# Customer Replacement Procedure

## EMC Unity™ Family

## EMC Unity™ Hybrid

## Replacing a faulted 3.5-inch disk drive

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This document describes how to replace a faulted 3.5-inch disk drive in the Unity 300, Unity 400, Unity 500, Unity 600.

The disk slots are located behind the front bezel of the enclosure. These disk enclosures use 3.5-inch disks:

- 12-slot disk processor enclosure (DPE)
- 15-slot disk-array enclosure (DAE)

**Note**

The disk carriers for the 3.5-inch disks in the 12-slot DPE cannot be transferred into the 15-slot DAE.

**Note**

You do not have to power down any components to replace a faulted disk drive.

**NOTICE**

When Data at Rest Encryption is enabled, only drives that meet at least one of these requirements can be used: factory new drives, securely erased/sanitized drives, or previously encrypted drives.


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# Before you start

Before you begin this procedure, ensure that you have received the new part and have correctly identified its intended location in the system. Refer to your Unisphere **Service** section for instructions on how to identify failures, order new parts, and handle hardware components.

## Additional resources

As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features. Contact your EMC technical support professional if a product does not function properly or does not function as described in this document.

**Where to get help**
Support, product, and licensing information can be obtained as follows:

**Product information**
For product and feature documentation or release notes, go to Unity Technical Documentation at: www.emc.com/en-us/documentation/unity-family/index.htm. You can also access this page from the Unity product family page at: www.emc.com/en-us/storage/unity.htm. In the **Why Unity** section, click **Unity Product Resources**.

**Troubleshooting**
For information about EMC products, software updates, licensing, and service, go to EMC Online Support (registration required) at: https://Support.EMC.com. After logging in, locate the appropriate **Support by Product** page.

**Technical support**
For technical support and service requests, go to EMC Online Support at: https://Support.EMC.com. After logging in, locate **Create a service request**. To open a service request, you must have a valid support agreement. Contact your EMC Sales Representative for details about obtaining a valid support agreement or to answer any questions about your account.

**Special notice conventions used in this document**
EMC uses the following conventions for special notices:

**DANGER**

**Indicates a hazardous situation which, if not avoided, will result in death or serious injury.**

**WARNING**

**Indicates a hazardous situation which, if not avoided, could result in death or serious injury.**

**CAUTION**

**Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**

**NOTICE**

Addresses practices not related to personal injury.

**Note**

Presents information that is important, but not hazard-related.

## Handling replaceable units

This section describes the precautions that you must take and the general procedures that you must follow when removing, installing, and storing any replaceable unit.

### Avoiding electrostatic discharge (ESD) damage

When replacing or installing hardware units, you can inadvertently damage the sensitive electronic circuits in the equipment by simply touching them. Electrostatic charge that has accumulated on your body discharges through the circuits. If the air in the work area is very dry, running a humidifier in the work area will help decrease the risk of ESD damage. Follow the procedures below to prevent damage to the equipment.

Be aware of the following requirements:

- Provide enough room to work on the equipment.
- Clear the work site of any unnecessary materials or materials that naturally build up electrostatic charge, such as foam packaging, foam cups, cellophane wrappers, and similar items.
- Do not remove replacement or upgrade units from their antistatic packaging until you are ready to install them.
- Before you begin service, gather together the ESD kit and all other materials you will need.
- Once servicing begins, avoid moving away from the work site; otherwise, you may build up an electrostatic charge.
- Use ESD anti-static gloves or an ESD wristband (with strap).
  If using an ESD wristband with a strap:
  - Attach the clip of the ESD wristband to the ESD bracket or bare metal on a cabinet/rack or enclosure.
  - Wrap the ESD wristband around your wrist with the metal button against your skin.
  - If a tester is available, test the wristband.
- If an emergency arises and the ESD kit is not available, follow the procedures in Emergency Procedures (without an ESD kit).

### Emergency procedures (without an ESD kit)

In an emergency when an ESD kit is not available, use the following procedures to reduce the possibility of an electrostatic discharge by ensuring that your body and the subassembly are at the same electrostatic potential.

**NOTICE**

These procedures are not a substitute for the use of an ESD kit. Follow them only in the event of an emergency.

- Before touching any unit, touch a bare (unpainted) metal surface of the cabinet/rack or enclosure.
- Before removing any unit from its antistatic bag, place one hand firmly on a bare metal surface of the cabinet/rack or enclosure, and at the same time, pick up the unit while it is still sealed in the antistatic bag. Once you have done this, do not move around the room or touch other furnishings, personnel, or surfaces until you have installed the unit.
- When you remove a unit from the antistatic bag, avoid touching any electronic components and circuits on it.
- If you must move around the room or touch other surfaces before installing a unit, first place the unit back in the antistatic bag. When you are ready again to install the unit, repeat these procedures.

## Hardware acclimation times

Systems and components must acclimate to the operating environment before applying power. This requires the unpackaged system or component to reside in the operating environment for up to 16 hours in order to thermally stabilize and prevent condensation.

Refer to the table, Table 1 on page 4, to determine the precise amount of stabilization time required.

**Table 1** Hardware acclimation times (systems and components)

| **If the last 24 hours of the TRANSIT/STORAGE environment was this:** | | **...and the OPERATING environment is this:** | **...then let the system or component acclimate in the new environment this many hours:** |
|---|---|---|---|
| Temperature | Humidity | | |
| Nominal<br>68-72°F (20-22°C) | Nominal<br>40-55% RH | Nominal 68-72°F (20-22°C)<br>40-55% RH | 0-1 hour |
| Cold<br>‹68°F (20°C) | Dry<br>‹30% RH | ‹86°F (30°C) | 4 hours |
| Cold<br>‹68°F (20°C) | Damp<br>≥30% RH | ‹86°F (30°C) | 4 hours |
| Hot<br>›72°F (22°C) | Dry<br>‹30% RH | ‹86°F (30°C) | 4 hours |
| Hot<br>›72°F (22°C) | Humid<br>30-45% RH | ‹86°F (30°C) | 4 hours |
| | Humid<br>45-60% RH | ‹86°F (30°C) | 8 hours |
| | Humid<br>≥60% RH | ‹86°F (30°C) | 16 hours |
| Unknown | | ‹86°F (30°C) | 16 hours |

**NOTICE**

- If there are signs of condensation after the recommended acclimation time has passed, allow an additional eight (8) hours to stabilize.
- Systems and components must not experience changes in temperature and humidity that are likely to cause condensation to form on or in that system or component. Do not exceed the shipping and storage temperature gradient of 45°F/hr (25°C/hr).
- Do NOT apply power to the system for at least the number of hours specified in the table, Table 1 on page 4. If the last 24 hours of the transit/storage environment is unknown, then you must allow the system or component 16 hours to stabilize in the new environment.

## Removing, installing, or storing replaceable units

Use the following precautions when removing, handling, or storing replaceable units:

**⚠ CAUTION**

**Some replaceable units have the majority of their weight in the rear of the component. Ensure that the back end of the replaceable unit is supported while installing or removing it. Dropping a replaceable unit could result in personal injury or damage to the equipment.**

**NOTICE**

- For a module that must be installed into a slot in an enclosure, examine the rear connectors on the module for any damage before attempting its installation.
- A sudden jar, drop, or even a moderate vibration can permanently damage some sensitive replaceable units.

- Do not remove a faulted replaceable unit until you have the replacement available.
- When handling replaceable units, avoid electrostatic discharge (ESD) by wearing ESD anti-static gloves or an ESD wristband with a strap. For additional information, refer to Avoiding electrostatic discharge (ESD) damage on page 3.
- Avoid touching any exposed electronic components and circuits on the replaceable unit.
- Never use excessive force to remove or install a replaceable unit. Take time to read the instructions carefully.
- Store a replaceable unit in the antistatic bag and the specially designed shipping container in which you received it. Use the antistatic bag and special shipping container when you need to return the replaceable unit.
- Replaceable units must acclimate to the operating environment before applying power. This requires the unpackaged component to reside in the operating environment for up to 16 hours in order to thermally stabilize and prevent condensation. Refer to Hardware acclimation times on page 4 to ensure the replaceable unit has thermally stabilized to the operating environment.

**NOTICE**

Your storage system is designed to be powered on continuously. Most components are hot swappable; that is, you can replace or install these components while the storage system is running. However, the system requires that:

- Front bezels should always be attached to ensure EMI compliance. Make sure you reattach the bezel after replacing a component.
- Each slot should contain a component or filler panel to ensure proper air flow throughout the system.

## Unpacking a part

### Procedure

1. Wear ESD gloves or attach an ESD wristband to your wrist and the enclosure in which you are installing the part.
2. Unpack the part and place it on a static-free surface.
3. If the part is a replacement for a faulted part, save the packing material to return the faulted part.

# Standard touch point colors

Touch points are component locations where you can:

- Grip the hardware to remove or install a component.
- Open or close a latch.
- Turn a knob to open, close, or adjust a component.

Standard touch point colors are terra-cotta (orange) or blue.

**Note**

Within this documentation, the color orange is used instead of terra-cotta for simplicity.

**Table 2** Standard touch point colors

| Touch point color | Description |
|---|---|
| Terra-cotta (orange) | This color indicates that you can perform the task, such as remove a component with a terra-cotta (orange) lever, while the system remains powered (up/on).<br>**Note**<br>Some tasks may require additional steps. |
| Blue | This color indicates that a shutdown of the system or component is required before you can perform the task, such as removing a component with a blue lever. |

## Handling disks

Disks are extremely sensitive electronic components. Always handle a disk gently, and observe the following guidelines:

- Follow the instructions described in Removing, installing, or storing replaceable units on page 5.
- Do not stack disks upon one another, or place them on hard surfaces.
- Make sure that the replacement disk has the same part number or the part number of an approved replacement for the faulted disk. The part number (PN005xxxxxx) appears on the disk. A replacement disk should be the same type (example: SAS, FLASH) and have the same capacity (size and speed) as the disk it is replacing.
- When removing a disk, pull the disk partially out of the slot, then wait 30 seconds for the drive to spin down before removing it.
- When installing multiple disks in a powered up system, wait at least 10 seconds before sliding the next disk into position.
- Place disks on a soft, antistatic surface, such as an industry-standard antistatic foam pad or the container used to ship the disk.

# Identifying and locating the faulted 3.5-inch disk drive

Before you replace a faulted 3.5-inch disk drive, you must locate it's placement within the storage system by using Unisphere.

Using Unisphere, locate the faulted 3.5-inch disk drive in the enclosure.

**Procedure**

1. In Unisphere, select **System View**.
2. Select the **Enclosures** page.
3. Locate the faulted 3.5-inch disk drive marked orange and displayed in the **Enclosure** view shown.

   Unisphere automatically displays the view showing the 3.5-inch disk drive requiring service.

**Figure 1** Faulted 3.5 disk drive location - example

# Summary of tasks for replacing a disk

To replace a disk, you must complete the tasks below in the order in which they appear. This document provides instructions for completing each task.

1. Identify the faulted disk.

2. Open the console, if necessary.
3. Remove the front bezel.
4. Remove the faulted disk from its slot.
5. Unpack the replacement disk.
6. Install the replacement disk in the slot.
7. Reinstall the front bezel.
8. Close the console, if necessary.
9. Verify the operation of the replacement disk.

# Replacing the faulted 3.5-inch disk drive

Take the following actions to remove the faulted 3.5-inch disk drive and install the replacement 3.5-inch disk drive into the system.

## Removing the front bezel

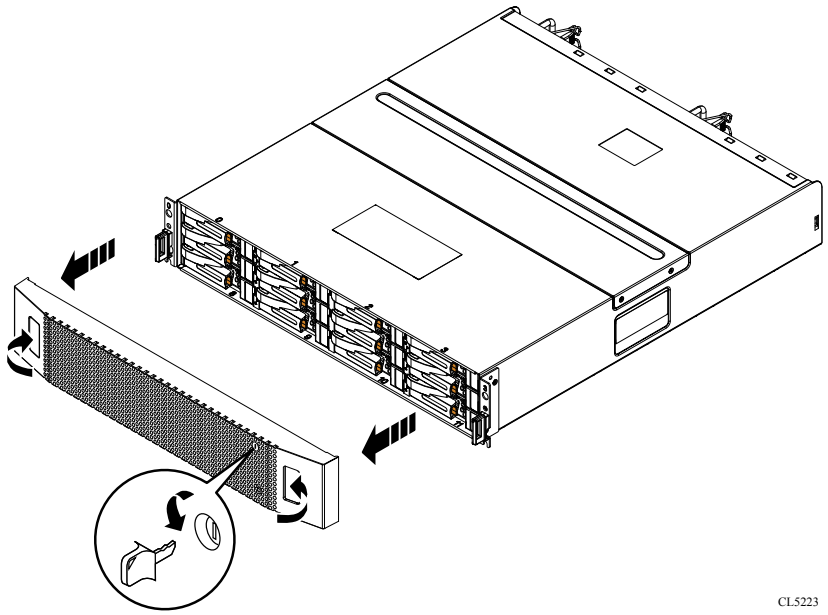
**NOTICE**

You must remove the disk enclosure's front bezel to gain access to the disks. The bezel is required for EMI compliance when the enclosure is powered up. Remove it only to replace or add a disk.

### Procedure

1. If the bezel has a lock, insert the key that shipped with your enclosure into the lock, and turn the key to unlock the bezel.
2. Press the two latch buttons on the bezel surface to release the bezel from the cabinet.
3. Pull the bezel off the cabinet and put it on a clean, static-free surface.

**Figure 2** Removing the front bezel




## Removing the faulted 3.5-inch disk

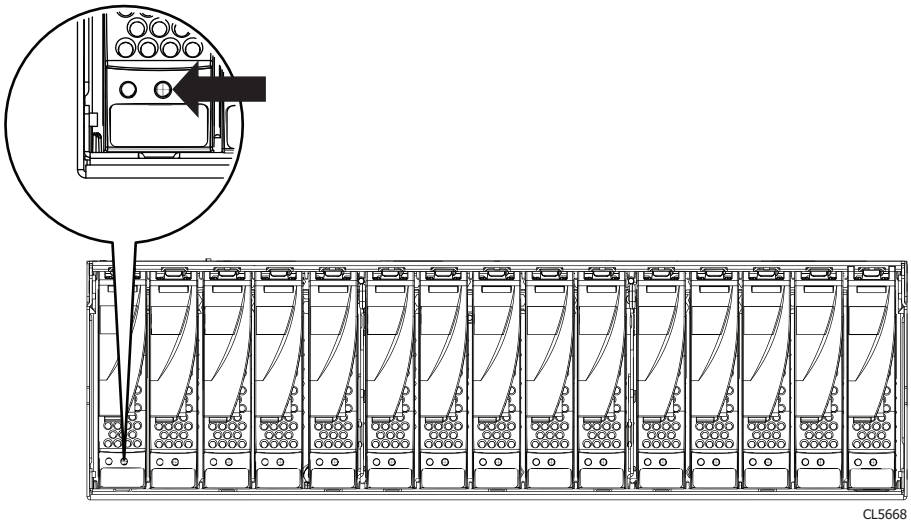
This procedure describes how to remove a disk drive from the supported drive enclosures.

### Before you begin

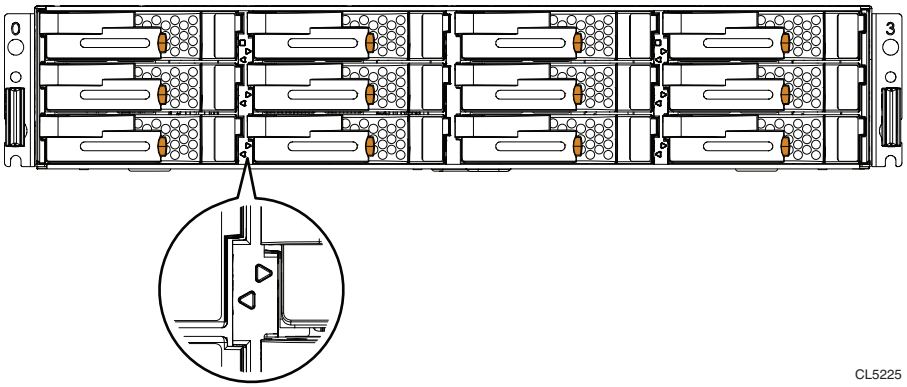
Identify the faulted disk drive by locating the amber fault LED on the drive carrier:

**Figure 3** Fault LED on the disk drive carrier

Location on drive carrier in 15-drive DAE




Location on drive carrier in 12-drive DPE




**Note**

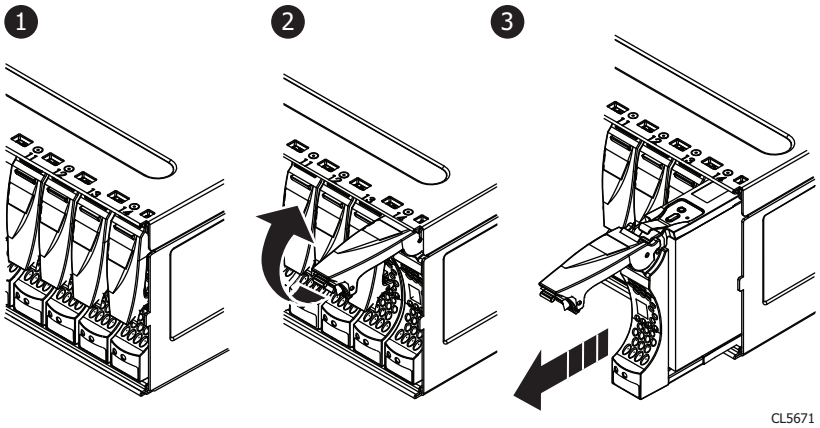
Disks can be removed and replaced with the power applied to the enclosure.

## Procedure

1. Attach an ESD wristband to your wrist and the enclosure.
2. Partially remove the faulted disk from the enclosure slot:

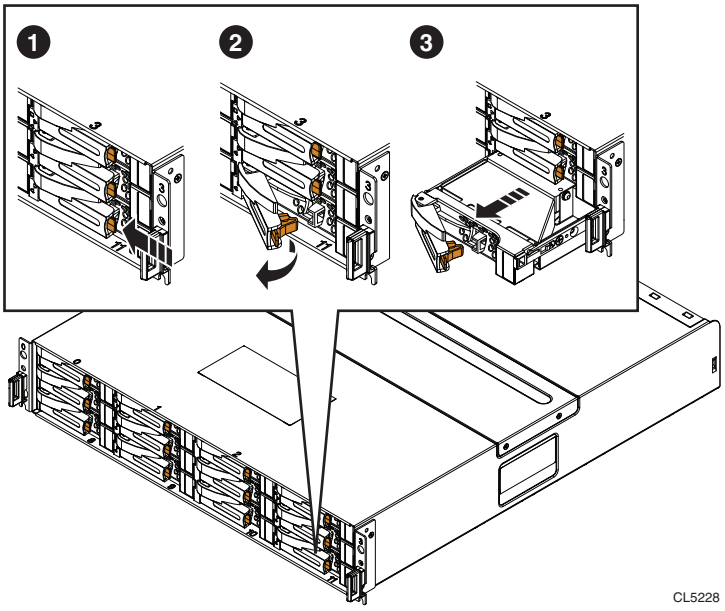
- For a 15-drive DAE: Pull the latch on the disk up (2) but do not pull the latch past 45 degrees from the disk.

**Figure 4** Removing a disk in a 15-drive DAE




- For a 12-drive DPE: Press the orange tab in (1) and pull the ejector handle out (2); do not pull the handle past 45 degrees from the disk.

**Figure 5** Removing a disk in a 12-drive DAE




You have removed power from the drive and, for disks with spinning platters, begun the spin down process.

3. Do one of the following:
   - If the disk's fault LED is on steadily, slowly pull the disk about 1 inch (3 centimeters) from its slot and wait 30 seconds for the disk to stop spinning before pulling the disk completely out of the slot.
   - If the disk's fault LED is off or mostly off, slowly pull the disk completely out of the slot.
4. Place the disk on a static-free surface.

# Installing the new 3.5-inch disk

This procedure describes how to install a disk drive in the supported

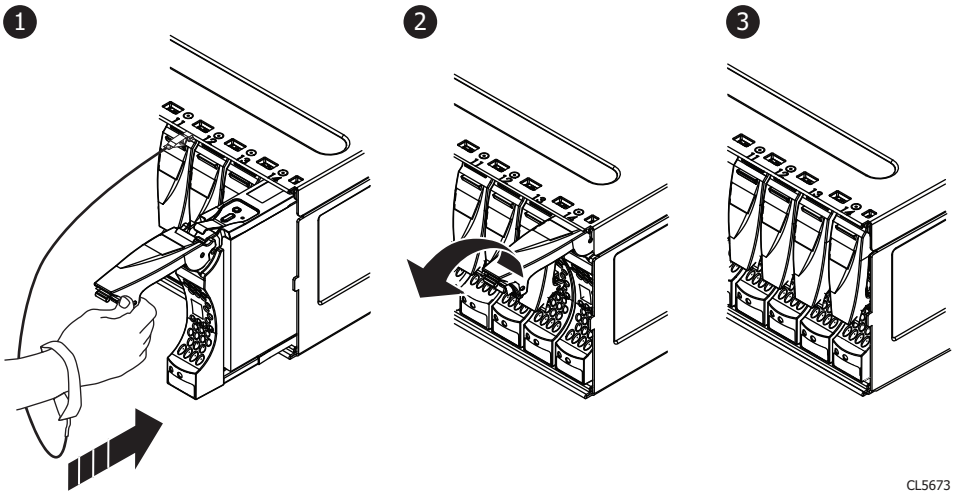
**Note**

If you are installing multiple disks to a powered up system, wait at least 10 seconds after inserting each disk before sliding the next disk into position.

## Procedure

1. Align the disk with the guides in the slot.
2. Insert the disk into the enclosure:
   - For a 15-drive DAE: With the disk latch fully open, gently push the disk into the slot. The disk latch begins to rotate downward when its tabs meet the enclosure.

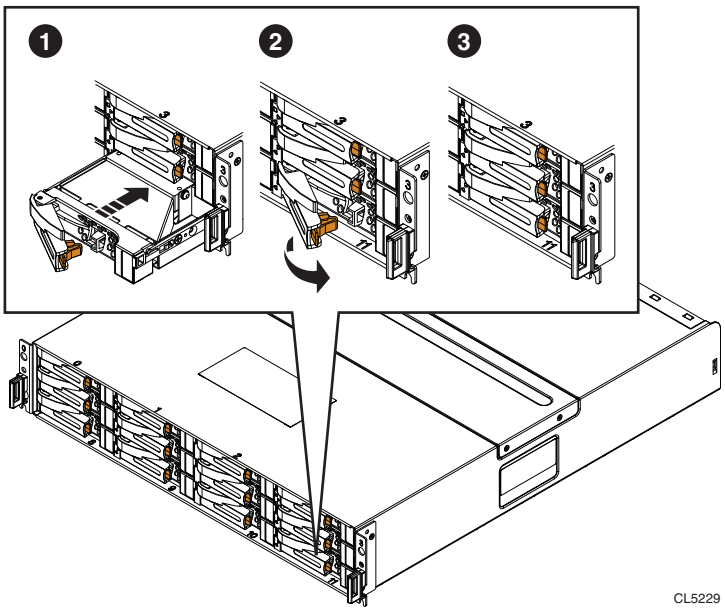
     **Figure 6** Installing a disk into 15-drive DAE

   - For a 12-drive DPE:
     a. Ensure the ejector handle is open at a 45 degree angle from the drive.
     b. Gently push the disk into the slot by pressing on the right-most thumb space (2).

c. Engage the ejector handle to fully seat the disk (3).

**Figure 7** Installing a disk into 12-drive DPE

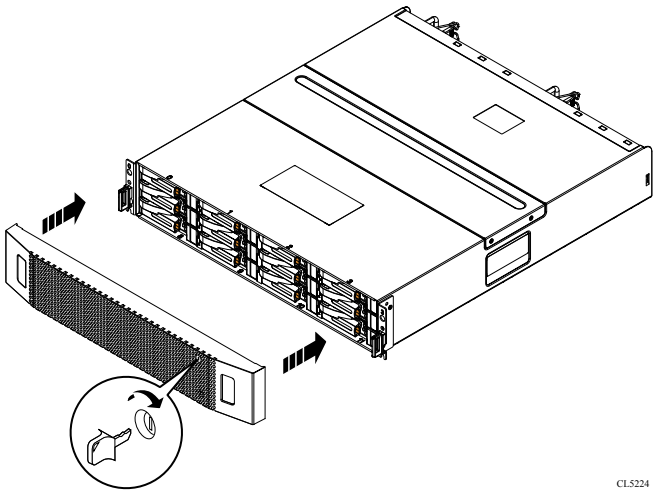



## Installing the front bezel

### Procedure

1. Align the bezel with the enclosure.
2. Gently push the bezel into place on the cabinet until it latches.
3. If the bezel has a lock, insert the key that shipped with your enclosure into the lock, and turn the key to lock the bezel.

**Figure 8** Installing the front bezel




# Verifying the operation of the 3.5-inch disk drive

Verify that the new 3.5-inch disk drive is recognized by your system, and operating correctly using the procedure that follows.

### Procedure

1. In Unisphere, select **System View**.
2. On the Summary page, confirm that the system status is OK.
3. Select the **Enclosures** page.
4. Verify that the 3.5-inch disk drive appears with OK status in the enclosure view.

   Select the DPE or DAE housing the disk drive with the **Enclosure** dropdown menu and then select the **Front** view of the disk enclosure. Locate the new disk drive shown in this enclosure view.

   **Figure 9** Replacement 3.5 disk drive location - example

   If the system health monitor shows the part as faulted, contact your service provider.

# Returning a faulted part

We appreciate the return of defective material within 5 business days (for US returns). For International customers, please return defective material within 5-10 business days. All instructions and material required to return your defective part were supplied with your good part shipment.

### Procedure

1. Package the faulted part in the shipping box that contained the replacement part, and seal the box.
2. Ship the failed part to your service provider as described in the instructions that were included with the replacement part.
3. (Optional) For more information about returning customer-replaceable parts, from Unisphere, click **Support › Replace Disk Drives, Power Supplies, and Other Parts › Return a Part** to display the part return instructions.

   If your screen does not show the **Return a Part** option, contact your service provider for instructions on what to do next.

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