



EMC[®] VNX[®]

VNX5200[™] Block

Installation Guide

P/N 300-999-786

REV 02

EMC²

Tasks to Complete after a VNX Installation

Two Sections have been added to the VNX w/ MCx installation. Performed the task below after the installation is complete.

Task 1: Upgrade the VNX OE to 05.33.000.5.038 or higher

To resolve the unexpected reboot of the Storage Processor after ~80 days of runtime upgrade the Block OE to 05.33.000.5.038 or higher.

ETA 175619:

VNX: VNX systems will experience an unexpected reboot after ~80 days of runtime.

If the VNX Block OE can not be upgraded then reboot Storage Processor B.

Task 2: Upgrade Disk Drives require a firmware at the time of installation

During disk drive qualification a variety of settings are changed for testing purposes.

Disk drives that are used with these settings for six (6) months will begin to degrade at an accelerated rate and will eventually fail.

Refer to Knowledge Base Solution: 00180338

In the VNX Procedure Generator refer to

Service Alerts, Reference Documents, FCOs, TSEs and Parts Guides >

FCO F012614FO Shipped not Installed Disk Drive Firmware Upgrade

The drive part numbers that may be affected by this issue are shown in the table below:

Compass Drive Part Numbers		
005049202	005049294	005049925
005049203	005049295	005049926
005049205	005049302	005049951
005049206	005049577	005049956
005049207	005049804	005050281
005049250	005049820	005050282

Service LAN Port Connection for VNX with MCx

CAUTION: Never connect a switch or hub between the two Service LAN Ports on any VNX5200, VNX5400, VNX5600, VNX5800 and VNX7600 storage system.

Connect to only one of the VNX with Storage Processor MCx Service LAN Ports. Making a single connection to one Storage Processor Service LAN Port will provide communicate to both Storage Processors.

Use a single connection with a hub or a direct connection from your laptop to the Service LAN port. Connecting both Service LAN ports to a Hub will cause a network storm and panic the array.

If this problem occurs, promptly remove the Ethernet cables. Reseat the Management Module if the port appears not to function. The Management Modules are hot-swappable and may be removed and reseated without affecting the array's operation.

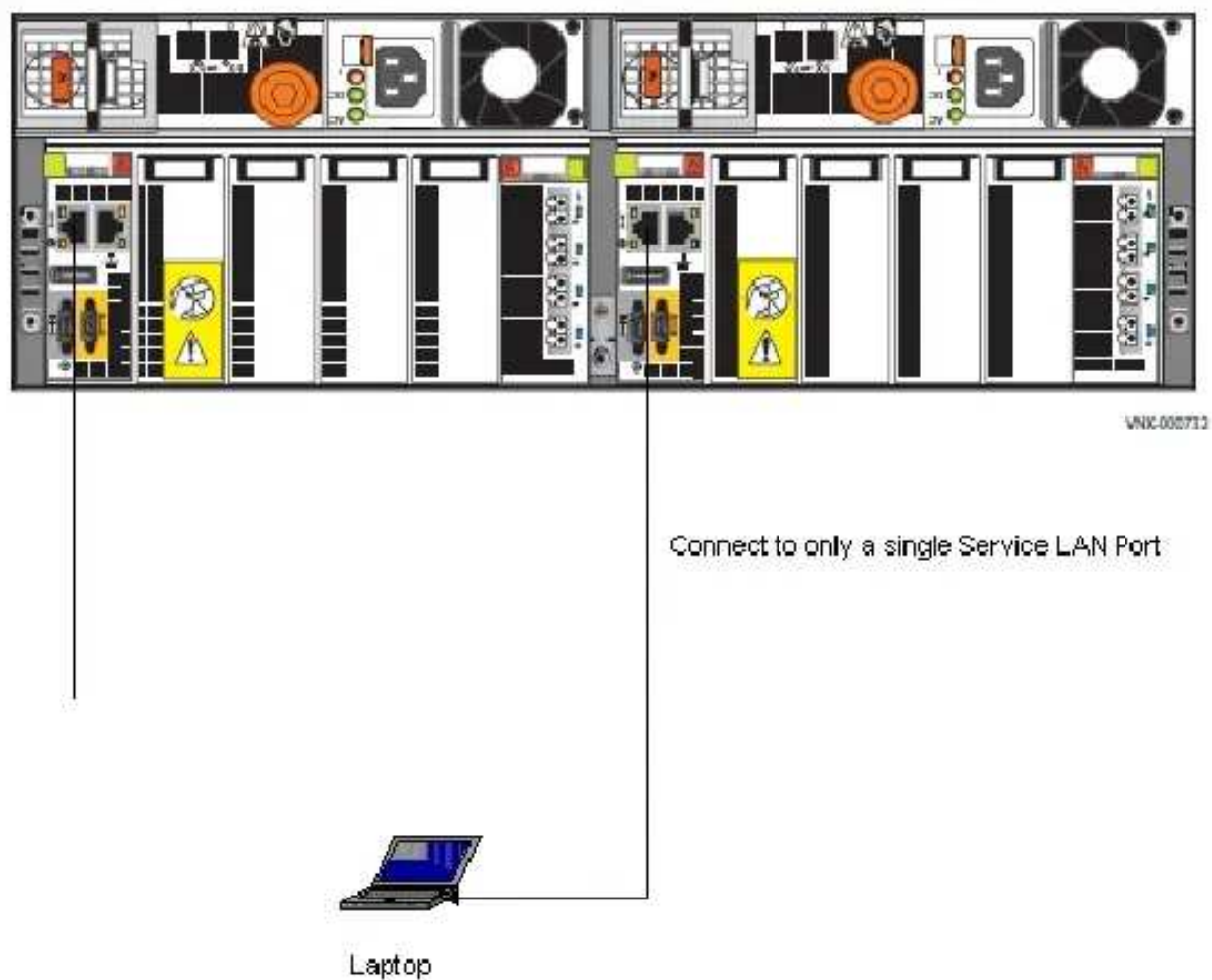


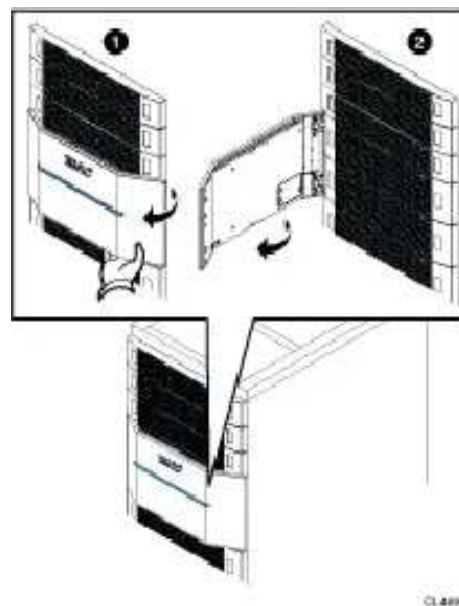
Figure 1 Service LAN Port Connection for VNX with MCx

VNX with MCX Light Bar

Introduction

EMC Rack Cabinet:

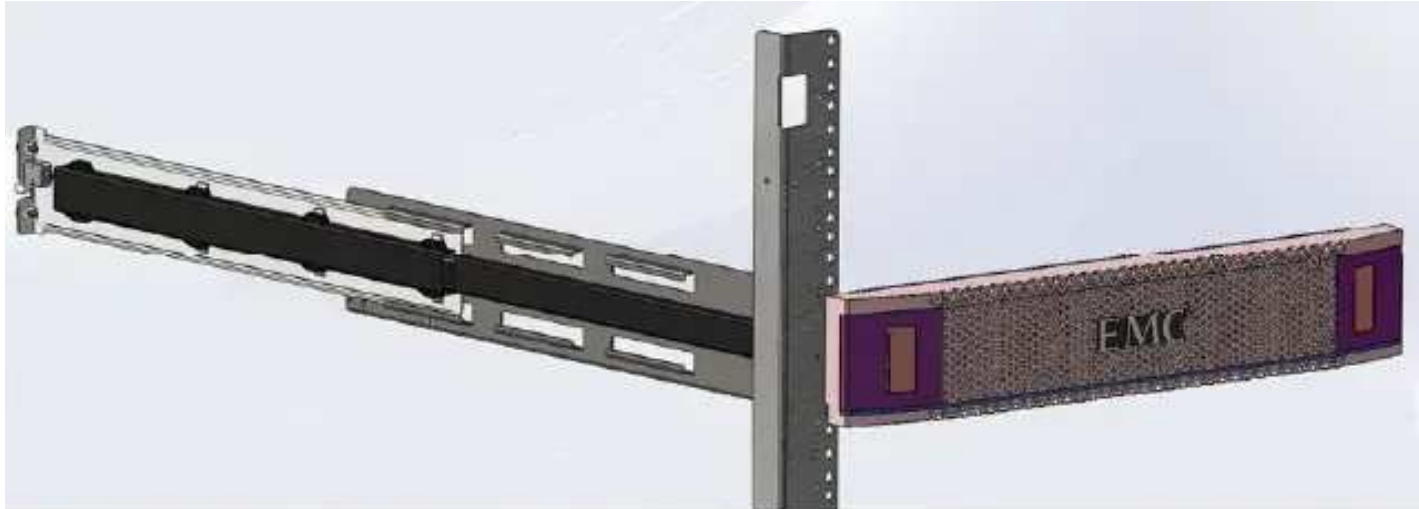
Console: The door on the front of an EMC RACK that swings out of the way to allow access to the disk drives. The Light Bar is part of the Console, the EMC Badge door. Opening the door provides access to VNX Bezels. The power to the Light Bar is provided by a power supply plugged into the PDU. A USB to USB cable provide a power connection between the power supply and the Light Bar.



CL400

Customer Rack Cabinet:

Bezel Light Bar: A VNX with MCx bezel contains a Light bar. This is intended for use in non-EMC racks.



Power Connections

The Blue Light Bar is powered by a power supply transformer assembly connected to the PDU.

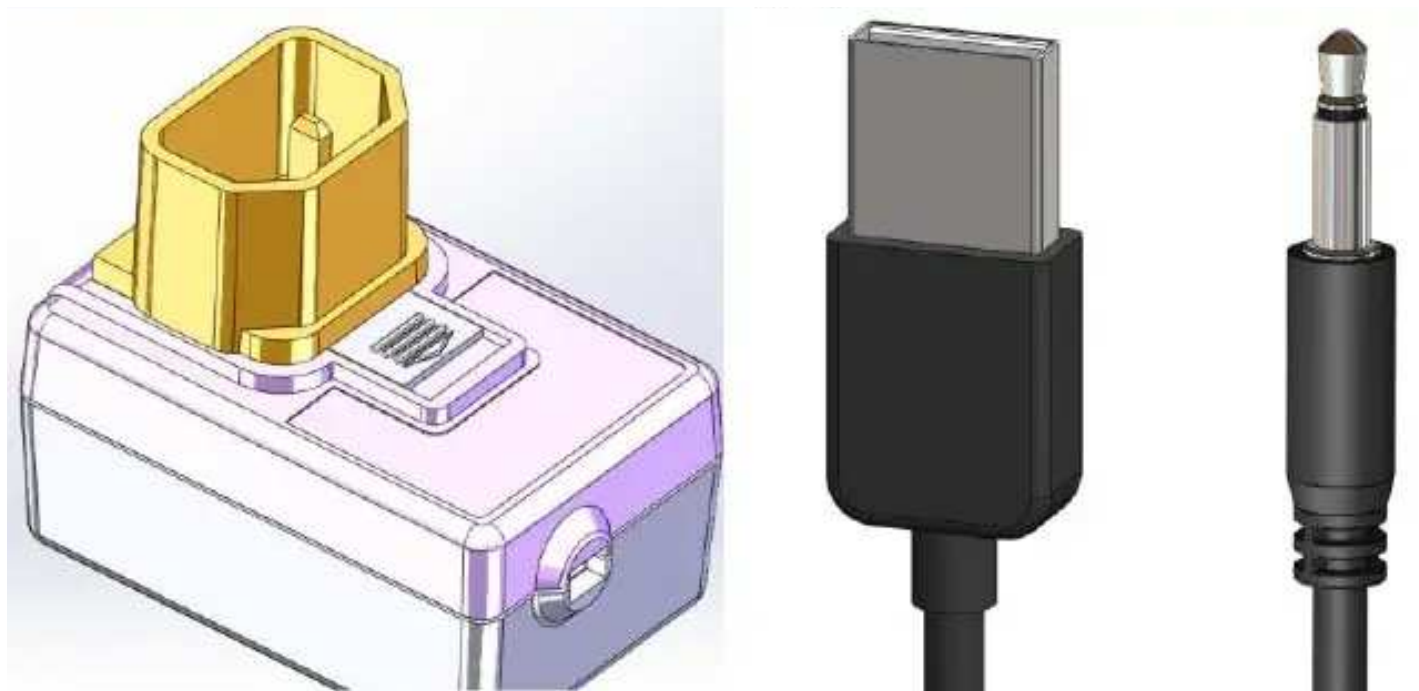


Figure 1 Light Bar Power Connectors

The DC power for the Bezel Light Bar is carried by cables from the power supply through a rack rail to the Light Bar power connector.

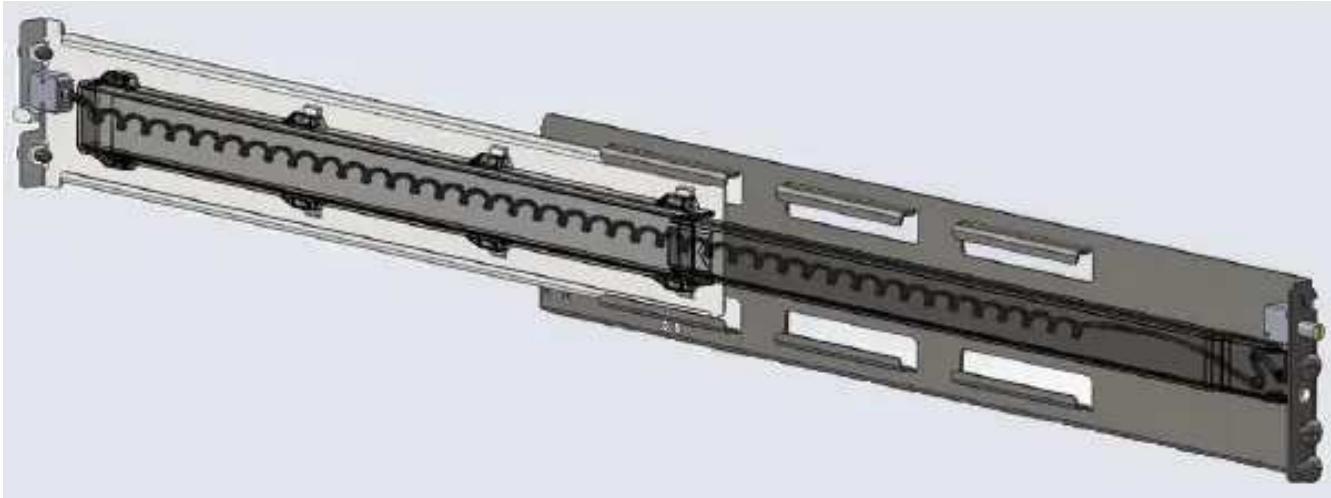


Figure 2 Adjustable Rail Set and Light Bar Power Cable

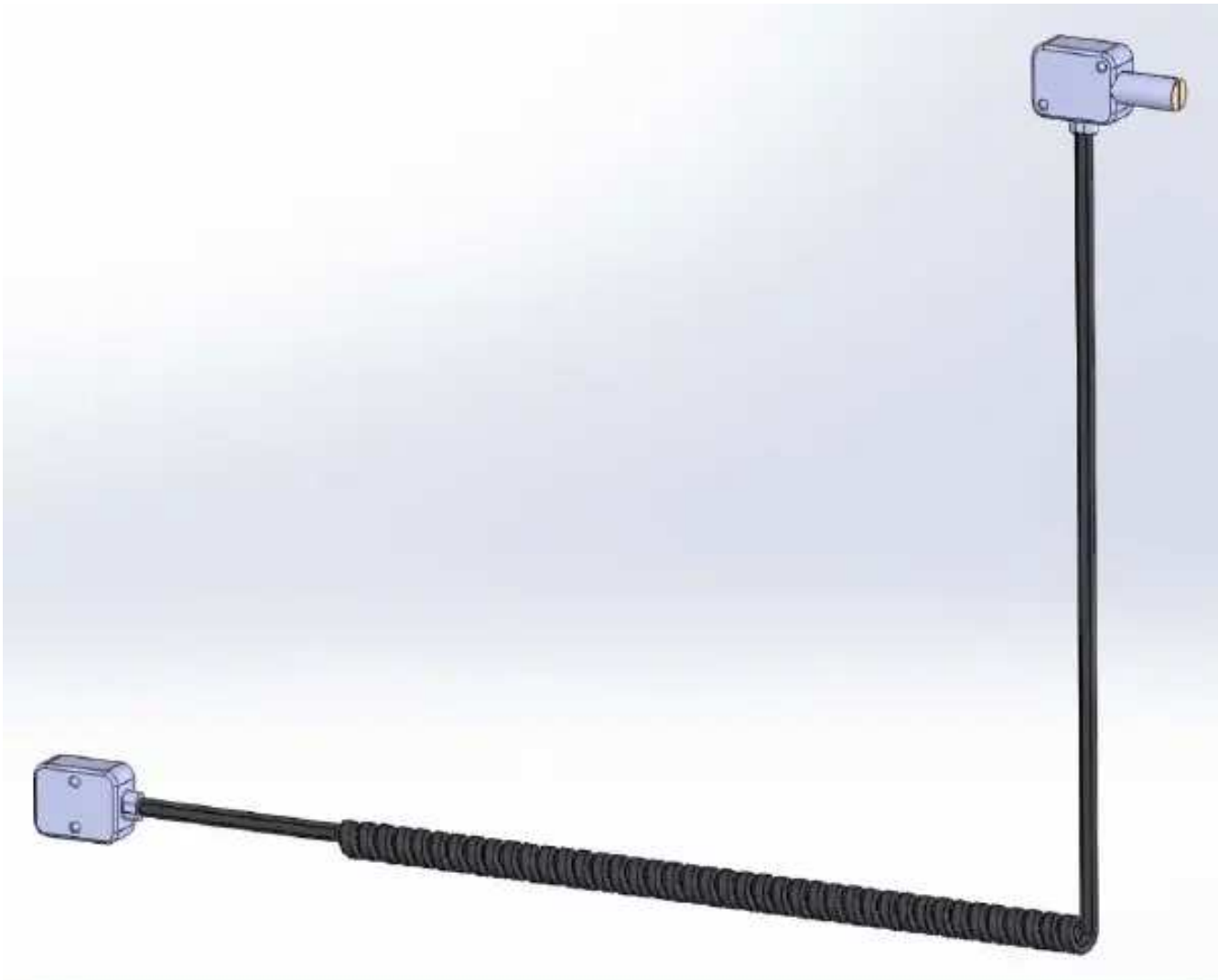


Figure 3 Rail Set Internal Cable

A USB to mini phono jack connects from the power supply to a jack located on the back of the right rail.



Figure 4 Rear Rail Power Connection

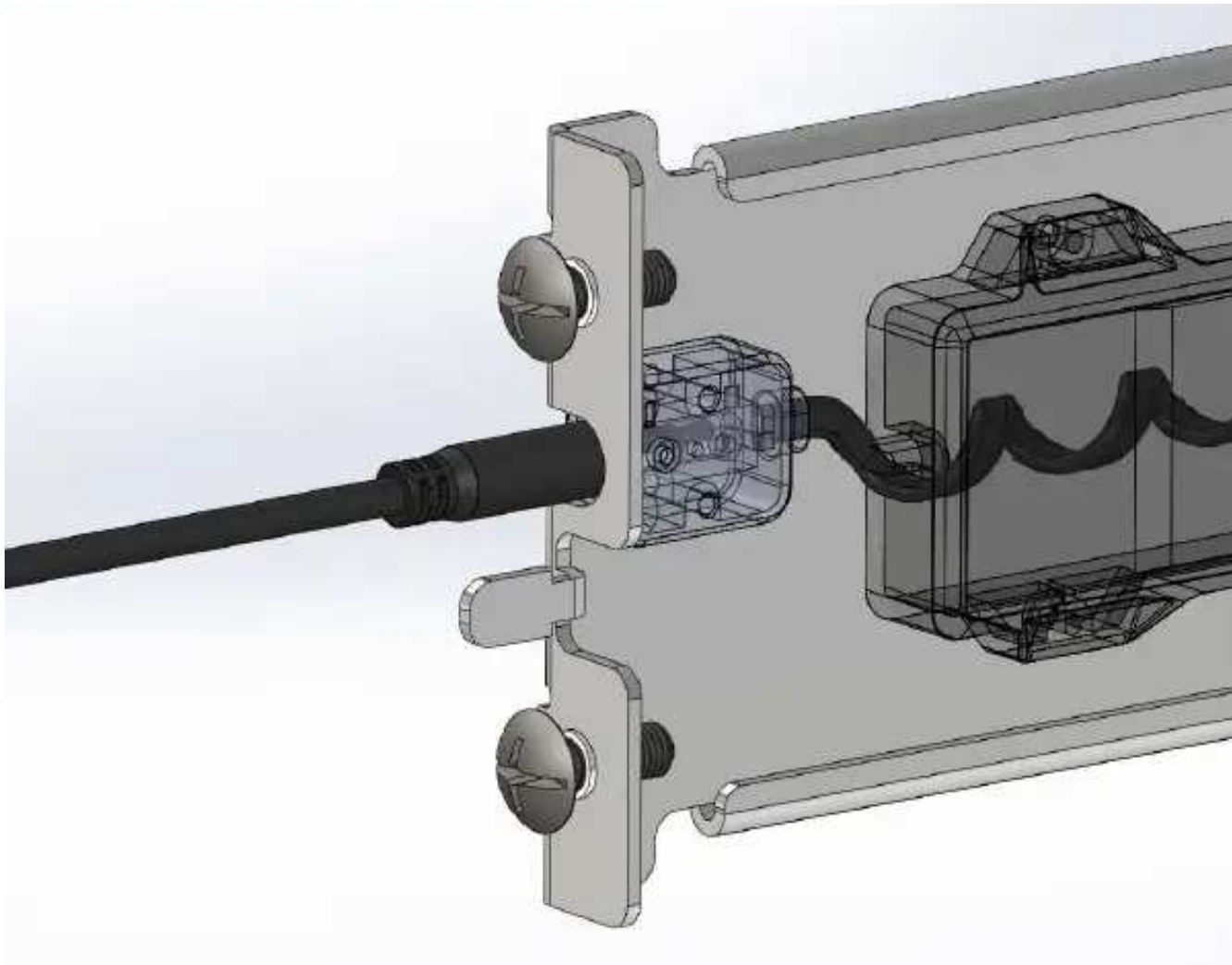


Figure 5 Rear Mini Phono Connection

A pair of pogo pins on the door makes contact with a connector in the front of the rail to power the Light Bar located in the bezel.

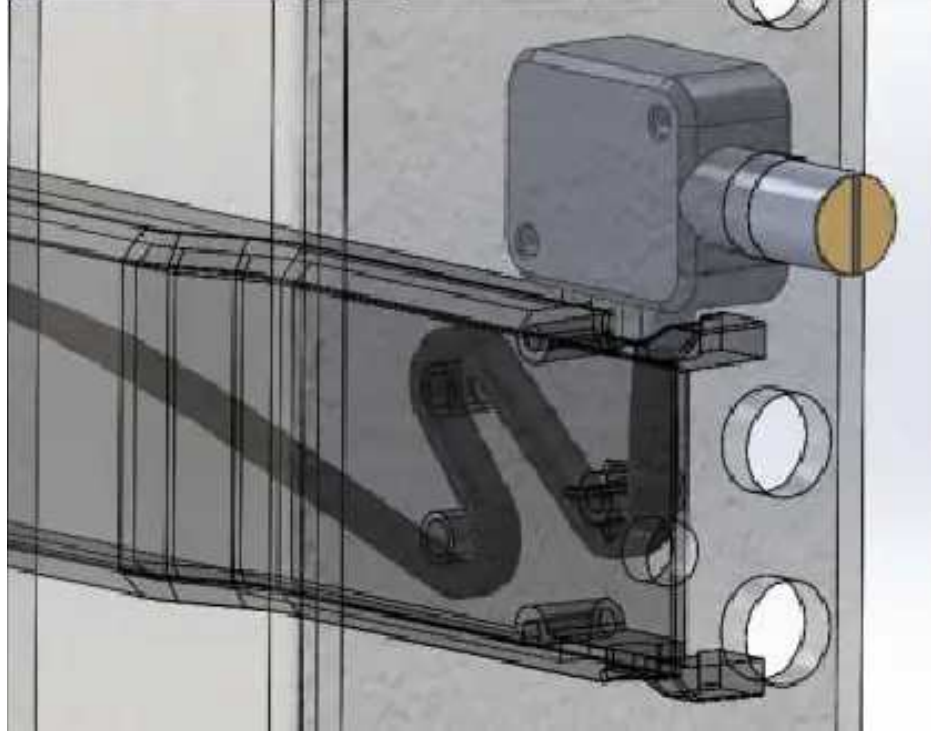


Figure 6 Front Contact Connection

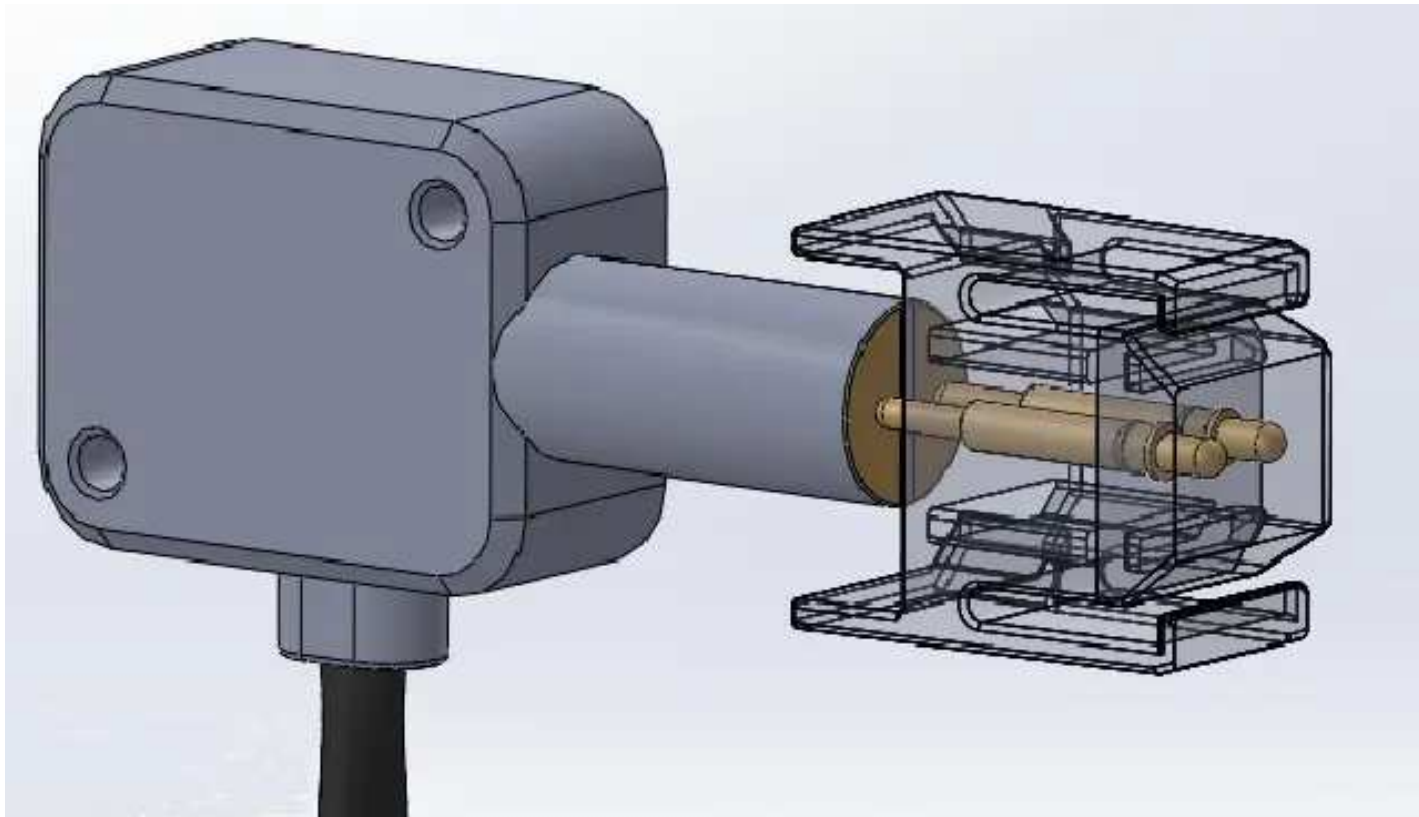


Figure 7 Pogo Pin Connection

Installation

Please note that there are modifications to the printed File and Unified Installation guides which one should be aware of.

Under the Prepare your system:

Removing mini-rack components section, the updated text should now read:



CAUTION: On the left ganged rail, there is a blue light power connector protruding from the front which goes through a hole in the front channel of the mini-rack.



Figure 8 Light Bar power connector

1. [] Carefully remove the ganged rails from the mini-rack by pulling each ganged rail out from the rear, then the front.
2. [] Unscrew the front and rear screws and remove the ganged rails from the mini-rack.
3. [] Retain all the removed rails and screws for later assembly of the rails into the site rack.

Under the Assemble components in your cabinet:

Installing the Ganged Rails section, the updated text should now read:

4. [] Install the ganged rail into the appropriate location in the site rack, for space considerations find the lowest available space.

Note: The rails must be level front to back and with the companion rail left to right.

5. [] Insert the right ganged rail into the right side of the cabinet rack.
6. [] To hold the ganged rails in place, insert all the screws (3 front and 2 back) previously removed from the ganged rails that were held in the mini-rack.



CAUTION: On the left ganged rail, there is a blue light power connector protruding from the front of the ganged rail which goes through a hole in the front post of the cabinet rack shown in Figure 8.

7. [] Carefully install the left ganged rail from the mini-rack by inserting the left ganged rail front first, then the rear.
8. [] On the rear of the left ganged rail, insert the gang rail alignment pins into the hole in the back of the rack post.

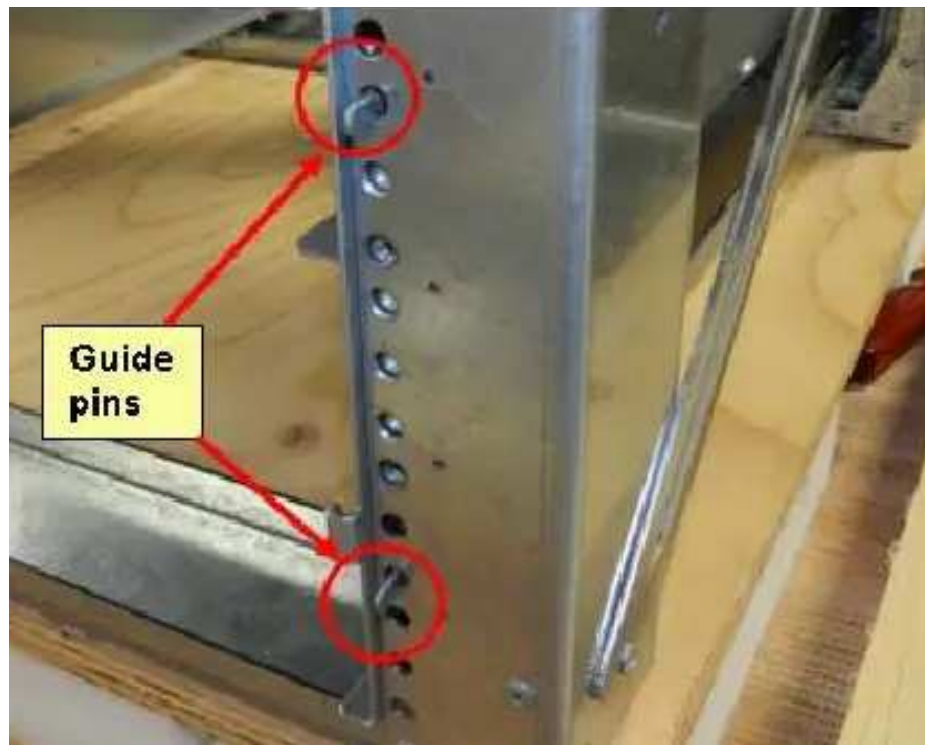


Figure 9 Gang Rail alignment pins

9. [] To hold the ganged rails in place, insert all the screws (3 front and 2 back) previously removed from the ganged rails that were held in the mini-rack.
10. [] Tighten the screws.

Verifying Proper Operation

Once the rail set is assembled in the rack cabinet and all connections have been made verify operation. With A/C applied to the PDU, the Light Bar will be lit with the Bezel in place.

If the Light Bar is not illuminated reseal the cable connections. Use a DC volt meter to verify that a voltage is present at each connection point. A Light Bar that is not lit will not impact system operation. An unlit Light Bar is a cosmetic issue.

Installing VNX with MCx Components

Install the VNX with MCx components in the rack only if the Bezel Light Bar is operational. Replacing a rail set requires un-racking the system and is an off line event for an operational system.

Ordering Replacement Parts

The cable with light power connector and rail assemble are not FRU parts so the Missing, Wrong and Damaged (MWD) process needs to be used to obtain replacement parts.

Table 1 Light Bar Part Numbers

Part Number	Console Light Bar Use	Bezel Light Bar Use
P/N 071-000-522 Power Supply Transformer	X	X
P/N 038-003-941 USB 2.0 - USB Type A - USB Type	X	
P/N 106-565-022 ganged rail kit number		X
P/N 038-900-021 USB to mini Phono cable		X

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For the most up-to-date regulatory document for your product line, go to the technical documentation and advisories section on the EMC online support website.

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Introduction

Audience

Although your VNX system is customer-installable, EMC recommends that the installation be performed by someone who has a general background in information technology. While prior training is not required, customers who successfully installed this product were trained as:

- ◆ EMC Proven Professionals
- ◆ Microsoft Certified Technology Specialists
- ◆ Cisco Certified Network Associates
- ◆ CompTIA A+ certified technicians

Your service provider offers a variety of installation and implementation services designed to assist you in putting your VNX system into production as quickly and efficiently as possible. Contact your sales representative to take advantage of these service offerings.

Shipment Methods

There are two ways in which the product is packed and shipped to you. It will be shipped completely-installed and cabled in an EMC cabinet or it will be shipped in multiple boxes for installation into a customer-provided cabinet.

Overview of installing an EMC cabinet

If your system was shipped in an EMC cabinet, the installation process involves the following steps:

1. Read and complete the prerequisite tasks listed in [“Before you begin” on page 7](#).
2. Unpack the shipping boxes and verify the shipping contents from the packing instructions on the outside of the box as described in [“Unpacking the Disk Processor Enclosure \(DPE\)” on page 9](#).
3. Verify the cabling and connect the system to your network as described in [“Cable your system” on page 19](#).
4. Power up your system and verify that the system powered up correctly by checking the LEDs of the disk processor enclosure (DPE). This is described in [“Power up” on page 21](#).
5. Complete the tasks listed in [“Setup” on page 39](#).

Overview of installing in a customer cabinet

If your system was shipped to be installed in your own cabinet, the installation process involves the following:

1. Read and complete the prerequisite tasks listed in [“Before you begin” on page 7](#).
2. Unpack the shipping boxes and verify the shipping contents as described in [“Unpack your system” on page 9](#).
3. Remove shipping container contents and assemble the components in your cabinet as described in [“Assemble components in your cabinet” on page 13](#).
4. Cable your system as described in [“Cable your system” on page 19](#).
5. Power up your system by connecting power cables, and then verify that the system powered up correctly by checking the LEDs of the DPE as described in [“Power up” on page 21](#).
6. Optionally, you can add a disk array enclosure (DAE), power it up and then verify that the DAE powered up correctly by checking the DAE LED status as described in [“Add additional storage” on page 23](#).
7. Complete the tasks listed in [“Setup” on page 39](#).



Prepare your system

Use the Before you begin checklist to help you determine what you need to install for your system.

Before you begin

Table 1 Before you begin

Complete	Task	Comments
<input type="checkbox"/>	1. Setup a product support account.	If you do not already have a Product Support account, go to https://Support.EMC.com to set one up. You will need a support account for access to the latest documentation and troubleshooting information, online chat, installation and maintenance videos, utilities and wizards.
<input type="checkbox"/>	2. Complete the VNX Block Configuration Worksheet and the ESRS Worksheet.	These worksheets are provided at the end of this document. To download additional worksheets: <ul style="list-style-type: none">• Go to https://Support.EMC.com, select VNX5200, and then download the appropriate worksheets.
<input type="checkbox"/>	3. Prepare site.	For resource requirements, go to Table 2 on page 8 .
<input type="checkbox"/>	4. Download and print the VNX planned power up and power down procedures.	Planned power down of VNX systems utilize Unisphere since there are no hardware Off switches. All VNX power up and power down procedures are available at https://mydocs.emc.com/VNX/ . They are also available in the <i>VNX System Operations Guide</i> .
<input type="checkbox"/>	5. Download additional VNX installation documentation (when appropriate).	EMC provides additional documentation for installation of certain VNX systems, including: <ul style="list-style-type: none">• NEBS systems• Dense-rack systems To download this documentation, go to https://Support.EMC.com , select VNX5200 > Documentation .
<input type="checkbox"/>	6. Consult VNX documentation (optional).	<ul style="list-style-type: none">• If you are unfamiliar with the VNX system architecture, download and review the <i>VNX5200 Hardware Information Guide</i> before you begin the installation. Go to https://Support.EMC.com and select VNX5200 > Documentation > Manuals and Guides > VNX5200 Hardware Information Guide.• If you want to generate documentation specific to your system configuration, including to configure servers, update software, or add and replace hardware, go to https://mydocs.emc.com/VNX/.



Site requirements

Table 2 Site Requirements

Area	Requirement
Power	<p>AC Power: For high availability, at least two AC circuits are required.</p> <p>VNX models with the 1100 W power supply (VNX52DPxxx/VNXB52DPxxx] require at least two 200-240 V AC circuits.</p> <p>VNX models with the 800 W power supply (VNX52VPxxx) require at least two 100-240 V AC circuits. These models have specific power limits.</p> <p>See the <i>VNX5200 Hardware Information Guide</i>.</p> <p>For full power specifications, go to Mydocs.emc.com and select View technical specifications under the About VNX section.</p>
Network	<p>Two 1-Gigabit Ethernet management connections and two customer-supplied CAT5e or better cables.</p>
Space	<p>Cabinet vertical space:</p> <ul style="list-style-type: none">• 3U (unit) (5.25 inches, 13.3 cm) for disk processor enclosure (DPE)• For each optional DAE, either 2U, 3U, or 4U.
Tools	<p>Slotted or Phillips screwdriver</p>
Management Station	<p>A Windows-based computer to run the initialization, maintenance, and management tools with:</p> <ul style="list-style-type: none">• Minimum screen resolution of 1280 x 800 and 256 colors• At least 500 MB of free space• Connection on same LAN subnet as your system if you will use it to initialize the system• Windows Domain Controller recommended• SMTP server network connection to the VNX5200 and the management host• JRE*• Browser* (Internet Explorer, Mozilla Firefox) <p>*Supported versions are listed in the release notes.</p>
Network information	<p>The management port and login information in the Planning Worksheets of this install guide. This information includes:</p> <ul style="list-style-type: none">• A static IP address for each storage processor in the system (for example, 123.45.6.7)• The IPv6 global prefix and gateway for each SP if your network supports the IPv6 Internet Protocol and you want to manually configure IPv6 for the management ports• 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



Unpack your system

Unpack and install the DPE first. Other storage (DAEs) will be unpacked, assembled, and cabled later.

Unpacking the Disk Processor Enclosure (DPE)

You will have received your system either fully assembled and cabled in an EMC cabinet, or in shipping boxes to be unpacked and installed into your own cabinet.

Note: If your system includes the use of 4U DAEs, they are not customer-installable. They will arrive either installed in an EMC cabinet fully assembled or in separate shipping boxes and will need to be installed by service personnel.

If your system was shipped fully assembled and cabled in an EMC cabinet:

1. Follow the unpacking instructions on the outside of the box.
2. Go directly to [“Cable your system” on page 19](#) of this installation guide to verify the cabling.

If your system was shipped in separate boxes and needs to be assembled in your own cabinet:

1. Verify that you have received all of the DPE components, including cables, bezel, rail kit, and mounting screws. [Figure 1 on page 10](#) shows the shipping contents.

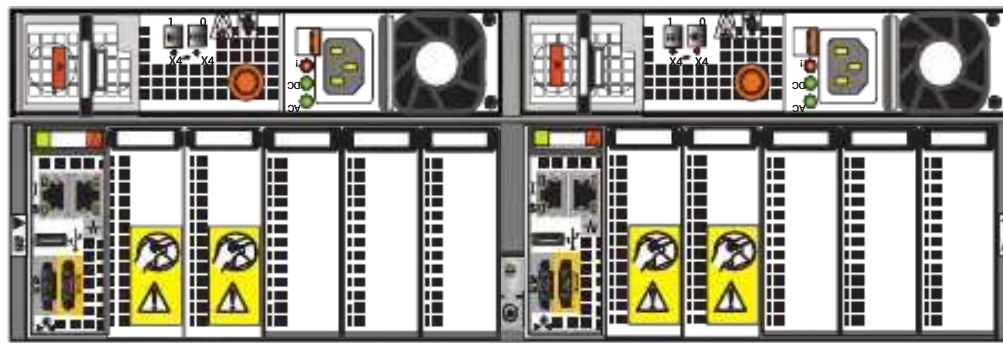


Disk processor enclosure (DPE)

Front



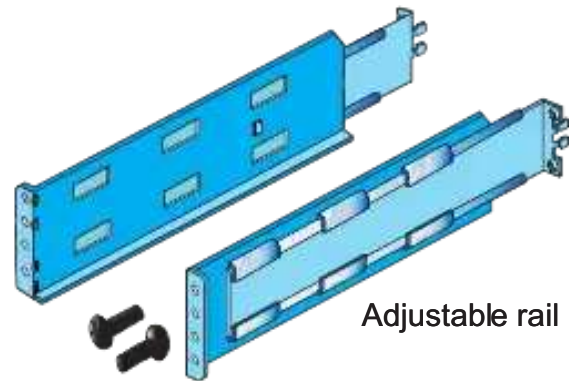
Rear



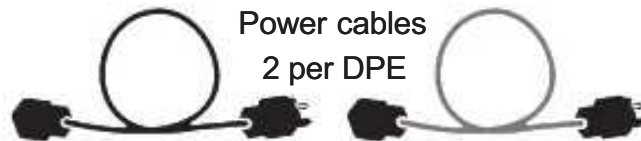
Mounting screws



4 SAS cables



Adjustable rail kit



Power cables
2 per DPE



Service cable 1 per DPE



Bezel

Documentation kit, including Installation Guide, environmental information, and sheets of cable labels.

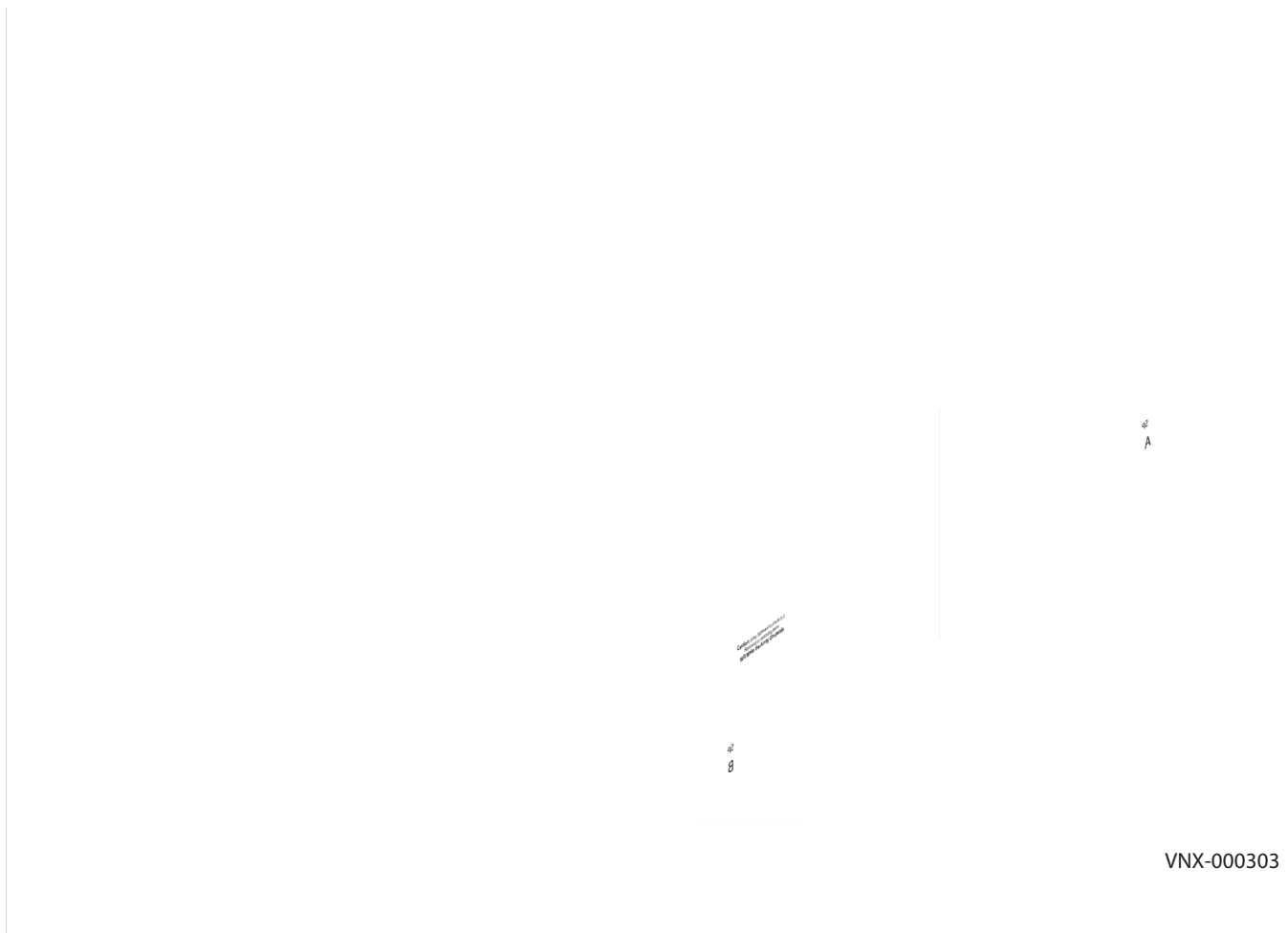
Figure 1 DPE container contents

For damaged or missing components, notify your Sales associate immediately for replacements.

2. Start the unpacking and assembly process with “[Detaching the DPE from the shipping material](#)”.

Detaching the DPE from the shipping material

The DPE is attached with 4 screws, two on each side, to the shipping container. Unscrew the shipping screws to remove the DPE from the container.



Removing the DPE from the shipping container

Ensure that you have the latest version of the installation guide and any other associated documentation. To download the most recent version of the installation guide, go to <https://mydocs.emc.com/VNX/> and select .





Assemble components in your cabinet

This section describes how to install VNX5200 storage-system hardware. In general, you should install hardware starting at the lowest available rack/cabinet space and work up from there. EMC recommends placing the DPE in this lowest cabinet location first. The DPE contains dual Storage Processors and the vault drives for the system. It can also contain additional disks. Additional disk storage (optional DAEs) should be installed above the DPE.

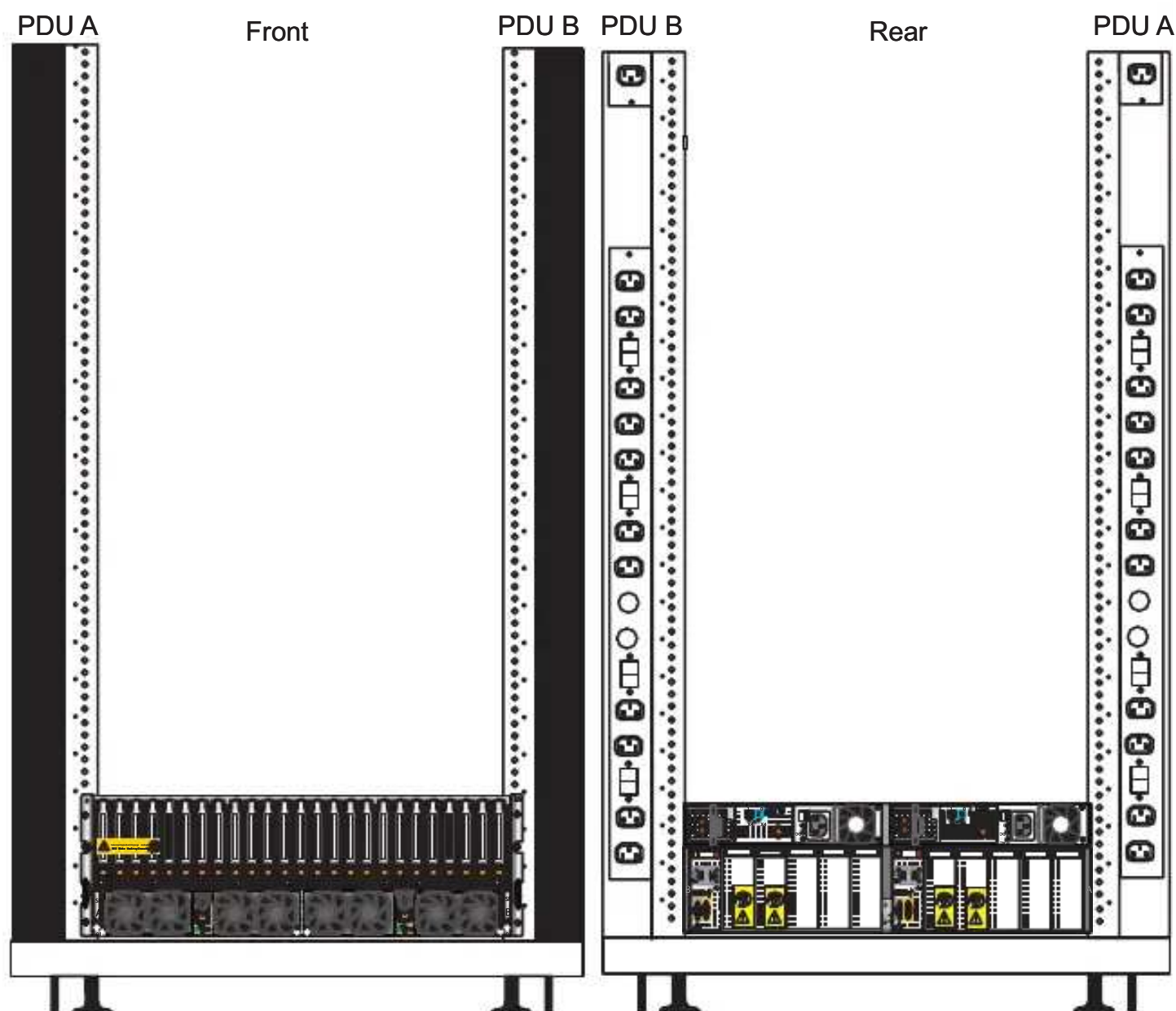


Figure 3 Stacking location of the VNX5200 DPE

IMPORTANT

If you may convert this system to a Unified system, EMC recommends leaving space for the additional hardware. A Unified system normally has additional File hardware (4U) directly above the DPE.



Installing rails

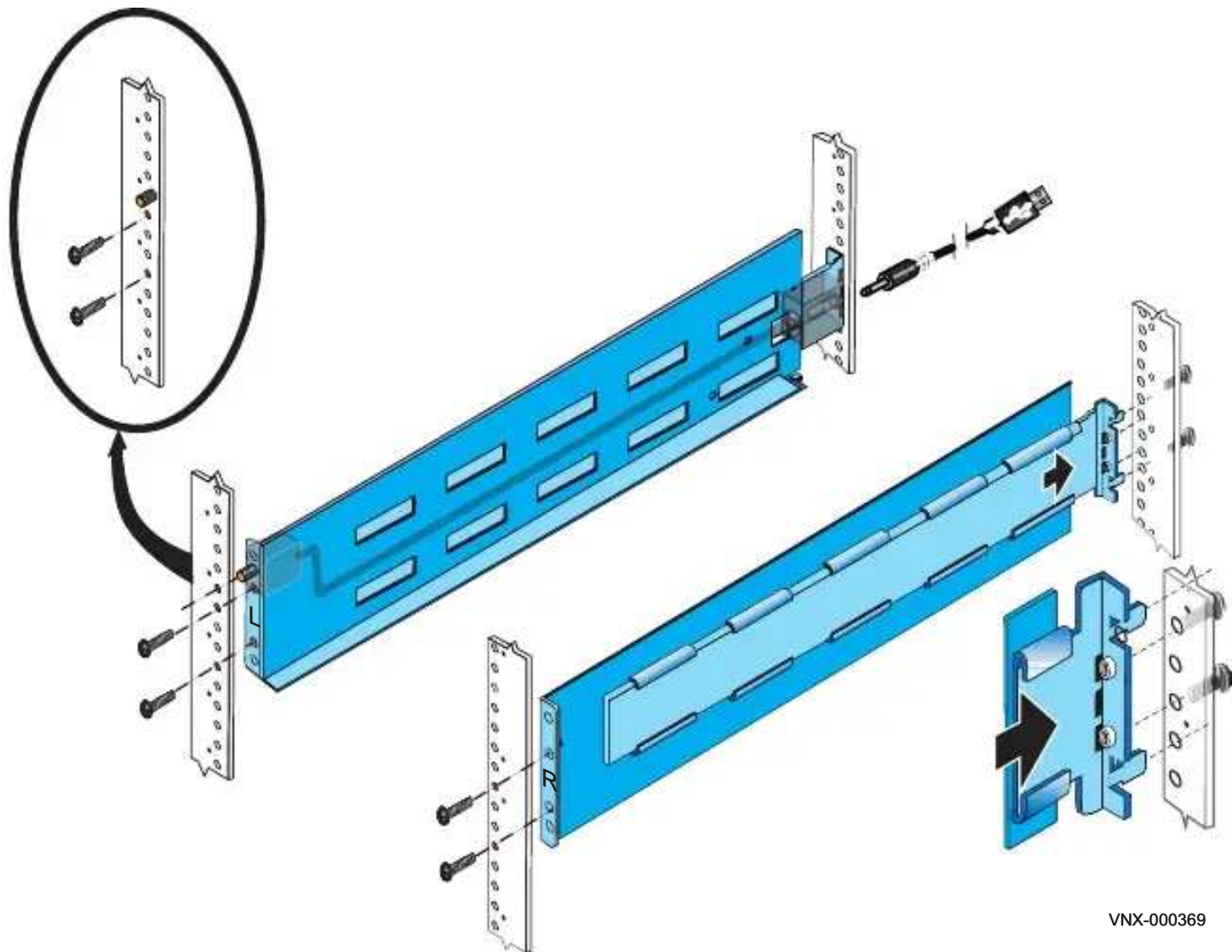
Installing the DPE rails

The DPE rails should be installed first, at the bottom of the cabinet. The left adjustable rail has a connector protruding from the front which goes through a hole in the front channel of the cabinet and will connect to light the bezel.

IMPORTANT

All rails must be aligned level front to back and with the companion rail, left to right.

1. Insert the adjustable 3U rail slide and seat both alignment pins into the rear channel of your cabinet.
2. Extend the rail and align the front of the rails as shown in [Figure 4](#). Ensure the connector extends through a hole in the front channel.
3. Insert two retention screws in the two holes indicated in the front.
4. Insert two retention screws in the back of each rail.



VNX-000369

Figure 4 Installing the DPE rails



Installing the components

CAUTION

Some components are heavy and may require two people. If needed, use an appropriate lifting device (mechanical lift).

Installing the disk processor enclosure

Your disk processor enclosure is a 3U, 25 2.5" drive DPE as shown in [Figure 5](#).

Disk-processor enclosure front



Disk-processor enclosure rear



Figure 5 Front and Rear view of DPE

Note: The DPE contains two Storage Processors (SP A and SP B). Each SP contains a management module and five slots for I/O modules, numbered 0-4. Slots 0 and 1 in each SP have covers indicating that those slots are not supported.



1. Locate the Product ID/SN from the product serial number tag (PSNT) located at the back of the DPE as shown in [Figure 6](#).
2. Record this number to use when you register the product during system setup steps.

IMPORTANT

Be careful when you slide the enclosure into the rails. The PSNT tag on the back of the enclosure as shown in [Figure 6](#) can inadvertently become jammed, cut off, or block the enclosure seating.

Disk-processor enclosure rear

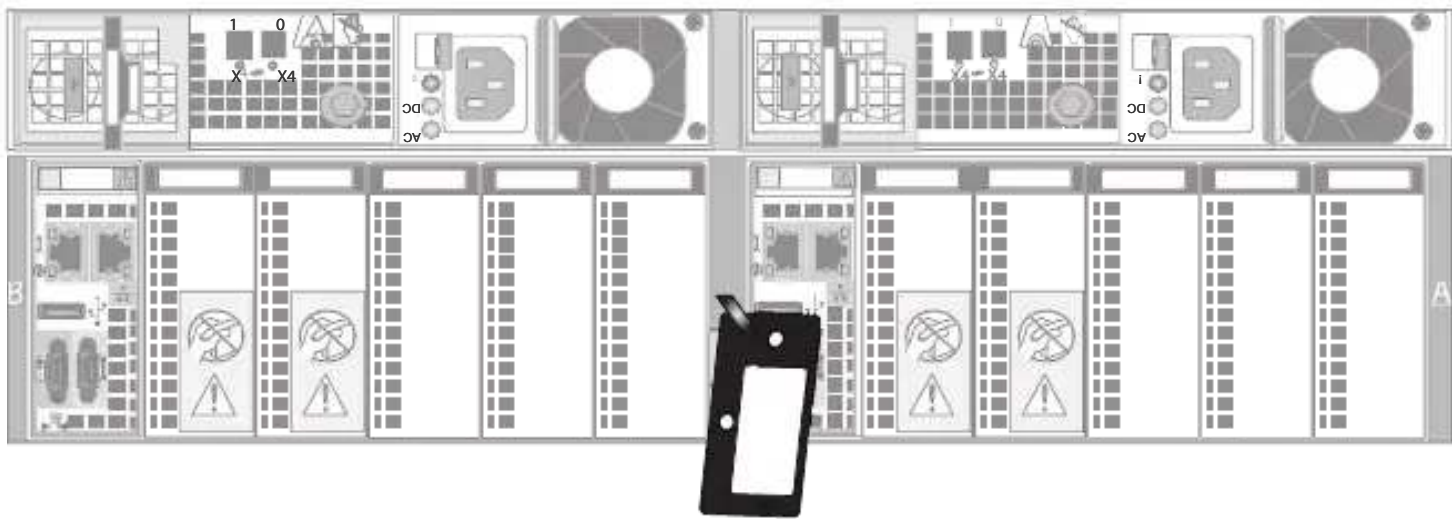
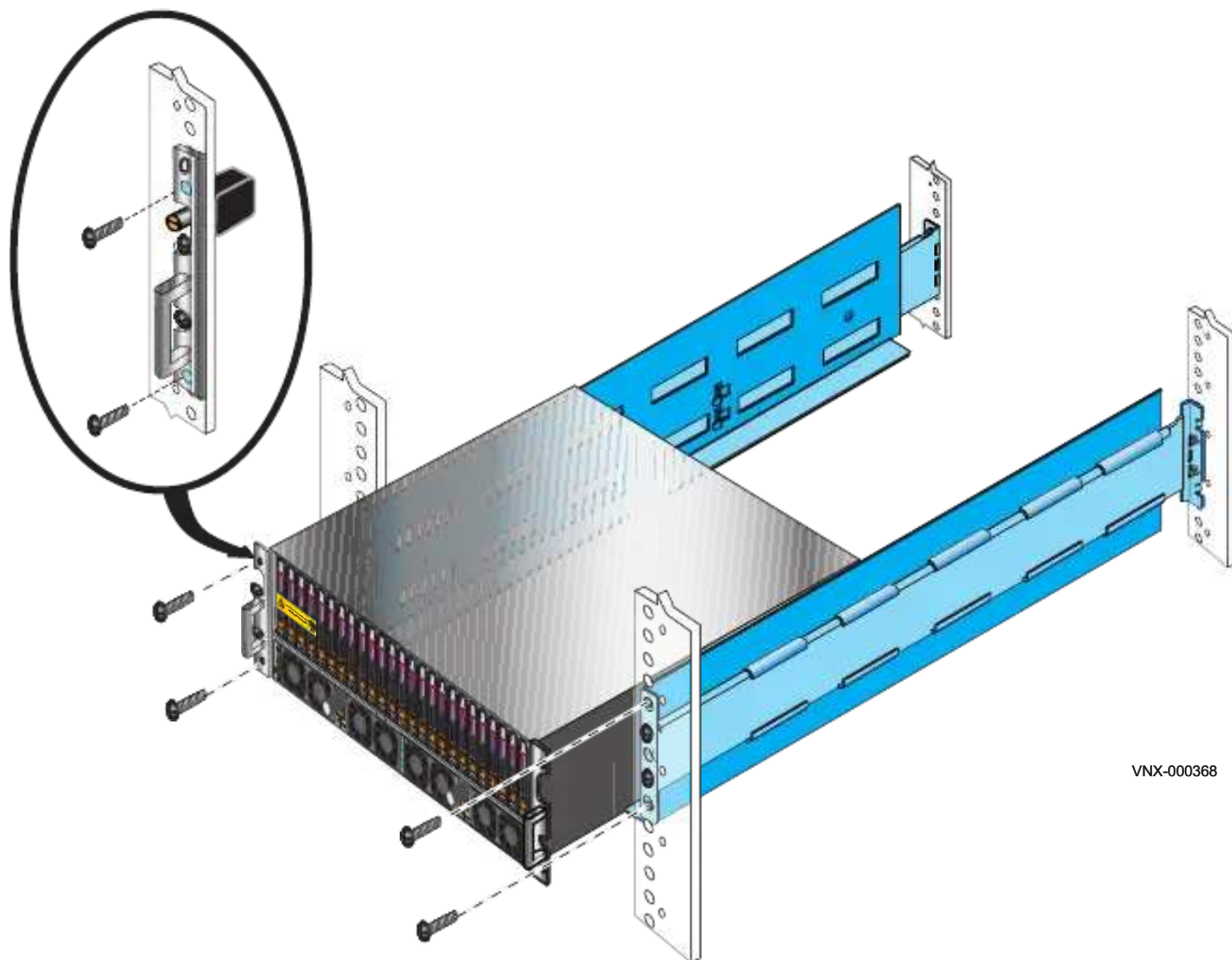


Figure 6 PSNT tag on the rear of the 3U DPE

3. Slide the disk processor enclosure (DPE) into the 3U DPE rails in the cabinet. Ensure that the enclosure is fully seated in the cabinet. The rail stops in the back will seat into the back of the enclosure at the correct depth, and the front of the enclosure will be flush with the cabinet face.
4. When the DPE is in place, insert and tighten all of the screws as shown in [Figure 7 on page 17](#). It may be easier to install the screws working in a diagonal pattern, such as bottom left and top right, bottom right and top left.



VNX-000368

Figure 7 Installing the DPE





Cable your system

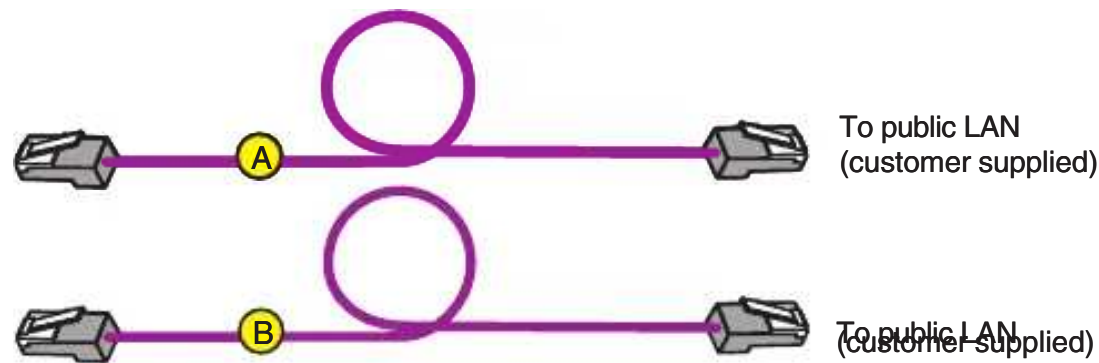
Some cables for your system have cable labels pre-attached. Labels are provided for SAS cables. There are no labels for power cables and customer-supplied cables.

Attach system to the network

Attaching storage processors to the network



The storage processors and the Windows host from which you initialize the storage system must share the same subnet on your public LAN.

1. Locate your Ethernet cables.



VNX-000225

Figure 8 Customer-supplied management cables

2. Connect your public LAN using a CAT 5e or better (customer-supplied) Ethernet cable to the RJ45 port on SP A identified as . See cable A in [Figure 9 on page 20](#).
3. Connect your public LAN using a CAT 5e or better (customer-supplied) Ethernet cable to the RJ45 port on SP B identified as . See cable B in [Figure 9 on page 20](#).



Disk-processor enclosure rear

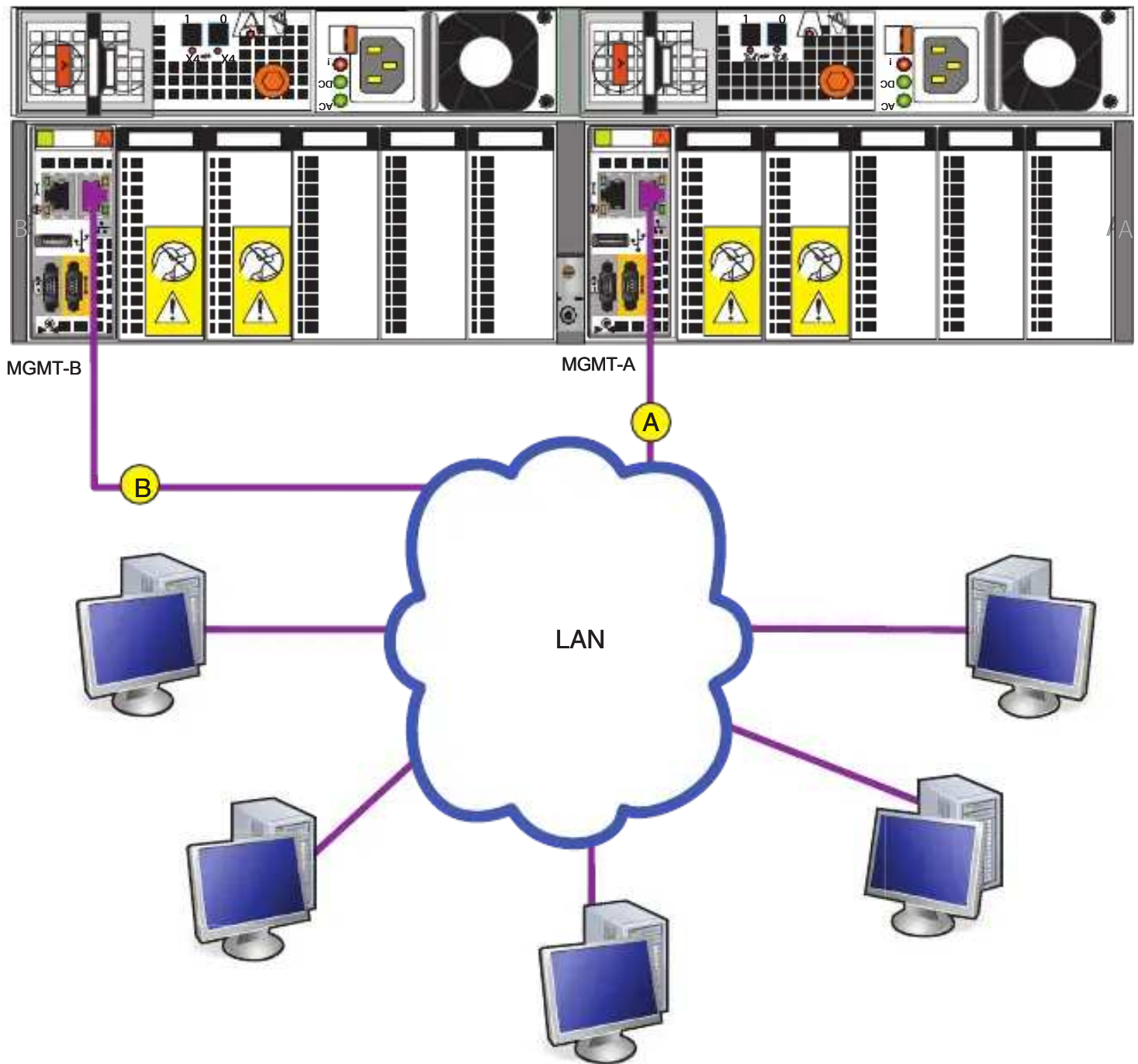


Figure 9 Attaching the SPs to the network



Power up

Before you power up

Ensure that all cabinet circuit breakers are in the On position, all necessary PDU switches are switched on, and power is connected.

Connecting or verifying power cables

The power cables are conveniently color-coded. Two colors identify the different zones (PDUs). Black power cables connect to PDU B, while gray power cables connect to PDU A.

1. Connect SP power A to power distribution unit (PDU) A. **A**
2. Connect SP power B to PDU B. **B**
3. Lock each power cable in place. Dress the cables as appropriate.

Wait 15 minutes for the system to power up completely.

4. Monitor the system as it powers up. See [“Verifying system status”](#) on page 22 for information on what to look for.

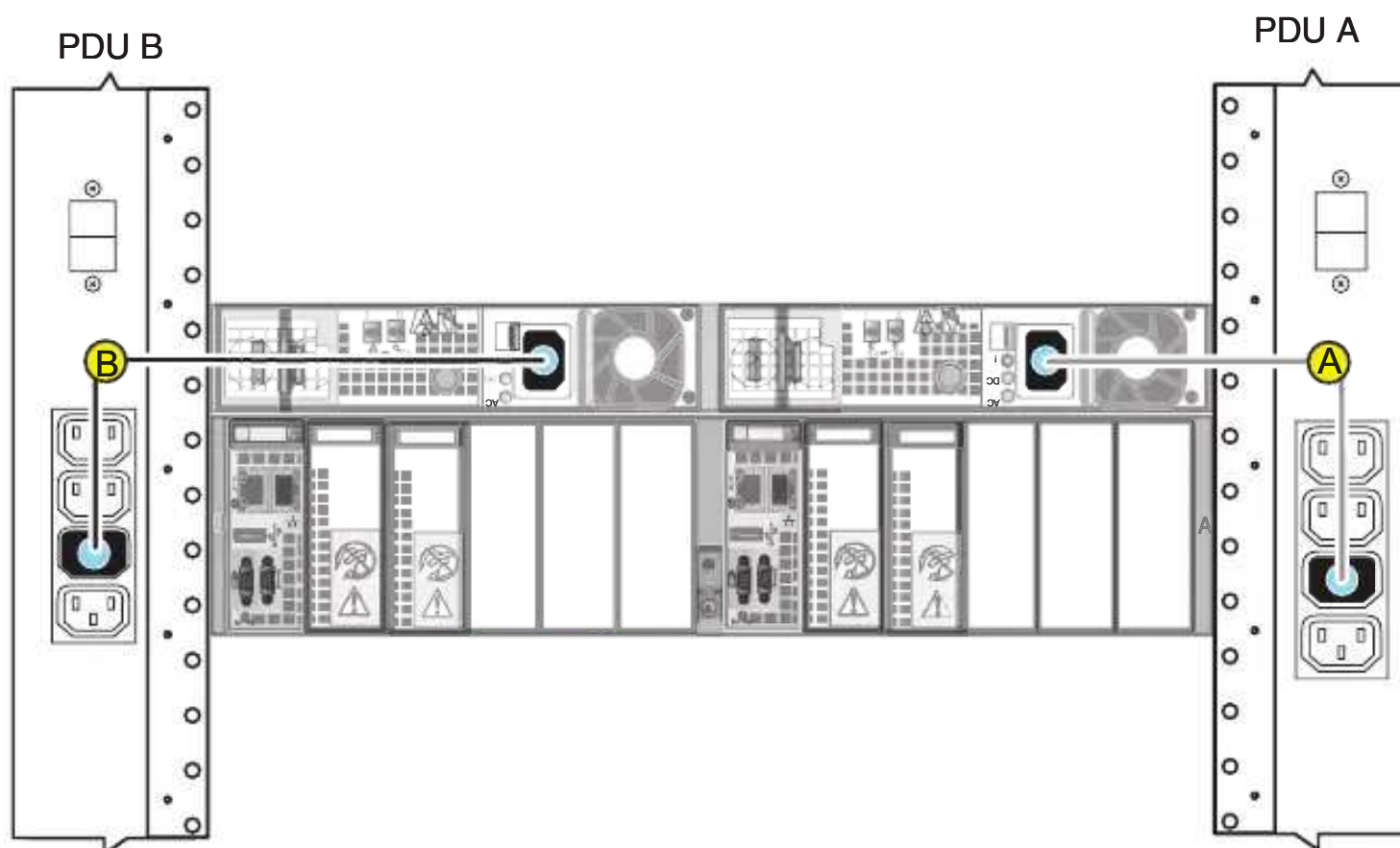


Figure 10 Connecting DPE power cables



Verifying system status

While your system powers up, the software goes through a number of stages causing LED activity lights to blink. You can verify that your system powered up correctly and completely after 15 minutes.

Table 3 lists the LEDs that you need to check to ensure that the system is powered up correctly.

The *VNX5200 Hardware Information Guide* provides details on all LEDs. Physical indications that the storage system is up and running without error:

Table 3 DPE and SP LEDs

LEDs	Location	State/Color
DPE Power	Front of unit	On/Solid blue
DPE Fault	Front of unit	Off
SP Power	Front of unit	On/Solid green
SP Fault/status	Front of unit	Off

1. Verify that the DPE Power LED located on the front is solid blue and the DPE fault/status is off as shown in [Figure 11](#).

Disk-processor enclosure front

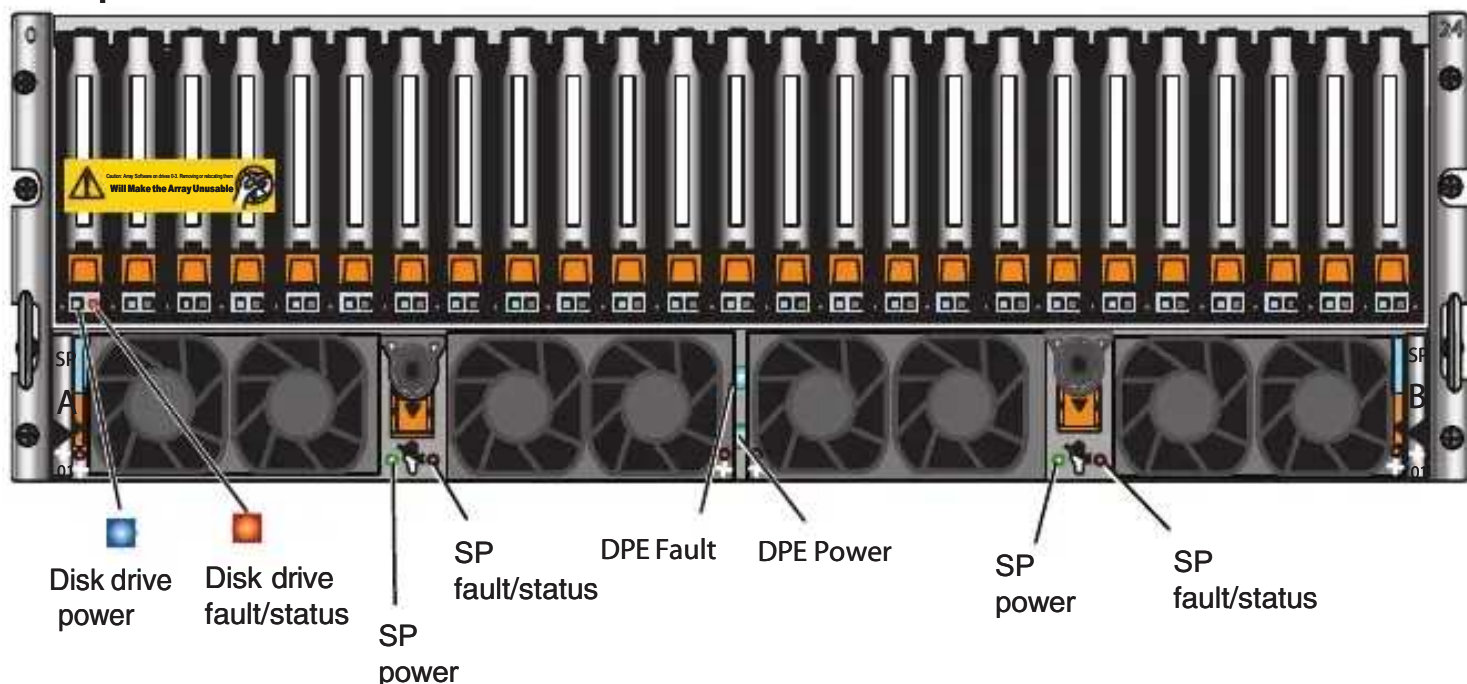


Figure 11 DPE Front LEDs

2. Verify that the SP Power LEDs on both SP A and SP B are solid green and the SP Fault LEDs are off as shown in [Figure 11](#).

Note: If any fault LEDs are on, or if any power LEDs remain flashing after approximately 15 minutes of operation, contact your authorized service provider.

Make sure the power-up is complete before you continue with the next task.



Add additional storage

Note: The VNX5200 provides two SAS ports for connection to additional storage. Disk-array enclosures can be added up to the disk limit for the system and connected to these two ports in loops (shown in [Figure 23 on page 34](#)).

Disk-array enclosure types

DAEs are optional components that add extra storage. DAEs come in:

- ◆ 2U, 25 2.5” drive DAE shown in [Figure 12](#).
- ◆ 3U, 15 3.5” drive DAE shown in [Figure 13 on page 24](#).
- ◆ 4U 60 drive DAE shown in [Figure 14 on page 24](#). The 4U DAE requires a deeper rack and is not customer-installable.

The optional DAEs use a 2U rail kit for the 25 2.5” drive DAE or a 3U rail kit for the 15 3.5” drive DAE. The 4U DAE will be fully installed in the EMC cabinet.

If DAEs are used, the DAEs should be installed immediately above the DPE in the cabinet. Any type of DAE may be installed. The arrangement of the DAEs in a cabinet may depend upon a number of factors. The *VNX5200 Hardware Information Guide* provides more information on DAE assembling and arrangement.

2U, 25 2.5” drive DAE front



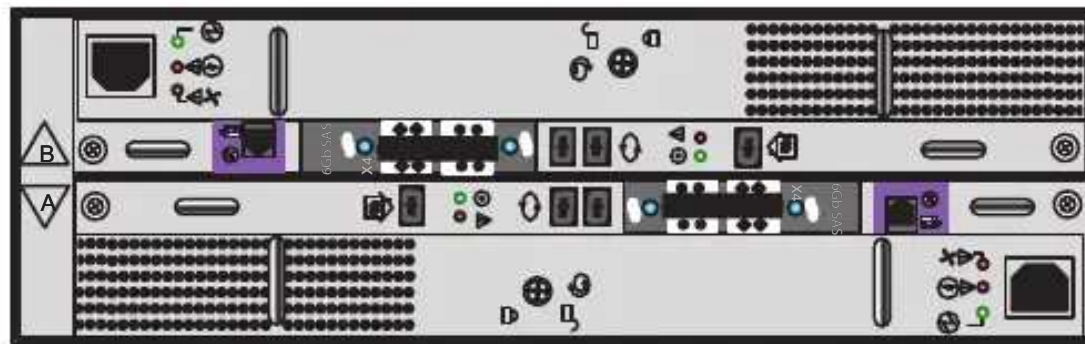
Rear

VNX-000227

Figure 12 2U, 25 2.5” drive DAE



3U, 15 3.5" drive Disk-array enclosure front

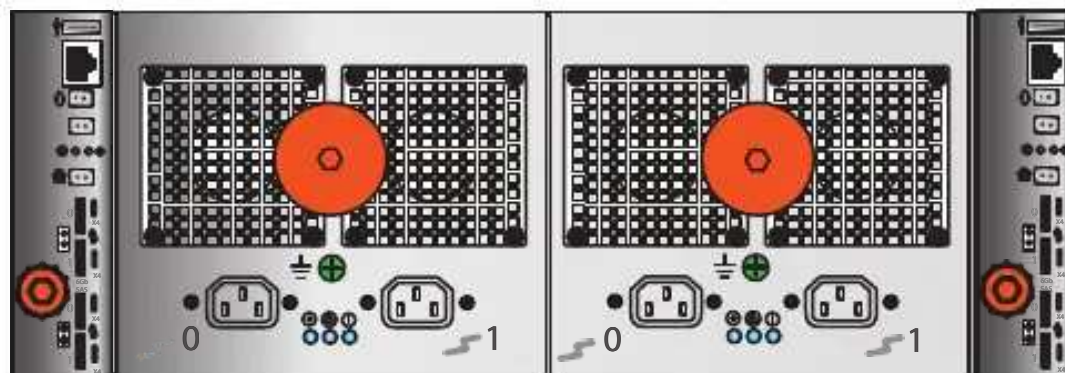
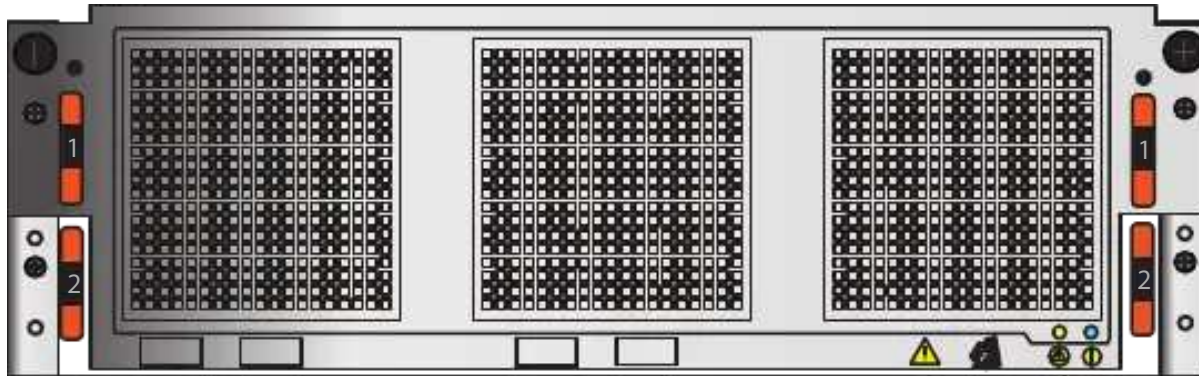


VNX-000266

Rear

Figure 13 3U, 15 3.5" drive DAE

4U 60 drive Disk-array enclosure front



Rear

Figure 14 4U, 60 drive DAE



Note: The 4U DAE can utilize either 2.5” or 3.5” disks. The disks are accessible from the top since the DAE is a drawer that slides out for service.

Assembling DAEs



The DAE is heavy and should be installed into 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 or help from another person.

1. Unpack the shipping containers.
2. Verify the contents. See [Figure 15 on page 26](#).



Disk-array enclosure (optional) (DAE)

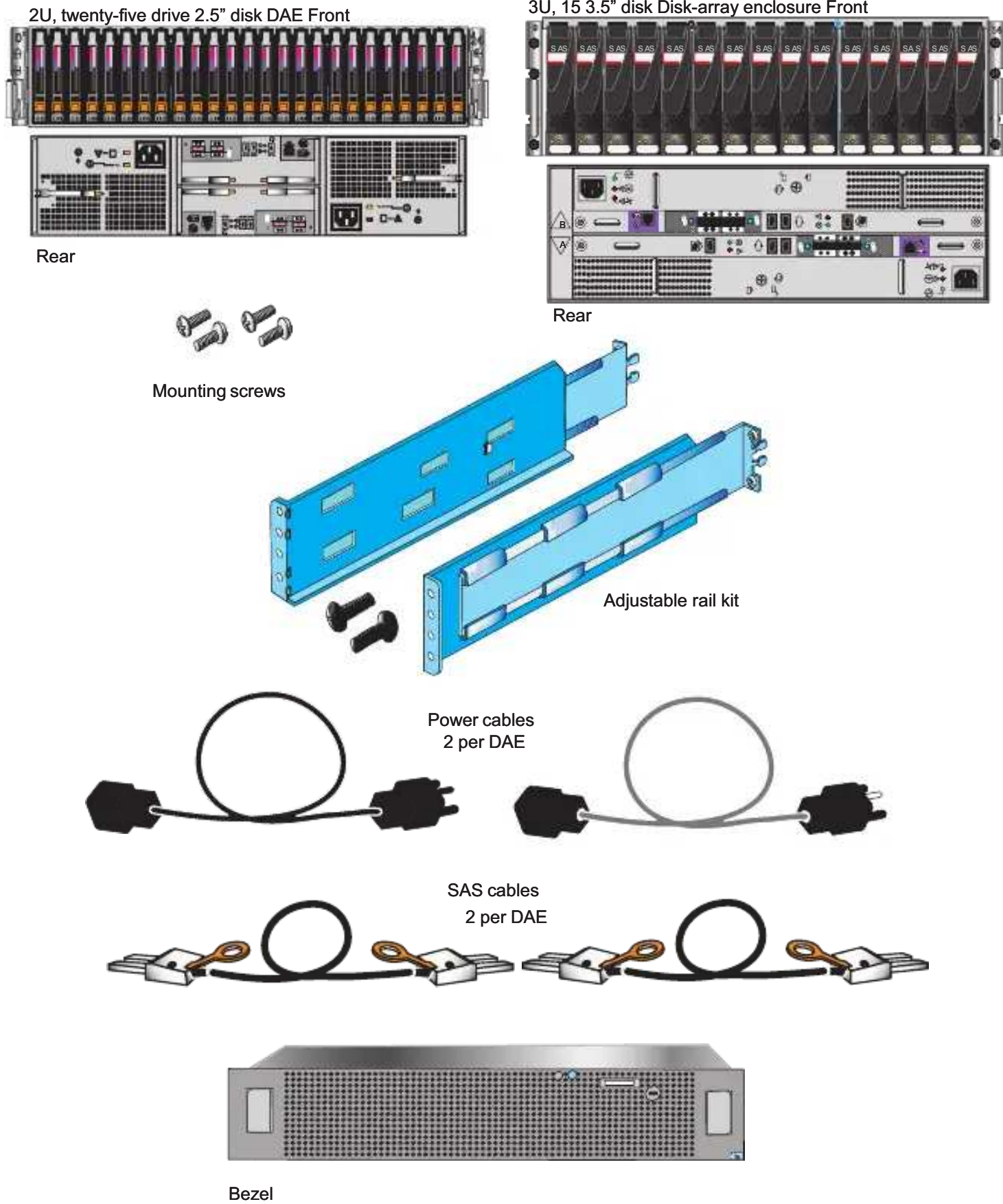
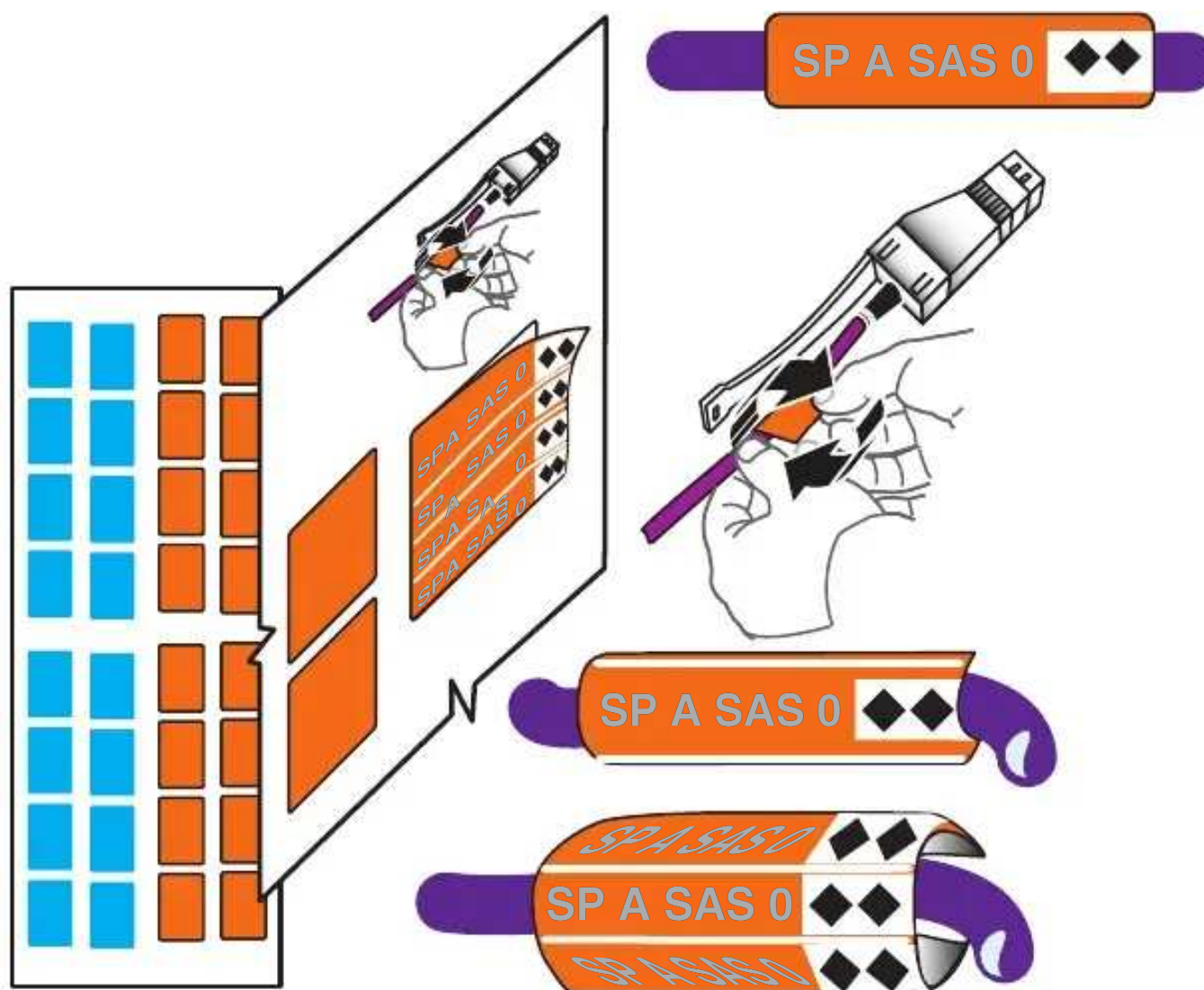


Figure 15 DAE carton contents



3. Label the cables:
 - a. Locate a pair of SAS cables and the Sheet A labels.
 - b. Attach the cable labels by matching the icons on the connectors with the icons on the labels as shown in [Figure 16](#) and [Figure 21](#) on page 32.
 - c. Continue for all the SAS cables for your system.



VNX-000529

Figure 16 Attach labels to the SAS cables



Install DAE rails

1. Insert the adjustable rail slide and seat both alignment pins into the rear channel of your cabinet.
2. Extend the rail and align the front of the rails as shown in [Figure 17](#).
3. Insert two retention screws in the middle two holes of the front and two retention screws in the back of each rail (3U rails) as shown in [Figure 17](#). For 2U rails, insert one screw in the lowest hole of the front and two in the back of each rail as shown in [Figure 18 on page 29](#).

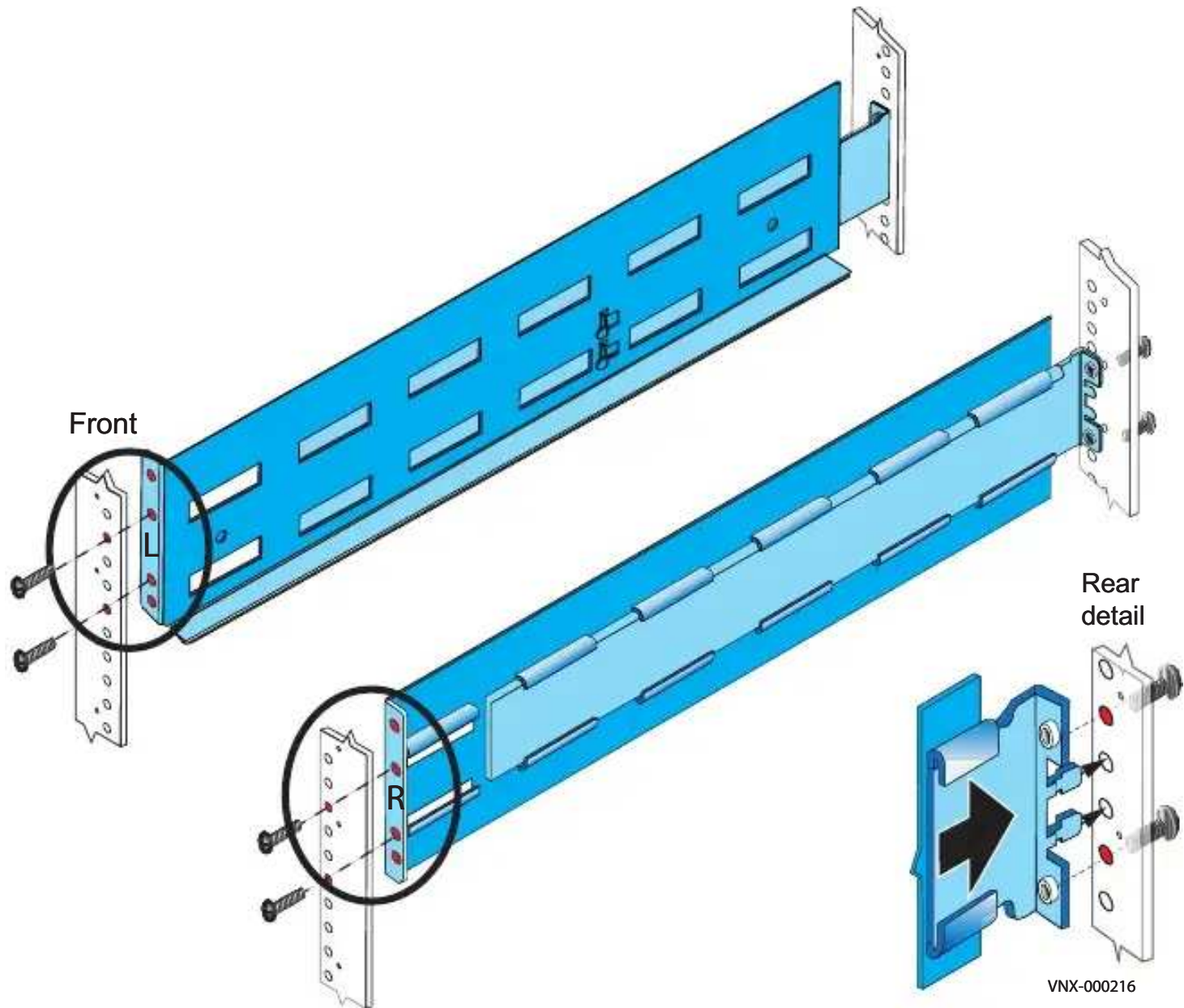


Figure 17 Installing 3U DAE rails

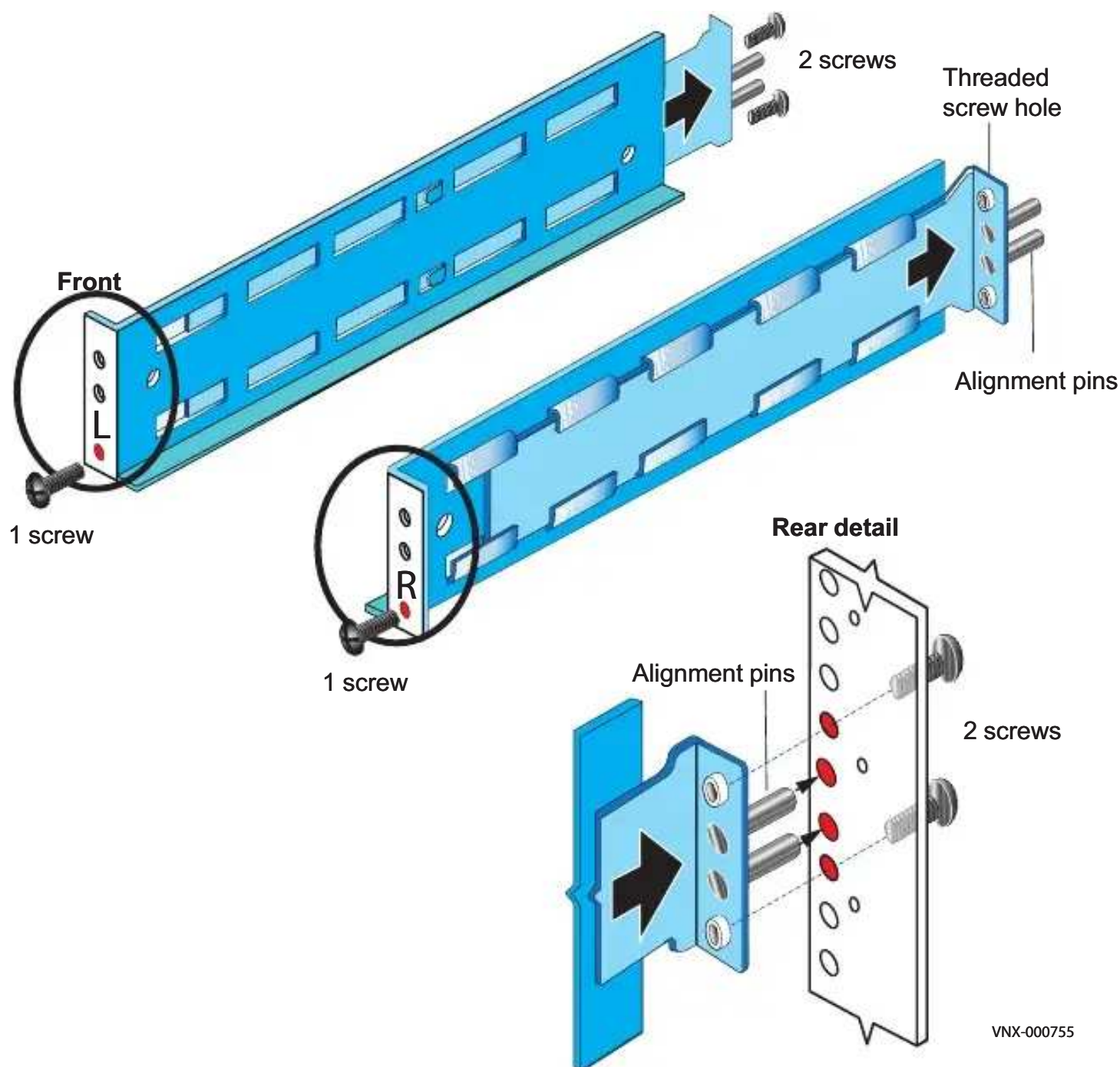
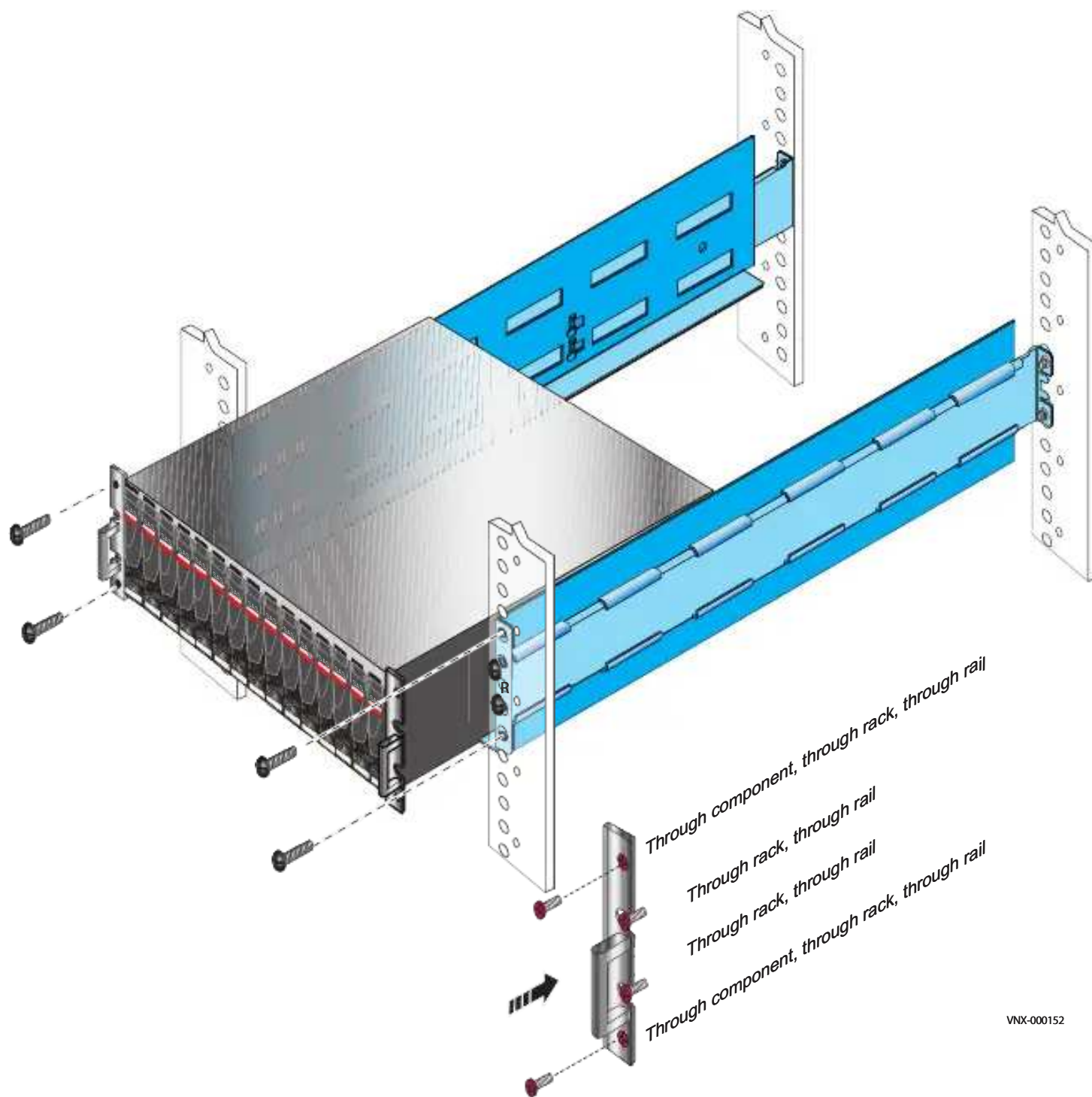


Figure 18 Installing 2U DAE rails

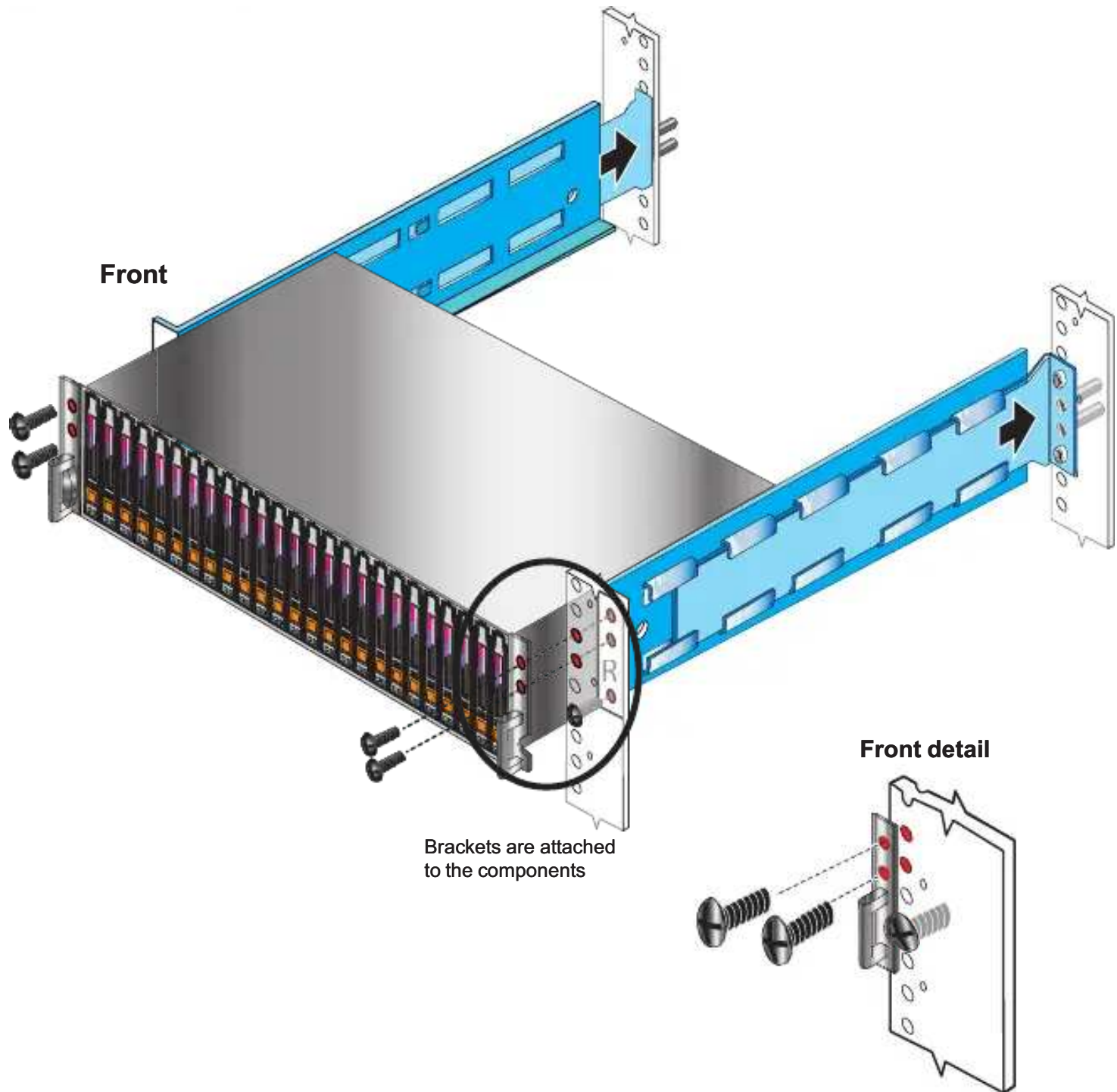
Install the DAE

1. Slide the disk-array enclosure (DAE) into the DAE rails in the cabinet. Ensure that the enclosure is fully seated in the cabinet. The rail stops in the back will seat into the back of the enclosure at the correct depth, and the front of the enclosure will be flush with the cabinet face.
2. When the DAE is in place, insert and tighten all of the screws. It may be easier to install the screws working in a diagonal pattern, such as bottom left and top right, bottom right and top left.
3. Repeat, as appropriate, with other DAEs.



VNX-000152

Figure 19 Installing a 3U DAE in the rails



VNX-000756

Figure 20 Installing a 2U DAE in the rails

Note: The 4U DAE is not illustrated because it is not customer-installable.



Connect SAS DPE and DAE cables

In this example, two DAEs are being added. This example illustrates connecting one DAE to each of the ports available on the DPE. Each DAE has two Link Control Cards (LCC), designated A or B, as shown in [Figure 13 on page 24](#).

Note: The cables between the DPE ports and LCC ports on DAEs are 2-meter mini-HD to mini-SAS.

EMC provides a cable installation educational video entitled *Mini-SAS HD Cable Connectivity* on Edutube under VNX. You must have Powerlink access to view the video.

1. Locate one pair of cables for each DAE as shown in [Figure 21](#).

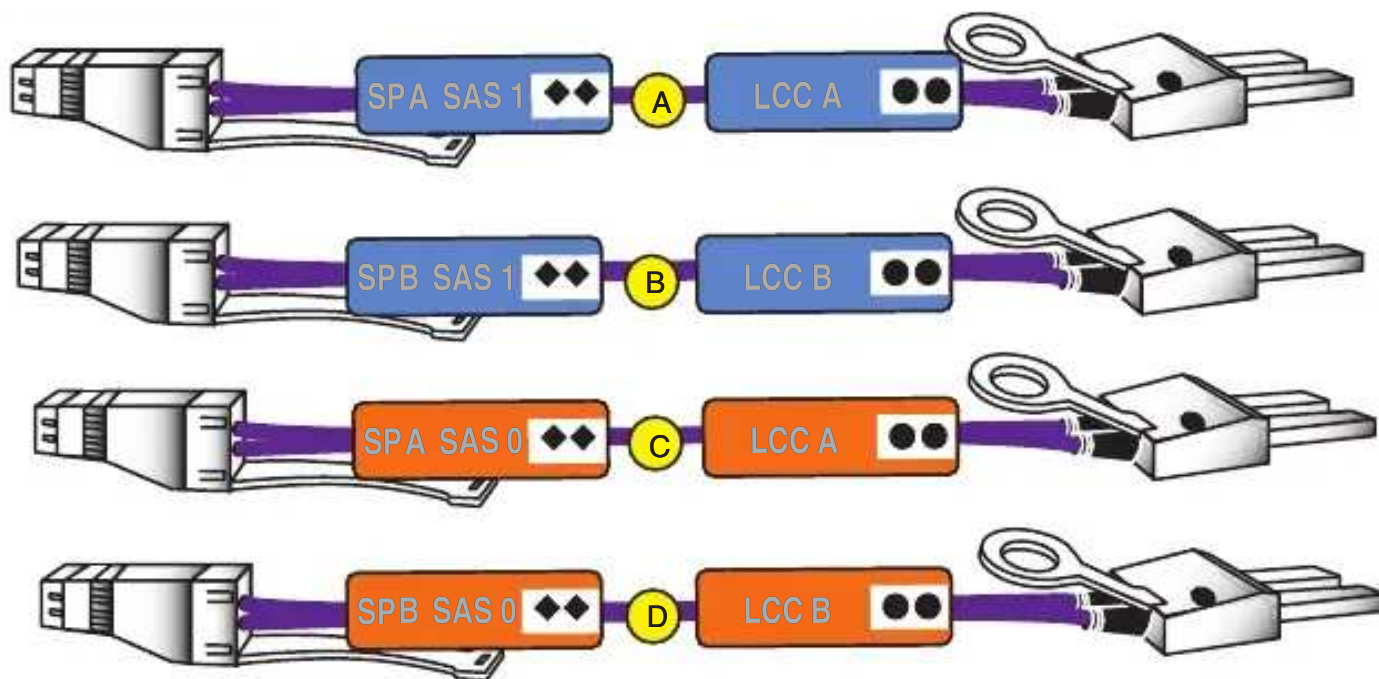
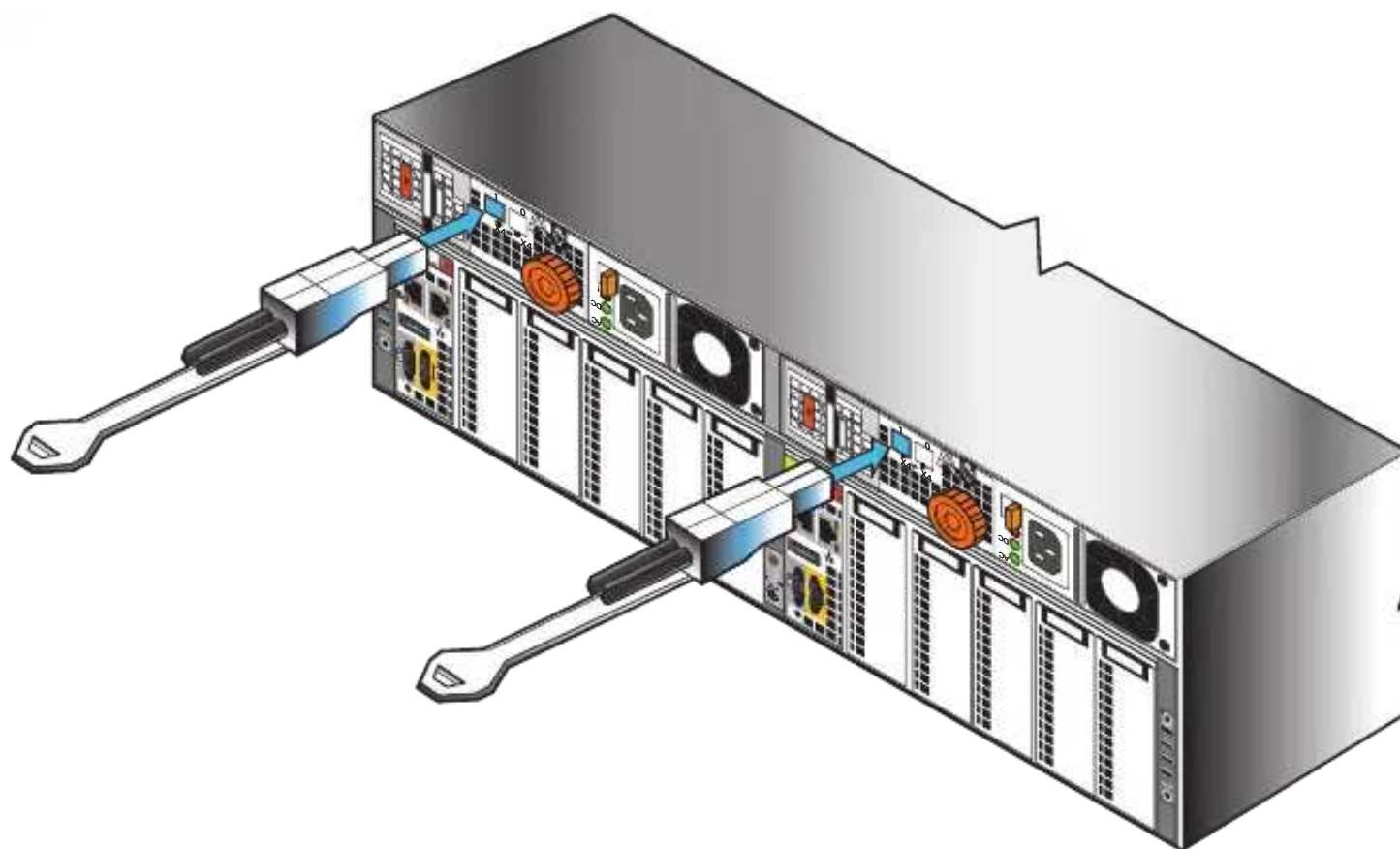


Figure 21 SAS cables for the first two DAEs

The SAS ports on the DPE are labeled 0 and 1. Port 0 is connected internally to the SAS expander that connects all the internal DPE disks. Since Port 0 is already connected internally to the DPE disks, the first DAE is connected to Port 1 to balance the load on the SAS ports. The second DAE is connected to Port 0.



VNX-000619

Figure 22 Connecting the mini-HD cable ends to the SAS ports

The release tabs are down for the mini-HD connections to both ports 0 and 1, both sides.

Note: Cabling to the 4U DAE is not shown because it is not customer-installable.

Additional DAEs can be added to each loop. Each BE loop can support up to 10 DAEs or 250 disks, subject to the maximum number of disks for the system.

Note: The *VNX5200 Hardware Information Guide* provides examples of how to cable DAEs in your VNX5200 for interleaved or stacked environments.

[Figure 23 on page 34](#) shows two different kinds of DAEs, one 2U DAE and one 3U DAE. Your system may differ. The steps to follow are the same, no matter what kinds of DAEs you have in your system.

For steps 2 through 5, connect the following cables from the SAS ports of the DPE to the LCC ports marked with double circles ●● on the DAEs. The cable ends to the LCC are marked with single circles ● on the cable connectors as shown in [Figure 21 on page 32](#). Ensure that the cables lock into place.

2. Connect SP A SAS 1 to DAE 1 LCC A (●●). A
3. Connect SP B SAS 1 to DAE 1 LCC B (●●). B
4. Connect SP A SAS 0 to DAE 2 LCC A (●●). C



5. Connect SP B SAS 0 to DAE 2 LCC B (●●). **D**

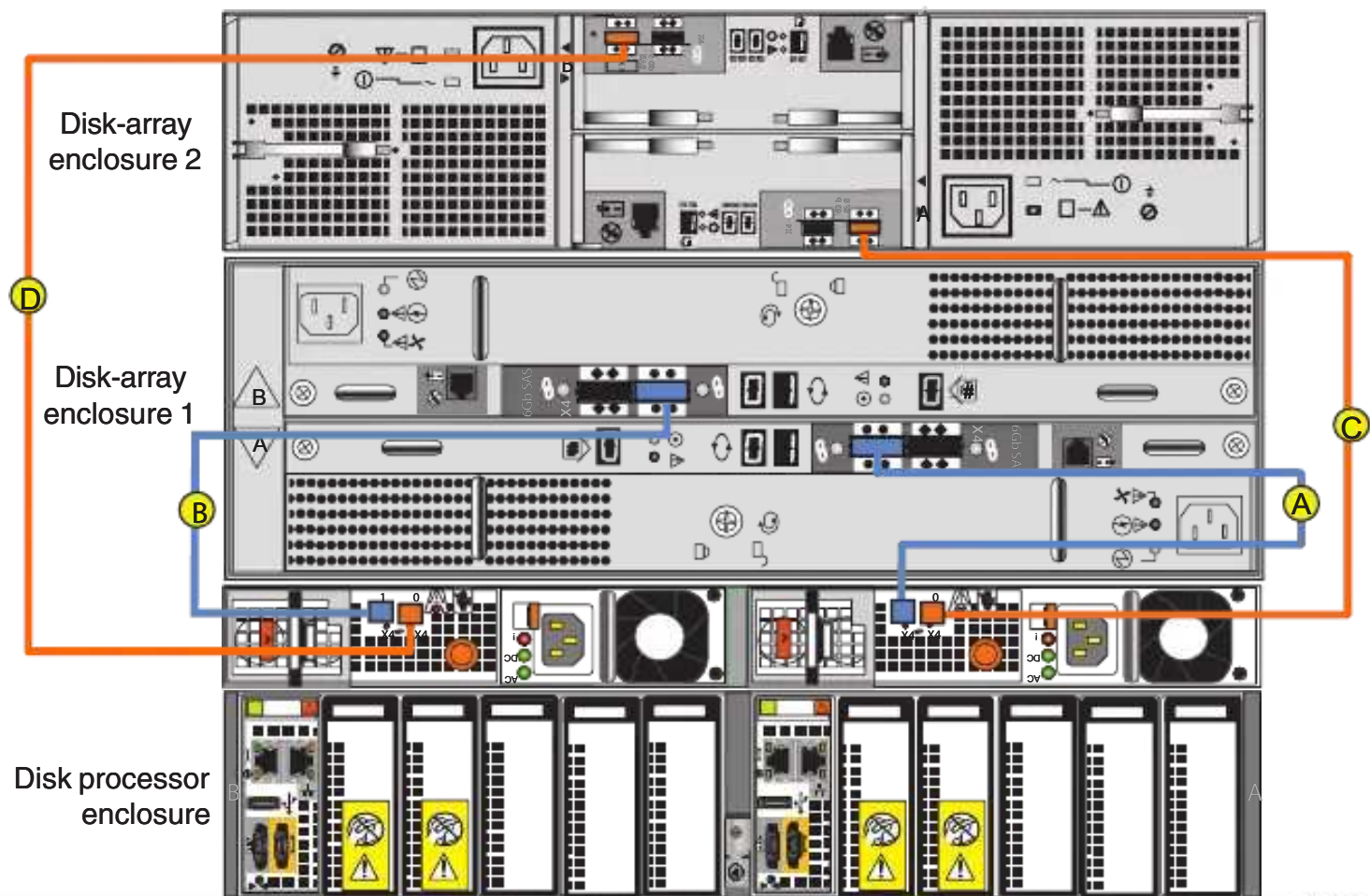


Figure 23 Cabling the first two DAEs to the storage processors

IMPORTANT

Identify the cables by the cable labels and the connectors. The cables and ports are not colored. Bus 0 is identified with orange labels. Bus 1 uses blue labels. See [Figure 21 on page 32](#).

Additional DAEs, up to the system maximum, can be added by extending the loop, connecting cables from LCC A and B of a DAE (◆◆) to the appropriate LCC ports (●●) of an additional DAE. Cables from DAE to DAE on these loops are mini-SAS to mini-SAS cables. Each BE loop can support up to 10 DAEs. For more details on additional DAE cabling, see the *VNX5200 Hardware Information Guide*.



Power up DAEs

Ensure that the cabinet circuit breakers are still on and the PDUs are powered on. The DAE power cables should be connected directly to the PDUs as shown in [Figure 24](#). The DAE power cables are also conveniently color-coded. Two colors identify the different zones (PDUs). Black power cables connect to PDU B, while gray power cables connect to PDU A. Once they are connected, the DAEs will begin to power up.

1. Connect or verify that the DAE 1 power cable is connected to PDU A. **A**
2. Connect or verify that the DAE 1 power cable is connected to PDU B. **B**
3. Connect or verify that the DAE 2 power cable is connected to PDU A. **C**
4. Connect or verify that the DAE 2 power cable is connected to PDU B. **D**

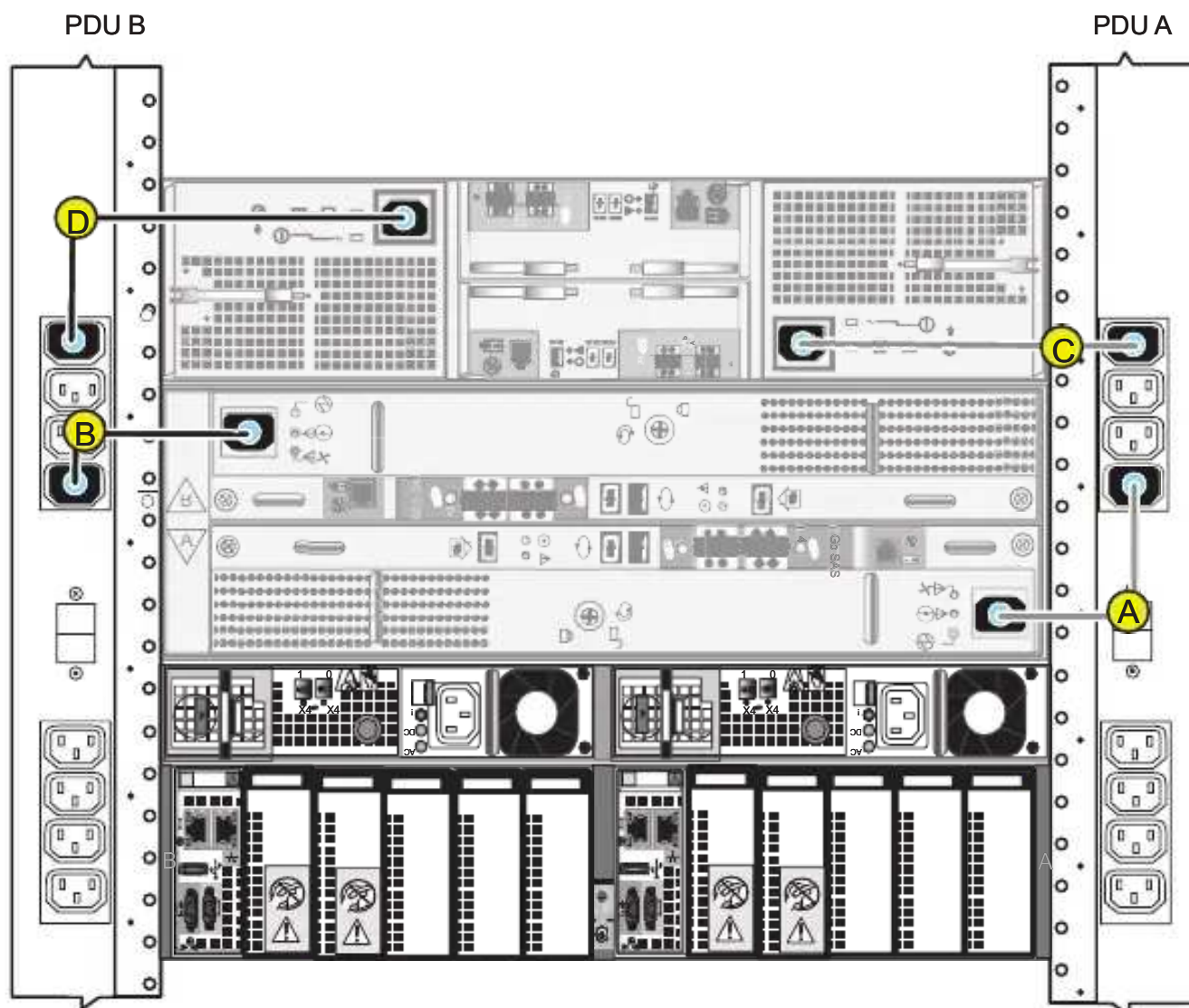


Figure 24 Powering up the DAEs



Verify DAE status

The illustrations used here focus on the LEDs that you check to verify that the system powered up correctly. The *VNX5200 Hardware Information Guide* provides more details on all LEDs.

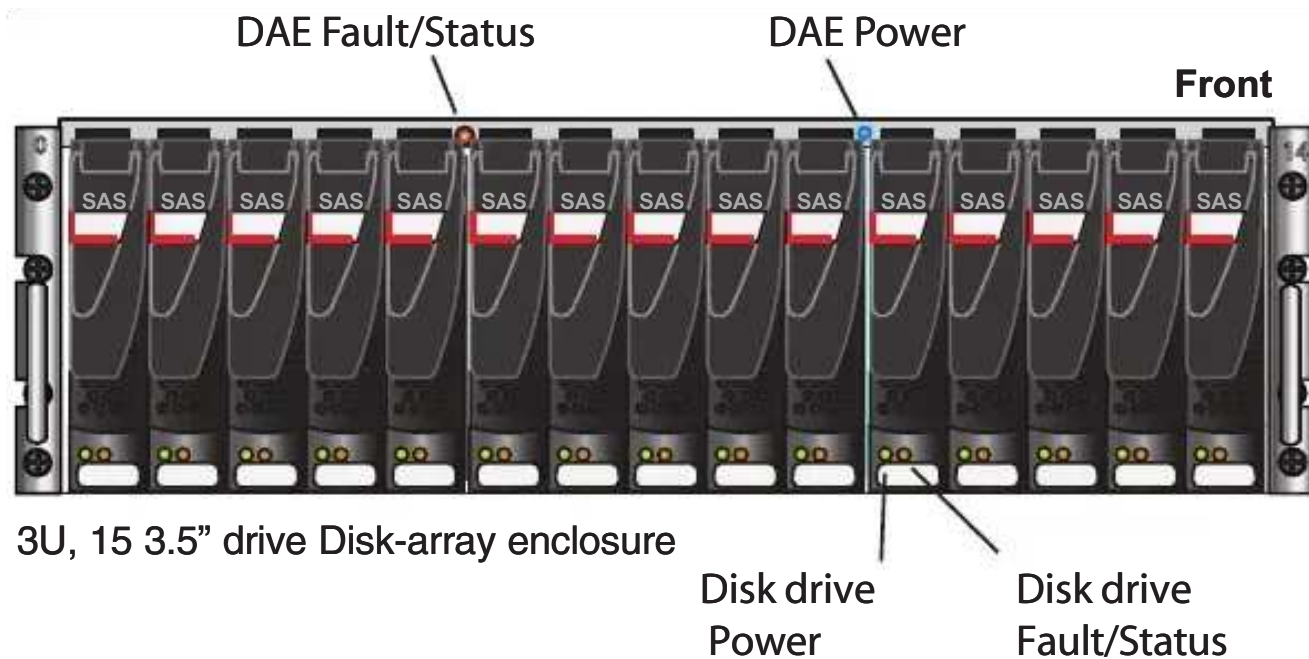
Table 4 lists the LEDs that you need to check to ensure that 3U and 2U DAEs powered up correctly.

Table 4 DAE LEDs

LEDs	Location	State/Color	Description
DAE Fault/Status	Front	Off	OK
		Amber	Fault has occurred
DAE Power	Front	On/Blue	OK

Verify 3U, 15 3.5” drive DAE status

1. Verify that the status of the 3U DAE Power LED located on the front is solid blue and the DAE Fault/Status LED is off as shown in Figure 25.
2. If any fault LEDs are on, or if any power LEDs are flashing, contact your authorized service provider.



VNX-000205

Figure 25 3U, 15 3.5” drive DAE LEDs



Verify 2U, 25 2.5" drive DAE status

1. Verify that the status of the 2U DAE Power LED located on the front is solid blue and the DAE Fault/Status is off as shown in [Figure 26](#).
2. If any fault LEDs are on, or if any power LEDs are flashing, contact your authorized service provider.

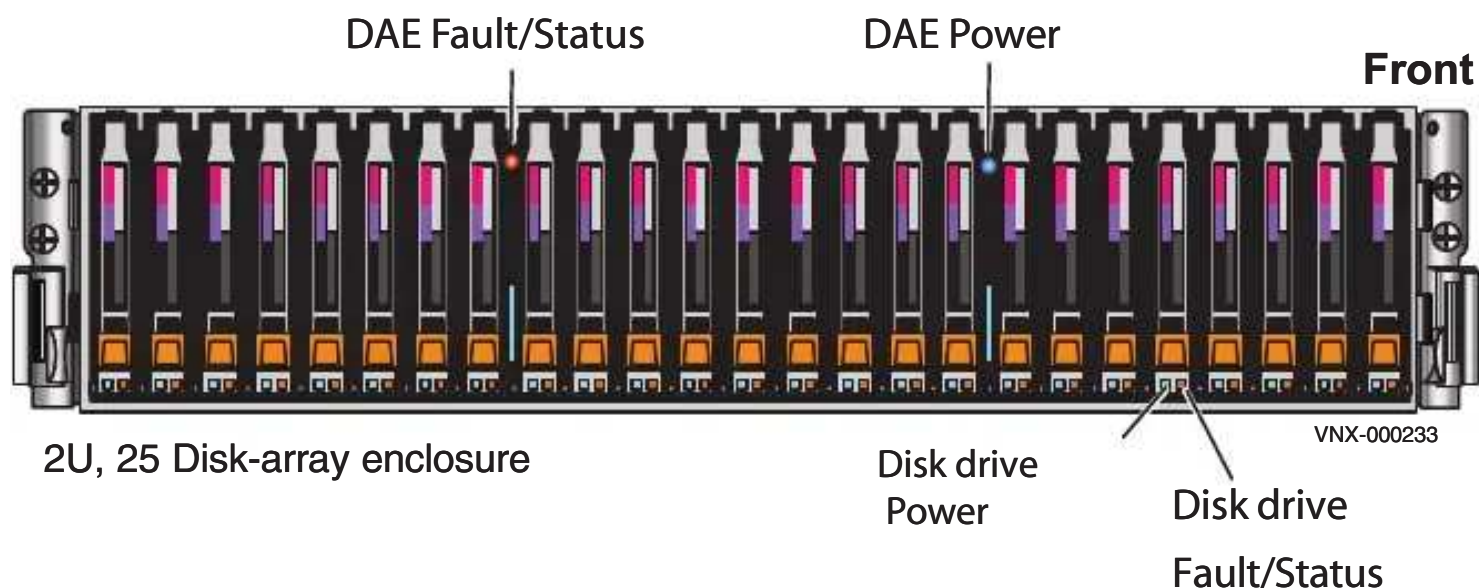


Figure 26 2U, 25 2.5" drive DAE LEDs

Verify 4U, 60 drive DAE status

1. Verify that the status of the 4U DAE Power LED located on the front is solid blue and the DAE Fault/Status is off as shown in [Figure 27](#).
2. If any fault LEDs are on, or if any power LEDs are flashing, contact your authorized service provider.

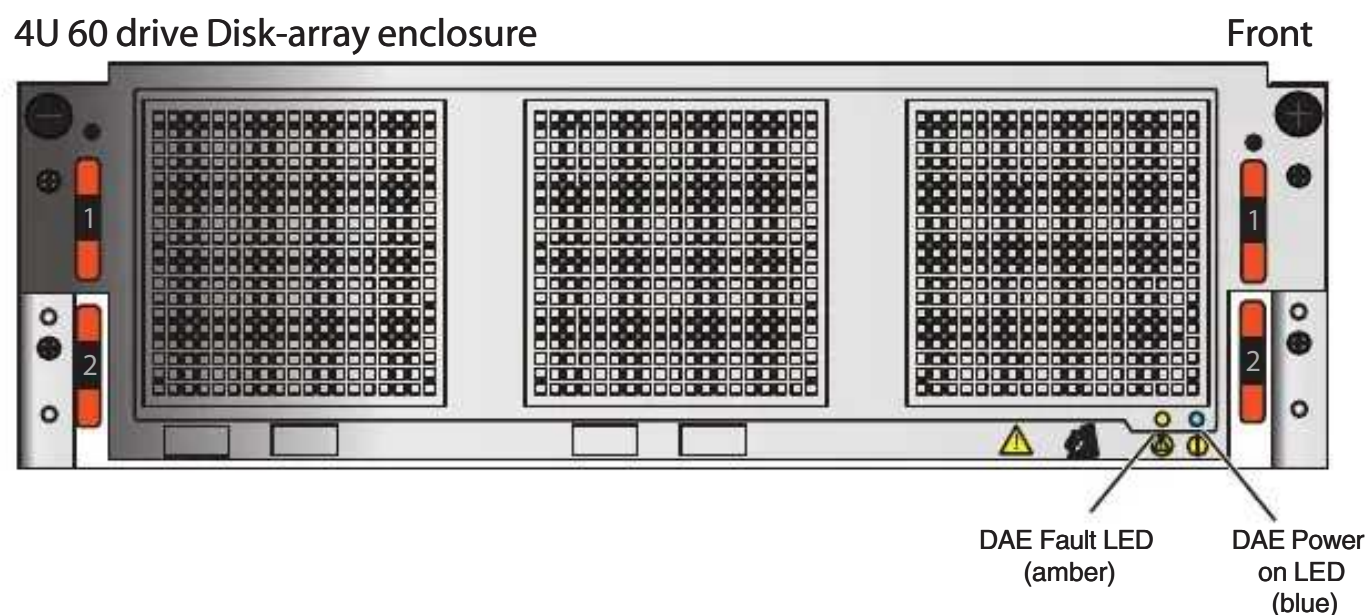


Figure 27 4U 60 drive DAE LEDs





Setup

After you have completed all of the installation steps, continue to set up your system by performing the post-installation tasks in this section.

Connect a management station

You must connect a management station to your system directly or remotely over a subnetwork. This computer will be used to set up your system and must be on the same subnet as the storage system to complete the initialization.

IMPORTANT

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 uninitialized system from being detected. If there is, disable it (Windows Services) and rerun the Initialization tool.

Information on different types of Unisphere management stations is available in the document *Setting up a Unisphere Management Station for the VNX Series* on <https://mydocs.emc.com/VNX/>.

In the section Additional VNX documentation select the Related documentation for VNX for Block OE 5.33 and VNX for File OE 8.1. The document is available under VNX Management.

Initialize your storage system

Download the latest version of the VNX installation utilities from the Support website. The sequence for the installation and information about the utilities used is described below.

IMPORTANT

You will need the information from the “[VNX Block Configuration Worksheet](#)” on page 45 in the initialization process.

Downloading the Unisphere Storage System Initialization Wizard

1. Go to <https://Support.EMC.com> and select **VNX5200 > Downloads**.
2. Download the appropriate version of the **Unisphere Storage System Initialization Wizard**.

Note: If your host is behind a firewall, open UDP port 2162 (outgoing) and port 2163 (incoming). These ports are used by the initialization utility. If these ports are not opened, the initialization utility will not function properly.

3. Double-click the downloaded executable and follow the steps in the wizard to install the utility.
4. On the **Install Complete** screen, make sure that the **Launch Unisphere Storage System Initialization Wizard** checkbox is selected.



5. Click **Done**. The initialization utility opens. Follow the online instructions to discover and assign IP addresses to your storage system. Use the information from the “[VNX Block Configuration Worksheet](#)” on page 45 for the initialization process.

If you encounter any issues during initialization:

- Go to <https://mydocs.emc.com/VNX/> and click **Before you begin** to read about known issues and suggestions.
- Go to <https://Support.EMC.com>, select **VNX5200**, click **Search Support**, and enter the specific failure message into the EMC Knowledgebase for possible resolution and corrective action.

Update the storage system software and register your system

The storage system comes pre-installed with the latest version of VNX Operating Environment (OE) software available at the time of shipment. The Unisphere Service Manager (USM) is a collection of tools that helps you update, install, register, and maintain your system hardware and software. Use USM to check for and install an updated version of the VNX OE software and register your storage system.

Downloading USM documentation

1. Go to <https://Support.EMC.com> to **VNX5200** > **Documentation** to download *Downloading and Installing the USM*.
2. For additional information on using USM, go to <https://mydocs.emc.com/VNX/>.
3. Under **VNX tasks**, select **Update VNX software**.
4. Select appropriate settings for your configuration to generate a customized procedure.

Downloading Unisphere Service Manager

1. Go to <https://Support.EMC.com> and select **VNX5200** > **Downloads**.
2. Download **Unisphere Service Manager**.
3. Save the executable to your management station.
4. From the folder where you downloaded the executable, double-click the file and follow the wizard's steps to install USM.
5. On the **Install Complete** screen, leave the **Launch Unisphere Service Manager** checkbox selected.
6. Click **Done**. Unisphere Service Manager opens.
7. Click **Login**.
8. Connect to your system by entering the host name or IP address and click **Connect**.

Tasks to Complete after a VNX Installation

Block OE Upgrade to 05.33.000.5.038 or higher

To resolve the unexpected reboot of the Storage Processor after ~80 days of runtime upgrade the Block OE to 05.33.000.5.038 or higher.

ETA 175619:

VNX: VNX systems will experience an unexpected reboot after ~80 days of runtime.

The text of the ETA can be found Service Alerts, Reference Documents, FCOs, TSEs and Parts Guides > EMC Tech Advisories (ETA) for VNX and VNX with MCx.

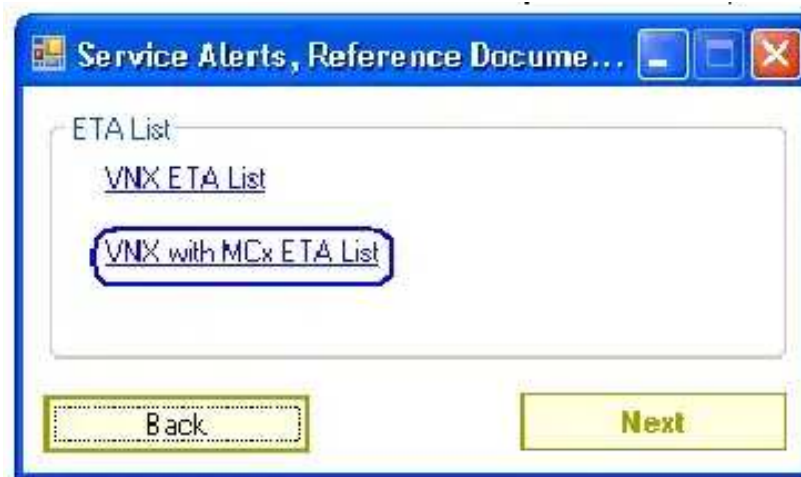


Figure 1 Technical Advisories for VNX with MCx

Additional issues resolved can be found in the release notes.

VNX Operating Environment for Block 05.33.000.5.038,
VNX Operating Environment for File 8.1.1.33,
EMC Unisphere 1.3.1.1.0033
Release Notes P/N 302-000-403 REV 03 January 13, 2014

VNX Operating Environment for Block 05.33.000.5.051,
VNX Operating Environment for File 8.1.1.51,
EMC Unisphere 1.3.2.1.0051
Release Notes P/N 302-000-403 REV 05 February 28, 2014



CAUTION: If the Customer will not allow the VNX Block OE to be upgraded then reboot Storage Processor B.

Rebooting Storage Processor B will stagger the runtime clock values and prevent both Storage Processors from reaching the ~80 days of runtime and rebooting at the same time. Rebooting SPB after the installation is complete is expected to add a difference of greater than 40 minutes (2400 seconds), but less than several hours to the runtime of SPA and SPB.

Note: ETA 175619 reboots one Storage Processor, waits 40 minutes then reboots the other Storage Processor. You are performing a single Storage Processor reboot as part of the VNX installation where Storage Processor run time is expected to be less than several hours.

To reboot a Storage Processor using EMC Unisphere Manager:

1. [] Open EMC Unisphere using your storage processors IP address in a supported browser.
2. [] Click on the array and select "System", "Hardware" and then "Storage Hardware".



Figure 2 Storage Hardware Display

3. [] Expand the tab for SPs.
4. [] Right-click SPB.
5. [] Select Reboot.



Figure 3 Storage Processor Dropdown Menu

6. [] Select Yes to Confirm: Reboot SP "Do you wish to continue?"
7. [] Select Yes to continue after the reboot warning.

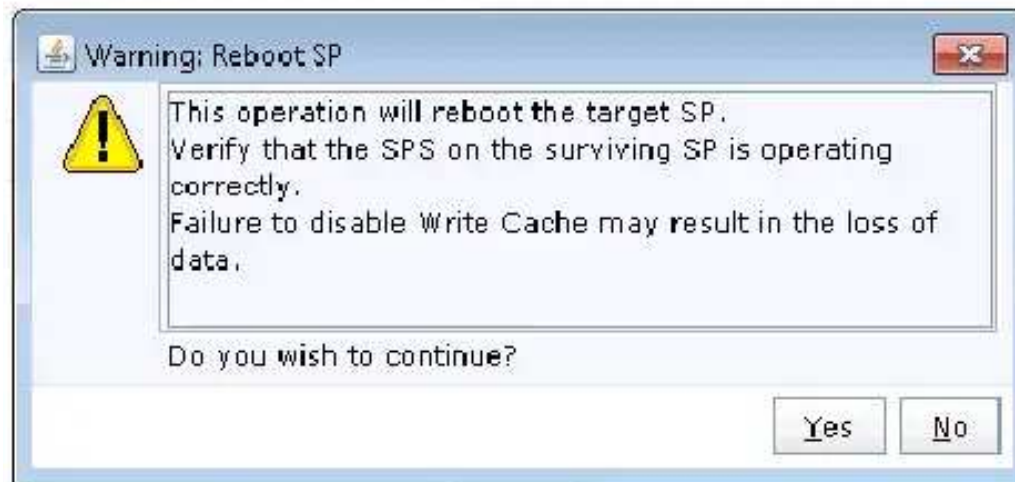


Figure 4 Reboot Warning

8. [] The reboot success message will display.
9. [] Click on OK.

Note: A Storage processor reboot can take 20 minutes to complete.

SP B	Removed
CPU Module B	Present
DIMMS B	Present
IO Modules	Removed

Figure 5 Dropdown Menu

10. [] The display will show when the SPB is removed and when SPB is available.
11. [] Examine the Storage processor Fault and Status LEDs to verify that it has rebooted successfully.

How to Determine Storage Processor Uptime

12. [] Log onto Unisphere for the VNX system where the Storage Processor is to be rebooted.
13. [] Select System
14. [] Select Hardware
15. [] Select Storage Hardware

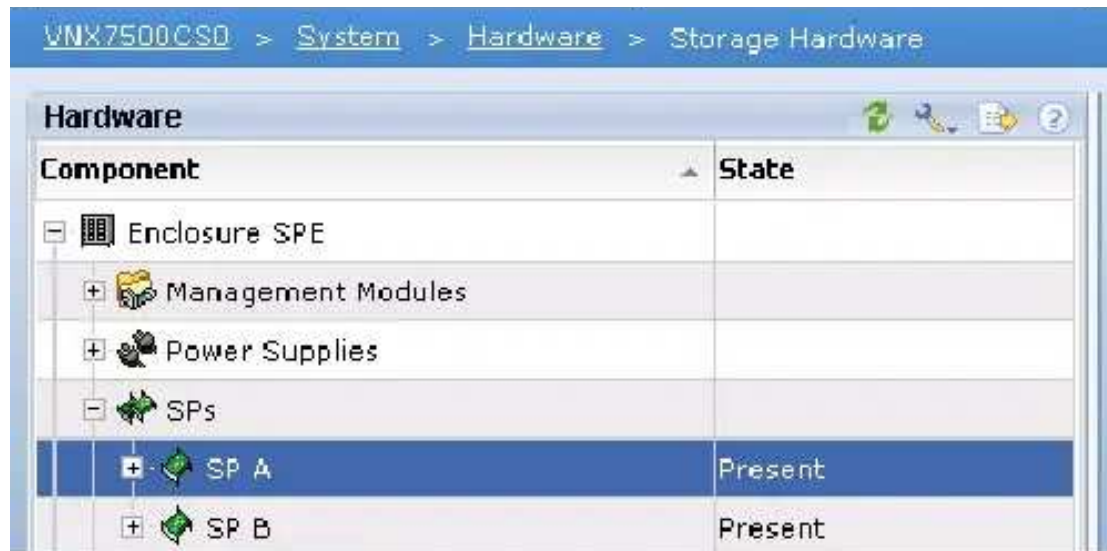


Figure 6 Expanded Storage Hardware Display

16. [] Right Click on SPA and select View Events.

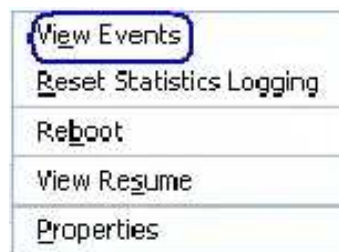


Figure 7 Storage Processor Dropdown Menu

17. [] Do you wish to continue? Select Yes.

18. [] Select Filter.

19. [] Select View as Of: Last 24 hours.

20. [] View by Event Code: All

21. [] In Description: enter uptime.

22. [] Click on OK.

23. [] Record the uptime if needed.

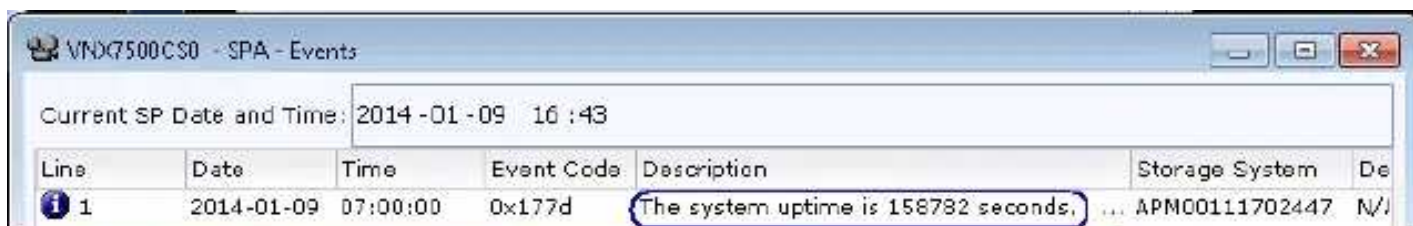


Figure 8 View Events SPA Uptime

24. [] Right Click on SPB and select View Events.

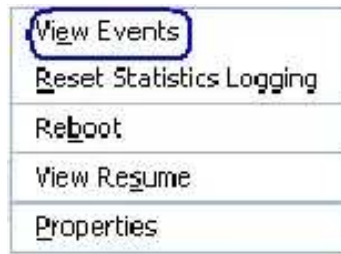


Figure 9 Storage Processor Dropdown Menu

- 25. [] Do you wish to continue? Select Yes.
- 26. [] Select Filter.
- 27. [] Select View as Of: Last 24 hours.
- 28. [] View by Event Code: All
- 29. [] In Description: enter uptime.
- 30. [] Click on OK.
- 31. [] Record the uptime if needed.

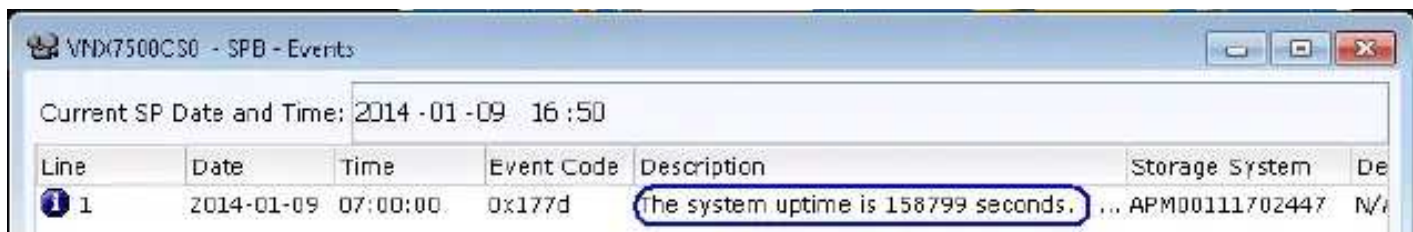


Figure 10 View Events SPB Uptime

Disk Drive Firmware Upgrade Examine FCO F012614FO

In the VNX Procedure Generator refer to

Service Alerts, Reference Documents, FCOs, TSEs and Parts Guides >

FCO F012614FO Shipped not Installed Disk Drive Firmware Upgrade

The drive part numbers that may be affected by this issue are shown in the table below:

Compass Drive Part Numbers		
005049202	005049294	005049925
005049203	005049295	005049926
005049205	005049302	005049951
005049206	005049577	005049956
005049207	005049804	005050281
005049250	005049820	005050282

Refer to Knowledge Base Solution: 00180338



Downloading the latest version of the VNX operating environment software (optional)

EMC recommends downloading and installing the latest version of the operating environment. This task is optional.

1. Select **Software** > **System Software**.
2. Run the **Prepare for Installation** wizard to check for an updated version of the VNX OE.
3. If an updated version is available, then run the **Install Software** wizard to install the update.

Registering your system for service with your service provider

1. Run the **Storage System Registration** wizard in Unisphere Service Manager.
2. From within the USM, select **Register** > **Register Storage System**.
3. Follow the steps in the wizard to complete the registration process.

Check system health

You can run a quick and real-time check on the connectivity, management, and storage component status of your VNX system.

The health check checks network connectivity, management service status, Storage Processor status, Hot Spare status, disk faults, disk status, whether VNX OE for Block has been committed, and hardware component faults.

You can also use USM to:

- ◆ Install and update Firmware
- ◆ Install language packs (if purchased)
- ◆ Install software enablers (if purchased)

To check system health:

1. From within the USM, go to the **System** tab of the **Tools** section.
2. Select **Health Check**.
3. Log out of USM and close it.

Check system events

Log in to Unisphere to confirm the health of your system, checking the system alerts, event logs, and statistics.

1. Open a browser and enter the IP address of SP A.
2. Use the sysadmin credentials to log in to Unisphere. You may be prompted by certificate-related warnings. Accept all certificates as "Always Trust".
3. Select your storage system and select **System** > **Monitoring and Alerts**.



If any alerts or warnings are listed in that screen or your dashboard, see the Unisphere online help for that event.

Install ESRS and configure ConnectHome

You can ensure that your system communicates with your service provider by installing the ESRS

(EMC Secure Remote Support). There are multiple implementations for ESRS. If you already have an ESRS Gateway Server, this system can be monitored through it. If you already have an IP Client, this system can be added to it.

IMPORTANT

You will need the information from the ESRS Worksheet in this configuration.

Downloading ESRS documentation and setting up ESRS

1. Go to <https://mydocs.emc.com/VNX/>.
2. Under **VNX tasks**, select **Initialize and register VNX for block and configure ESRS**.
3. Select the appropriate options for your configuration.
4. Select **Install and Configure ESRS** to generate a customized version of *EMC Secure Remote Support for VNX* document.
5. Follow the instructions for the ESRS implementation you choose.
6. Set up the ESRS and test the ConnectHome process.

Configure servers for VNX systems

Go to <https://mydocs.emc.com/VNX/> and from the Server tasks list, select an appropriate task such as:

- ◆ Attach server
- ◆ Install or update software (VNX for Block)
- ◆ Verify Server high availability, using Unisphere Server Utility

Provision storage

Provisioning storage includes:

- ◆ Creating RAID groups/storage pools
- ◆ Creating LUNs
- ◆ Assigning LUNs to the host servers in its storage group

To provision storage:

1. Launch Unisphere and select your system.



2. Select **Storage**.
3. From the task list, under **Wizards**, select **LUN Provisioning Wizard**. Use this wizard to create LUNs and, optionally, assign the LUNs to a host/server system.

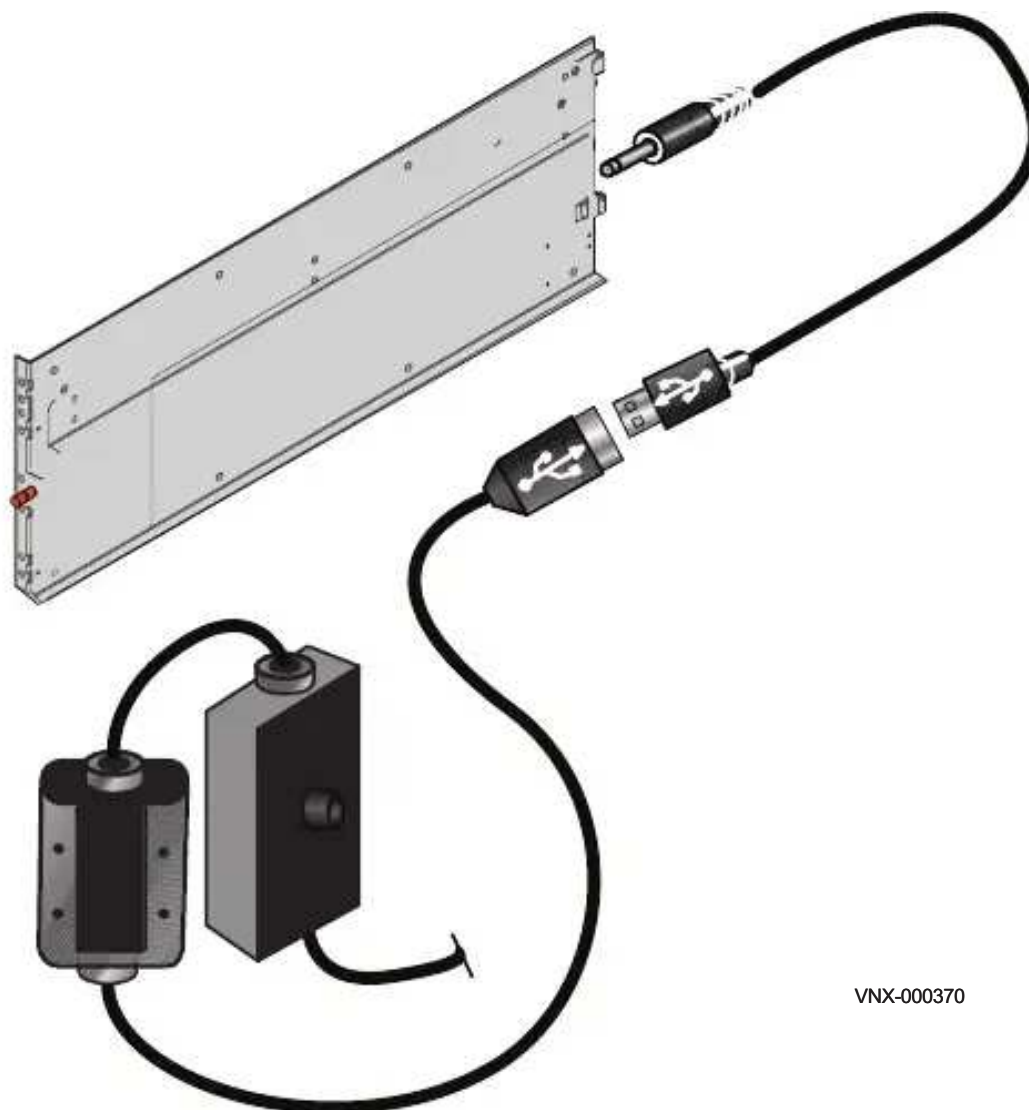
For more information on these tasks, follow the instructions in the Unisphere online help.

Attach bezels

When all of the components have been installed, all of the screws have been tightened, and all of the cables have been installed securely into the proper ports, return to the front of the site rack and select the correct bezel for the component and press the bezel into place on the front of the component.

IMPORTANT

The DPE left rail has a connector which protrudes through the cabinet channel holes. The cable kit for the VNX5200 includes a cable to connect from the rear of that rail to the cabinet power. See [Figure 28](#).



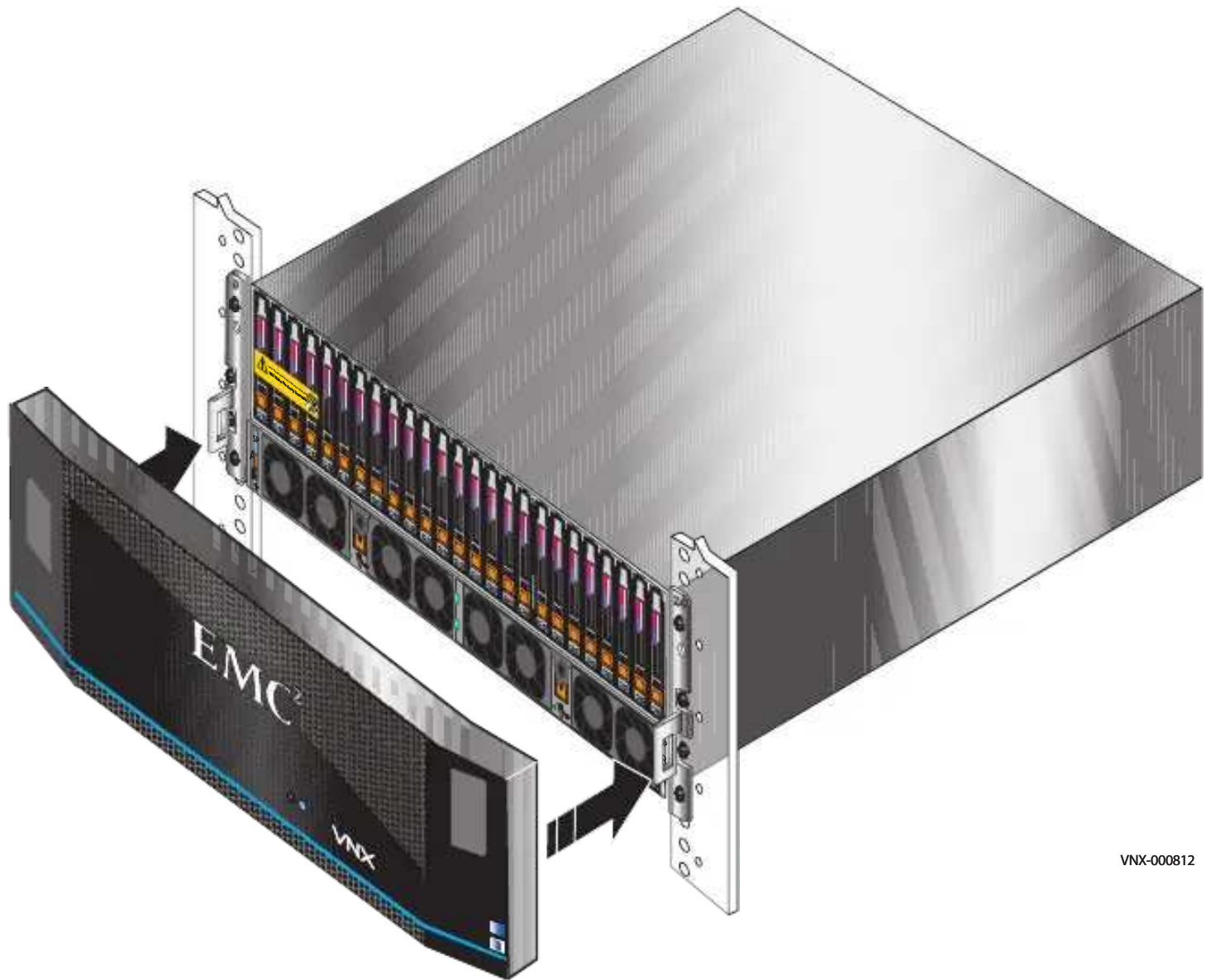
VNX-000370

Figure 28 Connecting the power to the DPE rail for the bezel

1. Locate the bezel for each installed component.



2. On the front of the rack or cabinet, position and align each bezel to the front-mounting brackets on the corresponding component.
3. Press the bezel into the bracket until it clicks into place as shown in [Figure 29 on page 44](#). Bezels have a lock built into them, so you can opt to lock the bezels in place with the key provided. To lock the bezel, insert the key and turn it one quarter turn clockwise.
4. Repeat steps 2 and 3 for the remaining bezels.



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Figure 29 Attaching the bezels

Planning Worksheets

IMPORTANT

This worksheet is for VNX hardware and software only. It does not cover other network connections or requirements from other software.

VNX Block Configuration Worksheet

With your network administrator, determine the IP addresses and network parameters you plan to use with the storage system, and record the information on the following worksheet. You must have this information to set up and initialize the system.

You manage the storage system through a dedicated LAN port on each storage processor. These ports must share a subnet with the host you use to initialize the system. After initialization, any host on the same network and with a supported browser can manage the system through the management ports.

Record network information for your system on the worksheets on the next pages. Your network administrator should provide most of this information. For more information, refer to your configuration planning guide.

Table 5 IPv4 Management Port Information

	IP Address	Subnet mask	Gateway
SP A			
SP B			

Note: Do not use 128.221.1.248 through 128.221.1.255, 192.168.1.1, or 192.168.1.2 for an IPv4 IP address.

Table 6 IPv6 Management Port Information (optional; manual configuration only)

Global prefix	
Gateway	

Table 7 Login information for the storage system administrator

Field	Description	Value
Username	User choice	

Table 7 Login information for the storage system administrator

Password	User choice	
Storage-system serial number	The serial number is located on the PSNT tag hanging from the rear of the DPE chassis. The number is identified as SN/Product ID.	
Scope	Global or Local	

Table 8 IPv4 address for iSCSI targets

SP, slot and port	Local port number	Target port IP address	Subnet mask	Gateway
SPA, slot __, port 0				
SPA, slot __, port 1				
SPA, slot __, port 2				
SPA, slot __, port 3				
SPB, slot __, port 0				
SPB, slot __, port 1				
SPB, slot __, port 2				
SPB, slot __, port 3				
SPA, slot __, port 0				
SPA, slot __, port 1				
SPA, slot __, port 2				
SPA, slot __, port 3				
SPB, slot __, port 0				
SPB, slot __, port 1				
SPB, slot __, port 2				
SPB, slot __, port 3				
SPA, slot __, port 0				
SPA, slot __, port 1				
SPA, slot __, port 2				
SPA, slot __, port 3				
SPB, slot __, port 0				
SPB, slot __, port 1				
SPB, slot __, port 2				

ESRS Worksheet

The following information is required to set up Secure Remote Support IP Client.

Table 10 Content required for ESRS setup

Field	Description	Value
VNX System or Off-Array Unisphere Manager	The system IP address or the host name of a workstation running Unisphere Manager (Off-Array)	
Unisphere Manager Login Username	Global username with administrative privileges	
Unisphere Manager Login Password	Global username password	
SMTP Server IP address or host name	If your ESRS IP Client installation will use the optional email notification as a backup communication method for the Call Home feature, you will need connectivity to an outgoing SMTP server. You must provide the IP address for the SMTP server.	
Email address	You must provide your email address (in the from field) for email notification.	
Proxy Server Settings	If the monitor station connects to the Internet through a proxy server, you must indicate this during the ESRS IP Client installation and provide the IP address, port, and protocol (HTTPS or SOCKS) for the proxy server.	
Proxy Server IP address or network name		
Protocol to be used (HTTPS or SOCKS)		
Port number of the proxy server		
Proxy server login credentials Username Password	You must supply login credentials for the proxy server. You must supply both the username and password for authentication.	
Powerlink login information User name Password		

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