Maintain appliance configuration

StorageGRID appliances

NetApp
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Common procedures for node maintenance: Overview

Use these instructions to maintain your StorageGRID system.

About these instructions

These instructions describe procedures common to all nodes such as how to apply a software hotfix, recover grid nodes, recover a failed site, decommission grid nodes or an entire site, perform network maintenance, perform host-level and middleware maintenance procedures, and perform grid node procedures.

> In these instructions, “Linux” refers to a Red Hat® Enterprise Linux®, Ubuntu®, or Debian® deployment. Use the NetApp Interoperability Matrix Tool (IMT) to get a list of supported versions.

Before you begin

- You have a broad understanding of the StorageGRID system.
- You have reviewed your StorageGRID system’s topology and you understand the grid configuration.
- You understand that you must follow all instructions exactly and heed all warnings.
- You understand that maintenance procedures not described aren’t supported or require a services engagement.

Maintenance procedures for appliances

Specific maintenance procedures for each type of StorageGRID appliance are in the appliance maintenance sections:

- Maintain SG6100 appliance
- Maintain SG6000 appliance
- Maintain SG5800 appliance
- Maintain SG5700 appliance
- Maintain SG110 and SG1100 appliances
- Maintain SG100 and SG1000 appliances

Place appliance into maintenance mode

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

Before you begin

- 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.

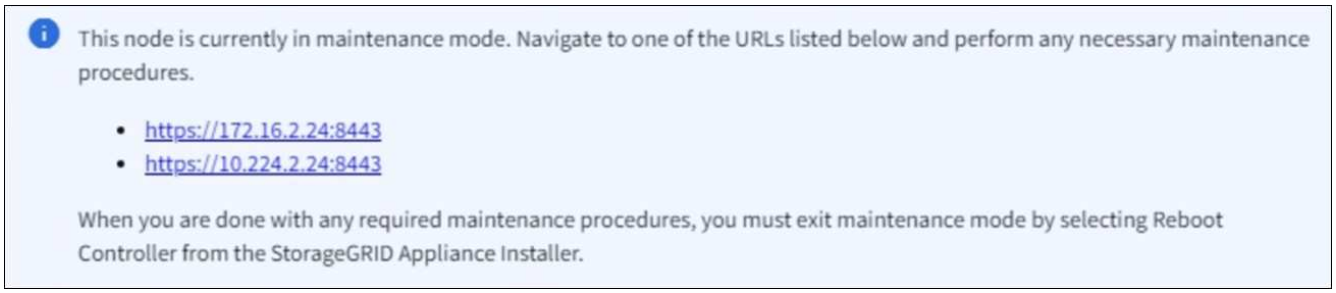
> The admin account password and SSH host keys for a StorageGRID appliance in maintenance mode remain the same as they were when the appliance was in service.

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:

   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.

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 don't 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

Before you begin

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.

Before you begin

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. 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.

Check DNS server configuration

You can check and temporarily change the DNS servers that are currently in use by this appliance node.

Before you begin

The appliance has been placed maintenance mode.

About this task

You might need to change the DNS server settings if an encrypted appliance can't 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 can't 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 can't 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, because 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:

     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.

Update MAC address references (SG100, SG1000, SGF6024, and SG6060)

In some cases you might need to update MAC address references after the replacement of an appliance.

About this task

If any of the network interfaces on an appliance you are replacing are configured for DHCP, you might need to update the permanent DHCP lease assignments on the DHCP servers to reference the MAC addresses of the replacement appliance. The update ensures the replacement appliance is assigned the expected IP addresses.

Steps

1. Locate the label on the front of the appliance. The label lists the MAC address for the BMC management port of the appliance.
2. To determine the MAC address for the Admin Network port, you must add **2** to the hexadecimal number on the label.

   For example, if the MAC address on the label ends in **09**, the MAC address for the Admin Port would end in **0B**. If the MAC address on the label ends in **(*y*)FF**, the MAC address for the Admin Port would end in **(*y*+1)01**.

   You can easily make this calculation by opening Calculator in Windows, setting it to Programmer mode, selecting Hex, typing the MAC address, then typing **+ 2 =**.

3. Ask your network administrator to associate the DNS/network and IP address for the appliance you

removed with the MAC address for the replacement appliance.

> You must ensure that all IP addresses for the original appliance have been updated before you apply power to the replacement appliance. Otherwise, the appliance 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 appliance.

> If the original appliance used static IP address, the new appliance will automatically adopt the IP addresses of the appliance you removed.

Use the Manage drives tab (SG110, SG1100, SGF6112, and SG6160)

You can use the Manage drives tab in the Grid Manager to perform troubleshooting and maintenance tasks on the drives for appliances that support this feature.

Before you begin

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

About this task

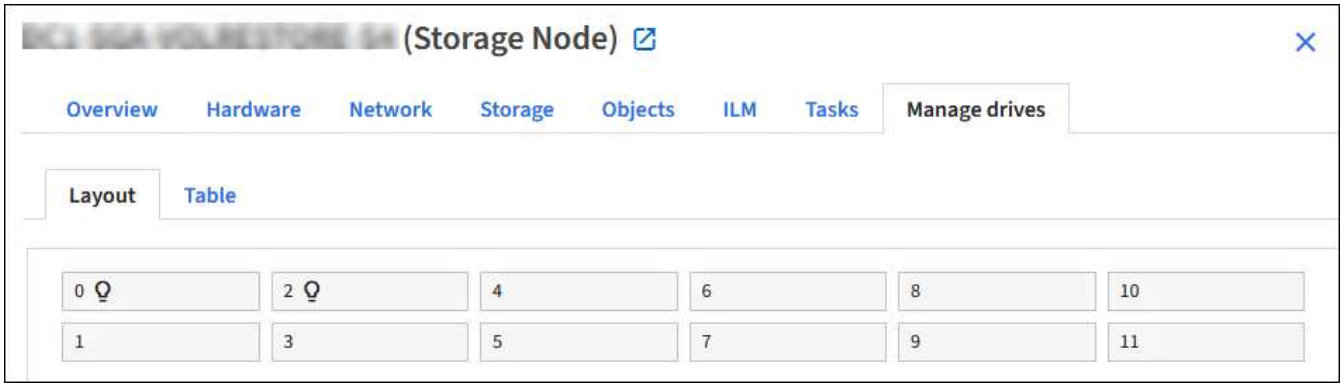
If you have an appliance that supports this feature and either the Storage appliance administrator or Root access permission, a Manage drives tab appears on the appliance details page.

> For StorageGRID 11.8, the Manage drives tab is supported for only the SGF6112 appliance.

The Manage drives tab contains the following views:

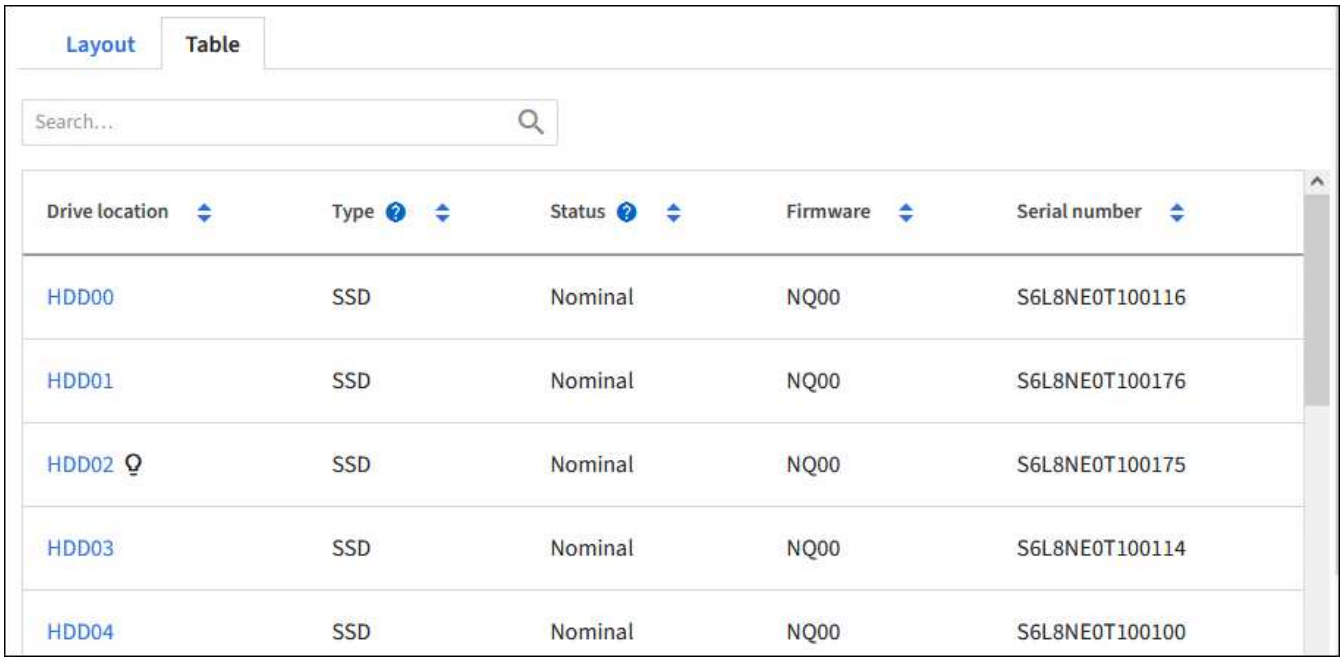
Layout

Layout of data storage drives in the appliance. Select a drive to view drive details.



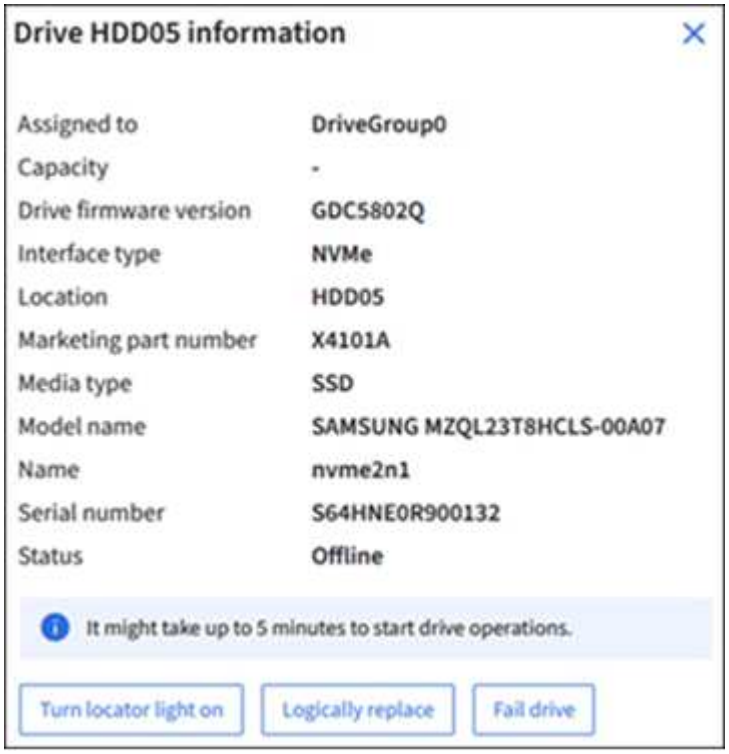
Table

Lists information for each drive. Select a drive to view drive details.



Drive details

Summary for each drive. Select the appropriate task button, as described in the steps below.



Turn locator light on or off

To physically locate a drive in the appliance:

1. From the Grid Manager, select **NODES** > ***data center***.
2. Select ***appliance storage node*** > **Manage drives** > **Layout** > ***drive***.

   The drive details panel appears.

3. Select **Turn locator light on**.
   - A light bulb icon appears for the drive.
   - An amber LED blinks on the physical drive.
4. When you want to turn off the locator light, select **Turn locator light off**.

Logically replace drive

If a drive in the storage appliance needs to be rebuilt or reinitialized:

1. From the Grid Manager, select **NODES** > ***data center***.
2. Select ***appliance storage node*** > **Manage drives** > **Layout** > ***drive***.

   The drive details panel appears.

3. Select **Logically replace**.

   On the drive details panel, the drive's status indicates *Rebuilding*. Rebuilding a drive could take up to 5 minutes.

Fail drive

For troubleshooting, you can manually "fail" a drive that you suspect is faulty. The system will then run without that drive.

1. From the Grid Manager, select **NODES** > ***data center***.
2. Select ***appliance storage node*** > **Manage drives** > **Layout** > ***drive***.

   The drive details panel appears.

3. Select **Fail drive**.

After you fail a drive, you must either physically replace the drive or logically replace the drive.

Monitor node encryption in maintenance mode

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.

See Configure key management servers for information about implementing KMS for StorageGRID appliances.

Before you begin

- You enabled node encryption for the appliance during installation. You can't enable node encryption after the appliance is installed.
- You have placed the appliance into maintenance mode.

Steps

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

   The Node Encryption page includes 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 instructions for configuring KMS.
  - If there are unexpected problems connecting to KMS hosts, verify that the DNS servers are correct and that appliance networking is correctly configured.
  - 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.

  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:

     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.

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.

Before you begin

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 can't 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.

  Don't 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 an 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`** in the warning dialog box and select **Clear KMS Key and Delete Data**.

   The KMS encryption key and all data are deleted from the node, and the appliance reboots. A dialog box appears while the appliance reboot is in process, which 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 can't 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 is in a pre-install state, you can physically remove the appliance from your StorageGRID system. See the instructions for preparing the appliance for reinstallation.

Use the StorageGRID appliance baseboard management controller (BMC)

Some StorageGRID appliances include a baseboard management controller (BMC) that allows low-level hardware access for appliance configuration, monitoring, and diagnosis.

The BMC interface is supported by the following StorageGRID appliance models:

- SG100
- SG110
- SG1000
- SG1100
- SG6000
- SG6100

See the BMC User Guide for detailed information about using the BMC interface for these appliances. You should only access BMC functions that are *not* documented in StorageGRID documentation when directed by technical support.

This BMC user guide is for the latest version of BMC firmware available for some StorageGRID appliances. Your StorageGRID appliance might have a BMC firmware version that is slightly different.

- The BMC firmware updates during StorageGRID software upgrades. If you are not running the latest version of StorageGRID software, you can update your appliance to the latest StorageGRID version to install the latest BMC firmware version available for your appliance.
- If your BMC appears different before or after a StorageGRID update, information in the BMC User Guide might help you adapt instructions for your BMC version.

BMC use for StorageGRID appliances

The following BMC procedures are documented for use with supported StorageGRID appliances:

- Access the BMC dashboard
- Configure BMC SNMP settings
- Set up email alert notifications
- Troubleshoot hardware installation:

    - SG1000 and SG100
    - SG1100 and SG110
    - SG6000
    - SG6100
- Determine the appliance power state:
    - SG1000 and SG100
    - SG1100 and SG110
    - SG6000
    - SG6100
- Turn the appliance identify LED on and off:
    - SG1000 and SG100
    - SG1100 and SG110
    - SG6000
    - SG6100

BMC features not supported for StorageGRID appliances

The following BMC features conflict with StorageGRID-specific configuration and should not be used.

- Settings
    - RAID Management
    - SAS IT Management
    - IPMI Interfaces
    - Cold Redundancy
    - NIC Selection
- Image Redirection
- Host System Diagnostics
- Maintenance
    - Dual Image Configuration
    - Firmware Information
    - Firmware Update
    - Restore Factory Defaults

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