Maintain SG5600 appliance

StorageGRID

NetApp
May 03, 2022

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Maintain SG5600 appliance

You might need to upgrade the SANtricity OS Software on the E2700 controller, replace the E2700 controller or the E5600SG 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.

Place appliance into maintenance mode

You must place the appliance into maintenance mode before performing specific maintenance procedures.

What you'll need

- You are signed in to the Grid Manager using a supported web browser.
- You have the Maintenance or Root access permission. For details, see the instructions for administering StorageGRID.

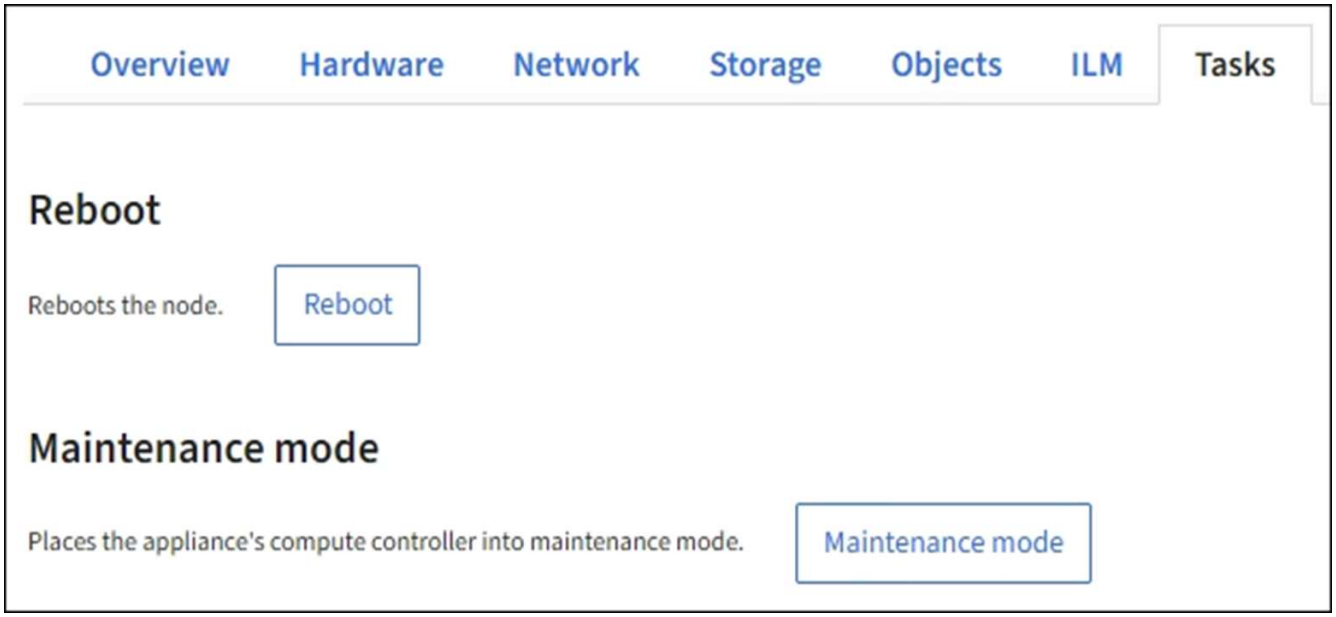
About this task

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

> The admin account password and SSH host keys for a StorageGRID appliance in maintenance mode remain the same as they were when the appliance was in service.

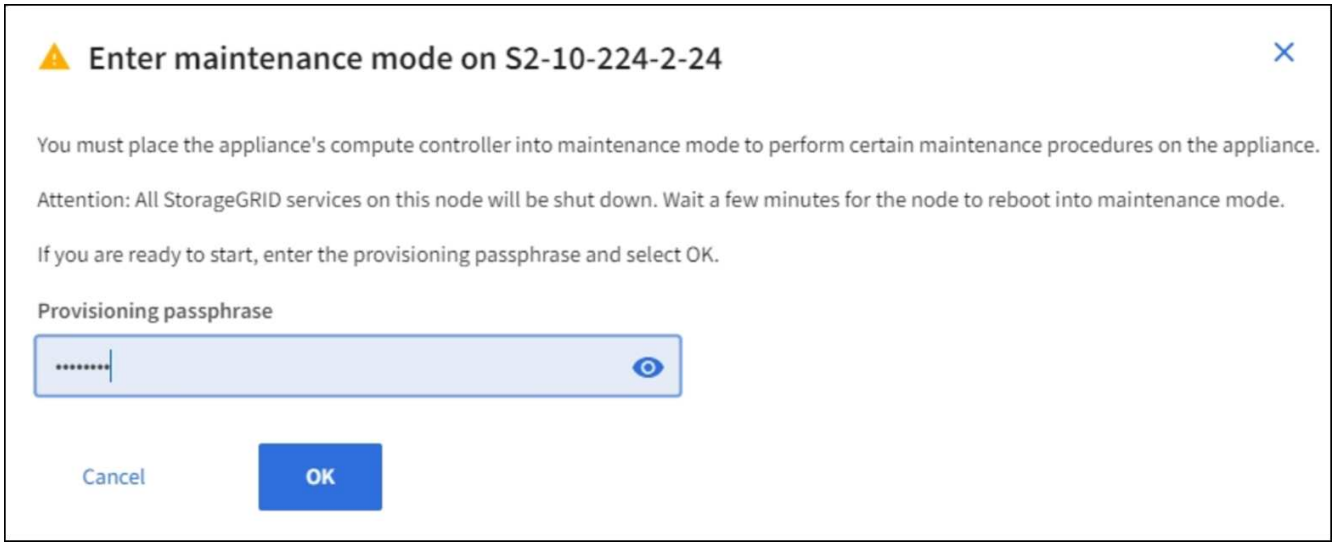
Steps

1. From the Grid Manager, select **NODES**.
2. From the tree view of the Nodes page, select the appliance Storage Node.
3. Select **Tasks**.



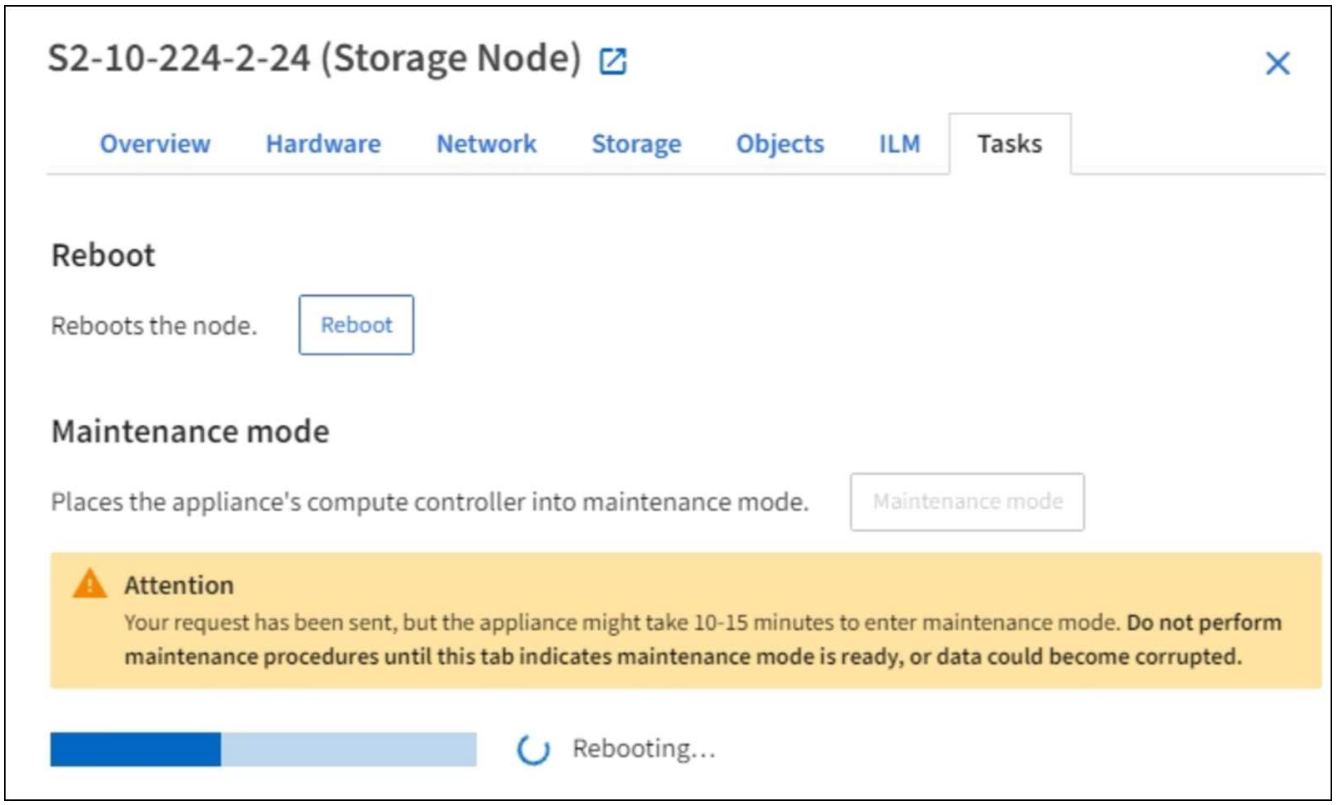
4. Select **Maintenance mode**.

A confirmation dialog box appears.

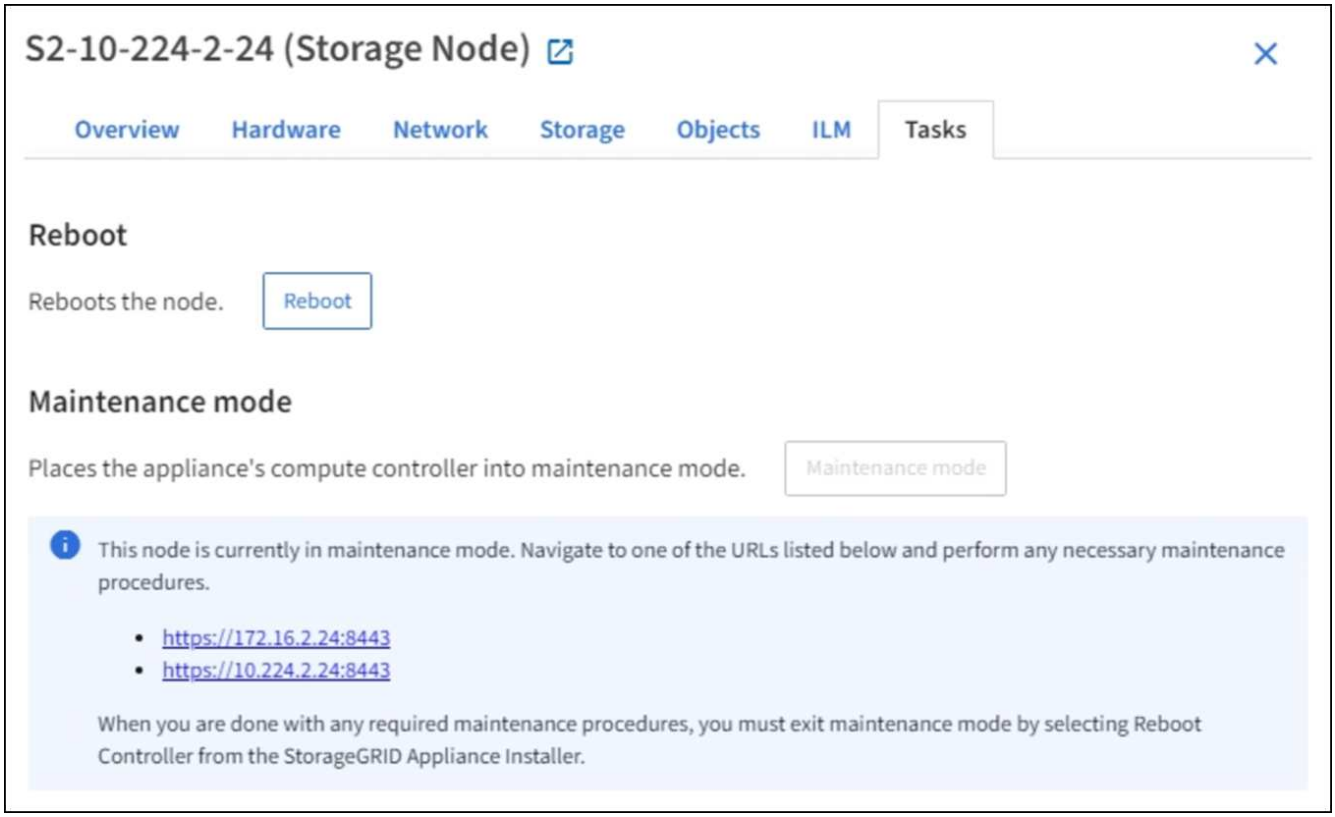


5. Enter the provisioning passphrase, and select **OK**.

   A progress bar and a series of messages, including "Request Sent," "Stopping StorageGRID," and "Rebooting," indicate that the appliance is completing the steps for entering maintenance mode.



When the appliance is in maintenance mode, a confirmation message lists the URLs you can use to access the StorageGRID Appliance Installer.



6. To access the StorageGRID Appliance Installer, browse to any of the URLs displayed.

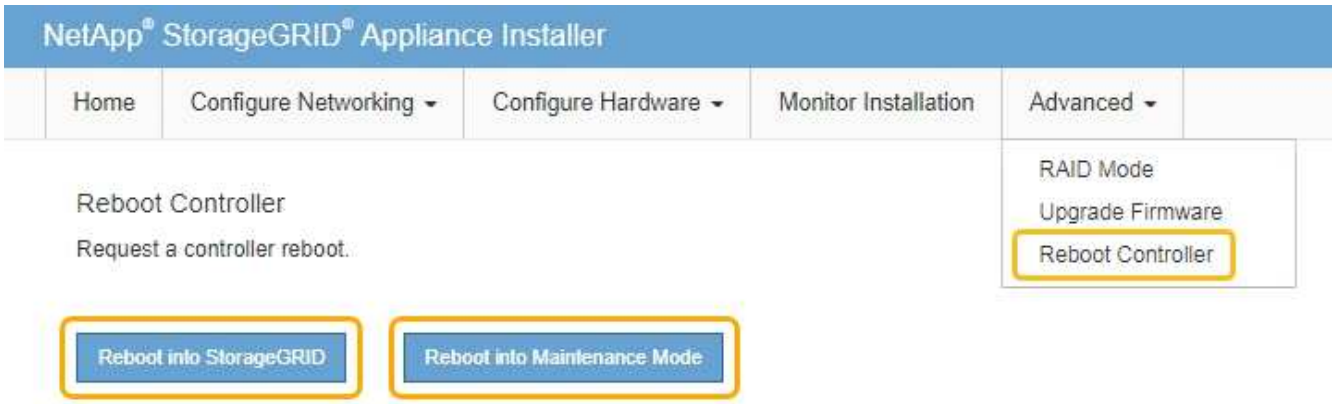
   If possible, use the URL containing the IP address of the appliance's Admin Network port.

   > If you have a direct connection to the appliance's management port, use `https://169.254.0.1:8443` to access the StorageGRID Appliance Installer page.

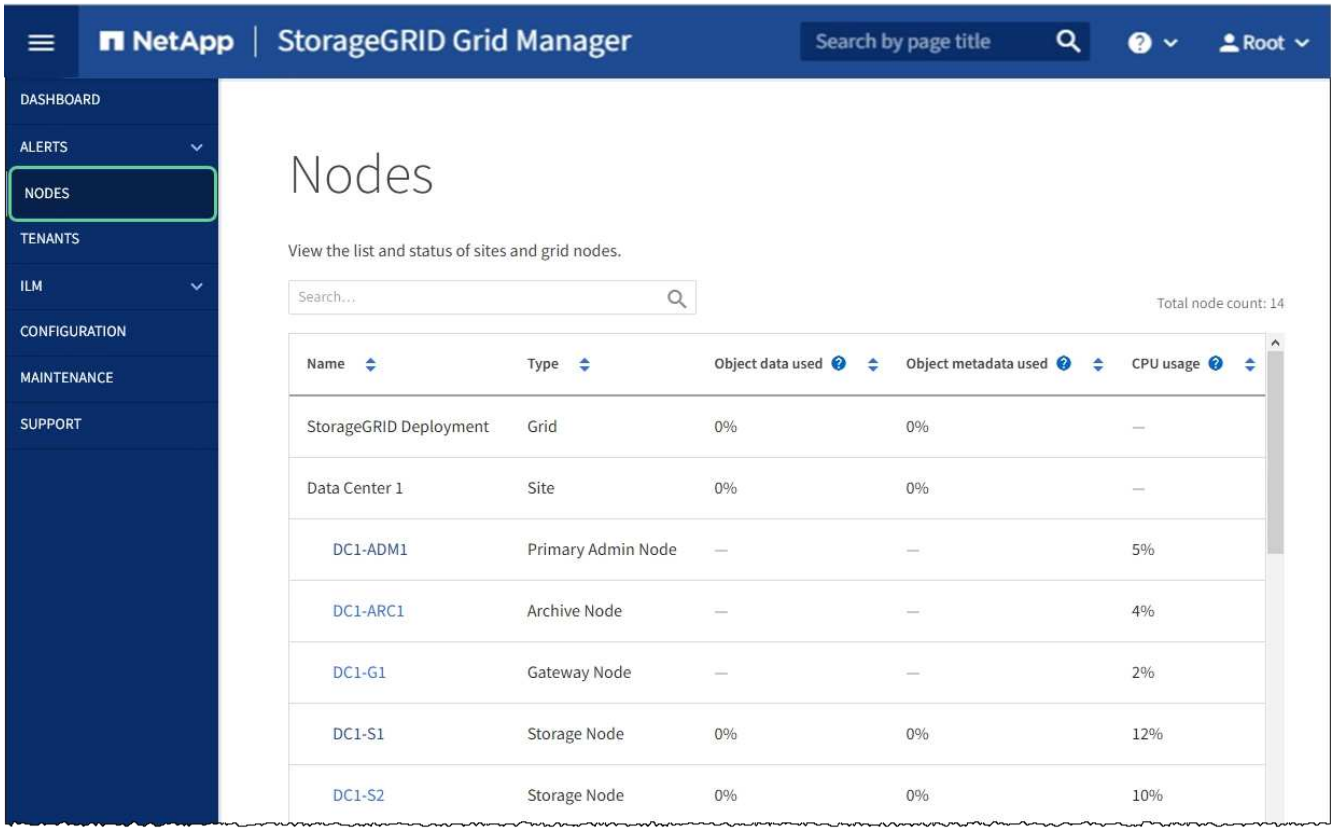
7. From the StorageGRID Appliance Installer, confirm that the appliance is in maintenance mode.

8. Perform any required maintenance tasks.
9. After completing maintenance tasks, exit maintenance mode and resume normal node operation. From the StorageGRID Appliance Installer, select **Advanced** > **Reboot Controller**, and then select **Reboot into StorageGRID**.



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, go back to the Grid Manager. The **NODES** page should display a normal status (no icon) for the appliance node, indicating that no alerts are active and the node is connected to the grid.



Upgrade SANtricity OS on 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.

What you'll need

- 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 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.
- You have access to the NetApp downloads page for SANtricity OS.

About this task

You cannot perform other software updates (StorageGRID software upgrade or a hotfix) until you have completed the SANtricity OS upgrade 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.

The following steps are only applicable when you are using the Grid Manager to perform the upgrade. The storage controllers in the appliance cannot 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 do not need to apply a separate NVSRAM upgrade file.

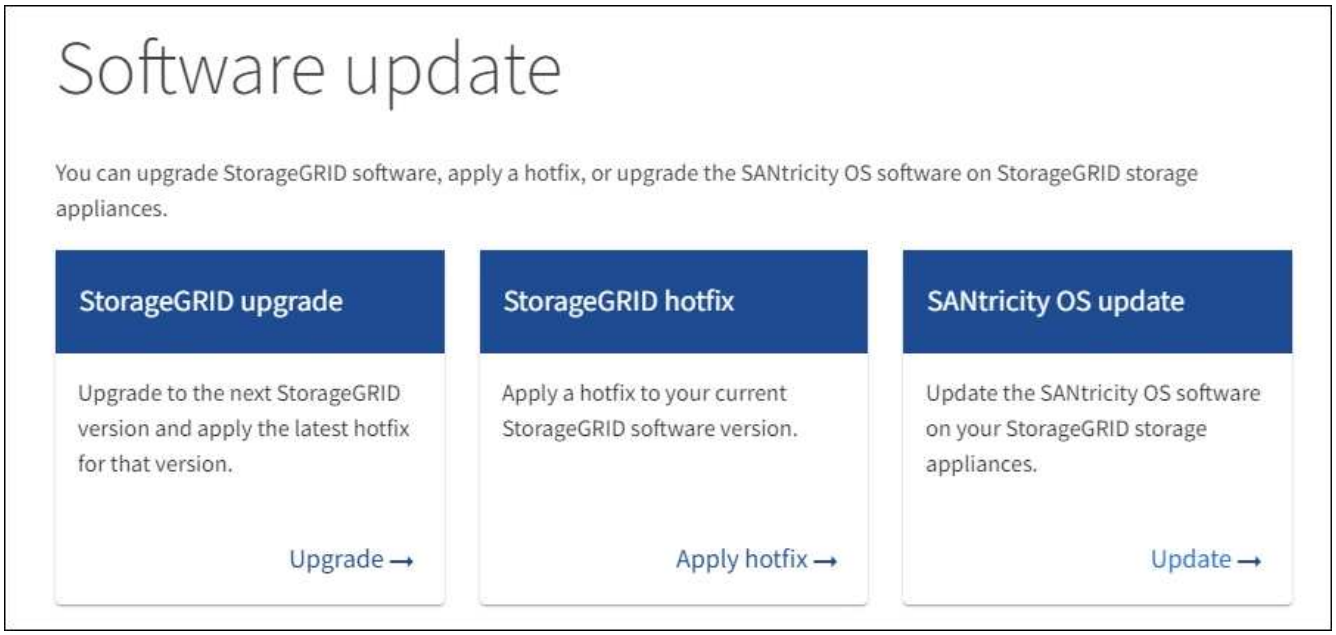
Steps

1. Download the new SANtricity OS Software file from the NetApp support site.

   Be sure to choose the SANtricity OS version for your storage controllers.

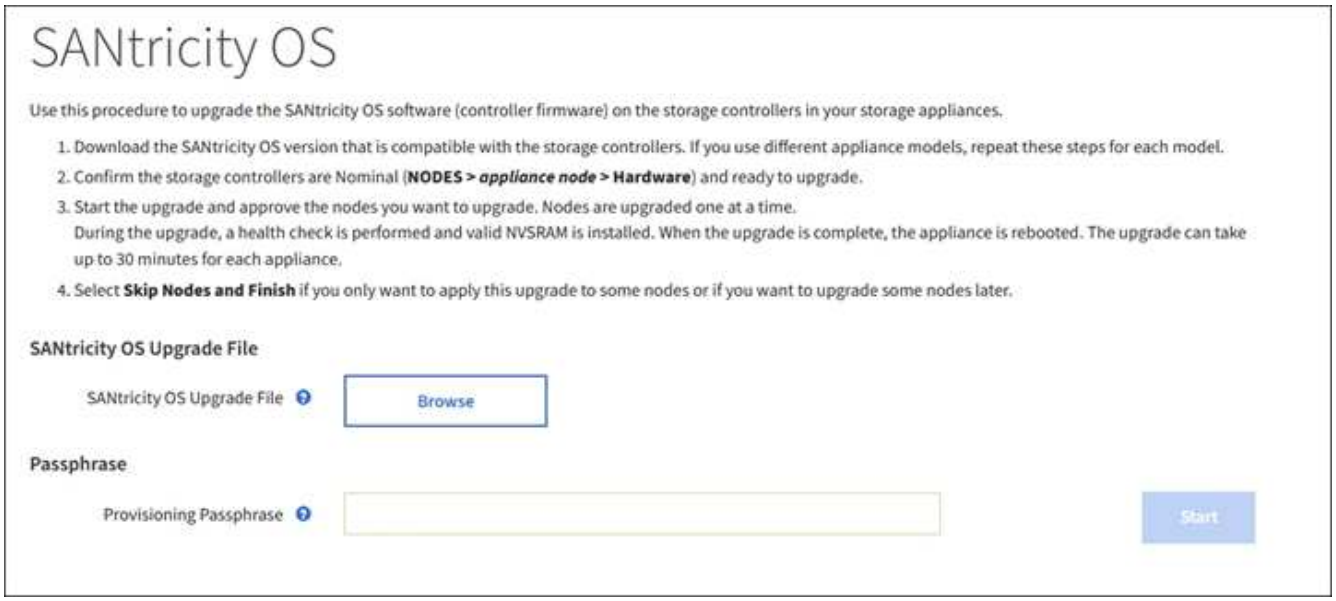
   NetApp Downloads: SANtricity OS

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



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

   The SANtricity OS upgrade page appears.



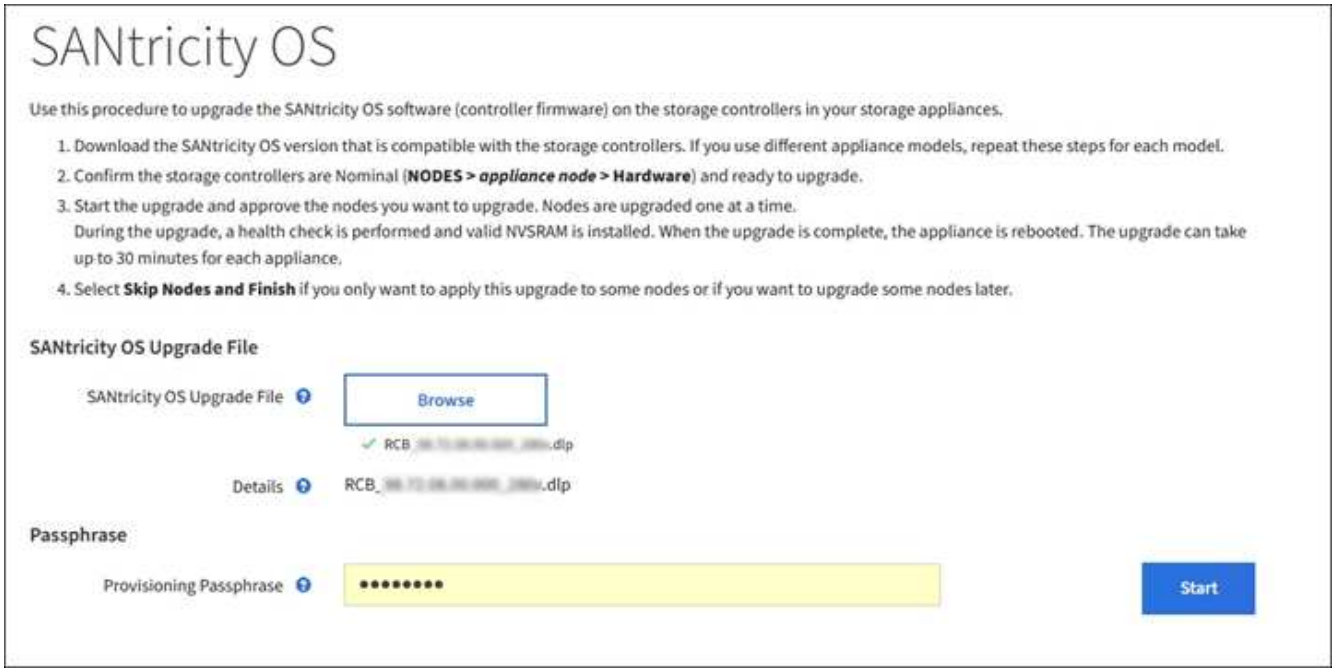
4. Select the SANtricity OS upgrade file you downloaded from the NetApp support site.
   a. Select **Browse**.
   b. Locate and select the file.
   c. Select **Open**.

      The file is uploaded and validated. When the validation process is done, the file name is shown next to the **Browse** button.

      Do not change the file name since it is part of the verification process.

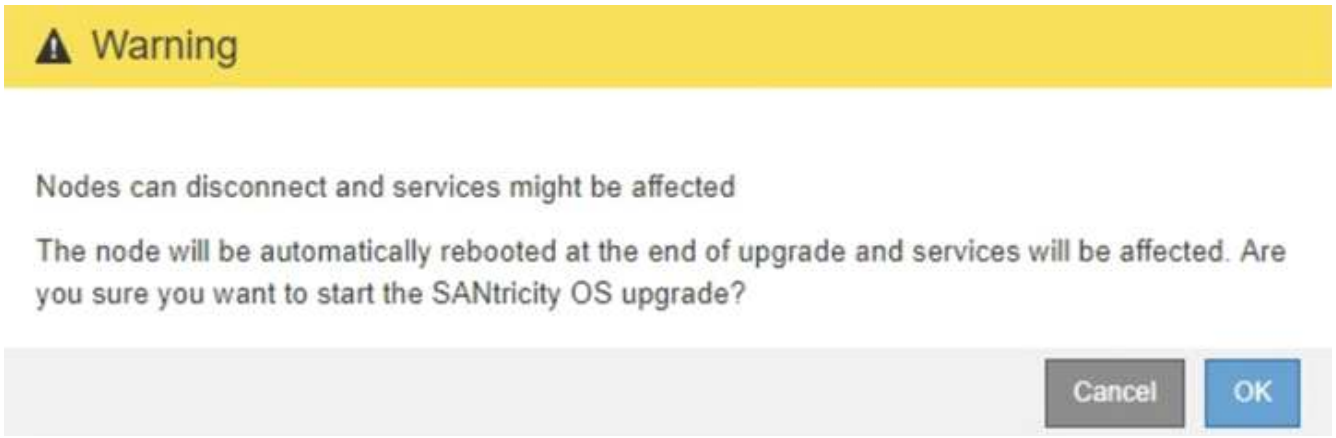
5. Enter the provisioning passphrase.

The **Start** button is enabled.



6. Select **Start**.

   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 **OK** to stage the SANtricity OS upgrade file to the primary Admin Node.

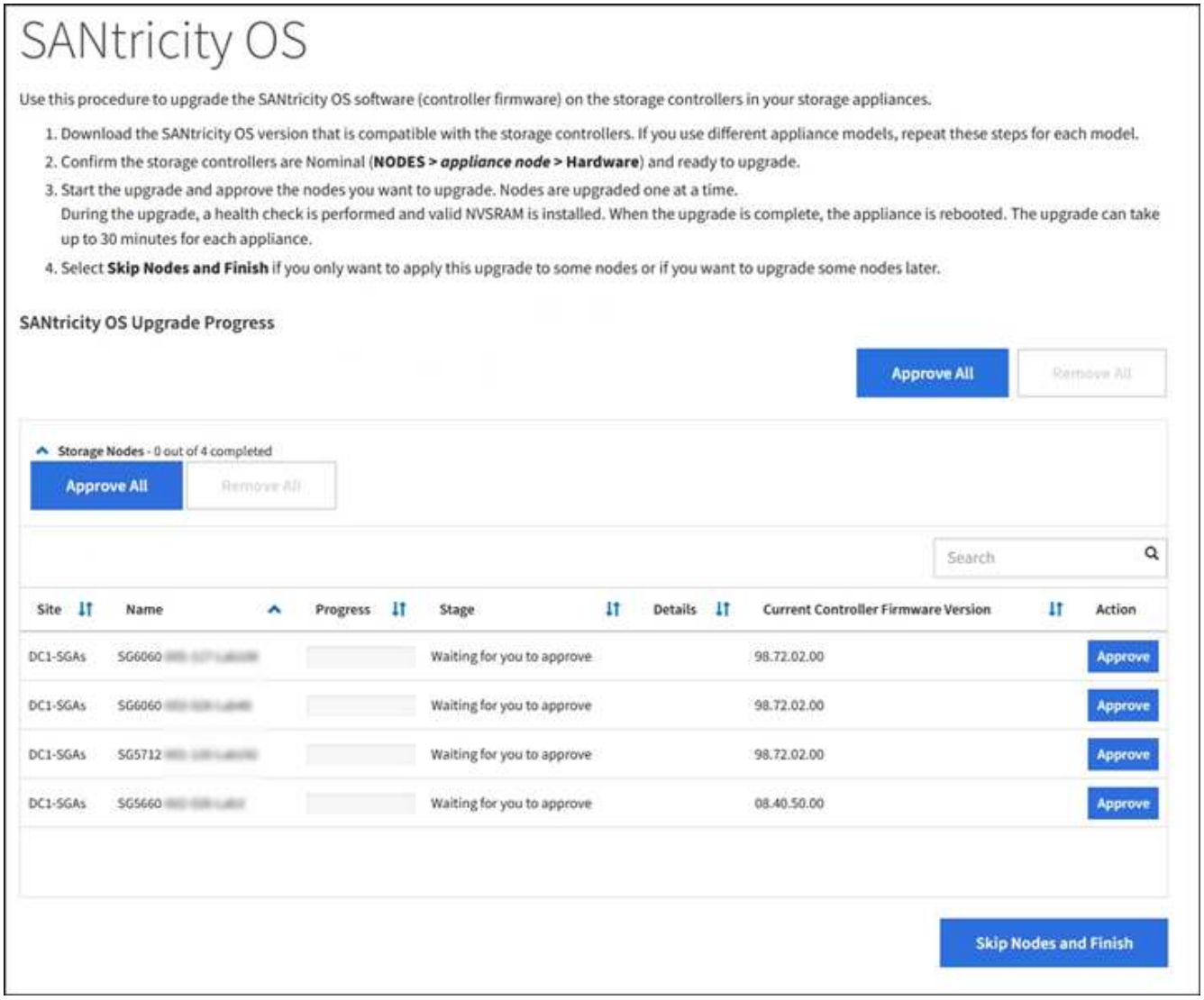
   When the SANtricity OS upgrade starts:

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

      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.

      The table shows all appliance Storage Nodes. Software-based Storage Nodes are not displayed. Select **Approve** for all nodes that require the upgrade.



8. Optionally, sort the list of nodes in ascending or descending order by **Site**, **Name**, **Progress**, **Stage**, **Details**, or **Current Controller Firmware Version**. Or, enter a term in the **Search** box to search for specific nodes.

   You can scroll through the list of nodes by using the left and right arrows at the bottom right corner of the section.

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

   > Do not 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 either of the **Approve All** buttons 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(s).

- Select one or more **Approve** buttons to add one or more nodes to the SANtricity OS upgrade queue.

  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.

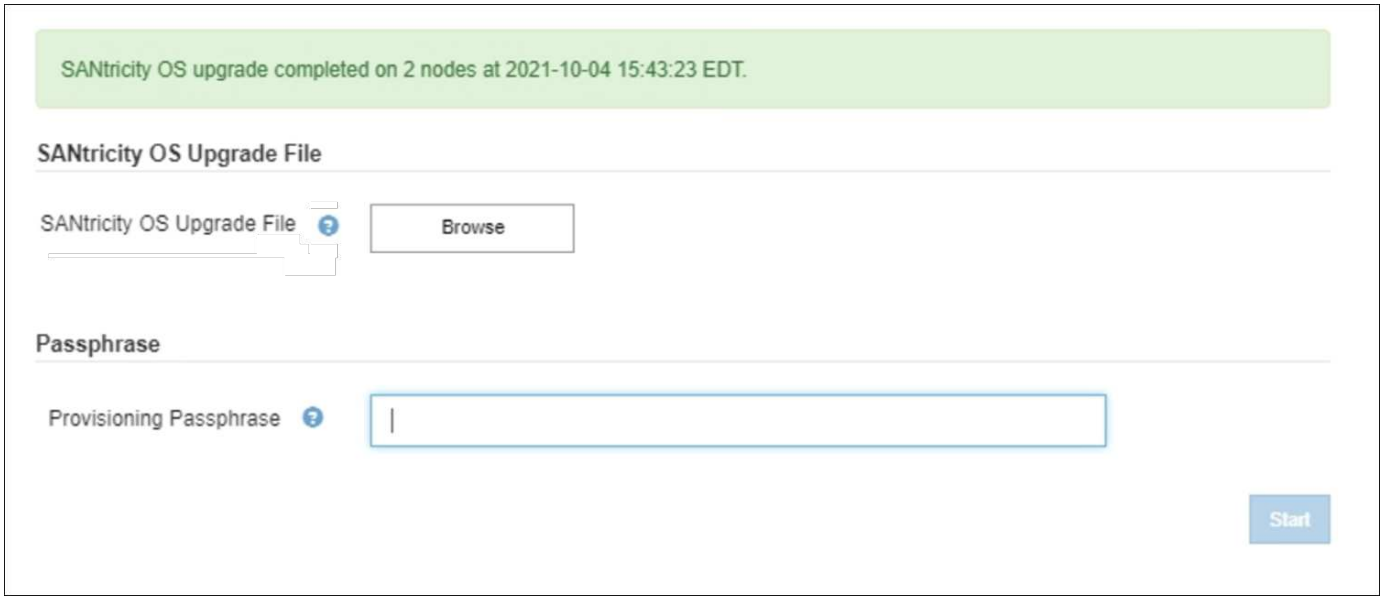
10. If you need to remove a node or all nodes from the SANtricity OS upgrade queue, select **Remove** or **Remove All**.

    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 being 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: “You must use maintenance mode to upgrade SANtricity OS on this node. See the installation and maintenance instructions for your appliance. After the upgrade, you can use this utility for future upgrades.” 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 date and time the SANtricity OS upgrade was completed.



12. If a node cannot be upgraded, note the reason shown in the Details column and take the appropriate 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.

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

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 nodes.

    b. Select **OK** to return to the **SANtricity OS** page.
    c. When you are ready to continue approving nodes, go to Download the SANtricity OS to restart the upgrade process.

> Nodes already approved and upgraded without errors remain upgraded.

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

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

> When you repeat the upgrade procedure, you have to approve previously upgraded nodes.

Related information

NetApp Interoperability Matrix Tool

Upgrade SANtricity OS on E2700 controller using maintenance mode

Upgrade SANtricity OS on E2700 controller using maintenance mode

If you are unable to upgrade the SANtricity OS Software using the Grid Manager, use the maintenance mode procedure to apply the upgrade.

What you’ll need

- 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 E5600SG controller into maintenance mode if you are not using the Grid Manager. Placing the controller into maintenance mode interrupts the connection to the E2700 controller. Before changing the link configuration, you must place the E5600SG 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

Do not 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. From a service laptop, access SANtricity Storage Manager, and sign in.
2. Download the new SANtricity OS Software file and NVSRAM file to the management client.

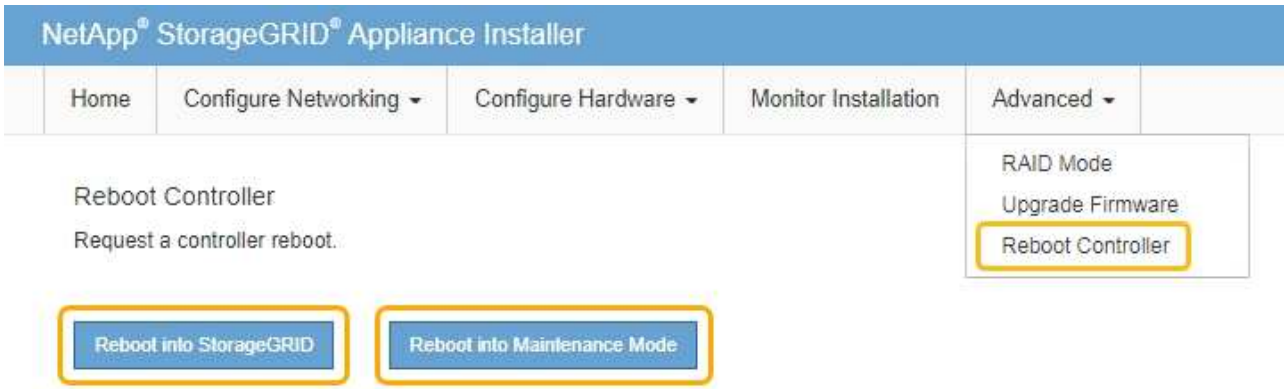
> The NVSRAM is specific to the StorageGRID appliance. Do not use the standard NVSRAM download.

3. Follow the instructions in the *E2700 and E5600 SANtricity Software and Firmware Upgrade instructions* or the SANtricity Storage Manager online help, and upgrade the E2700 controller's firmware, NVSRAM, or both.

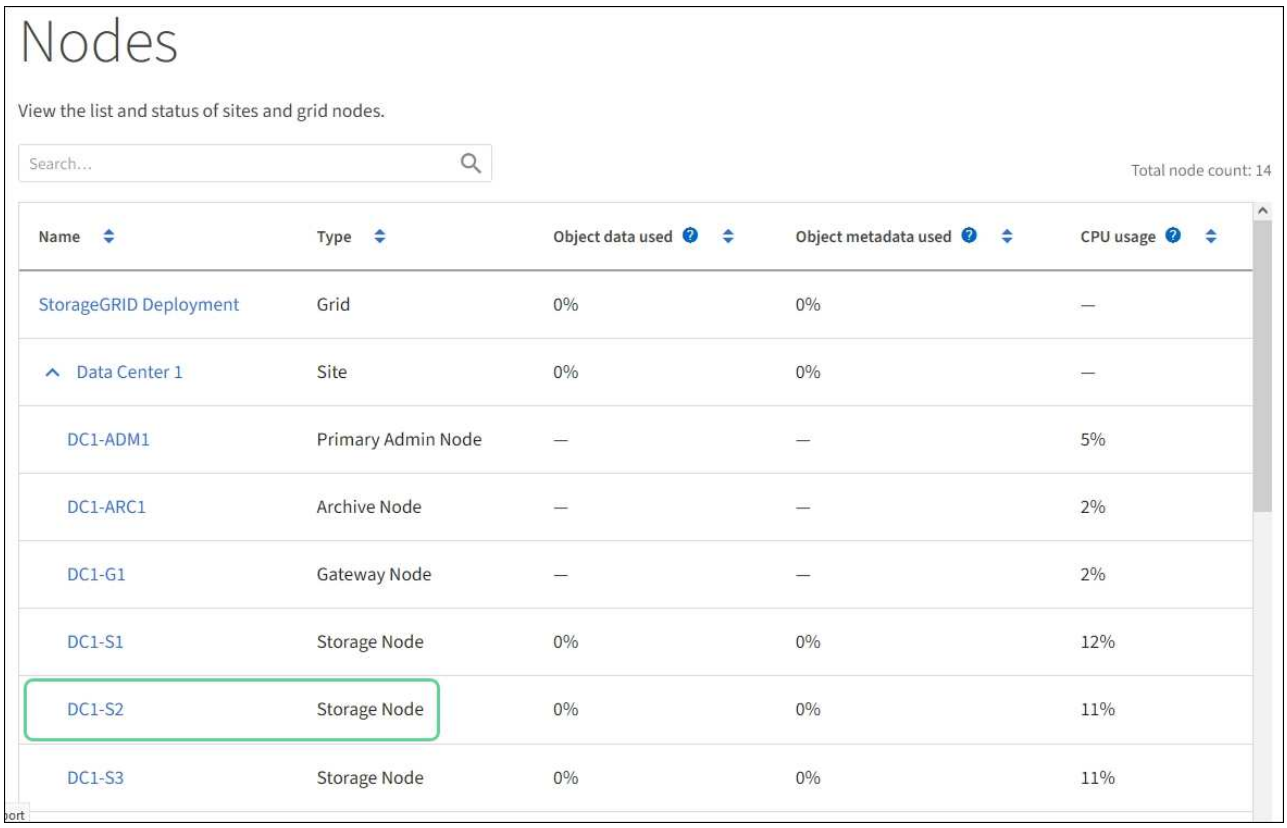
> If you need to upgrade the NVSRAM in the E2700 controller, you must confirm that the SANtricity OS file you downloaded was designated as compatible with StorageGRID appliances.

> Activate the upgrade files immediately. Do not defer activation.

4. 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, go back to the Grid Manager. The Nodes page should display a normal status (no icons 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.



Upgrade drive firmware using SANtricity Storage Manager

You upgrade your drive firmware to make sure you have all the latest features and bug fixes.

What you'll need

- The storage appliance has an Optimal status.

- All drives have an Optimal status.
- You have the latest version of SANtricity Storage Manager installed that is compatible with your StorageGRID version.

  Upgrade SANtricity OS on storage controllers using Grid Manager

  Upgrade SANtricity OS on the E2700 controller using maintenance mode

- You have placed the StorageGRID appliance in maintenance mode.

> Maintenance mode interrupts the connection to the storage controller, stopping all I/O activity and placing all drives offline.

> Do not 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 policies.

Steps

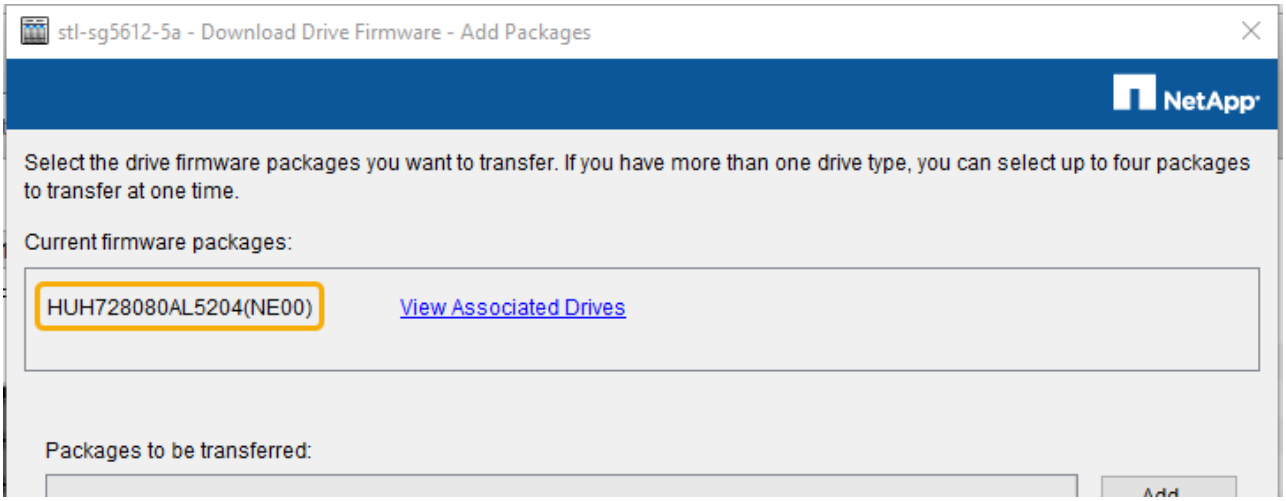
1. Open a web browser, and enter the IP address as the URL for SANtricity Storage Manager:
   `https://E2700_Controller_IP`
2. Enter the SANtricity Storage Manager administrator username and password, if required.
3. From SANtricity Enterprise Management, select the **Devices** tab.

   The SANtricity Array Management window opens.
4. From SANtricity Array Management, double-click the Storage Array with the drives to upgrade.
5. Verify that both the Storage Array and drives have an Optimal status.
6. Verify the drive firmware version currently installed in the storage appliance:

   a. From SANtricity Enterprise Management, select **Upgrade** > **Drive Firmware**.

      The Download Drive Firmware - Add Packages window displays the drive firmware files currently in use.

   b. Note current drive firmware revisions and drive identifiers under Current firmware packages.



In this example:

- The drive firmware revision is **NE00**.
- The drive identifier is **HUH728080AL5204**.

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

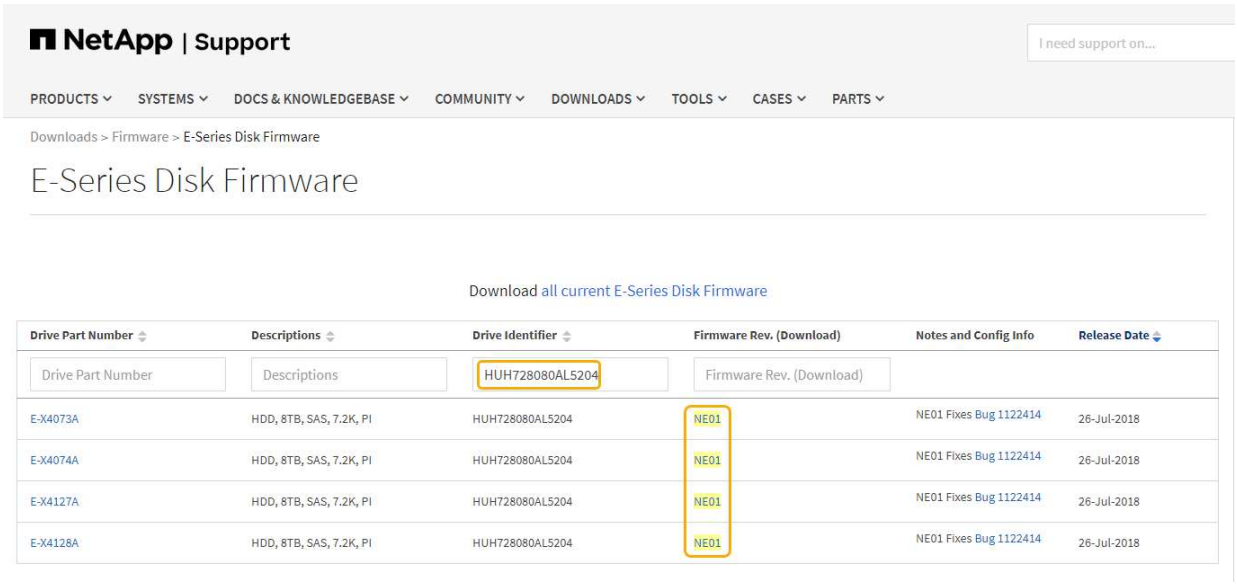
7. Download and prepare the available drive firmware upgrade:
   a. Open your web browser, navigate to NetApp Support web site, and log in using your ID and password.

      NetApp Support

   b. On the NetApp Support web 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.
8. Install the drive firmware upgrade:
   a. From the SANtricity Storage Manager Download Drive Firmware - Add Packages window, select **Add**.
   b. Navigate to the directory that contains the firmware files and select up to four firmware files.

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

      Selecting more than one firmware file to upgrade the firmware of the same drive might result in a file

conflict error. If a file conflict error occurs, an error dialog appears. To resolve this error, select **OK** and remove all other firmware files except the one that you want to use for upgrading the firmware of the drive. To remove a firmware file, select the firmware file in the Packages to Be Transferred information area, and select **Remove**. In addition, you can only select up to four drive firmware packages at one time.

c. Select **OK**.

   The system updates the Packages to be transferred information area with the firmware files you selected.

d. Select **Next**.

   The Download Drive Firmware - Select Drives window opens.

   - All drives in the appliance are scanned for configuration information and upgrade eligibility.
   - You are presented with a selection (depending on what variety of drives you have in the storage array) of compatible drives that can be upgraded with the firmware you selected. The drives capable of being upgraded as an online operation are displayed by default.
   - The selected firmware for the drive appears in the Proposed Firmware information area. If you must change the firmware, select **Back** to return to the previous dialog.

e. From the Drive upgrade capability, select the **Parallel** download operation or **All**.

   You can use either of these upgrade methods because the appliance is in maintenance mode, where I/O activity is stopped for all drives and all volumes.

f. In Compatible Drives, select the drives for which you want to upgrade the selected firmware files.
   - For one or more drives, select each drive you want to upgrade.
   - For all compatible drives, select **Select all**.

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

g. Select **Finish**; then, type `yes` and select **OK**.
   - The drive firmware download and upgrade begins, with Download Drive Firmware - Progress indicating the status of the firmware transfer for all drives.
   - The status of each drive participating in the upgrade appears in the Transfer Progress column of Devices updated.

     A parallel drive firmware upgrade operation can take as much as 90 seconds to complete if all drives are upgraded on a 24-drive system. On a larger system, the execution time is slightly longer.

h. During the firmware upgrade process, you can:
   - Select **Stop** to stop the firmware upgrade in progress. Any firmware upgrade currently in progress are completed. Any drives that have attempted firmware upgrade show their individual status. Any remaining drives are listed with a status of Not attempted.

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

   - Select **Save As** to save a text report of the firmware upgrade progress summary. The report saves with a default .log file extension. If you want to change the file extension or directory, change the

parameters in Save Drive Download Log.

i. Use Download Drive Firmware - Progress to monitor the progress of the drive firmware upgrades. The Drives Updated area contains a list of drives that are scheduled for firmware upgrade and the transfer status of each drive's download and upgrade.

   The progress and status of each drive that is participating in the upgrade appears in the Transfer Progress column. Take the appropriate recommended action if any errors occur during the upgrade.

   - **Pending**

     This status is shown for an online firmware download operation that has been scheduled but has not yet started.

   - **In progress**

     The firmware is being transferred to the drive.

   - **Reconstruction in progress**

     This status is shown if a volume transfer takes place during the rapid reconstruction of a drive. This is typically due to a controller reset or failure and the controller owner transfers the volume.

     The system will initiate a full reconstruction of the drive.

   - **Failed - partial**

     The firmware was only partially transferred to the drive before a problem prevented the rest of the file from being transferred.

   - **Failed - invalid state**

     The firmware is not valid.

   - **Failed - other**

     The firmware could not be downloaded, possibly because of a physical problem with the drive.

   - **Not attempted**

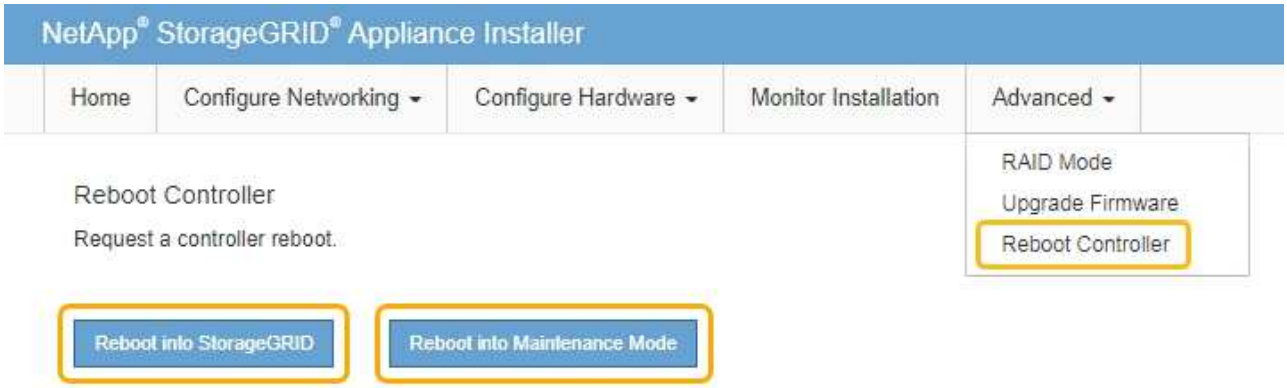
     The firmware was not downloaded, which may be due to a number of different reasons such as the download was stopped before it could occur, or the drive did not qualify for the upgrade, or the download could not occur due to an error.

   - **Successful**

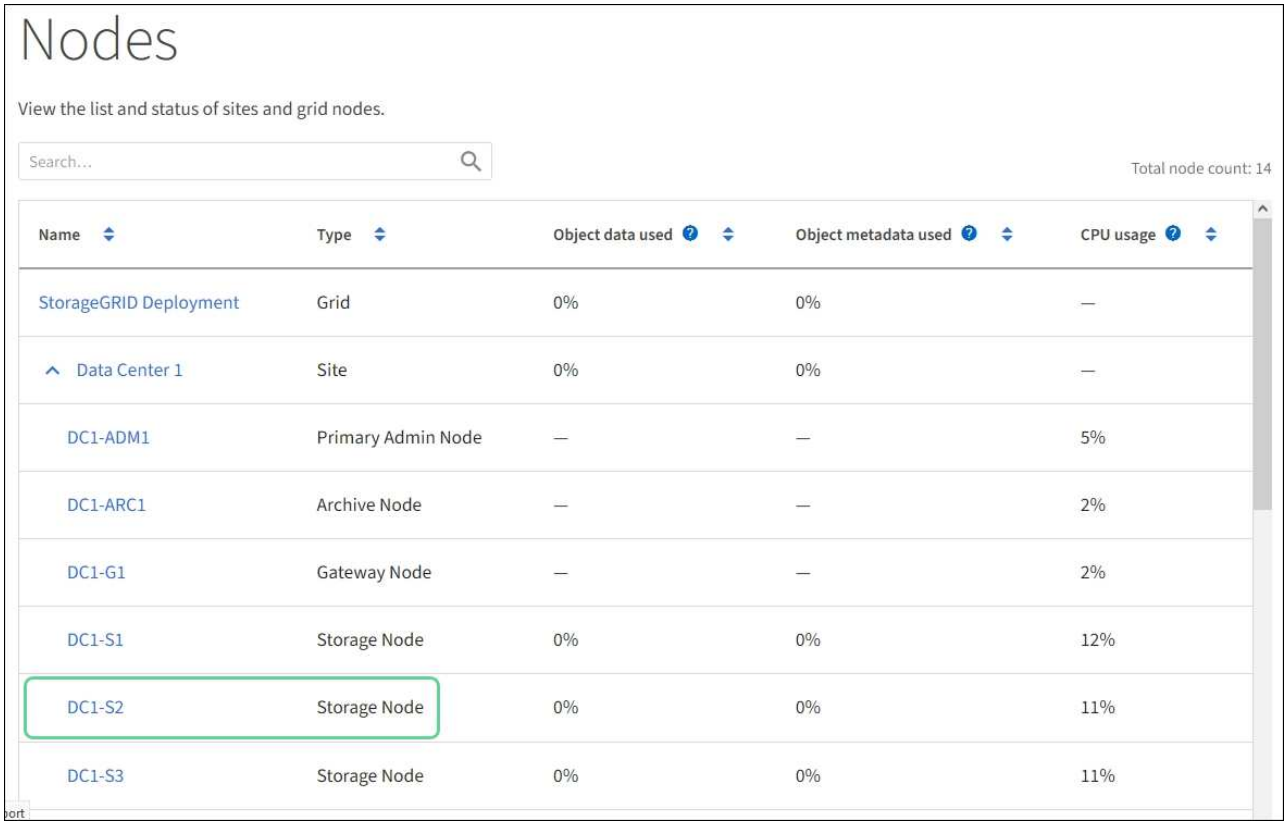
     The firmware was downloaded successfully.

9. After the drive firmware upgrade completes:
   - To close the Drive Firmware Download Wizard, select **Close**.
   - To start the wizard again, select **Transfer More**.
10. 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, go back to the Grid Manager. The **Nodes** page should display a normal status (no icons 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.



Replace E2700 controller

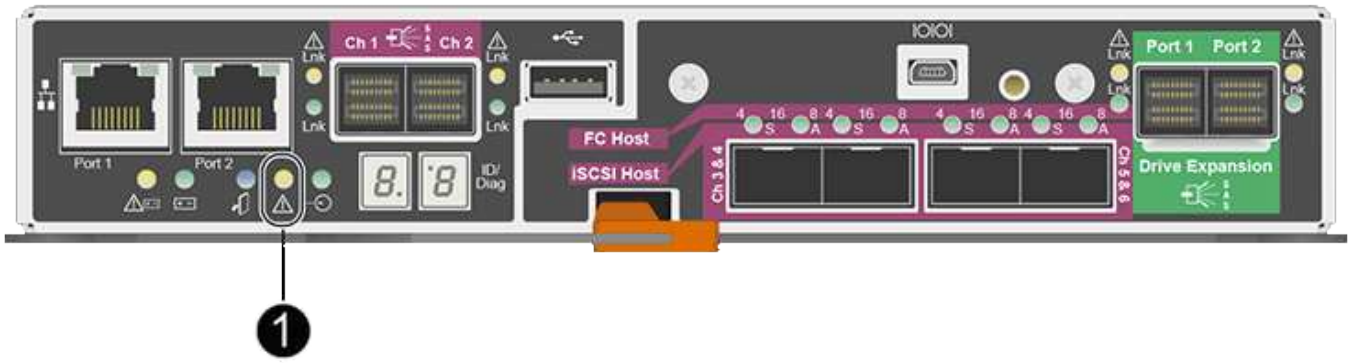
You might need to replace the E2700 controller if it is not functioning optimally or it has failed.

What you'll need

- 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 antistatic protection.
- You must have the Maintenance or Root Access permission. For details, see the instructions for administering StorageGRID.

About this task

You can determine if you have a failed controller by checking the amber Service Action Required LED on the controller (shown as 1 in the illustration). If this LED is on, the controller should be replaced.



The appliance Storage Node will not be accessible when you replace the controller. If the E2700 controller is functioning sufficiently, you can place the E5600SG 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.

Steps

1. Prepare to remove the controller.

   You use SANtricity Storage Manager to perform these steps.

   a. Make a note of which version of SANtricity OS software is currently installed on the controller.
   b. Make a note of which version of NVSRAM is currently installed.
   c. 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 Storage Manager.

   d. Back up the configuration database.

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

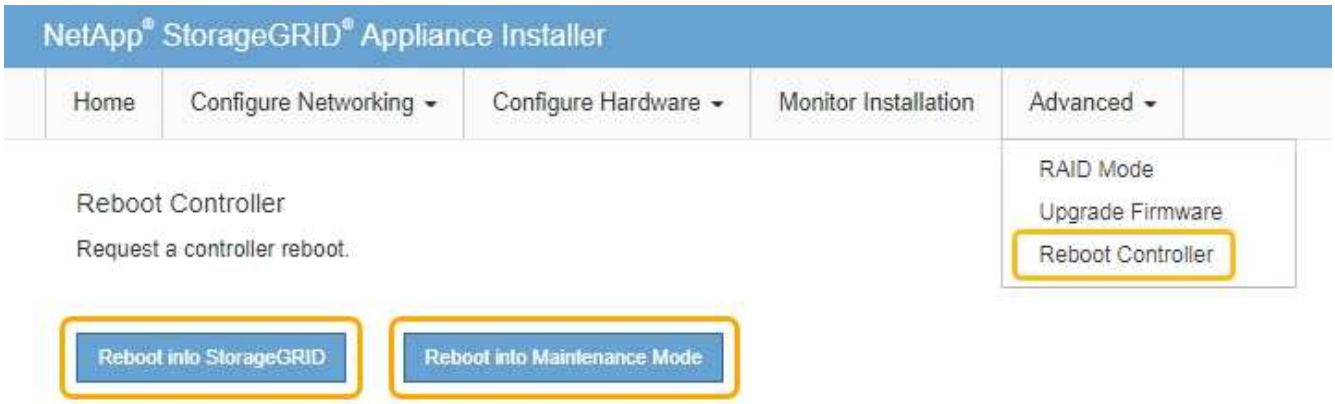
e. Collect support data for the appliance.

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

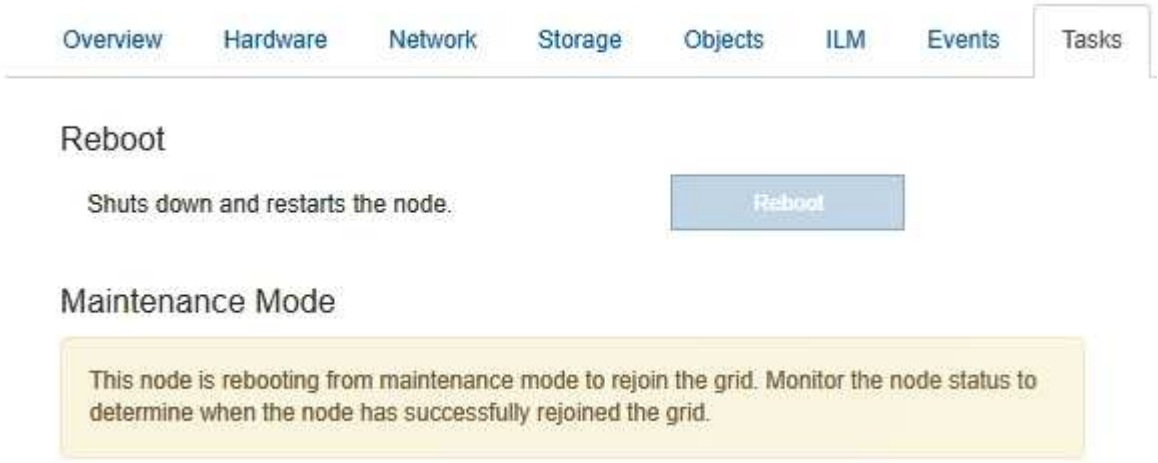
2. If the StorageGRID appliance is running in a StorageGRID system, place the E5600SG controller into maintenance mode.
3. If the E2700 controller is functioning sufficiently to allow for a controlled shutdown, confirm that all operations have completed.
   a. From the title bar of the Array Management Window, select **Monitor** > **Reports** > **Operations in Progress**.
   b. Confirm that all operations have completed.
4. Follow the instructions in the replacement procedure for a simplex E2700 controller to complete these steps:
   a. Label the cables and then disconnect the cables.

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

   b. Remove the failed controller from the appliance.
   c. Remove the controller cover.
   d. Unscrew the thumbscrew and remove the battery from the failed controller.
   e. Install the battery in the replacement controller, and replace the controller cover.
   f. Install the replacement controller into the appliance.
   g. Replace the cables.
   h. Wait for the E2700 controller to reboot. Verify that the seven-segment display shows a state of `99`.
5. If the appliance uses secured drives, import the drive security key.
6. Return the appliance to normal operating mode. From the StorageGRID Appliance Installer, select **Advanced** > **Reboot Controller**, and then select **Reboot into StorageGRID**.

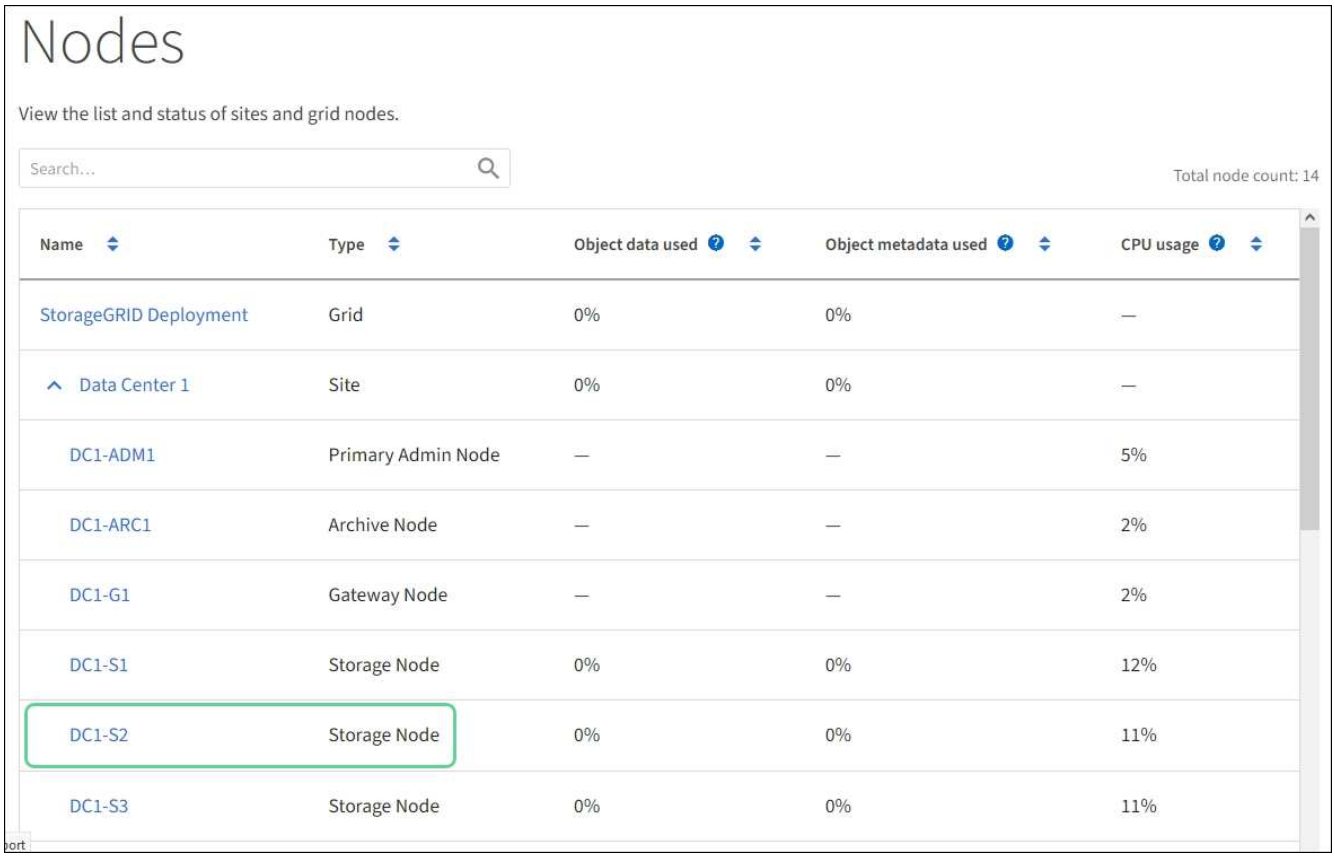


During the reboot, the following screen appears:



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

7. 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 (no icons 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.



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

Related information

NetApp E-Series and EF-Series Hardware Replacement Procedures

NetApp Documentation: E2700 Series

Replace E5600SG controller

You might need to replace the E5600SG controller.

What you'll need

You must have access to the following resources:

- E-Series hardware replacement information on the NetApp Support Site at mysupport.netapp.com
- E5600 documentation on the Support Site
- The appliance has been placed maintenance mode.

About this task

If both controllers are functioning sufficiently to allow for a controlled shutdown, you can shut down the E5600SG controller first to interrupt the connectivity to the E2700 controller.

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 cannot 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. Use antistatic protection.
2. Label each cable that is attached to the E5600SG controller, so you can reconnect the cables correctly.

   To prevent degraded performance, do not twist, fold, pinch, or step on the cables. Do not bend the cables tighter than a 5-cm (2-in) radius.

3. When the appliance has been placed maintenance mode, shut down the E5600SG 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 E5600SG controller:
      `shutdown -h now`
4. Turn off the power to the enclosure, and wait until all LED and seven-segment display activity on the rear of the controller has stopped.
5. Remove the cables.
6. Remove the controller, as described in the E5600SG controller documentation.
7. Insert the new controller, as described in the E5600SG controller documentation.
8. Replace all cables.
9. Turn the power back on to the enclosure.
10. Monitor the seven-segment codes.
    - E2700 controller:

      The final LED state is `99`.

    - E5600SG controller:

      The final LED state is `HA`.

11. Monitor the status of the appliance Storage Node in the Grid Manager.

    Verify that the appliance Storage Nodes returns to the expected status.

Related information

NetApp E-Series and EF-Series Hardware Replacement Procedures

NetApp Documentation: E5600 Series

Replace other hardware components

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

What you'll need

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

About this task

To replace a drive, power-fan canister, fan canister, power canister, battery, or drive drawer, refer to the standard procedures for the E2700 and E5600 storage arrays. Focus on the step-by-step instructions for removing and replacing the hardware itself; many of the SANtricity Storage Manager procedures do not apply to an appliance.

SG5612 component replacement instructions

FRU	See
Drive	Follow the steps in the E-Series instructions for replacing a drive in the E2600, E2700, E5400, E5500, E5600 or 12-drive or 24-drive trays.
Power-fan canister	Follow the steps in the E-Series instructions for replacing a failed power-fan canister in the E5612 or the E5624 controller-drive tray.
Battery in the E2700 controller (requires removing the controller)	Follow the steps in Replace E2700 controller, but install the new battery in the existing controller.

SG5660 component replacement instructions

FRU	See
Drive	Follow the steps in the E-Series instructions for replacing a drive in the E2660, E2760, E5460, E5560, or E5660 trays.
Power canister	Follow the steps in the E-Series instructions for replacing a failed power canister in the E5660 controller-drive tray.

FRU	See
Fan canister	Follow the steps in the E-Series instructions for replacing a failed fan canister in the E5660 controller-drive tray.
Battery in the E2700 controller (requires removing the controller)	Follow the steps in Replace E2700 controller, but install the new battery in the existing controller.

Related information

NetApp E-Series and EF-Series Hardware Replacement Procedures

NetApp Documentation: E2700 Series

NetApp Documentation: E5600 Series

Change link configuration of E5600SG controller

You can change the Ethernet link configuration of the E5600SG controller. You can change the port bond mode, the network bond mode, and the link speed.

What you'll need

Place the E5600SG controller into maintenance mode.

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

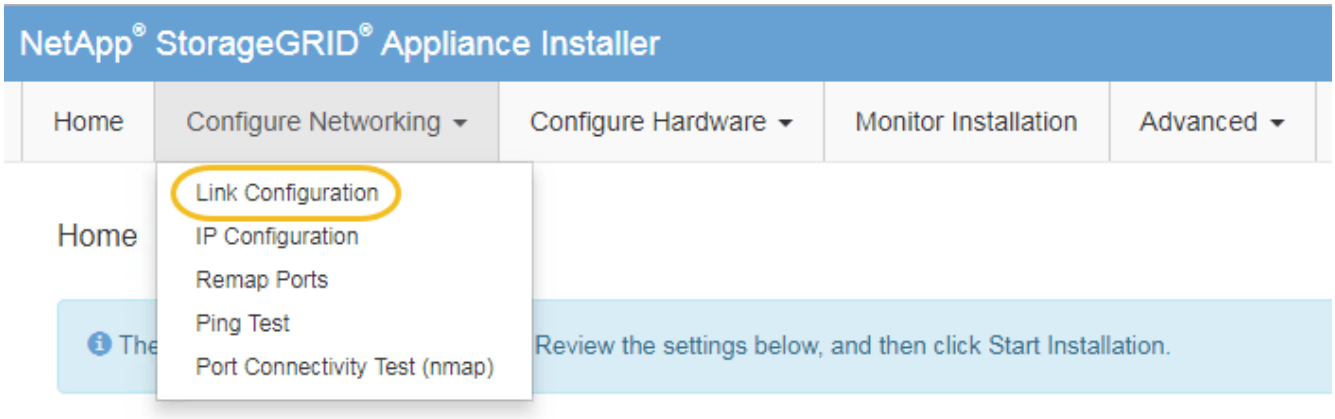
About this task

Options for changing the Ethernet link configuration of the E5600SG 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
- 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 on the options, see “Configuring network links.”

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

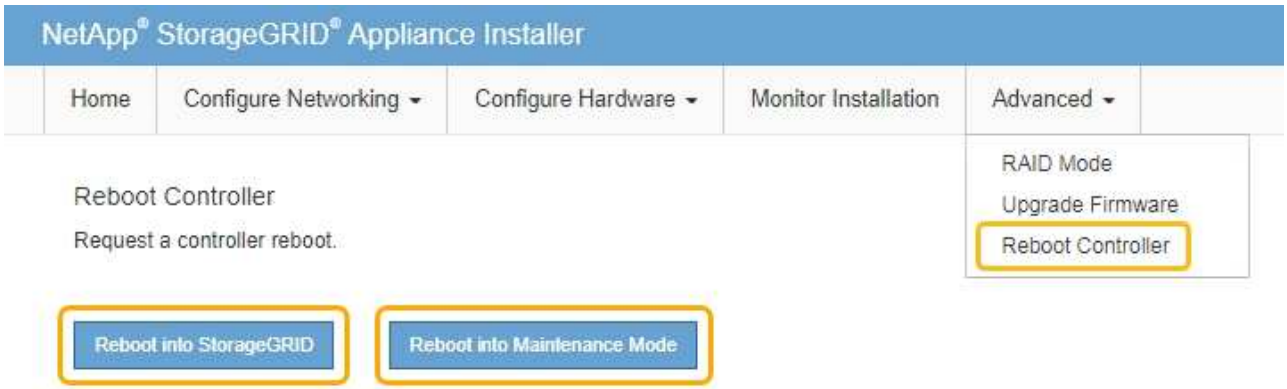
   > You might lose your connection if you made changes to the network or link you are connected through. If you are not reconnected within 1 minute, re-enter the URL for the StorageGRID Appliance Installer using one of the other IP addresses assigned to the appliance:
   > `https://E5600SG_Controller_IP:8443`

   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 set IP configuration instructions.

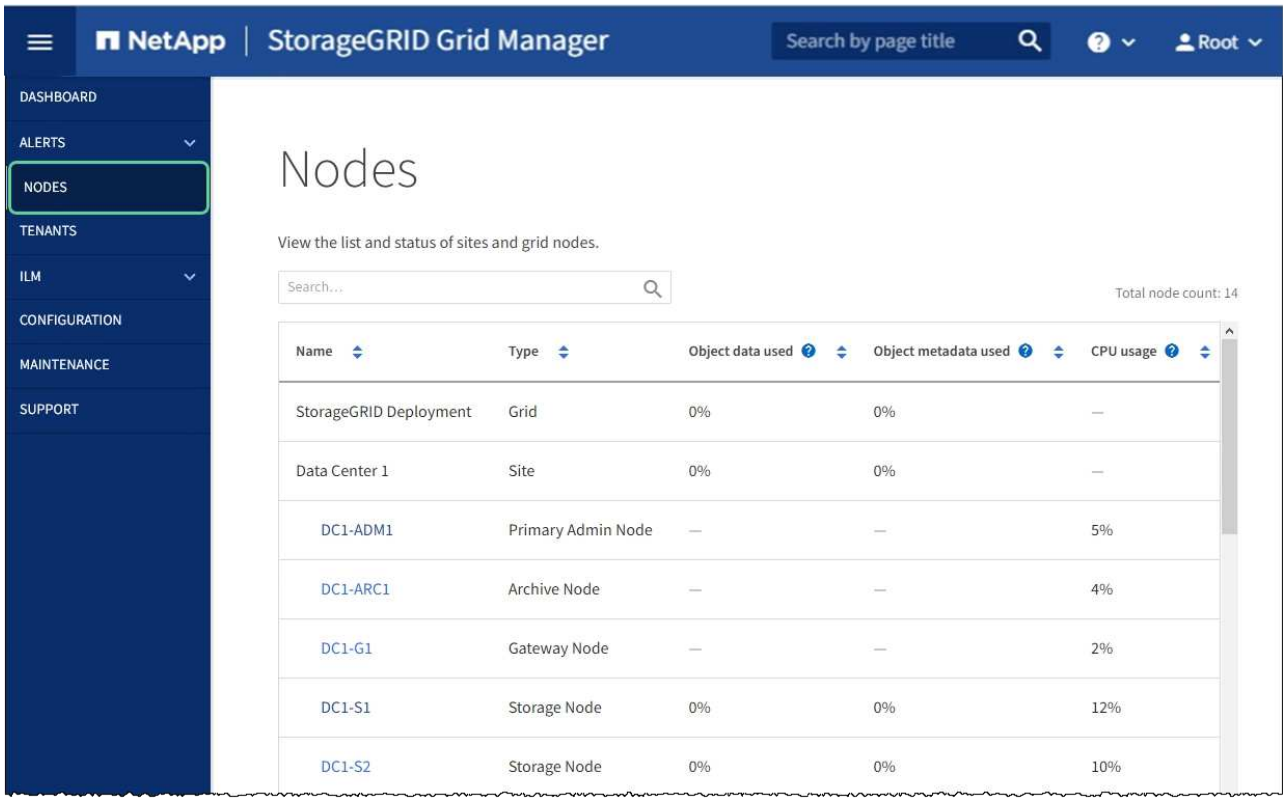
4. From the StorageGRID Appliance Installer, select **Configure Networking** > **Ping Test**.
5. Use the Ping Test tool to check connectivity to IP addresses on any networks that may have been affected by the link configuration changes you made in the Change link configuration step.

   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, go back to the Grid Manager. The **NODES** page should display a normal status (no icon) for the appliance node, indicating that no alerts are active and the node is connected to the grid.



Related information

Configure network links (SG5600)

Change MTU setting

You can change the MTU setting that you assigned when you configured IP addresses for the appliance node.

About this task

The MTU value of the network must match the value configured on the switch port the node is connected to. Otherwise, network performance issues or packet loss might occur.

For the best network performance, all nodes should be configured with similar MTU values on their Grid Network interfaces. The **Grid Network MTU mismatch** alert is triggered if there is a significant difference in MTU settings for the Grid Network on individual nodes. The MTU values do not have to be the same for all network types.

To change the MTU setting without rebooting the appliance node, use the Change IP tool.

If the Client or Admin Network was not configured in the StorageGRID Appliance Installer during the initial installation, change the MTU setting using maintenance mode.

Change the MTU setting using the Change IP tool

What you'll need

You have the `Passwords.txt` file to use the Change IP tool.

Steps

Access the Change IP tool and update the MTU settings as described in Change node network configuration.

Change the MTU setting using maintenance mode

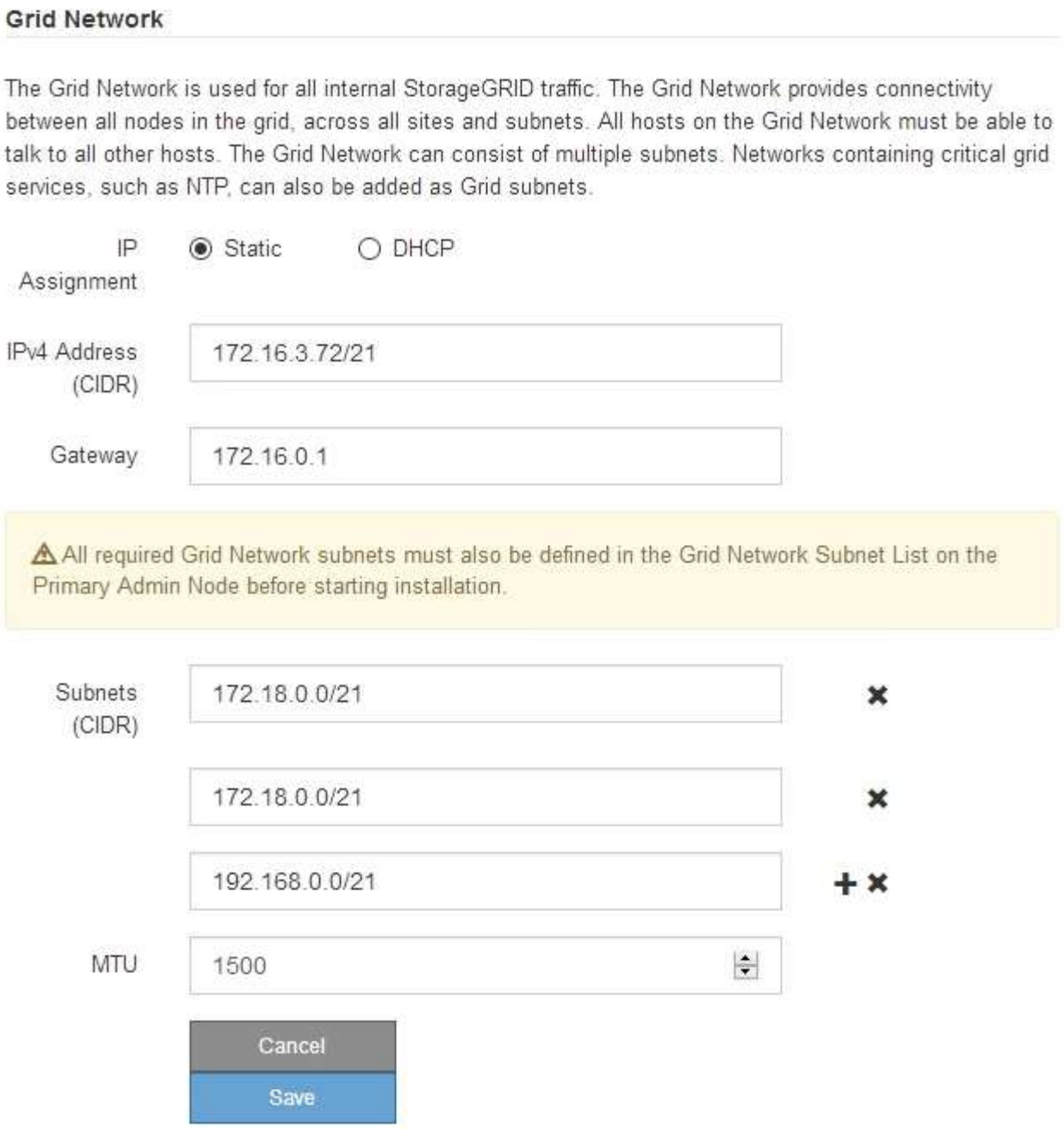
Change the MTU setting using maintenance mode if you are unable to access these settings using the Change IP tool.

What you'll need

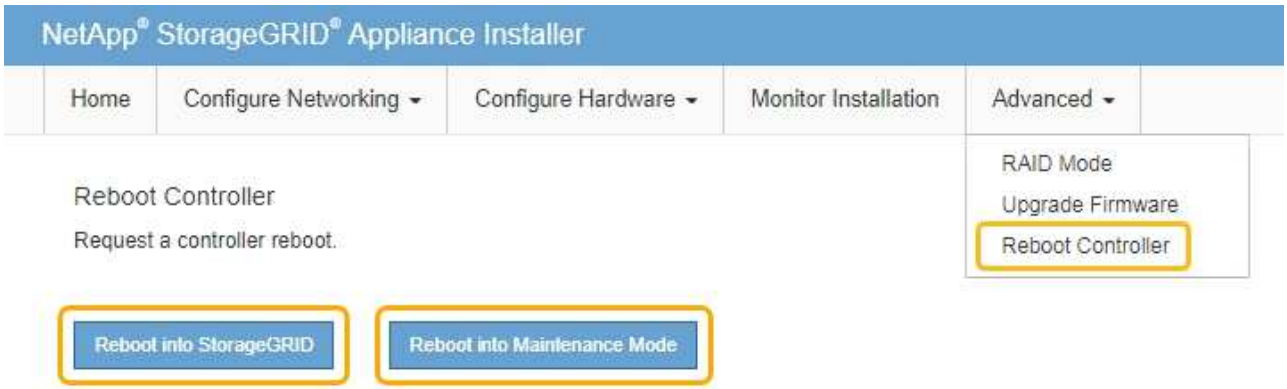
The appliance has been placed maintenance mode.

Steps

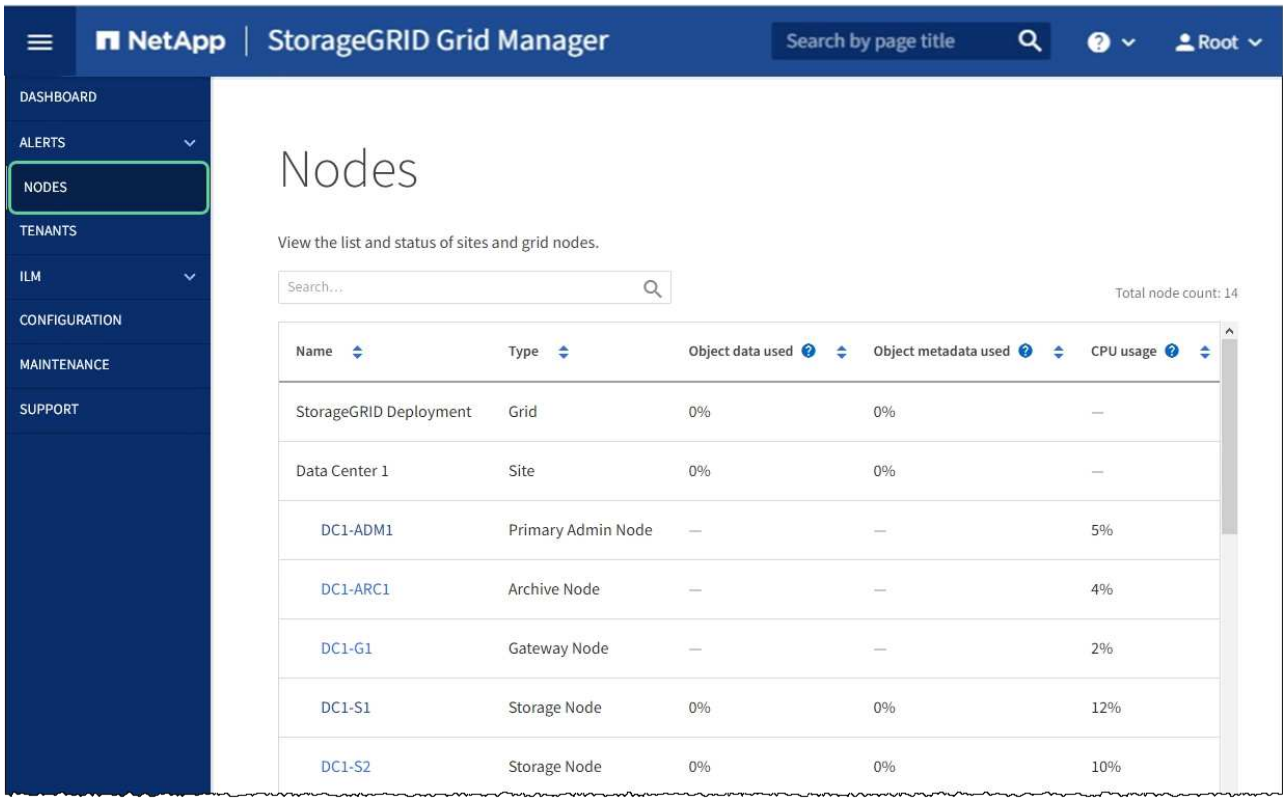
1. From the StorageGRID Appliance Installer, select **Configure Networking** > **IP Configuration**.
2. Make the desired changes to the MTU settings for the Grid Network, Admin Network, and Client Network.



3. When you are satisfied with the settings, select **Save**.
4. 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, go back to the Grid Manager. The **NODES** page should display a normal status (no icon) for the appliance node, indicating that no alerts are active and the node is connected to the grid.



Related information

Administer StorageGRID

Check DNS server configuration

You can check and temporarily change the domain name system (DNS) servers that are currently in use by this appliance node.

What you'll need

The appliance has been placed maintenance mode.

About this task

You might need to change the DNS server settings if an encrypted appliance cannot connect to the key management server (KMS) or KMS cluster because the hostname for the KMS was specified as a domain name instead of an IP address. Any changes that you make to the DNS settings for the appliance are temporary and are lost when you exit maintenance mode. To make these changes permanent, specify the DNS servers in Grid Manager (**MAINTENANCE** > **Network** > **DNS servers**).

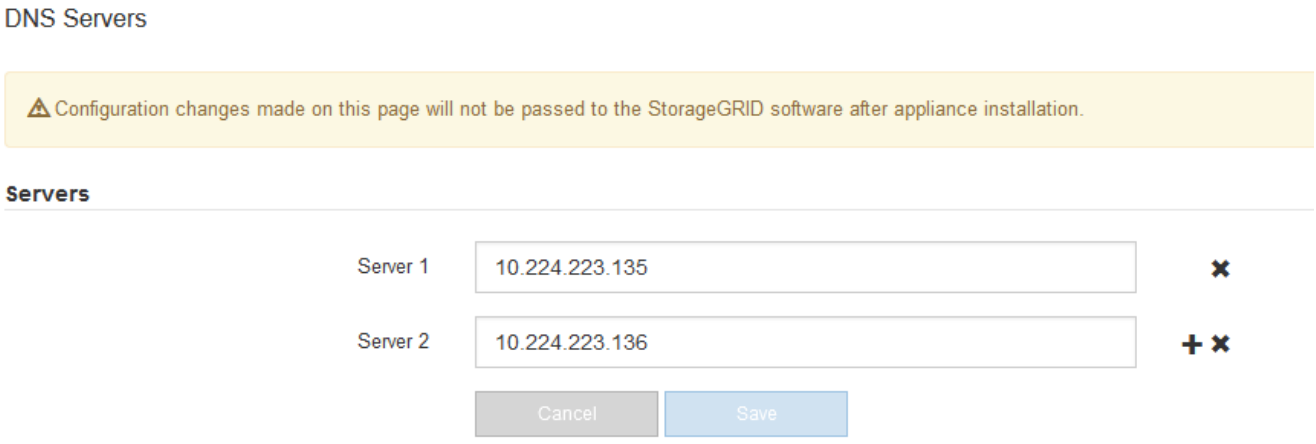
- Temporary changes to the DNS configuration are necessary only for node-encrypted appliances where the KMS server is defined using a fully qualified domain name, instead of an IP address, for the hostname.
- When a node-encrypted appliance connects to a KMS using a domain name, it must connect to one of the DNS servers defined for the grid. One of these DNS servers then translates the domain name into an IP address.
- If the node cannot reach a DNS server for the grid, or if you changed the grid-wide DNS settings when a node-encrypted appliance node was offline, the node is unable to connect to the KMS. Encrypted data on the appliance cannot be decrypted until the DNS issue is resolved.

To resolve a DNS issue preventing KMS connection, specify the IP address of one or more DNS servers in the StorageGRID Appliance Installer. These temporary DNS settings allow the appliance to connect to the KMS and decrypt data on the node.

For example, if the DNS server for the grid changes while an encrypted node was offline, the node will not be able to reach the KMS when it comes back online, since it is still using the previous DNS values. Entering the new DNS server IP address in the StorageGRID Appliance Installer allows a temporary KMS connection to decrypt the node data.

Steps

1. From the StorageGRID Appliance Installer, select **Configure Networking** > **DNS Configuration**.
2. Verify that the DNS servers specified are correct.



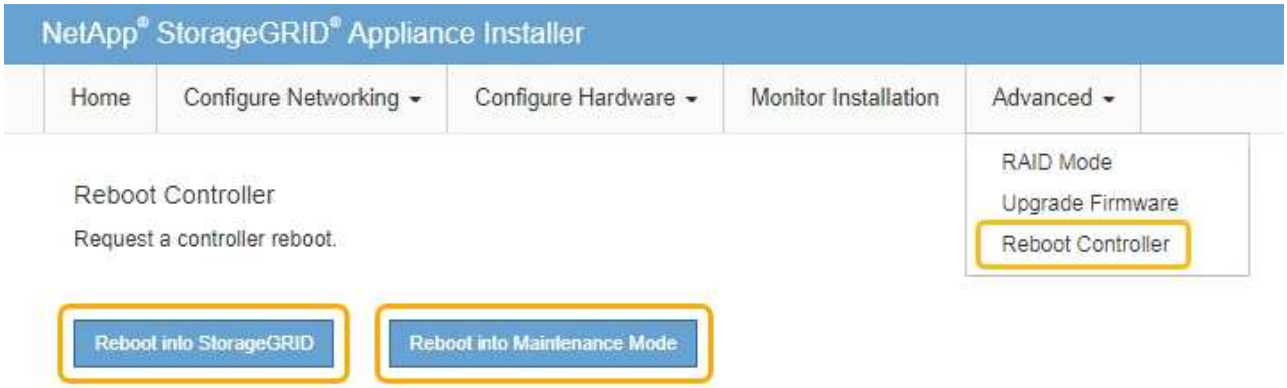
3. If required, change the DNS servers.

> Changes made to the DNS settings are temporary and are lost when you exit maintenance mode.

4. When you are satisfied with the temporary DNS settings, select **Save**.

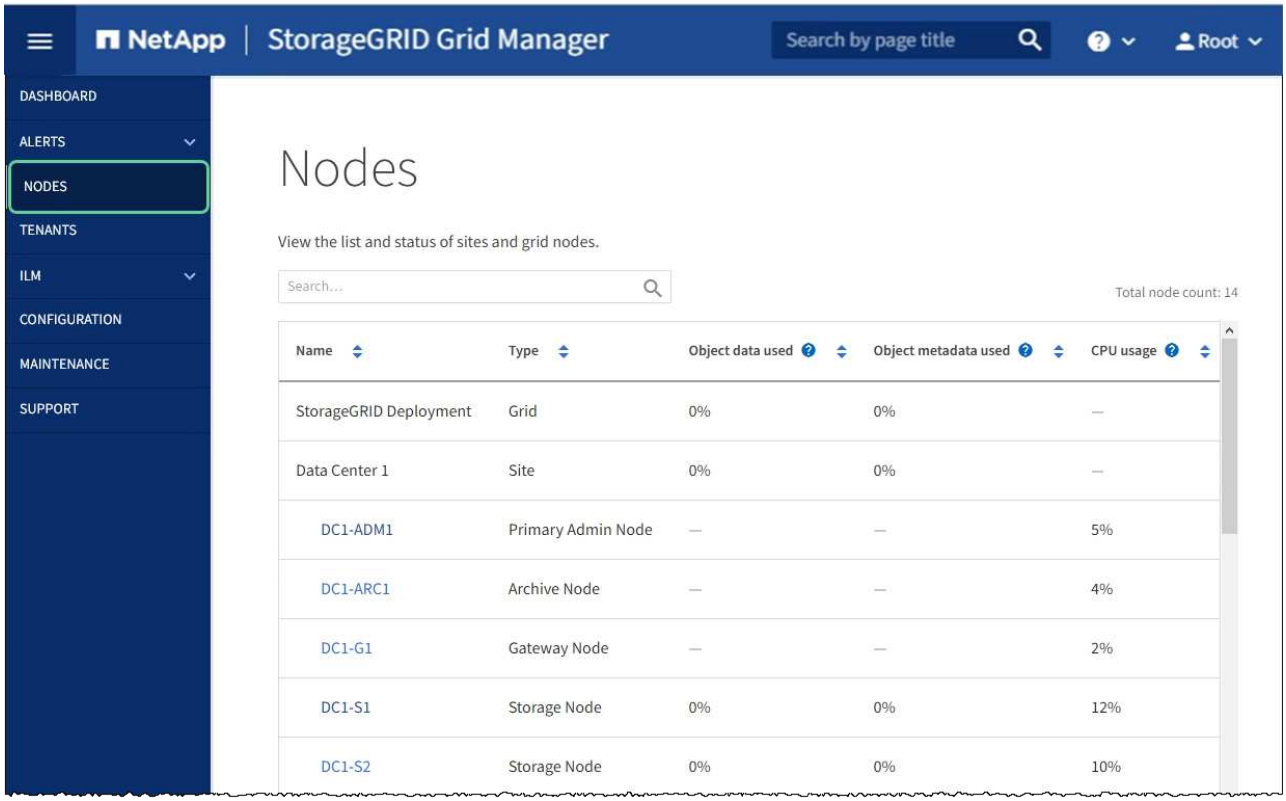
   The node uses the DNS server settings specified on this page to reconnect to the KMS, allowing data on the node to be decrypted.

5. After node data is decrypted, 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.



> When the node reboots and rejoins the grid, it uses the system-wide DNS servers listed in the Grid Manager. After rejoining the grid, the appliance will no longer use the temporary DNS servers specified in the StorageGRID Appliance Installer while the appliance was in maintenance mode.

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, go back to the Grid Manager. The **NODES** page should display a normal status (no icon) for the appliance node, indicating that no alerts are active and the node is connected to the grid.



Monitor node encryption in maintenance mode (SG5600)

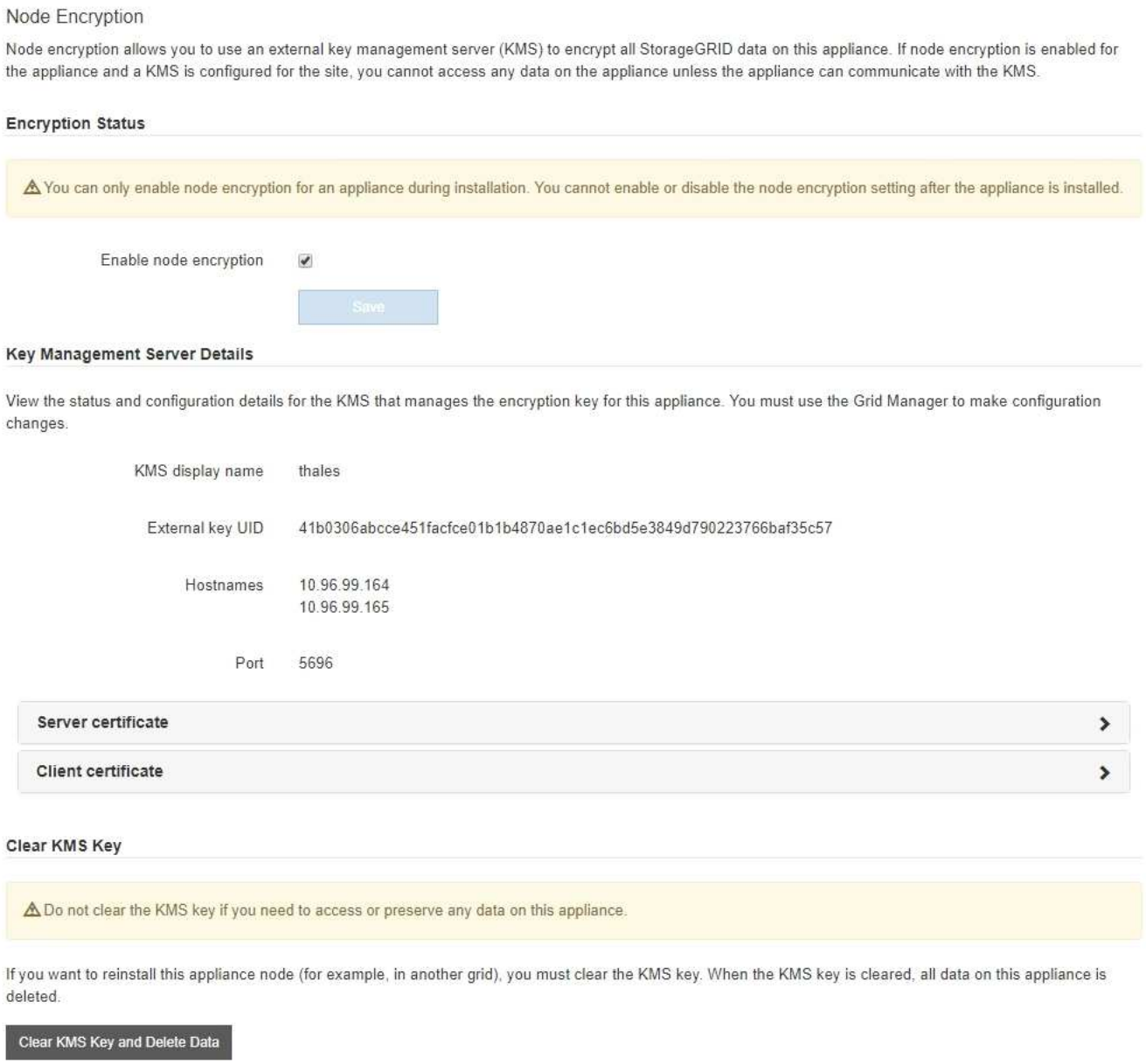
If you enabled node encryption for the appliance during installation, you can monitor the node-encryption status of each appliance node, including the node-encryption state and key management server (KMS) details.

What you'll need

- Node encryption must have been enabled for the appliance during installation. You cannot enable node encryption after the appliance is installed.
- The appliance has been placed into maintenance mode.

Steps

1. From the StorageGRID Appliance Installer, select **Configure Hardware** > **Node Encryption**.



The Node Encryption page includes these three sections:

- Encryption Status shows whether node encryption is enabled or disabled for the appliance.
- Key Management Server Details shows information about the KMS being used to encrypt the appliance. You can expand the server and client certificate sections to view certificate details and status.
  - To address issues with the certificates themselves, such as renewing expired certificates, see the information about KMS in the instructions for administering StorageGRID.
  - If there are unexpected problems connecting to KMS hosts, verify that the domain name system (DNS) servers are correct and that appliance networking is correctly configured.

    Check DNS server configuration

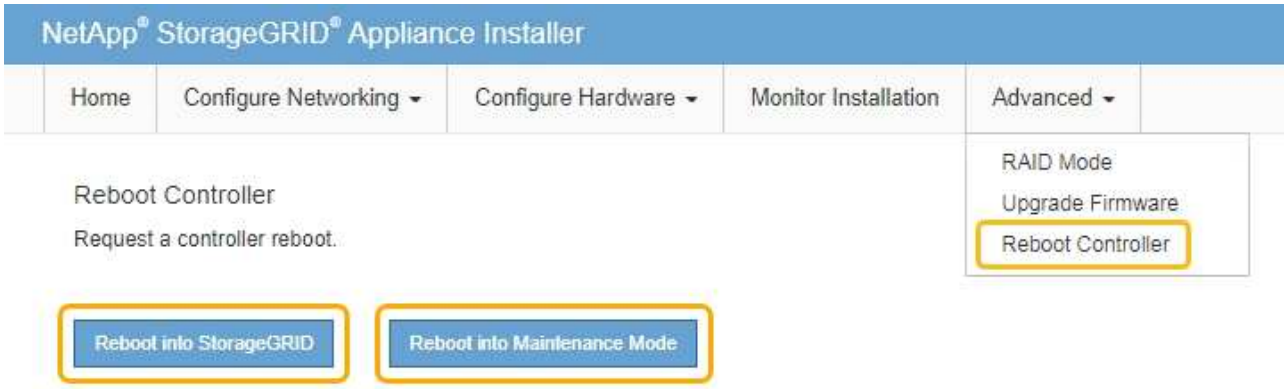
  - If you are unable to resolve your certificate issues, contact technical support.
- Clear KMS Key disables node encryption for the appliance, removes the association between the appliance and the key management server that was configured for the StorageGRID site, and deletes

all data from the appliance. You must clear the KMS key before you can install the appliance into another StorageGRID system.

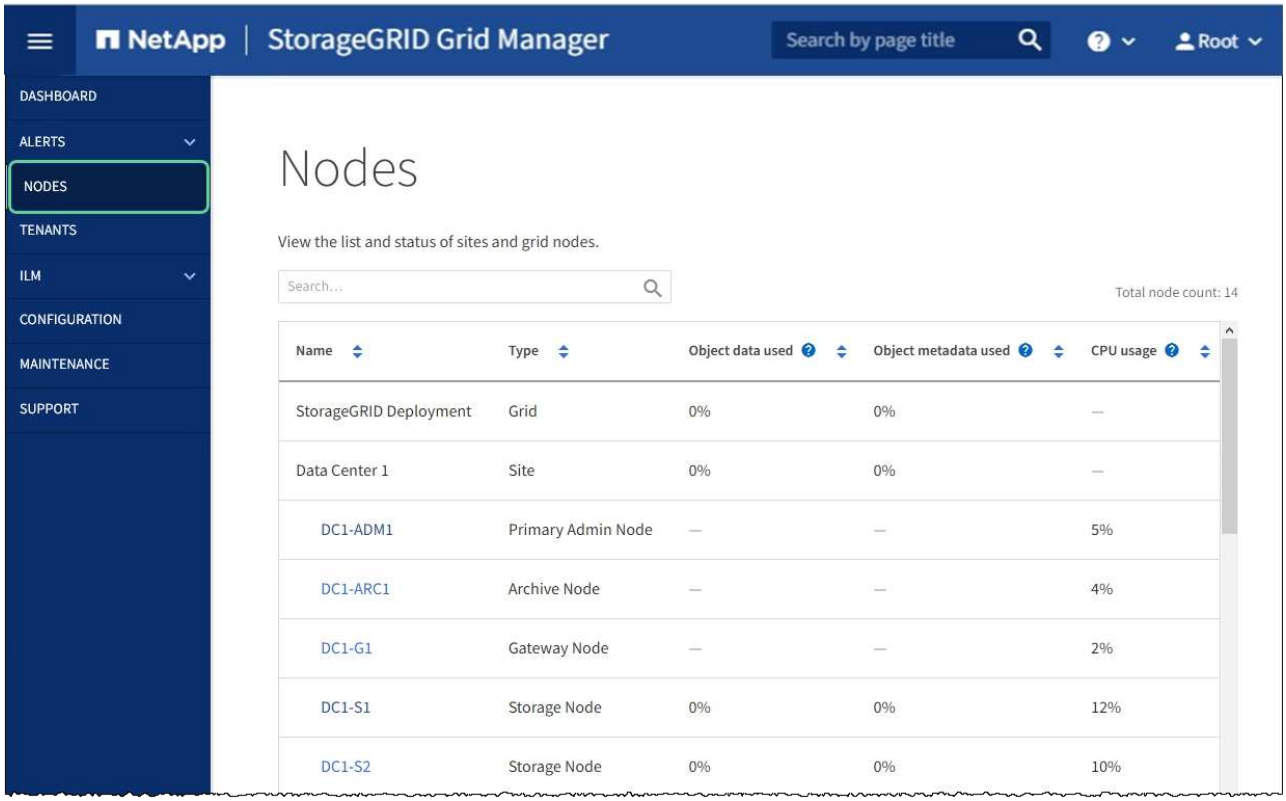
Clear key management server configuration

> Clearing the KMS configuration deletes data from the appliance, rendering it permanently inaccessible. This data is not recoverable.

2. When you are done checking node-encryption status, 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, go back to the Grid Manager. The **NODES** page should display a normal status (no icon) for the appliance node, indicating that no alerts are active and the node is connected to the grid.



Related information

Administer StorageGRID

Clear key management server configuration

Clearing the key management server (KMS) configuration disables node encryption on your appliance. After clearing the KMS configuration, the data on your appliance is permanently deleted and is no longer accessible. This data is not recoverable.

What you'll need

If you need to preserve data on the appliance, you must either perform a node decommission procedure or clone the node before you clear the KMS configuration.

> When KMS is cleared, data on the appliance will be permanently deleted and no longer accessible. This data is not recoverable.

Decommission the node to move any data it contains to other nodes in StorageGRID.

About this task

Clearing the appliance KMS configuration disables node encryption, removing the association between the appliance node and the KMS configuration for the StorageGRID site. Data on the appliance is then deleted and the appliance is left in a pre-install state. This process cannot be reversed.

You must clear the KMS configuration:

- Before you can install the appliance into another StorageGRID system, that does not use a KMS or that uses a different KMS.

Do not clear the KMS configuration if you plan to reinstall an appliance node in a StorageGRID system that uses the same KMS key.

- Before you can recover and reinstall a node where the KMS configuration was lost and the KMS key is not recoverable.
- Before returning any appliance that was previously in use at your site.
- After decommissioning a appliance that had node encryption enabled.

Decommission the appliance before clearing KMS to move its data to other nodes in your StorageGRID system. Clearing KMS before decommissioning the appliance will result in data loss and might render the appliance inoperable.

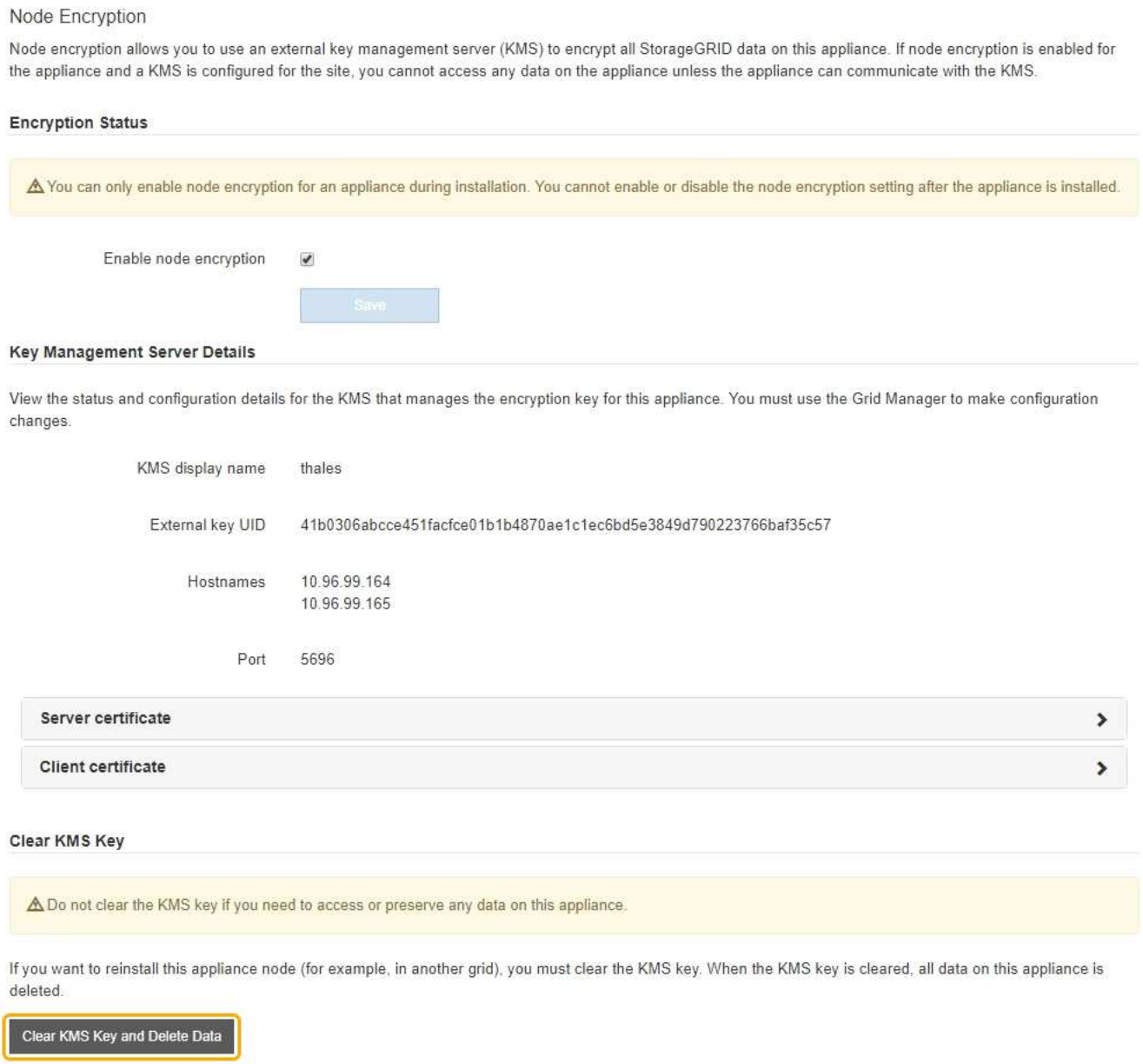
Steps

1. Open a browser, and enter one of the IP addresses for the appliance's compute controller.
   `https://Controller_IP:8443`

   `Controller_IP` is the IP address of the compute controller (not the storage controller) on any of the three StorageGRID networks.

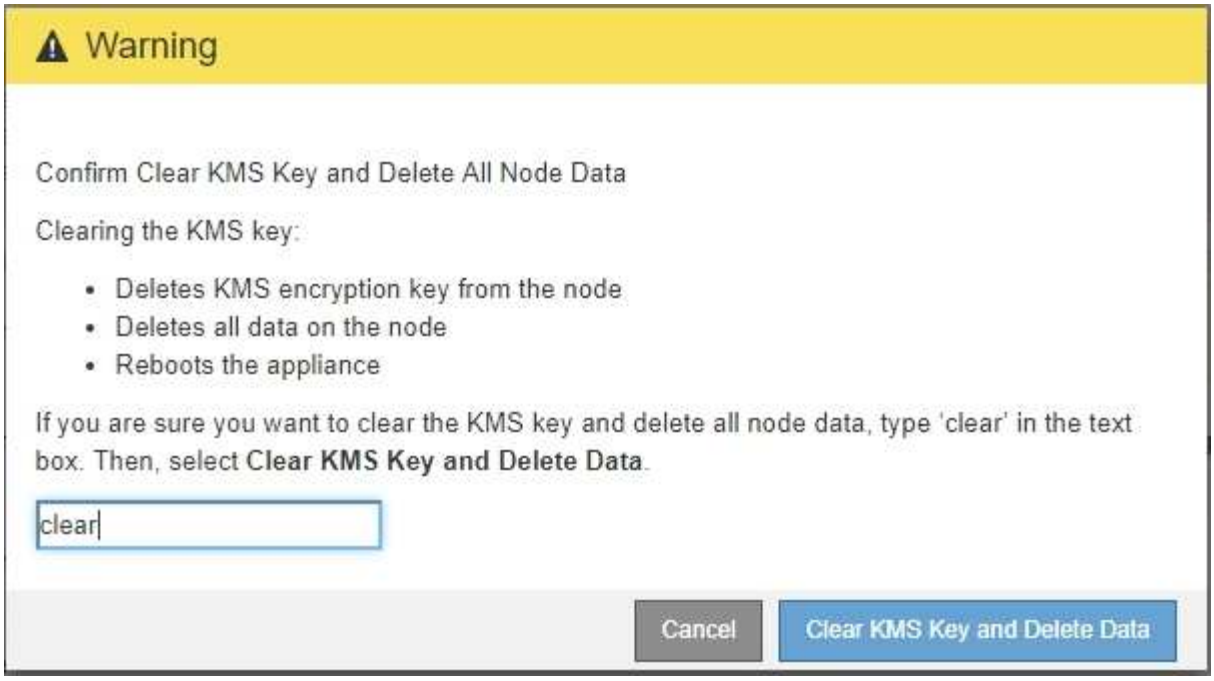
   The StorageGRID Appliance Installer Home page appears.

2. Select **Configure Hardware** > **Node Encryption**.



> If the KMS configuration is cleared, data on the appliance will be permanently deleted. This data is not recoverable.

3. At the bottom of the window, select **Clear KMS Key and Delete Data**.
4. If you are sure that you want to clear the KMS configuration, type
   `clear`
   and select **Clear KMS Key and Delete Data**.



The KMS encryption key and all data are deleted from the node, and the appliance reboots. This can take up to 20 minutes.

5. Open a browser, and enter one of the IP addresses for the appliance's compute controller.
`https://Controller_IP:8443`

   `Controller_IP` is the IP address of the compute controller (not the storage controller) on any of the three StorageGRID networks.

   The StorageGRID Appliance Installer Home page appears.

6. Select **Configure Hardware** > **Node Encryption**.
7. Verify that node encryption is disabled and that the key and certificate information in **Key Management Server Details** and the **Clear KMS Key and Delete Data** control are removed from the window.

   Node encryption cannot be reenabled on the appliance until it is reinstalled in a grid.

After you finish

After the appliance reboots and you have verified that KMS has been cleared and that the appliance in a pre-install state, you can physically remove the appliance from your StorageGRID system. See the recovery and maintenance instructions for information about Prepare appliance for reinstallation.

Related information

Administer StorageGRID