Quantum®

Replacing a Drive

StorNext QD6000/QD7000 Expansion Unit

StorNext QD6000/QD7000 Expansion Unit, Replacing a Drive, 6-68480-01 Rev A, July 2016, Product of USA.
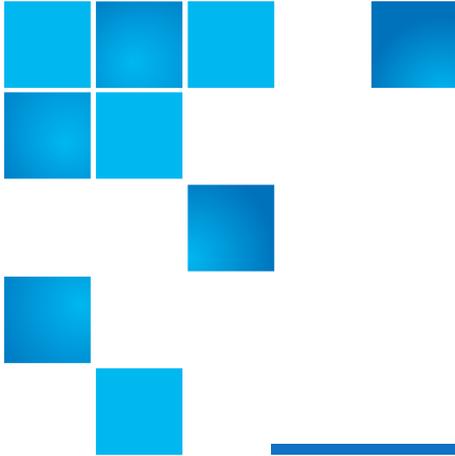
About this guide

NOTE: The Lancaster firmware is used on the E5600, Titan RAID controller, only. Refer to the NetApp to Quantum Naming Decoder section for additional information.

This section provides the following information:

- Intended audience
- Prerequisites
- NetApp to Quantum Naming Decoder

Intended audience

This guide is intended for storage customers and technicians.

Prerequisites

Prerequisites for installing and using this product include knowledge of:

- Servers and computer networks
- Network administration
- Storage system installation and configuration
- Storage area network (SAN) management and direct attach storage (DAS)
- Fibre Channel (FC) and Ethernet protocols

NetApp to Quantum Naming Decoder

Use Table 1 to correlate the NetApp product nomenclature to the equivalent Quantum-storage naming conventions.

Table 1   Product Nomenclature

E-Series NetApp Product	Quantum-Storage	Description
Controller-Drive Tray	Base System	Quantum uses Base System when referring to a drive tray with the RAID controllers.
Drive Tray	Expansion Unit	Quantum uses Expansion Unit when referring to a drive tray with the environmental services modules (ESMs).
E5600 (Code Name: Titan)	RAID controller	Four 16Gb/s FC SFP+ host ports
E5500 (Code Name: Soyuz)	RAID controller	Four 16Gb/s FC SFP+ host ports
E5400 (Code Name: Pikes Peak)	RAID controller	Four 8Gb/s FC SFP+ host ports
DE6600 (Code Name: Wembley)	4U 60-drive enclosure	60 3.5 inch disk drives
E5560 or E5660 (DE6600 4U drive enclosure with E5500 or E5600 RAID controllers)	Quantum StorNext QD7000	
E5460 (DE6600 4U drive enclosure with E5400 RAID controllers)	Quantum StorNext QD6000	
E5424 (DE5600 24-drive 2U drive enclosure (Code Name: Camden) with E5400 RAID controllers)	Quantum StorNext QS2400	
E5412 (DE1600 12-drive 2U drive enclosure (Code Name: Ebbets) with E5400 RAID controllers)	Quantum StorNext QS1200	

Replacing a Failed Drive in the E5612 or E5624 Controller-Drive Tray

To access this product, go to the NetApp® Support Site at mysupport.netapp.com.

You can determine whether you have a failed drive in two ways:

1. The Recovery Guru directs you to replace a failed drive.

2. You locate the failed drive by checking the three amber Service Action Required LEDs in three locations: the drive tray, the drive drawer, and the drive itself.

Install only drives that are specifically designed for your controller-drive tray and that have been specifically tested, formatted, and qualified in the factory as replacement drives for your controller-drive tray.

ATTENTION Possible equipment damage – You must replace the drive within three minutes after removal to prevent the possibility of overheating the equipment.

ATTENTION Possible loss of data access – Never insert drives into the controller-drive tray without first confirming that the drive firmware level is compatible with the other drives. Inserting a drive with an incorrect firmware level can cause loss of data access. For information about the supported drive firmware levels, contact your Technical Support Representative.

ATTENTION Possible loss of data access – Magnetic fields can destroy all data on the drive and cause irreparable damage to the drive circuitry. To avoid the loss of data access and damage to the drives, always keep drives away from magnetic devices.

ATTENTION Possible hardware damage – To prevent electrostatic discharge damage to the tray, use proper antistatic protection when handling tray components.

Replacing a Drive in the E5612 or E5624 Controller-Drive Tray

1. Gather support data about your storage array by using one of these methods:

   - Use the storage management software to collect and save a support bundle of your storage array. From the Array Management Window toolbar, select **Monitor > Health > Collect Support Data Manually**. Then name and specify a location on your system where you want to store the support bundle.

   - Use the command line interface (CLI) to run the `save storageArray supportData` command to gather comprehensive support data about the storage array. For more information about this command, refer to *Command Line Interface and Script Commands Programming Guide*.

   NOTE Gathering support data can temporarily impact performance on your storage array

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2. Did the Recovery Guru direct you to replace a failed drive?

- **Yes** – Go to step 3.
- **No** – Run the Recovery Guru to identify the failed component, and then go to step 3.

3. Put on antistatic protection.

4. Unpack the drive.

   a. Set the new drive on a flat, static-free surface near the controller-drive tray.

   b. Save all packing materials in case you need to return the drive.

5. Check the Controller-Drive Tray Service Action Required LED to locate the failed drive (Figure 1 and Figure 1 on the right front End Cap of the controller-drive tray).

Figure 1. End Cap on the E5612 Controller-Drive Tray

98006-10
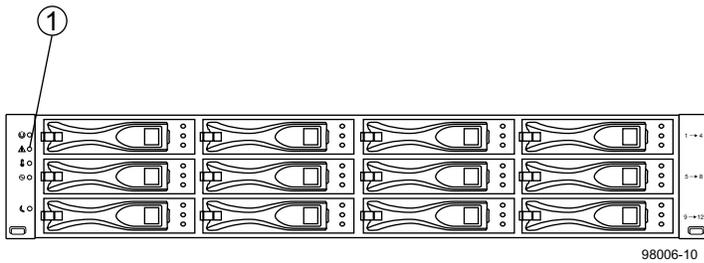
1. Controller-Drive Tray Service Action Required LED (Amber)

Figure 2. End Cap on the E5624 Controller-Drive Tray

98006- 11
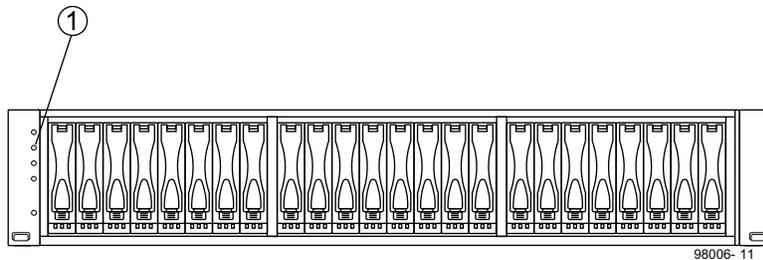
1. Controller-Drive Tray Service Action Required LED (Amber)

If a fault is detected, the amber Drive Service Action Required LED is on. Before you can safely remove the drive, the blue Drive Service Action Allowed LED must be on.

ATTENTION Potential damage to drives – Bumping a drive against another surface can damage the drive mechanism or connectors.

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6. If a fault is detected, the amber Drive Service Action Required LED is on. Before you can safely remove the drive, the blue Drive Service Action Allowed LED must be on.

Figure 3. Drive Status LEDs
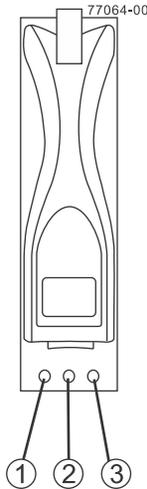
1. Drive Service Action Allowed LED (Blue)
2. Drive Service Action Required LED (Amber)
3. Drive Power LED (Green)

7. Remove the failed drive from the controller-drive tray:
   a. Pull the drive handle up (for a drive in the E5624 controller-drive tray) or to the left (for a drive in the E5612 controller-drive tray).
   b. Use the drive handle to pull the drive out a few centimeters, and allow the drive to spin down.
   c. Pull the drive completely out of the slot.
   d. Put the drive on an antistatic, cushioned surface away from magnetic fields.

   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 in the E5612 or E5624 Controller-Drive Tray

1. To install the new drive, wait 30 seconds for the storage management software to recognize that the drive has been removed.
   a. Place the replacement drive on the slot guides, and slide the drive all the way into the slot.

b. Push the drive handle to the right (E5612 controller-drive tray) or down (E5624 controller-drive tray) to lock the drive securely in place.

Figure 4. Installing a Drive in the E5612 Controller-Drive Tray

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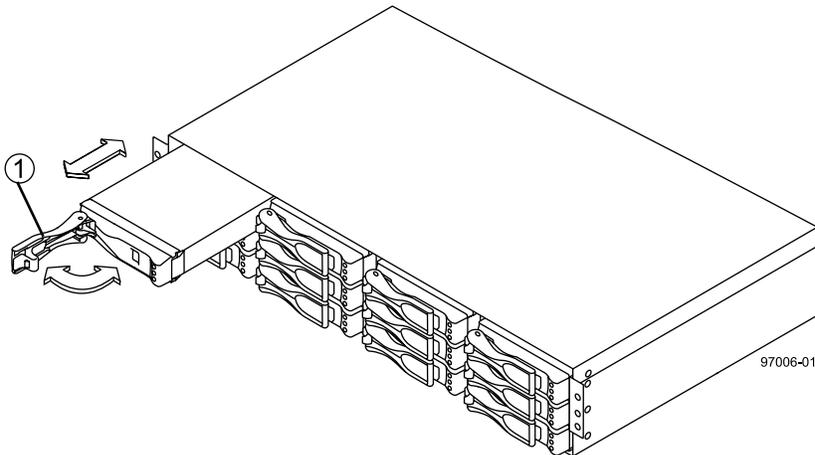
1. Drive Handle

Figure 5. Installing a Drive in the E5624 Controller-Drive Tray

96007-01
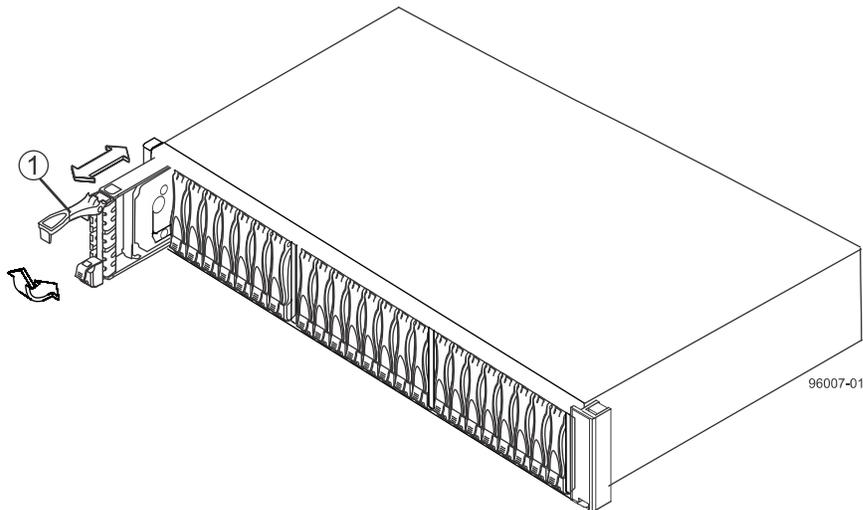
1. Drive Handle

NOTE Depending on your configuration, the controller might automatically reconstruct data to the new drive. If the controller-drive tray uses hot spares, the controller might need to perform a complete reconstruction on the hot spare before the controller copies the data to the replaced drive. This reconstruction process increases the time that is required to complete this procedure.

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2. Check the Drive Power LED and the Drive Service Action Required LED (LEDs on the Drive Drawer -- Front View). Based upon the LED status, perform one of these actions:

- **The Drive Power LED is on,** *or* **the Drive Service Action Required LED is off** – Go to step 5.

- **The Drive Power LED is off** – The drive might not be installed correctly. Remove the drive, wait 30 seconds, and then reinstall it. Go to step 3.

- **The Drive Service Action Required LED is on** – The new drive might be defective. Replace it with another new drive. Go to step 3.

3. Did this action correct the problem?

    - **Yes** – Go to step 4.

    - **No** – If the problem has not been resolved, contact your Technical Support Representative.

4. Bring the new drive back online by using the storage management software:

    a. In the Array Management Window, highlight the affected volume group and then select the menu option **Replace Drives**.

    b. Select the replaced drive that corresponds to the to the slot location or select an appropriate replacement drive.

    c. Click the **Replace Drive** button. When the drive reconstruction completes, the volume group is in an Optimal state.

    > **NOTE** In cases where the drive is bypassed, reconstruction will not occur automatically. The drive will, however, blink as the system recognizes the drive and the DACstore is read.

5. Using the LEDs and the storage management software, check the status of all of the trays in the storage array, and confirm the drive replacement.

6. Does any component have a Needs Attention status?

    - **Yes** – Click the **Recovery Guru** toolbar button in the Array Management Window, and complete the recovery procedure. If the problem has not been resolved, contact your Technical Support Representative.

    - **No** – Go to step 7.

7. Remove the antistatic protection.

8. Gather support data about your updated storage array by using one of these methods:

    - Use the storage management software to collect and save a support bundle of your storage array. From the Array Management Window toolbar, select **Monitor > Health > Collect Support Data Manually**. Then name and specify a location on your system where you want to store the support bundle.

    - Use the CLI to run the `save storageArray supportData` command to gather comprehensive support data about the storage array. For more information about this command, refer to *Command Line Interface and Script Commands Programming Guide*.

    > **NOTE** Gathering support data can temporarily impact performance on your storage array.

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You can also contact us in the following ways:

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