

# Dell EMC Unity™ Family

## Dell EMC Unity All Flash and Unity Hybrid

### Installation Guide

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# Additional resources

As part of an improvement effort, revisions of the software and hardware are periodically released. 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 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.htm](http://www.emc.com/en-us/documentation/unity-family.htm).

### Troubleshooting

For information about products, software updates, licensing, and service, go to 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 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 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



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

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

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

---



Addresses practices not related to personal injury.

---

### Note

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

---

## About this guide

This guide is designed for personnel who install, configure, and maintain the Unity 300/300F/350F, Unity 400/400F/450F, Unity 500/500F/550F, and Unity 600/600F/650F platform. To use this hardware publication, you should be familiar with digital storage equipment and cabling.

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### Note

This document was accurate at publication time. New versions of this document might be released. Check to ensure that you are using the latest version of this document.

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## Related documentation

The following Unity system documents provide additional information.

- *EMC Unity Hardware Information Guide*
- *EMC Unity Operating System Release Notes*

Additional relevant documentation can be obtained at:

- <http://bit.ly/unityinfohub>
- <https://support.emc.com/products/39949>

# CHAPTER 1

## Prepare your system

Use this section to understand what you need before you begin the installation as well as the site requirements for the system.

- [Before you begin](#)..... 8
- [Installation workflow including optional DAEs](#)..... 8
- [Site and equipment preparation](#)..... 9
- [Hardware acclimation times](#)..... 10
- [Avoiding electrostatic discharge \(ESD\) damage](#) ..... 11
- [Emergency procedures \(without an ESD kit\)](#)..... 12

## Before you begin

### Procedure

1. Set up a product support account.

If you do not already have a product support account, go to <https://support.emc.com/products/39949> to set one up. You will need a support account to access the latest troubleshooting information, online chat, installation and maintenance videos, utilities and wizards.

2. Complete the *Configuration Worksheet*.

The *Configuration Worksheet* is available for download from <https://support.emc.com/products/39949>. Configuration worksheet information is also included in [Configuration Worksheet](#) on page 67.

## Installation workflow including optional DAEs

Use the following documents and software and sequence of actions as a guide to install the storage system:

1. Use the Quick Start or this guide and the Hardware Information Guide to:

- a. Prepare the site for installation.
- b. Unpack the storage system.
- c. Rack and install the storage system.
- d. Cable the system components.
- e. Power up the system components.
- f. Use the Connection Utility (CU) to discover and configure the system management IP address for network management.
- g. Launch a browser, login to the system, and follow the Unisphere Initial Configuration wizard tasks to complete the initial system configuration.

2. Use Unisphere to:

- a. Complete the Initial Configuration Wizard tasks:
  - Accept License Agreement, Configure User Credentials, Install License File
  - Configure Network Services (DNS/NTP)
  - Configure FAST Cache and Pools (optional)
  - Configure Alerts (optional)
  - Configure Support Credentials, Customer Contact Information, and EMC Secure Remote Services (strongly recommended)
  - Configure iSCSI Interfaces (optional)
  - Set up a NAS Server (optional)
- b. Enable SSH under **Service > Service Tasks** (recommended for remote support)
- c. Update system software under **Settings > Software and Licenses** (as required)

- d. Configure Block and File resources, and Hosts (as required)
3. Use this guide and the Hardware Information Guide to:
  - a. Rack and install optional DAEs
  - b. Cable the optional DAEs
  - c. Power up the optional DAEs
  - d. Configure additional Block and File resources, and Hosts (as required)

## Site and equipment preparation

The following items must be available at the site to install the storage system:

- Tools: Slotted or Phillips screwdriver, ESD protection kit, and a mechanical lift (optional).

---

### Note

A Slotted or Phillips screwdriver with a six inch or longer magnetic head is recommended for the 12-drive disk processor enclosure.

- Management console: A Windows-based computer to run the initialization, maintenance, and management tools with:
  - At least 100 MB of free space
  - Connection on same LAN subnet as your storage system (recommended)
  - Web browser (Internet Explorer, Mozilla Firefox, Google Chrome)

---

### Note

Refer to the Unity Support Matrix on the support website for compatibility and interoperability information related to the Web browsers.

- Space: Cabinet vertical space of 2U (3.5 inches, 8.9 cm) for the disk processor enclosure (DPE, 25-drive or 12-drive) and, if applicable, cabinet vertical space of 2U for each optional 25-drive disk-array enclosure (DAE) or 3U (5.75 inches, 14.6 cm) for each optional 15-drive DAE.
- Network connections:
  - Two 1-gigabit Ethernet management connections
  - Four CNA ports (two per SP) that can be set, if applicable, either at manufacturing time or, if not, during installation or later to:
    - 2 x 10GbE or 1GbE ports, or
    - 2 x 4Gb/s or 8Gb/s or 16Gb/s or 2 x 2Gb/s or 4Gb/s or 8Gb/s FC ports, or
    - 2 x 16Gb/s single mode (SM) FC ports, or
    - 1 x 16Gb/s SM FC port and 1 x 4Gb/s or 8Gb/s or 16Gb/s or 1 x 2Gb/s or 4Gb/s or 8Gb/s multi-mode (MM) FC port

---

### Note

Once set they cannot be changed. 10GbE connectivity supports both the 10GbE optical SFP and the 10GbE Active/Passive TwinAX cables. 1GbE connectivity supports only the 1GbE optical SFP.

- Two 10GbE ports for file/iSCSI protocols, if applicable
- If ordered, add-on I/O interface modules
- Bulk Category (CAT) 5, 5e, 6, 6a or better cables for each connection to your network
- Network, information:
  - DNS and NTP servers accessible from the storage system (recommended)
  - Windows Domain Controller (recommended)
  - SMTP server network connection to the storage system and the management host (optional)
  - If you are using the Connection Utility, the management port and login information required includes:
    - A static IP address for the system
    - The subnet mask of the LAN to which the system is connected
    - The default gateway address of the LAN to which the system is connected
    - Passwords for system users admin and service
  - If you are setting up the system on a network with DHCP servers, DNS servers, and Dynamic DNS services, you need:
    - System serial number
    - Domain information

## 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 10, 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<br>(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   | Dry                  | <86°F (30°C)                              | 4 hours   |

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

| 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: |
|---|--------------------|---|--|
| >72°F (22°C)  | <30% RH            |   |  |
| 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 10. 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.

## 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 precautions to reduce the possibility of an electrostatic discharge by ensuring that your body and the subassembly are at the same electrostatic potential.

### NOTICE

These precautions 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.

# CHAPTER 2

## Unpack your system

Unpack the system components. Verify that you have everything that you need to assemble and cable the system.

- [Unpack the disk processor enclosure](#).....14

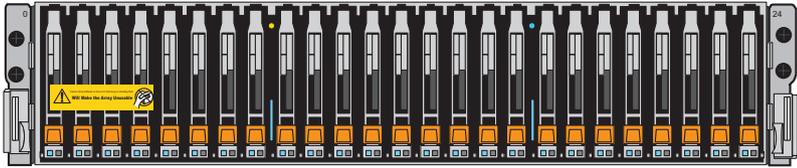
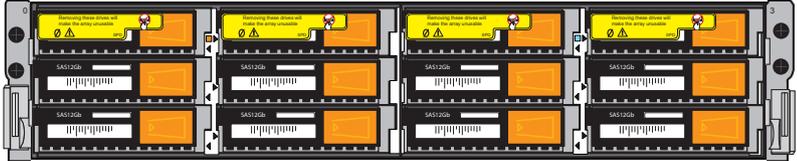
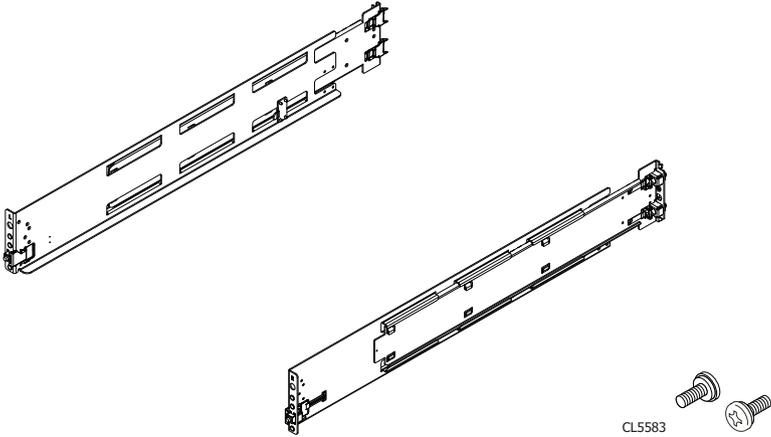
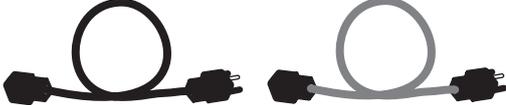
## Unpack the disk processor enclosure

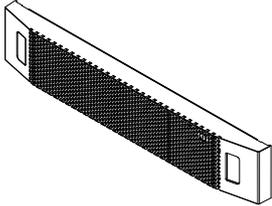
The disk processor enclosure (DPE) is a 2U component with either 12 3.5" drive slots or 25 2.5" drive slots. Verify that you have received all of the DPE components, including cables, bezel, rail kit, and mounting screws.

### Verifying shipping package contents

Confirm that you received all necessary equipment needed to install the new 2U DPE.

Verify that you received the following:

| Component  |  |
|--|--|
| <p>Disk processor enclosure (DPE)<br/>- 2U component with either:<br/>    25 2.5" drive slots<br/>    or<br/>    12 3.5" drive slots</p> | <p>Front view 25 2.5" drive slots</p>  <p>or</p> <p>Front view 12 3.5" drive slots</p>  |
| <p>Rail kit (1, includes 2 rails and 6 screws)</p>   |  <p>CL5583</p>   |
| <p>Power cords</p>   |    |

| Component  |   |
|--|---|
| Bezel for disk processor enclosure (1, with key) |  |

Unpack your system

# CHAPTER 3

## Install your storage system components into a rack

**NOTICE**

If the cabling channel at the top of the rack will be used to run the power cables, it is recommended to install the disk processor enclosure (DPE) in the lowest available location in a cabinet and then installing any optional disk-array enclosure (DAE) above the DPE. If the cabling channel at the bottom of the rack will be used to run the power cables, leave 1U of open space at the bottom of the cabinet when installing the DPE. Also, if all 40U of space in a single rack would be used, use two racks instead and leave 1U of open space at the bottom of the cabinet when installing the DPE.

---

**CAUTION**

**The enclosures are heavy and should be installed into or removed from a rack by two people. To avoid personal injury and/or damage to the equipment, do not attempt to lift and install an enclosure into a rack without a mechanical lift and/or help from another person.**

---

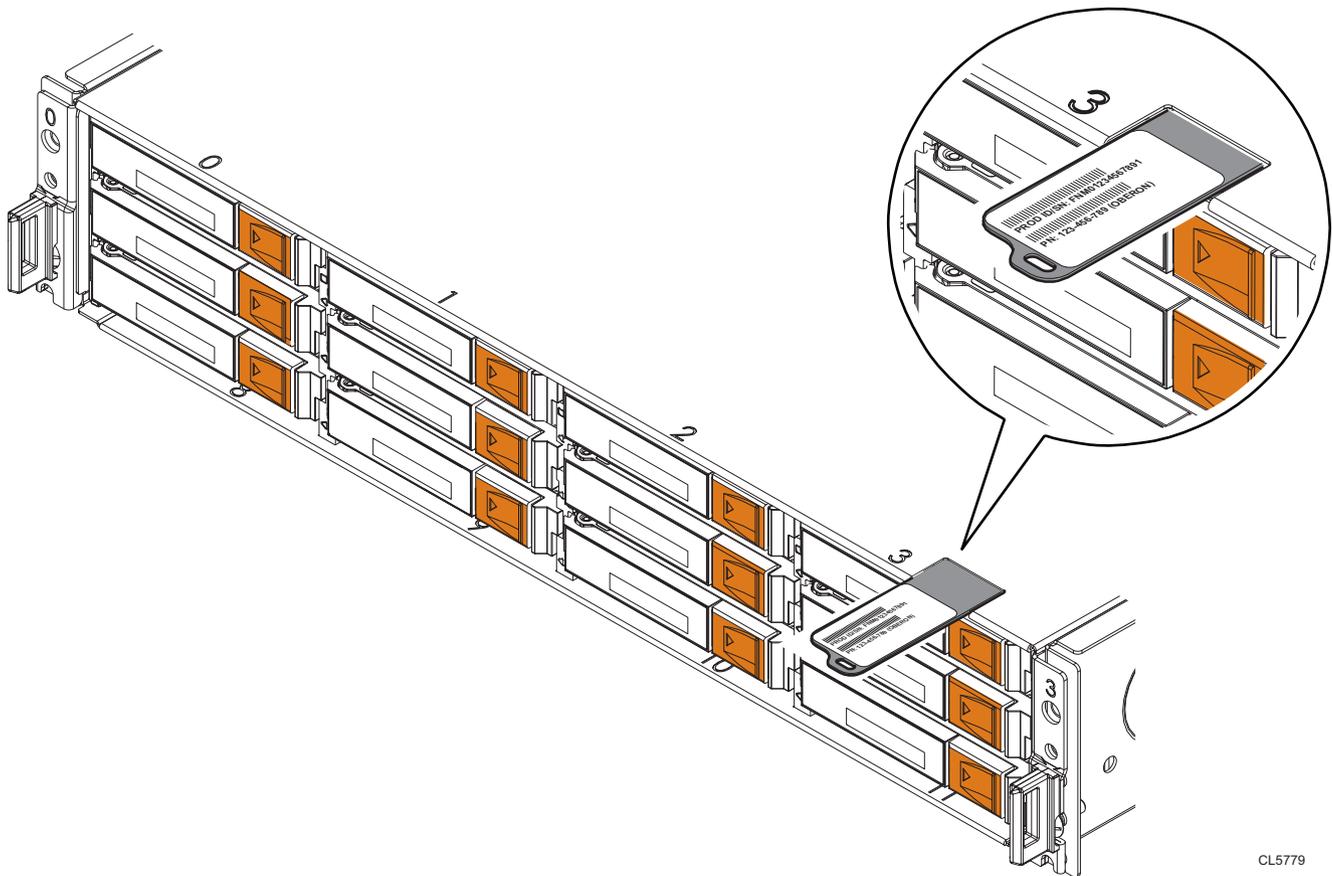
- [Install the disk processor enclosure](#)..... 18

## Install the disk processor enclosure

There are two types of DPE(s). Each is 2U. One utilizes 3.5" disks, while the other utilizes 2.5" disks. The installation procedure is identical, no matter which one you have in your system.

The DPE has a Product Serial Number Tag (PSNT) attached to the front of the chassis. On a DPE with 12 horizontal 3.5" drive slots, the tag is located on the top edge near the right side, see [Figure 1](#) on page 18.

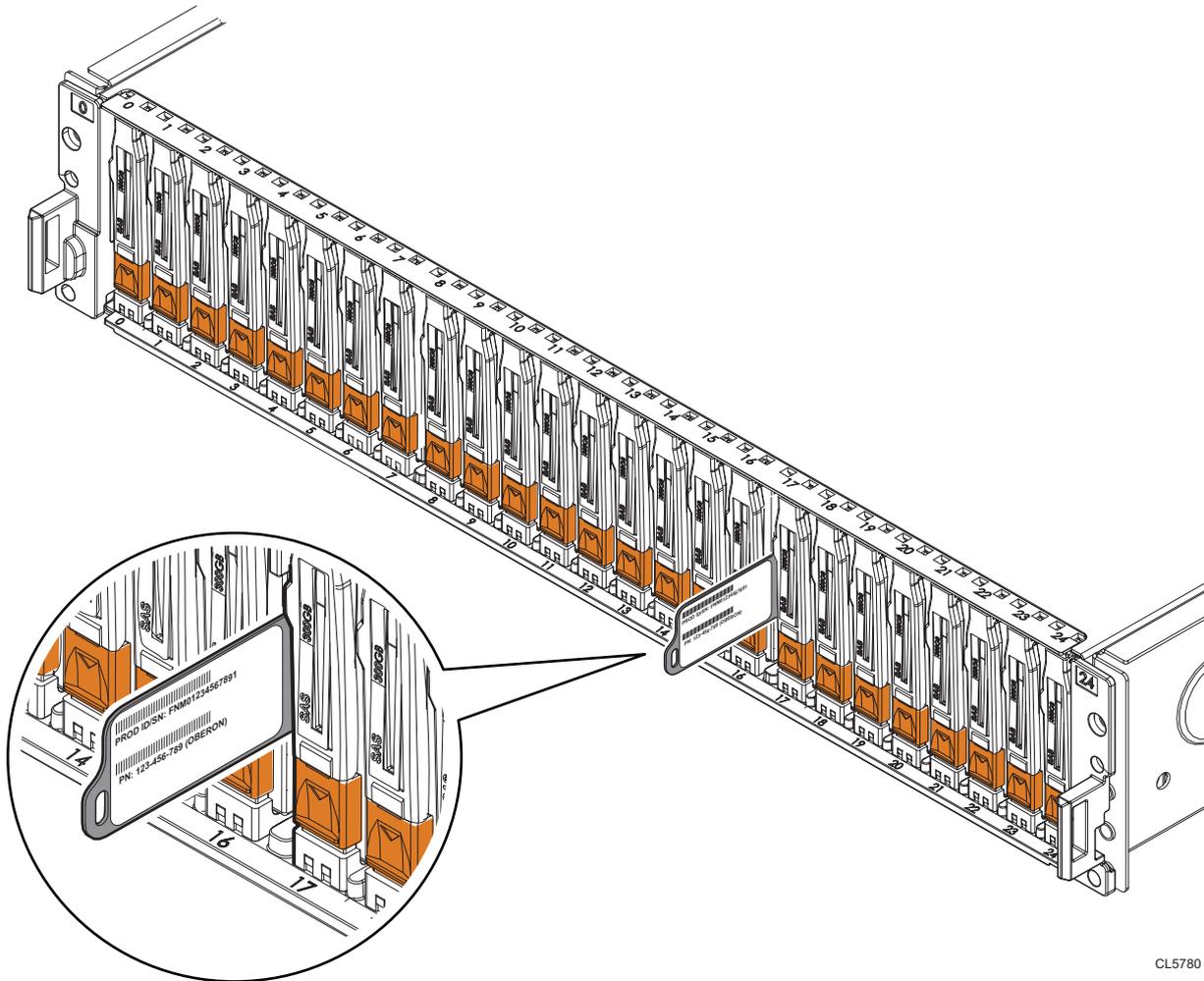
**Figure 1** PSNT location on DPE with 12-drive slots



CL5779

On a DPE with 25 vertical 2.5" drive slots, the tag is located below the DPE power status LED between drive slots 16 and 17, see [Figure 2](#) on page 19.

**Figure 2** PSTN location on a DPE with 25-drive slots



CL5780

Before installation of the chassis, pull the tag outward and record the information from the tag on the Configuration Worksheet. After recording the information, return the tag to its inserted position.

---

**Note**

Before installing the DPE, watch the Unity Quick Start Installation Video at <http://bit.ly/unityinfohub>.

---

## Installing the rails in the cabinet

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**Note**

The snap-in rails are dedicated left and right, and cannot be interchanged.

---

**Procedure**

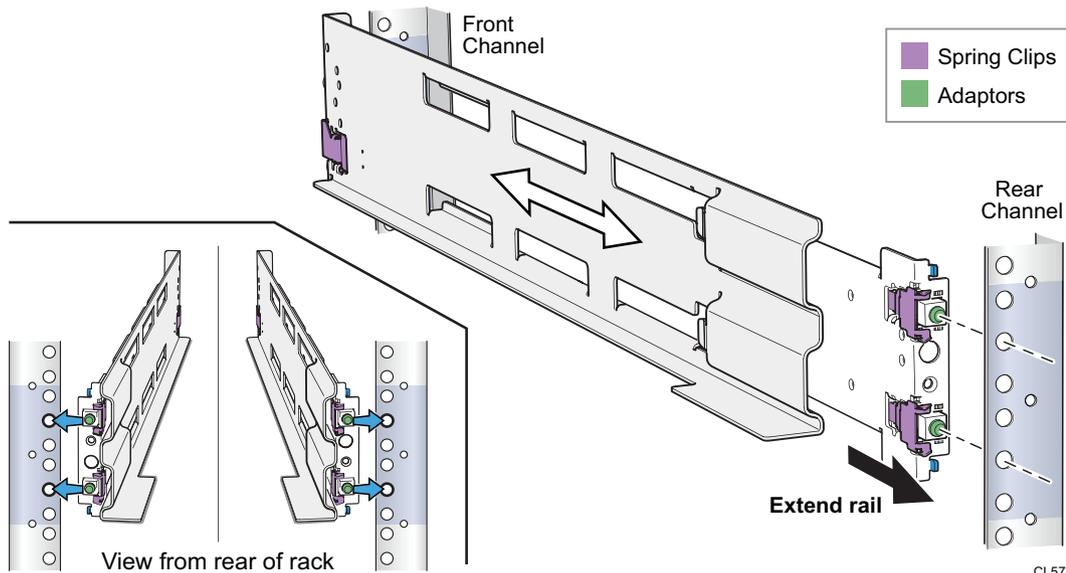
1. First, orient the rails. Face the front of the cabinet when orienting the left and right rail placement. The front edge of each rail is stamped L or R.
2. From the rear of the cabinet, insert the adapters into the holes on the rear rack channel with the rail extended as shown in [Push rail into rear channel mounting holes](#).

3. Push the rail into the rear mounting holes until the spring clips snap into place on the outside of the rear channel.

**CAUTION**

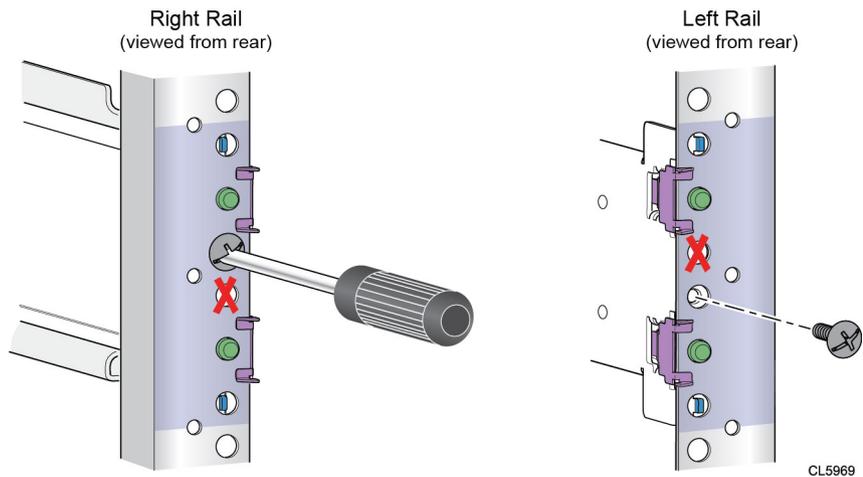
Ensure the holes on the rail line up with the holes on the cabinet. This will ensure proper alignment of the rails. Also, check that the rails are level and using the same cabinet Unit markers from front to rear. Ensure you are using the same unit markers from the front of the cabinet to the rear of the cabinet.

Figure 3 Push rail into rear channel mounting holes



4. From the rear of the cabinet, secure the rails in place using one M5 screw on each rail.

Figure 4 Installing the M5 Screw



5. Working from the front of the cabinet, align the adaptor with the mounting hole on the front of the rack as shown in [Securing rail to front channel](#).

**⚠ CAUTION**

Ensure the holes on the rail line up with the holes on the cabinet. This will ensure proper alignment of the rails. Also, check that the rails are level from front-to-back and left-to-right. Ensure you are using the same unit markers from the front of the cabinet to the rear of the cabinet.

---

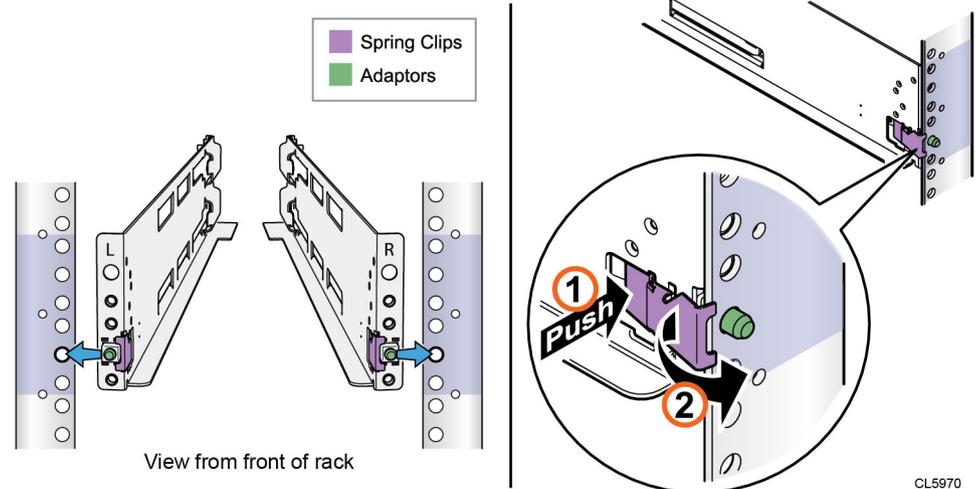
6. Push in on the spring clip while pulling the rail forward. When the spring clip is forward of the front rack channel, and the adaptor is in the mounting holes, release the spring clip so it holds the rail in place.

**⚠ CAUTION**

Ensure the spring clip is securely attached to the channel. It may be necessary to push in on the clip to assist in snapping it into place.

---

Figure 5 Securing rail to front channel



## Installing the DPE on the rails

### **⚠ CAUTION**

The enclosure is heavy and should be installed into or removed from a rack by two people. To avoid personal injury and/or damage to the equipment, do not attempt to lift and install the enclosure into a rack without a mechanical lift and/or help from another person.

L'armoire étant lourde, sa mise en place sur une rampe nécessite deux personnes. Afin de ne pas vous blesser et/ou endommager le matériel, n'essayez pas de soulever et d'installer l'armoire sur une rampe sans avoir recours à un relevage mécanique et/ou à l'aide d'une autre personne.

Das Gehäuse ist schwer und sollte nur von zwei Personen in einem Rack installiert werden. Zur Vermeidung von körperlichen Verletzungen und/oder der Beschädigung des Gerätes, bitte das Gehäuse nicht ohne die Hilfe einer zweiten Person anheben und einbauen.

Il contenitore è pesante e dev'essere installato nel rack da due persone. Per evitare danni personali e/o all'apparecchiatura, non tentare di sollevare ed installare in un rack il contenitore senza un sollevatore meccanico e/o l'aiuto di un'altra persona.

Debido a su considerable peso, la instalación del compartimento en el bastidor deben realizarla siempre dos personas. Para evitar daños personales o en el equipo, el compartimento no debe levantarse ni instalarse en el bastidor sin la ayuda de un elevador mecánico o de otra persona.

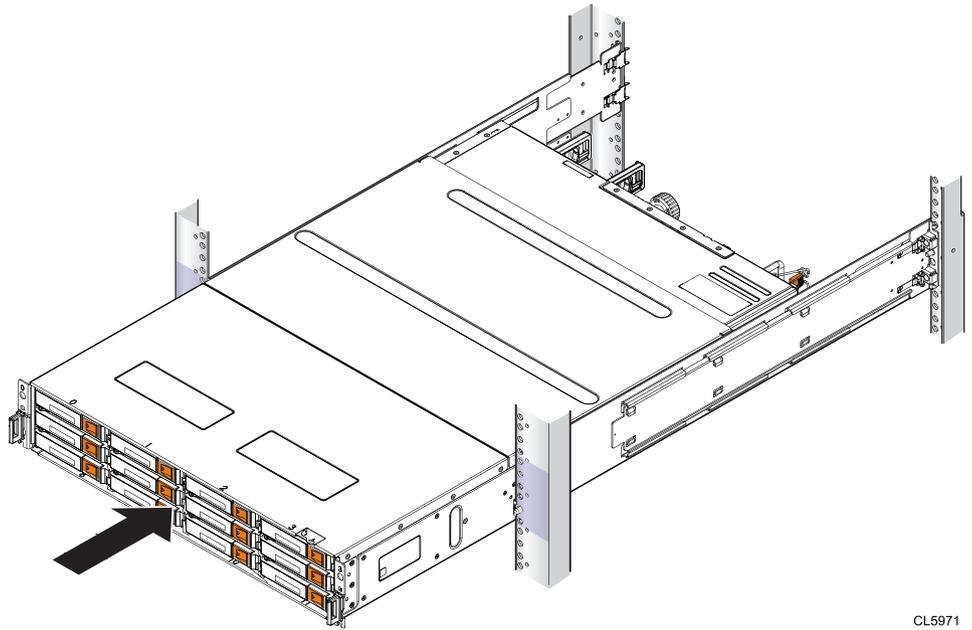
本設備相當沉重，安裝置機架時應由兩人搬動。切勿在未經機械搬動車和(或)他人協助的情況下，獨自搬動和安裝本設備，以免受傷和(或)損壞設備。

---

### Procedure

1. Lift the enclosure and, from the front of the cabinet, slide the enclosure onto the rails.

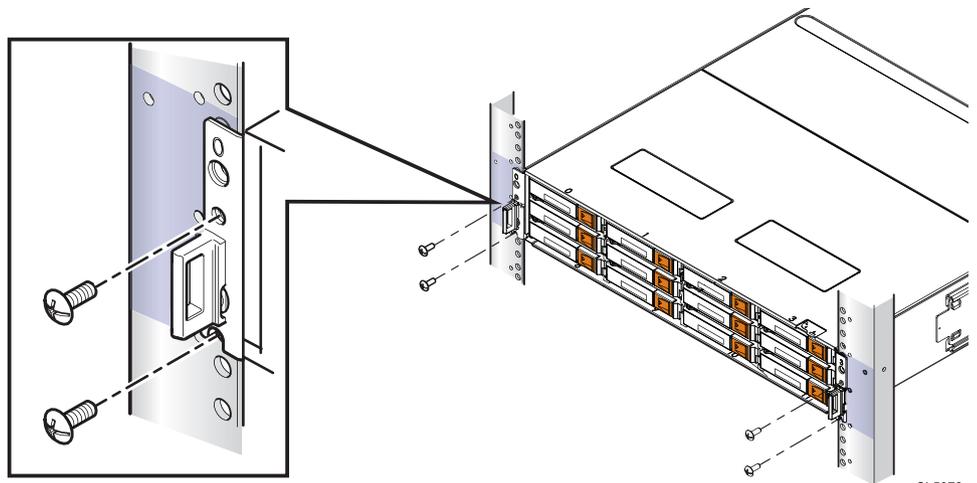
**Figure 6** Sliding the enclosure onto the rails



CL5971

2. Secure the front of the enclosure to the front vertical channels of the cabinet using four screws (two per side) by installing all four screws, and then tightening them.

**Figure 7** Securing enclosure to the front of the cabinet



CL5972

Install your storage system components into a rack

# CHAPTER 4

## Cable and power up your storage system components

Use this section to connect the storage system components to the network and redundant power sources.

- [Attach the storage processors to the network](#)..... 26
- [DPE power up](#)..... 26
- [Verify status LEDs](#)..... 28
- [Installing the front bezel](#)..... 31

## Attach the storage processors to the network

### Procedure

1. Locate two bulk Category (CAT) 5, 5e, 6, 6a or better Ethernet cables.
2. Connect two Ethernet cables from the LAN to the 1 Gb RJ45 management ports from which you will configure the system. This will be one port on each storage processor. See [Figure 8](#) on page 26.

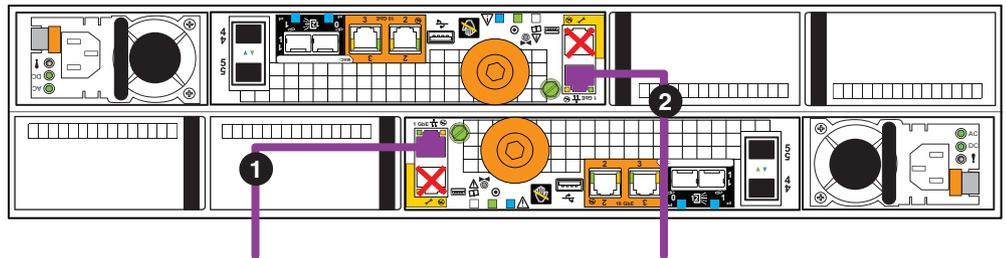
---

### Note

The SP A and SP B network management ports must be connected on the same subnet. In general, both SPs should have mirrored configurations in order to provide failover.

---

**Figure 8** Cabling the storage processors to the network



3. Attach Ethernet and/or Fibre Channel cables to the DPE ports, whether those built in to each SP or those on an I/O module, that you wish to use in order to create interfaces.

This step is optional and can be done at a later time. Only the management network cables installed in the previous step are required at this time.

---

### Note

Additional information about the ports and cabling is in the Hardware Information Guide, available on the Unity Info Hub at <http://bit.ly/unityinfohub> or on EMC Online Support (<https://support.emc.com/products/39949>).

---

## DPE power up

### Before you begin

All components must be racked and the network cabling completed before connecting the storage system to power and booting the system. Ensure that CNA ports 4 and 5 on the SPs are populated with the appropriate SFP type or active TwinAx connectors. Depending on the type of SFP used, the CNA ports will persist either as Ethernet or Fibre Channel, and once the protocol is set, it can only be changed by re-initializing the system.

### Procedure

1. Verify that the cabinet circuit breakers are in the On position and that power is connected to the cabinet.
2. Attach a double-sided Shut Down Procedure cable label to each power cable using the tie wraps included in the Accessory Kit.

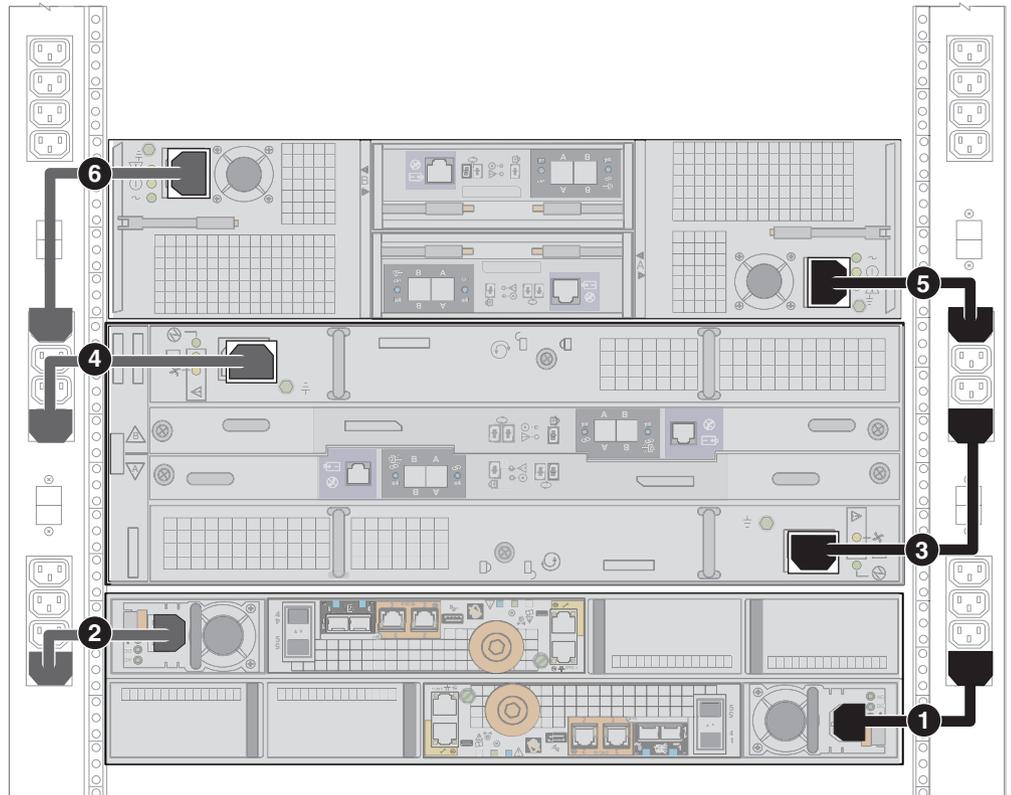
**Note**

Attach each label close to the end of the power cable where it plugs into the DPE.

- For each DPE power cable (shown as cables 1 and 2 in [Figure 9](#) on page 27), plug the cable into the system component.

The power cable to Power Distribution Unit (PDU) A is black. The power cable to PDU B is gray.

**Figure 9** Power cables to the DPE and optional DAEs



- Secure each power cable to the system component with the cable retention bail (moveable metal clip) on the component.
- Connect the power to the DPE. Plug the free end of the power cables into the PDU. Connect the power supply for SP A (shown as cable 1 in [Figure 9](#) on page 27) to PDU A . Connect the power supply for SP B (shown as cable 2 in ) to PDU B.
- Bundle and secure the cables as necessary with tie wraps.
- If your storage system has been installed in a cabinet, place the single-sided adhesive backed Shut Down Procedure label included in the Accessory Kit on the back of the cabinet door. Otherwise, place this label in a location that is visible while viewing the storage system from the rear.
- Monitor the system as it powers up. It takes approximately 10-15 minutes for the system to power up. The LEDs show the progress of system activation. Green, blue, and amber activity lights blink during the startup sequence. Review the next section for information on the power up states.

## Verify status LEDs

The system should be available in approximately 15 minutes.

This section calls out only the LEDs that you need to verify to ensure that the system powered up correctly.

**Note**

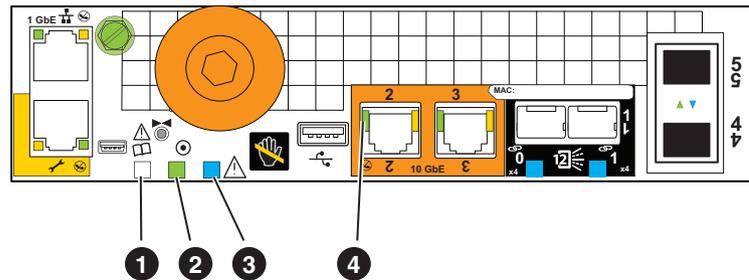
The *Unity Hardware Information Guide* provides more details on all system LEDs.

The array is powered up and ready to run the Connection Utility once the SP Fault LED shows intervals of amber for one second and blue for three seconds. If the system is on a network with a DNS server and DHCP, the management IP address can be assigned automatically. When it is assigned, the SP Fault LED will be solid blue. Ensure that the power-up is complete and that the system is ready before you continue.

**DPE rear status LEDs**

Verify that the storage system is up and running without error using the rear facing physical indicators on the storage processor as shown in [Figure 10](#) on page 28 and [Table 2](#) on page 28.

**Figure 10** SP status LEDs



**Table 2** SP status LEDs descriptions

| Location | LED                     | Color | State                                     | Description                            |
|----------|-------------------------|-------|---|--|
| 1        | SP Memory or Boot Fault | Amber | Off                                       | Normal operation                       |
| 2        | SP Power                | Green | On  | SP is on main power                    |
| 3        | SP Fault                | Amber | Blinking once every four seconds (.25 Hz) | BIOS is running                        |
|          |                         |       | Blinking once every second (1 Hz)         | POST is running                        |
|          |                         |       | Blinking four times every second (4 Hz)   | POST completed and OS boot has started |
|          |                         |       | Off                                       | Normal operation                       |

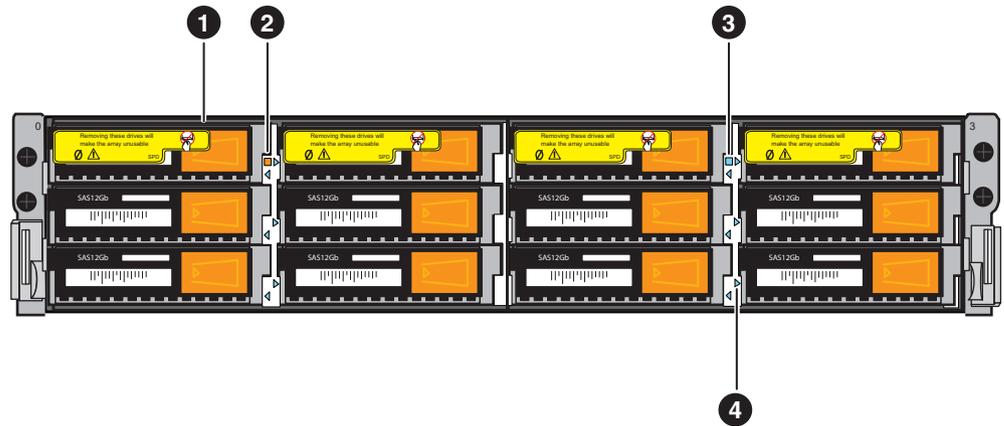
**Table 2** SP status LEDs descriptions (continued)

| Location | LED          | Color          | State   | Description  |
|----------|--------------|----------------|---|--|
|          |              | Blue           | Blinking once every four seconds (.25 Hz)                                 | Operating system is booting  |
|          |              |                | Blinking once every second (1 Hz)   | Operating system driver is starting  |
|          |              |                | Blinking four times every second (4 Hz)                                   | Operating system caching driver is starting  |
|          |              |                | On  | SP is not initialized. A management IP address is assigned.<br><br><b>Note</b><br>Once license accepted, the SP fault LED turns off. |
|          |              | Off            | All operating system software has booted and SP is ready for I/O.         |  |
|          |              | Amber and blue | Alternating at one second intervals                                       | SP is in Service mode.   |
|          |              |                | Intervals of amber for one second then immediately blue for three seconds | System not initialized and no management IP address assigned.  |
| 4        | Ethernet I/O | Green          | On  | Ethernet link active   |

**DPE front status LEDs**

Verify that the storage system is up and running without error using the front facing physical indicators on the [Figure 11](#) on page 30 and [Table 3](#) on page 30 or [Figure 12](#) on page 30 and [Table 4](#) on page 30.

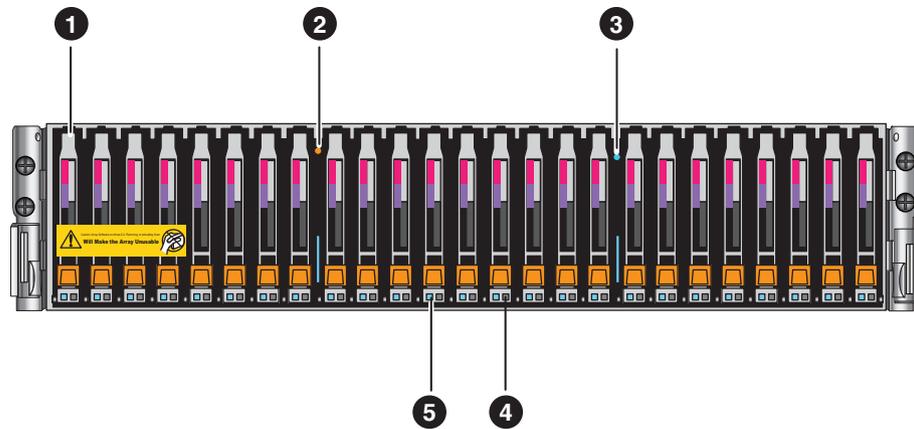
**Figure 11** 12-drive DPE status LEDs



**Table 3** Table 12-drive DPE status LED descriptions

| Location | Description               | Location | Description                             |
|----------|---------------------------|----------|---|
| 1        | 3.5-inch disk drive       | 3        | DPE power status LED (blue on)          |
| 2        | DPE fault LED (amber off) | 4        | Disk drive ready/activity LED (blue on) |

**Figure 12** 25-drive DPE status LEDs



**Table 4** 25-drive DPE status LED descriptions

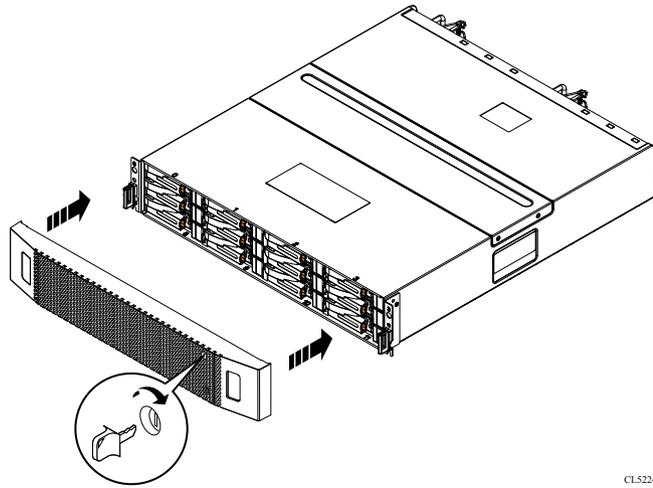
| Location | Description                    | Location | Description                             |
|----------|--------------------------------|----------|---|
| 1        | 2.5-inch disk drive            | 4        | Disk drive fault LED (amber off)        |
| 2        | DPE fault LED (amber off)      | 5        | Disk drive ready/activity LED (blue on) |
| 3        | DPE power status LED (blue on) |          |   |

# 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 13** Installing the front bezel



CL5224

Cable and power up your storage system components

# CHAPTER 5

## Set up a management interface connection

After you finish installing, cabling, and powering up the system, the system must acquire an IP address for its management interface before you can register, license, or configure it.

- [Connect a Windows-based computer to your storage system](#).....34
- [Automatically assigning a dynamic storage system management port IP address](#) .....34
- [Manually assigning a static storage system management port IP address](#).....36

## Connect a Windows-based computer to your storage system

---

### Note

At the end of the power-up process, the SP Fault LED blinks in intervals of amber for one second and then blue for three seconds, indicating that the system is ready to run the Connection Utility.

---

You must connect a Windows-based computer to your system directly or remotely over a subnetwork. This computer will be used to continue setting up your system and must be on the same subnet as the storage system to complete the initialization.

### NOTICE

Check to see if there is security software running on your workstation/laptop such as Cisco Security Agent or McAfee Host Intrusion Prevention Service that may prevent the initialized system from being detected. If there is, disable it (Windows Services) before running the initialization.

---

The system management ports support both IPv4 and IPv6. You can assign an IP address to a system in the following ways:

- If you are running the storage system on a dynamic network that includes a DHCP server and a DNS server, the management IP address can be assigned automatically.
- If you are not running the storage system in a network that supports DHCP or you would rather manually assign a static IP address, you must install and run the Connection Utility on the Windows-based computer.

Dynamic IP addresses (DHCP) should not be used for any components of the EMC Secure Remote Services Virtual Edition (ESRS VE) servers, Policy Manager servers, or managed devices.

### NOTICE

If you use DHCP to assign IP addresses to any EMC Secure Remote Services (ESRS) components (ESRS Virtual Edition servers, Policy Manager, or managed devices), they must have static IP addresses. Leases for the IP addresses that EMC devices use cannot be set to expire. EMC recommends that you assign static IP addresses to those devices you plan to have managed by ESRS.

---

## Automatically assigning a dynamic storage system management port IP address

Assigning an IP address to a storage system management port dynamically requires the following:

- Network DNS server (with dynamic DNS services enabled)
- Network DHCPv4 server and/or a DHCPv6 server and/or a router advertising DNS servers
- Connectivity between the storage system, the DHCP server, and the DNS server

The DHCP server must be configured to automatically register DHCP clients with Dynamic DNS services. By default, storage systems are configured to use DHCP for IP assignment and will accept an IP address offered by a network DHCP server.

Perform the following steps to automatically assign an IP address to your storage system management port:

### Procedure

- After you power up the storage system, check the SP Fault LED.
  - If the SP Fault LED is solid blue, a management IP address has been assigned.
  - If the SP Fault LED is solid blue for three seconds and then flashes amber for one second intervals, no management IP address has been assigned. Check the connectivity between the system, the DNS server, and the DHCP server.
- Open a web browser and access the Unisphere management interface specifying the following as a URL in the browser's address bar:  
serial\_number.dns\_zone

where

| URL string    | Description  |
|---------------|--|
| serial_number | Serial number of your storage system. You can find this in the packing materials that came with your system (for example, FNM00131800283). It is also on the PSNT tag on the front of the DPE. |
| dns_zone      | Network DNS zone on which the storage system is located (for example, mylab.emc.com).  |

Based on the examples provided in this table, the URL to the storage system would be FNM00131800283.mylab.emc.com.

### Note

If a certificate error appears, follow the instructions in your browser either to bypass the error or to install the self-signed storage system certificate. For more detail about your storage system certificate, refer to the *EMC Unity Security Configuration Guide*.

- Log in with the default username and password.
  - Username:** admin
  - Password:** Password123#

The Unisphere Initial Configuration wizard launches.

- Continue with the steps in the Unisphere Initial Configuration wizard to accept the license agreement, configure, and update the software on your system.

The Unisphere Initial Configuration wizard online help provides information about the steps remaining to accept the license agreement, configure, and update the software on your system.

- Confirm that the SP Fault LED is now out.

This provides an indication that all operating system software has booted and SP is ready for I/O.

## Manually assigning a static storage system management port IP address

To manually assign a static IP address for the storage system management port, you must install and run the Connection Utility on a Windows-based computer. The Connection Utility assigns a network address to the storage system.

### Download and install the Connection Utility software

#### Procedure

1. Download the Connection Utility installation program from the EMC Online Support website (<https://support.emc.com>), under the **Downloads** selection on the menu bar of the product page for your storage system.
2. Install the Connection Utility software on a Windows computer. To use the Auto Discover method discussed below, install on a computer in the same subnet as the storage system's management port.
3. Launch the Connection Utility (under Windows, **Start > Programs > EMC > Connection Utility**).

---

#### Note

The Connection Utility automatically sets the displayed language based on the settings of the computer. To change the language displayed in the Connection Utility, select the desired language from the list under **Change language**.

---

### Run the Connection Utility

#### Before you begin

Obtain the following information:

- **Serial Number:** Unique identifier associated with the storage system (printed on a tag located on the system). This identifies your system when you use the Connection Utility to discover storage systems on a subnet. When you register your system online, this value is the Product ID.
- **System name:** Name that you will be assigning to the storage system.
- **IP address:** Management IPv4 or IPv6 address through which Unisphere connects to the storage system.
- **Subnet mask:** For IPv4 management addresses, the subnet mask is an IP address mask that identifies the range of IP addresses in the subnet where the storage system is connected.
- **Subnet prefix length:** For IPv6 management addresses, the subnet prefix length is the number of significant bits in the address that will be used for routing purposes.
- **Gateway address:** IP address of the default gateway for the management interface. The gateway is the IP address of the router or node used to communicate outside the local subnet.

Run the Connection Utility from a host attached to the same subnet as your storage system. Doing so lets the Connection Utility automatically detect the new storage

system. If you are unable to run the Connection Utility from the same subnet, you can still manually configure the connection.

### Procedure

1. On the **Welcome** screen, select one of the following methods to configure your system, and then click **Next**:
  - **Auto Discover** - Use this method if you are running the Connection Utility from a host on the same subnet as your storage system. This method automatically discovers unconfigured storage systems on your local network and sends the configuration file directly to the storage system.
  - **Manual Configuration** - Use this method if you are running the Connection Utility from a host that is not on the same subnet as your storage system. This method enables you to create a configuration file that you can save to a USB flash drive. You then insert the flash drive into the USB port on the storage system, and the storage system automatically reads the configuration from the USB drive.
2. [Applies to **Auto Discover** mode only] From the list of automatically discovered systems, select the system you want to configure, and then click **Next**. Note: If you do not see the system listed on the screen, try clicking **Discover** to restart the discovery process. If the problem persists, refer to troubleshooting instructions.
3. On the **Configure** screen, specify the following:
  - **Name** - A meaningful name for this system. You can specify a name up to 32 characters. It can only contain alpha-numeric characters, a dash, and an underscore. It cannot contain any space characters or begin and end with a dash.
  - In the **Management IPv4 Address** and **Management IPv6 Address** sections, select the options you want, specify relevant information, and then click **Next**.
4. Review the configuration information, and then do the following based on the mode you selected:
  - For **Auto Discover** mode, click **Start** to apply the configuration on the storage system.
  - For **Manual Configuration** mode:
    - a. Click **Save to USB drive**. Ensure that you save the configuration file to the root directory level of the USB drive.
    - b. Click **Next** to identify the location of the port on your storage system.
    - c. Insert the USB drive into one of the available USB ports on either SP.  
The storage system will automatically detect the USB drive and apply the network connection information. This process may take up to 10 minutes. When successfully completed, a response file (iw\_resp.txt) is written back to the USB drive.
5. Click **Finish**.
6. Confirm that the SP Fault LED is solid blue, which indicates that the system's IP address has been set.

### After you finish

In a web browser, access Unisphere by specifying the URL: **http://<ip\_address>/**.

Where, **<ip\_address>** is the IP address you set for the storage system.

---

**Note**

Refer to the *Configuration Worksheet* for information on the user credentials you must use the first time you log on.

---

The Initial Configuration Wizard launches the first time you access Unisphere. Refer to the *Configuration Worksheet* and *Unisphere Online Help* for more information on configuring and start using your system.

# CHAPTER 6

## Unpack your DAE

Unpack the DAE components. Verify that you have everything that you need to assemble and cable the DAE.

- [Unpack the \(optional\) disk-array enclosures](#).....40

## Unpack the (optional) disk-array enclosures

Disk-array enclosures (DAEs) provide additional storage. The types of DAEs available are:

- 3U 15 disk 3.5" drive DAE
- 2U 25 disk 2.5" drive DAE

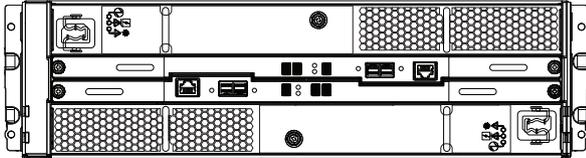
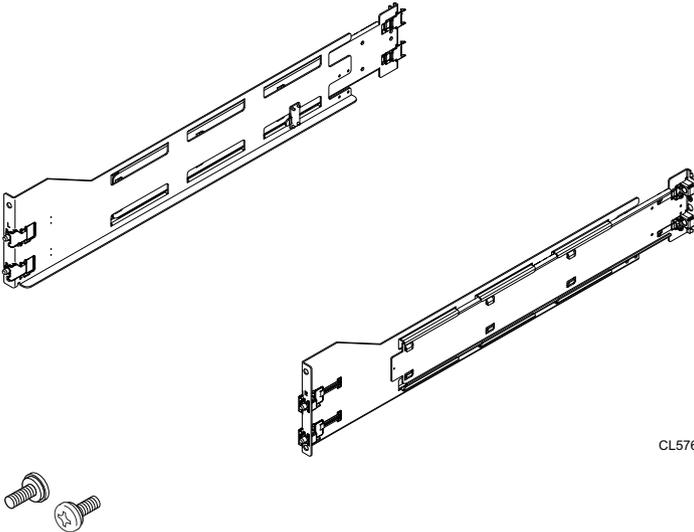
DAEs are optional. If you have one or more DAEs in the system, verify that you have received all of the DAE components, including cables, bezel, rail kit, and mounting screws.

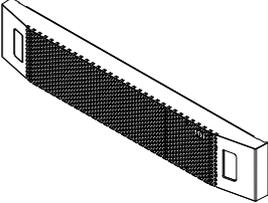
### 15-drive DAE container contents

#### Verifying shipping package contents

Confirm that you received all necessary equipment needed to install the new 15-drive DAE.

Verify that you received the following:

| Component                  |  | Quantity                          |
|----------------------------|--|-----------------------------------|
| Disk-array enclosure (DAE) | <p>Front view</p>  <p>Rear view</p>  <p>CL5665</p> | 1                                 |
| Snap in rail kit           |  <p>CL5766</p>   | 1 (includes 2 rails and 6 screws) |
| Power cords (AC or DC)     | AC power cords   | 2                                 |

| Component   |   | Quantity |
|---|---|----------|
|   |  <p>DC power cords</p> |          |
| <p>Bezel for disk-array enclosure (with key)</p>  |                        | <p>1</p> |
| <p>SAS cables (either 1 meter or 2 meter copper) that connect disk-array enclosures to each other (1 meter cables) or to DPE (2 meter cables)</p> |                        | <p>2</p> |

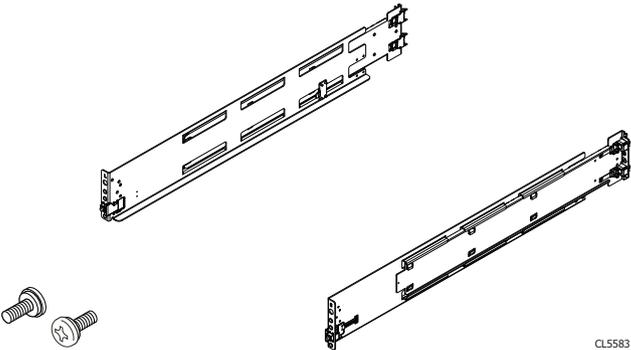
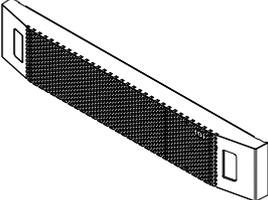
## 25-drive DAE container contents

### Verifying shipping package contents

Confirm that you received all necessary equipment needed to install the new 25-drive DAE.

Verify that you received the following:

| Component                                  |  | Quantity |
|--|--|----------|
| <p>Disk-array enclosure (25-drive DAE)</p> | <p>Front view</p>  <p>Rear view</p>  | <p>1</p> |

| Component  |   | Quantity |
|--|---|----------|
| Rail kit, including<br>Snap-in rails (2)<br>Screws (3 per rail)  |  <p style="text-align: right; font-size: small;">CL5583</p> | 1        |
| Power cords  |    | 2        |
| Bezel for disk-array enclosure (with key)  |    | 1        |
| mini-SAS HD cables (either 1 meter or 2 meter copper) that connect disk-array enclosures to each other (1 meter cables) or to DPE (2 meter cables) |    | 2        |

# CHAPTER 7

## Install your DAE components into a rack

**NOTICE**

If the cabling channel at the top of the rack will be used to run the power cables, it is recommended to install the disk processor enclosure (DPE) in the lowest available location in a cabinet and then installing any optional disk-array enclosure (DAE) above the DPE. If the cabling channel at the bottom of the rack will be used to run the power cables, leave 1U of open space at the bottom of the cabinet when installing the DPE. Also, if all 40U of space in a single rack would be used, use two racks instead and leave 1U of open space at the bottom of the cabinet when installing the DPE.

---

**CAUTION**

**The enclosures are heavy and should be installed into or removed from a rack by two people. To avoid personal injury and/or damage to the equipment, do not attempt to lift and install an enclosure into a rack without a mechanical lift and/or help from another person.**

---

- [Install the disk array enclosure](#)..... 44

## Install the disk array enclosure

There are two types of DAEs. One is a 3U 15 disk 3.5" drive DAE. The other is a 2U 25 disk 2.5" drive DAE. DAEs are optional. The installation procedures are slightly different for each.

### Install 15-drive DAE

#### Installing snap-in rails in the cabinet

---

##### Note

The snap-in rails are dedicated left and right, and cannot be interchanged. The front edge of each rail is stamped L or R for left or right side when the rail faces the cabinet front.

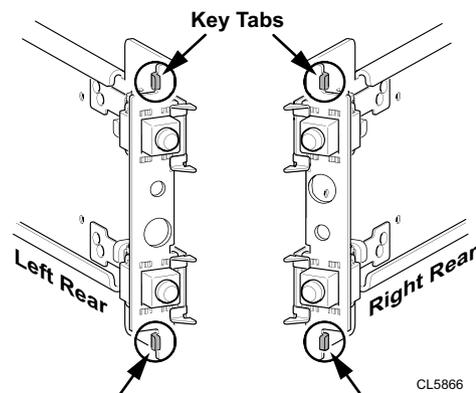
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The snap-in rails have two key tabs at the top and bottom edge on the rear of each rail. The key tabs ensure that the rails are installed in the appropriate 2U space.

##### Procedure

1. From the rear of the cabinet, insert the two key tabs into the holes of the 2U-space on the rear cabinet channel.

**Figure 14** Key tabs at rear rail top and bottom edge



---

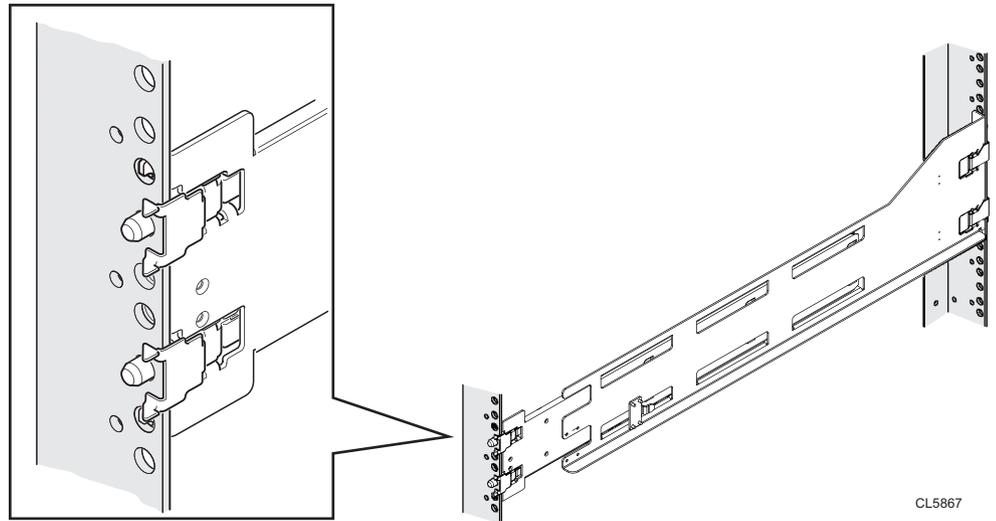
##### Note

As the key tabs and adaptors are pushed into the rear mounting holes, the spring clips will ride over the cabinet channel and snap into place.

---

2. Holding the rail extended, push the key tabs and the adaptors into the rear mounting holes until the spring clips snap into place on the outside of the rear cabinet channel.

**Figure 15** Aligning the rear adaptors (left rear of cabinet shown)

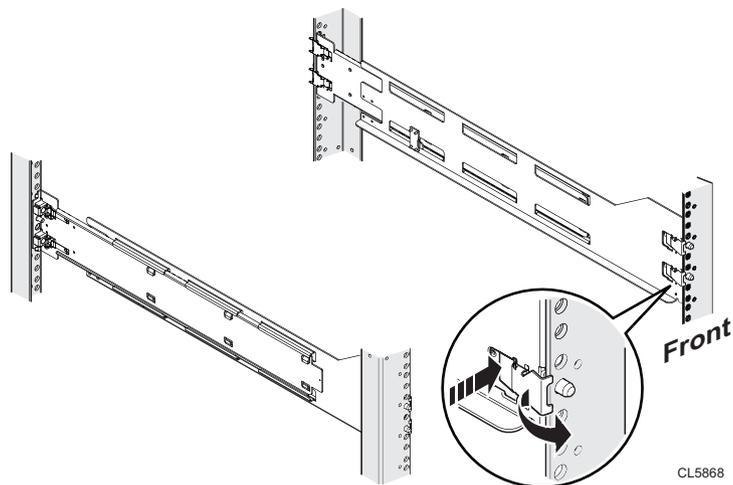


3. At the front of the cabinet, making sure the rail is level, pull it forward and align the rail adaptor with the mounting hole in the channel. Push in on the spring clip while pulling forward on the rail. When the spring clip is forward of the front cabinet channel, and the adaptor is in the mounting holes, release the spring clip so it holds the rail in place.

**CAUTION**

Ensure the spring clip is securely attached to the channel. It may be necessary to push in on the clip to assist in snapping it into place.

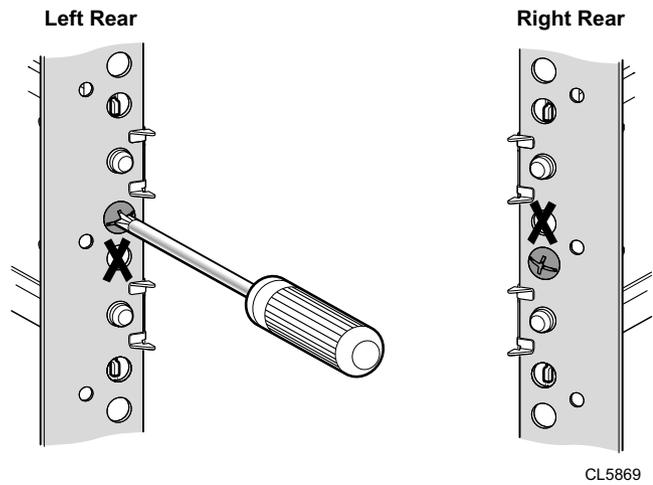
**Figure 16** Securing the Spring Clips



4. From the rear of the cabinet, secure the rail in place using one M5 screw on each rail.

Install your DAE components into a rack

**Figure 17** Installing the M5 Screw



## Installing the DAE on the rails

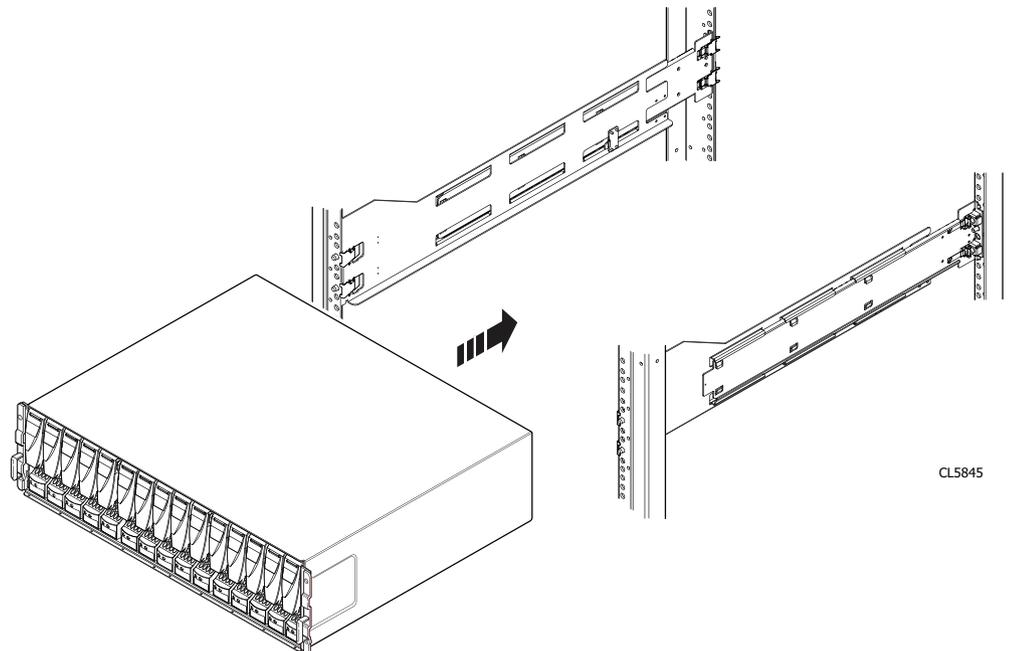
**⚠ WARNING**

The enclosure is heavy and should be installed into or removed from a rack by two people. To avoid personal injury and/or damage to the equipment, do not attempt to lift and install the enclosure into a rack without a mechanical lift and/or help from another person.

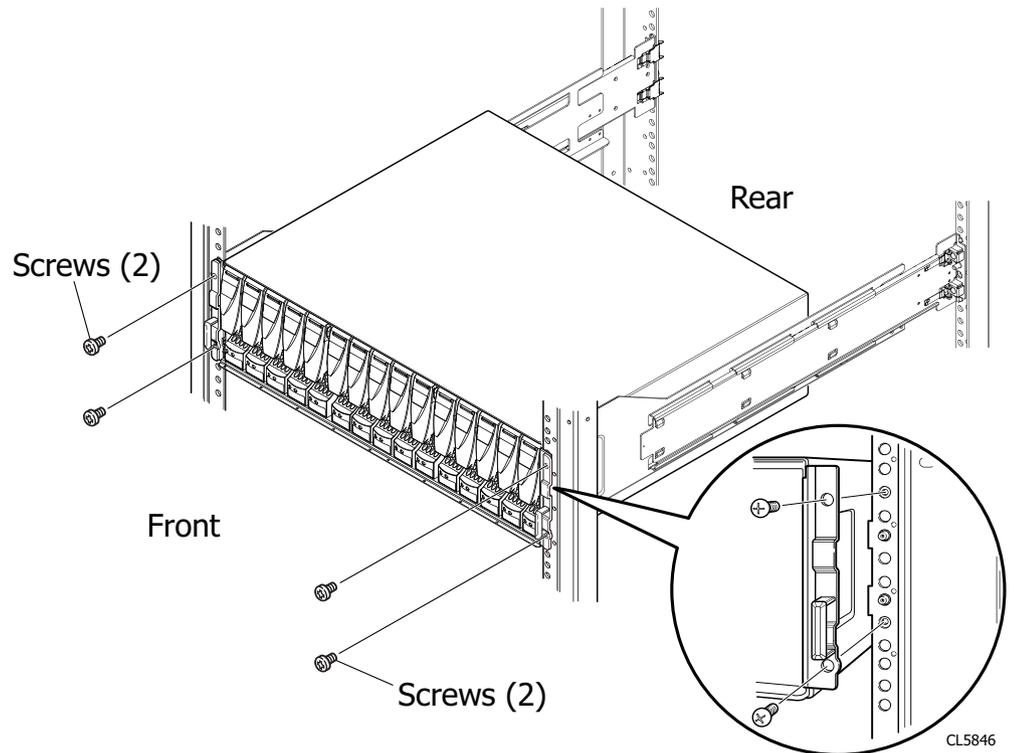
### Procedure

1. With help from another person, lift the enclosure and, from the front of the cabinet/rack, slide the enclosure onto the rails.

**Figure 18** Sliding the enclosure onto the rails



2. Once the enclosure is completely seated into the rear tabs, secure the front of the enclosure to the front vertical channels with four screws (two per side), but do not tighten the screws until they are all in place.

**Figure 19** Securing the front of the enclosure

## Install 25-drive DAE

### Installing the rails in the cabinet

---

#### Note

The snap-in rails are dedicated left and right, and cannot be interchanged.

---

#### Procedure

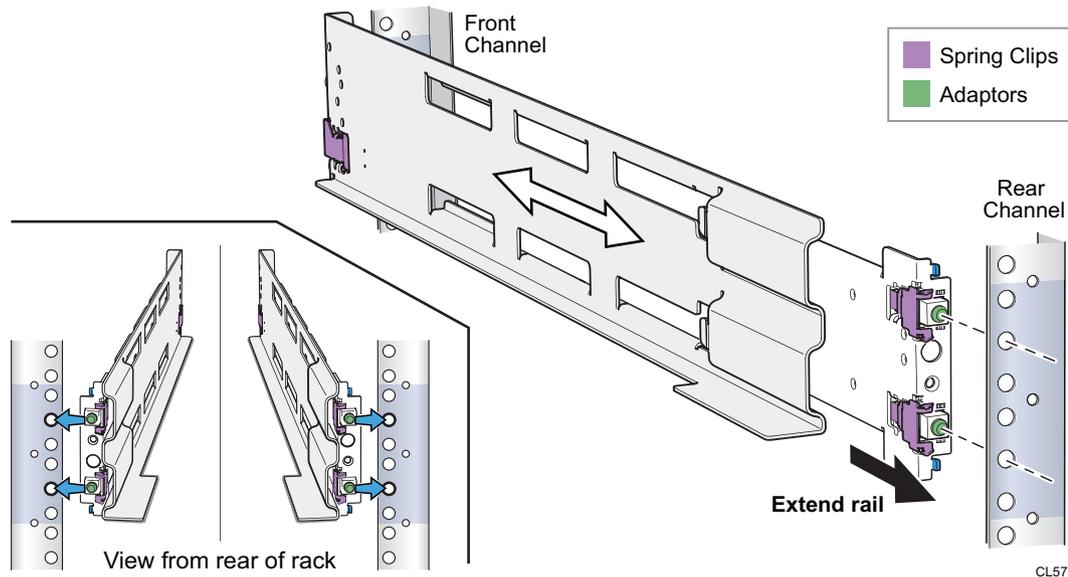
1. First, orient the rails. Face the front of the cabinet when orienting the left and right rail placement. The front edge of each rail is stamped L or R.
2. From the rear of the cabinet, insert the adapters into the holes on the rear rack channel with the rail extended as shown in Figure 20.
3. Push the rail into the rear mounting holes until the spring clips snap into place on the outside of the rear channel.

#### **CAUTION**

**Ensure the holes on the rail line up with the holes on the cabinet. This will ensure proper alignment of the rails. Also, check that the rails are level and using the same cabinet Unit markers from front to rear. Ensure you are using the same unit markers from the front of the cabinet to the rear of the cabinet.**

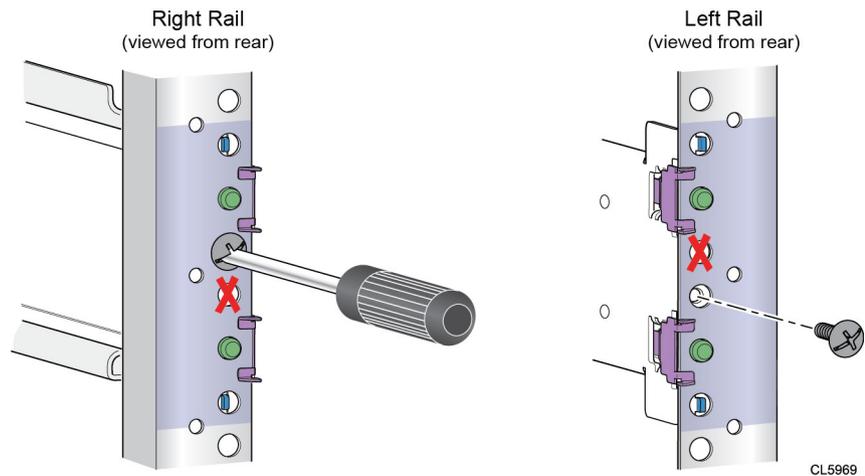
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**Figure 20** Push rail into rear channel mounting holes



4. From the rear of the cabinet, secure the rails in place using one M5 screw on each rail.

**Figure 21** Installing the M5 Screw



5. Working from the front of the cabinet, align the adaptor with the mounting hole on the front of the rack as shown in Figure 22.

**CAUTION**

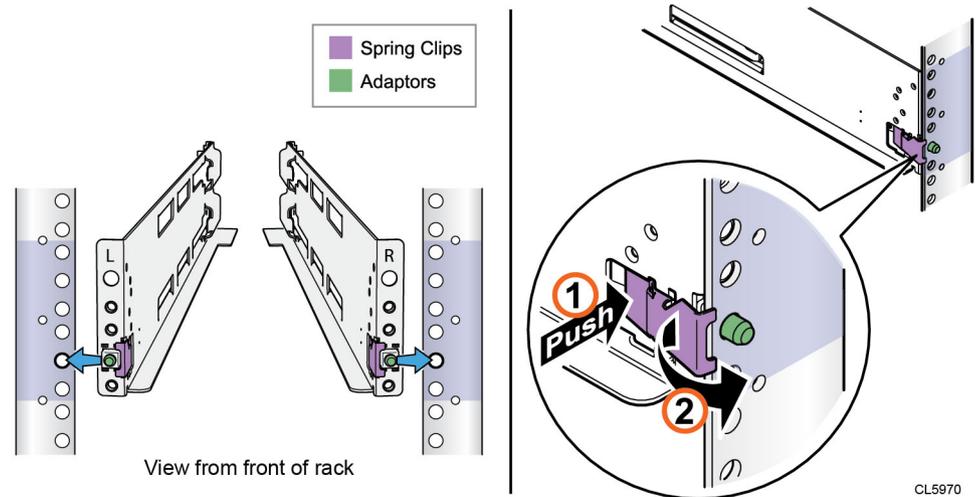
**Ensure the holes on the rail line up with the holes on the cabinet. This will ensure proper alignment of the rails. Also, check that the rails are level from front-to-back and left-to-right. Ensure you are using the same unit markers from the front of the cabinet to the rear of the cabinet.**

6. Push in on the spring clip while pulling the rail forward. When the spring clip is forward of the front rack channel, and the adaptor is in the mounting holes, release the spring clip so it holds the rail in place.

**CAUTION**

Ensure the spring clip is securely attached to the channel. It may be necessary to push in on the clip to assist in snapping it into place.

Figure 22 Securing rail to front channel



CL5970

## Installing the DAE on the rails

**CAUTION**

The enclosure is heavy and should be installed into or removed from a rack by two people. To avoid personal injury and/or damage to the equipment, do not attempt to lift and install the enclosure into a rack without a mechanical lift and/or help from another person.

L'armoire étant lourde, sa mise en place sur une rampe nécessite deux personnes. Afin de ne pas vous blesser et/ou endommager le matériel, n'essayez pas de soulever et d'installer l'armoire sur une rampe sans avoir recours à un relevage mécanique et/ou à l'aide d'une autre personne.

Das Gehäuse ist schwer und sollte nur von zwei Personen in einem Rack installiert werden. Zur Vermeidung von körperlichen Verletzungen und/oder der Beschädigung des Gerätes, bitte das Gehäuse nicht ohne die Hilfe einer zweiten Person anheben und einbauen.

Il contenitore è pesante e dev'essere installato nel rack da due persone. Per evitare danni personali e/o all'apparecchiatura, non tentare di sollevare ed installare in un rack il contenitore senza un sollevatore meccanico e/o l'aiuto di un'altra persona.

Debido a su considerable peso, la instalación del compartimento en el bastidor deben realizarla siempre dos personas. Para evitar daños personales o en el equipo, el compartimento no debe levantarse ni instalarse en el bastidor sin la ayuda de un elevador mecánico o de otra persona.

本設備相當沉重，安裝置機架時應由兩人搬動。切勿在未經機械搬動車和(或)他人協助的情況下，獨自搬動和安裝本設備，以免受傷和(或)損壞設備。

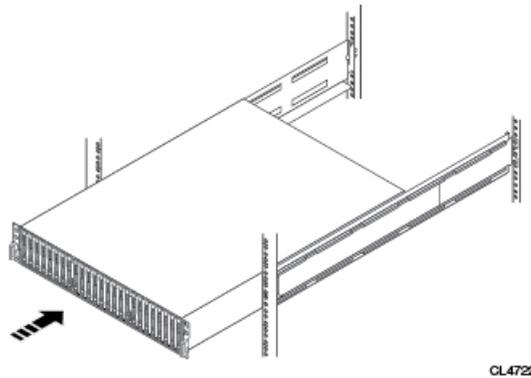
**CAUTION**

Do not install the enclosure without the rear rail screws installed and fully tightened. If the screws are not installed and tightened, the rails could rotate out of position, possibly causing the enclosure to fall, causing damage to the DAE and causing personnel injury.

**Procedure**

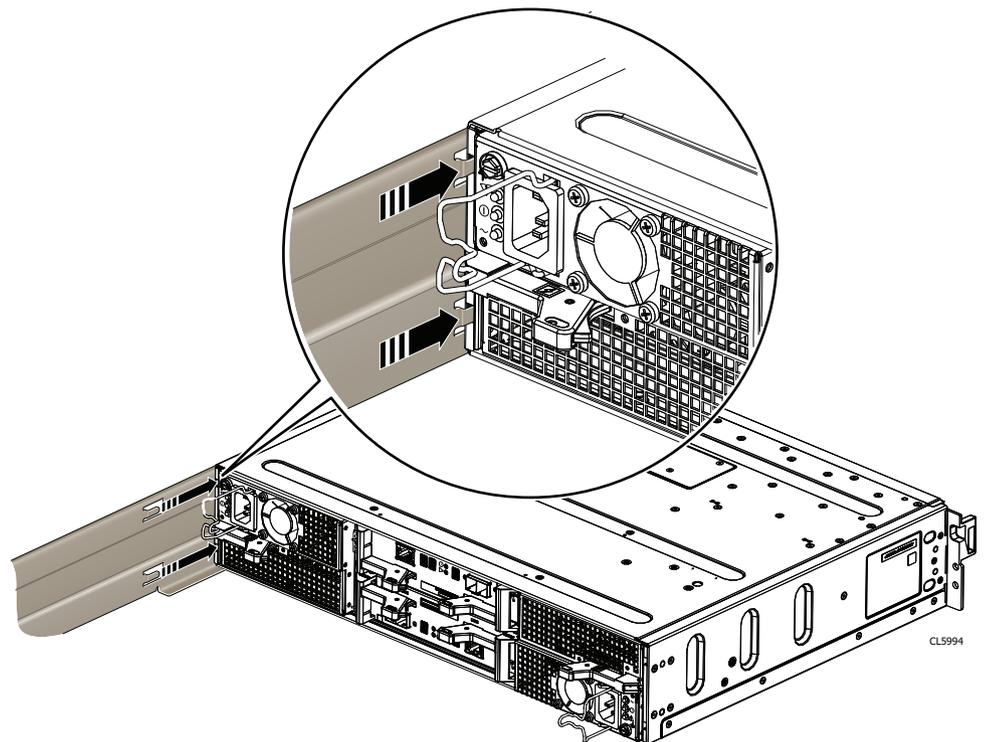
1. With help from another person, lift the enclosure and, from the front of the cabinet/rack, slide the enclosure onto the rails.

**Figure 23** Sliding the enclosure onto the rails



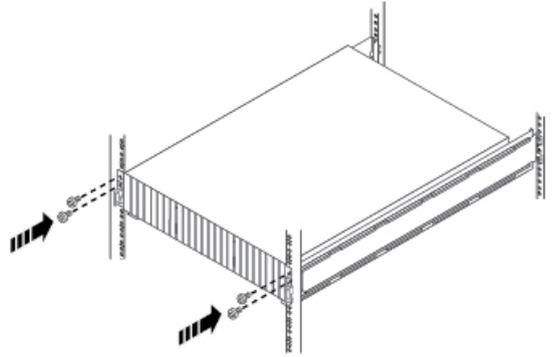
When the enclosure slides to the back of the cabinet, the rear tabs on the rails insert into the notches in the rear of the enclosure. The tabs secure and support the rear of the enclosure.

**Figure 24** Rail tabs securing the rear of the enclosure



2. Secure the front of the enclosure to the front vertical channels with four screws (two per side), but do not tighten the screws until they are all in place.

**Figure 25** Securing the front of the enclosure



CL4725

Install your DAE components into a rack

# CHAPTER 8

## Cable and power up your DAE components

Use this section to cable your storage system to optional DAEs and to connect the DAE components to redundant power sources.

- [Cabling the DPE to a DAE](#) ..... 54
- [Cabling an expansion DAE to an existing DAE to extend a back-end bus](#) ..... 63
- [DAE power up](#) ..... 66

## Cabling the DPE to a DAE

If you have one or more DAEs, these components must be cabled to the DPE back-end ports so that the storage is available in the system. Typically, the DAE(s) that are to be directly connected to the DPE need to be located close enough to the DPE so that the 2-meter DPE-to-DAE interconnect cables can be routed and connected to the DPE easily. 5- and 10-meter interconnect cables are available when you need to connect enclosures across multiple racks.

---

### Note

General DAE back-end bus configuration rules:

1. Maximum number of enclosures per bus is 10.
2. Maximum number of drive slots per bus is 250, up to specific system limitations for drive slots.
3. For best performance, evenly distributing DAEs across the available back-end buses is recommended.

Consider the maximum number of drives supported by the storage system model. DAEs can be added to the system while the operating system is active and up to the DAE and drive slot limit for the storage system. DAEs or drive slots over the system limit will not be allowed to operate with the system.

---

Shown in the upcoming figures are examples of two-bus SAS cabling in this DPE-based storage platform. The storage processors connect to the DAEs with mini-SAS HD cables. The cables connect LCCs in the DAEs of a storage platform in a daisy-chain topology.

The mini-SAS HD ports on the storage processors in the DPE are labeled 0 and 1. Mini-SAS HD port 0 is connected internally to the SAS expander that connects the drives on the front of the DPE. The DPE and its front facing drives begin the first back-end bus, BE0, and is automatically enclosure 0 (EA0). We refer to the address of this enclosure as BE0 EA0.

### NOTICE

Each DAE supports two completely redundant connections to the DPE (LCC A and LCC B).

---

Since mini-SAS HD port 0 is already connected internally to the DPE drives, it is recommended that you connect the first optional DAE to the mini-SAS HD output port 1 of each storage processor to begin back-end bus 1 (BE1) and designate this DAE as enclosure 0 of this bus. We refer to the address of this enclosure as BE1 EA0.

In a two back-end bus system, it is recommended that you connect the second optional DAE to the mini-SAS HD port 0 of each storage processor.

### DAE load balancing

If your system has several optional DAEs, you can daisy-chain them within that bus. However, it is recommended that you balance each bus. In other words, always optimize your environment by using every available bus, and spreading the number of enclosures and drives as evenly as possible across the buses.

The rule of load or bus balancing is applied to all DAEs. BE0 EA0 (0\_0) is the DPE (SP A and B). So, to balance the load, the first DAE (LCC A and B) in the cabinet is BE1 EA0 (1\_0) and with the second DAE BE0 EA1 (0\_1), and so on.

## Cabling the first optional DAE to create back-end bus 1

Connect the first optional expansion DAE to port 1 of the DPE to create back-end bus 1 (BE1) and designate this DAE as enclosure 0 of this bus. We refer to the address of this enclosure as BE1 EA0 (1\_0).

### Before you begin

To prepare for this cabling task:

- Locate the mini-SAS HD cables to be used to connect to the newly installed expansion DAE.  
Typically these cables are 2-meters long. You use longer cables, typically 5-meters or 8-meters, to connect enclosures located in different racks. Cables are shipped without labels attached. The cables and ports are not colored.
- Locate the sheet of cable labels provided.

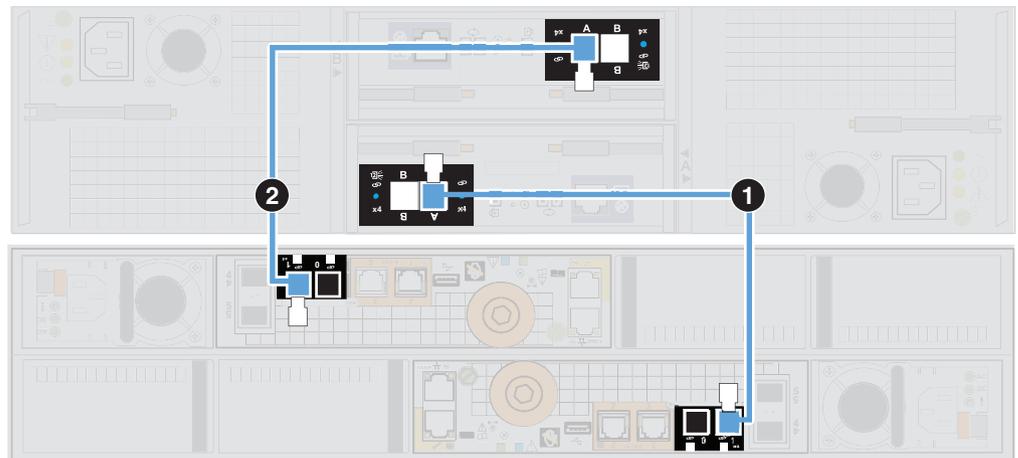
Orient the cable connectors as described in the procedure that follows, making sure that you do NOT connect:

- A DAE expansion port 0 to another expansion port 0.
- Any A-side ports to B-side ports.

Use the following illustrations to complete this cabling task:

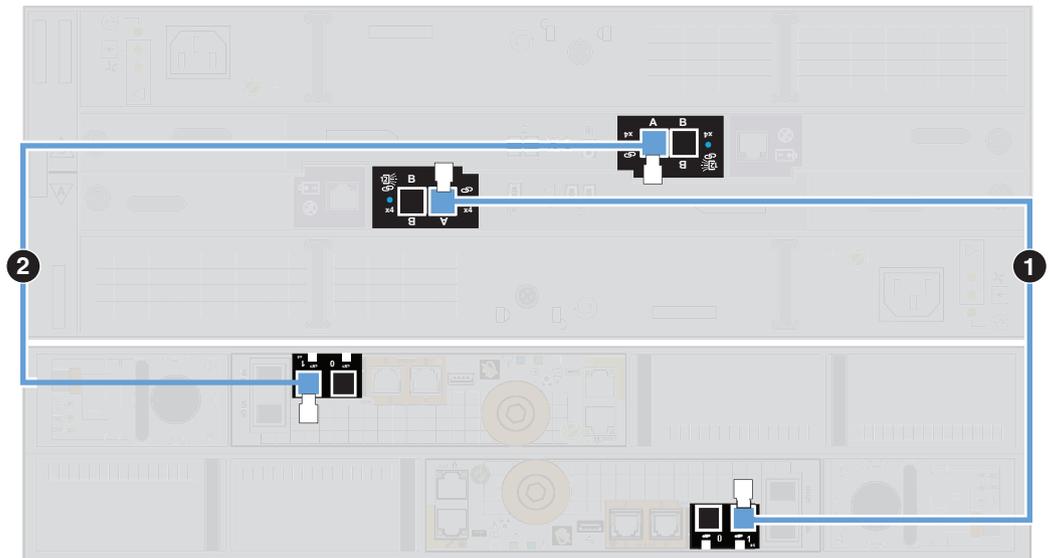
**Figure 26** Example: DPE to DAE BE1 enclosure 0

DPE to 25-drive DAE BE1 enclosure 0 SAS cabling



DPE to 15-drive DAE BE1 enclosure 0 SAS cabling

**Figure 26** Example: DPE to DAE BE1 enclosure 0 (continued)



**NOTICE**

When cabling the 15-drive DAE LCC SAS ports, ensure that the cables do not overlap behind the DAE. The illustration above demonstrates the proper method for cabling to the DAE LCC SAS ports.

**Procedure**

1. Label a pair of mini-SAS HD cables using the blue labels shown here.

| Back-end bus and enclosure number | Cable label                           |  |            |                                     |  |              |
|-----------------------------------|---------------------------------------|--|------------|-------------------------------------|--|--------------|
|                                   | Expansion port cable labeling details |  |            | Primary port cable labeling details |  |              |
|                                   | Label part number                     | Label  | Port       | Label part number                   | Label  | Port         |
| BE1 Enclosure 0 - A-side          | 046-001-562                           | <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">046-001-562_xx</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP A SAS 1</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP A SAS 1</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP A SAS 1</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP A SAS 1</div> | SP A SAS 1 | 046-021-012                         | <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">046-021-012_xx</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC A PORT A</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC A PORT A</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC A PORT A</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC A PORT A</div> | LCC A Port A |
| BE1 Enclosure 0 - B-side          | 046-003-750                           | <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">046-003-750_xx</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP B SAS 1</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP B SAS 1</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP B SAS 1</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">SP B SAS 1</div> | SP B SAS 1 | 046-021-013                         | <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">046-021-013_xx</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC B PORT A</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC B PORT A</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC B PORT A</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: #4a90e2; color: white; text-align: center;">LCC B PORT A</div> | LCC B Port A |

2. Connect each SP to the first optional DAE to create BE1 EA0.

**Note**

Neither connector on the mini-SAS HD cable has a symbol to indicate input or output.

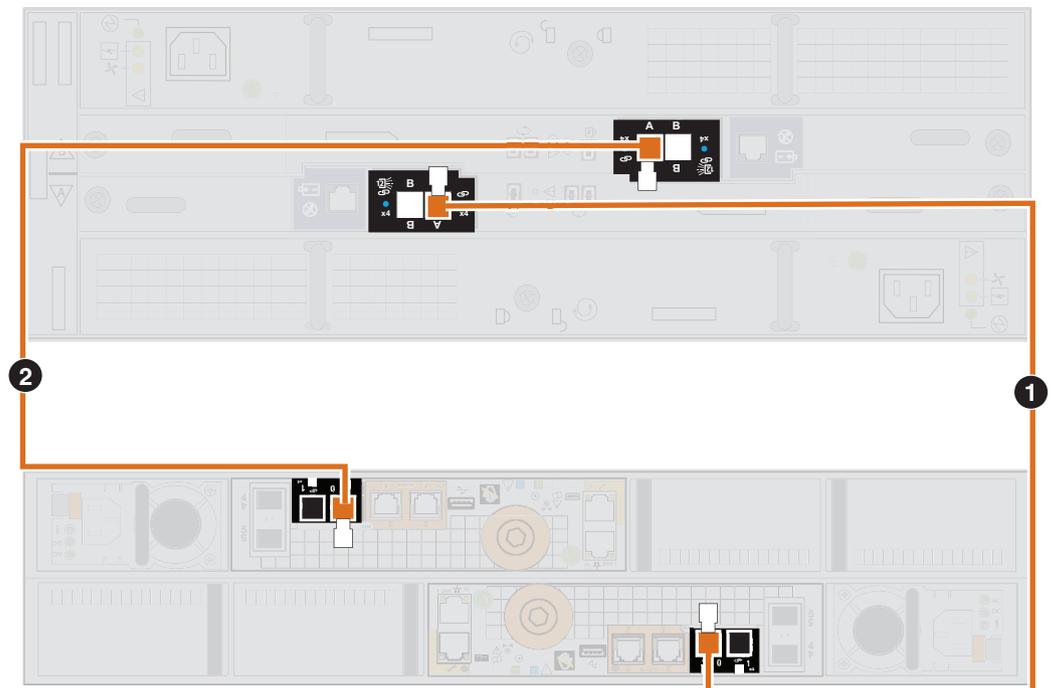
- a. Connect port 1 on SP A in the bottom slot in the DPE to port A on the link control card A (LCC A) at the bottom of the DAE. [1]
- b. Connect port 1 on SP B in the top slot in the DPE to port A on the link control card (LCC B) at the top of the DAE. [2]

## Cabling the second optional DAE to extend back-end bus 0

Connect the second optional expansion DAE to the DPE expansion port 0 to extend back-end bus 0 (BE0) and designate this DAE as enclosure 1 of this bus. We refer to the address of this enclosure as BE0 EA1 (0\_1).

Use the following illustration to complete this cabling task:

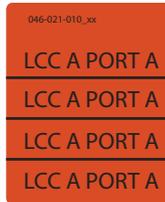
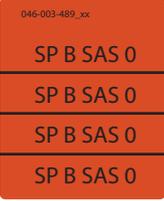
**Figure 27** Example: DPE to 15-drive DAE BE0 enclosure 1

**NOTICE**

When cabling the 15-drive DAE LCC SAS ports, ensure that the cables do not overlap behind the DAE. The illustration above demonstrates the proper method for cabling to the DAE LCC SAS ports.

**Procedure**

1. Label a pair of mini-SAS HD cables using the orange labels shown here.

| Back-end bus and enclosure number | Cable label                           |   |            |                                     |   |              |
|-----------------------------------|---------------------------------------|---|------------|-------------------------------------|---|--------------|
|                                   | Expansion port cable labeling details |   |            | Primary port cable labeling details |   |              |
|                                   | Label part number                     | Label   | Port       | Label part number                   | Label   | Port         |
| BE0 Enclosure 1 - A-side          | 046-001-561                           |  | SP A SAS 0 | 046-021-010                         |  | LCC A Port A |
| BE0 Enclosure 1 - B-side          | 046-003-489                           |  | SP B SAS 0 | 046-021-011                         |  | LCC B Port A |

2. Connect DPE port 0 to the new DAE to extend BE0 EA1.
  - a. Connect port 0 on SP A in the bottom slot in the DPE to port A on the link control card A (LCC A) at the bottom of the DAE. [1]
  - b. Connect port 0 on SP B in the top slot in the DPE to port A on the link control card (LCC B) at the top of the DAE. [2]

## Cabling the DPE SAS module ports to create back-end buses 2 through 5

Where supported, the following example shows how to connect remaining four SAS back-end ports and shows the cable labels for these SAS cables, as well as the back-end bus and enclosure numbers for these DPE to DAE connections.

---

### Note

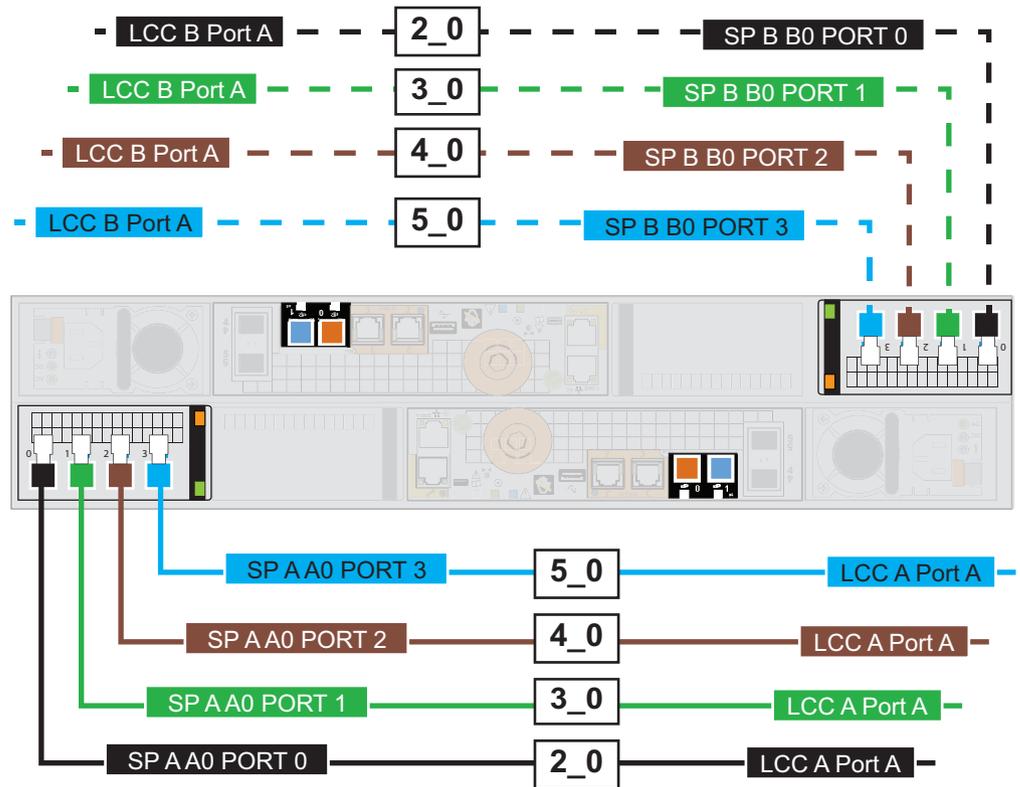
The optional back-end 12-Gb/s SAS module is not supported on all Unity storage systems.

---

Cable the DAE to the 12-Gb/s SAS modules in the DPE 0, port 0 through port 3, to create back-end bus 2 through 5, BE2-BE5.

Use the following illustration to complete this cabling task:

**Figure 28** Bus 2, Bus 3 , Bus 4, and Bus 5 enclosure 0 SAS cabling

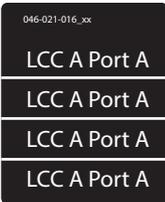
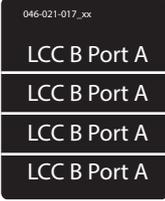
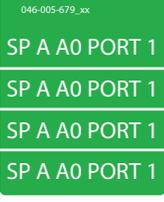
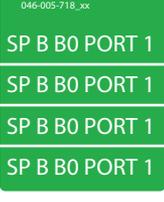
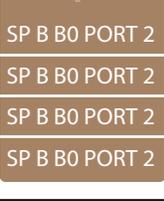


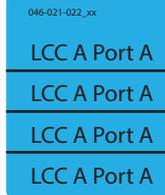
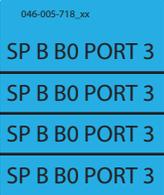
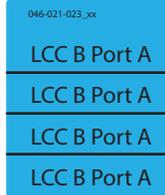
- 2\_0 side A, black, SP A B0 port 0 to DAE <w> LCC A port A
- 2\_0 side B, black, SP B B0 port 0 to DAE <w> LCC B port A
- 3\_0 side A, green, SP A B0 port 1 to DAE <x> LCC A port A
- 3\_0 side B, green, SP B B0 port 1 to DAE <x> LCC B port A
- 4\_0 side A, brown, SP A B0 port 2 to DAE <y> LCC A port A
- 4\_0 side B, brown, SP B B0 port 2 to DAE <y> LCC B port A
- 5\_0 side A, cyan, SP A B0 port 3 to DAE <z> LCC A port A
- 5\_0 side B, cyan, SP B B0 port 3 to DAE <z> LCC B port A

For each new BE2-BE5:

**Procedure**

1. Label a pair of mini-SAS HD cables using the appropriate labels (black, green, brown, or cyan) shown here.

| Back-end bus and enclosure number  | Cable label                           |   |                |                                     |   |              |
|------------------------------------|---------------------------------------|---|----------------|-------------------------------------|---|--------------|
|                                    | Expansion port cable labeling details |   |                | Primary port cable labeling details |   |              |
|                                    | Label part number                     | Label   | Port           | Label part number                   | Label   | Port         |
| BE2 enclosure 0 and above - A-side | 046-005-679                           |    | SP A A0 PORT 0 | 046-021-16                          |    | LCC A Port A |
| BE2 enclosure 0 and above - B-side | 046-005-718                           |    | SP B B0 PORT 0 | 046-021-017                         |    | LCC B Port A |
| BE3 enclosure 0 and above - A-side | 046-005-711                           |   | SP A A0 PORT 1 | 046-021-018                         |   | LCC A Port A |
| BE3 enclosure 0 and above - B-side | 046-005-719                           |  | SP B B0 PORT 1 | 046-021-019                         |  | LCC B Port A |
| BE4 enclosure 0 and above - A-side | 046-005-935                           |  | SP A A0 PORT 2 | 046-021-020                         |  | LCC A Port A |
| BE4 enclosure 0 and above - B-side | 046-005-937                           |  | SP B B0 PORT 2 | 046-021-021                         |  | LCC B Port A |

| Back-end bus and enclosure number  | Cable label                           |   |                |                                     |   |              |
|------------------------------------|---------------------------------------|---|----------------|-------------------------------------|---|--------------|
|                                    | Expansion port cable labeling details |   |                | Primary port cable labeling details |   |              |
|                                    | Label part number                     | Label   | Port           | Label part number                   | Label   | Port         |
| BE5 enclosure 0 and above - A-side | 046-005-936                           |  | SP A A0 PORT 3 | 046-021-022                         |  | LCC A Port A |
| BE5 enclosure 0 and above - B-side | 046-005-938                           |  | SP B B0 PORT 3 | 046-021-023                         |  | LCC B Port A |

2. Connect each SP to the optional DAE to create BE2 enclosure 0 through BE5 enclosure 0, as needed.
  - a. For SP A, connect the lowest available port in the SAS module in the bottom slot of the DPE to port A on the link control card A (LCC A) at the bottom of the DAE.
  - b. For SP B, connect the lowest available port in the SAS module in the top slot of the DPE to port A on the link control card B (LCC B) at the top of the DAE.

**Example 1** Connect the DAE to the DPE SP slot 0 port 0 to create back-end bus 2, BE2

Connect the DAE to the DPE SP slot 0 port 0 to create back-end bus 2 (BE2) and designate this DAE as enclosure 0 of this bus. We refer to the address of this enclosure as BE2 EA0 (2\_0).

**Example 1** Connect the DAE to the DPE SP slot 0 port 0 to create back-end bus 2, BE2 (continued)

**Figure 29** Example: DPE to 15-drive DAE BE2 enclosure 0



**NOTICE**

When cabling the 15-drive DAE LCC SAS ports, ensure that the cables do not overlap behind the DAE. The illustration above demonstrates the proper method for cabling to the DAE LCC SAS ports.

1. Label a pair of mini-SAS HD cables using the black labels shown here.

| Back-end bus and enclosure number | Cable label                           |  |                |                                     |  |              |
|-----------------------------------|---------------------------------------|--|----------------|-------------------------------------|--|--------------|
|                                   | Expansion port cable labeling details |  |                | Primary port cable labeling details |  |              |
|                                   | Label part number                     | Label  | Port           | Label part number                   | Label  | Port         |
| BE2 Enclosure 0 - A-side          | 046-005-679                           | 046-005-679_xx<br>SP A A0 PORT 0<br>SP A A0 PORT 0<br>SP A A0 PORT 0<br>SP A A0 PORT 0 | SP A A0 PORT 0 | 046-021-016                         | 046-021-016_xx<br>LCC A Port A<br>LCC A Port A<br>LCC A Port A<br>LCC A Port A | LCC A Port A |
| BE2 Enclosure 0 - B-side          | 046-005-718                           | 046-005-718_xx<br>SP B B0 PORT 0<br>SP B B0 PORT 0<br>SP B B0 PORT 0<br>SP B B0 PORT 0 | SP B B0 PORT 0 | 046-021-017                         | 046-021-017_xx<br>LCC B Port A<br>LCC B Port A<br>LCC B Port A<br>LCC B Port A | LCC B Port A |

**Example 1** Connect the DAE to the DPE SP slot 0 port 0 to create back-end bus 2, BE2 (continued)

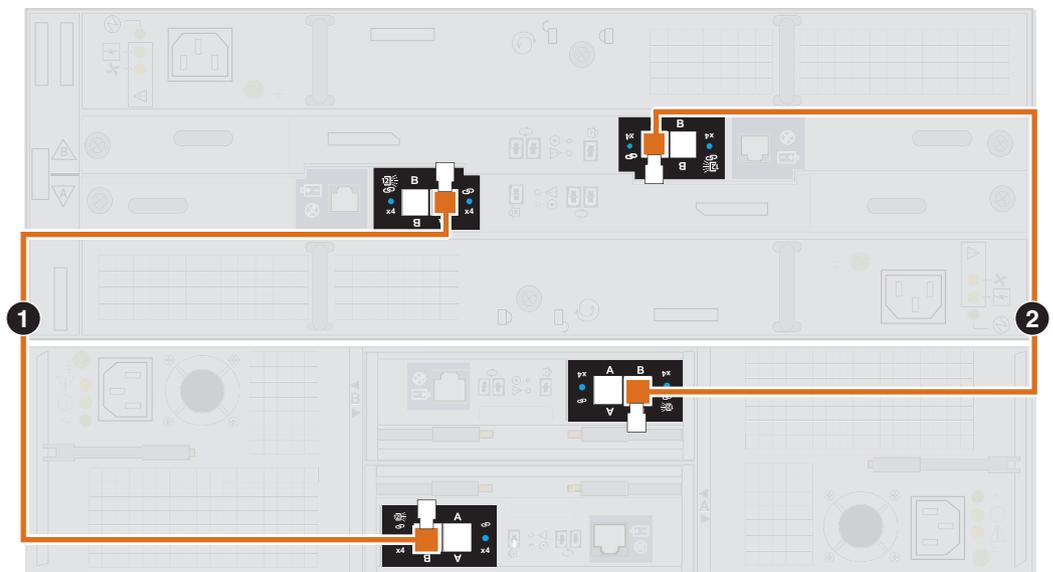
2. Connect slot 0 port 0 on SP A in the bottom slot in the DPE to port A on the link control card A (LCC A) at the bottom of the DAE. [1]
3. Connect slot 0 port 0 on SP B in the top slot in the DPE to port A on the link control card (LCC B) at the top of the DAE. [2]

## Cabling an expansion DAE to an existing DAE to extend a back-end bus

Connect the optional expansion DAE to the last installed DAE in the back-end bus to extend to the new DAE.

Use the following illustration to complete this cabling task:

**Figure 30** Example: Extend SAS BE to new DAE



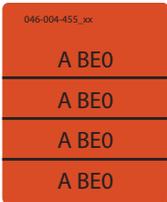
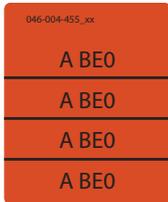
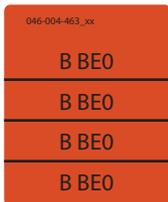
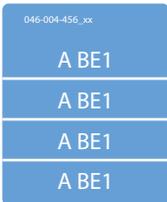
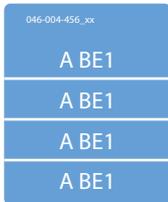
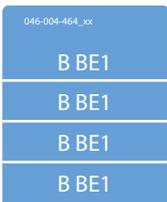
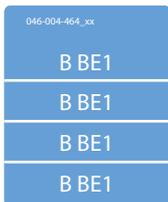
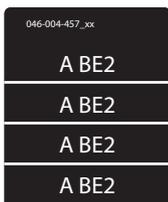
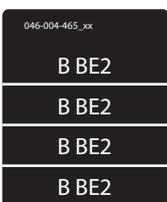
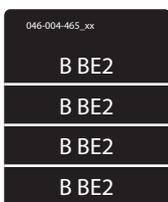
### NOTICE

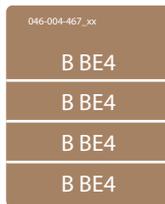
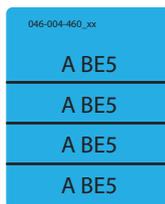
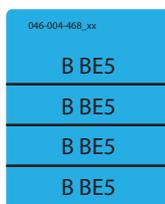
When cabling the 15-drive DAE LCC SAS ports, ensure that the cables do not overlap behind the DAE. The illustration above demonstrates the proper method for cabling to the DAE LCC SAS ports.

### Procedure

1. Label a pair of mini-SAS HD cables using the appropriate labels (orange, blue, lack, green, brown, or cyan) shown here.

Typically, DAEs connect to other DAEs using 1-meter cables.

| Back-end bus number | Cable label                           |   |              |                                     |   |              |
|---------------------|---------------------------------------|---|--------------|-------------------------------------|---|--------------|
|                     | Expansion port cable labeling details |   |              | Primary port cable labeling details |   |              |
|                     | Label part number                     | Label   | Port         | Label part number                   | Label   | Port         |
| BE0 - A-side        | 046-004-455                           |    | LCC A Port B | 046-004-455                         |    | LCC A Port A |
| BE0 - B-side        | 046-004-463                           |    | LCC B Port B | 046-004-463                         |    | LCC B Port A |
| BE1 - A-side        | 046-004-456                           |   | LCC A Port B | 046-004-456                         |   | LCC A Port A |
| BE1 - B-side        | 046-004-464                           |  | LCC B Port B | 046-004-464                         |  | LCC B Port A |
| BE2 - A-side        | 046-004-457                           |  | LCC A Port B | 046-004-457                         |  | LCC A Port A |
| BE2 - B-side        | 046-004-465                           |  | LCC B Port B | 046-004-465                         |  | LCC B Port A |

| Back-end bus number | Cable label                           |   |              |                                     |   |              |
|---------------------|---------------------------------------|---|--------------|-------------------------------------|---|--------------|
|                     | Expansion port cable labeling details |   |              | Primary port cable labeling details |   |              |
|                     | Label part number                     | Label   | Port         | Label part number                   | Label   | Port         |
| BE3 - A-side        | 046-004-458                           |    | LCC A Port B | 046-004-458                         |    | LCC A Port A |
| BE3 - B-side        | 046-004-466                           |    | LCC B Port B | 046-004-466                         |    | LCC B Port A |
| BE4 - A-side        | 046-004-459                           |   | LCC A Port B | 046-004-459                         |   | LCC A Port A |
| BE4 - B-side        | 046-004-467                           |  | LCC B Port B | 046-004-467                         |  | LCC B Port A |
| BE5 - A-side        | 046-004-460                           |  | LCC A Port B | 046-004-460                         |  | LCC A Port A |
| BE5 - B-side        | 046-004-468                           |  | LCC B Port B | 046-004-468                         |  | LCC B Port A |

2. Connect the existing DAE to the expansion DAE to extend that back-end.

If you have additional DAEs, add labels to the mini-SAS HD to mini-SAS HD cables and use those cables to extend the bus. For more information about cabling additional DAEs, see the associated *Hardware Information Guide*.

- a. Connect port B on the link control card A (LCC A) of the lower-numbered DAE to port A on the link control card A (LCC A) of the higher-numbered DAE. [1]

LCC A is located on the lower portion of the DAE.

- b. Connect port B on the link control card B (LCC B) of the lower-numbered DAE to port A on the link control card B (LCC B) of the higher-numbered DAE. [2]

LCC B is located on the upper portion of the DAE.

## DAE power up

### Procedure

1. Verify that the cabinet circuit breakers are in the On position and that power is connected to the cabinet.
2. Connect the power cables to optional DAEs (shown as cables 3, 4, 5, and 6 in [Figure 9](#) on page 27) and ensure that the DAE power cables are also clipped in place.
3. Secure each power cable to the system component with the cable retention bail (moveable metal clip) on the component.
4. Connect the power to the DAEs. Plug the free end of the power cable for LCC A (shown as cables 3 and 5 in [Figure 9](#) on page 27) to PDU A. Connect the power cable for LCC B (shown as cables 4 and 6 in [Figure 9](#) on page 27) to PDU B.

The enclosures start powering up immediately once they are connected to power.

5. Bundle and secure the cables as necessary with tie wraps.

# APPENDIX A

## Configuration Worksheet

This appendix contains a worksheet to collect and record information and to use as a guide to start setting up your storage system.

Topics include:

- [Configuration worksheet](#).....68

# Configuration worksheet

Use this worksheet to collect and record information to start setting up your storage system using the following:

- EMC Online Support
- Connection Utility
- Unisphere Initial Configuration Wizard

This worksheet should be used in conjunction with the information in the previous chapter. Refer to the *Connection Utility* and *Unisphere Online Help* for additional guidance for setting up your storage system. In the respective user interface, click the ? icon to display its online help.

**Note**

Sites with restricted Internet access must obtain the Connection Utility software and product license keys in advance to configure the system. Go to the Unity Info Hub at <http://bit.ly/unityinfohub> for detailed instructions.

**EMC Online Support**

Enter the following information related to your EMC Online Support account:

| Item  | Value |
|---|-------|
| <p><b>EMC Online Support account:</b></p> <ul style="list-style-type: none"> <li>• Go to support.emc.com to create your EMC Online Support account.</li> <li>• Your username and password will be required for the Unisphere Initial Configuration wizard.</li> </ul> |       |

**Connection Utility**

Enter the following information related to the system management address:

| Item   | Value |
|--|-------|
| <p><b>Storage system Product ID / Serial Number:</b></p> <ul style="list-style-type: none"> <li>• Refer to the serial number tag on the front of the DPE component for the system ID.</li> <li>• Use this ID in the Connection Utility to auto-discover a storage system on a subnet.</li> </ul> |       |
| <p><b>Name:</b></p> <ul style="list-style-type: none"> <li>• If you obtained the system's IP address through DHCP, use the system serial number for the name.</li> </ul>   |       |
| <p><b>Management IP Address:</b></p> <ul style="list-style-type: none"> <li>• Management IPv4 and/or IPv6 address to assign to the storage system.</li> </ul>  |       |
| <p><b>Subnet Mask (IPv4 only):</b></p>   |       |

| Item  | Value |
|---|-------|
| <ul style="list-style-type: none"> <li>IP address mask that identifies the range of IP addresses in the subnet where storage system is connected.</li> </ul>              |       |
| <b>Gateway:</b> <ul style="list-style-type: none"> <li>Default gateway IP address of the storage system management interface.</li> </ul>                                  |       |
| <b>Prefix Length (IPv6 only):</b> <ul style="list-style-type: none"> <li>The number of significant bits in the address that will be used for routing purposes.</li> </ul> |       |

**Unisphere**

Enter the following information to initially log into Unisphere:

| Item  | Value  |
|---|--|
| <b>Unisphere login information:</b> <ul style="list-style-type: none"> <li>When logging into Unisphere for the first time, use the default system account user name and password</li> </ul> | <ul style="list-style-type: none"> <li><b>User Name:</b> admin</li> <li><b>Password:</b> Password123#</li> </ul> |

**Initial Configuration Wizard**

The Initial Configuration Wizard walks you through the initial set up of Unisphere and prepares the system for use. The first time the wizard launches, you will need to access the End User License Agreement (EULA) and install Unisphere licenses. Use the following list of screens and related actions as a guide to the initial configuration process.

| Screen Name        | Action   |
|--------------------|--|
| Copyright          | Accept the EULA.   |
| Unisphere Password | Set the Unisphere admin and service passwords  |
| Unisphere Licenses | Obtain your Unisphere license file online and upload your license file.  |
| DNS servers        | (Manual configuration) Enter the network name or IP address of one or more DNS servers.<br><hr/> <b>Note</b><br>A DNS server is required for EMC Secure Remote Services (ESRS).<br><hr/> |
| NTP Servers        | Enter the network name or IP address of one or more NTP (Network Time Protocol) servers.   |

| Screen Name                  | Action   |
|------------------------------|--|
|                              | <p><b>Note</b></p> <p>An NTP server must be configured before you can create a NAS server with SMB (CIFS) shares that use Windows Active Directory (required for multiprotocol). It is also recommended that you configure an NTP server on both systems in order for the replication feature to work correctly.</p> |
| FAST Cache and Storage Pools | Create FAST Cache (if supported) and storage pools, or configure these items later.  |
| Alert Settings               | Configure alert notifications by entering the email addresses to which alerts should be sent, set the severity level for these alerts, and configure an SMTP server.   |
| Proxy Server                 | (optional) Enter the Protocol, IP address, and Proxy Server username and password.   |
| EMC Support Credentials      | Enter your EMC Online Support username and password.   |
| Customer Information         | Enter your customer contact information, including name, email, and office phone number. EMC Support will use this information to get in contact with you in response to an issue.   |
| EMC Secure Remote Services   | Enable and configure EMC Secure Remote Services (ESRS) to send system information to EMC and expedite issue resolution.  |
| iSCSI Interfaces             | (optional) Refer to the Unisphere Online Help for more information about configuring iSCSI interfaces.   |
| NAS Servers                  | (optional) Refer to the NAS Server Wizard Online Help for more information about configuring NAS servers.  |

**Note**

Visit the Unity Info Hub page at <http://bit.ly/unityinfohub> for more information about configuring your storage system.