# Quantum

# Replacing a Drive in Base System or Expansion Unit

## StorNext QD7000

### Firmware 8.30.xx.xx

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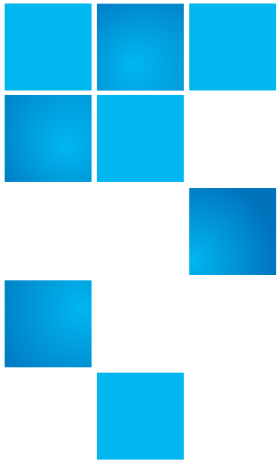
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# Preface

This section provides the following information:

- Audience
- Prerequisites
- NetApp to Quantum Naming Decoder
- Product Safety Statements
- Contacts
- Comments
- Quantum Global Services

## Audience

This manual 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 | Sixty 3.5 inch disk drives |

| E-Series NetApp Product | Quantum-Storage | Description |
|---|---|---|
| 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 |  |

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This unit is engineered and manufactured to meet all safety and regulatory requirements. Be aware that improper use may result in bodily injury, damage to the equipment, or interference with other equipment.

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# Replacing a Drive in E2660, E2760, E5460, E5560, or E5660 Trays

The Recovery Guru in SANtricity Storage 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 operations.

**About this task**

This document describes how to replace a failed drive in the following 60-drive controller-drive trays or drive trays.

| Model | Support 60 drives |
|---|---|
| Controller-drive trays | E2660, E2760, E5460, E5560, E5660 |
| Drive trays | DE6600 |

**Steps**

1.  Determine whether you have a failed drive.

    You know you have a failed drive if either of the following is true:

    *   The Recovery Guru has directed you to replace a failed drive.

    *   You have located the failed drive by checking the two amber Service Action Required LEDs in two locations: the drive tray and the drive itself.

2.  Obtain the replacement drive.

    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** – 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.

**Steps**

1.
2.

# Removing a drive

You must gather support data and confirm which drive has failed before removing the drive.

**Before you begin**

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

**Steps**

1.  Gather support data about your storage array.

| Option | Description |
| --- | --- |
| Storage management software | 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. |
| Command line interface | Run the `save storageArray supportData` command to gather comprehensive support data about the storage array. For more information about this command, refer to the *Command Line Interface and Script Commands Programming Guide*. |

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

2.  If the Recovery Guru in SANtricity Storage 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.

3.  Put on antistatic protection.

4.  Unpack the drive.

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

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

5.  Remove the bezel from the front of the tray.

6.  Locate the failed drive by checking the Drive Drawer Service Action Required LEDs on the front of the tray.

| LED color | Result |
| --- | --- |
| Amber | Fault is detected. |
| Blue | You can safely remove the drive. |

> **Attention: Possible damage to drives** – After the blue Drive Drawer Service Action Allowed LED comes on, wait 30 seconds before you open the drive drawer. Waiting 30 seconds allows the drive to spin down, which prevents possible damage to the hardware. To prevent possible damage to the other spinning drives in the drive drawer, open the drive drawer slowly.

7.  Release the levers on each side of the drive drawer by pulling both towards the center.

> **Note:** If you are replacing drives in separate drawers, you can extend only one drawer at a time.
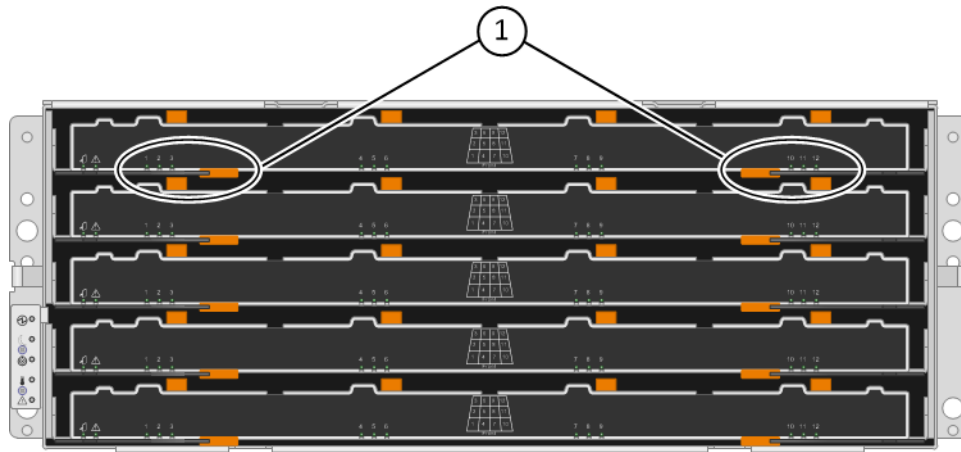
| 1 | Release levers |
|---|---|

8. Carefully pull on the extended drive drawer levers to pull out the drive drawer to its full extension without removing it from the tray.

9. Remove the failed drive from the drive drawer.

   a. Locate the drive release lever that secures the drive handle in place. Disengage the drive release lever by carefully pulling it back to release the drive handle.

   b. Raise the drive handle to vertical.

   c. Lift the drive from the drive drawer by using the drive handle.
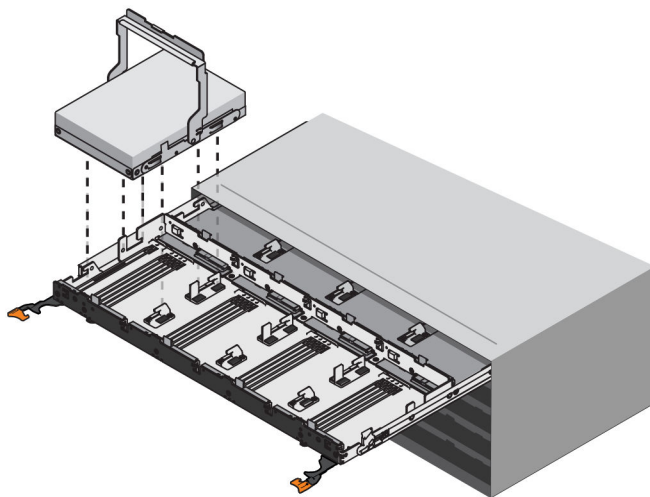


   d. Put the drive on a flat, static-free surface.

      If the fault is with the drive drawer and not the drive, the drive can be re-used.

10. If you are removing multiple drives, label each drive with the tray number, the drive drawer number, and the slot number.

**Related information**

*SANtricity 11.30 Command Line Interface and Script Commands Programming Guide*

# Installing a drive

You can install a drive in a 60-drive controller or drive-tray and bring the new drive online by using the storage management software.

**Steps**

1. Raise the drive handle on the new drive to the vertical position.

2. Align the two raised buttons on each side over the matching gap in the drive channel on the drive drawer.
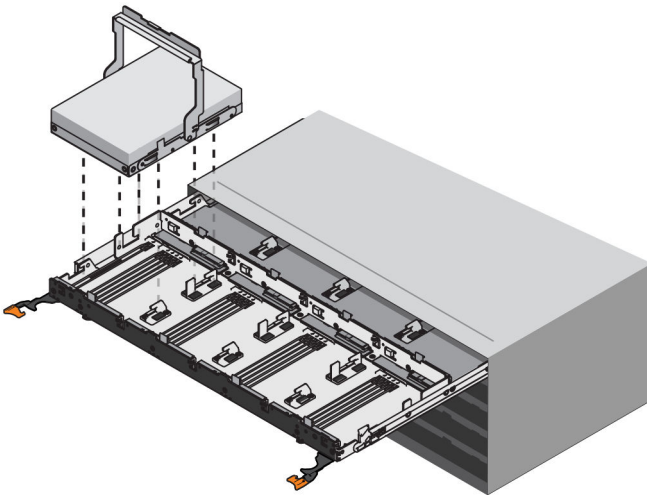


3. Lower the drive straight down, and then rotate the drive handle down until the drive snaps into place under the drive release lever.

4. Push the drive drawer all the way into the drive tray, and close the levers on each side of the drive drawer.

**Attention: Possible equipment malfunction** – Make sure that you push both drive drawer levers to each side so that the drive drawer is completely closed. The drive drawer must be completely closed to allow proper airflow and prevent overheating.

**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.

5. Look at the Drive Drawer Service Action Required LED. Based on the LED status, perform one of these actions:

| LED status | Result |
| --- | --- |
| On | The drive might not be installed correctly, or the new drive might be defective. Remove the drive, wait 60 seconds, and reinstall the drive. If it still fails, replace it with another new drive. Go to the next step when resolved. |
| Off | Go to the next step. |

   **Note:** If the problem is not resolved, contact technical support.

6. Install the bezel on the front of the tray.

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

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

   b. Select the replaced drive that corresponds 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.

8. Check the status of all of the trays in the storage array.

9. If any component has a Needs Attention status Click the **Recovery Guru** toolbar button in the Array Management Window, and complete the recovery procedure. If the problem is not resolved, contact technical support.

10. Remove the antistatic protection.

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

| Option | Description |
| --- | --- |
| Storage management software | 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. |
| Command line interface | 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*. |

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

**Related information**

*SANtricity 11.30 Command Line Interface and Script Commands Programming Guide*

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