NetApp

Maintain SG5700 hardware

StorageGRID appliances

NetApp
December 15, 2025

Table of Contents

Maintain SG5700 storage appliance hardware

Maintain SG5700 appliance

You might need to upgrade the SANtricity OS Software on the E2800 controller, change the Ethernet link configuration of the E5700SG controller, replace the E2800 controller or the E5700SG controller, or replace specific components. The procedures in this section assume that the appliance has already been deployed as a Storage Node in a StorageGRID system.

Procedures specific to maintaining your SG5700 appliance are in this section.

See Common procedures for maintenance procedures that are used by all appliances.

See Set up hardware for maintenance procedures that are also performed during initial appliance installation and configuration.

Maintenance configuration procedures

Upgrade SANtricity OS on storage controller

About upgrading SANtricity OS on a SG5700 storage controller

To ensure optimal functioning of the storage controller, you must upgrade to the latest maintenance release of the SANtricity OS that is qualified for your StorageGRID appliance.

Consult the NetApp Interoperability Matrix Tool (IMT) to determine which version you should be using.

Download the new SANtricity OS Software file from NetApp Downloads: StorageGRID Appliance.

Use one of the following procedures based on the version of SANtricity OS currently installed:

- If the storage controller is using SANtricity OS 08.42.20.00 (11.42) or newer, use the Grid Manager to perform the upgrade.

  Upgrade SANtricity OS on storage controllers using Grid Manager

- If the storage controller is using a SANtricity OS version older than 08.42.20.00 (11.42), use maintenance mode to perform the upgrade.

  Upgrade SANtricity OS on E2800 controller using maintenance mode

Upgrade SANtricity OS on SG5700 storage controllers using Grid Manager

For storage controllers currently using SANtricity OS 08.42.20.00 (11.42) or newer, you must use the Grid Manager to apply an upgrade.

Before you begin

- If you did not obtain the SANtricity OS version you want to upgrade to from NetApp Downloads: StorageGRID Appliance, you have consulted NetApp Downloads: StorageGRID Appliance or the NetApp Interoperability Matrix Tool (IMT) to confirm that the SANtricity OS version you are using for the upgrade is compatible with your appliance.
- You have the Maintenance or Root access permission.
- You are signed in to the Grid Manager using a supported web browser.
- You have the provisioning passphrase.

About this task

You can't perform other software updates (StorageGRID software upgrade or a hotfix) while a SANtricity OS upgrade is in process. If you attempt to start a hotfix or a StorageGRID software upgrade before the SANtricity OS upgrade process has finished, you are redirected to the SANtricity OS upgrade page.

The procedure will not be complete until the SANtricity OS upgrade has been successfully applied to all applicable nodes that have been selected for the upgrade. It might take more than 30 minutes to load the SANtricity OS on each node (sequentially) and up to 90 minutes to reboot each StorageGRID storage appliance. Nodes in your grid that don't use SANtricity OS will not be affected by this procedure.

> ⚠ The following steps are only applicable when you are using the Grid Manager to perform the upgrade. The storage controllers in the appliance can't be upgraded using the Grid Manager when the controllers are using SANtricity OS older than 08.42.20.00 (11.42).

> ⓘ This procedure will automatically upgrade the NVSRAM to the most recent version associated with the SANtricity OS upgrade. You don't need to apply a separate NVSRAM upgrade file.

> ⓘ Apply the latest StorageGRID hotfix before you begin this procedure. See StorageGRID hotfix procedure for details.

Steps

1. Download the new SANtricity OS Software file from NetApp Downloads: StorageGRID Appliance.

   Choose the SANtricity OS version for your storage controllers.

2. Select **MAINTENANCE** > **System** > **Software update**.

Software update

You can upgrade StorageGRID software, apply a hotfix, or upgrade the SANtricity OS software on StorageGRID storage appliances. NetApp recommends you apply the latest hotfix before and after each software upgrade. Some hotfixes are required to prevent data loss.

StorageGRID upgrade

Upgrade to the next StorageGRID version and apply the latest hotfix for that version.

Upgrade →

StorageGRID hotfix

Apply a hotfix to your current StorageGRID software version.

Apply hotfix →

SANtricity OS update

Update the SANtricity OS software on your StorageGRID storage appliances.

Update →

3. In the SANtricity OS update section, select **Update**.

   The SANtricity OS upgrade page appears and lists the details for each appliance node including:

   - Node name
   - Site
   - Appliance model
   - SANtricity OS version
   - Status
   - Last upgrade status

4. Review the information in the table for all of your upgradable appliances. Confirm that all storage controllers have **Nominal** status. If the status for any controller is **Unknown**, go to **Nodes** > *appliance node* > **Hardware** to investigate and resolve the issue.

5. Select the SANtricity OS upgrade file you downloaded from the NetApp Support Site.

   a. Select **Browse**.
   b. Locate and select the file.
   c. Select **Open**.

   The file is uploaded and validated. When the validation process is done, the file name is shown with a green check mark next to the **Browse** button. Don't change the file name because it is part of the verification process.

6. Enter the provisioning passphrase and select **Continue**.

   A warning box appears stating that your browser's connection might be lost temporarily as services on nodes that are upgraded are restarted.

7. Select **Yes** to stage the SANtricity OS upgrade file to the primary Admin Node.

   When the SANtricity OS upgrade starts:

a. The health check is run. This process checks that no nodes have the status of Needs Attention.

> ℹ️ If any errors are reported, resolve them and select **Start** again.

b. The SANtricity OS Upgrade Progress table appears. This table shows all Storage Nodes in your grid and the current stage of the upgrade for each node.

> ℹ️ The table shows all appliance Storage Nodes. Software-based Storage Nodes aren't displayed. Select **Approve** for all nodes that require the upgrade.

8. Optionally, sort the list of nodes in ascending or descending order by:

   ○ Node name

   ○ Current version

   ○ Progress

   ○ Stage

   ○ Status

   You can also enter a term in the Search box to search for specific nodes.

9. Approve the grid nodes you are ready to add to the upgrade queue. Approved nodes are upgraded one at a time.

> ⚠ Don't approve the SANtricity OS upgrade for an appliance Storage Node unless you are sure the node is ready to be stopped and rebooted. When the SANtricity OS upgrade is approved on a node, the services on that node are stopped and the upgrade process begins. Later, when the node is finished upgrading, the appliance node is rebooted. These operations might cause service interruptions for clients that are communicating with the node.

- Select the **Approve All** button to add all Storage Nodes to the SANtricity OS upgrade queue.

  > ⓘ If the order in which nodes are upgraded is important, approve nodes or groups of nodes one at a time and wait until the upgrade is complete on each node before approving the next node.

- Select one or more **Approve** buttons to add one or more nodes to the SANtricity OS upgrade queue. The **Approve** button is disabled if the Status is not Nominal.

  After you select **Approve**, the upgrade process determines if the node can be upgraded. If a node can be upgraded, it is added to the upgrade queue.

  For some nodes, the selected upgrade file is intentionally not applied and you can complete the upgrade process without upgrading these specific nodes. Nodes intentionally not upgraded show a stage of Complete (upgrade attempted) and list the reason the node was not upgraded in the Details column.

10. If you need to remove a node or all nodes from the SANtricity OS upgrade queue, select **Remove** or **Remove All**.

    When the stage progresses beyond Queued, the **Remove** button is hidden and you can no longer remove the node from the SANtricity OS upgrade process.

11. Wait while the SANtricity OS upgrade is applied to each approved grid node.

    - If any node shows a stage of Error while the SANtricity OS upgrade is applied, the upgrade has failed for the node. With the assistance of technical support, you might need to place the appliance in maintenance mode to recover it.

    - If the firmware on the node is too old to be upgraded with the Grid Manager, the node shows a stage of Error with the details that you must use maintenance mode to upgrade SANtricity OS on the node. To resolve the error, do the following:

      a. Use maintenance mode to upgrade SANtricity OS on the node that shows a stage of Error.

      b. Use the Grid Manager to restart and complete the SANtricity OS upgrade.

    When the SANtricity OS upgrade is complete on all approved nodes, the SANtricity OS Upgrade Progress table closes and a green banner shows the number of nodes upgraded, and the date and time the upgrade completed.

12. If a node can't be upgraded, note the reason shown in the Details column and take the appropriate action.

    > ⓘ The SANtricity OS upgrade process will not be complete until you approve the SANtricity OS upgrade on all the listed Storage Nodes.

Reason	Recommended action
Storage Node was already upgraded.	No further action required.
SANtricity OS upgrade is not applicable to this node.	The node does not have a storage controller that can be managed by the StorageGRID system. Complete the upgrade process without upgrading the node displaying this message.
SANtricity OS file is not compatible with this node.	The node requires a SANtricity OS file different than the one you selected. After completing the current upgrade, download the correct SANtricity OS file for the node and repeat the upgrade process.

13. If you want to end approving nodes and return to the SANtricity OS page to allow for an upload of a new SANtricity OS file, do the following:

    a. Select **Skip Nodes and Finish**.

       A warning appears asking if you are sure you want to finish the upgrade process without upgrading all applicable nodes.

    b. Select **OK** to return to the **SANtricity OS** page.

    c. When you are ready to continue approving nodes, download the SANtricity OS to restart the upgrade process.

       > Nodes already approved and upgraded without errors remain upgraded.

14. Repeat this upgrade procedure for nodes with a stage of Complete that require a different SANtricity OS upgrade file.

    > For nodes with a status of Needs Attention, use maintenance mode to perform the upgrade.

Related information

- NetApp Interoperability Matrix Tool
- Upgrade SANtricity OS on E2800 controller using maintenance mode

Upgrade SANtricity OS on E2800 controller using maintenance mode

For storage controllers currently using SANtricity OS older than 08.42.20.00 (11.42), you must use the maintenance mode procedure to apply an upgrade.

Before you begin

- You have consulted the NetApp Interoperability Matrix Tool (IMT) to confirm that the SANtricity OS version you are using for the upgrade is compatible with your appliance.

- You must place the E5700SG controller into maintenance mode, which interrupts the connection to the E2800 controller.

	In rare instances, placing a StorageGRID appliance into maintenance mode might make the appliance unavailable for remote access.

About this task

Don't upgrade the SANtricity OS or NVSRAM in the E-Series controller on more than one StorageGRID appliance at a time.

	Upgrading more than one StorageGRID appliance at a time might cause data unavailability, depending on your deployment model and ILM policies.

Steps

1. Confirm the appliance is in maintenance mode.

2. From a service laptop, access SANtricity System Manager and sign in.

3. Download the new SANtricity OS Software file and NVSRAM file to the management client.

	The NVSRAM is specific to the StorageGRID appliance. Don't use the standard NVSRAM download.

4. Follow the instructions in the *E2800 and E5700 SANtricity Software and Firmware Upgrade Guide* or the SANtricity System Manager online help to upgrade the E2800 controller's firmware and NVSRAM.

	Activate the upgrade files immediately. Don't defer activation.

5. If this procedure completed successfully and you have additional procedures to perform while the node is in maintenance mode, perform them now. When you are done, or if you experienced any failures and want to start over, select **Advanced** > **Reboot Controller**, and then select one of these options:

   ◦ Select **Reboot into StorageGRID**

   ◦ Select **Reboot into Maintenance Mode** to reboot the controller with the node remaining in maintenance mode. Select this option if you experienced any failures during the procedure and want to start over. After the node finishes rebooting into maintenance mode, restart from the appropriate step in the procedure that failed.

   It can take up to 20 minutes for the appliance to reboot and rejoin the grid. 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.

Related information

Upgrade SANtricity OS on storage controllers using Grid Manager

Upgrade drive firmware

Upgrade SG5700 drive firmware automatically during appliance reboot

The StorageGRID Appliance Installer automatically installs the latest E-Series drive firmware files during appliance reboot.

E-Series drive firmware files are included in the StorageGRID software. These updates are installed automatically whenever a StorageGRID appliance reboots:

- Into maintenance mode
- As part of a rolling reboot
- During a StorageGRID version upgrade or hotfix installation
- During a SANtricity OS upgrade using maintenance mode

> ⚠️ The drive firmware upgrade isn't attempted for nodes with a status of Needs Attention.

> ℹ️ While an appliance reboots, I/O (input/output) activity to the storage controller is stopped.

You can also install drive firmware upgrades manually using the SANtricity System Manager online or offline method:

- To apply a new drive firmware upgrade before it's packaged in the StorageGRID software
- If an automatic drive firmware upgrade fails
- To use the SANtricity System Manager online drive firmware upgrade from Grid Manager instead of rebooting the node

Upgrade SG5700 drive firmware using SANtricity System Manager online method

Use the SANtricity System Manager online method to upgrade the firmware on the drives in your appliance to make sure you have all the latest features and bug fixes.

Before you begin

- The storage appliance has an Optimal status.
- All drives have an Optimal status.

> ⚠️ Don't upgrade the drive firmware on more than one StorageGRID appliance at a time. Doing so might cause data unavailability, depending on your deployment model and ILM policy.

About this task

The drives are upgraded one at a time while the appliance is performing I/O. This method does not require you to place the appliance in maintenance mode. However, system performance might be impacted and the upgrade might take several hours longer than the offline method.

> ℹ️ Drives belonging to volumes that don't have redundancy must be updated using the offline method. The offline method should be used for any drive associated with flash read cache, or any pool or volume group that is currently degraded.
>
> You must use the offline method when upgrading SSD drives.

Steps

1. Access SANtricity System Manager using one of these methods:
   - Use the StorageGRID Appliance Installer and select **Advanced** > **SANtricity System Manager**
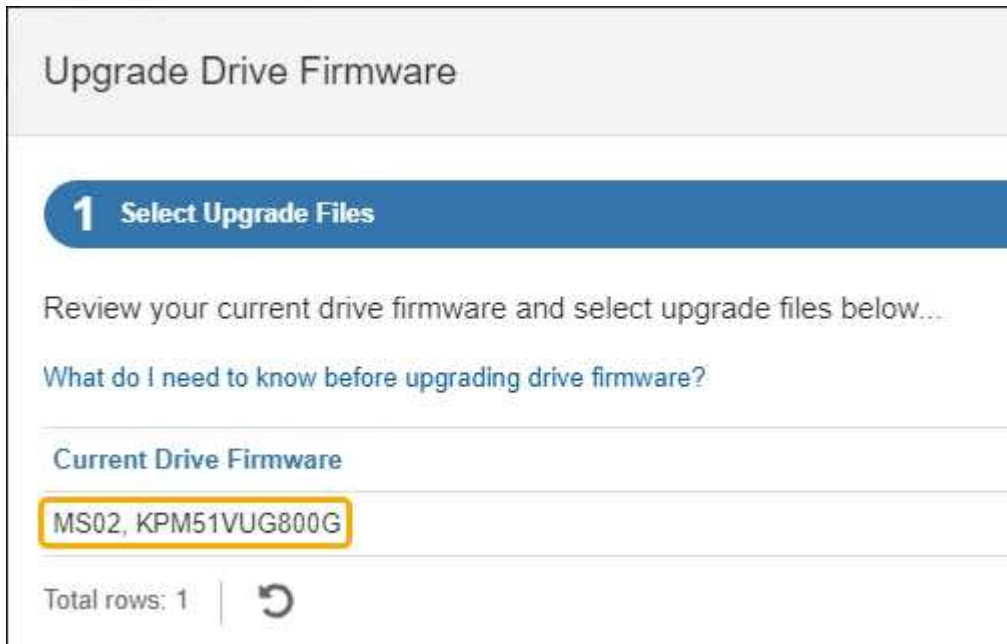   - Use the Grid Manager and select **NODES** > *Storage Node* > **SANtricity System Manager**

◦ Use SANtricity System Manager by browsing to the storage controller IP:

https://*Storage_Controller_IP*

2. Enter the SANtricity System Manager administrator username and password, if required.

3. Verify the drive firmware version currently installed in the storage appliance:

   a. From SANtricity System Manager, select **SUPPORT** > **Upgrade Center**.

   b. Under Drive Firmware upgrade, select **Begin Upgrade**.

   The Upgrade Drive Firmware page displays the drive firmware files currently installed.

   c. Note the current drive firmware revisions and drive identifiers in the Current Drive Firmware column.

   In this example:

   ▪ The drive firmware revision is **MS02**.

   ▪ The drive identifier is **KPM51VUG800G**.

   d. Select **View drives** in the Associated Drives column to display where these drives are installed in your storage appliance.

   e. Close the Upgrade Drive Firmware window.

4. Download and prepare the available drive firmware upgrade:

   a. Under Drive Firmware upgrade, select **NetApp Support**.

   b. On the NetApp Support Site, select the **Downloads** tab, and then select **E-Series Disk Drive Firmware**.

   The E-Series Disk Firmware page displays.

   c. Search for each **Drive Identifier** installed in your storage appliance and verify that each drive identifier has the latest firmware revision.

      ▪ If the firmware revision is not a link, this drive identifier has the latest firmware revision.

- If one or more drive part numbers are listed for a drive identifier, a firmware upgrade is available for these drives. You can select any link to download the firmware file.

d. If a later firmware revision is listed, select the link in the Firmware Rev. (Download) column to download a `.zip` archive containing the firmware file.

e. Extract (unzip) the drive firmware archive files you downloaded from the Support site.

5. Install the drive firmware upgrade:

a. From SANtricity System Manager, under Drive Firmware upgrade, select **Begin Upgrade**.

b. Select **Browse**, and select the new drive firmware files that you downloaded from the Support site.

Drive firmware files have a filename similar to `D_HUC101212CSS600_30602291_MS01_2800_0002.dlp`.

You can select up to four drive firmware files, one at a time. If more than one drive firmware file is compatible with the same drive, you get a file conflict error. Decide which drive firmware file you want to use for the upgrade and remove the other one.

c. Select **Next**.

Select Drives lists the drives that you can upgrade with the selected firmware files.

Only drives that are compatible appear.

The selected firmware for the drive appears in the **Proposed Firmware** column. If you must change this firmware, select **Back**.

d. Select **Upgrade all drives online** — Upgrades the drives that can support a firmware download while the storage array is processing I/O. You don't have to stop I/O to the associated volumes using these drives when you select this upgrade method.

ⓘ An online upgrade can take several hours longer than an offline upgrade.

e. In the first column of the table, select the drive or drives you want to upgrade.

The best practice is to upgrade all drives of the same model to the same firmware revision.

f. Select **Start** and confirm that you want to perform the upgrade.

If you need to stop the upgrade, select **Stop**. Any firmware downloads currently in progress complete.

Any firmware downloads that have not started are canceled.

> ⚠️ Stopping the drive firmware upgrade might result in data loss or unavailable drives.

    g. (Optional) To see a list of what was upgraded, select **Save Log**.

The log file is saved in the downloads folder for your browser with the name `latest-upgrade-log-timestamp.txt`.

If required, troubleshoot driver firmware upgrade errors.

Upgrade SG5700 drive firmware using SANtricity System Manager using offline method

Use the SANtricity System Manager offline method to upgrade the firmware on the drives in your appliance to make sure you have all the latest features and bug fixes.

Before you begin

- The storage appliance has an Optimal status.
- All drives have an Optimal status.
- You have placed the StorageGRID appliance into maintenance mode.

> ℹ️ While the appliance is in maintenance mode, I/O (input/output) activity to the storage controller is stopped to make disruptive storage operations safe.

> ⚠️ Don't upgrade the drive firmware on more than one StorageGRID appliance at a time. Doing so might cause data unavailability, depending on your deployment model and ILM policy.

About this task

The drives are upgraded in parallel while the appliance is in maintenance mode. If the pool or volume group does not support redundancy or is degraded, you must use the offline method to upgrade the drive firmware. You should also use the offline method for any drive associated with flash read cache, or any pool or volume group that is currently degraded. The offline method upgrades firmware only while all I/O activity is stopped on the drives to be upgraded. To stop I/O activity, place the node into maintenance mode.

The offline method is faster than the online method and will be significantly faster when many drives in a single appliance need upgrades. However, it requires that nodes be taken out of service, which might require scheduling a maintenance window and monitoring progress. Choose the method that is the best fit for your operational procedures and the number of drives that need to be upgraded.

Steps
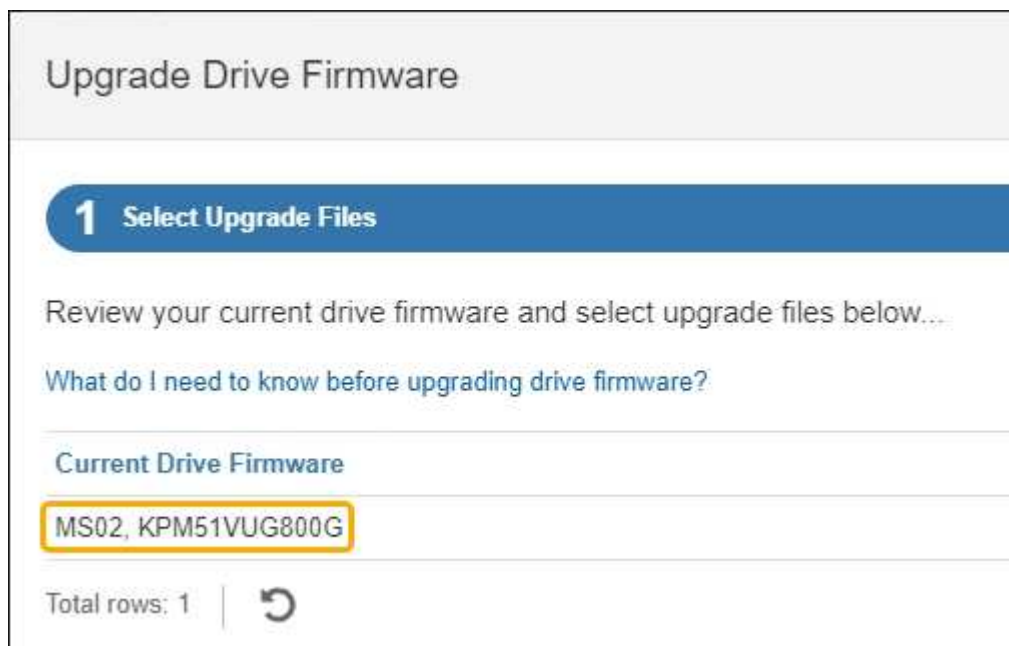
1. Confirm that the appliance is in maintenance mode.
2. Access SANtricity System Manager using one of these methods:

   - Use the StorageGRID Appliance Installer and select **Advanced** > **SANtricity System Manager**
   - Use the Grid Manager and select **NODES** > *Storage Node* > **SANtricity System Manager**
   - Use SANtricity System Manager by browsing to the storage controller IP:

   `https://Storage_Controller_IP`

3. Enter the SANtricity System Manager administrator username and password, if required.

4. Verify the drive firmware version currently installed in the storage appliance:

   a. From SANtricity System Manager, select **SUPPORT** > **Upgrade Center**.

   b. Under Drive Firmware upgrade, select **Begin Upgrade**.

      The Upgrade Drive Firmware page displays the drive firmware files currently installed.

   c. Note the current drive firmware revisions and drive identifiers in the Current Drive Firmware column.

      In this example:

      - The drive firmware revision is **MS02**.
      - The drive identifier is **KPM51VUG800G**.

   d. Select **View drives** in the Associated Drives column to display where these drives are installed in your storage appliance.

   e. Close the Upgrade Drive Firmware window.

5. Download and prepare the available drive firmware upgrade:

   a. Under Drive Firmware upgrade, select **NetApp Support**.

   b. On the NetApp Support Site, select the **Downloads** tab, and then select **E-Series Disk Drive Firmware**.

      The E-Series Disk Firmware page displays.

   c. Search for each **Drive Identifier** installed in your storage appliance and verify that each drive identifier has the latest firmware revision.

      - If the firmware revision is not a link, this drive identifier has the latest firmware revision.
      - If one or more drive part numbers are listed for a drive identifier, a firmware upgrade is available for these drives. You can select any link to download the firmware file.

PRODUCTS ∨   SYSTEMS ∨   DOCS & KNOWLEDGEBASE ∨   COMMUNITY ∨   DOWNLOADS ∨   TOOLS ∨   CASES ∨   PARTS ∨

Downloads > Firmware > E-Series Disk Firmware

E-Series Disk Firmware

Download all current E-Series Disk Firmware

Drive Part Number	Descriptions	Drive Identifier	Firmware Rev. (Download)	Notes and Config Info	Release Date
Drive Part Number	Descriptions	KPM51VUG800G	Firmware Rev. (Download)		
E-X4041C	SSD, 800GB, SAS, PI	KPM51VUG800G	MS03	MS02 Fixes Bug 1194908 MS03 Fixes Bug 1334862	04-Sep-2020

d. If a later firmware revision is listed, select the link in the Firmware Rev. (Download) column to download a `.zip` archive containing the firmware file.

e. Extract (unzip) the drive firmware archive files you downloaded from the Support site.

6. Install the drive firmware upgrade:

a. From SANtricity System Manager, under Drive Firmware upgrade, select **Begin Upgrade**.

b. Select **Browse**, and select the new drive firmware files that you downloaded from the Support site.

   Drive firmware files have a filename similar to
   `D_HUC101212CSS600_30602291_MS01_2800_0002.dlp`.

   You can select up to four drive firmware files, one at a time. If more than one drive firmware file is compatible with the same drive, you get a file conflict error. Decide which drive firmware file you want to use for the upgrade and remove the other one.

c. Select **Next**.

   Select Drives lists the drives that you can upgrade with the selected firmware files.

   Only drives that are compatible appear.

   The selected firmware for the drive appears in the **Proposed Firmware** column. If you must change this firmware, select **Back**.

d. Select **Upgrade all drives offline (parallel)** — Upgrades the drives that can support a firmware download only while all I/O activity is stopped on any volumes that use the drives.

> ⚠ You must place the appliance into maintenance mode before using this method. You should use the **Offline** method to upgrade the drive firmware.

> ⚠ If you want to use the Offline (parallel) upgrade, don't proceed unless you are certain that the appliance is in maintenance mode. Failure to place the appliance into maintenance mode before initiating an offline drive firmware update might cause data loss.

e. In the first column of the table, select the drive or drives you want to upgrade.

   The best practice is to upgrade all drives of the same model to the same firmware revision.

f. Select **Start** and confirm that you want to perform the upgrade.

If you need to stop the upgrade, select **Stop**. Any firmware downloads currently in progress complete. Any firmware downloads that have not started are canceled.

> ⚠️ Stopping the drive firmware upgrade might result in data loss or unavailable drives.

    g. (Optional) To see a list of what was upgraded, select **Save Log**.

       The log file is saved in the downloads folder for your browser with the name `latest-upgrade-log-timestamp.txt`.

       If required, troubleshoot driver firmware upgrade errors.

7. After the procedure completes successfully, perform any additional maintenance procedures while the node is in maintenance mode. When you are done, or if you experienced any failures and want to start over, go to the StorageGRID Appliance Installer and select **Advanced** > **Reboot Controller**. Then select one of these options:

    ◦ **Reboot into StorageGRID**.

    ◦ **Reboot into Maintenance Mode**. Reboot the controller and keep the node in maintenance mode. Select this option if there were any failures during the procedure and you want to start over. After the node finishes rebooting into maintenance mode, restart from the appropriate step in the procedure that failed.

    It can take up to 20 minutes for the appliance to reboot and rejoin the grid. 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.

Troubleshoot drive firmware upgrade errors

Troubleshoot errors that can occur when using SANtricity System Manager to upgrade the firmware on the drives in your appliance.

- **Failed assigned drives**

  ◦ One reason for the failure might be that the drive does not have the appropriate signature. Make sure that the affected drive is an authorized drive. Contact technical support for more information.

  ◦ When replacing a drive, make sure that the replacement drive has a capacity equal to or greater than the failed drive you are replacing.

  ◦ You can replace the failed drive while the storage array is receiving I/O.

- **Check storage array**

  ◦ Make sure that an IP address has been assigned to each controller.

  ◦ Make sure that all cables connected to the controller aren't damaged.

  ◦ Make sure that all cables are tightly connected.

- **Integrated hot spare drives**

  This error condition must be corrected before you can upgrade the firmware.

- **Incomplete volume groups**

  If one or more volume groups or disk pools are incomplete, you must correct this error condition before you can upgrade the firmware.

- **Exclusive operations (other than background media/parity scan) currently running on any volume groups**

  If one or more exclusive operations are in progress, the operations must complete before the firmware can be upgraded. Use System Manager to monitor the progress of the operations.

- **Missing volumes**

  You must correct the missing volume condition before the firmware can be upgraded.

- **Either controller in a state other than Optimal**

  One of the storage array controllers needs attention. This condition must be corrected before the firmware can be upgraded.

- **Mismatched Storage Partition information between Controller Object Graphs**

  An error occurred while validating the data on the controllers. Contact technical support to resolve this issue.

- **SPM Verify Database Controller check fails**

  A storage partitions mapping database error occurred on a controller. Contact technical support to resolve this issue.

- **Configuration Database Validation (If supported by the storage array's controller version)**

  A configuration database error occurred on a controller. Contact technical support to resolve this issue.

- **MEL Related Checks**

  Contact technical support to resolve this issue.

- **More than 10 DDE Informational or Critical MEL events were reported in the last 7 days**

  Contact technical support to resolve this issue.

- **More than 2 Page 2C Critical MEL Events were reported in the last 7 days**

  Contact technical support to resolve this issue.

- **More than 2 Degraded Drive Channel Critical MEL events were reported in the last 7 days**

  Contact technical support to resolve this issue.

- **More than 4 critical MEL entries in the last 7 days**

  Contact technical support to resolve this issue.

Change link configuration of E5700SG controller

You can change the Ethernet link configuration of the E5700SG controller. You can change the port bond mode, the network bond mode, and the link speed.

Before you begin

Place E5700SG controller into maintenance mode.

> ⓘ In rare instances, placing a StorageGRID appliance into maintenance mode might make the appliance unavailable for remote access.

About this task

Options for changing the Ethernet link configuration of the E5700SG controller include:

- Changing **Port bond mode** from Fixed to Aggregate, or from Aggregate to Fixed
- Changing **Network bond mode** from Active-Backup to LACP, or from LACP to Active-Backup
- Changing the **LACP transmit hash policy** and **LACP PDU rate** values
- Enabling or disabling VLAN tagging, or changing the value of a VLAN tag
- Changing the link speed from 10-GbE to 25-GbE, or from 25-GbE to 10-GbE

Steps

1. Select **Configure Networking** > **Link Configuration** from the menu.

2. Make the desired changes to the link configuration.

   For more information about the options, see Configure network links.

3. When you are satisfied with your selections, click **Save**.

   > ⓘ You might lose your connection if you made changes to the network or link you are connected through. If you aren't reconnected within 1 minute, re-enter the URL for the StorageGRID Appliance Installer using one of the other IP addresses assigned to the appliance:
   > **https://*E5700SG_Controller_IP*:8443**

   If you made changes to the VLAN settings, the subnet for the appliance might have changed. If you need to change the IP addresses for the appliance, follow the configure StorageGRID IP addresses instructions.

4. From the StorageGRID Appliance Installer, select **Configure Networking** > **Ping Test**.

5. Use the Ping Test tool to check connectivity to IP addresses on any networks that might have been affected by the link configuration changes you made in the Change link configuration step.

   In addition to any other tests you choose to perform, confirm that you can ping the grid IP address of the primary Admin Node, and the grid IP address of at least one other Storage Node. If necessary, correct any link configuration issues.

6. Once you are satisfied that your link configuration changes are working, reboot the node. From the StorageGRID Appliance Installer, select **Advanced** > **Reboot Controller**, and then select one of these options:

   ◦ Select **Reboot into StorageGRID** to reboot the controller with the node rejoining the grid. Select this

option if you are done working in maintenance mode and are ready to return the node to normal operation.

- ○ Select **Reboot into Maintenance Mode** to reboot the controller with the node remaining in maintenance mode. (This option is available only when the controller is in maintenance mode.) Select this option if there are additional maintenance operations you need to perform on the node before rejoining the grid.

  It can take up to 20 minutes for the appliance to reboot and rejoin the grid. 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.

Hardware procedures

Replace E2800 series storage controller in the SG5700

You might need to replace the E2800 series 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.

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

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

- If all drives are secured, you have reviewed the steps in the simplex E2800 series controller replacement procedure, which include downloading and installing E-Series SANtricity System Manager from the NetApp Support Site and then using the Enterprise Management Window (EMW) to unlock the secured drives after you have replaced the controller.

  > ⚠   You will not be able to use the appliance until you unlock the drives with the saved key.

- You must have specific access permissions.

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

About this task

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

- The Recovery Guru in SANtricity System Manager directs you to replace the controller.

- The amber Attention LED on the controller is on, indicating that the controller has a fault.

The appliance Storage Node will not be accessible when you replace the controller. If the E2800 series controller is functioning sufficiently, you can place the E5700SG controller into maintenance mode.

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

controller and install it in the replacement controller.
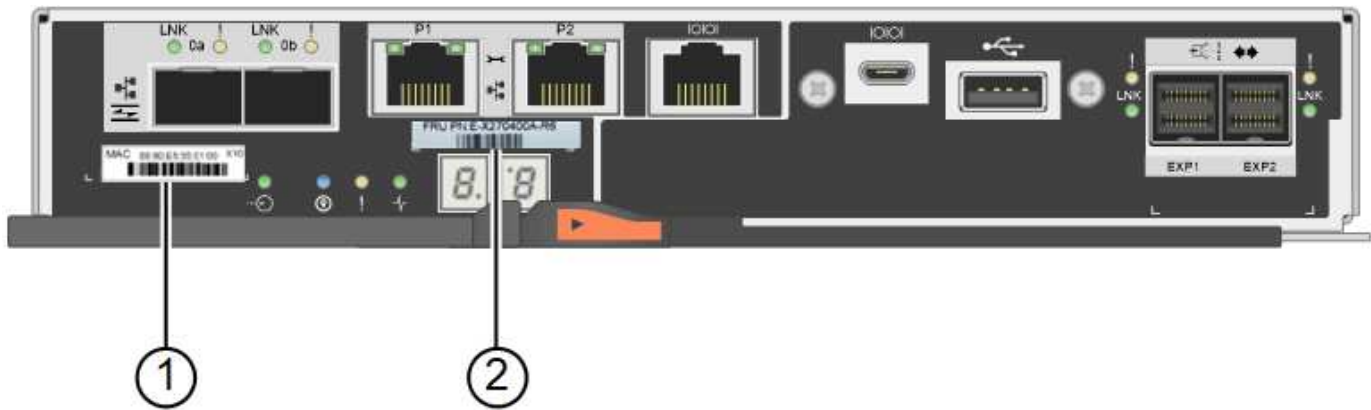
> ℹ️ The storage controllers in most appliance models don't include host interface cards (HIC).
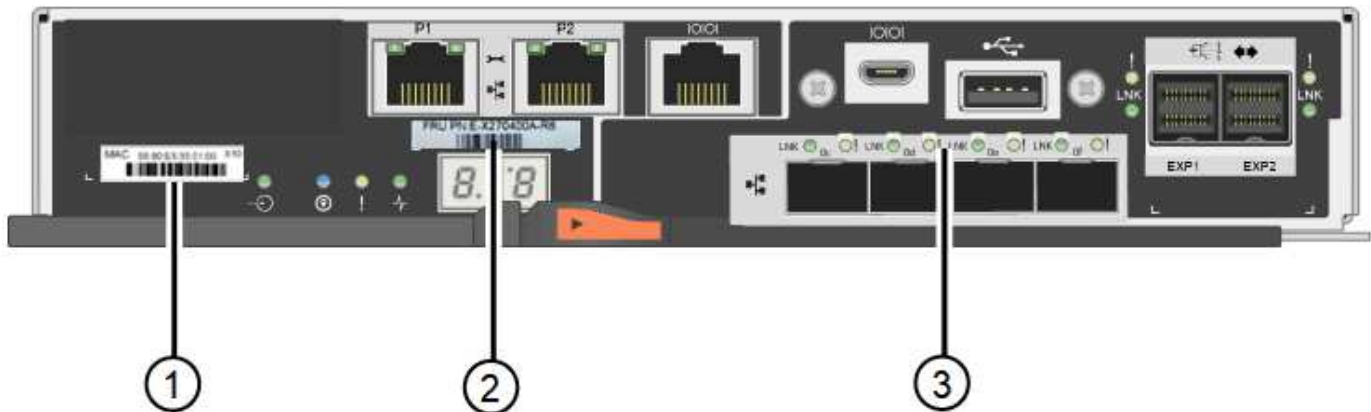
Step 1: Prepare to remove the controller

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

E2800A storage controller:

E2800B storage controller:

Label	component	Description
1	MAC address	The MAC address for management port 1 ("P1 on the E2800A and 0a on the E2800B"). If you used DHCP to obtain the original controller's IP address, you will need this address to connect to the new controller.
2	FRU part number	The FRU part number. This number must match the replacement part number for the currently installed controller.

Label	component	Description
3	4-port HIC	The 4-port host interface card (HIC). This card must be moved to the new controller when you perform the replacement. **Note**: the E2800A controller does not have a HIC.

Follow the instructions in the E2800 controller replacement procedure to prepare to remove the controller.

You use SANtricity System Manager to perform the following steps.

Steps

1. Make a note of which version of SANtricity OS software is currently installed on the controller.

2. Make a 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 appliance are security enabled, the new controller will not be able to access the appliance until you unlock the secured drives using the Enterprise Management Window in SANtricity System Manager.

4. Back up the configuration database.

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

5. Collect support data for the appliance.

> ℹ️ 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.

Step 2: Take 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 E5700SG controller into maintenance mode.

2. If the E2800 controller is functioning sufficiently to allow for a controlled shutdown, confirm that all operations have completed.

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

   b. Confirm that all operations have completed.

3. Power off the controller shelf.

Step 3: Remove the controller

Remove the failed controller from the appliance.

Steps

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

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

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

3. Release the controller from the appliance by squeezing the latch on the cam handle until it releases, and then open the cam handle to the right.

4. Using two hands and the cam handle, slide the controller out of the appliance.

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

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

6. Remove the cover by pressing down on the button and sliding the cover off.

Step 4: Move battery to the new controller

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

Steps

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

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

Item	Description
1	Internal Cache Active LED
2	Battery

2. Locate the blue release latch for the battery.

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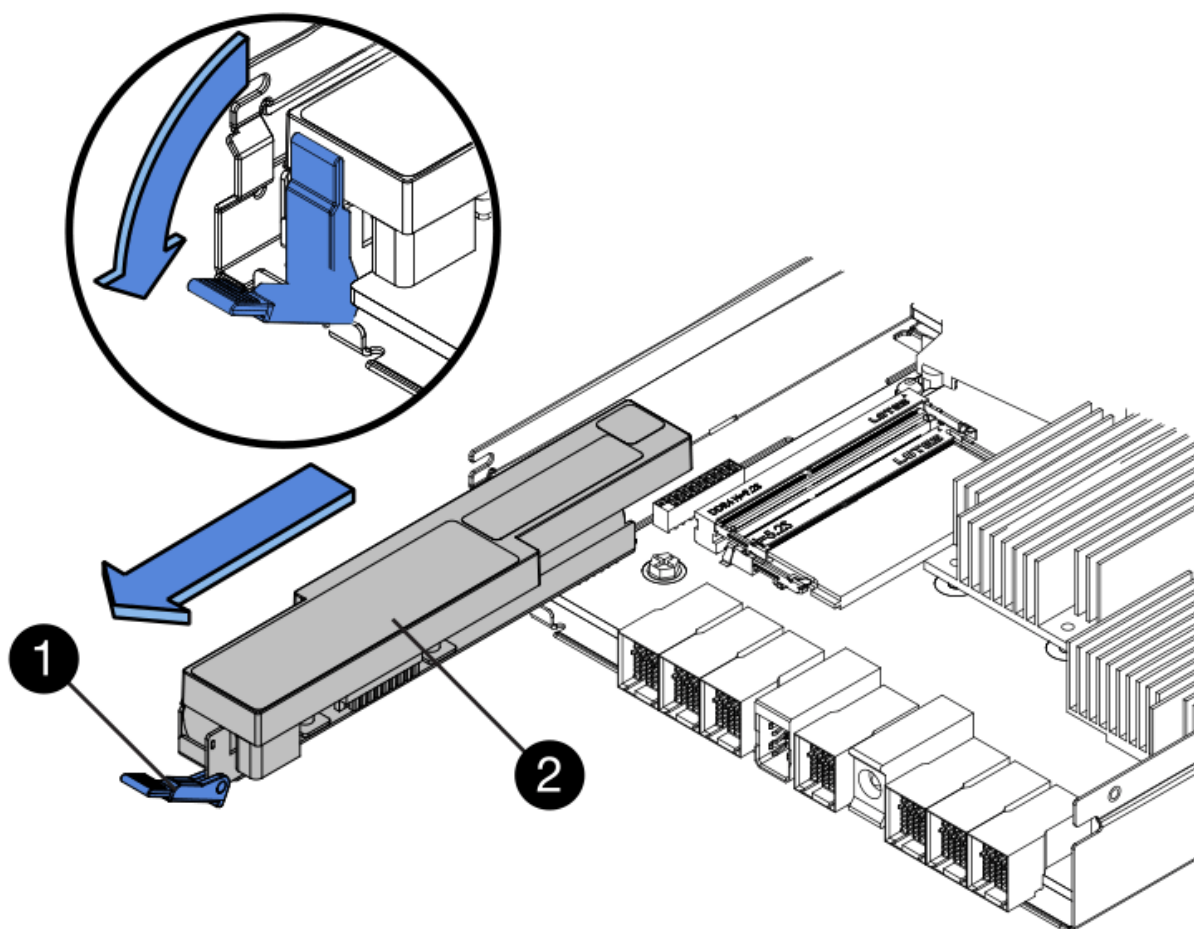
Item	Description
1	Battery release latch
2	Battery

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

5. Remove the cover from the replacement controller.

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

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

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

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

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

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

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

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

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

10. Replace the controller cover.

Step 5: Move HIC to new controller, if needed

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

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

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

E2800A

An E2800A controller does not have a HIC.

Replace the E2800A controller cover, and go to

E2800B

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

Steps

1. Remove any SFPs from the HIC.

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

   There are four screws: one on the top, one on the side, and two on the front.
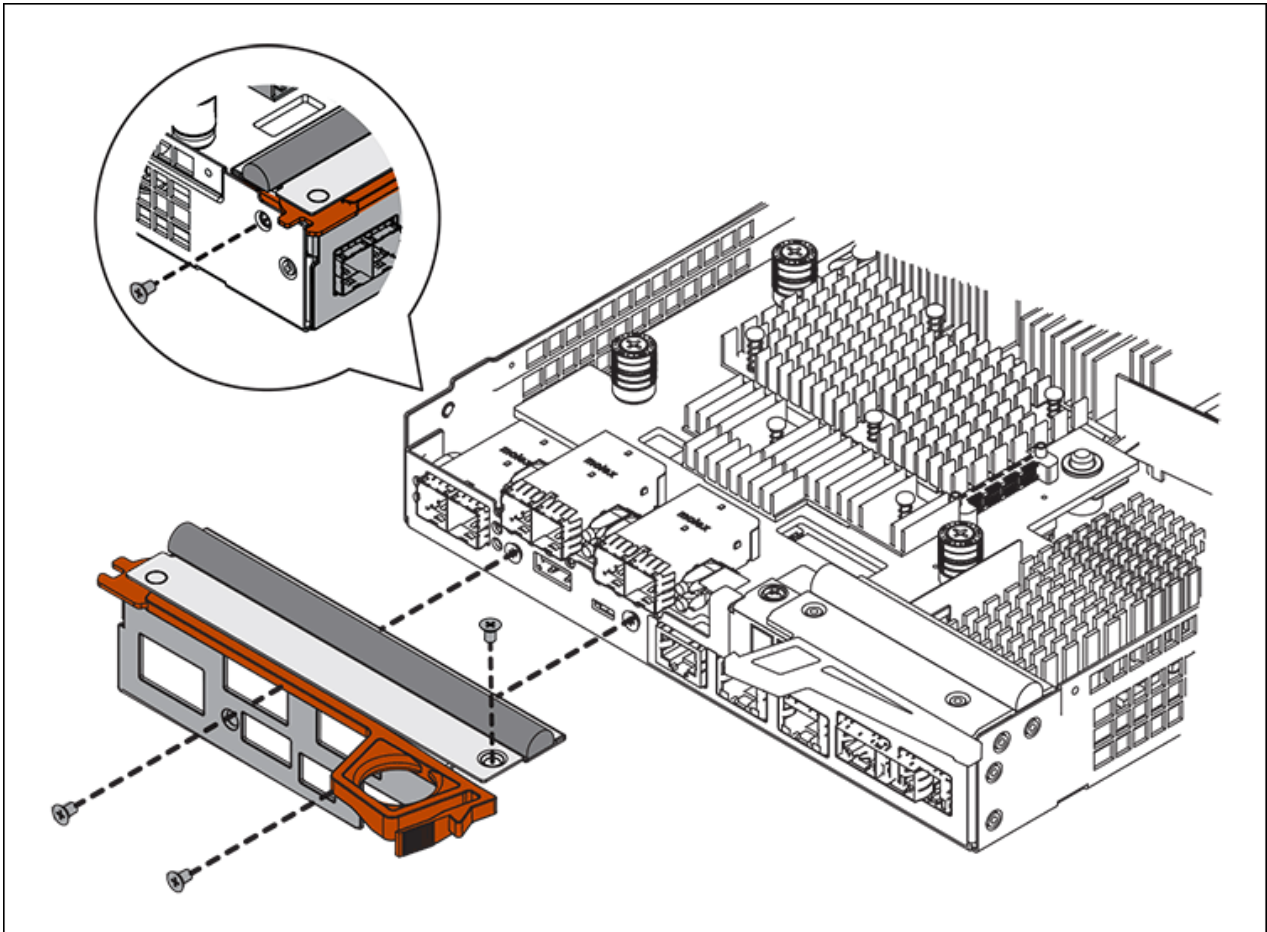
3. Remove the HIC faceplate.

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

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

   ⚠️ Be careful not to scratch or bump the components on the bottom of the HIC or on the top of the controller card.
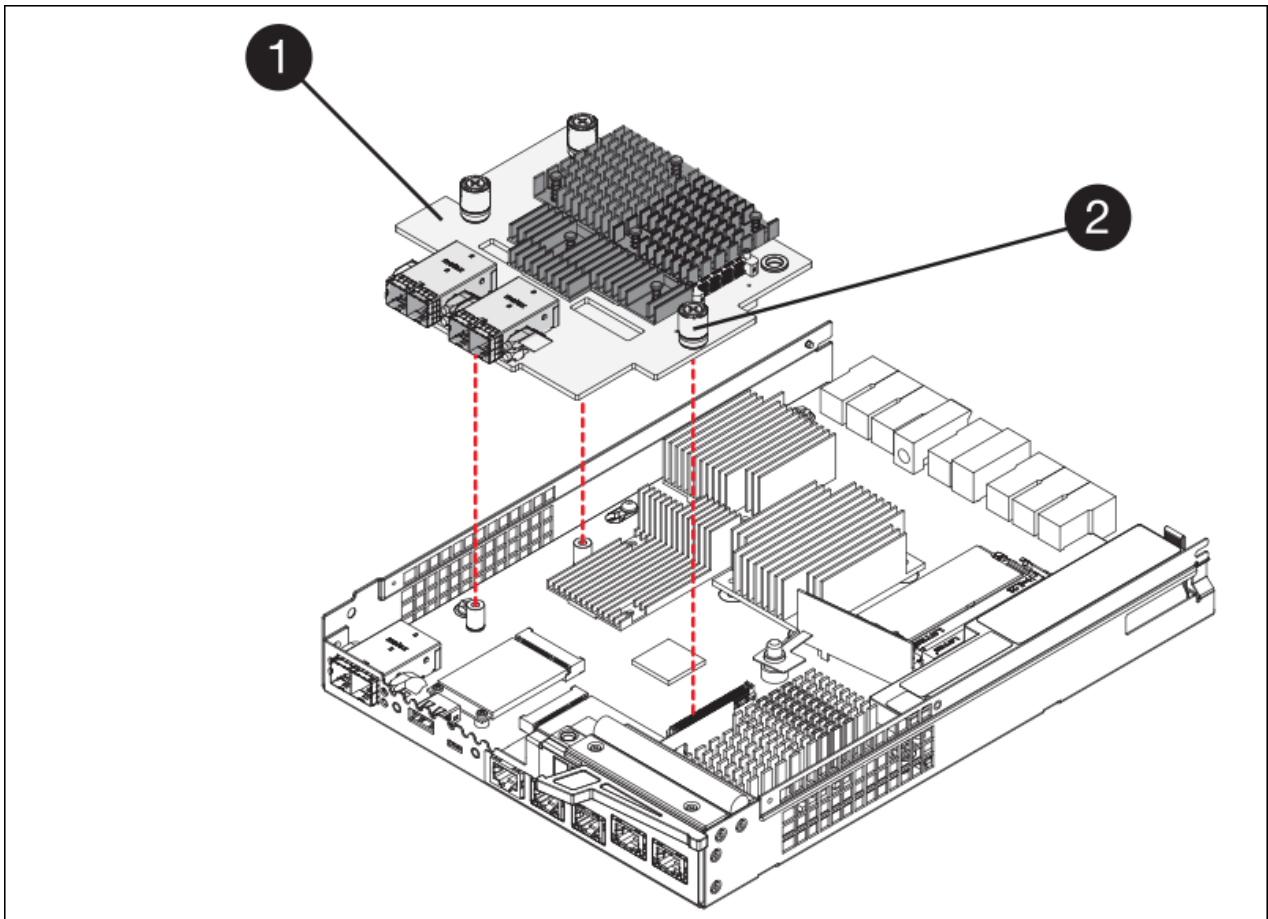
Label	Description
1	Host interface card
2	Thumbscrews

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

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

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

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

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

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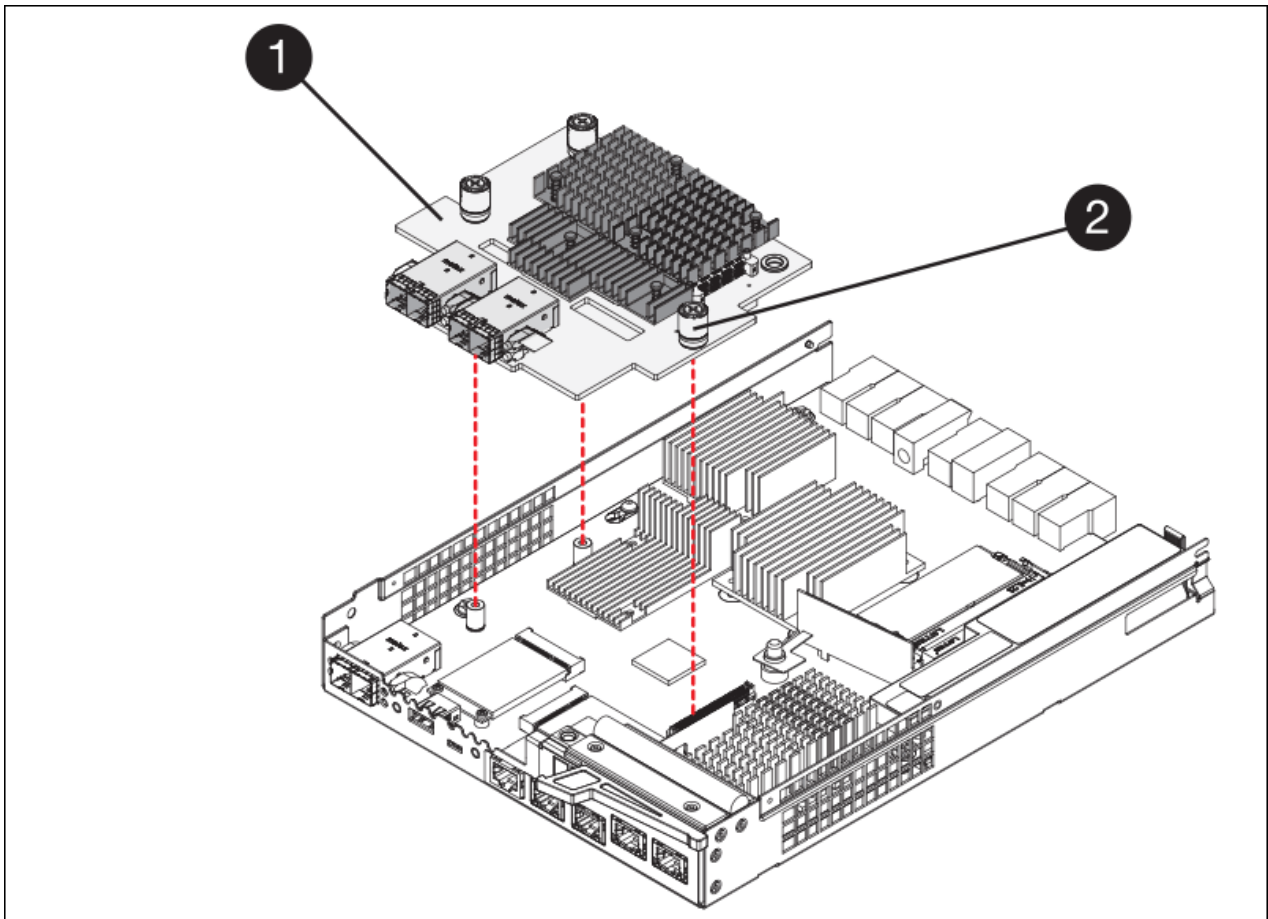
Label	Description
1	Host interface card
2	Thumbscrews

10. Hand-tighten the HIC thumbscrews.

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

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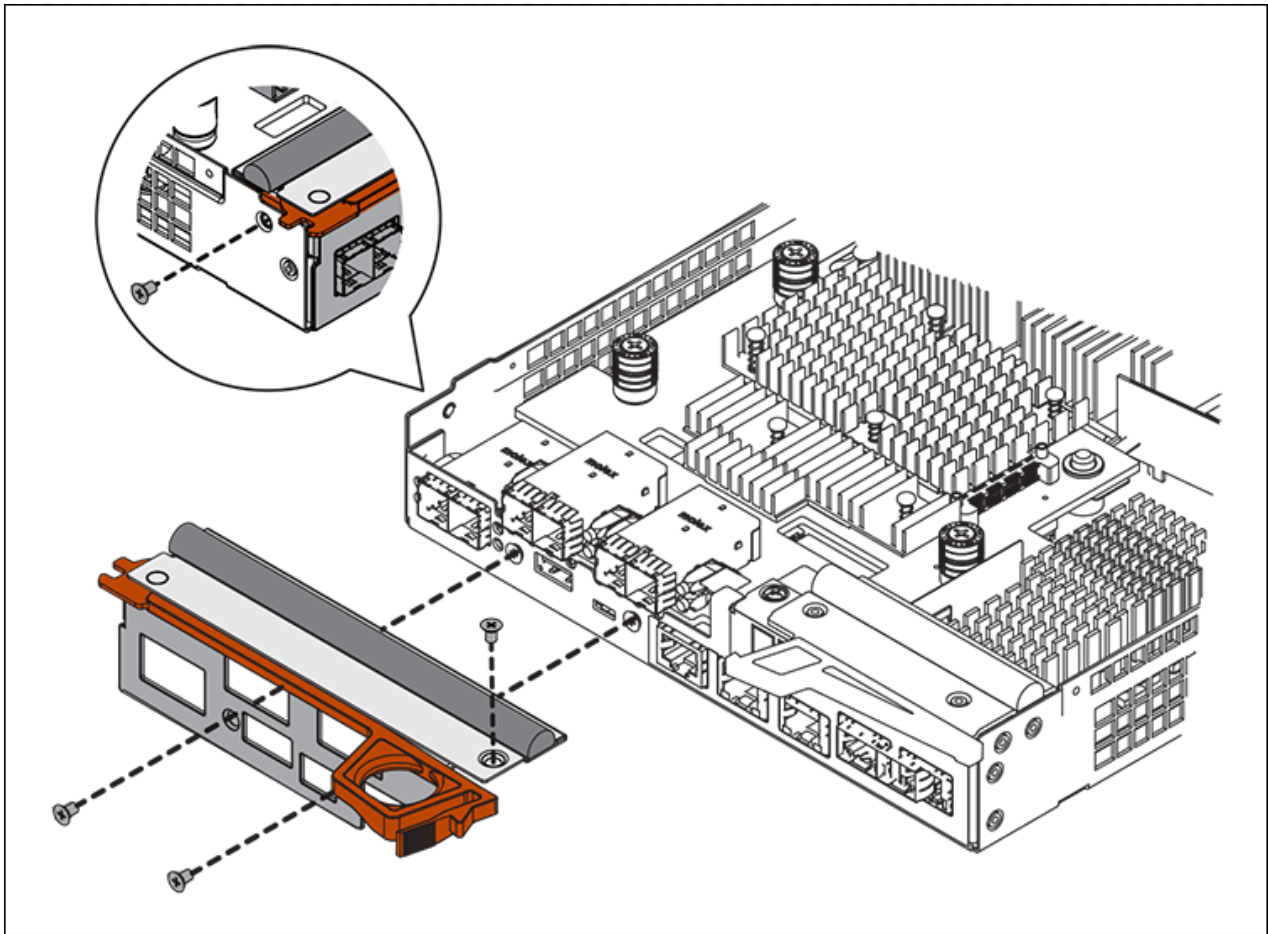
12. Reinstall any removed SFPs into the HIC.

Step 6: Replace controller

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

Steps

1. Install the replacement controller into the appliance.

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

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

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

   d. Replace the cables and SFPs.

   e. Power on the controller shelf.

   f. Wait for the E2800 controller to reboot. Verify that the seven-segment display shows a state of `99`.

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

   > ℹ️ The steps for assigning an IP address to the replacement controller depend on whether you connected management port 1 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 appliance uses secured drives, follow the instructions in the E2800 controller replacement procedure to import the drive security key.

3. 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:

   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.

6. From SANtricity System Manager, confirm that the new controller is Optimal, and collect support data.

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

Replace StorageGRID E5700SG compute controller

You might need to replace the E5700SG 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 downloaded the E-Series instructions for replacing a failed E5700 controller.

> (i) Refer to the E-Series instructions only for additional details on specific steps. Do not use them to replace a controller in the StorageGRID appliance, as the procedures differ. For example, the E-Series instructions for the E5700 controller describe how to remove the battery and the host interface card (HIC) from a failed controller and install them in a replacement controller. These steps don't apply to the StorageGRID E5700SG controller.

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

About this task

You will not be able to access the appliance Storage Node when you replace the controller. If the E5700SG controller is functioning sufficiently, you can perform a controlled shutdown at the start of this procedure.

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

Steps

1. Shut down the E5700SG 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 `#`.

2. Shut down the E5700SG controller:
   `shutdown -h now`

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 insert the replacement controller in the appliance. 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.

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

    c. 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.

    d. 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 and SFPs.

6. After the controllers have successfully booted up, the seven-segment displays should show the following:

    ◦ E2800 series controller:

The final state is `99`.

- ◦ E5700SG controller:

  The final state is `HA`.

7. After the appliance rejoins the grid, 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.

Related information

NetApp E-Series documentation

Replace other hardware components in the SG5700

You might need to replace a controller battery, drive, fan, or power supply, in the StorageGRID appliance.

Before you begin

- You have the E-Series hardware replacement procedure.
- The appliance has been placed into maintenance mode if the component replacement procedure requires that you shut down the appliance.

About this task

To replace the battery in the E2800 controller, see the instructions in these instructions for replacing the E2800 controller. Those instructions describe how to remove the controller from the appliance, remove the battery from the controller, install the battery, and replace the controller.

To replace a drive, power-fan canister, fan canister, power canister, or drive drawer in the appliance, access the E-Series procedures for maintaining E2800 hardware.

SG5712 component replacement instructions

FRU	See E-Series instructions for
Drive	Replacing a drive in E2800 12-drive or 24-drive shelves
Power-fan canister	Replacing a power-fan canister in E2800 shelves

SG5760 component replacement instructions

FRU	See E-Series instructions for
Drive	Replacing a drive in E2860 shelves
Power canister	Replacing a power canister in E2860 shelves
Fan canister	Replacing a fan canister in E2860 shelves

FRU	See E-Series instructions for
Drive drawer	Replacing a drive drawer in E2860 shelves