

# HP Disk Drive Replacement Instructions

## Abstract

These instructions apply to Fibre Channel and SAS disk drives.



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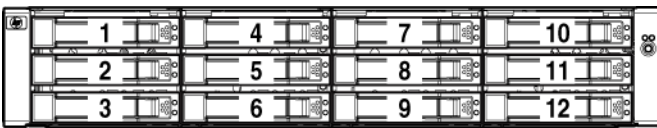
## Before you begin

Observe the following precautions when replacing the disk drive:

- Ensure you have a replacement part available before removing the failed component. Removing a component impacts cooling within the enclosure. Use a drive blank if a new drive is not available.
- HP recommends that the replacement drive matches the capacity and speed of the original drive. For example, if the original drive was a 300 GB, 15K RPM drive, the replacement would be a 300 GB, 15K RPM drive.
- P63x0 and P65x0 storage systems support SAS disk drives with EVA on the front identification label. Other SAS drives are not supported.
- Do not remove more than one disk drive at a time from the enclosure. Doing so would impact cooling of the enclosure and can cause data loss.
- Parts can be damaged by electrostatic discharge. Use proper antistatic protection.
- Have a copy of the product user guide available for reference. You can download a copy of the user guide from the product support page on the HP website.

Figure 1 (page 2) shows the numbering of Fibre Channel disk drives in the disk enclosure used with the EVA.

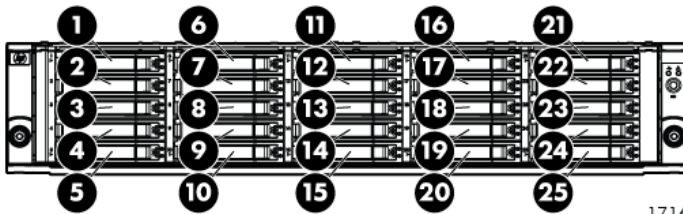
Figure 1 FC disk drive numbering



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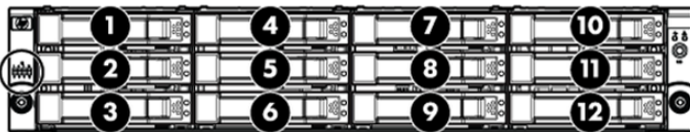
Figure 2 (page 2) shows the numbering of SAS small form factor (SFF) disk drives and Figure 3 (page 2) shows the numbering of large form factor (LFF) disk drives in the disk enclosure used with the P63x0/P65x0 EVA.

Figure 2 SAS SFF disk drive numbering




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Figure 3 SAS LFF disk drive numbering



## Types of disk drive failures

There are two types of disk drive failures:

- **Hard failure:** The disk drive is no longer functioning properly and has been assigned a failed status. This type of failure is indicated by an operational state of  (Failed) in HP P6000 Command View. The amber fault status indicator on the disk is typically on.
- **Impending failure:** Although the disk drive is still functioning, errors have been detected that indicate an impending failure. This type of failure is not accompanied by a failed status.

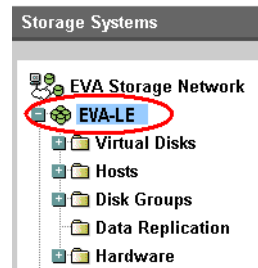
**CAUTION:** A disk drive with an impending failure appears to be operating normally in HP P6000 Command View, and the fault light on the disk is off. Therefore, it is important that you positively identify the disk drive before performing the replacement. Work with the HP Solution Center to ensure you identify the correct disk drive for replacement.

## Verifying system redundancy

Before replacing a disk, examine the redundancy status of the entire storage system to ensure a disk can be removed without impacting data availability.

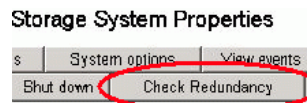
1. Open HP P6000 Command View and click the icon of the storage system you want to view (Figure 4 (page 2)).

Figure 4 Selecting a storage system



2. On the Initialized Storage System Properties window, click **Check Redundancy** (Figure 5 (page 2)).

Figure 5 Checking redundancy

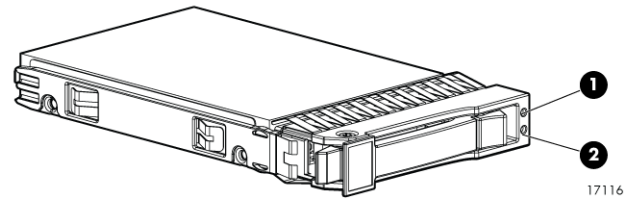


3. If the system is redundant, continue with "Verifying component failure" (page 3).

If the system is not redundant, information is displayed indicating the cause of the lack of redundancy. See the HP P6000 Command View online help to interpret the information that is displayed. In this situation, work with your HP call center agent to determine how to proceed.

**CAUTION:** Do not proceed with the disk drive replacement until you are certain the storage system is redundant.

**Figure 7 SAS disk drive status indicators**



- 1. Locate/Fault
- 2. Status

**Table 1 Disk drive status indicator LED descriptions**

LED	LED color	LED status	Description
1. Locate/Fault	Blue	Slow blinking (0.5 Hz)	Locate drive
	Amber	Solid	Drive fault
2. Status	Green	Blinking (1 Hz)	Drive is spinning up or down and is not ready
		Fast blinking (4 Hz)	Drive activity
		Solid	Ready for activity

## Verifying component failure

Before replacing a disk drive, use the following methods to verify component failure:

**CAUTION:** If HP P6000 Command View does not present a status consistent with the disk status indicators, or if HP P6000 Command View or your system monitoring tool indicates multiple hardware failures, contact HP support for assistance (<http://www.hp.com/support>).

- Analyze all failure messages received. Error messages identify each disk drive by its rack, enclosure, bay, and UUID (World Wide Name). Record this information to assist you in identifying the correct disk before replacing it.

The following is a sample of the disk identification information:

```
FRU List:
Storage System Name:   EVA_1
Storage System World Wide ID: 5000-1FE1-0015-42A0

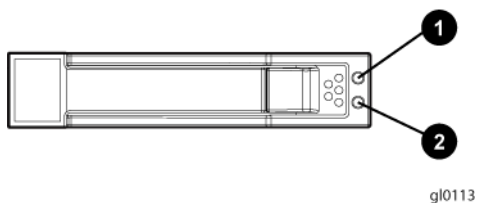
Disk Drive UUID: 2000-0000-871D-FE60

Drive Location ---
Enclosure ID:      8
Bay ID:            1
Rack Number:      0
```

**NOTE:** The Disk Drive UUID corresponds to the disk Node World Wide Name displayed in HP P6000 Command View.

- Observe the disk status indicators (Figure 6 (page 3) for Fibre Channel disk drives and Figure 7 (page 3) for SAS disk drives; Table 1 (page 3) describes the LEDs). If a hard failure has occurred, the amber indicator will be on solid.

**Figure 6 FC disk drive status indicators**




- 1. Locate/Fault
- 2. Status

- Verify the disk status using HP P6000 Command View:

- In the Navigation pane, select **Storage system**→**Hardware**→**Disk enclosure**→**Bay**. Use the information from the error message to guide you to the correct disk.
- In the Content pane, select the **Disk Drive** tab.
- Compare the disk Node World Wide Name with the error message UUID information recorded earlier to ensure you have selected the correct disk (Figure 8 (page 3)).

**Figure 8 Identifying Node World Wide Name**

Identification	
Name:	Disk 012
Loop Pair:	LoopPair1
Node World Wide Name:	2000-000c-5053-3f97
UID:	2000-000c-5053-3f97-0000-0000-0000-0000

4. Verify the disk operational state. If a hard failure has occurred, the operational state appears as  (Failed). A disk with an impending failure indicates Good status until the condition of the disk drive degrades enough to become a hard failure.
5. Verify that the **Requested usage** and **Actual usage** boxes display `Ungrouped` (Figure 9 (page 4)).

**Figure 9 Verifying disk group status**

System	
Requested usage:	Ungrouped
Actual usage:	Ungrouped
Disk group:	n/a
Occupancy:	0.00 GB

**CAUTION:** Both fields must display `Ungrouped` before you remove the disk drive.

If both fields display `Ungrouped`, proceed to [Step 7](#).

Otherwise, continue with [Step 6](#).

6. For an impending failure, you must ungroup the disk before you remove it:





Only ungroup one disk at a time. Before you ungroup a disk, verify that leveling is not in progress and that sufficient free space is available. After you ungroup the disk, verify the status of the disk group before continuing. For more information about leveling and free space, see the Enterprise Virtual Array configuration best practices white paper for your array model.

- a. Click **Ungroup**.
- b. Click **Ungroup in background**.

A dialog box indicates that the Operation succeeded. This indicates that the ungroup operation has been initiated. You can monitor the progress of the ungroup on the Disk Drive Properties window.

- c. Click the **Disk Drive** tab and monitor the ungroup progress in the **Migration progress** box (Figure 10 (page 4)).

**Figure 10 Monitoring ungroup progress**

Condition/State	
Operational state:	 Operation in progress
Migration state:	 Ungrouping
Migration progress:	0%  100% 67% progress 

When the ungroup is complete, continue with [Step 7](#).

The ungrouping process can take up to several hours to complete. The duration depends on the capacity of the disk and the level of storage system activity.

If, after attempting to ungroup the disk, the **Requested usage** and **Actual usage** boxes do not display `Ungrouped` or the **Migration progress** box does not display 100%, contact your HP-authorized service representative for assistance.

7. Click **Remove** to prepare the disk for removal. The status indicators on the disk will flash to help you locate the disk. You can now proceed to [“Removing a disk drive”](#) (page 5).

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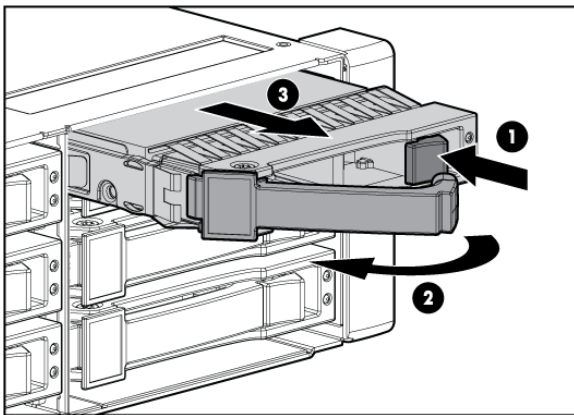
## Removing a disk drive

1. Determine the status of the disk drive from the hot-plug disk drive LEDs. See [Table 1 \(page 3\)](#).
2. Back up all data on the disk drive.

**⚠ CAUTION:** To prevent insufficient cooling and thermal damage, do not operate the storage enclosure unless all bays are populated with either a disk drive or a blank.

3. Press the drive latch on the disk drive to unlatch the lever (1, [Figure 11 \(page 5\)](#)), and move the lever to the left (2).

**Figure 11 Removing a disk drive**



4. Pull the disk drive out of the drive bay (3).

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## Changing the Device Addition Policy

To prevent the storage system from automatically grouping a new disk that might have the incorrect firmware on it, verify the Device Addition Policy and set it to manual if necessary:

1. In the HP P6000 Command View navigation pane, select the storage system.  
The Initialized Storage System Properties window opens.
2. Click **System Options**.
3. Select **Set system operational policies**.
4. If the Device Addition Policy is set to *Automatic*, change it to *Manual*.
5. Click **Save changes**.

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**NOTE:** To return the Device Addition Policy to automatic, repeat this procedure after you verify that the disk has the correct firmware version.

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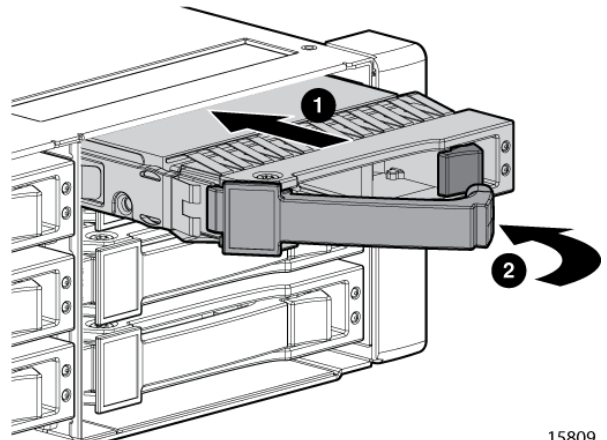
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## Installing a disk drive

1. Insert the disk drive into the drive bay (1, [Figure 12 \(page 5\)](#)) until it clicks, locking the drive. Push firmly on the front of the drive carrier to ensure the drive is fully seated into the enclosure.
2. Rotate the drive lever to the right until it locks (2).

**ⓘ IMPORTANT:** When the drive is inserted and the enclosure is powered, the drive LEDs flash for two seconds to indicate that the drive is seated properly and receiving power.

**Figure 12 Installing a disk drive**



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3. As the drive begins to spin, verify that the drive LEDs illuminate one at a time and then turn off together to indicate that the system has recognized the new drive.

In fault-tolerant configurations, allow the replacement drive to be reconstructed automatically with data from the other drives. While reconstruction is in progress, the online LED flashes.

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## Verifying operation

After replacing the disk, observe the following to verify that the disk is operating properly:

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**NOTE:** It can take up to 10 minutes for the component to display good status.

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- Observe the disk status indicators (Table 1 (page 3)). The green indicator should be on or flashing.
- Verify the following using HP P6000 Command View:
  - Navigate back to the component and verify the operational state. It should be  (Good).
  - Ensure that the disk drive is running the correct firmware. Record the Model number and the Firmware version of the disk (Figure 13 (page 6)). Compare the firmware version with the supported disk drive firmware in the *HP P6000 Enterprise Virtual Array Disk Drive Firmware Support* document, which is available at the following website:

<http://www.hp.com/support/manuals>

Click **Disk Storage Systems** under Storage, and then select your product under P6000/EVA Disk Arrays.

If the disk is running an unsupported version of firmware, download the firmware from the following website and install it using the instructions included with the firmware file. Do not add the disk to a disk group if it is running an unsupported firmware version.

<http://www.hp.com/support/evadiskfirmware>

**NOTE:** When downloading the firmware, use the disk drive model number to locate the correct firmware file. If you have difficulty locating the firmware, contact your HP-authorized service representative for assistance.

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## Adding the disk to a disk group

After replacing the disk drive, add the disk to a disk group. The disk is typically added back into its original disk group.

1. In the navigation pane, select **Storage system**→**Hardware**→**Disk Enclosure**→**Bay**.
2. In the content pane, select the **Disk Drive** tab.
3. Click **Group** to initiate the process for adding the disk to a disk group.

Operation Successful is displayed indicating the disk is now grouped and leveling has been initiated. The storage system begins immediately using the disk.

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**NOTE:** If the Device Addition Policy is set to automatic, the disk is automatically added to a disk group. In this case, the **Group** option will not be available.

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## Returning the failed component

Follow the return instructions provided with the new component.

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**Figure 13 Verifying model number and firmware version**

Physical	
Type:	Fibre Channel Disk
Manufacturer:	HPQ
Model number:	BF1465A693
Serial number:	JDVUYRQJ
Firmware version:	HP02
Formatted capacity:	136.73 GB
Drive Type:	Online

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