



# **Replace drive**

## **StorageGRID appliances**

NetApp  
December 09, 2025

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# Replace drive

## Replace drives in the SGF6112

The SGF6112 storage appliance contains 12 SSD drives. Data on the drives is protected by a RAID scheme that enables the appliance to recover from any single drive failure without having to copy data from another node.

The failure of a second drive before an initial drive failure has been corrected might require data be copied from other nodes to restore redundancy. This restoration of redundancy can take longer, and might be impossible, if single-copy ILM rules are in use or were used in the past, or if data redundancy has been impacted by failures on other nodes. Therefore, if one of the SGF6112 drives fails, you must replace it as soon as possible to ensure redundancy.

### Before you begin

- You have [physically located the appliance](#).
- You have verified which drive has failed by noting that the drive's left LED is solid amber or using the Grid Manager to [view the alert caused by the failed drive](#).



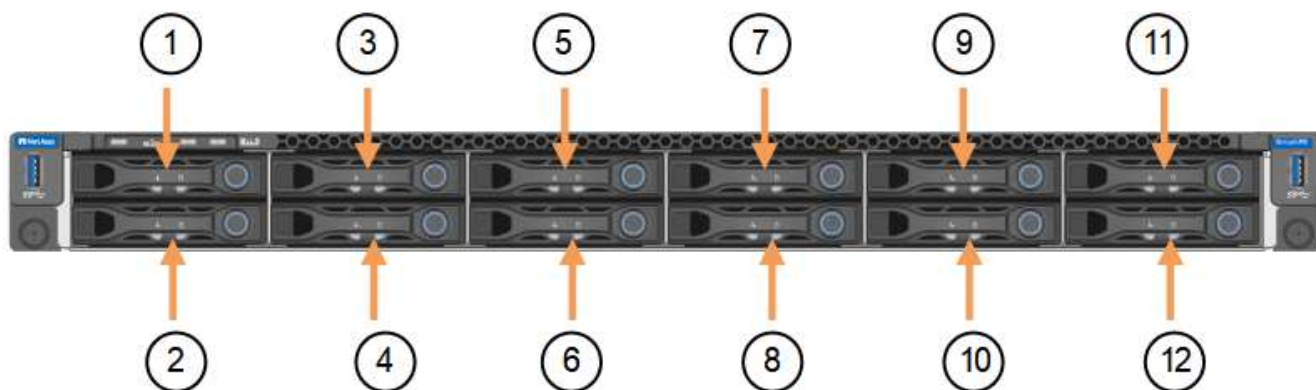
See the information about viewing status indicators to verify the failure.

- You have obtained the replacement drive.
- You have obtained proper ESD protection.

### Steps

1. Verify that the drive's left fault LED is amber or use the drive slot ID from the alert to locate the drive.

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



Position	Drive
1	HDD00
2	HDD01
3	HDD02

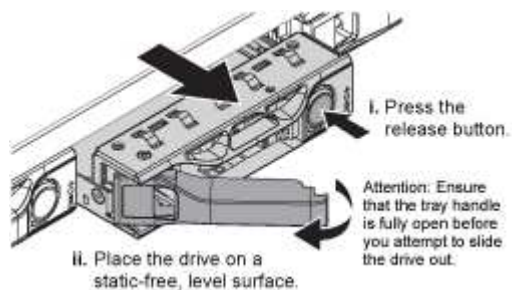
Position	Drive
4	HDD03
5	HDD04
6	HDD05
7	HDD06
8	HDD07
9	HDD08
10	HDD09
11	HDD10
12	HDD11

You can also use the Grid Manager to monitor the status of the SSD drives. Select **NODES**. Then select **Storage Node > Hardware**. If a drive has failed, the Storage RAID Mode field contains a message about which drive has failed.

2. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.
3. Unpack the replacement drive, and set it on a static-free, level surface near the appliance.

Save all packing materials.

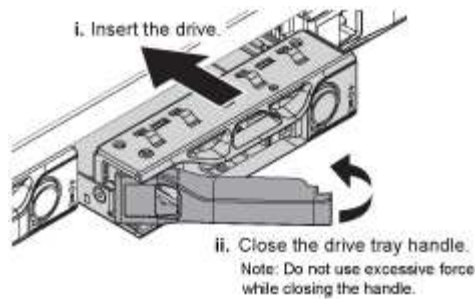
4. Press the release button on the failed drive.



The handle on the drive springs open partially, and the drive releases from the slot.

5. Open the handle, slide the drive out, and place it on a static-free, level surface.
6. Press the release button on the replacement drive before you insert it into the drive slot.

The latch springs open.



7. Insert the replacement drive in the slot, and then close the drive handle.



Don't use excessive force while closing the handle.

When the drive is fully inserted, you hear a click.

The replaced drive is automatically rebuilt with mirrored data from the working drives. The drive LED should blink initially, but then stop blinking as soon as the system determines that the drive has enough capacity and is functional.

You can check the status of the rebuild by using the Grid Manager.

8. If more than one drive failed and has been replaced, you might have alerts indicating that some volumes need to have data restored to them. If you receive an alert, before attempting volume recovery, select **NODES > appliance Storage Node > Hardware**. In the StorageGRID Appliance section of the page, verify that the Storage RAID mode is healthy or rebuilding. If the status lists one or more failed drives, correct this condition before attempting volume restoration.
9. In the Grid Manager, go to **NODES > appliance Storage Node > Hardware**. In the StorageGRID Appliance section of the page, verify that the Storage RAID mode is healthy.

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 drive in SG6100-CN

The SG6160 appliance contains two SSD drives in the SG6100-CN controller which function as a read cache. If one of these drives fails, you must replace it as soon as possible to minimize the potential performance impact.

### Before you begin

- You have [physically located the appliance](#).
- You have verified which drive has failed by noting that its left LED is solid amber or using Grid Manager to [view the alert caused by the failed drive](#).
- You have obtained the replacement drive.
- You have obtained proper ESD protection.

### Steps

1. Verify that the drive's left fault LED is amber or use the drive slot ID from the alert to locate the drive.

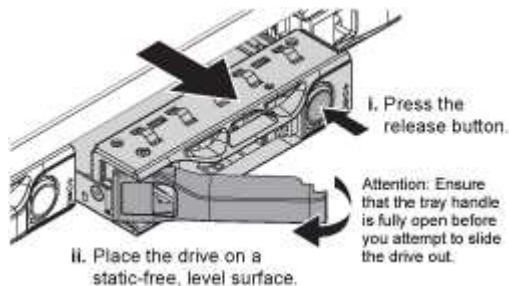
The drives are in the following positions in the chassis (front of chassis with bezel removed shown).



2. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.
3. Unpack the replacement drive, and set it on a static-free, level surface near the appliance.

Save all packing materials.

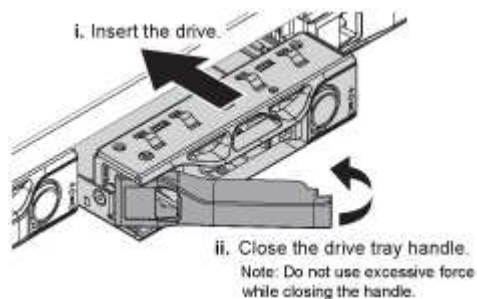
4. Press the release button on the failed drive.



The handle on the drive springs open partially, and the drive releases from the slot.

5. Open the handle, slide the drive out, and place it on a static-free, level surface.
6. Press the release button on the replacement drive before you insert it into the drive slot.

The latch springs open.



7. Insert the replacement drive in the slot, and then close the drive handle.



Don't use excessive force while closing the handle.

When the drive is fully inserted, you hear a click.

When both SSD drives are functioning normally, the system will automatically restore read-cache functionality. You can [run diagnostics](#) to monitor the read-cache hit rate. Since the cache was just rebuilt, the hit rate might be low initially but should increase over time as the cache is repopulated by clients accessing object 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 drive in storage controller shelf or expansion shelf (SG6160)

You can replace a drive in an SG6160 storage controller shelf or expansion shelf (DE460C).

## About this task

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

## Before you begin

- Review the drive handling requirements.
- Make sure you have the following:
  - A replacement drive that is supported by NetApp for your controller shelf or drive shelf.
  - An ESD wristband, or you have taken other antistatic precautions.
  - Access to SANtricity System Manager:
    - From Grid Manager, select **NODES > appliance node > SANtricity System Manager**. Controller information is on the [SANtricity System Manager tab](#).
    - Point a browser in your management station to the controller's domain name or IP address.

## Step 1: Prepare to replace drive

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

### Steps

1. If the Recovery Guru in SANtricity System Manager has notified you of an *impending drive failure*, but the drive has not yet failed, follow the instructions in the Recovery Guru to fail the drive.
2. If needed, use SANtricity System Manager to confirm you have a suitable replacement drive.
  - a. Select **Hardware**.
  - b. Select the failed drive on the shelf graphic.
  - c. Click the drive to display its context menu, and then select **View settings**.
  - d. Confirm that the replacement drive has a capacity equal to or greater than the drive you are replacing and that it has the features you expect.
3. If needed, use SANtricity System Manager to locate the drive within the storage array.
  - a. If the shelf has a bezel, remove it so you can see the LEDs.
  - b. From the drive's context menu, select **Turn on locator light**.

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

4. Unlatch the drive drawer by pulling on both levers.
  - a. Using the extended levers, carefully pull the drive drawer out until it stops.

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

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

## Step 2: Remove failed drive

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

### Steps

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

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

2. Release the drive drawer levers from the center of the appropriate drive drawer by pulling both towards the sides of the drawer.
3. Carefully pull on the extended drive drawer levers to pull out the drive drawer to its full extension without removing it from the enclosure.
4. Gently pull back the orange release latch that is in front of the drive you want to remove.

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

5. Open the cam handle, and lift out the drive slightly.
6. Wait 30 seconds.
7. Use the cam handle to lift the drive from the shelf.
8. Place the drive on an antistatic, cushioned surface away from magnetic fields.
9. Wait 30 seconds for the software to recognize that the drive has been removed.



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

## Step 3: Install new drive

Install a new drive to replace the failed one.



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



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

### Steps

1. Raise the cam handle on the new drive to vertical.
2. Align the two raised buttons on each side of the drive carrier with the matching gap in the drive channel on the drive drawer.
3. Lower the drive straight down, and then rotate the cam handle down until the drive snaps into place under the orange release latch.



4. Carefully push the drive drawer back into the enclosure. Push the drawer in slowly to avoid jarring the drawer and causing damage to the storage array.
5. Close the drive drawer by pushing both levers towards the center.

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

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

## Step 4: Complete drive replacement

Confirm that the new drive is working correctly.

### Steps

1. Check the Power LED and the Attention LED on the drive you replaced. (When you first insert a drive, its Attention LED might be on. However, the LED should go off within a minute.)
  - Power LED is on or blinking, and the Attention LED is off: Indicates that the new drive is working correctly.
  - Power LED is off: Indicates that the drive might not be installed correctly. Remove the drive, wait 30 seconds, and then reinstall it.
  - Attention LED is on: Indicates that the new drive might be defective. Replace it with another new drive.
2. If the Recovery Guru in SANtricity System Manager still shows an issue, select **Recheck** to ensure the problem has been resolved.
3. If the Recovery Guru indicates that drive reconstruction did not start automatically, start reconstruction manually, as follows:



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

- a. Select **Hardware**.
- b. Click the drive that you replaced.
- c. From the drive's context menu, select **Reconstruct**.
- d. Confirm that you want to perform this operation.

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

4. As required, reinstall the bezel.
5. Return the failed part to NetApp, as described in the RMA instructions shipped with the kit.

### What's next?

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

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