Dell PowerStore

Installation and Service Guide for PowerStore 1000, 1200, 3000, 3200, 5000, 5200, 7000, 9000, and 9200

Version 3.x

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DELL Technologies

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

Contents

Preface

NOTE: PowerStore OS 3.0.0 supports PowerStore T models only.

NOTE: PowerStore x200 models are available as PowerStore T only.

As part of an improvement effort, revisions of the software and hardware are periodically released. Some functions that are described in this document are not supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information about product features. Contact your service provider 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 the PowerStore Documentation page at https://www.dell.com/powerstoredocs.

- **Troubleshooting**

  For information about products, software updates, licensing, and service, go to https://www.dell.com/support and locate the appropriate product support page.

- **Technical support**

  For technical support and service requests, go to https://www.dell.com/support and locate the **Service Requests** page. 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.

- **Documentation for older versions**

  For documentation of the older PowerStore versions, go to the PowerStore Documentation page at https://www.dell.com/powerstoredocs.

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Install a new base enclosure and an optional expansion enclosure

Follow these procedures to add a new base enclosure and an optional expansion enclosure to the system. For a detailed overview of these components, see the *PowerStore Hardware Information Guide*.

NOTE: Review the information in Safety precautions for handling replaceable units before handling parts.

Topics:

Installation power overview

Follow these guidelines for when to power on your system during various installation scenarios.

NOTE:

Table 1. Installing expansion enclosures during the initial system installation

Installation Scenario	Order of Operations
Installing just a base enclosure	1. Install the base enclosure. 2. Plug in the power cables.
Installing a base enclosure and expansion enclosures	1. Install the base enclosure and expansion enclosures. 2. Cable the expansion enclosures to the base enclosure. 3. Plug in the power cables.

Table 2. Adding expansion enclosures to a running system

Installation Scenario	Order of Operations
Adding the first expansion enclosure	1. Install the expansion enclosure. 2. Cable the expansion enclosures to the base enclosure. 3. Plug in the power cables.
Adding a second expansion enclosure	1. Install the expansion enclosure. 2. Plug in the power cables. 3. Move the loopback cables and then add two new cables.
Adding a third expansion enclosure	1. Install the expansion enclosure. 2. Plug in the power cables. 3. Move loopback cables and then add two new cables.

Install a new base enclosure

Take the following actions to install a new base enclosure into a rack.

Choose where to install the base enclosure

Before installing the new base enclosure, determine the placement of the new base enclosure within the rack.

Steps

1. Install the base enclosure in the lowest available 2U space, leaving 2U of space at the bottom of the rack for serviceability. Most cabinets mark 1U increments with horizontal lines or small holes in the channels.
2. If this is the second base enclosure to be installed in the rack, install it directly into the 2U space above the first base enclosure.

   NOTE: For additional rack space considerations, refer to the *PowerStore Planning Guide*.

3. Considering these recommendations, choose a 2U space in the cabinet for the base enclosure.

   NOTE: It is recommended that you include 36 inches of clearance in front of and behind the rack to avoid a system shutdown if maintenance or service activities are required.

Unpack the base enclosure

The base enclosure is a 2U component with 25 2.5" drive slots. Verify that you have received all of the base enclosure components in the shipping package.

NOTE: Before installing the base enclosure, ensure that the hardware has acclimated to the operating environment as described in Hardware acclimation times.

Verify shipping package contents

Confirm that you received all necessary equipment needed to install the new base enclosure.

- Base enclosure - 2U component with 25 2.5" drive slots
- Tool-less rail kit
- Power cords
- Bezel

Install the rails in the cabinet

This task describes the procedure to install one rail. After installing one rail, repeat the procedure for the other rail. The procedure is the same for both the left and right rail. You can install the rails into either a square or round hole rack.

Steps

1. Position the rail end piece so the label FRONT is located at the front of the rack and facing towards the inside of the rack, while orienting the rear of the rail to align level with the holes on the rear of the rack.
2. From the rear of the rack, pull the rail straight back until the latch is locked.
3. To install the front end piece of the rail, press the blue latch release button until the latch rotates open.
4. Pull the rail forward until the pins slide into the holes on the front of the rack, then release the latch to secure the rail in place.

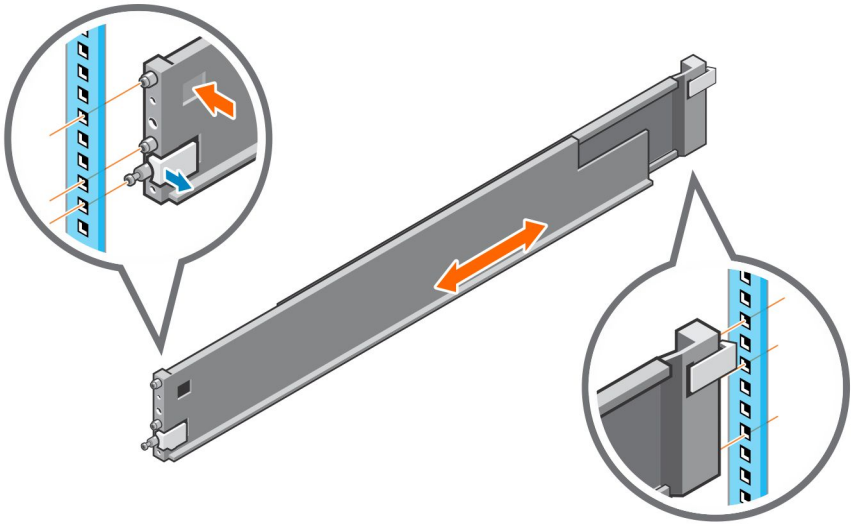


Figure 1. Installing the rails

5. Repeat for the other rail.

Install the base enclosure on the rails

Steps

1. Lift the enclosure and slide it onto the rails from the front of the cabinet.
2. Push the system into the rack until the slam latches engage and lock the system into the rack.
   Ensure that the enclosure is flush with the front of the rack, fully seated in the cabinet, and does not slide out.

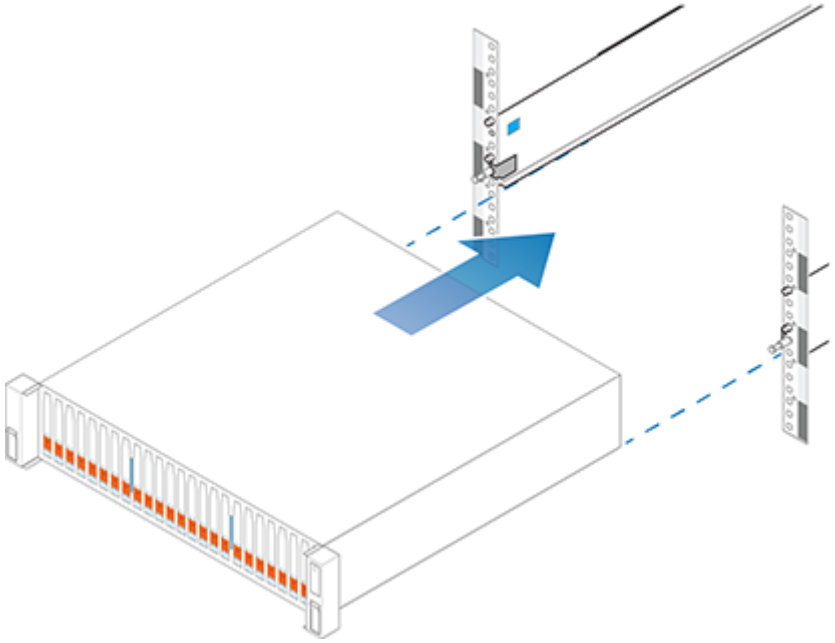


Figure 2. Installing the system in the enclosure

Cable the base enclosure appliance to switches

For switch cabling information, refer to the *PowerStore Networking Guide for PowerStore T Models or PowerStore Networking Guide for PowerStore X Models*.

NOTE: Do not connect the power cables until you have completed network configuration.

Connect power cables

Prerequisites

If you are also installing an expansion enclosure, wait to power up the base enclosure until after you have cabled the expansion enclosure.

Steps

1. Plug each power cable into the base enclosure power supply.

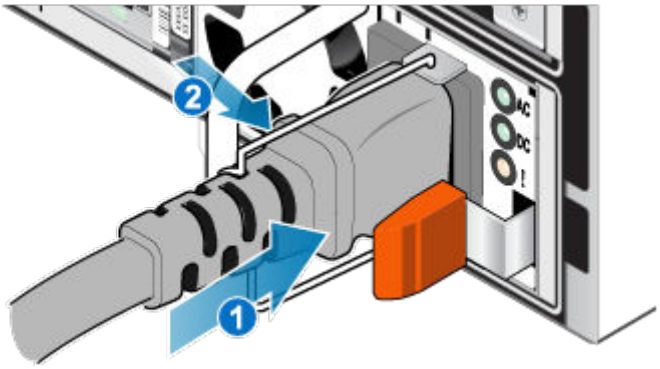


Figure 3. Inserting the power cable

2. Connect the other end of the power cable to the power distribution unit (PDU) on the rack.

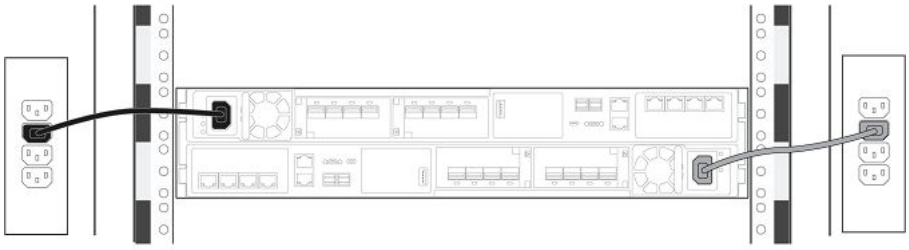


Figure 4. Connecting to the PDU

After you connect the power cables, the base enclosure automatically starts up.

Discover your system

Once you have completed installing your base enclosure and optional expansion enclosures, discover your newly installed enclosure.

Refer to *PowerStore Networking Guide for PowerStore T Models or PowerStore Networking Guide for PowerStore X Models* for details.

Upgrade PowerStore software

PowerStore systems come pre-installed with the latest version of PowerStore software that was available at the time of shipment. After installing the PowerStore system, Dell recommends upgrading the PowerStore software to the latest available version. Refer to the *PowerStore Software Upgrade Guide* for detailed instructions.

Install a SAS expansion enclosure

Take the following actions to install a SAS expansion enclosure into the system during the initial system installation or to install the first SAS expansion enclosure into a running system.

NOTE: During the initial system installation, do not power on the system until you have finished cabling all of the expansion enclosures.

CAUTION: On a running cluster, if you are adding an expansion enclosure after installing the first expansion enclosure during initial system installation, you must power on the new expansion enclosure before attaching the back-end cables. Review Installation power overview before proceeding.

Summary of tasks for installing an expansion enclosure

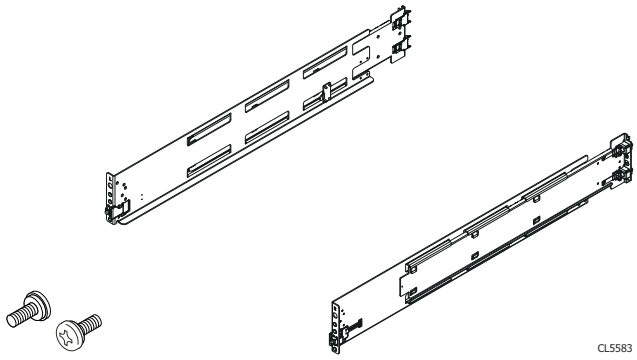
To install an expansion enclosure, complete the tasks below in the order in which they appear. This document provides instructions for completing each task.

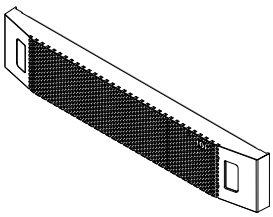
1. Verify the contents of the shipping package.
2. Choose the space in the cabinet for the new expansion enclosure.
3. Remove the filler panels that cover the cabinet space for the new expansion enclosure.
4. Install the rails for the new expansion enclosure in the cabinet.
5. Install the expansion enclosure on the rails.
6. If the new expansion enclosure shipped without its drives installed, install the drives in the expansion enclosure.
7. Install the front bezel on the new expansion enclosure.
8. Apply cable labels.
9. Review Installation power overview.
10. Attach the expansion (back-end) cables, and then attach the power cables.

Verify shipping package contents

Confirm that you received all the equipment that is required to install the new expansion enclosure.

Verify that you received the following:

Component		Quantity
Expansion enclosure		1
Rail kit, including Snap-in rails (2) Screws (3 per rail)		1

Component		Quantity
Power cords (2), either Black and gray C13/C14 Black and gray C13/C20		2
Bezel for expansion enclosure (with key)		1
Mini-SAS HD cables (4) (1 m or 2 m copper) to connect the base enclosure to the expansion enclosure, the expansion enclosure to another expansion enclosure, and to loopback from the expansion enclosure to the base enclosure.		2

Choose where to install the expansion enclosure

Before installing the new expansion enclosure, you should determine the placement of the new expansion enclosure within the rack.

Steps

1. It is recommended that you install the expansion enclosure in the next available 2U space directly above the base enclosure or the last expansion enclosure in the system.

   Most cabinets mark 1U increments with horizontal lines or small holes in the channels.
2. Considering these recommendations, choose a 2U space in the cabinet for the expansion enclosure.

Removing a filler panel

About this task

In most cases, the front space into which you will install the enclosure is covered by a filler panel, which is attached to latch brackets. If one or more filler panels cover the space where you want to install the enclosure, remove each panel using the procedure that follows.

Steps

1. Remove the filler panel.
2. Use a flatblade screwdriver or similar tool to pry off the latch brackets (Prying off a latch bracket).

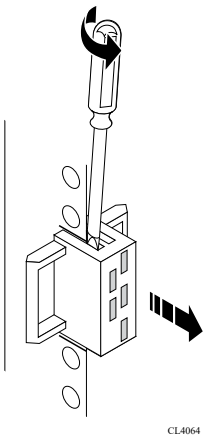


Figure 5. Prying off a latch bracket

Install the rails in the cabinet

This task describes the procedure to install one rail. After installing one rail, repeat the procedure for the other rail. The procedure is the same for both the left and right rail. You can install the rails into either a square or round hole rack.

Steps

1. Position the rail end piece so the label FRONT is located at the front of the rack and facing towards the inside of the rack, while orienting the rear of the rail to align level with the holes on the rear of the rack.
2. From the rear of the rack, pull the rail straight back until the latch is locked.
3. To install the front end piece of the rail, press the blue latch release button until the latch rotates open.
4. Pull the rail forward until the pins slide into the holes on the front of the rack, then release the latch to secure the rail in place.

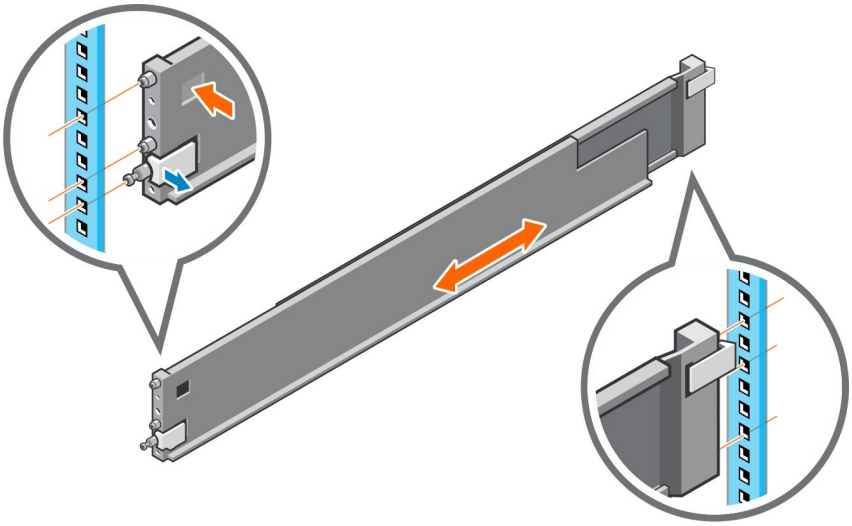


Figure 6. Installing the rails

5. Repeat for the other rail.

Install the expansion enclosure on the rails

Steps

1. With help from another person, lift the expansion enclosure and, from the front of the rack, slide the expansion enclosure onto the rails.
2. Push the expansion enclosure into the rack until the slam latches engage and lock the system into the rack.

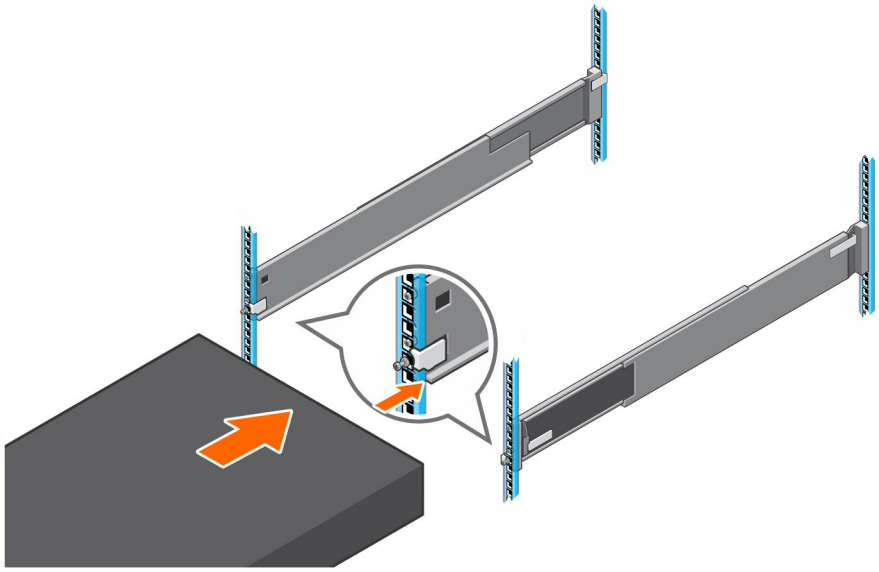


Figure 7. Securing the system in the rack

3. If securing the system for shipment in the rack or in other unstable environments, locate the hard mount captive screw under each latch and tighten using a #2 Phillips screwdriver.

Installing drives

If the drives shipped separately from the enclosure, install them in the enclosure now. If the drives are already installed in the enclosure, you are ready to install the bezel.

Installing a drive

About this task

NOTE: If you are installing multiple drives in a system that is powered up, wait at least 10 seconds before sliding the next drive into position.

NOTE: Drives must be installed from left-to-right starting with the first available slot.

Steps

1. Align the drive with the guides in the slot.
2. With the latch fully opened, gently push the drive into the slot.
   The latch begins to rotate downward when it meets the enclosure.
3. Push the orange button until the drive is fully seated in the slot.
4. Push the latch down until it locks into place.

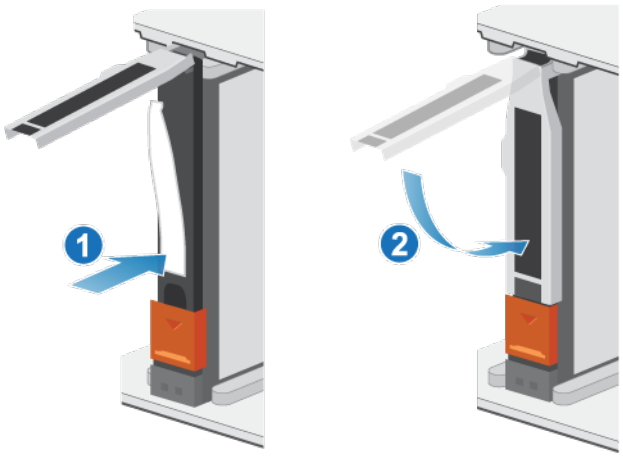


Figure 8. Installing a drive

The activity light flashes to indicate that the spin-up sequence has begun.

Installing the front bezel

Prerequisites

CAUTION: If the protective plastic strip is present on the front of the bezel, it must be removed before placing the system into operation. Failure to remove the protective plastic strip will cause the system to overheat.

About this task

Refer to Installing the bezel while performing the procedure that follows.

Steps

1. If present, remove the protective plastic strip from the front of the bezel.
2. Align the bezel with the enclosure.
3. Gently push the bezel into place on the cabinet until it latches.
4. If the bezel has a key lock, lock the bezel with the provided key.

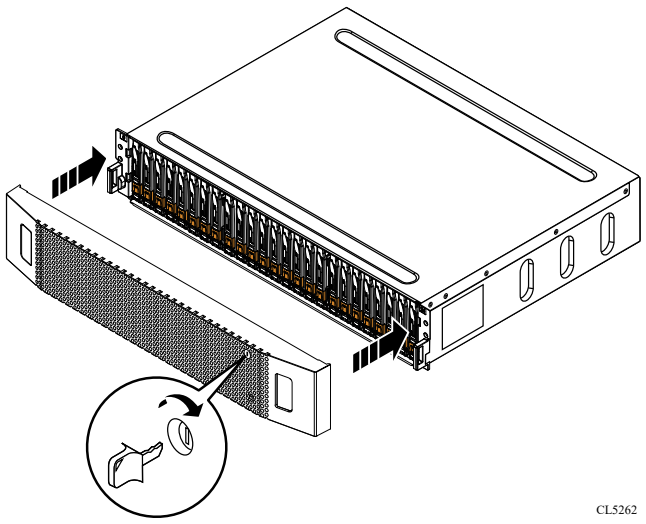


Figure 9. Installing the bezel

Cable the base enclosure to the expansion enclosure

Follow these guidelines to cable the base enclosure to an expansion enclosure.

Prerequisites

NOTE: One cabinet requires four SAS cables, two cabinets requires six SAS cables, and three cabinets require eight SAS cables. Verify that you have the correct amount of cables before you start.

CAUTION: If you observe incorrect cabling between expansion enclosures or to the base enclosure, do not attempt to correct the cable connections. To avoid a potential service disruption, gather support materials and contact your service provider for guidance.

CAUTION: Incorrect cabling could cause all new drives to be locked.

Apply cable labels at each end of the following cables:

- Node to first expansion enclosure
- Node to last expansion enclosure
- Expansion enclosure to expansion enclosure if you are installing more than one

Steps

1. Cable SAS port B from each node on the base enclosure to the link control card (LCC) on the first expansion enclosure in the stack:
   a. Connect node A, SAS port B to LCC A, port A on the expansion enclosure.
   b. Connect node B, SAS port B to LCC B, port A on the expansion enclosure.
2. Cable SAS port A from each node on the base enclosure to the LCCs on the last expansion enclosure in the stack:
   a. Connect node A, SAS port A to LCC B, port B on the last expansion enclosure.
   b. Connect node B, SAS port A to LCC A, port B on the last expansion enclosure.
3. If you are installing more than one expansion enclosure, cable expansion enclosure to expansion enclosure:
   a. Connect LCC A, port B on the first expansion enclosure to LCC A, port A on the next expansion enclosure.
   b. Connect LCC B, port B on the first expansion enclosure to LCC B, port A on the next expansion enclosure.

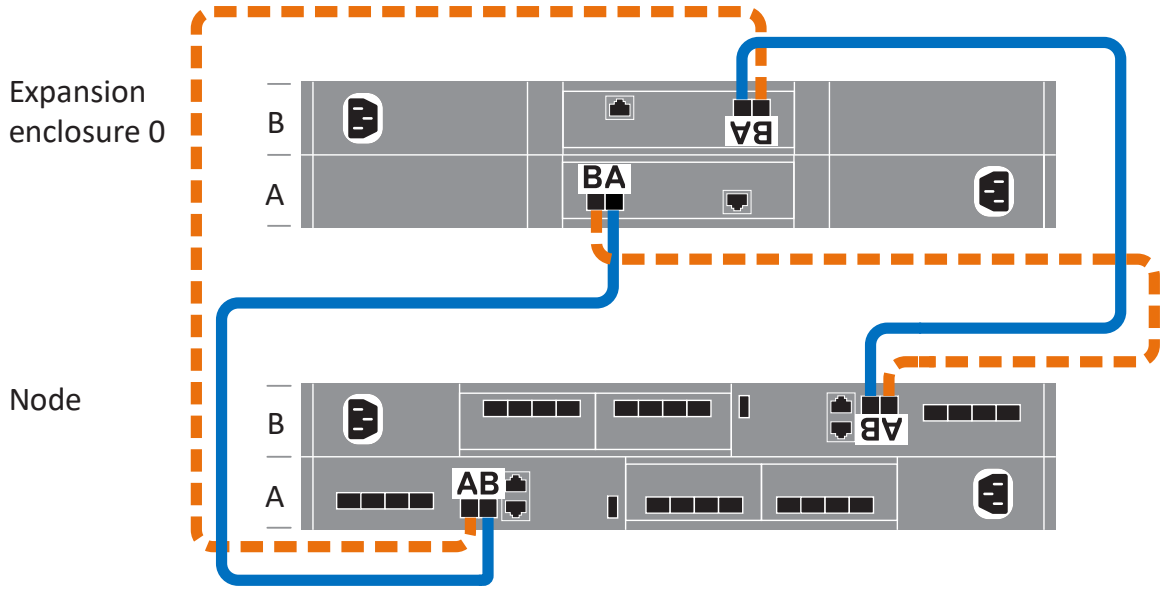


Figure 10. Cabling the base enclosure to one expansion enclosure

NOTE: For additional cabling diagrams, refer to the Cable Label Worksheet.

Connect SAS expansion enclosure power cables

Steps

1. Connect the power cable to the power/cooling module:

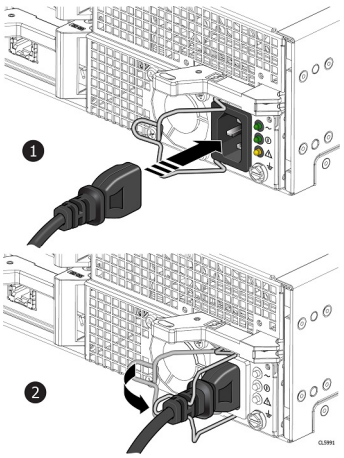


Figure 11. Attaching power cable

2. Attach the retention bail (strain relief) to the base of the power cable.
   The retention bail prevents the power cable from pulling out of the connection.

Add a SAS expansion enclosure

Take the following actions to add a SAS expansion enclosure to a running system with existing expansion enclosures.

NOTE: If this is the first SAS expansion enclosure, refer to Install an ESS25 expansion enclosure.

Summary of tasks for adding an expansion enclosure

To add an expansion enclosure to a running system, complete the tasks below in the order in which they appear. This document provides instructions for completing each task.

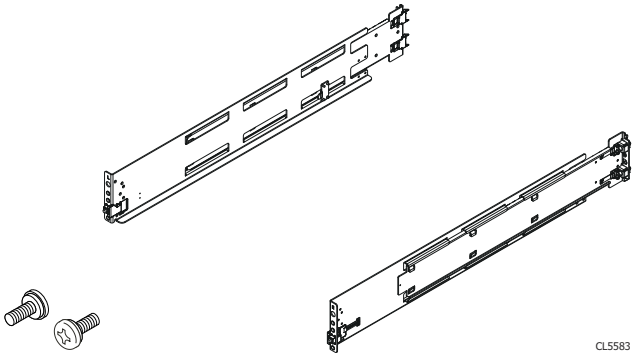
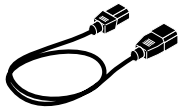
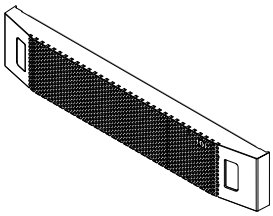
NOTE: When adding an expansion enclosure to a running system, you must power on the expansion enclosure before attaching the back-end cables.

1. Verify the contents of the shipping package.
2. Choose the space in the cabinet for the new expansion enclosure.
3. Remove the filler panels that cover the cabinet space for the new expansion enclosure.
4. Install the rails for the new expansion enclosure in the cabinet.
5. Install the expansion enclosure on the rails.
6. If the new expansion enclosure shipped without its drives installed, install the drives in the expansion enclosure.
7. Install the front bezel on the new expansion enclosure.
8. Attach the power cables to the new expansion enclosure.
9. Attach the expansion (back-end) cables to the new expansion enclosure as described in Cable the new SAS expansion enclosure.
10. Verify the operation of the new expansion enclosure.

Verify shipping package contents

Confirm that you received all the equipment that is required to install the new expansion enclosure.

Verify that you received the following:

Component		Quantity
Expansion enclosure		1
Rail kit, including Snap-in rails (2) Screws (3 per rail)		1
Power cords (2), either Black and gray C13/C14 Black and gray C13/C20		2
Bezel for expansion enclosure (with key)		1
Mini-SAS HD cables (4) (1 m or 2 m copper) to connect the base enclosure to the expansion enclosure, the expansion enclosure to another expansion enclosure, and to loopback from the expansion enclosure to the base enclosure.		2

Choose where to install the expansion enclosure

Before installing the new expansion enclosure, you should determine the placement of the new expansion enclosure within the rack.

Steps

1. It is recommended that you install the expansion enclosure in the next available 2U space directly above the base enclosure or the last expansion enclosure in the system.

   Most cabinets mark 1U increments with horizontal lines or small holes in the channels.
2. Considering these recommendations, choose a 2U space in the cabinet for the expansion enclosure.

Removing a filler panel

About this task

In most cases, the front space into which you will install the enclosure is covered by a filler panel, which is attached to latch brackets. If one or more filler panels cover the space where you want to install the enclosure, remove each panel using the procedure that follows.

Steps

1. Remove the filler panel.
2. Use a flatblade screwdriver or similar tool to pry off the latch brackets (Prying off a latch bracket).

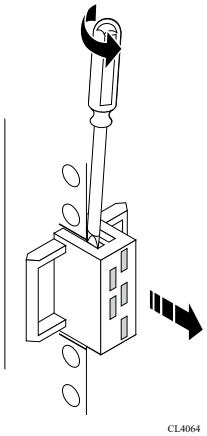


Figure 12. Prying off a latch bracket

Install the rails in the cabinet

This task describes the procedure to install one rail. After installing one rail, repeat the procedure for the other rail. The procedure is the same for both the left and right rail. You can install the rails into either a square or round hole rack.

Steps

1. Position the rail end piece so the label FRONT is located at the front of the rack and facing towards the inside of the rack, while orienting the rear of the rail to align level with the holes on the rear of the rack.
2. From the rear of the rack, pull the rail straight back until the latch is locked.
3. To install the front end piece of the rail, press the blue latch release button until the latch rotates open.
4. Pull the rail forward until the pins slide into the holes on the front of the rack, then release the latch to secure the rail in place.

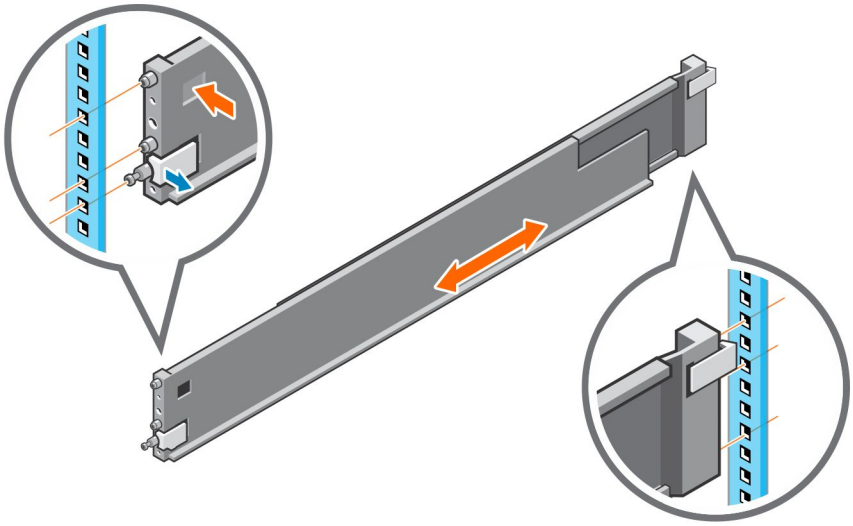


Figure 13. Installing the rails

5. Repeat for the other rail.

Install the expansion enclosure on the rails

Steps

1. With help from another person, lift the expansion enclosure and, from the front of the rack, slide the expansion enclosure onto the rails.
2. Push the expansion enclosure into the rack until the slam latches engage and lock the system into the rack.

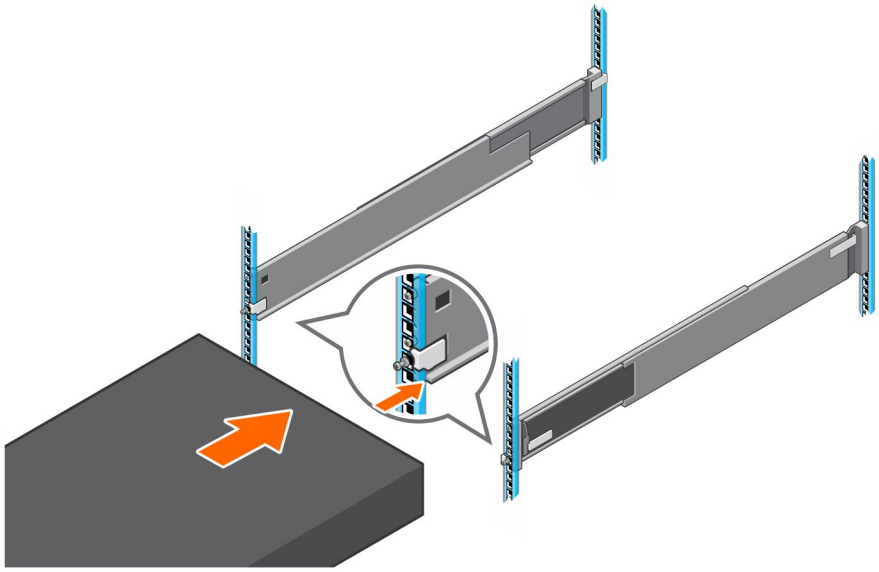


Figure 14. Securing the system in the rack

3. If securing the system for shipment in the rack or in other unstable environments, locate the hard mount captive screw under each latch and tighten using a #2 Phillips screwdriver.

Installing drives

If the drives shipped separately from the enclosure, install them in the enclosure now. If the drives are already installed in the enclosure, you are ready to install the bezel.

Installing a drive

About this task

NOTE: If you are installing multiple drives in a system that is powered up, wait at least 10 seconds before sliding the next drive into position.

NOTE: Drives must be installed from left-to-right starting with the first available slot.

Steps

1. Align the drive with the guides in the slot.
2. With the latch fully opened, gently push the drive into the slot.
   The latch begins to rotate downward when it meets the enclosure.
3. Push the orange button until the drive is fully seated in the slot.
4. Push the latch down until it locks into place.

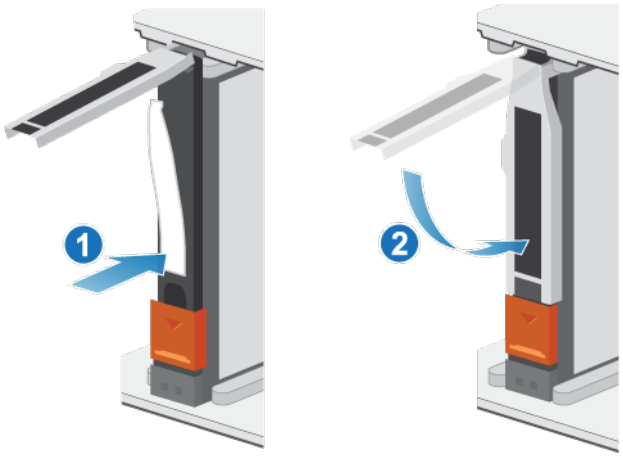


Figure 15. Installing a drive

The activity light flashes to indicate that the spin-up sequence has begun.

Installing the front bezel

Prerequisites

CAUTION: If the protective plastic strip is present on the front of the bezel, it must be removed before placing the system into operation. Failure to remove the protective plastic strip will cause the system to overheat.

About this task

Refer to Installing the bezel while performing the procedure that follows.

Steps

1. If present, remove the protective plastic strip from the front of the bezel.
2. Align the bezel with the enclosure.
3. Gently push the bezel into place on the cabinet until it latches.

4. If the bezel has a key lock, lock the bezel with the provided key.

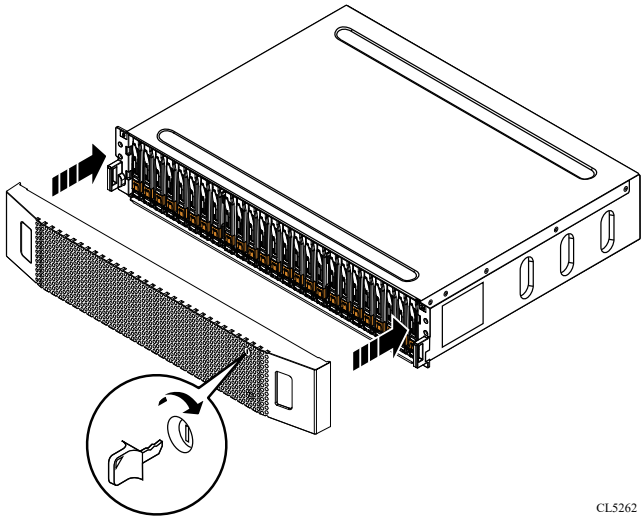


Figure 16. Installing the bezel

Connect SAS expansion enclosure power cables

Steps

1. Connect the power cable to the power/cooling module:

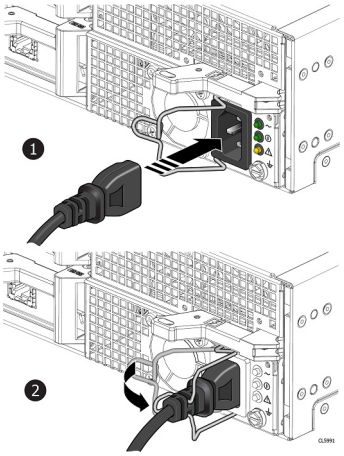


Figure 17. Attaching power cable

2. Attach the retention bail (strain relief) to the base of the power cable.
   The retention bail prevents the power cable from pulling out of the connection.

Cable the new SAS expansion enclosure

Follow these guidelines to cable an expansion enclosure in a running system to a new expansion enclosure.

Prerequisites

Apply cable labels to the cables connecting the expansion enclosures. In this procedure, "last expansion enclosure" refers to the last expansion enclosure that is currently installed. The "new expansion enclosure" refers to the expansion enclosure that you are adding in this procedure.

NOTE: One cabinet requires four SAS cables, two cabinets requires six SAS cables, and three cabinets require eight SAS cables. Verify that you have the correct amount of cables before you start.

CAUTION: If you observe incorrect cabling between expansion enclosures or to the base enclosure, do not attempt to correct the cable connections. To avoid a potential service disruption, gather support materials and contact your service provider for guidance.

CAUTION: Incorrect cabling could cause all new drives to be locked.

Steps

1. Disconnect the SAS cable from LCC B, port B of the last expansion enclosure and move it to LCC B, port B of the new expansion enclosure.
2. Disconnect the SAS cable from LCC A, port B of the last expansion enclosure and move it to LCC A, port B of the new expansion enclosure.
3. Use a new SAS cable to connect LCC A, port B of the last expansion enclosure to LCC A, port A of the new expansion enclosure.
4. Use a new SAS cable to connect LCC B, port B of the last expansion enclosure to LCC B, port A of the new expansion enclosure.

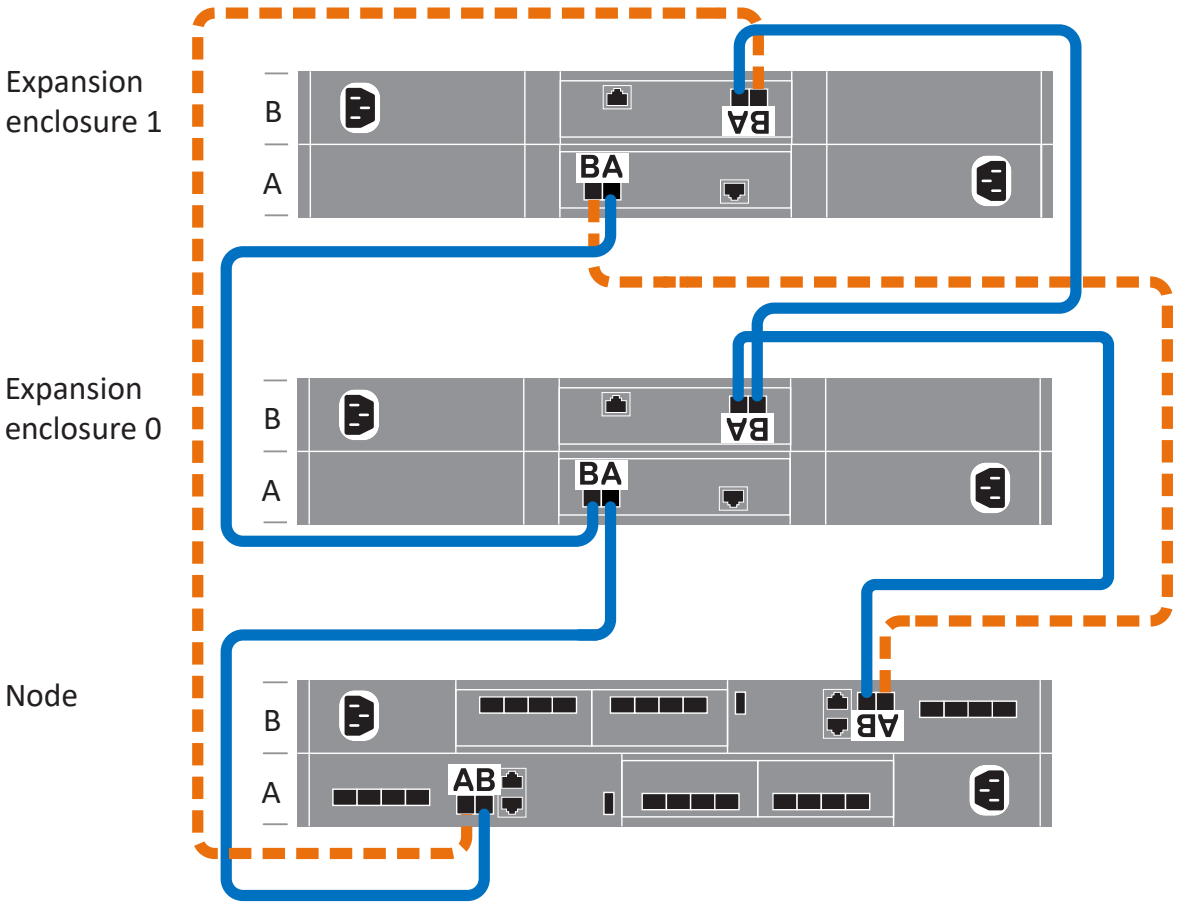


Figure 18. Cabling the base enclosure to two expansion enclosures

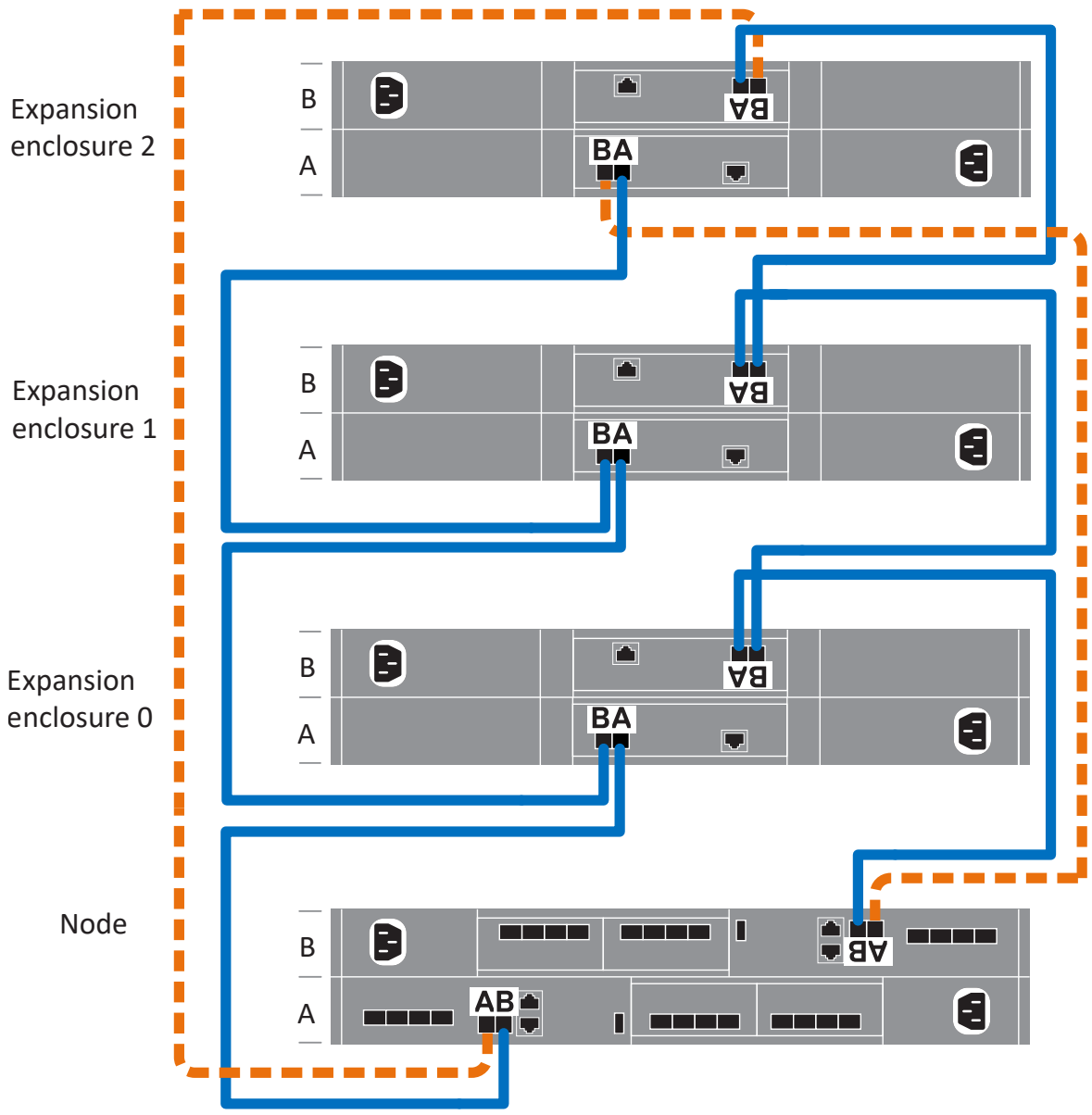


Figure 19. Cabling the base enclosure to three expansion enclosures

NOTE: For additional cabling diagrams, refer to the Cable Label Worksheet.

Install an NVMe expansion enclosure

Take the following actions to install an NVMe expansion enclosure into the system during the initial system installation or to install the first NVMe expansion enclosure into a running system.

NOTE: During the initial system installation, do not power on the system until you have finished cabling all of the expansion enclosures.

CAUTION: On a running cluster, if you are adding an expansion enclosure after installing the first expansion enclosure during initial system installation, you must power on the new expansion enclosure before attaching the back-end cables. Review Installation power overview before proceeding.

Summary of tasks for installing an expansion enclosure

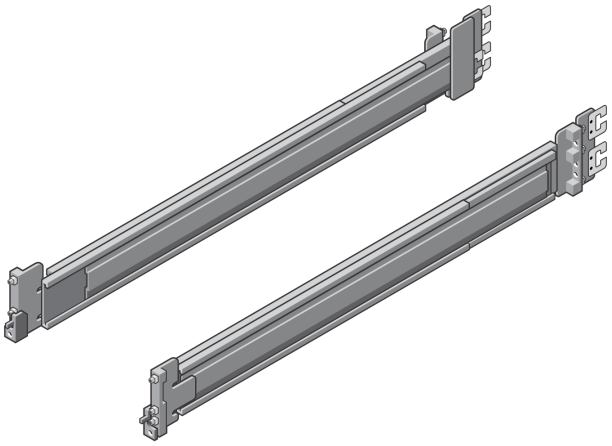
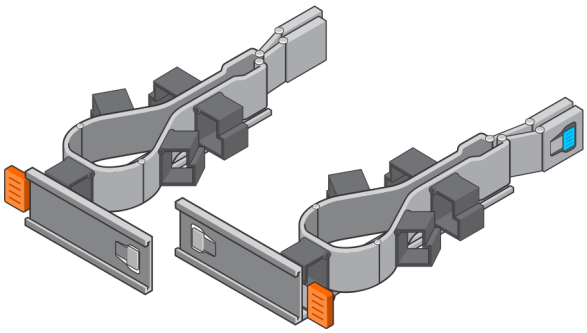
To install an expansion enclosure, complete the tasks below in the order in which they appear. This document provides instructions for completing each task.

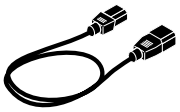
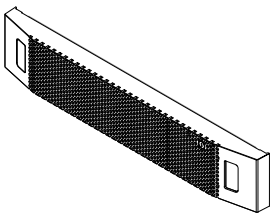
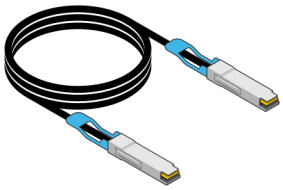
1. Verify the contents of the shipping package.
2. Choose the space in the cabinet for the new expansion enclosure.
3. Remove the filler panels that cover the cabinet space for the new expansion enclosure.
4. Install the rails for the new expansion enclosure in the cabinet.
5. Install the expansion enclosure on the rails.
6. Install the cable management arms.
7. Apply cable labels.
8. Review Installation power overview.
9. Attach the expansion (back-end) cables, and then attach the power cables.
10. Close the cable management arms.
11. Test the cable management arms.
12. If the new expansion enclosure shipped without its drives installed, install the drives in the expansion enclosure.
13. Install the front bezel on the new expansion enclosure.

Verify shipping package contents

Confirm that you received all the equipment that is required to install the new NVMe expansion enclosure.

Verify that you received the following:

Component		Quantity
NVMe expansion enclosure		1
Rail kit, including Snap-in rails (2) Screws (2 per rail)		1
Cable management arms		2

Component		Quantity
Power cords, either Black and gray C13/C14 Black and gray C13/C20		2
Bezel for NVMe expansion enclosure (with key)		1
100G QSFP28 cables to connect the base enclosure to the NVMe expansion enclosure, the NVMe expansion enclosure to another NVMe expansion enclosure, and to loopback from the NVMe expansion enclosure to the base enclosure. **NOTE:** The first NVMe expansion enclosure ships with four 100G QSFP28 cables. The second and third NVMe expansion enclosure ship with two 100G QSFP28 cables.		2

Choose where to install the expansion enclosure

Before installing the new expansion enclosure, you should determine the placement of the new expansion enclosure within the rack.

Steps

1. It is recommended that you install the expansion enclosure in the next available 2U space directly above the base enclosure or the last expansion enclosure in the system.

   Most cabinets mark 1U increments with horizontal lines or small holes in the channels.
2. Considering these recommendations, choose a 2U space in the cabinet for the expansion enclosure.

Removing a filler panel

About this task

In most cases, the front space into which you will install the enclosure is covered by a filler panel.

Steps

If one or more filler panels cover the space where you want to install the enclosure, remove each panel.

Installing the NVMe expansion enclosure rails

About this task

Install the rails from the front of the cabinet into which you are installing the enclosure. The 2U NVMe expansion enclosure includes rails that slide into the cabinet rail assembly. The rails are dedicated left and right, and cannot be interchanged. The front side of each rail is labeled Left Front or Right Front.

Steps

1. Locate the 2U cabinet space designated for the enclosure.
2. Install the right rail to the rear NEMA channel.
   a. Align the right rail with the lower U of the allotted 2U space.
   b. Push the rail back to secure the rail posts in the cabinet NEMA channel. An audible click indicates that the rail is secure in the channel.
3. Install the right rail to the front NEMA channel.
   a. Align the front of the right rail so that it is level.
   b. Pull the rail forward while holding the rail clamp open.
   c. Once the rail posts are in the cabinet NEMA channel, release the rail clamp. An audible click indicates that the connection is secure.
4. Install the left rail by mirroring steps 2 and 3.

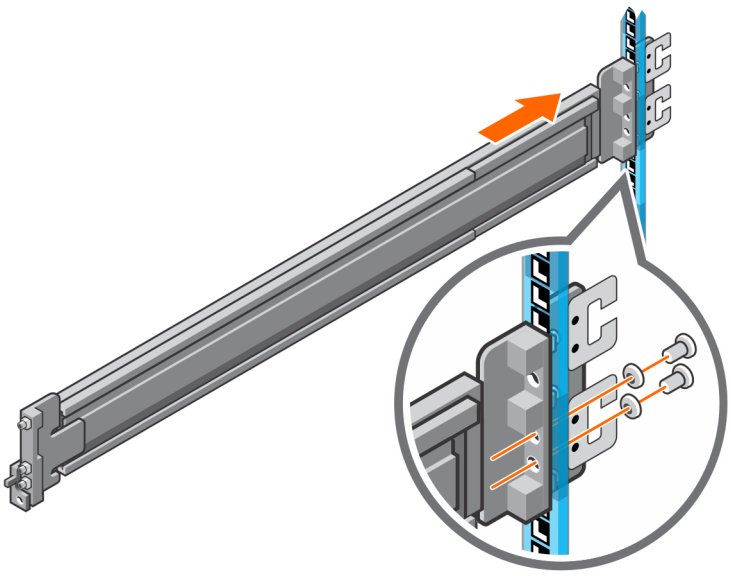


Figure 20. Installing the NVMe expansion enclosure rails (rear)

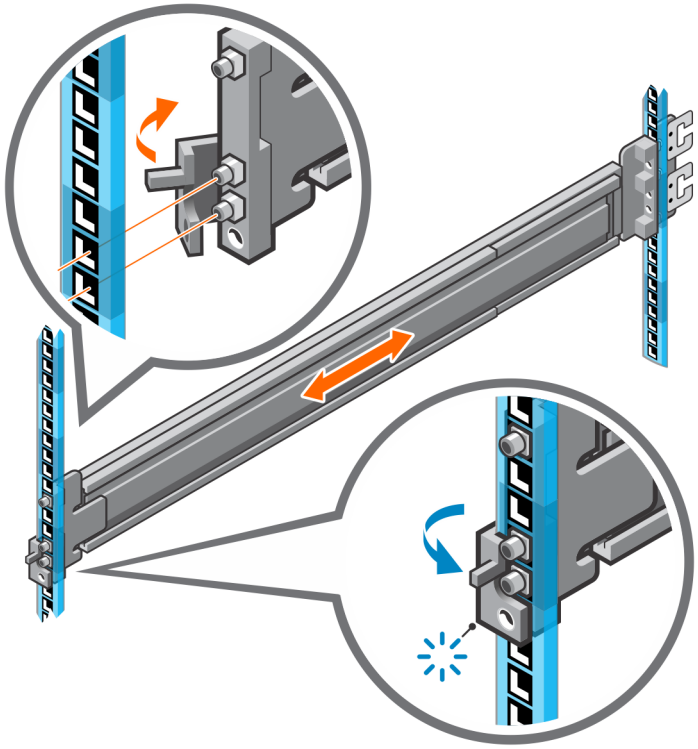


Figure 21. Installing the NVMe expansion enclosure rails (front)

5. Add the retaining screws that came with the rails to the front and back of both rails.

NOTE: Use the washers that came with the rails if the rack holes are square.

NOTE: The screw hole at the front of the rail is behind the rail clamp.

NOTE: You will need a long handled screwdriver to reach the screw hole at the rear of the rack.

NOTE: The following illustration does not show the C-clips that are used to attach the cable management arms.

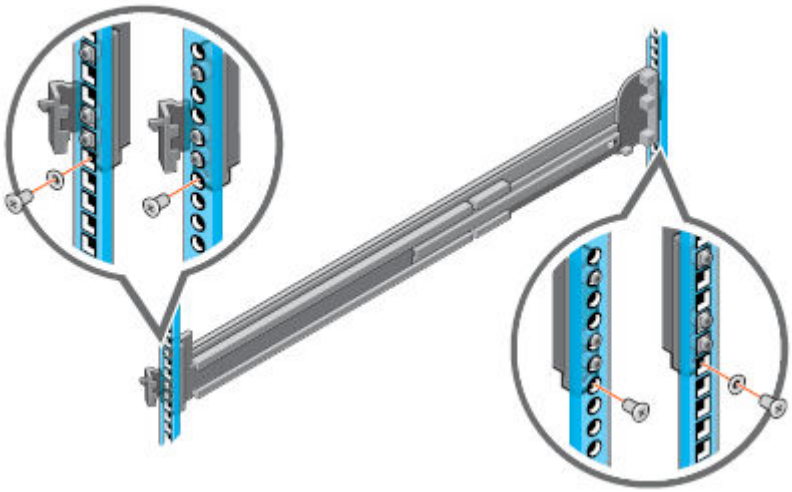


Figure 22. Adding the retaining screws

Install the system in the cabinet

In an angled drop-in design, inner (chassis) rails are attached to the sides of the system and then the system slides into the outer (cabinet) rails that are installed in the rack.

About this task

WARNING: The system is heavy. To avoid personal injury and/or damage to the equipment, do not attempt to install the system in a cabinet without a mechanical lift and/or help from another person.

Steps

1. Pull the inner rails out of the rack until they lock into place.
2. Release the inner rail lock by pulling forward on the orange tabs and sliding the inner rail out of the intermediate rails until they are fully extended.

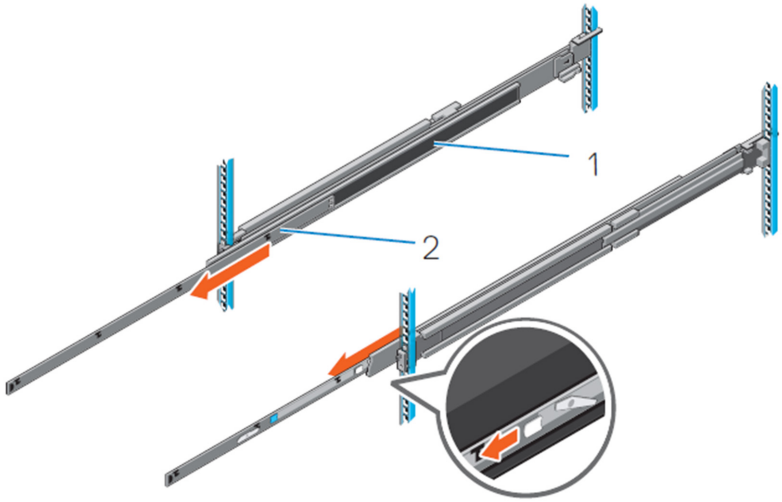


Figure 23. Pull out the intermediate rail

1. Intermediate rail
2. Inner rail

3. Attach the inner rails to the sides of the system by aligning the J-slots on the rail with the standoffs on the system and sliding forward on the system until they lock into place.

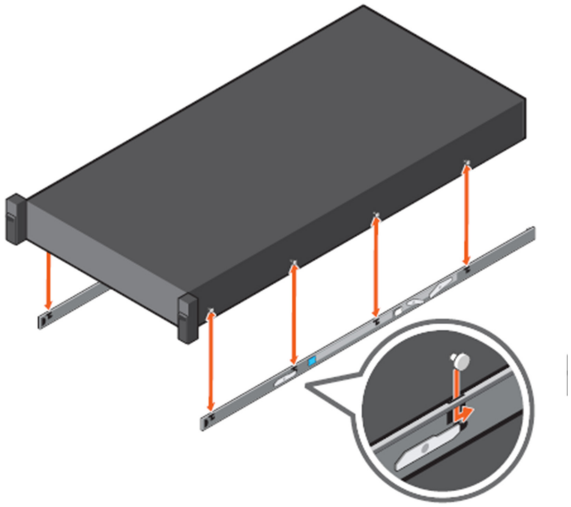


Figure 24. Attach the inner rails to the system

4. Verify all the J-slots on the rails are aligned with the rail standoffs on the system.

CAUTION: Improper installation on the rails may damage the rails or cause the system to fall when extended.

5. With the intermediate rails extended, install the system into the extended rails.

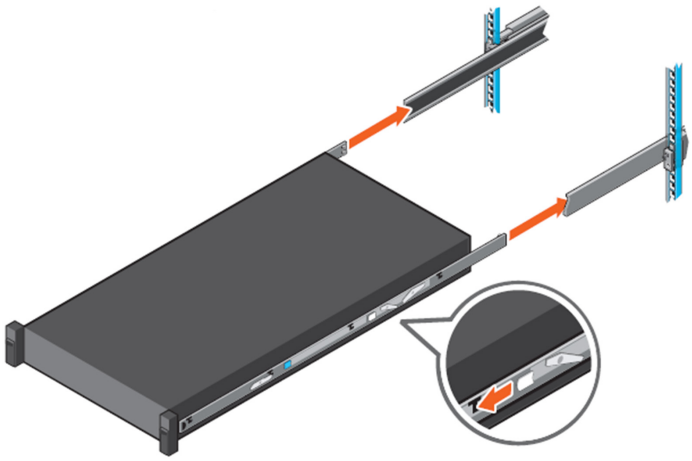


Figure 25. Install system into the extended rails

6. Pull the orange slide release lock tabs forward on both the rails, and slide the system into the rack.

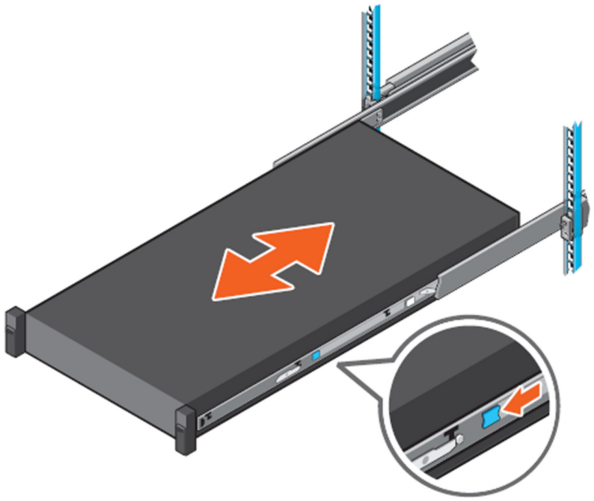


Figure 26. Slide system into the rack

Installing cable management arms

About this task

To properly orient the cable management arms, hold them with the silver side facing down. The words "Upper" and "Lower" on the arms should be legible.

Steps

1. Install the lower cable management arm:
   a. On the right-hand side of the rear of the cabinet, align the two retention latches with the two lower rail clips, and insert them into the clips until you feel and hear an audible click.
2. Install the upper cable management arm:

a. On the left-hand side of the rear of the cabinet, align the two retention latches with the two upper rail clips, and insert them into the clips until you feel and hear an audible click.

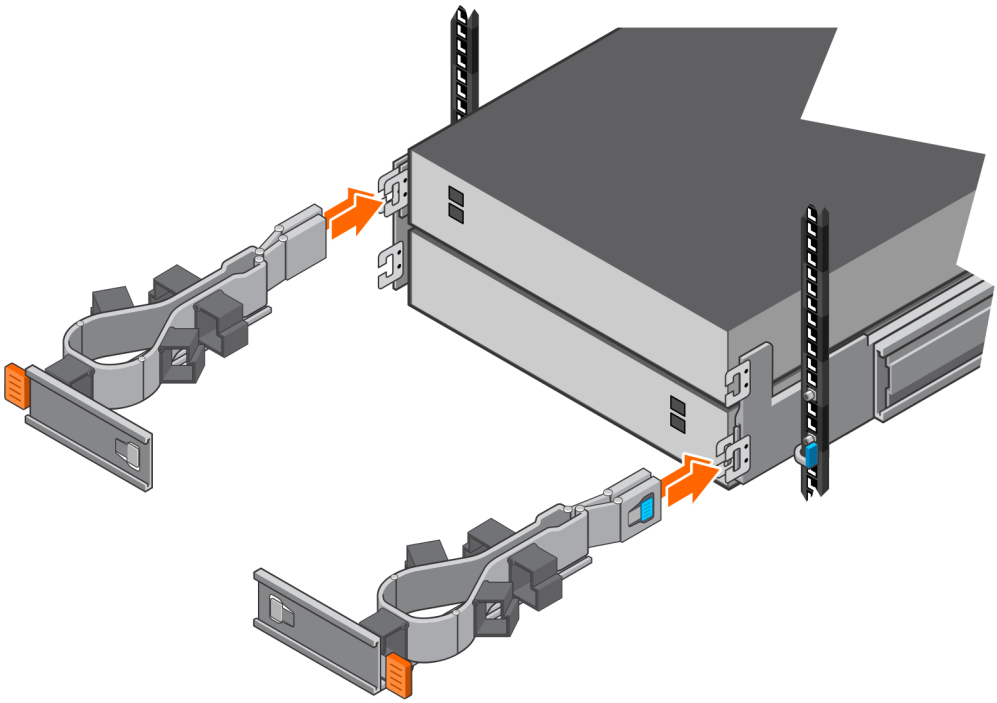


Figure 27. Installing the cable management arms

Cable the base enclosure to the NVMe expansion enclosure

Prerequisites

Determine how many expansion enclosures you are installing. Use the cable label diagrams that shipped with your system to determine the end-to-end locations for the back-end cables.

NOTE: If you are installing more than one NVMe expansion enclosure, use the 2M cables (PN 038-004-928-00) to connect the base enclosure to the NVMe expansion enclosure. Use the 2M cables (PN 038-004-928-00) to connect an NVMe expansion enclosure to another NVMe expansion enclosure with PowerStore version 3.2.0.1 or earlier. Use the 2.5M cables (PN 038-004-986-00) to connect an NVMe expansion enclosure to another NVMe expansion enclosure with PowerStore version 3.2.1 or later.

Steps

1. Apply the provided cable labels to each end of the cables.

   NOTE: The system ships with three sheets of labels. All three sheets contain the same information. They are just different colors. You only need to use one label sheet per expansion enclosure. The different colors are to identify which expansion enclosure the cables belong to. For example, you could use the pink label sheet for the first enclosure, and then use the green sheet for the second enclosure.

2. Ensure that the cable management arms (CMAs) are fully open and in the service position.
3. Open the CMA baskets and loosen the velcro straps.
4. Based on the following illustrations, route the data cables through the CMAs. The cables represented by yellow lines route through the upper CMA, and the cables represented by blue lines route through the lower CMA.

   Follow these guidelines when routing cables:

   - Gently route the cables into and around the arms without excess bending.

- Ensure that the data cables are oriented correctly to latch into the ports.
- There should not be any more slack between the expansion enclosure and the CMA than is needed to direct the cable. Any excess length should be outside of the CMA and dressed when cabling is complete.
- In two or three expansion enclosure configurations, route the data cables between the expansion enclosures through the CMA for one expansion enclosure and into the CMA of the other expansion enclosure.

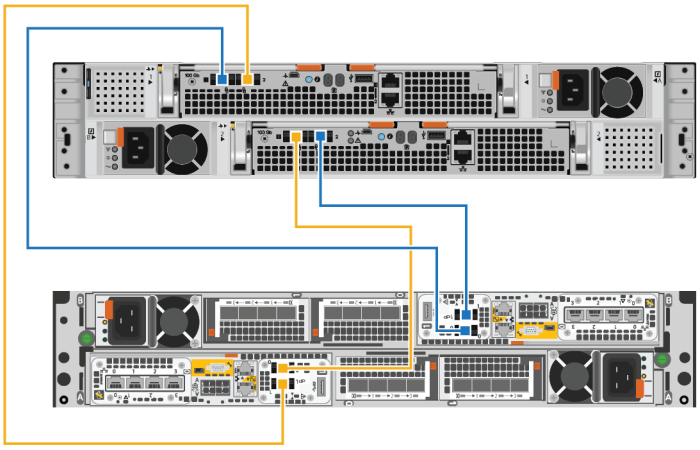


Figure 28. Cabling a single expansion enclosure

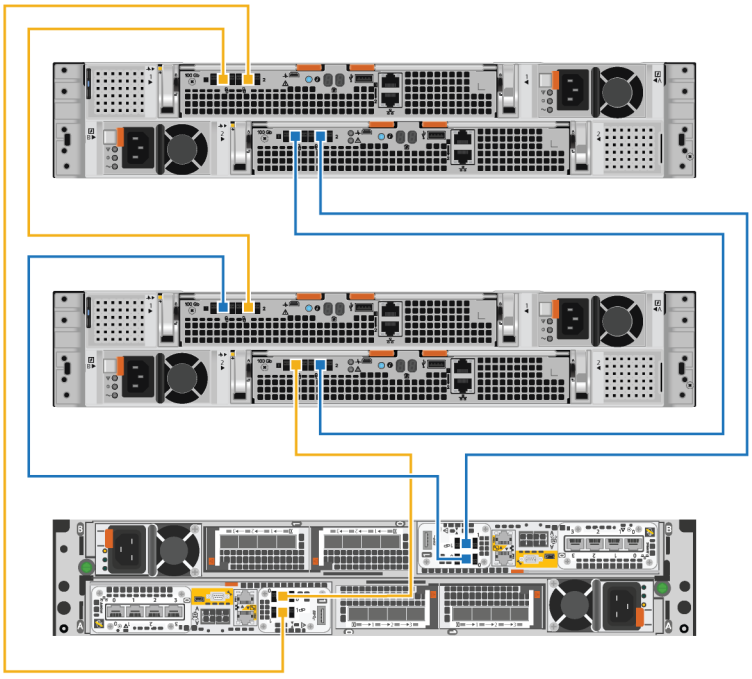


Figure 29. Cabling two expansion enclosures

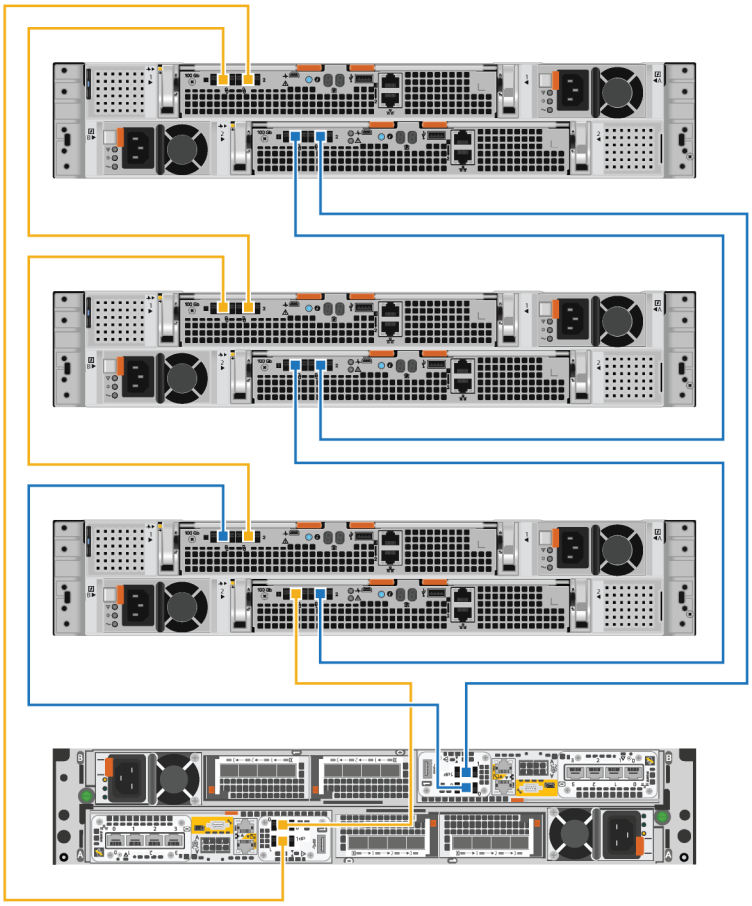


Figure 30. Cabling three expansion enclosures

5. Route the power cords through the CMAs. The power cords for power supplies on the left route through the upper CMA, and the power cords for power supplies on the right route through the lower CMAs.
6. Plug each power cable into the expansion enclosure power supply and secure the cord with the retention bail at the connector.

   NOTE: If the power source PDU is energized, do not connect the power cords to the PDU until the system is ready to be brought online. If you connect the power cords sooner, the system may power up during the installation.

   NOTE: It is recommended that you plug in the black power cables on the left and the gray power cables on the right. The power cables work in either power supply, but a consistent cabling method will make it easier to troubleshoot issues.

7. Close all of the baskets and tighten the Velcro on the arms to prevent the cables from slipping.

Closing the cable management arms

About this task

Perform this procedure to close the cable management arms.

Steps

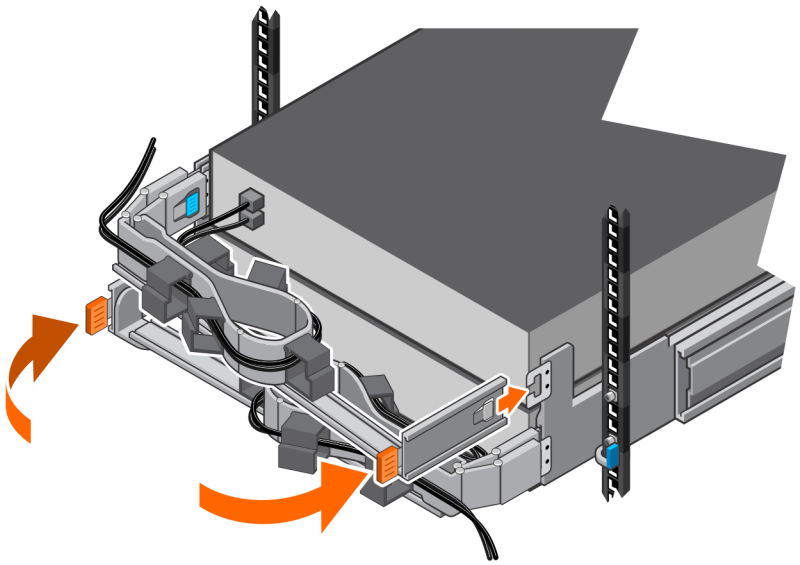
1. Close the lower cable management arm:
   a. Swing the lower cable management arm to the left side of the enclosure, and align the retention latch with the lower rail bracket.
   b. Press the retention latch onto the lower rail bracket.

c. Make sure that you hear the audible click that indicates that the lower cable management arm is in place.

2. Close the upper cable management arm:
   a. Swing the upper cable management arm to the right side of the enclosure, and align the retention latch with the upper rail bracket.
   b. Press the retention latch onto the upper rail bracket.
   c. Make sure that you hear the audible click that indicates that the upper cable management arm is in place.

Example

Figure 31. Closing the cable management arms



Testing the cable management arms

Steps

1. From the front of the rack, lift the black tabs on the expansion enclosure and slowly pull the expansion enclosure from the rack to ensure that proper slack has been provided for the cables.
2. Ensure that the stops on the rails engage into the service position when the top access door is clear.
3. If you feel resistence, stop pulling and adjust any tight cables so that pulling the expansion enclosure from the rack does not strain any cables or pull them from the ports.
4. Ensure that you can remove the expansion enclosure from the rack until it is in the service position. The expansion enclosure is in the service position when it clicks into place and will not move any further.
5. Once you have finished adjusting the cables, pull the orange tabs on the side of the expansion enclosure, and push the expansion enclosure back into the rack until it locks into place.
6. Inspect the cables again to make any necessary final adjustments.
7. Using a Philips screwdriver, tighten the chassis-securing screws located under the self-locking latches on the front of the expansion enclosure. These screws secure the expansion enclosure chassis to the cabinet rails in the event that the cabinet needs to be moved.

Installing drives

If the drives shipped separately from the enclosure, install them in the enclosure now. If the drives are already installed in the enclosure, you are ready to install the bezel.

Installing a drive

About this task

NOTE: If you are installing multiple drives in a system that is powered up, wait at least 10 seconds before sliding the next drive into position.

NOTE: Drives must be installed from left-to-right starting with the first available slot.

Steps

1. Align the drive with the guides in the slot.
2. With the latch fully opened, gently push the drive into the slot.
   The latch begins to rotate downward when it meets the enclosure.
3. Push the orange button until the drive is fully seated in the slot.
4. Push the latch down until it locks into place.

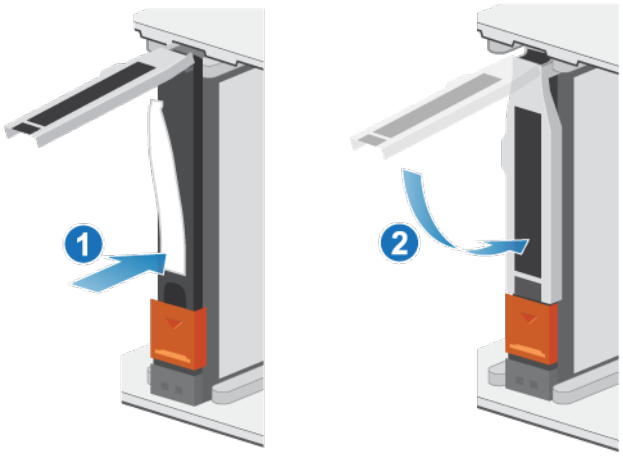


Figure 32. Installing a drive

The activity light flashes to indicate that the spin-up sequence has begun.

Installing the front bezel

Prerequisites

CAUTION: If the protective plastic strip is present on the front of the bezel, it must be removed before placing the system into operation. Failure to remove the protective plastic strip will cause the system to overheat.

About this task

Refer to Installing the bezel while performing the procedure that follows.

Steps

1. If present, remove the protective plastic strip from the front of the bezel.
2. Align the bezel with the enclosure.
3. Gently push the bezel into place on the cabinet until it latches.
4. If the bezel has a key lock, lock the bezel with the provided key.

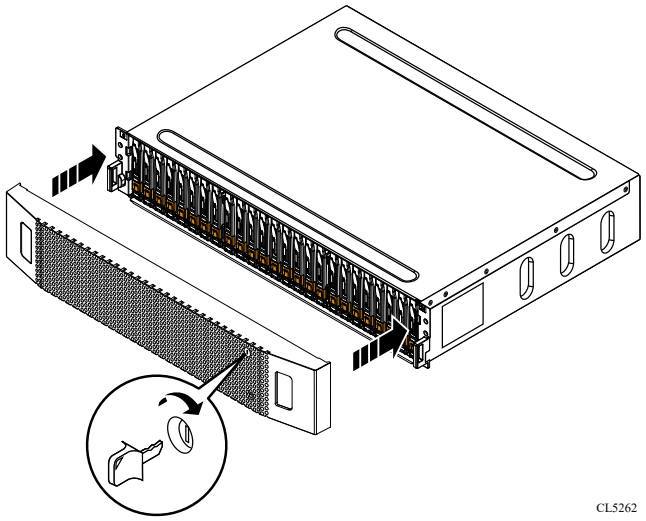


Figure 33. Installing the bezel

Add an NVMe expansion enclosure

Take the following actions to add an NVMe expansion enclosure to a running system with existing expansion enclosures.

NOTE: If this is the first NVMe expansion enclosure, refer to Install an ENS24 expansion enclosure.

Summary of tasks for adding an expansion enclosure

To add an expansion enclosure to a running system, complete the tasks below in the order in which they appear. This document provides instructions for completing each task.

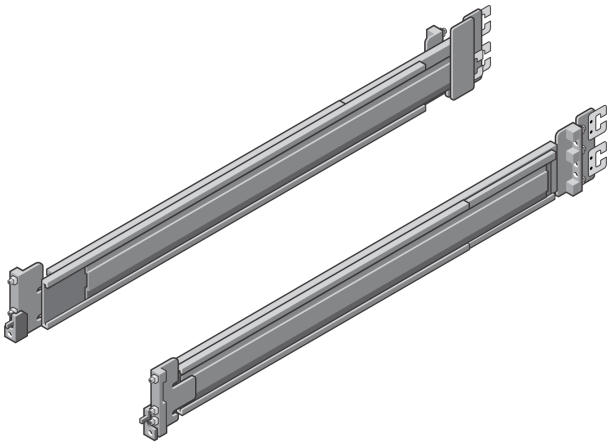
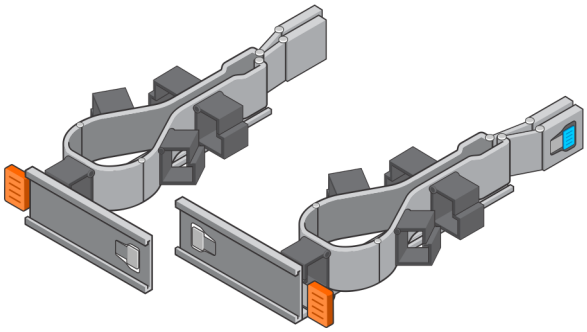
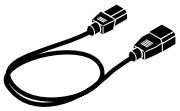
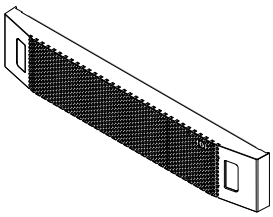
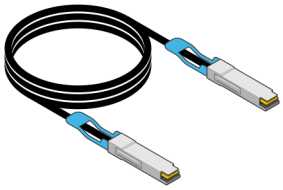
NOTE: When adding an expansion enclosure to a running system, you must power on the expansion enclosure before attaching the back-end cables.

1. Verify the contents of the shipping package.
2. Choose the space in the cabinet for the new expansion enclosure.
3. Remove the filler panels that cover the cabinet space for the new expansion enclosure.
4. Install the rails for the new expansion enclosure in the cabinet.
5. Install the expansion enclosure on the rails.
6. Install the cable management arms.
7. Apply cable labels.
8. Route the data cables and power cords through the cable management arms.
9. Attach the power cables to the new expansion enclosure.
10. Close the cable management arms.
11. Test the cable management arms.
12. Plug the power cables into the power source.
13. Attach the expansion (back-end) cables to the new expansion enclosure.
14. If the new expansion enclosure shipped without its drives installed, install the drives in the expansion enclosure.
15. Install the front bezel on the new expansion enclosure.

Verify shipping package contents

Confirm that you received all the equipment that is required to install the new NVMe expansion enclosure.

Verify that you received the following:

Component		Quantity
NVMe expansion enclosure		1
Rail kit, including Snap-in rails (2) Screws (2 per rail)		1
Cable management arms		2
Power cords, either Black and gray C13/C14 Black and gray C13/C20		2
Bezel for NVMe expansion enclosure (with key)		1
100G QSFP28 cables to connect the base enclosure to the NVMe expansion enclosure, the NVMe expansion enclosure to another NVMe expansion enclosure, and to loopback from the NVMe expansion enclosure to the base enclosure. **NOTE:** The first NVMe expansion enclosure ships with four 100G		2

Component		Quantity
QSFP28 cables. The second and third NVMe expansion enclosure ship with two 100G QSFP28 cables.		

Choose where to install the expansion enclosure

Before installing the new expansion enclosure, you should determine the placement of the new expansion enclosure within the rack.

Steps

1. It is recommended that you install the expansion enclosure in the next available 2U space directly above the base enclosure or the last expansion enclosure in the system.

   Most cabinets mark 1U increments with horizontal lines or small holes in the channels.
2. Considering these recommendations, choose a 2U space in the cabinet for the expansion enclosure.

Removing a filler panel

About this task

In most cases, the front space into which you will install the enclosure is covered by a filler panel.

Steps

If one or more filler panels cover the space where you want to install the enclosure, remove each panel.

Installing the NVMe expansion enclosure rails

About this task

Install the rails from the front of the cabinet into which you are installing the enclosure. The 2U NVMe expansion enclosure includes rails that slide into the cabinet rail assembly. The rails are dedicated left and right, and cannot be interchanged. The front side of each rail is labeled Left Front or Right Front.

Steps

1. Locate the 2U cabinet space designated for the enclosure.
2. Install the right rail to the rear NEMA channel.
   a. Align the right rail with the lower U of the allotted 2U space.
   b. Push the rail back to secure the rail posts in the cabinet NEMA channel. An audible click indicates that the rail is secure in the channel.
3. Install the right rail to the front NEMA channel.
   a. Align the front of the right rail so that it is level.
   b. Pull the rail forward while holding the rail clamp open.
   c. Once the rail posts are in the cabinet NEMA channel, release the rail clamp. An audible click indicates that the connection is secure.
4. Install the left rail by mirroring steps 2 and 3.

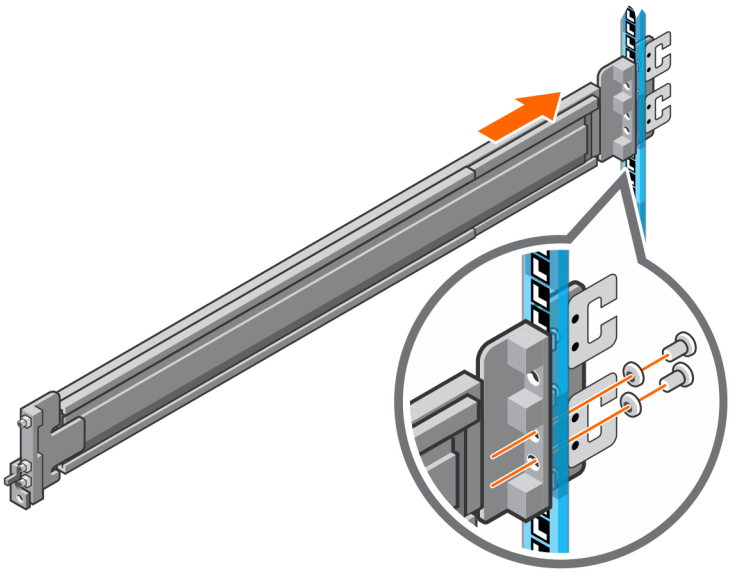


Figure 34. Installing the NVMe expansion enclosure rails (rear)

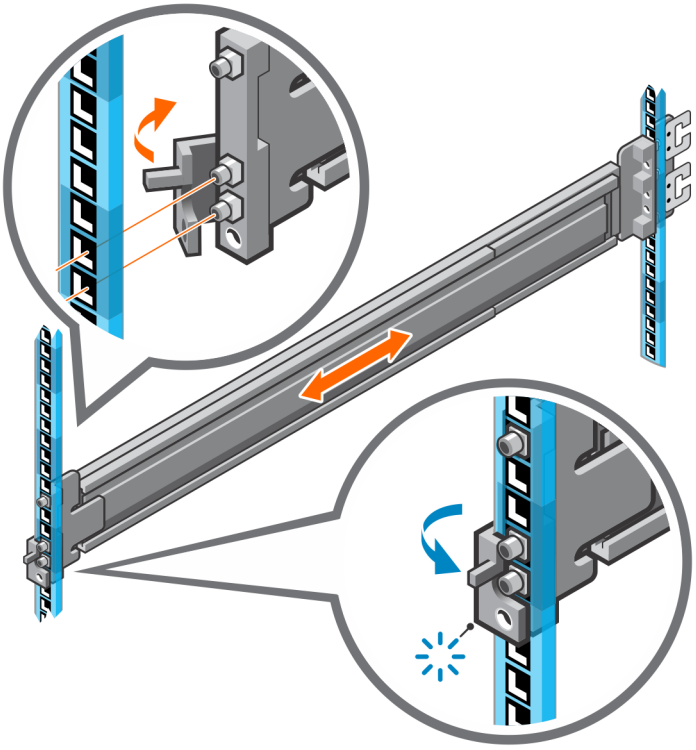


Figure 35. Installing the NVMe expansion enclosure rails (front)

5. Add the retaining screws that came with the rails to the front and back of both rails.

NOTE: Use the washers that came with the rails if the rack holes are square.

NOTE: The screw hole at the front of the rail is behind the rail clamp.

NOTE: You will need a long handled screwdriver to reach the screw hole at the rear of the rack.

NOTE: The following illustration does not show the C-clips that are used to attach the cable management arms.

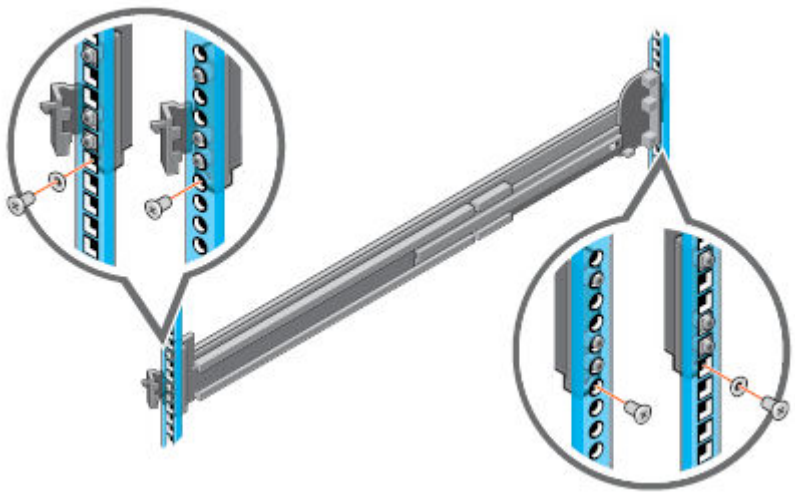


Figure 36. Adding the retaining screws

Install the system in the cabinet

In an angled drop-in design, inner (chassis) rails are attached to the sides of the system and then the system slides into the outer (cabinet) rails that are installed in the rack.

About this task

WARNING: The system is heavy. To avoid personal injury and/or damage to the equipment, do not attempt to install the system in a cabinet without a mechanical lift and/or help from another person.

Steps

1. Pull the inner rails out of the rack until they lock into place.
2. Release the inner rail lock by pulling forward on the orange tabs and sliding the inner rail out of the intermediate rails until they are fully extended.

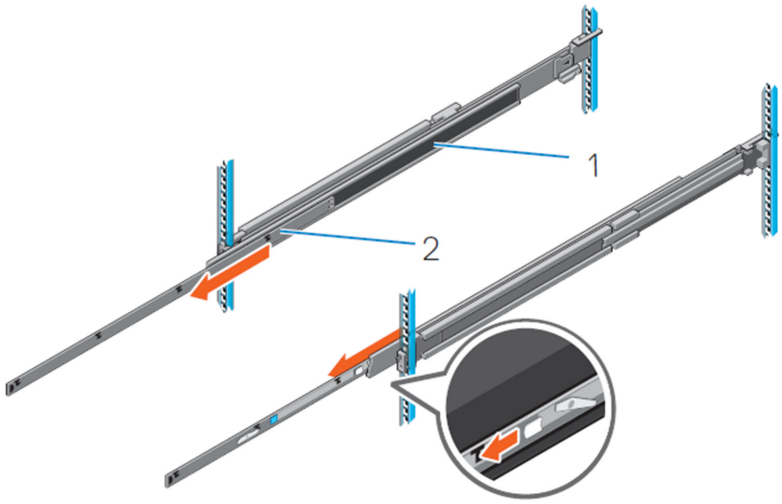


Figure 37. Pull out the intermediate rail

1. Intermediate rail

2. Inner rail

3. Attach the inner rails to the sides of the system by aligning the J-slots on the rail with the standoffs on the system and sliding forward on the system until they lock into place.

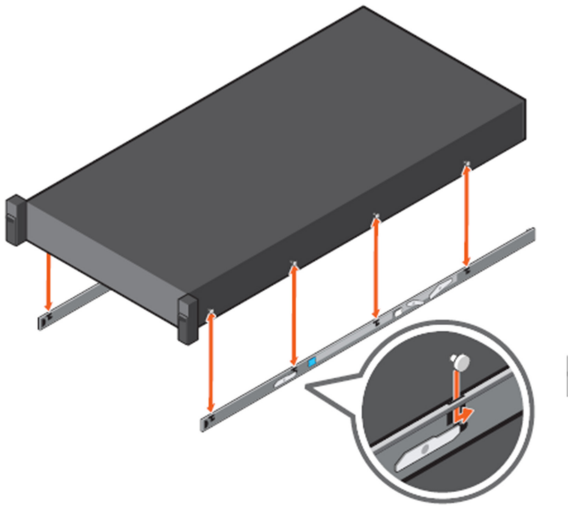


Figure 38. Attach the inner rails to the system

4. Verify all the J-slots on the rails are aligned with the rail standoffs on the system.

CAUTION: Improper installation on the rails may damage the rails or cause the system to fall when extended.

5. With the intermediate rails extended, install the system into the extended rails.

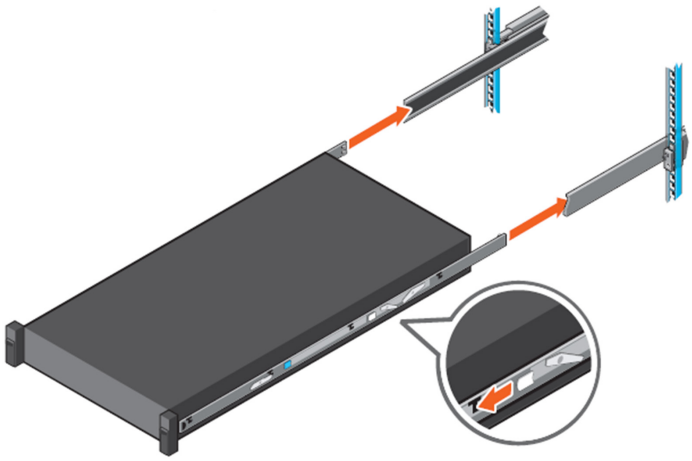


Figure 39. Install system into the extended rails

6. Pull the orange slide release lock tabs forward on both the rails, and slide the system into the rack.

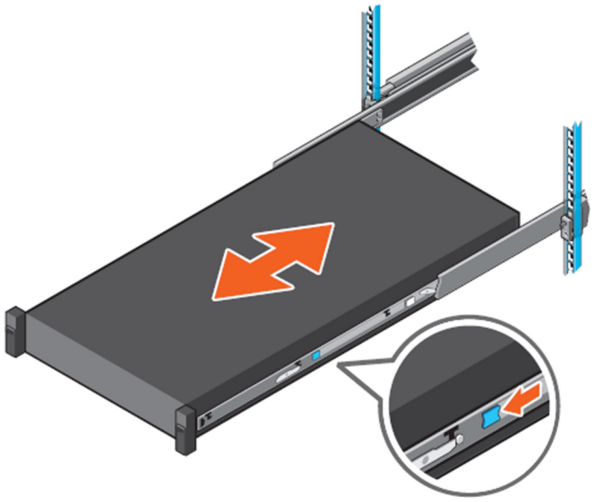


Figure 40. Slide system into the rack

Installing cable management arms

About this task

To properly orient the cable management arms, hold them with the silver side facing down. The words "Upper" and "Lower" on the arms should be legible.

Steps

1. Install the lower cable management arm:
   a. On the right-hand side of the rear of the cabinet, align the two retention latches with the two lower rail clips, and insert them into the clips until you feel and hear an audible click.
2. Install the upper cable management arm:
   a. On the left-hand side of the rear of the cabinet, align the two retention latches with the two upper rail clips, and insert them into the clips until you feel and hear an audible click.

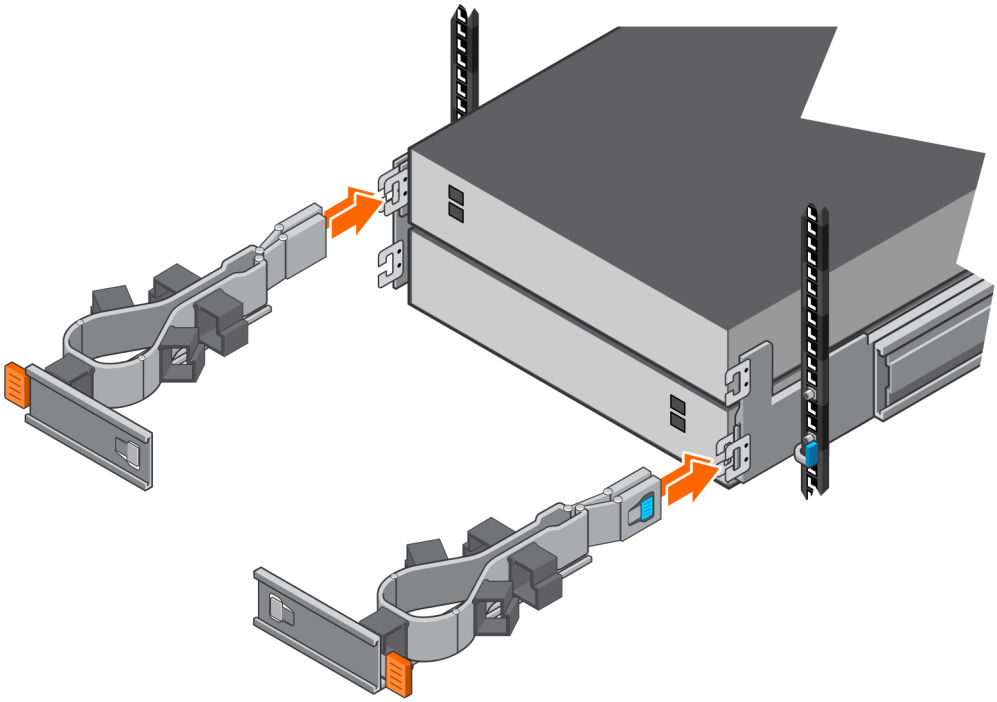


Figure 41. Installing the cable management arms

Cable the new NVMe expansion enclosure

Follow these guidelines to cable an expansion enclosure in a running system to a new expansion enclosure.

Prerequisites

Apply cable labels to the cables connecting the expansion enclosures. In this procedure, "last expansion enclosure" refers to the last expansion enclosure that is currently installed. The "new expansion enclosure" refers to the expansion enclosure that you are adding in this procedure.

CAUTION: Incorrect cabling could cause all new drives to be locked.

About this task

Route the data cables through the cable management arms, but do not connect them to the ports yet. Ensure that there is enough slack for each cable to connect to the designated port.

Steps

1. Move the two loopback cables from port 2 of the last expansion enclosure to port 2 of the new expansion enclosure:
   a. Disconnect the QSFP cable from LCC 1, port 2 of the last expansion enclosure and move it to LCC 1, port 2 of the new expansion enclosure.
   b. Disconnect the QSFP cable from LCC 2, port 2 of the last expansion enclosure and move it to LCC 2, port 2 of the new expansion enclosure.
2. Add two new cables from port 2 of the last expansion enclosure to port 1 of the new expansion enclosure:
   a. Use a new QSFP cable to connect LCC 1, port 2 of the last expansion enclosure to LCC 1, port 1 of the new expansion enclosure.
   b. Use a new QSFP cable to connect LCC 2, port 2 of the last expansion enclosure to LCC 2, port 1 of the new expansion enclosure.

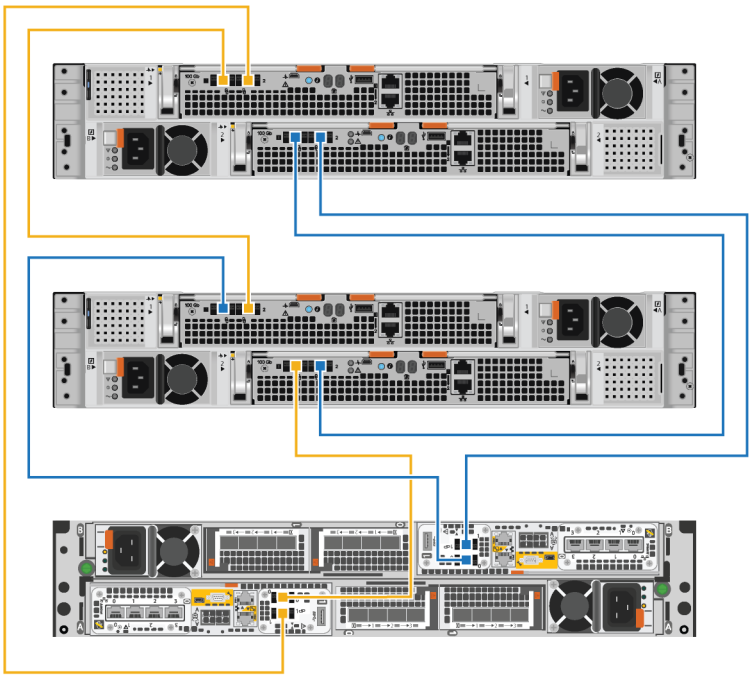


Figure 42. Cabling two expansion enclosures

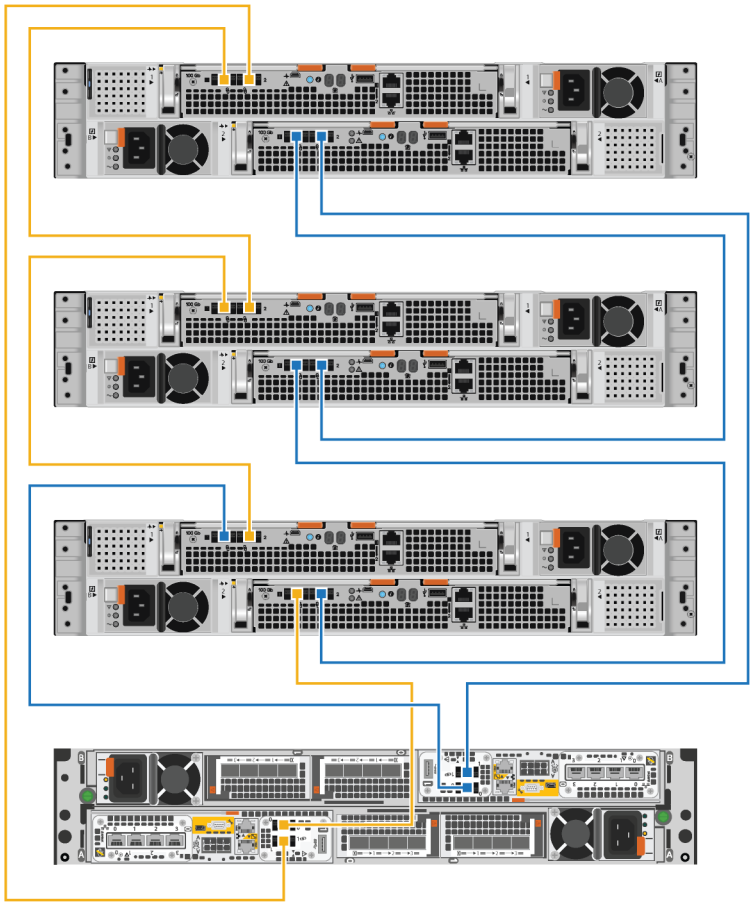


Figure 43. Cabling three expansion enclosures

3. Route the power cords through the cable management arms. The power cords for power supplies on the left route through the upper cable management arms, and the power cords for power supplies on the right route through the lower cable management arms.
4. Plug each power cable into the expansion enclosure power supply and secure the cord with the retention bail at the connector.

   NOTE: If the power source PDU is energized, do not connect the power cords to the PDU until the system is ready to be brought online. If you connect the power cords sooner, the system may power up during the installation.

   NOTE: It is recommended to plug in the black power cables on the left and the gray power cables on the right. The power cables work in either power supply, but a consistent cabling method will make it easier to troubleshoot issues.

Closing the cable management arms

About this task

Perform this procedure to close the cable management arms.

Steps

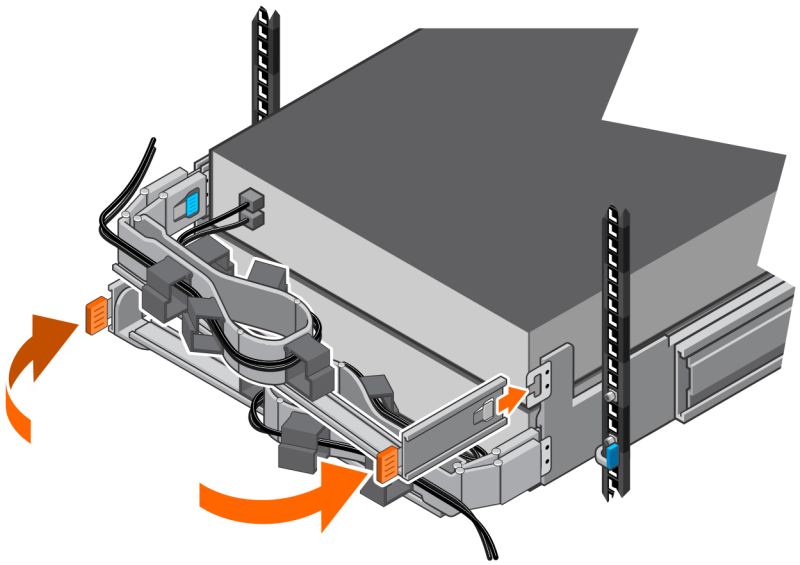
1. Close the lower cable management arm:
   a. Swing the lower cable management arm to the left side of the enclosure, and align the retention latch with the lower rail bracket.
   b. Press the retention latch onto the lower rail bracket.

c. Make sure that you hear the audible click that indicates that the lower cable management arm is in place.

2. Close the upper cable management arm:
   a. Swing the upper cable management arm to the right side of the enclosure, and align the retention latch with the upper rail bracket.
   b. Press the retention latch onto the upper rail bracket.
   c. Make sure that you hear the audible click that indicates that the upper cable management arm is in place.

Example

Figure 44. Closing the cable management arms



Testing the cable management arms

Steps

1. From the front of the rack, lift the black tabs on the expansion enclosure and slowly pull the expansion enclosure from the rack to ensure that proper slack has been provided for the cables.
2. Ensure that the stops on the rails engage into the service position when the top access door is clear.
3. If you feel resistence, stop pulling and adjust any tight cables so that pulling the expansion enclosure from the rack does not strain any cables or pull them from the ports.
4. Ensure that you can remove the expansion enclosure from the rack until it is in the service position. The expansion enclosure is in the service position when it clicks into place and will not move any further.
5. Once you have finished adjusting the cables, pull the orange tabs on the side of the expansion enclosure, and push the expansion enclosure back into the rack until it locks into place.
6. Inspect the cables again to make any necessary final adjustments.
7. Using a Philips screwdriver, tighten the chassis-securing screws located under the self-locking latches on the front of the expansion enclosure. These screws secure the expansion enclosure chassis to the cabinet rails in the event that the cabinet needs to be moved.

Attach the cables

Steps

1. Plug the power cables into the power source.
2. Attach the data cables to the ports on the new expansion enclosure.