NetApp

Replace appliance

StorageGRID appliances

NetApp
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Replace appliance

Replace SGF6112 appliance

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

Before you begin

- You have a replacement appliance with the same part number as the appliance you are replacing. Check the tags attached to the front of the appliances to confirm that the part numbers match.
- You have labels to identify each cable that is connected to the appliance.
- You have physically located the appliance.

About this task

The StorageGRID node will not be accessible while you replace the appliance. If the appliance is functioning sufficiently, you can perform a controlled shutdown at the start of this procedure.

> ⓘ If you are replacing the appliance 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 appliance 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. Shut down the appliance.

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

   Contact your network or DHCP-server administrator to update the permanent DHCP lease assignments. The administrator can determine the MAC addresses of the replacement appliance from the DHCP server logs or by inspecting the MAC address tables in the switches to which the appliance Ethernet ports are connected.

4. Remove and replace the appliance:

a. Label the cables and then disconnect the cables and any network transceivers.

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

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

c. Note the position of the replaceable components (two power supplies, three NICs, and twelve SSDs) in the failed appliance.

The twelve drives are in the following positions in the chassis (front of chassis with bezel removed shown):
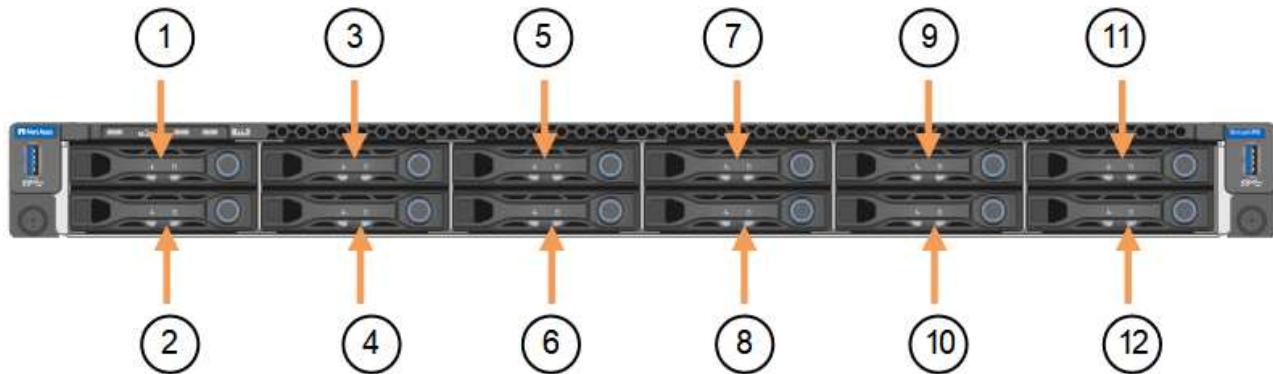
	Drive
1	HDD00
2	HDD01
3	HDD02
4	HDD03
5	HDD04
6	HDD05
7	HDD06
8	HDD07
9	HDD08
10	HDD09
11	HDD10
12	HDD11

d. Transfer the replaceable components to the replacement appliance.

Follow the maintenance instructions provided for reinstalling the replaceable components.

> ⚠ If you want to retain the data on the drives, insert the SSD drives into the same drive slots they occupied in the failed appliance. If you don't, the Appliance Installer will display a warning and you will have to put the drives into the correct slots and reboot the appliance before the appliance can rejoin the grid.

e. Install the replacement appliance into the cabinet or rack.

f. Replace the cables and any optical transceivers.

5. Power on the appliance.

6. If the appliance you replaced had hardware drive encryption enabled for the SED drives, see Access an encrypted drive. Follow the guidance to access the encrypted drive when the replacement appliance starts for the first time. A reboot will be required to complete the procedure.

7. Wait for the appliance to rejoin the grid. If the appliance does not rejoin the grid, follow the guidance on the StorageGRID Appliance Installer home page to address any issues.

> ⚠ To prevent data loss if the Appliance Installer indicates that physical hardware changes are required, such as moving disk drives to different slots, power down the appliance before making hardware changes.

8. 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

9. Log in to the replaced 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.

10. Restore BMC network connectivity for the replaced 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
```

11. 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.

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

After you finish

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

- View status indicators
- View boot-up codes for appliance

Replace SG6100-CN controller

You might need to replace the SG6100-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 SG6100-CN controller. If the SG6100-CN 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. 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 SG6100-CN controller is functioning sufficiently to allow for a controlled shutdown, shut down the SG6100-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.

4. Remove and replace the SG6100-CN controller:

  a. Label and then disconnect the cables.

> ⚠️   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. Note the position of the replaceable components (two power supplies, three NICs, and two SSDs) in the failed controller.

    The two drives are in the following positions in the chassis (front of chassis with bezel removed shown):

	Drive
1	HDD00
2	HDD01

  d. Transfer the replaceable components to the replacement controller.

    Follow the maintenance instructions provided for reinstalling the replaceable components.

> ⚠️   If you want to retain the data on the drives, insert the SSD drives into the same drive slots they occupied in the failed appliance. If you don't, the Appliance Installer will display a warning and you will have to put the drives into the correct slots and reboot the controller before the controller can rejoin the grid.

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

f. Replace the cables and any optical transceivers.

g. Power on the controller and monitor the controller LEDs.

5. If the appliance you replaced had hardware 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.

6. 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

7. 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.

8. 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 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
```

9. 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.

10. 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 E4000 storage controller (SG6160)

You might need to replace an E4000 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:

- A Grid Manager alert indicates a storage controller failure condition, and Grid Manager or the Recovery Guru in SANtricity System Manager direct 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.

Step 1: Prepare the replacement controller

Prepare the replacement E4000 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.

Step 2: Take the controller offline

Prepare to remove the failed controller and and take it offline. You can use SANtricity System Manager to perform these steps.

Steps

1. 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.

2. Back up the configuration database.

   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.

   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**.

3. 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.

   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**.

4. Take the controller you plan to replace offline.

Step 3: Remove controller canister

Remove a 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

Remove the battery from the impaired controller and install it in the replacement controller if necessary.

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.
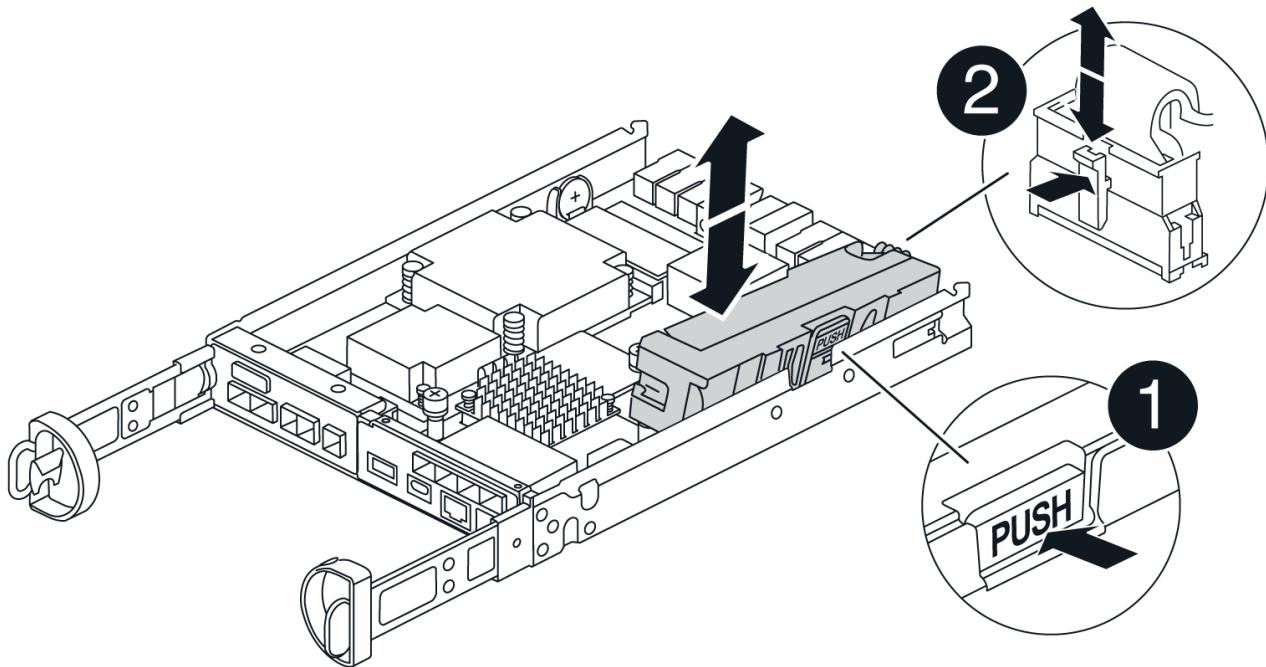
1	Battery release tab
2	Battery power connector

2. Move the battery to the replacement controller canister and install it:

   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.

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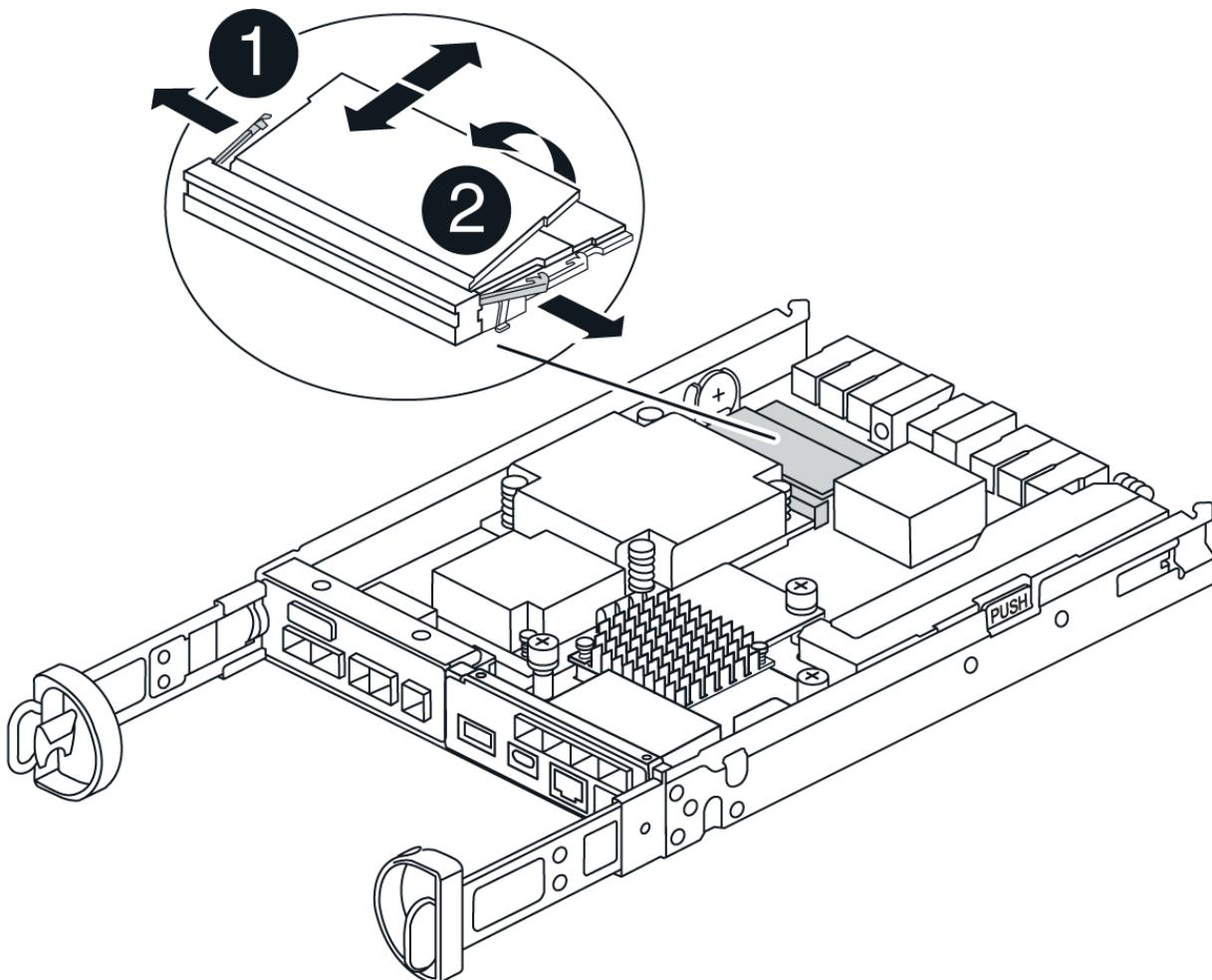
1	DIMM ejector tabs
2	DIMMS

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.

(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. Aligning 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. 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 **Controllers & Components**.

   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.

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

   ◦ The amber Attention LED on the controller turns on and then turns off, unless there is an error.

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

4. 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.

> **ⓘ** If you cannot resolve the problem, contact technical support.

5. If required, redistribute all volumes back to their preferred owner using SANtricity System Manager.

    a. Select **Storage › Volumes**.

    b. Select **More › Redistribute volumes**.

6. 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**.

7. If you placed the appliance in maintenance mode during this procedure, exit maintenance mode and wait for the node to reboot and rejoin the grid. This process can take up to 20 minutes. To confirm that the reboot is complete and that the node has rejoined the grid:

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

    b. Verify that the appliance node has a normal status (green check mark icon ✅ to the left of the node name), which indicates that no alerts are active and the node is connected to the grid.

What's next?

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

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.