Hardware procedures

StorageGRID Appliances

NetApp
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Hardware procedures

Replace SG5800 controller

You might need to replace the SG5800 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.

About this task

The appliance Storage Node will not be accessible when you replace the controller. If the SG5800 controller is functioning sufficiently, you can perform a controlled shutdown at the start of this procedure.

> ⓘ 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. Shut down the SG5800 controller.

   a. Log in to the grid node:

      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. Shut down the SG5800 controller:

      `shutdown -h now`

   c. Wait for any data in cache memory to be written to the drives.

      The green Cache Active LED on the back of the E4000 controller is on when cached data needs to be written to the drives. You must wait for this LED to turn off.

2. Turn off the power.

   a. From the home page of SANtricity System Manager, select View Operations in Progress.

   b. Confirm that all operations have completed.

   c. Turn off both power switches on the appliance.

d. Wait for all LEDs to turn off.

3. If the StorageGRID networks attached to the controller use DHCP servers:

   a. Note the MAC addresses for the ports on the replacement controller (located on labels on the controller).

   b. Ask your network administrator to update the IP address settings for the original controller to reflect the MAC addresses for the replacement controller.

   > ⓘ You must ensure that the IP addresses for the original controller have been updated before you apply power to the replacement controller. Otherwise, the controller will obtain new DHCP IP addresses when it boots up and might not be able to reconnect to StorageGRID. This step applies to all StorageGRID networks that are attached to the controller.

4. Remove the controller from the appliance:

   a. Put on an ESD wristband or take other antistatic precautions.

   b. Label the cables and then disconnect the cables and SFPs.

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

   c. 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. 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.

6. Power on the appliance, and monitor the controller LEDs.

7. Confirm that the appliance Storage Node appears in the Grid Manager and that no alarms 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 E4000 controller (SG5800)

You might need to replace the E4000 controller if it is not functioning optimally or if it has failed.

Before you begin

Make sure you have the following:

- A replacement controller with the same part number as the controller you are replacing.

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

- An ESD wristband, or you have taken anti-static precautions.
- Labels to identify each cable that is connected to the controller.
- Specific access permissions.
- You must be signed in to the Grid Manager using a supported web browser.
- Access to SANtricity System Manager:
  - From Grid Manager, select **NODES** > *appliance node* > **SANtricity System Manager**. Controller information is on the SANtricity System Manager tab.
  - Point a browser in your management station to the controller's domain name or IP address.

About this task

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

- A Grid Manager alert indicates a storage controller failure, and Grid Manager or 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.

The appliance Storage Node will not be accessible when you replace the controller. If the E4000 series controller is functioning sufficiently, you can place the SG5800 appliance into maintenance mode.

Step 1: Prepare to replace controller

Prepare to replace a controller canister by saving the drive security key, backing up the configuration, and collecting support data. Then, you can stop host I/O operations and power down the controller shelf.

Steps

1. If possible, make a note of which version of SANtricity OS software is currently installed on the controller. Open SANtricity System Manager and select **Support › Upgrade Center › View Software and Firmware Inventory**.
2. Make note of which version of NVSRAM is currently installed.
3. If the Drive Security feature is enabled, be sure a saved key exists and that you know the pass phrase required to install it.

> ⚠ **Possible loss of data access** — If all drives in the storage array are security enabled, the new controller will not be able to access the storage array until you unlock the secured drives using the CLI. For more information on the CLI, see the E-series documentation.

   To save the key (might not be possible, depending on the state of the controller):

   a. From SANtricity System Manager, select **Settings › System**.

   b. Under **Drive security key management**, select **Back Up Key**.

   c. In the **Define a pass phrase/Re-enter pass phrase** fields, enter and confirm a pass phrase for this backup copy.

   d. Click **Backup**.

   e. Record your key information in a secure location, and then click **Close**.

4. Back up the storage array's configuration database using SANtricity System Manager.

If a problem occurs when you remove a controller, you can use the saved file to restore your configuration. The system will save the current state of the RAID configuration database, which includes all data for volume groups and disk pools on the controller.

- From System Manager:

   a. Select **Support › Support Center › Diagnostics**.

   b. Select **Collect Configuration Data**.

   c. Click **Collect**.

   The file is saved in the Downloads folder for your browser with the name, **configurationData-<arrayName>-<dateTime>.7z**.

- Alternatively, you can back up the configuration database by using the following CLI command:

```
save storageArray dbmDatabase sourceLocation=onboard contentType=all
file="filename";
```

5. Collect support data for your storage array using SANtricity System Manager.

If a problem occurs when you remove a controller, you can use the saved file to troubleshoot the issue. The system will save inventory, status, and performance data about your storage array in a single file.

   a. Select **Support › Support Center › Diagnostics**.

   b. Select **Collect Support Data**.

   c. Click **Collect**.

   The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

Step 2: Place the controller offline

Take the controller offline and confirm that all operations are complete.

Steps

1. If the StorageGRID appliance is running in a StorageGRID system, place the appliance into maintenance mode.

2. If the E4000 controller is functioning sufficiently to allow for a controlled shutdown, confirm that all operations have completed.

   a. Wait for any data in cache memory to be written to the drives.

   The green Cache Active LED on the back of the controller is on when cached data needs to be written to the drives. You must wait for this LED to turn off.

   b. From the home page of SANtricity System Manager, select **View Operations in Progress**.

   c. Confirm that all operations have completed before continuing with the next step.

3. Turn off both power switches on the controller shelf.

4. Wait for all LEDs on the controller shelf to turn off.

Step 3: Remove E4000 controller canister

Remove an E4000 controller canister.

Steps

1. Put on an ESD wristband or take other antistatic precautions.

2. Label each cable that is attached to the controller canister.

3. Disconnect all the cables from the controller canister.

   > ⚠️ | To prevent degraded performance, do not twist, fold, pinch, or step on the cables.

4. Squeeze the latch on the cam handle until it releases, open the cam handle fully to release the controller canister from the midplane, and then, using two hands, pull the controller canister out of the chassis.

5. Place the controller on a flat, static-free surface with the removable cover facing up.

6. Open the cover by pressing the blue buttons on the sides of the controller canister to release the cover, and then rotate the cover up and off of the controller canister.

Step 4: Determine parts to transfer to replacement controller

Your replacement controller may come with parts pre-installed. Determine which parts must be transferred to the replacement controller canister.
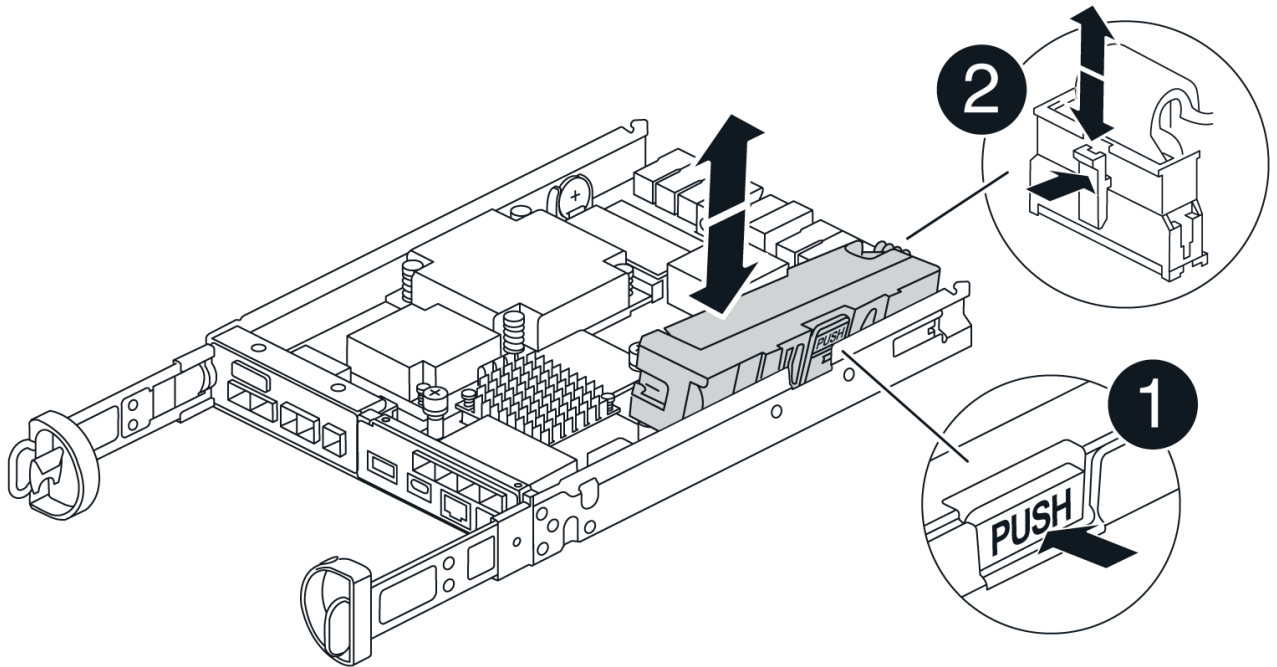
1. Place the replacement controller on a flat, static-free surface with the removable cover facing up.

2. Open the cover by pressing the blue buttons on the sides of the controller canister to release the cover, and then rotate the cover up and off of the controller canister.

3. Determine if the replacement controller contains a battery and/or DIMMs. If it does, reinstall the controller cover and go to Step 8: Replace controller. Otherwise:

   ◦ If the replacement controller does not include a battery or DIMM, go to Step 5: Remove the battery.

   ◦ If the replacement controller includes a battery but not a DIMM, go to Step 6: Move the DIMMs.

Step 5: Remove the battery

Removed the battery from the impaired controller and install it in the replacement controller.

Steps

1. Remove the battery from the controller canister:

   a. Press the blue button on the side of the controller canister.

   b. Slide the battery up until it clears the holding brackets, and then lift the battery out of the controller canister.

   c. Unplug the battery plug by squeezing the clip on the face of the battery plug to release the plug from the socket, and then unplug the battery cable from the socket.

❶	Battery release tab
❷	Battery power connector

2. Move the battery to the replacement controller canister:

   a. Align the battery with the holding brackets on the sheet metal side wall, but do not connect it. You will plug it in once the rest of the components are moved to the replacement controller canister.

3. If the replacement controller has pre-installed DIMMs, go to Step 7: Install the battery. Otherwise, continue to the next step.

Step 6: Move the DIMMs

Remove the DIMMs from the impaired controller canister and install them into the replacement controller canister.

Steps

1. Locate the DIMMs on your controller canister.

   ⓘ Note the location of the DIMM in the sockets so that you can insert the DIMM in the same location in the replacement controller canister and in the proper orientation. Remove the DIMMs from the impaired controller canister:
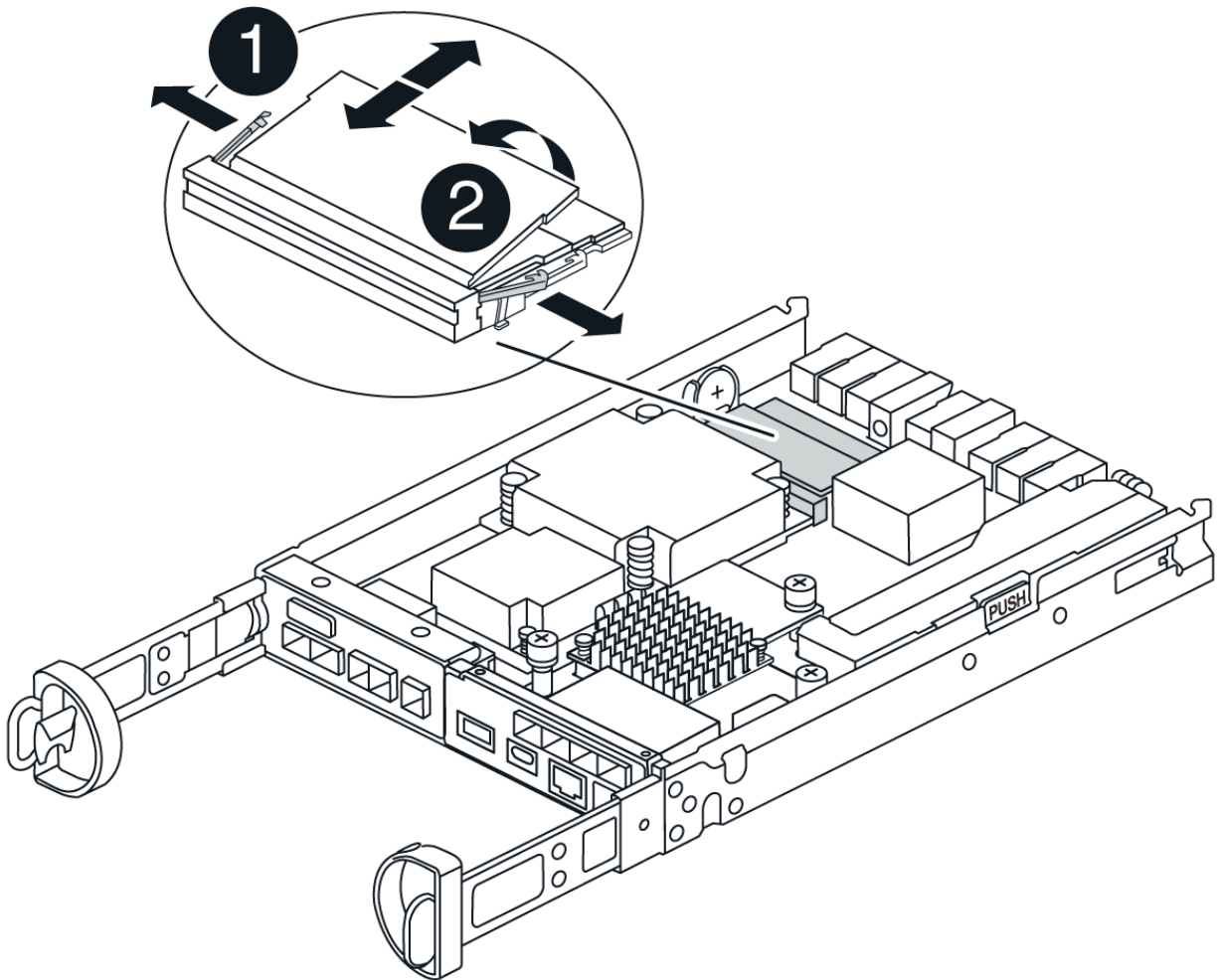
   a. Eject the DIMM from its slot by slowly pushing apart the two DIMM ejector tabs on either side of the DIMM.

      The DIMM will rotate up a little.

   b. Rotate the DIMM as far as it will go, and then slide the DIMM out of the socket.

| $\textcircled{i}$ | Carefully hold the DIMM by the edges to avoid pressure on the components on the DIMM circuit board. |

❶	DIMM ejector tabs
❷	DIMMS

2. Verify that the battery is not plugged into the replacement controller canister.

3. Install the DIMMs in the replacement controller in the same place they were in the impaired controller:

   a. Push carefully, but firmly, on the top edge of the DIMM until the ejector tabs snap into place over the notches at the ends of the DIMM.

      The DIMM fits tightly in the slot, but should go in easily. If not, realign the DIMM with the slot and reinsert it.

   | $\textcircled{i}$ | Visually inspect the DIMM to verify that it is evenly aligned and fully inserted into the slot. |

4. Repeat these steps for the other DIMM.

5. If the replacement controller has a pre-installed battery, go to Step 8: Replace controller. Otherwise, continue to the next step.

Step 7: Install the battery

Install the battery into the replacement controller canister.

Steps

1. Plug the battery plug back into the socket on the controller canister.

   Make sure that the plug locks down into the battery socket on the motherboard.

2. Align the battery with the holding brackets on the sheet metal side wall.

3. Slide the battery pack down until the battery latch engages and clicks into the opening on the side wall.

4. Reinstall the controller canister cover and lock it into place.

Step 8: Replace controller

Install the replacement controller and verify that the node 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.

   e. Power on the controller shelf.

   f. Wait for the E4000 controller to reboot.

   g. Determine how you will assign an IP address to the replacement controller.

   > (i) The steps for assigning an IP address to the replacement controller depend on whether you connected the management port to a network with a DHCP server and on whether all drives are secured.

   If management port 1 is connected to a network with a DHCP server, the new controller will obtain its IP address from the DHCP server. This value might be different than the original controller's IP address.

2. If the storage array has secure drives, import the drive security key; otherwise, go to the next step. Follow the appropriate procedure below for a storage array with all secure drives or a mix of secure and unsecure drives.

   > (i) *Unsecure drives* are unassigned drives, global hot spare drives, or drives that are part of a volume group or a pool that is not secured by the Drive Security feature. Secure drives are assigned drives that are a part of a secured volume group or disk pool using Drive Security.

   ◦ **Only secured drives (no unsecure drives)**:

   a. Access the storage array's command line interface (CLI). For more information on the CLI, see the

b. Load the appropriate simplex NVSRAM on the controller.

For example: `download storageArray NVSRAM file=\"N4000-881834-SG4.dlp\" forceDownload=TRUE;`

c. Confirm that the controller is **Optimal** after loading simplex NVSRAM.

d. If using external security key management, setup external key management on the controller.

e. If using internal security key management, enter the following command to import the security key:

```
import storageArray securityKey file="C:/file.slk"
passPhrase="passPhrase";
```

where:

- `C:/file.slk` represents the directory location and name of your drive security key

- `passPhrase` is the pass phrase needed to unlock the file After the security key has been imported, the controller reboots, and the new controller adopts the saved settings for the storage array.

f. Go to the next step to confirm that the new controller is Optimal.

◦ **Mix of secure and unsecure drives**:

a. Collect the support bundle and open the storage array profile.

b. Find and record all the unsecure drives' locations, which are found in the support bundle.

c. Power off the system.

d. Remove the unsecure drives.

e. Replace the controller.

f. Power on the system and wait for the seven-segment display to show the tray number.

g. From SANtricity System Manager, select **Settings › System**.

h. In the Security Key Management section, select **Create/Change Key** to create a new security key.

i. Select **Unlock Secure Drives** to import the security key you saved.

j. Run the `set allDrives nativeState` CLI command.

k. The controller will reboot automatically.

l. Wait for the controller to boot up and for the seven-segment display to show the tray number or a flashing L5.

m. Power off the system.

n. Reinstall the unsecure drives.

o. Reset the controller using SANtricity System Manager.

p. Power on the system and wait for the seven-segment display to show the tray number.

q. Go to the next step to confirm that the new controller is Optimal.

3. If you placed the appliance into maintenance mode during this procedure, return the appliance to normal operating mode. From the StorageGRID Appliance Installer, select **Advanced** > **Reboot Controller**, and

then select **Reboot into StorageGRID**.

4. During the reboot, monitor the node's status to determine when it has rejoined the grid.

   The appliance reboots and rejoins the grid. This process can take up to 20 minutes.

5. Confirm that the reboot is complete and that the node has rejoined the grid. In the Grid Manager, verify that the Nodes page displays a normal status (green check mark icon ✅ to the left of the node name) for the appliance node, indicating that no alerts are active and the node is connected to the grid.
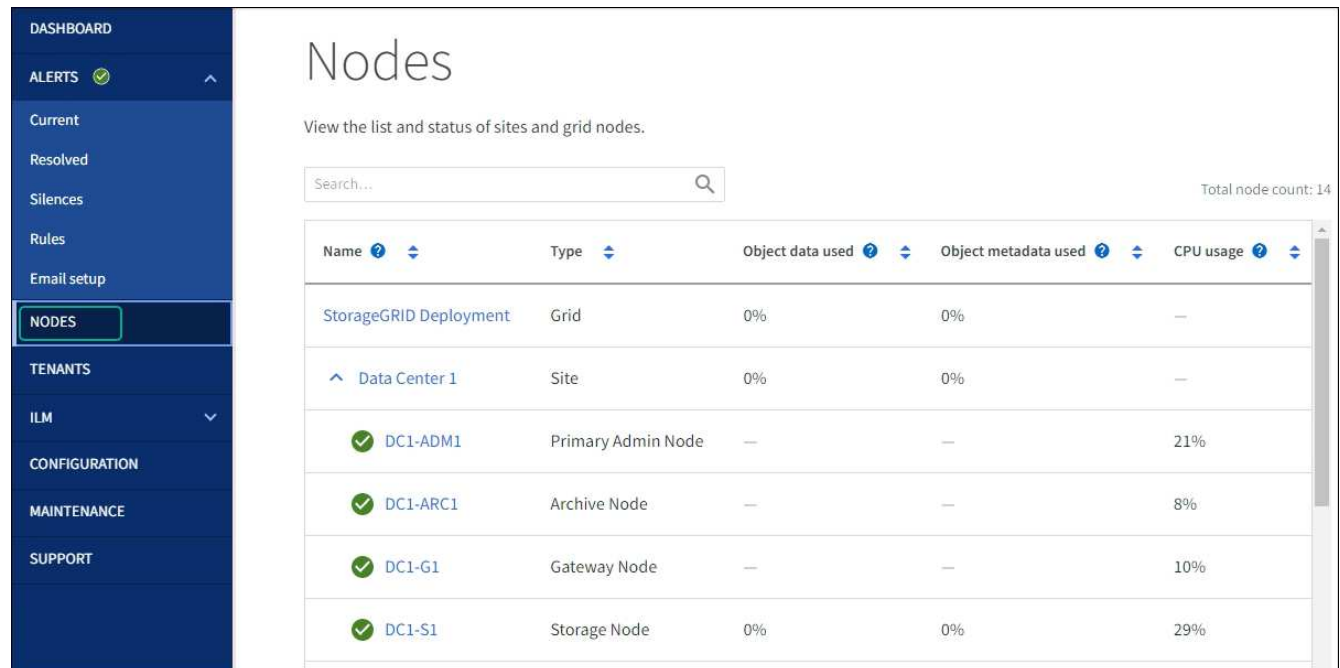
6. From SANtricity System Manager, confirm that the new controller is Optimal.

   a. Select **Hardware**.

   b. For the controller shelf, select **Show back of shelf**.

   c. Select the controller canister you replaced.

   d. Select **View settings**.

   e. Confirm that the controller's **Status** is Optimal.

f. If the status is not Optimal, highlight the controller, and select **Place Online**.

7. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support › Support Center › Diagnostics**.

   b. Select **Collect Support Data**.

   c. Click **Collect**.

   The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

What's next?

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 canister in SG5860

You can replace a fan canister in an SG5860.

About this task

Each appliance includes two fan canisters. If a fan canister fails, you must replace it as soon as possible to ensure that the shelf has adequate cooling.

> ⚠ **Possible equipment damage** — If you perform this procedure with the power turned on, you must complete it within 30 minutes to prevent the possibility of overheating the equipment.

Before you begin

- Review the details in the Recovery Guru to confirm that there is an issue with the fan canister and select **Recheck** from the Recovery Guru to ensure no other items must be addressed first.

- Check that the amber Attention LED on the fan canister is on, indicating that the fan has a fault. Contact technical support for assistance if both fan canisters in the shelf have their amber Attention LEDs on.

- Make sure you have the following:

  ◦ A replacement fan canister (fan) that is supported for your appliance model.

  ◦ An ESD wristband, or you have taken other antistatic precautions.

Step 1: Prepare to replace fan canister

Prepare to replace a fan canister by collecting support data about your storage array and locating the failed component.

Steps

1. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support › Support Center › Diagnostics**.

   b. Select **Collect Support Data**.

   c. Click **Collect**.

   The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

2. From SANtricity System Manager, determine which fan canister has failed.

a. Select **Hardware**.

b. Look at the fan ✿ icon to the right of the **Shelf** drop-down lists to determine which shelf has the failed fan canister.

   If a component has failed, this icon is red.

c. When you find the shelf with a red icon, select **Show back of shelf**.

d. Select either fan canister or the red fan icon.

e. On the **Fans** tab, look at the statuses of the fan canisters to determine which fan canister must be replaced.

   A component with a **Failed** status must be replaced.

   > ⓘ If the second fan canister in the shelf does not have **Optimal** status, do not attempt to hot-swap the failed fan canister. Instead, contact technical support for assistance.

You can also find information about the failed fan canister in the Details area of the Recovery Guru, or you can review the Event Log under Support and filter by Component Type.

3. From the back of the storage array, look at the Attention LEDs to locate the fan canister you need to remove.

   You must replace the fan canister that has its Attention LED on.

Step 2: Remove failed fan canister and install new one

Remove a failed fan canister so you can replace it with a new one.

> ⚠ If you do not turn off the power to your storage array, ensure that you remove and replace the fan canister within 30 minutes to prevent the system from overheating.

Steps

1. Unpack the new fan canister, and place it on a level surface near the shelf.

   Save all packing material for use when returning the failed fan.

2. Press the orange tab to release the fan canister handle.

3. Use the fan canister handle to pull the fan canister out of the shelf.

4. Slide the replacement fan canister all the way into the shelf, and then move the fan canister handle until it latches with the orange tab.

Step 3: Complete fan canister replacement

Confirm that the new fan canister is working correctly, gather support data, and resume normal operations.

Steps

1. Check the amber Attention LED on the new fan canister.

> ⓘ After you replace the fan canister, the Attention LED stays on (solid amber) while the firmware checks that the fan canister was installed correctly. The LED goes off after this process is complete.

2. From the Recovery Guru in SANtricity System Manager, select **Recheck** to ensure the problem has been resolved.

3. If a failed fan canister is still being reported, repeat the steps in Step 2: Remove failed fan canister and install new one. If the problem persists, contact technical support.

4. Remove the antistatic protection.

5. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support** › **Support Center** › **Diagnostics**.

   b. Select **Collect Support Data**.

   c. Click **Collect**.

   The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

6. Return the failed part to NetApp, as described in the RMA instructions shipped with the kit.

What's next?

Your fan canister replacement is complete. You can resume normal operations.

Replace power supply in SG5812

You can replace a power supply in an SG5812.

About this task

If you plan to replace a power supply, keep the following requirements in mind.

- You must have a replacement power supply that is supported for your appliance.

- You have an ESD wristband, or you have taken other antistatic precautions.

> ⓘ Do not mix PSUs of the different voltage types. Always replace like for like.

Before you begin

- Review the details in the Recovery Guru to confirm that there is an issue with the power supply. Select **Recheck** from the Recovery Guru to ensure no other items must be addressed first.

- Check that the amber Attention LED on the power supply is on, indicating that the power supply or its integrated fan has a fault. Contact technical support for assistance if both power supplies in the shelf have their amber Attention LEDs on.

- Make sure you have the following:

  ◦ A replacement power supply that is supported for your controller appliance model.

  ◦ An ESD wristband, or you have taken other antistatic precautions.

  ◦ Access to SANtricity System Manager:

    ▪ From Grid Manager, select **NODES** > *appliance node* > **SANtricity System Manager**. Controller information is on the SANtricity System Manager tab.

- Point a browser in your management station to the controller's domain name or IP address.

Step 1: Prepare to replace power supply

Prepare to replace a power supply.

Steps

1. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support > Support Center > Diagnostics**.

   b. Select **Collect Support Data**.

   c. Click **Collect**.

      The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

2. From SANtricity System Manager, determine which power supply has failed.

   You can find this information in the Details area of the Recovery Guru, or you can review the information displayed for the shelf.

   a. Select **Hardware**.

   b. Look at the power ⊡ and fan ⚙ icons to the right of the **Shelf** drop-down lists to determine which shelf has the failed power supply.

      If a component has failed, either or both of these icons are red.

   c. When you find the shelf with a red icon, select **Show back of shelf**.

   d. Select either power supply.

   e. On the **Power Supplies** and **Fans** tabs, look at the statuses of the power-fan canisters, the power supplies, and the fans to determine which power supply must be replaced.

      A component with a **Failed** status must be replaced.

      > ⚠️ If the second power supply canister in the shelf does not have **Optimal** status, do not attempt to hot-swap the failed power supply. Instead, contact technical support for assistance.

3. From the back of the storage array, look at the Attention LEDs to locate the power supply you need to remove.

   You must replace the power supply that has its Attention LED on.

Step 2: Remove failed power supply

Remove a failed power supply so you can replace it with a new one.

Steps

1. Unpack the new power supply, and set it on a level surface near the drive shelf.

   Save all packing materials for use when returning the failed power supply.

2. Turn off the power supply and disconnect the power cables:

   a. Turn off the power switch on the power supply.

   b. Open the power cord retainer, and then unplug the power cord from the power supply.

   c. Unplug the power cord from the power source.

3. Squeeze the latch on the power supply cam handle, and then open the cam handle to fully release the power supply from the mid plane.

4. Use the cam handle to slide the power supply out of the system.

> ⚠️ When removing a power supply, always use two hands to support its weight.

Step 3: Install new power supply

Install a new power supply to replace the failed one.

Steps

1. Make sure that the on/off switch of the new power supply is in the **Off** position.

2. Using both hands, support and align the edges of the power supply with the opening in the system chassis, and then gently push the power supply into the chassis using the cam handle.

   The power supplies are keyed and can only be installed one way.

> ⚠️ Do not use excessive force when sliding the power supply into the system; you can damage the connector.

3. Close the cam handle so that the latch clicks into the locked position and the power supply is fully seated.

4. Reconnect the power supply cabling:

   a. Reconnect the power cord to the power supply and the power source.

   b. Secure the power cord to the power supply using the power cord retainer.

5. Turn on the power to the new power supply canister.

Step 4: Complete power supply replacement

Confirm that the new power supply is working correctly, gather support data, and resume normal operations.

Steps

1. On the new power supply, check that the green Power LED is on and the amber Attention LED is OFF.

2. From the Recovery Guru in SANtricity System Manager, select **Recheck** to ensure the problem has been resolved.

3. If a failed power supply is still being reported, repeat the steps in Step 2: Remove failed power supply, and in Step 3: Install new power supply. If the problem continues to persist, contact technical support.

4. Remove the antistatic protection.

5. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support > Support Center > Diagnostics**.

   b. Select **Collect Support Data**.

c. Click **Collect**.

　　　The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

6. Return the failed part to NetApp, as described in the RMA instructions shipped with the kit.

What's next?

Your power supply replacement is complete. You can resume normal operations.

Replace power canister in SG5860

You can replace a power canister in an SG5860.

About this task

Each appliance includes two power canisters for power redundancy. If a power canister fails, you must replace it as soon as possible to ensure that the shelf has a redundant power source.

You can replace a power canister while your appliance is powered on and performing host I/O operations, as long as the second power canister in the shelf has an Optimal status and the **OK to remove** field in the Details area of the Recovery Guru in SANtricity System Manager displays **Yes**.

While you perform this task, the other power canister supplies power to both fans to ensure that the equipment does not overheat.

Before you begin

- Review the details in the Recovery Guru to confirm that there is an issue with the power canister and select **Recheck** from the Recovery Guru to ensure no other items must be addressed first.
- Check that the amber Attention LED on the power canister is on, indicating that the canister has a fault. Contact technical support for assistance if both power canisters in the shelf have their amber Attention LEDs on.
- Make sure you have the following:
    - A replacement power canister that is supported for your appliance.
    - An ESD wristband, or you have taken other antistatic precautions.

Step 1: Prepare to replace power canister

Prepare to replace a power canister.

Steps

1. Collect support data for your storage array using SANtricity System Manager.
    a. Select **Support › Support Center › Diagnostics**.
    b. Select **Collect Support Data**.
    c. Click **Collect**.

　　　The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

2. From SANtricity System Manager, determine which power canister has failed.
    a. Select **Hardware**.

b. Look at the power ⊞ icon to the right of the **Shelf** drop-down lists to determine which shelf has the failed power canister.

   If a component has failed, this icon is red.

c. When you find the shelf with a red icon, select **Show back of shelf**.

d. Select either power canister or the red power icon.

e. On the **Power Supplies** tab, look at the statuses of the power canisters to determine which power canister must be replaced.

   A component with a **Failed** status must be replaced.

   > (!) If the second power canister in the shelf does not have **Optimal** status, do not attempt to hot-swap the failed power canister. Instead, contact technical support for assistance.

   > (i) You can also find information about the failed power canister in the Details area of the Recovery Guru, or you can review the information displayed for the shelf, or you can review the Event Log under Support and filter by Component Type.

3. From the back of the storage array, look at the Attention LEDs to locate the power canister you need to remove.

   You must replace the power canister that has its Attention LED on.

Step 2: Remove failed power canister

Remove a failed power canister so you can replace it with a new one.

Steps

1. Put on antistatic protection.

2. Unpack the new power canister, and set it on a level surface near the shelf.

   Save all packing materials for use when returning the failed power canister.

3. Turn off the power switch on the power canister that you need to remove.

4. Open the power cord retainer of the power canister that you need to remove, and then unplug the power cord from the power canister.

5. Press the orange latch on the power canister cam handle, and then open the cam handle to fully release the power canister from the mid plane.

6. Use the cam handle to slide the power canister out of the shelf.

   > (!) When removing a power canister, always use two hands to support its weight.

Step 3: Install new power canister

Install a new power canister to replace the failed one.

Steps

1. Make sure the on/off switch of the new power canister is in the Off position.

2. Using both hands, support and align the edges of the power canister with the opening in the system chassis, and then gently push the power canister into the chassis using the cam handle until it locks into place.

   > ⚠️ Do not use excessive force when sliding the power canister into the system; you can damage the connector.

3. Close the cam handle so that the latch clicks into the locked position and the power canister is fully seated.

4. Reconnect the power cord to the power canister, and secure the power cord to the power canister using the power cord retainer.

5. Turn on the power to the new power canister.

Step 4: Complete power canister replacement

Confirm that the new power canister is working correctly, gather support data, and resume normal operations.

Steps

1. On the new power canister, check that the green Power LED is on and the amber Attention LED is OFF.

2. From the Recovery Guru in SANtricity System Manager, select **Recheck** to ensure the problem has been resolved.

3. If a failed power canister is still being reported, repeat the steps in Step 2: Remove failed power canister and in Step 3: Install new power canister. If the problem continues to persist, contact technical support.

4. Remove the antistatic protection.

5. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support › Support Center › Diagnostics**.

   b. Select **Collect Support Data**.

   c. Click **Collect**.

   The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

6. Return the failed part to NetApp, as described in the RMA instructions shipped with the kit.

What's next?

Your power canister replacement is complete. You can resume normal operations.

Replace battery in E4000 (SG5800)

You must replace the affected battery in your E4000 controller if Grid Manager issues an alert for a storage controller battery failure, or the Recovery Guru in SANtricity System Manager indicates a "Battery Failed" or "Battery Replacement Required" status. To protect your data, the battery must be replaced as soon as possible.

From SANtricity System Manager, review the details in the Recovery Guru to confirm that there is an issue with a battery and to ensure no other items must be addressed first.

Before you begin

If you plan to replace a failed battery, you must have:

- A replacement battery.
- An ESD wristband, or you have taken other antistatic precautions.
- Labels to identify each cable that is connected to the controller canister.
- Access to SANtricity System Manager:
  - From Grid Manager, select **NODES** > *appliance node* > **SANtricity System Manager**. Controller information is on the SANtricity System Manager tab.
  - Point a browser in your management station to the controller's domain name or IP address.

Step 1: Prepare to replace battery

Power down the controller shelf so you can safely remove the failed battery.

Steps

1. Back up the storage array's configuration database using SANtricity System Manager.

   If a problem occurs when you remove a controller, you can use the saved file to restore your configuration. The system will save the current state of the RAID configuration database, which includes all data for volume groups and disk pools on the controller.

   - From System Manager:
     a. Select **Support › Support Center › Diagnostics**.
     b. Select **Collect Configuration Data**.
     c. Click **Collect**.

        The file is saved in the Downloads folder for your browser with the name, **configurationData-<arrayName>-<dateTime>.7z**.

   - Alternatively, you can back up the configuration database by using the following CLI command:

     ```
     save storageArray dbmDatabase sourceLocation=onboard contentType=all
     file="filename";
     ```

2. Collect support data for your storage array using SANtricity System Manager.

   If a problem occurs when you remove a controller, you can use the saved file to troubleshoot the issue. The system will save inventory, status, and performance data about your storage array in a single file.

   a. Select **Support › Support Center › Diagnostics**.
   b. Select **Collect Support Data**.
   c. Click **Collect**.

      The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

3. Shut down the SG5800 controller.

   a. Log in to the grid node:
      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. Shut down the SG5800 controller:

```
shutdown -h now
```

  c. Wait for any data in cache memory to be written to the drives.

    The green Cache Active LED on the back of the E4000 controller is on when cached data needs to be written to the drives. You must wait for this LED to turn off.

4. From the home page of SANtricity System Manager, select **View Operations in Progress**.

5. Confirm that all operations have completed before continuing with the next step.

6. Turn off both power switches on the controller shelf.

7. Wait for all LEDs on the controller shelf to turn off.

Step 2: Remove E4000 controller canister

You need to remove the controller canister from the controller shelf, so you can remove the battery.

Before you begin

Make sure you have the following:

- An ESD wristband, or you have taken other antistatic precautions.
- Labels to identify each cable that is connected to the controller canister.

Steps

1. Disconnect all the cables from the controller canister.

    (!) To prevent degraded performance, do not twist, fold, pinch, or step on the cables.

2. If the host ports on the controller canister use SFP+ transceivers, leave them installed.

3. Confirm that the Cache Active LED on the back of the controller is off.

4. Squeeze the latch on the cam handle until it releases, open the cam handle fully to release the controller canister from the midplane, and then, using two hands, pull the controller canister half-way out of the chassis.

Step 3: Install the new battery

You must remove the failed battery and replace it.

Steps

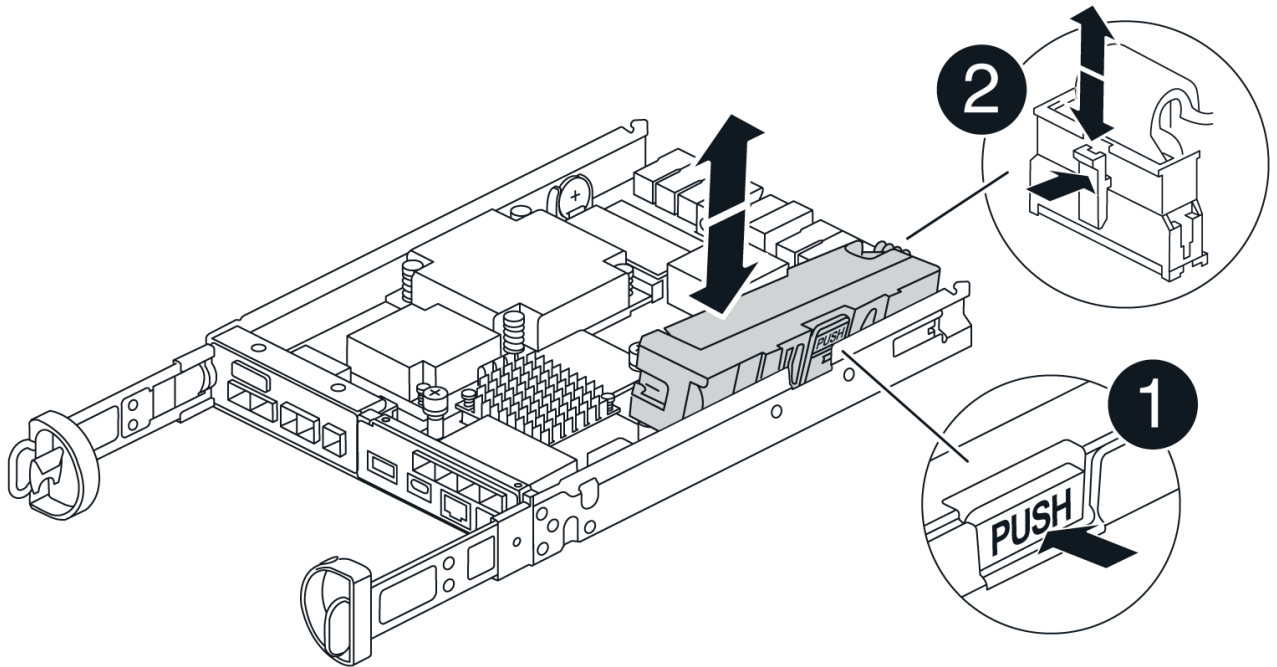1. Unpack the new battery and place it on a flat, static-free surface.

To comply with IATA safely regulations, replacement batteries are shipped with a state of charge (SoC) of 30 percent or less. When you reapply power, keep in mind that write caching will not resume until the replacement battery is fully charged and it has completed its initial learn cycle.

2. If you are not already grounded, properly ground yourself.

3. Remove the controller canister from the chassis.

4. Turn the controller canister over and place it on a flat, stable surface.

5. Open the cover by pressing the blue buttons on the sides of the controller canister to release the cover, and then rotate the cover up and off of the controller canister.
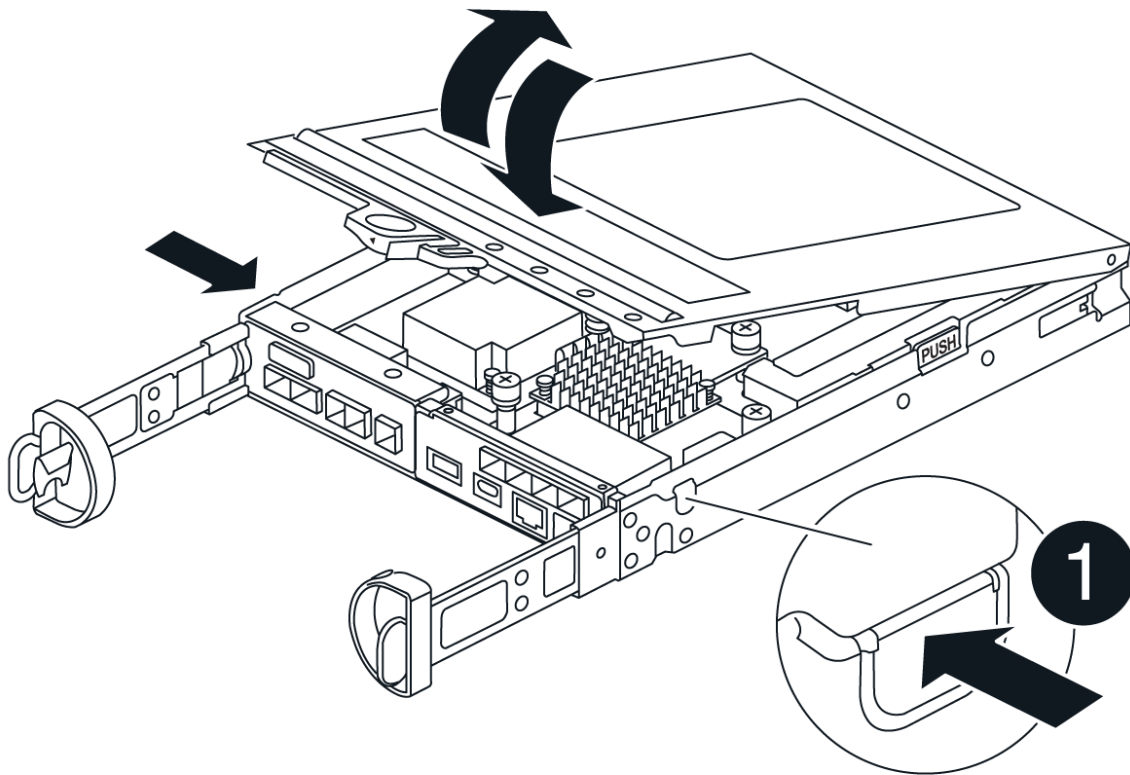
6. Locate the battery in the controller canister.

7. Remove the failed battery from the controller canister:

    a. Press the blue button on the side of the controller canister.

    b. Slide the battery up until it clears the holding brackets, and then lift the battery out of the controller canister.

    c. Unplug the battery from the controller canister.

①	Battery release tab
②	Battery power connector

8. Remove the replacement battery from its package. Install the replacement battery:

    a. Plug the battery plug back into the socket on the controller canister.

       Make sure that the plug locks down into the battery socket on the motherboard.

    b. Align the battery with the holding brackets on the sheet metal side wall.

    c. Slide the battery pack down until the battery latch engages and clicks into the opening on the side wall.

9. Reinstall the controller canister cover and lock it into place.

Step 4: Reinstall the controller canister

After you replace components in the controller canister, reinstall it into the chassis.

Steps

1. If you are not already grounded, properly ground yourself.

2. If you have not already done so, replace the cover on the controller canister.

3. Turn the controller canister over and align the end with the opening in the chassis.

4. Align the end of the controller canister with the opening in the chassis, and then gently push the controller canister halfway into the system.

   > ⓘ   Do not completely insert the controller canister in the chassis until instructed to do so.

5. Recable the system, as needed.

6. Complete the reinstallation of the controller canister:

   a. With the cam handle in the open position, firmly push the controller canister in until it meets the midplane and is fully seated, and then close the cam handle to the locked position.

      > (i) Do not use excessive force when sliding the controller canister into the chassis to avoid damaging the connectors.

      The controller begins to boot as soon as it is seated in the chassis.

   b. If you have not already done so, reinstall the cable management device.

   c. Bind the cables to the cable management device with the hook and loop strap.

Step 5: Complete battery replacement

Power up the controller.

Steps

1. Turn on the two power switches at the back of the controller shelf.

   - Do not turn off the power switches during the power-on process, which typically takes 90 seconds or less to complete.

   - The fans in each shelf are very loud when they first start up. The loud noise during start-up is normal.

2. When the controller is back online, check the controller shelf's Attention LEDs.

   If the status is not Optimal or if any of the Attention LEDs are on, confirm that all cables are correctly seated, and check that the battery and the controller canister are installed correctly. If necessary, remove and reinstall the controller canister and the battery.

   > (i) If you cannot resolve the problem, contact technical support. If needed, collect support data for your storage array using SANtricity System Manager.

3. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support › Support Center › Diagnostics**.

   b. Select Collect Support Data.

   c. Click Collect.

      The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

4. Confirm that the reboot is complete and that the node has rejoined the grid. In the Grid Manager, verify that the **Nodes** page displays a normal status (green check mark to the left of the node name) for the appliance node, indicating that no alerts are active and the node is connected to the grid.

   > (i) it may take 20 minutes from when you turn on the power switches to when the node rejoins the grid and displays a normal status in Grid Manager."

What's next?

Your battery replacement is complete. You can resume normal operations.

Replace DIMMs in E4000 (SG5800)

You can replace a DIMM in the E4000 if it has failed.

About this task

To replace a DIMM, you must verify the cache size of your controller, place the controller offline, remove the controller, remove the DIMMs, and install the new DIMMs in your controller. Then you can bring your controller back online and verify the storage array is working properly.

The appliance Storage Node may not be accessible when you replace the controller. If the E4000 series controller is functioning sufficiently, you can place the SG5800 controller into maintenance mode.

Before you begin

- Make sure you have the following:

    ◦ A replacement DIMM.

    ◦ An ESD wristband, or you have taken other antistatic precautions.

    ◦ A flat, static free work area.

    ◦ Labels to identify each cable that is connected to the controller canister.

- Access to SANtricity System Manager:

    ◦ From Grid Manager, select **NODES** > *appliance node* > **SANtricity System Manager**. Controller information is on the SANtricity System Manager tab.

    > ⓘ You may not be able to access SANtricity System Manager using Grid Manager during certain steps of this procedure. If the SG5800 controller is shut down, you will need to access SANtricity System Manager using your browser.

    ◦ Point a browser in your management station to the controller's domain name or IP address.

Step 1: Determine if you need to replace a DIMM

Verify the cache size of your controller before replacing the DIMMS.

Steps

1. Access the Storage Array profile for the controller. From SANtricity System Manager, go to **Support › Support Center**. From the Support Resources page, select **Storage Array Profile**.

2. Scroll down or use the Search field to locate the **Data Cache Module** information.

3. If a failed DIMM or a DIMM reporting **Data Cache Module** as not optimal is present, note the DIMM's location and continue to replace the DIMMs on your controller.

Step 2: Power down the controller shelf

Power down the controller so you can safely remove and replace the DIMMs.

Steps

1. From SANtricity System Manager, review the details in the Recovery Guru to confirm that there is an issue with a mismatched memory and to ensure no other items must be addressed first.

2. From the Details area of the Recovery Guru, determine which DIMM to replace.

3. Back up the storage array's configuration database using SANtricity System Manager.

   If a problem occurs when you remove a controller, you can use the saved file to restore your configuration. The system will save the current state of the RAID configuration database, which includes all data for volume groups and disk pools on the controller.

   ◦ From System Manager:

     a. Select **Support › Support Center › Diagnostics**.

     b. Select **Collect Configuration Data**.

     c. Click **Collect**.

        The file is saved in the Downloads folder for your browser with the name, **configurationData-<arrayName>-<dateTime>.7z**.

4. Shut down the SG5800 controller.

   a. Log in to the grid node:

      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. Shut down the SG5800 controller:

      shutdown -h now

   c. Wait for any data in cache memory to be written to the drives.

      The green Cache Active LED on the back of the E4000 controller is on when cached data needs to be written to the drives. You must wait for this LED to turn off.

5. From the home page of SANtricity System Manager, select **View Operations in Progress**.

6. Confirm that all operations have completed before continuing with the next step.

7. Turn off both power switches on the controller shelf.

8. Wait for all LEDs on the controller shelf to turn off.

Step 3: Remove controller canister

Remove the controller canister from the system and then remove the controller canister cover.
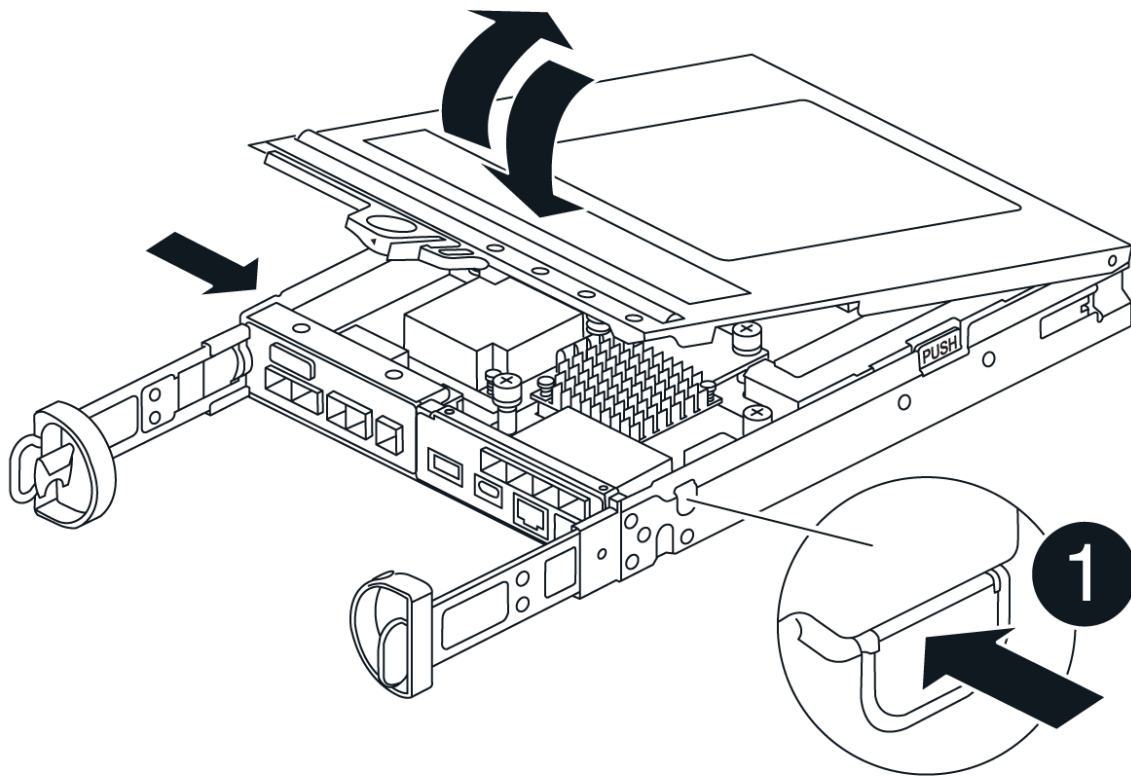
Steps

1. If you are not already grounded, properly ground yourself.

2. Loosen the hook and loop strap binding the cables to the cable management device, and then unplug the system cables and SFPs (if needed) from the controller canister, keeping track of where the cables were connected.

   Leave the cables in the cable management device so that when you reinstall the cable management

device, the cables are organized.

3. Remove and set aside the cable management devices from the left and right sides of the controller canister.

4. Squeeze the latch on the cam handle until it releases, open the cam handle fully to release the controller canister from the midplane, and then, using two hands, pull the controller canister out of the chassis.

5. Turn the controller canister over and place it on a flat, stable surface.

6. Open the cover by pressing the blue buttons on the sides of the controller canister to release the cover, and then rotate the cover up and off of the controller canister.

Step 4: Replace the DIMMs

Locate the DIMM inside the controller, remove it, and replace it.

Steps

1. If you are not already grounded, properly ground yourself.

2. You must perform a clean system shutdown before replacing system components to avoid losing unwritten data in the nonvolatile memory (NVMEM). The LED is located on the back of the controller canister.

3. If the NVMEM LED is not flashing, there is no content in the NVMEM; you can skip the following steps and proceed to the next task in this procedure.

4. If the NVMEM LED is flashing, there is data in the NVMEM and you must disconnect the battery to clear the memory:

a. Remove the battery from the controller canister by pressing the blue button on the side of the controller canister.

b. Slide the battery up until it clears the holding brackets, and then lift the battery out of the controller canister.

c. Locate the battery cable, press the clip on the battery plug to release the lock clip from the plug socket, and then unplug the battery cable from the socket.

d. Confirm that the NVMEM LED is no longer lit.

e. Reconnect the battery connector and recheck the LED on the back of the controller.

f. Unplug the battery cable.

5. Locate the DIMMs on your controller canister.

6. Note the orientation and location of the DIMM in the socket so that you can insert the replacement DIMM in the proper orientation.

7. Eject the DIMM from its slot by slowly pushing apart the two DIMM ejector tabs on either side of the DIMM, and then slide the DIMM out of the slot.

   The DIMM will rotate up a little.

8. Rotate the DIMM as far as it will go, and then slide the DIMM out of the socket.

   > (i) Carefully hold the DIMM by the edges to avoid pressure on the components on the DIMM circuit board.
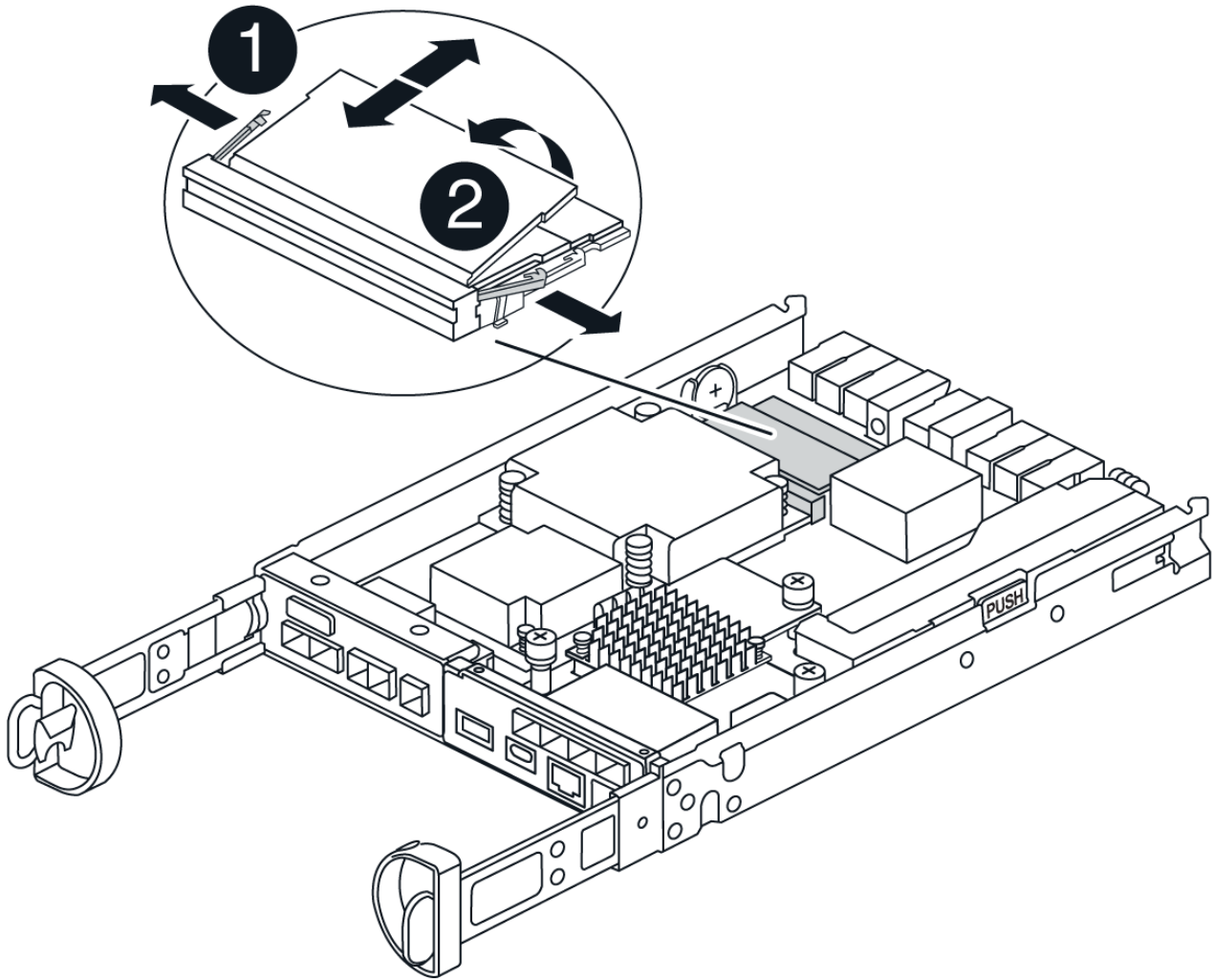
1	DIMM ejector tabs
2	DIMMS

9. Remove the replacement DIMM from the antistatic shipping bag, hold the DIMM by the corners, and align it to the slot.

   The notch among the pins on the DIMM should line up with the tab in the socket.

10. Insert the DIMM squarely into the slot.

    The DIMM fits tightly in the slot, but should go in easily. If not, realign the DIMM with the slot and reinsert it.

    ⓘ Visually inspect the DIMM to verify that it is evenly aligned and fully inserted into the slot.

11. Push carefully, but firmly, on the top edge of the DIMM until the ejector tabs snap into place over the notches at the ends of the DIMM.

12. Reconnect the battery:

a. Plug in the battery.

b. Make sure that the plug locks down into the battery power socket on the motherboard.

c. Align the battery with the holding brackets on the sheet metal side wall.

d. Slide the battery pack down until the battery latch engages and clicks into the opening on the side wall.

13. Reinstall the controller canister cover.

Step 5: Reinstall the controller canister

Reinstall the controller canister into the chassis.

Steps

1. If you are not already grounded, properly ground yourself.

2. If you have not already done so, replace the cover on the controller canister.

3. Turn the controller canister over and align the end with the opening in the chassis.

4. Gently push the controller canister halfway into the system. Align the end of the controller canister with the opening in the chassis, and then gently push the controller canister halfway into the system.

   > ⓘ Do not completely insert the controller canister in the chassis until instructed to do so.

5. Recable the system, as needed.

6. Complete the reinstallation of the controller canister:

   a. With the cam handle in the open position, firmly push the controller canister in until it meets the midplane and is fully seated, and then close the cam handle to the locked position.

      > ⓘ Do not use excessive force when sliding the controller canister into the chassis to avoid damaging the connectors.

      The controller begins to boot as soon as it is seated in the chassis.

   b. If you have not already done so, reinstall the cable management device.

   c. Bind the cables to the cable management device with the hook and loop strap.

7. Turn on both power switches on the controller shelf.

Step 6: Complete DIMMs replacement

Place the controller online, collect support data, and resume operations.

Steps

1. As the controller boots, check the controller LEDs.

   When communication with the other controller is reestablished:

   ◦ The amber Attention LED remains on.

   ◦ The Host Link LEDs might be on, blinking, or off, depending on the host interface.

2. When the controller is back online, confirm that its status is Optimal and check the controller shelf's Attention LEDs.

If the status is not Optimal or if any of the Attention LEDs are on, confirm that all cables are correctly seated and the controller canister is installed correctly. If necessary, remove and reinstall the controller canister. NOTE: If you cannot resolve the problem, contact technical support.

3. Collect support data for your storage array using SANtricity System Manager.

   a. Select **Support › Support Center › Diagnostics**.

   b. Select **Collect Support Data**.

   c. Click **Collect**.

   The file is saved in the Downloads folder for your browser with the name, **support-data.7z**.

4. Confirm that the reboot is complete and that the node has rejoined the grid. In the Grid Manager, verify that the **Nodes** page displays a normal status (green check mark to the left of the node name) for the appliance node, indicating that no alerts are active and the node is connected to the grid.

   > ⓘ it may take 20 minutes from when you turn on the power switches to when the node rejoins the grid and displays a normal status in Grid Manager."

Replace drives

Replace SG5800 drive overview

Before you replace a drive in an SG5812 or SG5860, review the requirements and considerations.

Drive handling

The drives in your appliance are fragile. Improper drive handling is a leading cause of drive failure.

Follow these rules to avoid damaging the drives in your storage array:

- Prevent electrostatic discharge (ESD):
    - Keep the drive in the ESD bag until you are ready to install it.
    - Do not insert a metal tool or knife into the ESD bag.

      Open the ESD bag by hand or cut the top off with a pair of scissors.

    - Keep the ESD bag and any packing materials in case you must return a drive later.
    - Always wear an ESD wrist strap grounded to an unpainted surface on your storage enclosure chassis.

      If a wrist strap is unavailable, touch an unpainted surface on your storage enclosure chassis before handling the drive.

- Handle drives carefully:
    - Always use two hands when removing, installing, or carrying a drive.
    - Never force a drive into a shelf, and use gentle, firm pressure to completely engage the drive latch.
    - Place drives on cushioned surfaces, and never stack drives on top of each other.
    - Do not bump drives against other surfaces.

- Before removing a drive from a shelf, unlatch the handle and wait 30 seconds for the drive to spin down.

- Always use approved packaging when shipping drives.

• Avoid magnetic fields:

- Keep drives away from magnetic devices.

  Magnetic fields can destroy all data on the drive and cause irreparable damage to the drive circuitry.

Replace drive in SG5812

You can replace a drive in an SG5812.

About this task

StorageGRID Grid Manager monitors appliance status and raises alerts when drive failures occur. When Grid Manager raises an alert, or at any time, you can use the Recovery Guru in SANtricity System Manager to get more information about the specific drive that has failed. When a drive has failed, its amber Attention LED is on. You can hot-swap a failed drive while the storage array is receiving I/O.

Before you begin

• Review the drive handling requirements

• Make sure you have the following:

- A replacement drive that is supported by NetApp for your controller shelf or drive shelf.

- An ESD wristband, or you have taken other antistatic precautions.

- A management station with a browser that can access SANtricity System Manager for the controller. (To open the System Manager interface, point the browser to the controller's domain name or IP address.)

Step 1: Prepare to replace drive

Prepare to replace a drive by checking the Recovery Guru in SANtricity System Manager and completing any prerequisite steps. Then, you can locate the failed component.

Steps

1. If the Recovery Guru in SANtricity System Manager has notified you of an *impending drive failure*, but the drive has not yet failed, follow the instructions in the Recovery Guru to fail the drive.

2. If needed, use SANtricity System Manager to confirm you have a suitable replacement drive.

   a. Select **Hardware**.

   b. Select the failed drive on the shelf graphic.

   c. Click the drive to display its context menu, and then select **View settings**.

   d. Confirm that the replacement drive has a capacity equal to or greater than the drive you are replacing and that it has the features you expect.

      For example, do not attempt to replace a hard disk drive (HDD) with a solid-state disk (SSD). Similarly, if you are replacing a secure-capable drive, make sure the replacement drive is also secure-capable.

3. If needed, use SANtricity System Manager to locate the drive within your storage array. From the drive's context menu on the Hardware page, select **Turn on locator light**.

The drive's Attention LED (amber) blinks so you can identify which drive to replace.

> ⓘ If you are replacing a drive in a shelf that has a bezel, you must remove the bezel to see the drive LEDs.

Step 2: Remove failed drive

Remove a failed drive to replace it with a new one.

Steps

1. Unpack the replacement drive, and set it on a flat, static-free surface near the shelf.

   Save all packing materials.

2. Press the release button on the failed drive.

3. Open the cam handle, and slide out the drive slightly.

4. Wait 30 seconds.

5. Using both hands, remove the drive from the shelf.

6. Place the drive on an antistatic, cushioned surface away from magnetic fields.

7. Wait 30 seconds for the software to recognize that the drive has been removed.

> ⓘ If you accidentally remove an active drive, wait at least 30 seconds, and then reinstall it. For the recovery procedure, refer to the storage management software.

Step 3: Install new drive

Install a new drive to replace the failed one.

> ⚠ Install the replacement drive as soon as possible after removing the failed drive. Otherwise, there is a risk that the equipment might overheat.

Steps

1. Open the cam handle.

2. Using two hands, insert the replacement drive into the open bay, firmly pushing until the drive stops.

3. Slowly close the cam handle until the drive is fully seated in the midplane and the handle clicks into place.

   The green LED on the drive comes on when the drive is inserted correctly.

> ⓘ Depending on your configuration, the controller might automatically reconstruct data to the new drive. If the shelf uses hot spare drives, the controller might need to perform a complete reconstruction on the hot spare before it can copy the data to the replaced drive. This reconstruction process increases the time that is required to complete this procedure.

Step 4: Complete drive replacement

Complete the drive replacement to confirm that the new drive is working correctly.

Steps

1. Check the Power LED and the Attention LED on the drive you replaced. (When you first insert a drive, its Attention LED might be on. However, the LED should go off within a minute.)

   ◦ Power LED is on or blinking, and the Attention LED is off: Indicates that the new drive is working correctly.

   ◦ Power LED is off: Indicates that the drive might not be installed correctly. Remove the drive, wait 30 seconds, and then reinstall it.

   ◦ Attention LED is on: Indicates that the new drive might be defective. Replace it with another new drive.

2. If the Recovery Guru in SANtricity System Manager still shows an issue, select **Recheck** to ensure the problem has been resolved.

3. If the Recovery Guru indicates that drive reconstruction did not start automatically, start reconstruction manually, as follows:

   > ⓘ Perform this operation only when instructed to do so by technical support or the Recovery Guru.

   a. Select **Hardware**.

   b. Click the drive that you replaced.

   c. From the drive's context menu, select **Reconstruct**.

   d. Confirm that you want to perform this operation.

   When the drive reconstruction completes, the volume group is in an Optimal state.

4. As required, reinstall the bezel.

5. Return the failed part to NetApp, as described in the RMA instructions shipped with the kit.

What's next?

Your drive replacement is complete. You can resume normal operations.

Replace drive in SG5860

You can replace a drive in an SG5860.

About this task

StorageGRID Grid Manager monitors appliance status and raises alerts when drive failures occur. When Grid Manager raises an alert, or at any time, you can use the Recovery Guru in SANtricity System Manager to get more information about the specific drive that has failed. When a drive has failed, its amber Attention LED is on. You can hot-swap a failed drive while the storage array is receiving I/O.

This procedure applies to DCM and DCM2 drive shelves.

Before you begin

- Review the drive handling requirements.

- Make sure you have the following:

  ◦ A replacement drive that is supported by NetApp for your controller shelf or drive shelf.

  ◦ An ESD wristband, or you have taken other antistatic precautions.

  ◦ A management station with a browser that can access SANtricity System Manager for the controller.

(To open the System Manager interface, point the browser to the controller's domain name or IP address.)

Step 1: Prepare to replace drive

Prepare to replace a drive by checking the Recovery Guru in SANtricity System Manager and completing any prerequisite steps. Then, you can locate the failed component.

Steps

1. If the Recovery Guru in SANtricity System Manager has notified you of an *impending drive failure*, but the drive has not yet failed, follow the instructions in the Recovery Guru to fail the drive.

2. If needed, use SANtricity System Manager to confirm you have a suitable replacement drive.

   a. Select **Hardware**.

   b. Select the failed drive on the shelf graphic.

   c. Click the drive to display its context menu, and then select **View settings**.

   d. Confirm that the replacement drive has a capacity equal to or greater than the drive you are replacing and that it has the features you expect.

   For example, do not attempt to replace a hard disk drive (HDD) with a solid-state disk (SSD). Similarly, if you are replacing a secure-capable drive, make sure the replacement drive is also secure-capable.

3. If needed, use SANtricity System Manager to locate the drive within the storage array.

   a. If the shelf has a bezel, remove it so you can see the LEDs.

   b. From the drive's context menu, select **Turn on locator light**.

   The drive drawer's Attention LED (amber) blinks so you can open the correct drive drawer to identify which drive to replace.

4. Unlatch the drive drawer by pulling on both levers.

   a. Using the extended levers, carefully pull the drive drawer out until it stops.

   b. Look at the top of the drive drawer to find the Attention LED in front of each drive.

   The drive drawer Attention LEDs are on the left side in front of each drive, with an attention icon on the drive handle just behind the LED.

Step 2: Remove failed drive

Remove a failed drive to replace it with a new one.

Steps

1. Unpack the replacement drive, and set it on a flat, static-free surface near the shelf.

   Save all packing materials for the next time you need to send a drive back.

2. Release the drive drawer levers from the center of the appropriate drive drawer by pulling both towards the sides of the drawer.

3. Carefully pull on the extended drive drawer levers to pull out the drive drawer to its full extension without removing it from the enclosure.

4. Gently pull back the orange release latch that is in front of the drive you want to remove.

The cam handle on the drive springs open partially, and the drive is released from the drawer.

5. Open the cam handle, and lift out the drive slightly.

6. Wait 30 seconds.

7. Use the cam handle to lift the drive from the shelf.

8. Place the drive on an antistatic, cushioned surface away from magnetic fields.

9. Wait 30 seconds for the software to recognize that the drive has been removed.

> ⓘ If you accidentally remove an active drive, wait at least 30 seconds, and then reinstall it. For the recovery procedure, refer to the storage management software.

Step 3: Install new drive

Install a new drive to replace the failed one.

> ⚠ Install the replacement drive as soon as possible after removing the failed drive. Otherwise, there is a risk that the equipment might overheat.

> ⚠ **Possible loss of data access** — When pushing the drive drawer back into the enclosure, never slam the drawer shut. Push the drawer in slowly to avoid jarring the drawer and causing damage to the storage array.

Steps

1. Raise the cam handle on the new drive to vertical.

2. Align the two raised buttons on each side of the drive carrier with the matching gap in the drive channel on the drive drawer.

3. Lower the drive straight down, and then rotate the cam handle down until the drive snaps into place under the orange release latch.

4. Carefully push the drive drawer back into the enclosure. Push the drawer in slowly to avoid jarring the drawer and causing damage to the storage array.

5. Close the drive drawer by pushing both levers towards the center.

   The green Activity LED for the replaced drive on the front of the drive drawer comes on when the drive is inserted correctly.

   Depending on your configuration, the controller might automatically reconstruct data to the new drive. If the shelf uses hot spare drives, the controller might need to perform a complete reconstruction on the hot spare before it can copy the data to the replaced drive. This reconstruction process increases the time that is required to complete this procedure.

Step 4: Complete drive replacement

Confirm that the new drive is working correctly.

Steps

1. Check the Power LED and the Attention LED on the drive you replaced. (When you first insert a drive, its Attention LED might be on. However, the LED should go off within a minute.)

- Power LED is on or blinking, and the Attention LED is off: Indicates that the new drive is working correctly.

- Power LED is off: Indicates that the drive might not be installed correctly. Remove the drive, wait 30 seconds, and then reinstall it.

- Attention LED is on: Indicates that the new drive might be defective. Replace it with another new drive.

2. If the Recovery Guru in SANtricity System Manager still shows an issue, select **Recheck** to ensure the problem has been resolved.

3. If the Recovery Guru indicates that drive reconstruction did not start automatically, start reconstruction manually, as follows:

> (i) Perform this operation only when instructed to do so by technical support or the Recovery Guru.

a. Select **Hardware**.

b. Click the drive that you replaced.

c. From the drive's context menu, select **Reconstruct**.

d. Confirm that you want to perform this operation.

When the drive reconstruction completes, the volume group is in an Optimal state.

4. As required, reinstall the bezel.

5. Return the failed part to NetApp, as described in the RMA instructions shipped with the kit.

What's next?

Your drive replacement is complete. You can resume normal operations.