Replacing a drive in E5724 shelves

The Recovery Guru in SANtricity System Manager monitors the drives in the storage array and can notify you of an impending drive failure or an actual drive failure. 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

- You have a replacement drive that is supported by NetApp for your controller shelf or drive shelf.

- You have an ESD wristband, or you have taken other antistatic precautions.

About this procedure

Use this procedure to replace a drive in the following controller or drive shelves:

Type of shelf	Number of drives	Type of drives
E5724 controller shelf	24	2.5-inch SAS drives
DE224C drive shelf	24	2.5-inch SAS drives

Note: Your E5724 storage array might include one or more SAS-2 legacy expansion drive trays, including the DE5600 24-drive tray, or the DE6600 60-drive tray. For instructions for replacing a drive in one of these drive trays, see *Replacing a Drive in E2660, E2760, E5460, E5560, or E5660 Trays* and *Replacing a Drive in E2600, E2700, E5400, E5500, and E5600 12-Drive or 24-Drive Trays*.

The figures show how the drives are numbered in each type of shelf (the shelf's front bezel or end caps have been removed).

Drive numbering in an E5724 controller shelf or DE224C drive shelf
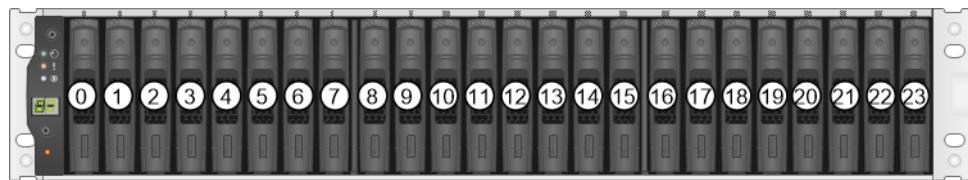
Steps

1. Rules for handling drives on page 1
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Rules for handling drives

The drives in your storage array are fragile. Improper drive handling is a leading cause of drive failure.

Follow these rules to avoid damaging the drives in your storage array:

- Prevent electrostatic discharge (ESD):

  ◦ Keep the drive in the ESD bag until you are ready to install it.

  ◦ Do not insert a metal tool or knife into the ESD bag.
    Open the ESD bag by hand or cut the top off with a pair of scissors.

  ◦ Keep the ESD bag and any packing materials in case you must return a drive later.

  ◦ Always wear an ESD wrist strap grounded to an unpainted surface on your storage enclosure chassis.
    If a wrist strap is unavailable, touch an unpainted surface on your storage enclosure chassis before handling the drive.

- Handle drives carefully:

  Note: Avoid setting drive on its side. If the drive falls flat it can cause damage.

  ◦ Always use two hands when removing, installing, or carrying a drive.

  ◦ Never force a drive into a shelf, and use gentle, firm pressure to completely engage the drive latch.

  ◦ Place drives on cushioned surfaces, and never stack drives on top of each other.

  ◦ Do not bump drives against other surfaces.

  ◦ Before removing a drive from a shelf, unlatch the handle and wait 30 seconds for the drive to spin down.

  ◦ Always use approved packaging when shipping drives.

- Avoid magnetic fields:

  ◦ Keep drives away from magnetic devices.
    Magnetic fields can destroy all data on the drive and cause irreparable damage to the drive circuitry.

Preparing to replace a drive

Before replacing a drive, check the Recovery Guru in SANtricity System Manager and complete 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.

      For example, do not attempt to replace a hard disk drive (HDD) with a solid-state disk (SSD). Similarly, if you are replacing a secure-capable drive, make sure the replacement drive is also secure-capable. FDE cannot replace FIPS and maintain security.

3. If needed, use SANtricity System Manager to locate the drive within the storage array.

   a. From the drive's context menu, select **Turn on locator light**.

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

Note: If you are replacing a drive in a shelf that has a bezel, you must remove the bezel to see the drive LEDs.

LEDs on DE224C SAS drive

Callout	LED name	State	Description
1	Activity	Solid green	The drive has power.
		Blinking green	The drive has power, and I/O operations are in progress.
2	Attention	Solid amber	The drive requires operator attention.
		Blinking amber	A locate drive operation has been requested.

Removing a drive

When you remove a drive, you must slide the drive partly out of the shelf and wait for the drive to spin down. Then, you can remove the drive completely.

Before you begin

- You have an ESD wristband, or you have taken other antistatic precautions.

- You have reviewed the *Rules for handling drives*.

Steps

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

   Save all packing materials.

2. Access the failed drive:

a. Press the release button on the failed drive. The release button is located at the top of the drive.
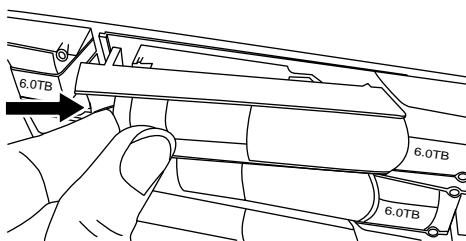
The cam handle on the drive springs open partially, and the drive releases from the midplane.

b. Open the cam handle, and slide out the drive slightly.

c. Wait 30 seconds.

d. Using both hands, remove the drive from the shelf.

3. Place the drive on an antistatic, cushioned surface away from magnetic fields.

4. Wait 30 seconds for the software to recognize that the drive has been removed.

   Note: 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.

Installing a drive

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

Steps

1. Open the cam handle.

2. Using two hands, insert the replacement drive into the open bay, firmly pushing until the drive stops.

3. Slowly close the cam handle until the drive is fully seated in the midplane and the handle clicks into place.

   The green LED on the drive comes on when the drive is inserted correctly.

   Note: 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.

After replacing a drive

After replacing a drive, you must confirm that the new drive is working correctly.

Steps

1. Check the Power LED and the Attention LED on the drive you replaced.

LED status	Description
The Power LED is on or blinking, and the Attention LED is off	The new drive is working correctly.

LED status	Description
The Power LED is off	The drive might not be installed correctly. Remove the drive, wait 30 seconds, and then reinstall it.
The Attention LED is on	The new drive might be defective. Replace it with another new drive. **Note:** When you first insert a drive, its Attention LED might be on. However, the LED should go off within a minute.

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:

   Note: 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.

   Contact technical support at *NetApp Support*, 888-463-8277 (North America), 00-800-44-638277 (Europe), or +800-800-80-800 (Asia/Pacific) if you need the RMA number.

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