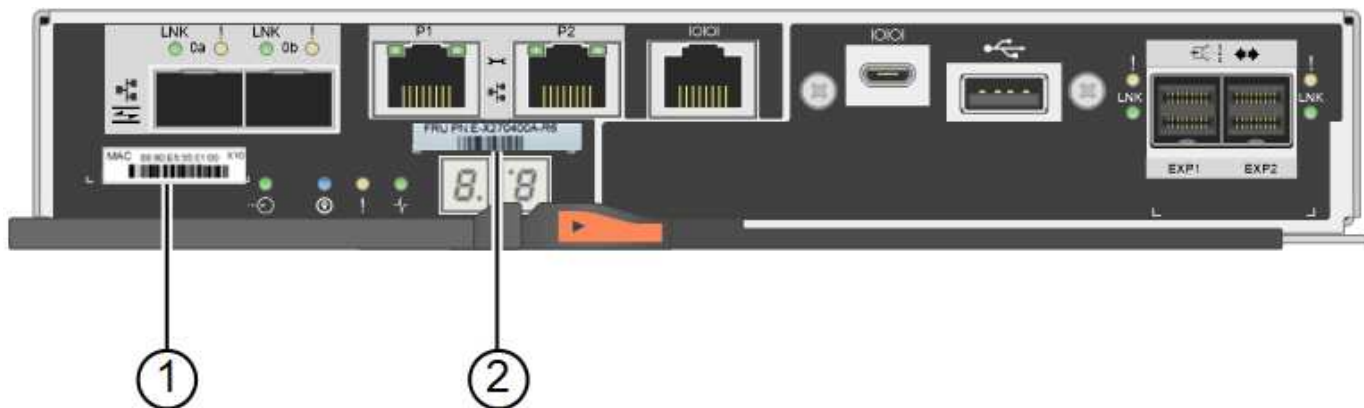
E2800B storage controller:

Label	component	Description
1	MAC address	The MAC address for management port 1 ("P1 on the E2800A and 0a on the E2800B"). If you used DHCP to obtain the original controller's IP address, you will need this address to connect to the new controller.
2	FRU part number	The FRU part number. This number must match the replacement part number for the currently installed controller.
3	4-port HIC	The 4-port host interface card (HIC). This card must be moved to the new controller when you perform the replacement. **Note**: the E2800A controller does not have a HIC.

Step 2: Take the controller offline

Prepare to remove the failed controller and and take it offline.

Steps

1. Prepare to remove the controller. You use SANtricity System Manager to perform these steps.

   a. Confirm that the replacement part number for the failed controller is the same as the FRU part number for the replacement controller.

When a controller has a fault and needs to be replaced, the replacement part number is displayed in the Details area of the Recovery Guru. If you need to find this number manually, you can look on the **Base** tab for the controller.

> ⚠ **Possible loss of data access —** If the two part numbers aren't the same, don't attempt this procedure.

    b. Back up the configuration database.

       If a problem occurs when you remove a controller, you can use the saved file to restore your configuration.

    c. Collect support data for the appliance.

> ⓘ Collecting support data before and after replacing a component ensures you can send a full set of logs to technical support if the replacement does not resolve the problem.

    d. Take the controller you plan to replace offline.

2. Power off the controller shelf.

Step 3: Remove the controller

Remove the failed controller from the appliance.

Steps

1. Put on an ESD wristband or take other antistatic precautions.
2. Label the cables and then disconnect the cables and SFPs.

> ⓘ To prevent degraded performance, don't twist, fold, pinch, or step on the cables.

3. Release the controller from the appliance by squeezing the latch on the cam handle until it releases, and then open the cam handle to the right.
4. Using two hands and the cam handle, slide the controller out of the appliance.

> ⚠ Always use two hands to support the weight of the controller.

5. Place the controller on a flat, static-free surface with the removable cover facing up.
6. Remove the cover by pressing down on the button and sliding the cover off.

Step 4: Move battery to the new controller

Remove the battery from the failed controller, and install it into the replacement controller.

Steps

1. Confirm that the green LED inside the controller (between the battery and the DIMMs) is off.

    If this green LED is on, the controller is still using battery power. You must wait for this LED to go off before removing any components.

Item	Description
1	Internal Cache Active LED
2	Battery

2. Locate the blue release latch for the battery.

3. Unlatch the battery by pushing the release latch down and away from the controller.
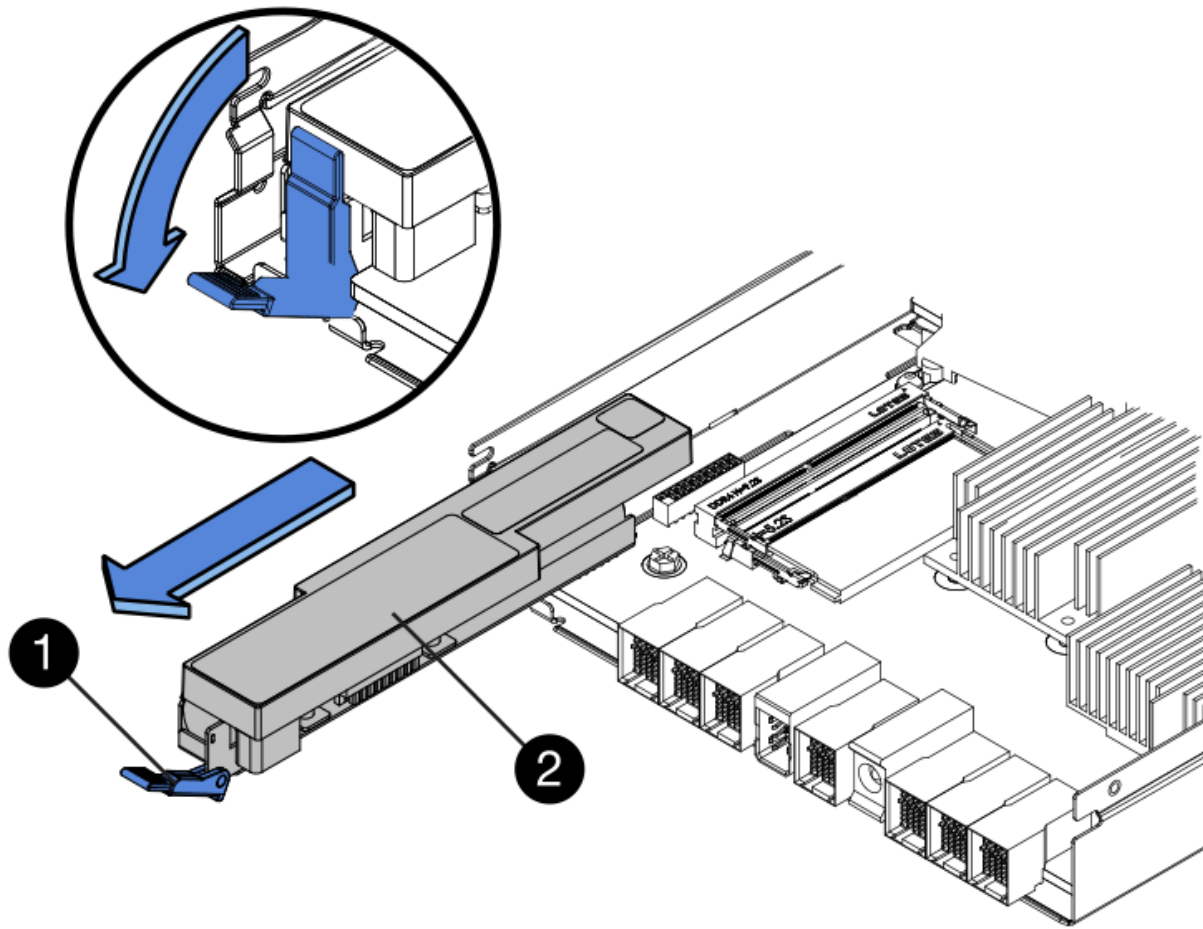
Item	Description
1	Battery release latch
2	Battery

4. Lift up on the battery, and slide it out of the controller.

5. Remove the cover from the replacement controller.

6. Orient the replacement controller so that the slot for the battery faces toward you.

7. Insert the battery into the controller at a slight downward angle.

   You must insert the metal flange at the front of the battery into the slot on the bottom of the controller, and slide the top of the battery beneath the small alignment pin on the left side of the controller.

8. Move the battery latch up to secure the battery.

   When the latch clicks into place, the bottom of the latch hooks into a metal slot on the chassis.

9. Turn the controller over to confirm that the battery is installed correctly.

> ⚠️ **Possible hardware damage** — The metal flange at the front of the battery must be completely inserted into the slot on the controller (as shown in the first figure). If the battery is not installed correctly (as shown in the second figure), the metal flange might contact the controller board, causing damage.

- **Correct — The battery's metal flange is completely inserted into the slot on the controller:**

- **Incorrect — The battery's metal flange is not inserted into the slot on the controller:**

10. Replace the controller cover.

Step 5: Move HIC to new controller, if needed

If the failed controller includes a host interface card (HIC), move the HIC from the failed controller to the replacement controller.

A separate HIC is used for the E2800B controller only. The HIC is mounted to the main controller board and includes two SPF connectors.

> ℹ️ The illustrations in this procedure show a 2-port HIC. The HIC in your controller might have a different number of ports.

E2800A

An E2800A controller does not have a HIC.

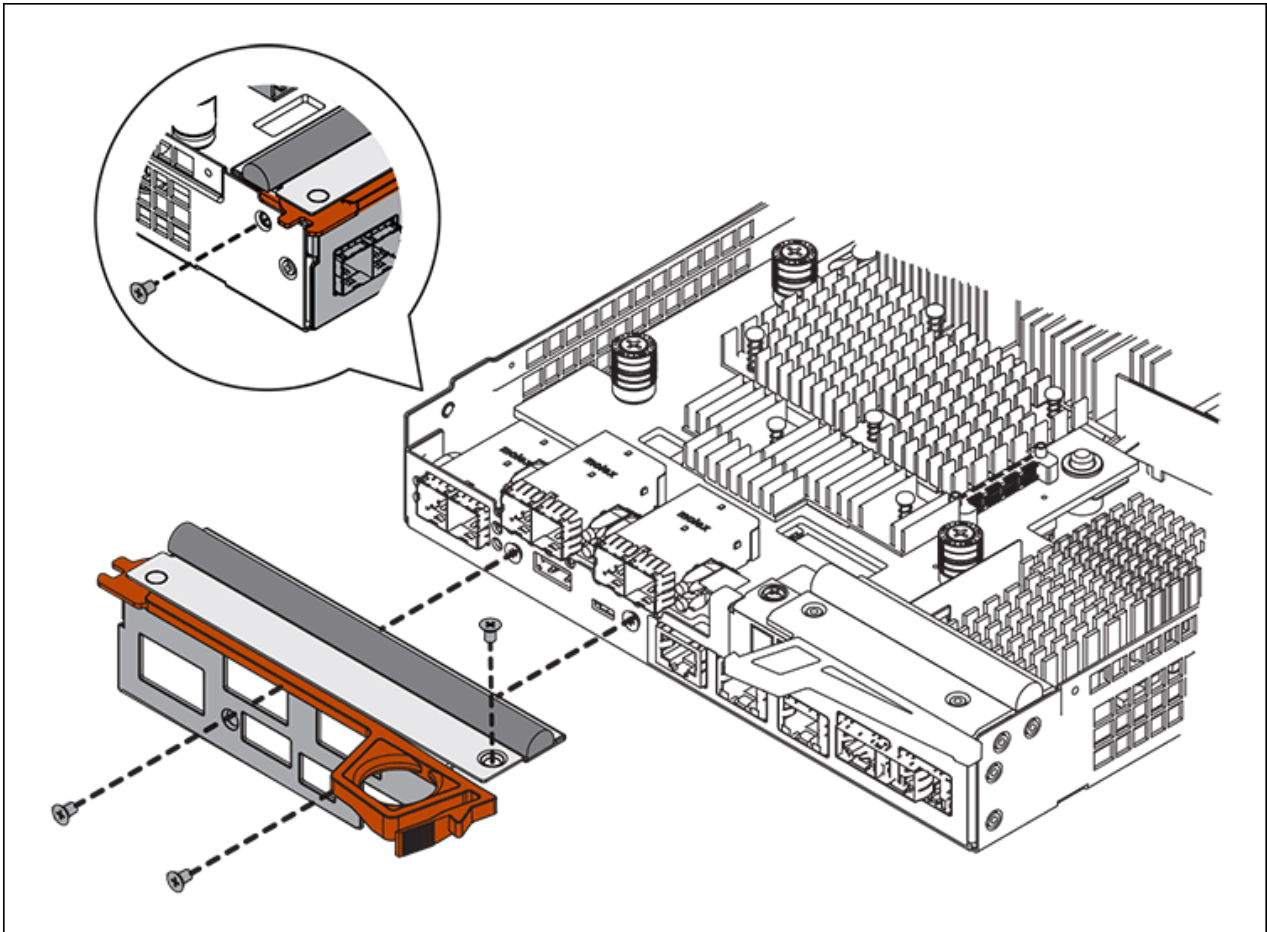Replace the E2800A controller cover, and go to Step 6: Replace controller

E2800B

Move the HIC from the failed E2800B controller to the replacement controller.

Steps

1. Remove any SFPs from the HIC.

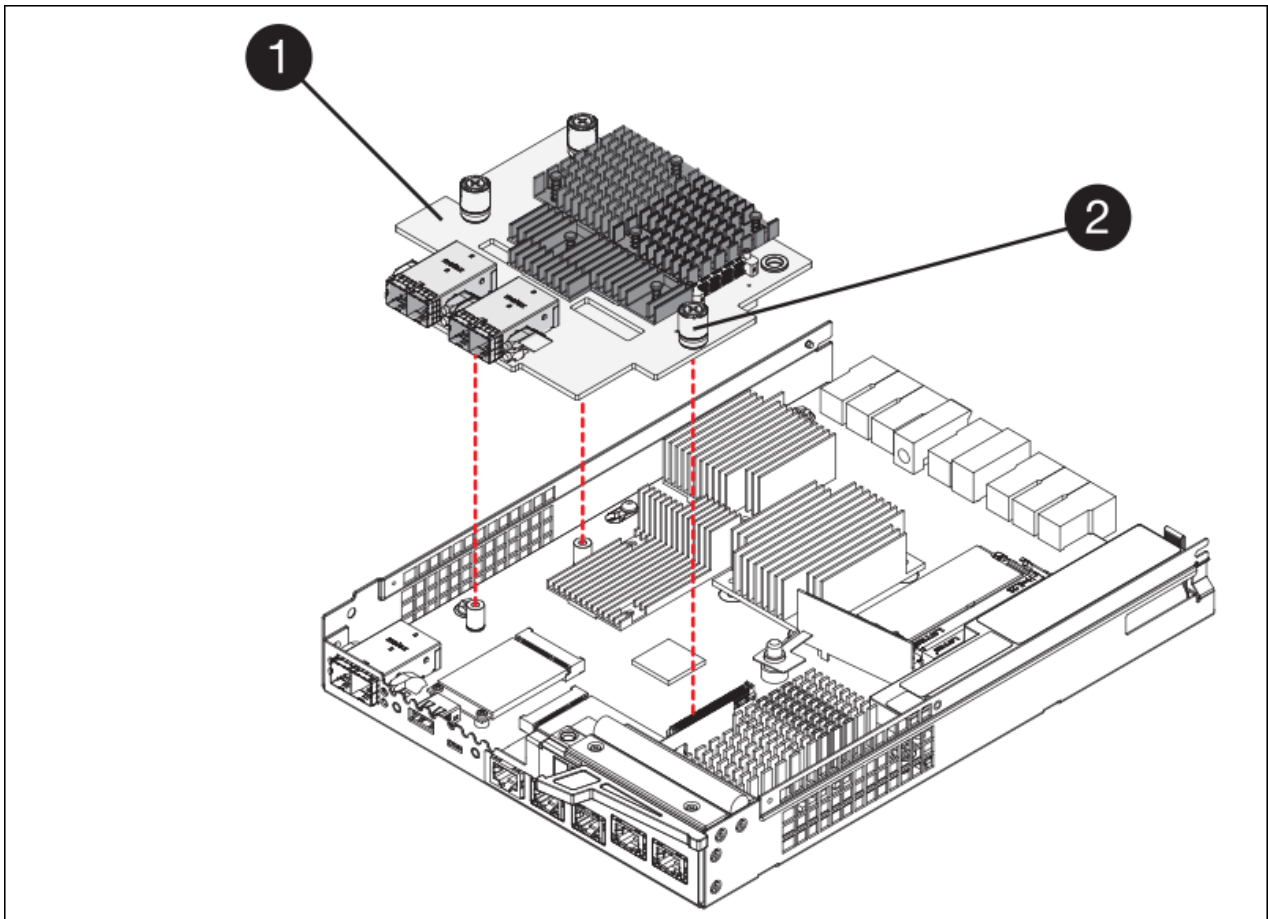2. Using a #1 Phillips screwdriver, remove the screws that attach the HIC faceplate to the controller.

   There are four screws: one on the top, one on the side, and two on the front.

3. Remove the HIC faceplate.

4. Using your fingers or a Phillips screwdriver, loosen the three thumbscrews that secure the HIC to the controller card.

5. Carefully detach the HIC from the controller card by lifting the card up and sliding it back.

   ⚠️ Be careful not to scratch or bump the components on the bottom of the HIC or on the top of the controller card.

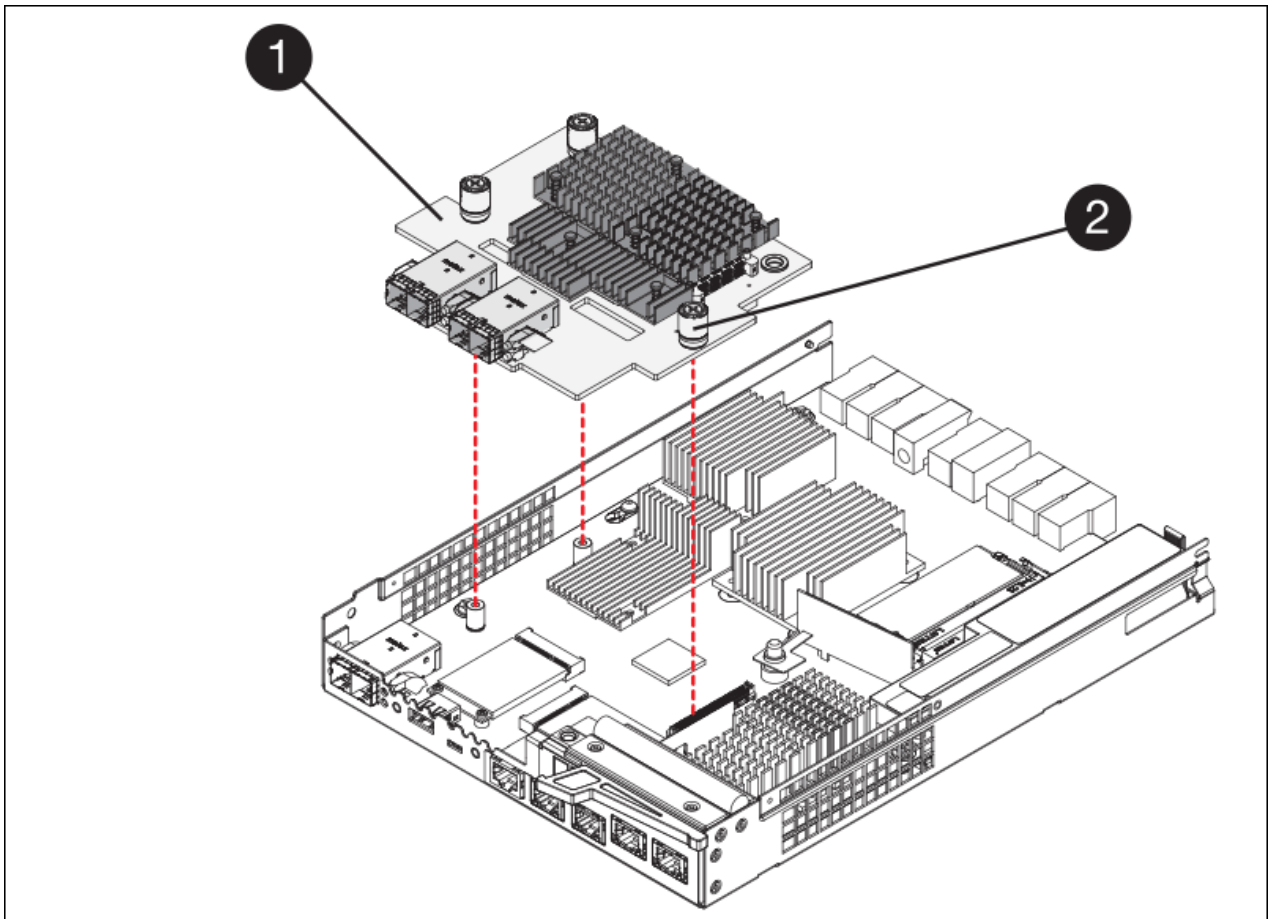| Label	Description
1	Host interface card
2	Thumbscrews

6. Place the HIC on a static-free surface.

7. Using a #1 Phillips screwdriver, remove the four screws that attach the blank faceplate to the replacement controller, and remove the faceplate.

8. Align the three thumbscrews on the HIC with the corresponding holes on the replacement controller, and align the connector on the bottom of the HIC with the HIC interface connector on the controller card.

   Be careful not to scratch or bump the components on the bottom of the HIC or on the top of the controller card.

9. Carefully lower the HIC into place, and seat the HIC connector by pressing gently on the HIC.

   > ⚠ **Possible equipment damage** — Be careful not to pinch the gold ribbon connector for the controller LEDs between the HIC and the thumbscrews.
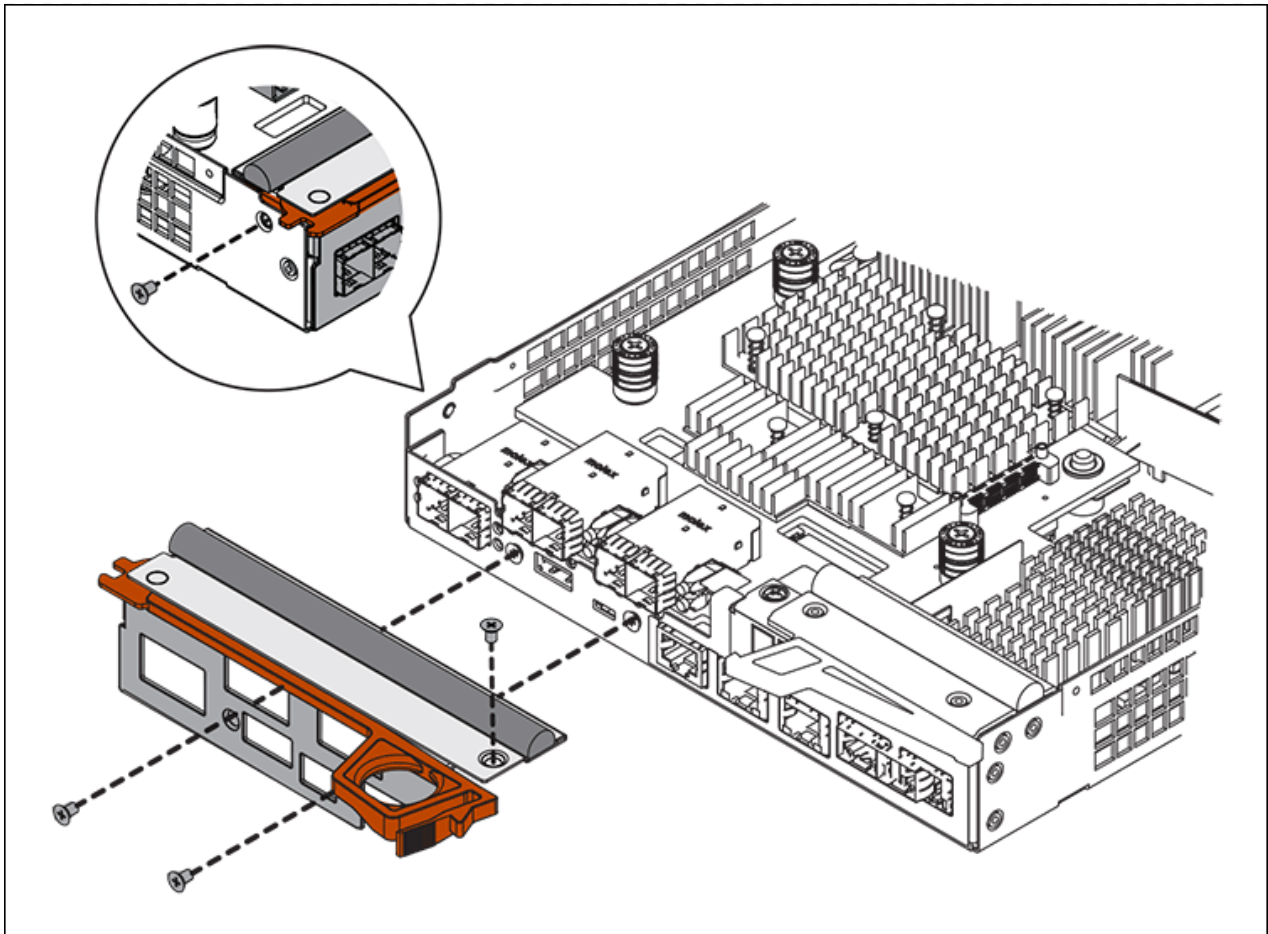
Label	Description
1	Host interface card
2	Thumbscrews

10. Hand-tighten the HIC thumbscrews.

    Don't use a screwdriver, or you might over tighten the screws.

11. Using a #1 Phillips screwdriver, attach the HIC faceplate you removed from the original controller to the new controller with four screws.

12. Reinstall any removed SFPs into the HIC.

Step 6: Replace controller

Install the replacement controller and verify that it has rejoined the grid.

Steps

1. Install the replacement controller into the appliance.

    a. Turn the controller over, so that the removable cover faces down.

    b. With the cam handle in the open position, slide the controller all the way into the appliance.

    c. Move the cam handle to the left to lock the controller in place.

    d. Replace the cables and SFPs.

    e. Power on the controller shelf.

    f. If the original controller used DHCP for the IP address, locate the MAC address on the label on the back of the replacement controller. Ask your network administrator to associate the DNS/network and IP address for the controller you removed with the MAC address for the replacement controller.

    > (i) If the original controller did not use DHCP for the IP address, the new controller will adopt the IP address of the controller you removed.

2. Bring the controller online using SANtricity System Manager:

a. Select **Hardware**.

b. If the graphic shows the drives, select **Show back of shelf**.

c. Select the controller you want to place online.

d. Select **Place Online** from the context menu, and confirm that you want to perform the operation.

e. Verify that the seven-segment display shows a state of `99`.

3. Confirm that the new controller is Optimal, and collect support data.

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Replace hardware components in SG6000 storage controller shelf

If a hardware problem occurs, you might need to replace a component in the storage controller shelf.

Before you begin

- You have the E-Series hardware replacement procedure.
- You have physically located the storage appliance where you are replacing storage shelf hardware components in the data center.

  Locate controller in data center

About this task

To replace the battery in the storage controller, see the steps in the instructions for replacing a storage controller. Those instructions describe how to remove a controller from the appliance, remove the battery from the controller, install the battery, and replace the controller.

For instructions for the other field replaceable units (FRUs) in the controller shelves, access the E-Series procedures for system maintenance.

FRU	See instructions
Battery	StorageGRID (these instructions): Replacing a storage controller
Drive	E-Series: • Replace drive (60-drive) • Replace drive (12-drive or 24-drive)
Power canister	E-Series • Replace power canister (60-drive) • Replace power supply (12-drive or 24-drive)

FRU	See instructions
Fan canister (60-drive shelves only)	E-Series: Replace fan canister (60-drive)
Drive drawer (60-drive shelves only)	E-Series: Replace drive drawer (60-drive)

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Replace hardware components in optional SG6000 60-drive expansion shelf

You might need to replace an input/output module, a power supply, or a fan in the expansion shelf.

Before you begin

- You have the E-Series hardware replacement procedure.
- You have physically located the storage appliance where you are replacing expansion shelf hardware components in the data center.

  Locate controller in data center

About this task

To replace an input/output module (IOM) in a 60-drive expansion shelf, see the steps in the instructions for replacing a storage controller.

To replace a power supply or a fan in a 60-drive expansion shelf, access the E-Series procedures for maintaining 60-drive hardware.

FRU	See E-Series instructions for
Input/output module (IOM)	Replacing an IOM
Power canister	Replace power canister (60-drive)
Fan canister	Replace fan canister (60-drive)

Replace SG6000-CN controller

You might need to replace the SG6000-CN controller if it is not functioning optimally or if it has failed.

Before you begin

- You have a replacement controller with the same part number as the controller you are replacing. Check the tags attached to the front of the controllers to confirm that the part numbers match.

- You have labels to identify each cable that is connected to the controller.

- You have physically located the controller to replace in the data center.

  Locate controller in data center

About this task

The appliance Storage Node will not be accessible when you replace the SG6000-CN controller. If the SG6000-CN controller is functioning sufficiently, you can perform a controlled shutdown at the start of this procedure.

> (i) If you are replacing the controller before installing StorageGRID software, you might not be able to access the StorageGRID Appliance Installer immediately after completing this procedure. While you can access the StorageGRID Appliance Installer from other hosts on the same subnet as the appliance, you can't access it from hosts on other subnets. This condition should resolve itself within 15 minutes (when any ARP cache entries for the original controller time out), or you can clear the condition immediately by purging any old ARP cache entries manually from the local router or gateway.

Steps

1. Display the current configurations of the appliance and record them.

   a. Log in to the appliance to be replaced:

      i. Enter the following command: `ssh admin@`*`grid_node_IP`*

      ii. Enter the password listed in the `Passwords.txt` file.

      iii. Enter the following command to switch to root: `su -`

      iv. Enter the password listed in the `Passwords.txt` file.

         When you are logged in as root, the prompt changes from `$` to `#`.

   b. Enter: **`run-host-command ipmitool lan print`** to display the current BMC configurations for the appliance.

2. If the SG6000-CN controller is functioning sufficiently to allow for a controlled shutdown, shut down the SG6000-CN controller.

3. If any of the network interfaces on this StorageGRID appliance are configured for DHCP, you might need to update the permanent DHCP lease assignments on the DHCP servers to reference the MAC addresses of the replacement appliance. The update ensures the appliance is assigned the expected IP addresses. See Update MAC address references.

4. Remove and replace the SG6000-CN controller:

   a. Label the cables and then disconnect the cables and any SFP+ or SFP28 transceivers.

      > (i) To prevent degraded performance, don't twist, fold, pinch, or step on the cables.

   b. Remove the failed controller from the cabinet or rack.

   c. Install the replacement controller into the cabinet or rack.

   d. Replace the cables and any SFP+ or SFP28 transceivers.

   e. Power on the controller and monitor the controller LEDs and boot-up codes.

When the controller starts, it automatically installs pending updates for the controller and appliance components. Installation of these updates can take an hour or more to complete, and the controller might reboot multiple times.

> ⚠️ Do not manually reboot the appliance unless you are certain that it is *not* in the middle of a firmware update.

You can connect a monitor or service laptop to the SG6000-CN controller to monitor update installation progress.

> ℹ️ A service-laptop connection might not be available at some stages of the installation process.

5. If the appliance where you replaced the controller used a key management server (KMS) to encrypt data, additional configuration might be required before the node can join the grid. If the node does not automatically join the grid, make sure that these configuration settings have transferred to the new controller and manually configure any settings that don't have the expected configuration:

   - Configure network links
   - Configure StorageGRID IP addresses
   - Configure node encryption for the appliance

6. Log in to the appliance with the replaced controller:

   a. Enter the following command: `ssh admin@grid_node_IP`

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

7. Restore BMC network connectivity for the appliance. There are two options:

   - Use static IP, netmask, and gateway
   - Use DHCP to obtain an IP, netmask, and gateway

     a. To restore the BMC configuration to use a static IP, netmask, and gateway, enter the following commands:

     run-host-command ipmitool lan set 1 ipsrc static

     run-host-command ipmitool lan set 1 ipaddr *Appliance_IP*

     run-host-command ipmitool lan set 1 netmask *Netmask_IP*

     run-host-command ipmitool lan set 1 defgw ipaddr *Default_gateway*

     b. To restore the BMC configuration to use DHCP to obtain an IP, netmask, and gateway, enter the following command:

     run-host-command ipmitool lan set 1 ipsrc dhcp

8. After restoring BMC network connectivity, connect to the BMC interface to audit and restore any additional custom BMC configuration you might have applied. For example, you should confirm the settings for SNMP trap destinations and email notifications. See Configure BMC interface.

9. Confirm that the appliance node appears in the Grid Manager and that no alerts appear.

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Related information

- Install SG6000-CN into cabinet or rack

- View status indicators

- View boot-up codes for SG6000-CN controller

Replace one or both power supplies in the SG6000-CN controller

The SG6000-CN controller has two power supplies for redundancy. If one of the power supplies fails, you must replace it as soon as possible to ensure that the compute controller has redundant power. Both power supplies operating in the controller must be the same model and wattage.

Before you begin

- You have determined the physical location in the data center of the controller with the power supply to be replaced.

  Locating the controller in a data center

- If you are replacing only one power supply:
  - You have unpacked the replacement power supply unit and ensured that it is the same model and wattage as the power supply unit you are replacing.
  - You have confirmed that the other power supply is installed and running.

- If you are replacing both power supplies at the same time:
  - You have unpacked the replacement power supply units and ensured they are the same model and wattage.

About this task

The figure shows the two power supply units for the SG6000-CN controller, which are accessible from the back of the controller. Use this procedure to replace one or both of the power supplies. If you are replacing both power supplies, you must first perform a controlled shut down of the appliance.


Steps

1. If you are replacing only one power supply, you don't need to shut down the appliance. Go to the Unplug the power cord step. If you are replacing both power supplies at the same time, do the following before unplugging the power cords:
   a. Shut down the appliance.

2. Unplug the power cord from each power supply to be replaced.

3. Lift the cam handle on the first supply to be replaced.
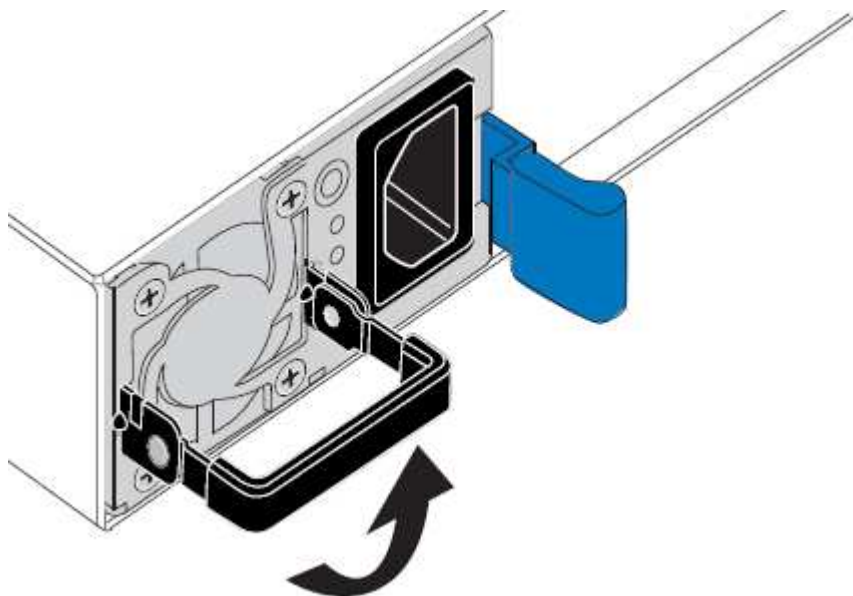
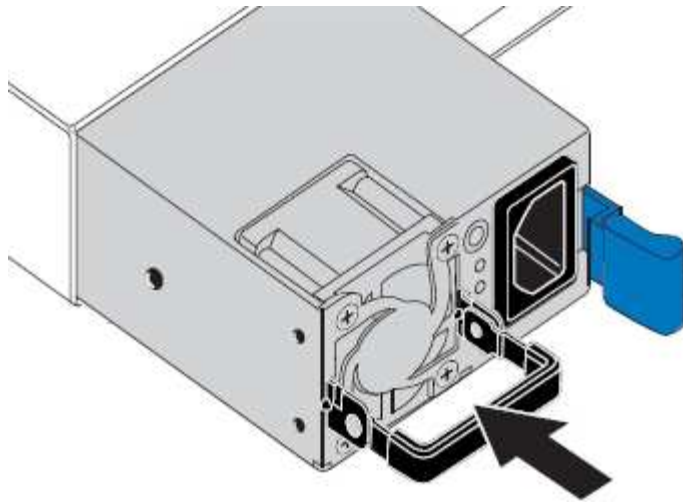4. Press the blue latch and pull the power supply out.
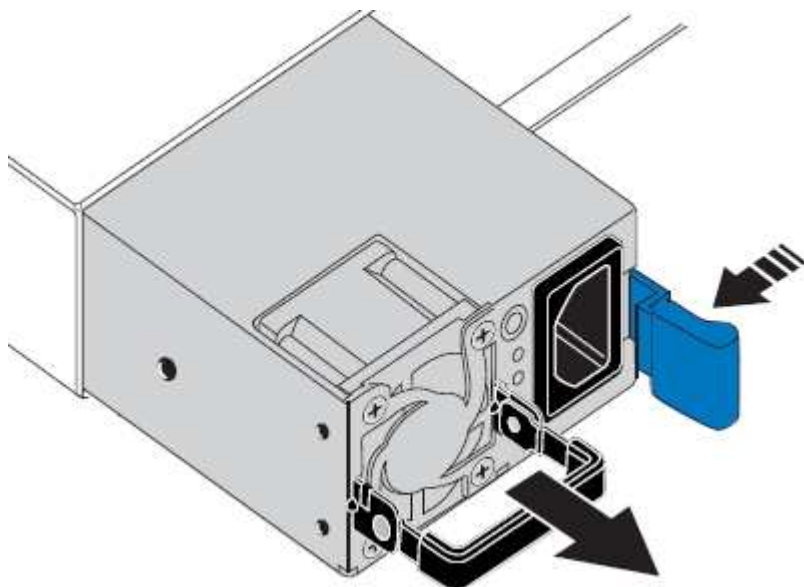
5. With the blue latch on the right, slide the replacement power supply into the chassis.

> (i)   Both power supplies must be the same model and wattage.

Ensure that the blue latch is on the right side when you slide the replacement unit in.

6. Push the cam handle down to secure the replacement power supply.

7. If you are replacing both power supplies, repeat steps 2 though 6 to replace the second power supply.

8. Connect the power cords to the replaced units and apply power.

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Replace fan in SG6000-CN compute controller

The SG6000-CN compute controller has eight cooling fans. If one of the fans fails, you must replace it as soon as possible to ensure that the controller has proper cooling.

Before you begin

- You have unpacked the replacement fan.
- You have physically located the appliance.
- You have confirmed that the other fans are installed and running.

About this task

The storage node will not be accessible while you replace the fan.

The photograph shows a fan for the SG6000-CN compute controller. The cooling fans are accessible after you take the top cover off the controller.

> ℹ️ Each of the two power supply units also contain a fan. Those fans aren't included in this procedure.

Steps

1. Shut down the SG6000-CN controller.

2. Lift the latch on the top cover and remove the cover from the appliance.

3. Locate the fan that failed.

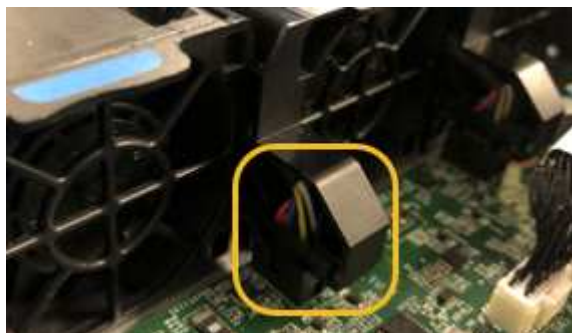4. Lift the failed fan out of the chassis.
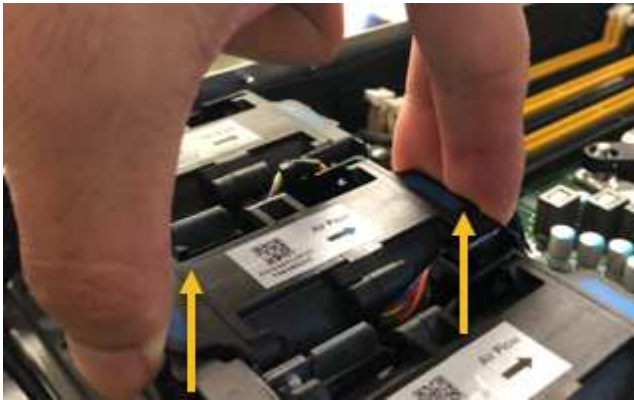
5. Slide the replacement fan into the open slot in the chassis.

   Line up the edge of the fan with the guide pin. The pin is circled in the photograph.

6. Press the fan's connector firmly into the circuit board.

7. Put the top cover back on the appliance, and press the latch down to secure the cover in place.

8. Power on the SG6000-CN controller.

9. Confirm that the appliance node appears in the Grid Manager and that no alerts appear.

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Replace SG6000-CN CMOS battery

Use this procedure to replace the CMOS coin cell battery on the system board.

Use these procedures to:

- Remove the CMOS battery
- Reinstall the CMOS battery

Remove the CMOS battery

Before you begin

- You have verified the appliance where the CMOS battery needs to be replaced.
- You have physically located the SG6000-CN controller where you are replacing the CMOS battery in the data center.
- You have recorded the current BMC configuration of the appliance, if it remains available.

   1. Log in to the appliance to be replaced:

      a. Enter the following command: `ssh admin@`*`grid_node_IP`*

      b. Enter the password listed in the `Passwords.txt` file.

      c. Enter the following command to switch to root: `su -`

      d. Enter the password listed in the `Passwords.txt` file.

      When you are logged in as root, the prompt changes from `$` to `#`.

   2. Enter: **`run-host-command ipmitool lan print`** to display the current BMC configuration for the appliance.

| | A controlled shutdown of the appliance is required before removing the appliance from the rack. |

- You have disconnected all cables and removed the appliance cover.

About this task

To prevent service interruptions, confirm that all other Storage Nodes are connected to the grid before starting the CMOS battery replacement or replace the battery during a scheduled maintenance window when periods of service disruption are acceptable. See the information about monitoring node connection states.

| | If you have ever used an ILM rule that creates only one copy of an object, you must replace the battery during a scheduled maintenance window because you might temporarily lose access to those objects during this procedure. See information about why you should not use single-copy replication. |

Steps

1. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.

2. Locate the two-slot riser assembly at the rear of the appliance.
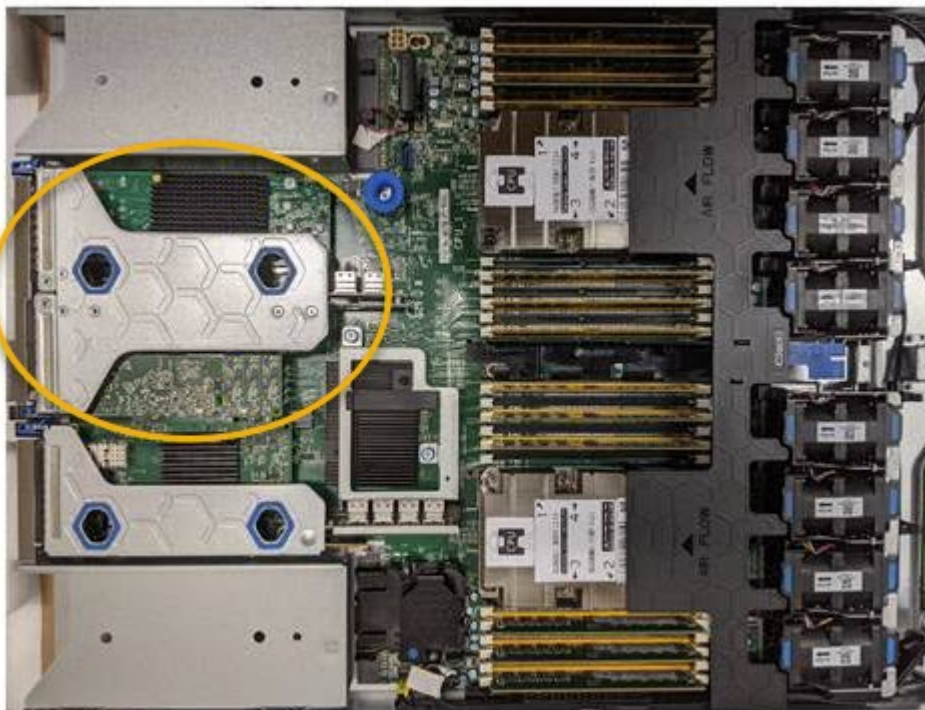
3. Grasp the riser assembly through the blue-marked holes and carefully lift it upwards. Move the riser assembly toward the front of the chassis as you lift it to allow the external connectors in its installed adapters to clear the chassis.

4. Place the riser on a flat anti-static surface with the metal frame side down.

5. Locate the CMOS battery on the system board in the position beneath the removed riser assembly.

6. Use your finger or a plastic pry tool to press the retaining clip away from the battery to spring it from the socket.

7. Remove the battery and dispose of it properly.

Reinstall the CMOS battery

Install the replacement CMOS battery into the socket on the system board.

Before you begin

- You have the correct replacement CMOS battery (CR2032).
- You have removed the failed CMOS battery.

Steps

1. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.

2. Remove the CMOS battery from its packaging.

3. Press the replacement battery into the empty socket on the system board with the positive (+) side up until the battery snaps in place.

4. Locate the alignment hole on the riser assembly (circled) that aligns with a guide pin on the system board to ensure correct riser assembly positioning.

5. Position the riser assembly in the chassis, making sure that it aligns with the connector and guide pin on the system board; then, insert the riser assembly.

6. Carefully press the riser assembly in place along its center line, next to the blue-marked holes, until it is fully seated.

7. If you have no other maintenance procedures to perform in the appliance, reinstall the appliance cover, return the appliance to the rack, attach cables, and apply power.

8. If the appliance you replaced had drive encryption enabled for the SED drives, you must enter the drive encryption passphrase to access the encrypted drives when the replacement appliance starts for the first time.

9. If the appliance you replaced used a key management server (KMS) to manage encryption keys for node encryption, additional configuration might be required before the node can join the grid. If the node does not automatically join the grid, make sure that these configuration settings have transferred to the new appliance and manually configure any settings that don't have the expected configuration:

   - Configure StorageGRID connections
   - Configure node encryption for the appliance

10. Log in to the appliance:

    a. Enter the following command: `ssh admin@grid_node_IP`

    b. Enter the password listed in the `Passwords.txt` file.

c. Enter the following command to switch to root: `su -`

d. Enter the password listed in the `Passwords.txt` file.

11. Restore BMC network connectivity for the appliance. There are two options:

    ◦ Use static IP, netmask, and gateway

    ◦ Use DHCP to obtain an IP, netmask, and gateway

    a. To restore the BMC configuration to use a static IP, netmask, and gateway, enter the following commands:

    `run-host-command ipmitool lan set 1 ipsrc static`

    `run-host-command ipmitool lan set 1 ipaddr `*`Appliance_IP`*

    `run-host-command ipmitool lan set 1 netmask `*`Netmask_IP`*

    `run-host-command ipmitool lan set 1 defgw ipaddr `*`Default_gateway`*

    b. To restore the BMC configuration to use DHCP to obtain an IP, netmask, and gateway, enter the following command:

    `run-host-command ipmitool lan set 1 ipsrc dhcp`

12. After restoring BMC network connectivity, connect to the BMC interface to audit and restore any additional custom BMC configuration you might have applied. For example, you should confirm the settings for SNMP trap destinations and email notifications. See Configure BMC interface.

13. Confirm that the appliance node appears in the Grid Manager and that no alerts appear.

Relocate SG6000-CN controller in cabinet or rack

Remove the SG6000-CN controller from a cabinet or rack to access the top cover or to move the appliance to a different location, then reinstall the controller into a cabinet or rack when hardware maintenance is complete.

Remove SG6000-CN controller from cabinet or rack

Remove the SG6000-CN controller from a cabinet or rack to access the top cover or to move the controller to a different location.

Before you begin

- You have labels to identify each cable that is connected to the SG6000-CN controller.

- You have physically located the SG6000-CN controller where you are performing maintenance in the data center.

  Locate controller in data center

- You have shut down the SG6000-CN controller.

  ⚠️   Don't shut down the controller using the power switch.

Steps

1. Label and then disconnect the controller power cables.

2. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.

3. Label and then disconnect the controller data cables and any SFP+ or SFP28 transceivers.

   > ℹ️ To prevent degraded performance, don't twist, fold, pinch, or step on the cables.

4. Loosen the two captive screws on the controller front panel.

5. Slide the SG6000-CN controller forward out of the rack until the mounting rails are fully extended and you hear the latches on both sides click.

   The controller top cover is accessible.

6. Optional: If you are fully removing the controller from the cabinet or rack, follow the instructions for the rail kit to remove the controller from the rails.

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Reinstall SG6000-CN controller into cabinet or rack

Reinstall the controller into a cabinet or rack when hardware maintenance is complete.

Before you begin

You have reinstalled the controller cover.

Reinstall SG6000-CN controller cover

Steps

1. Press the blue rail releases both rack rails at the same time and slide the SG6000-CN controller into the rack until it is fully seated.

   When you can't move the controller any further, pull the blue latches on both sides of the chassis to slide the controller all the way in.
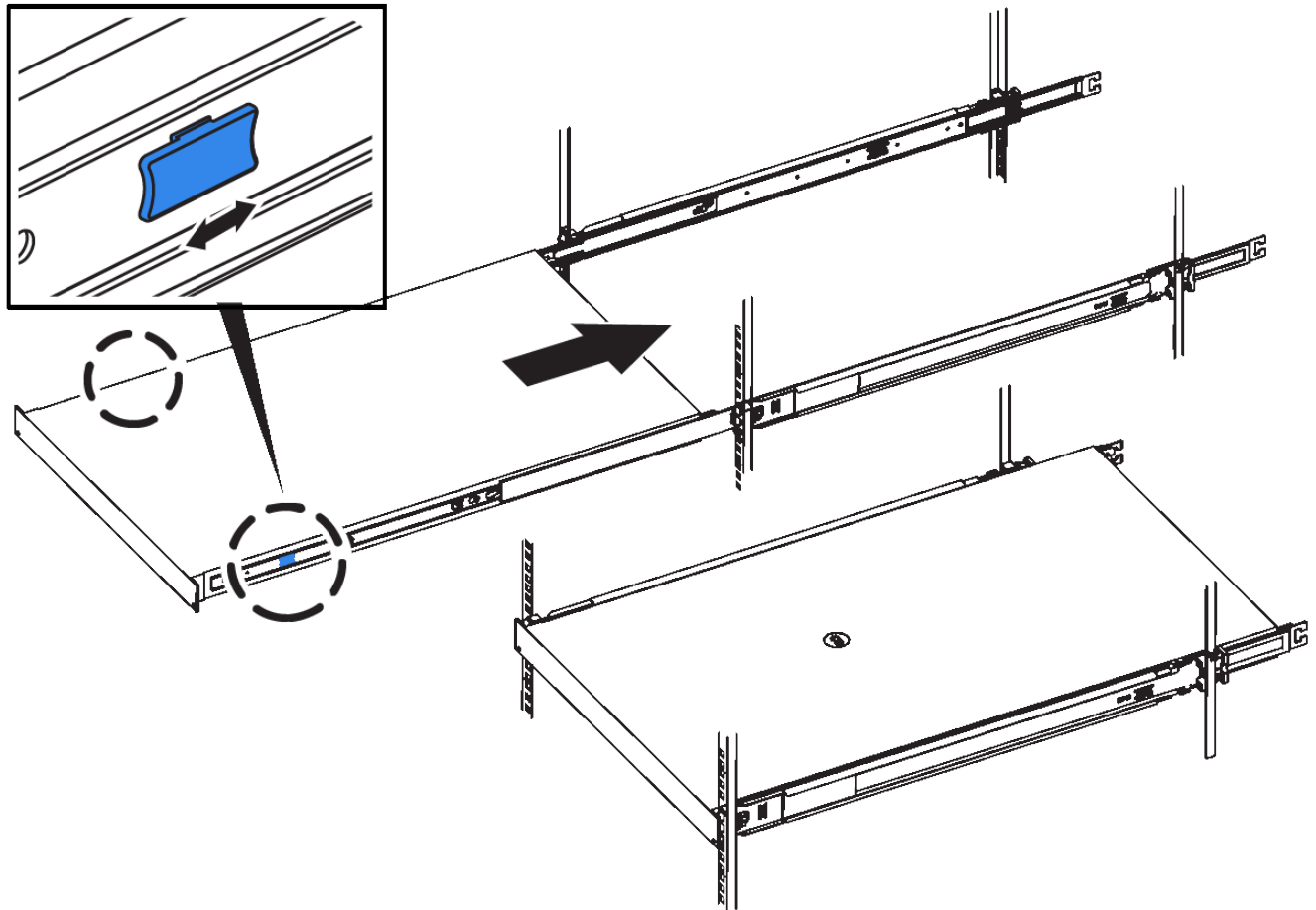
> ℹ️ Don't attach the front bezel until after you power on the controller.

2. Tighten the captive screws on the controller front panel to secure the controller in the rack.

3. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.

4. Reconnect the controller data cables and any SFP+ or SFP28 transceivers.

> ℹ️ To prevent degraded performance, don't twist, fold, pinch, or step on the cables.

Cable appliance

5. Reconnect the controller power cables.

Connect power cords and apply power (SG6000)

After you finish

The controller can be restarted restarted.

Replace SG6000 controller cover

Remove the appliance cover to access internal components for maintenance, and replace the cover when you are finished.

Remove SG6000-CN controller cover

Remove the controller cover to access internal components for maintenance.

Before you begin

Remove the controller from the cabinet or rack to access the top cover.

Remove SG6000-CN controller from cabinet or rack

Steps

1. Make sure that the SG6000-CN controller cover latch is not locked. If necessary, turn the blue plastic latch lock one-quarter turn in the unlock direction, as shown on the latch lock.

2. Rotate the latch up and back toward the rear of the SG6000-CN controller chassis until it stops; then, carefully lift the cover from the chassis and set it aside.

> ⚠️ Wrap the strap end of an ESD wristband around your wrist and secure the clip end to a metal ground to prevent static discharge when working inside the SG6000-CN controller.

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Reinstall SG6000-CN controller cover

Reinstall the controller cover when internal hardware maintenance is complete.

Before you begin

You have completed all maintenance procedures inside the controller.

Steps

1. With the cover latch open, hold the cover above the chassis and align the hole in the top cover latch with the pin in the chassis. When the cover is aligned, lower it onto the chassis.

2. Rotate the cover latch forward and down until it stops and the cover fully seats into the chassis. Verify that there are no gaps along the front edge of the cover.

   If the cover is not fully seated, you might not be able to slide the SG6000-CN controller into the rack.

3. Optional: Turn the blue plastic latch lock one-quarter turn in the lock direction, as shown on the latch lock, to lock it.

After you finish

Reinstall the controller in the cabinet or rack.

Replace Fibre Channel HBA in SG6000

You might need to replace a Fibre Channel HBA if it is not functioning optimally or if it has failed.

Verify Fibre Channel HBA to replace

If you are unsure which Fibre Channel host bus adapter (HBA) to replace, complete this procedure to identify it.

Before you begin

- You have the serial number of the storage appliance or SG6000-CN controller where the Fibre Channel HBA needs to be replaced.

  (i) If the serial number of the storage appliance containing the Fibre Channel HBA you are replacing starts with the letter Q, it will not be listed in the Grid Manager. You must check the tags attached to the front of each SG6000-CN controller in the data center until you find a match.

- You are signed in to the Grid Manager using a supported web browser.

Steps

1. From the Grid Manager, select **NODES**.

2. From the table on the Nodes page, select an appliance Storage Node.

3. Select the **Hardware** tab.

   Check the **Storage appliance chassis serial number** and the **Compute controller serial number** in the StorageGRID Appliance section. See if one of these serial numbers matches the serial number of the storage appliance where you are replacing the Fibre Channel HBA. If either serial number matches, you have found the correct appliance.

StorageGRID Appliance

Appliance model:	SG5660
Storage controller name:	StorageGRID-SGA-Lab11
Storage controller A management IP:	10.224.2.192
Storage controller WWID:	600a098000a4a707000000005e8ed5fd
Storage appliance chassis serial number:	1142FG000135
Storage controller firmware version:	08.40.60.01
Storage hardware:	Nominal
Storage controller failed drive count:	0
Storage controller A:	Nominal
Storage controller power supply A:	Nominal
Storage controller power supply B:	Nominal
Storage data drive type:	NL-SAS HDD
Storage data drive size:	2.00 TB
Storage RAID mode:	RAID6
Storage connectivity:	Nominal
Overall power supply:	Nominal
Compute controller serial number:	SV54365519
Compute controller CPU temperature:	Nominal
Compute controller chassis temperature:	Nominal

Storage shelves

Shelf chassis serial number	Shelf ID	Shelf status	IOM status
SN SV13304553	0	Nominal	N/A

- If the StorageGRID Appliance section does not display, the node selected is not a StorageGRID appliance. Select a different node from the tree view.
- If the Appliance Model is not SG6060 or SG6060X, select a different node from the tree view.

◦ If the serial numbers don't match, select a different node from the tree view.

4. After you locate the node where the Fibre Channel HBA needs to be replaced, write down the Compute controller BMC IP address listed the StorageGRID Appliance section.

   You can use this IP address to turn on the compute controller identify LED, to help you locate the appliance in the data center.

Remove Fibre Channel HBA

You might need to replace the Fibre Channel host bus adapter (HBA) in the SG6000-CN controller if it is not functioning optimally or if it has failed.

Before you begin

- You have the correct replacement Fibre Channel HBA.

- You have determined which SG6000-CN controller contains the Fibre Channel HBA to replace.

- You have physically located the SG6000-CN controller in the data center.

- You have shut down the SG6000-CN controller.

   ⚠️ A controlled shutdown is required before you remove the controller from the rack.

- You have removed the controller from the cabinet or rack.

- You have removed the controller cover.

About this task

To prevent service interruptions, confirm that all other Storage Nodes are connected to the grid before starting the Fibre Channel HBA replacement or replace the adapter during a scheduled maintenance window when periods of service disruption are acceptable. See the information about monitoring node connection states.

   ⚠️ If you have ever used an ILM rule that creates only one copy of an object, you must replace the Fibre Channel HBA during a scheduled maintenance window. Otherwise, you might temporarily lose access to those objects during this procedure.
   See information about why you should not use single-copy replication.

Steps

1. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.

2. Locate the riser assembly at the rear of the controller that contains the Fibre Channel HBA.
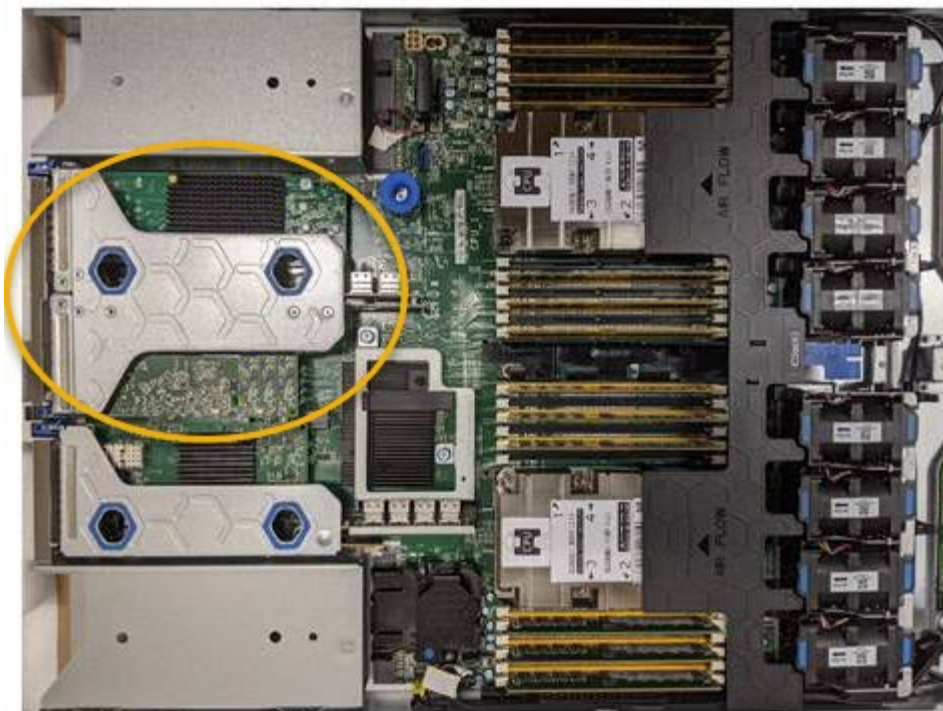
3. Grasp the riser assembly through the blue-marked holes and carefully lift it upwards. Move the riser assembly toward the front of the chassis as you lift it to allow the external connectors in its installed adapters to clear the chassis.

4. Place the riser card on a flat anti-static surface with the metal frame side down to access the adapters.

There are two adapters in the riser assembly: a Fibre Channel HBA and an Ethernet network adapter. The Fibre Channel HBA is indicated in the illustration.

5. Open the blue adapter latch (circled) and carefully remove the Fibre Channel HBA from the riser assembly. Rock the adapter slightly to help remove the adapter from its connector. Don't use excessive force.

6. Place the adapter on a flat anti-static surface.

After you finish

Install the replacement Fibre Channel HBA.

After replacing the part, return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the Part Return & Replacements page for further information.

Reinstall Fibre Channel HBA

The replacement Fibre Channel HBA is installed into the same location as the one that was removed.

Before you begin

- You have the correct replacement Fibre Channel HBA.
- You have removed the existing Fibre Channel HBA.

  Remove Fibre Channel HBA

Steps

1. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.
2. Remove the replacement Fibre Channel HBA from its packaging.
3. With the blue adapter latch in the open position, align the Fibre Channel HBA with its connector on the riser assembly; then, carefully press the adapter into the connector until it is fully seated.

   There are two adapters in the riser assembly: a Fibre Channel HBA and an Ethernet network adapter. The Fibre Channel HBA is indicated in the illustration.

4. Locate the alignment hole on the riser assembly (circled) that aligns with a guide pin on the system board to ensure correct riser assembly positioning.

5. Position the riser assembly in the chassis, making sure that it aligns with the connector and guide pin on the system board; then, insert the riser assembly.

6. Carefully press the riser assembly in place along its center line, next to the blue-marked holes, until it is fully seated.

7. Remove the protective caps from the Fibre Channel HBA ports where you will be reinstalling cables.

After you finish

If you have no other maintenance procedures to perform in the controller, reinstall the controller cover.