Dell EMC IDPA DP4400

Service Procedures

302-004-955

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DELLEMC

CONTENTS

CHAPTER 1

Prepare for assembly replacement

This chapter contains the following topics:

Hardware replacement overview

Some hardware components of the Integrated Data Protection Appliance (IDPA) DP4400 can be replaced without shutting down the system, and some hardware components require a system shutdown to replace.

The target audience for this document is support personnel who are responsible for replacing IDPA DP4400 components.

The following table lists the IDPA DP4400 components and whether it is required that they be shut down while being replaced. To replace one of these components, go to the required replacement procedure.

Table 1 IDPA DP4400 component replacement shutdown requirements

Model	Component shutdown is not required	Component shutdown is required
Dell PowerEdge R740 server	- Front disk drive - Rear disk drive - Internal disk drive - Power supply - Fans	- DIMMs - NIC cards - Boss card M2 storage

Memory optimized (independent channel) mode

This mode supports Single Device Data Correction (SDDC) only for memory modules that use x4 device width. It does not impose any specific slot population requirements.

System Service Tag

You can identify your system using the unique Express Service Code and Service Tag. Pull out the information tag in front of the system to view the Express Service Code and Service Tag. Alternatively, the information may be on a sticker on the chassis of the system. The mini Enterprise Service Tag (EST) is found on the back of the system. This information is used by Dell to route support calls to the appropriate personnel.

Figure 1 System Service Tag
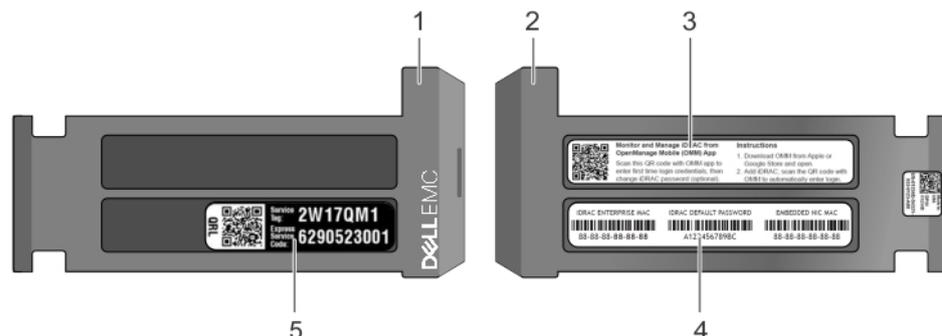
Figure 1 System Service Tag (continued)

1. information tag (top view)
2. information tag (back view)
3. OpenManage Mobile (OMM) label
4. iDRAC MAC address and iDRAC secure password label
5. Service Tag

Shut down the IDPA

Procedure

1. Log in to the ACM command line by using SSH.

   Use `root` for the user, and use the common password for the appliance.

2. Enter service mode by typing the following command:

   ```
   # dpacli -servicemode
   ```

   The following message appears: `Entering service mode............`

3. Wait while the system enters service mode.

   It can take up to 11 minutes for the system to enter service mode. To monitor the progress of the system, open a separate SSH session and run the following command: `# tail -f /var/log/dpatools/dpacli/dpacli.log`

   After the system successfully enters service mode, the CLI prompt reappears, and the `dpacli.log` file displays the following message: `Shut down services except ACM/ESXi: Succeeded`

   If the system fails to enter service mode, the following message appears: `Servicemode command failed.` The `dpacli.log` file contains information about the failure.

4. On the dashboard **Home** tab, click the **Shutdown Appliance** icon.
5. Type the administrator password, click **Authenticate**, and then click **Yes**.
6. Click **Logout**.

   While the appliance is shutting down, the **Login** screen displays a message indicating shutdown is in progress. To view the status, Log into ESX to monitor the shutdown.

Troubleshooting shutdown of the DP4400

If any part of the shutdown process fails to complete automatically, troubleshoot as follows.

Procedure

1. Login to the Avamar server with SSH by using the Avamar IP address.
2. Create a checkpoint by running the following command:

   mccli checkpoint create --override_maintenance_scheduler

3. Stop all Avamar services by running the following command:

   ```
   dpnctl stop all
   ```

4. Log in to the Data Domain with SSH using the Data Domain IP address.

5. Shut down the Data Domain system by running the following command:

   ```
   system poweroff
   ```

6. Open the vCenter by typing the IP address in the browser.

7. Log in to vCenter by using the customer-specified username and password. If the ACM is down, connect to VC and ESX using username "idpauser" and appliance password as a password.

8. Power off the Data Protection virtual application.

   All virtual machines and virtual applications under the Data Protection virtual application are automatically shut down.

9. Shut down the IDPA Virtual Machine guest operating system, and power off the virtual machine.

10. Log in to the ESXi server on which the vCenter resides.

11. Log in to each ESXi host.

12. Place each ESXi host into maintenance mode by running the following command on each host:

    ```
    esxcli system maintenanceMode set -e true -m noAction
    ```

13. Use the vSphere Client or the ESXi host to shut down all of the ESXi hosts.

CHAPTER 2

Remove and replace assemblies

This chapter contains the following topics:

Safety instructions

> **⚠ WARNING**
>
> **Whenever you need to lift the system, get others to assist you. To avoid injury, do not attempt to lift the system by yourself.**

> **⚠ WARNING**
>
> **Opening or removing the system cover while the system is powered on may expose you to a risk of electric shock.**

> **⚠ CAUTION**
>
> **Do not operate the system without the cover for a duration exceeding five minutes. Operating the system without the system cover can result in component damage.**

> **⚠ CAUTION**
>
> **Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

> **⚠ WARNING**
>
> **Always use a static mat and anti-static wristband while working on components inside the system.**

> **⚠ CAUTION**
>
> **To ensure proper operation and cooling, all bays in the system and system fans must be always populated with a component or a blank.**

Using the web user interface to monitor the DP4400

You can access the web user interface to monitor the health of the DP4400. For each device, the interface displays alerts for the system. Clicking an alert provides more information concerning it.

Figure 2 DP4400 web user interface
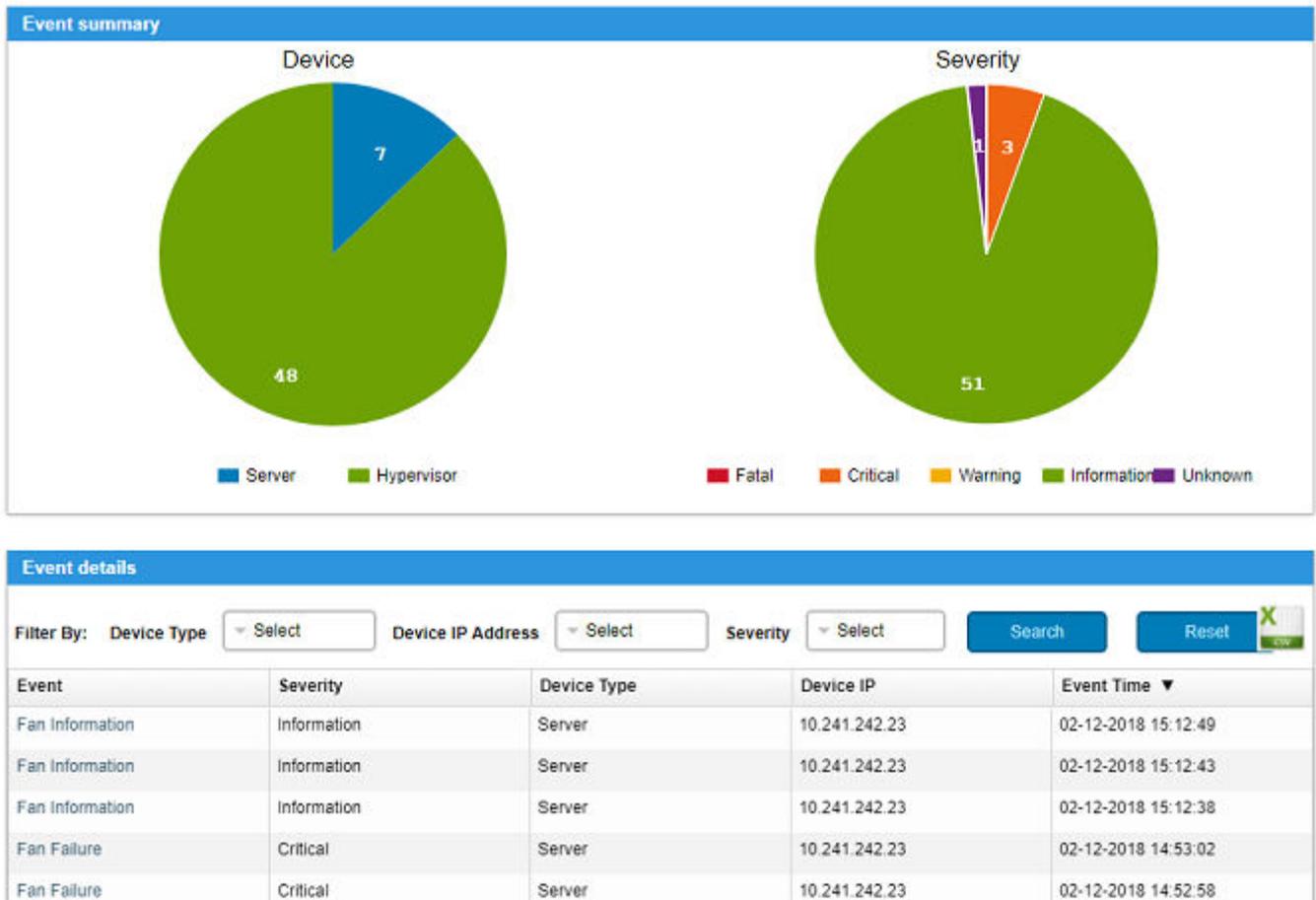
Remove and replace power supply

Power supply units

The power supply unit (PSU) is an internal hardware component which supplies power to the components in the system.

Your system supports two 750 W Mixed Mode HVDC PSUs.

⚠️ **CAUTION**

If two PSUs are installed, both the PSUs must have the same type of label. For example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. Mixing PSUs will result in mismatch condition or failure to turn the system on.

Power supply status indicators

Status LED indicators

Table 2 Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
🗄	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
🌡	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air shroud, memory module blank, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed.
⚡	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU.
◈	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module
▭	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card.

Power supply unit indicator codes

AC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator. The indicator shows whether power is present or a power fault has occurred.

Figure 3 AC PSU status indicator

1
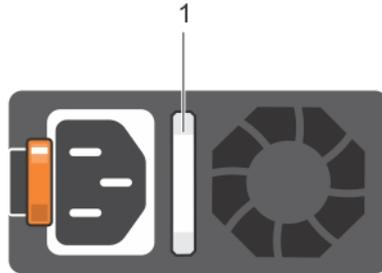
1. AC PSU status indicator/handle

This table describes the AC PSU status indicators and what condition is the PSU when the power indicator light is green, blinking green, blinking amber, and when it is not lit.

Table 3 AC PSU status indicator codes

Power indicator codes	Condition
Green	A valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates a problem with the PSU.
Not illuminated	Power is not connected to the PSU.
Blinking green	When the firmware of the PSU is being updated, the PSU handle blinks green. ⚠ **CAUTION** **Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs do not function.**
Blinking green and turns off	When hot-plugging a PSU, the PSU handle blinks green five times at a rate of 4 Hz and turns off. This indicates a PSU mismatch with respect to efficiency, feature set, health status, or supported voltage. ⚠ **CAUTION** **If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to turn the system on.**

Table 3 AC PSU status indicator codes (continued)

Power indicator codes	Condition
	⚠ CAUTION **When correcting a PSU mismatch, replace only the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must turn off the system.** **⚠ CAUTION** **AC PSUs support both 240 V and 120 V input voltages with the exception of Titanium PSUs, which support only 240 V. When two identical PSUs receive different input voltages, they can output different wattages, and trigger a mismatch.** **⚠ CAUTION** **If two PSUs are used, they must be of the same type and have the same maximum output power.** **⚠ CAUTION** **Combining AC and DC PSUs is not supported and triggers a mismatch.**

Remove and replace a power supply

Identifying a failed power supply from the ACM

If a power supply is suspected of failing, you can check the web UI or use the FRU command line verification from the ACM.

Procedure

1. Access the web UI and check for alerts in the Health screen. Click an alert for more details.

2. From the ACM, use SSH to connect to the ACM command line by typing: `ssh [administrator name]-dp4400-[ACM url]`

   For example: `ssh admin@acme-dp4400-ACM.lab.acme.com`
   Once connected, the screen displays a command line corresponding to the ACM.

3. At the command line, type the following command: `# showfru power`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the power supplies.

```
Collecting Data...........
_____
___
| ID| Status| Redundancy| Model                        | Part#    | Serial#        | FW
Version|
|
```

```
============================================================================
==|
| 1 | Failed| Fault      | PWR SPLY,750W,RDNT,ARTESYN| 0PJMDNA01| PHARP0079201AX| 00.1B.
53 | *
| 2 | OK    | Single     | PWR SPLY,750W,RDNT,ARTESYN| 0PJMDNA01| PHARP0079201AZ| 00.1B.
53 |
```

In this example, power supply 1 is identified as failed and should be replaced.

Remove the power supply unit

Before you begin

> ⚠️ **CAUTION**
>
> **The system needs one power supply unit (PSU) for normal operation. Since the DP4400 is a power-redundant system, remove and replace only one PSU at a time in a system that is powered on.**

1. Follow all safety guidelines.
2. Unlatch and lift the optional cable management arm if it interferes with the PSU removal.

Procedure

1. Disconnect the power cable from the power source and from the PSU you intend to remove, and then remove the cable from the strap on the PSU handle.
2. Press and hold the release latch, and slide the PSU out of the system by using the PSU handle.

   Figure 4 Removing a power supply unit
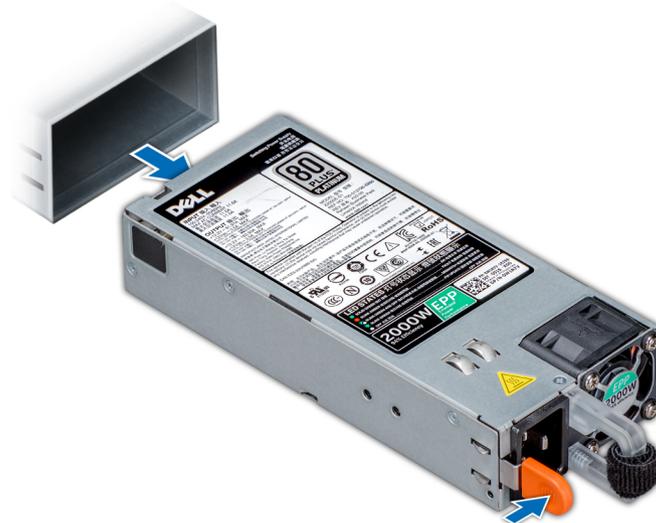
Replace a power supply unit

Before you begin

For systems that support redundant PSU, ensure that both the PSUs are of the same type and have the same maximum output power.

Note

The maximum output power (shown in watts) is listed on the PSU label.

Procedure

1. Slide the PSU into the system until the PSU is fully seated and the release latch snaps into place.

2. If you have unlatched the cable management arm, relatch it.

3. Connect the power cable to the PSU, and plug the cable into a power outlet.

> ⚠️ **CAUTION**
>
> **When connecting the power cable to the PSU, secure the cable to the PSU with the strap.**

Note

When installing, hot swapping, or hot adding a new PSU, wait for 15 seconds for the system to recognize the PSU and determine its status. The PSU redundancy may not occur until discovery is complete. Wait until the new PSU is discovered and enabled before you remove the other PSU. The PSU status indicator turns green to signify that the PSU is functioning properly.

Figure 5 Installing a power supply unit
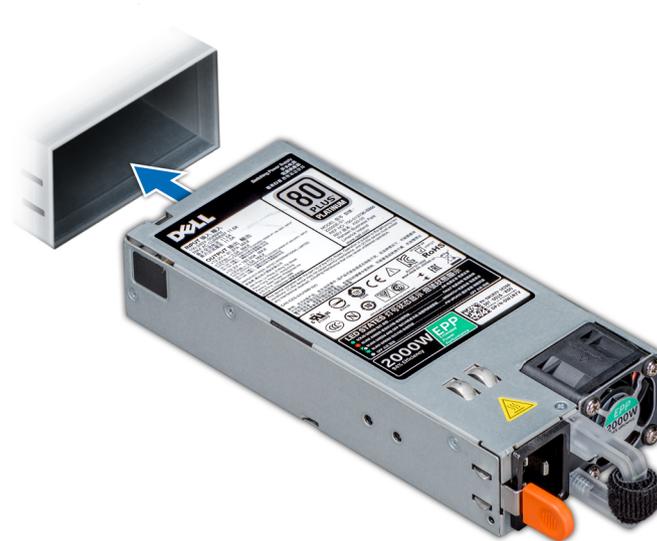
Verifying successful power supply replacement from the ACM

After a power supply is replaced, you can run the FRU command line verification from the ACM to ensure that the replacement was successful.

Procedure

1. From the ACM, type the following command: `# showfru power`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the power supplies.

```
acme-dp4400-ACM:~ # showfru power
Collecting Data...........
```

```
_____
___
| ID| Status| Redundancy| Model                       | Part#     | Serial#      | FW
Version|
|
=================================================================================
==|
| 1 | OK    | Full      | PWR SPLY,750W,RDNT,ARTESYN| 0PJMDNA01| PHARP0079201AX| 00.1B.
53 | *
| 2 | OK    | Full      | PWR SPLY,750W,RDNT,ARTESYN| 0PJMDNA01| PHARP0079201AZ| 00.1B.
53  |
```

2. Verify that the status for both power supplies is "OK".

Hard drive replacement overview

Hard drives

Hard drives are supplied in hot swappable hard drive carriers that fit in the hard drive slots.

> **⚠ CAUTION**
>
> **Before attempting to remove or install a hard drive while the system is running, see the documentation for the storage controller card to ensure that the host adapter is configured correctly.**

> **⚠ CAUTION**
>
> **Do not turn off or restart your system while a hard drive is being formatted. Doing so can cause a hard drive failure.**

When you format a hard drive, allow enough time for the formatting to complete. Be aware that high-capacity hard drives can take a long time to format.

Identify a faulted hard drive

Use the following information to identify a faulted hard drive:

- At the front of the system, check the left control panel Drive indicator ▣ as described in Status LED indicators on page 12.

- On the hard drive, check the status indicator as described in Hard drive indicator codes on page 18

Status LED indicators

> **Note**
>
> The status LED indicators are always off and only turn on to a solid amber if any error occurs.

Table 4 Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
▯	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
🌡	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air shroud, memory module blank, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed.
⚡	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU.
◈	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module
▭	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card.

Hard drive indicator codes

Each hard drive carrier has an activity LED indicator and a status LED indicator. The indicators provide information about the current status of the hard drive. The activity

LED indicator indicates whether the hard drive is currently in use or not. The status LED indicator indicates the power condition of the drive.

Figure 6 Hard drive indicators
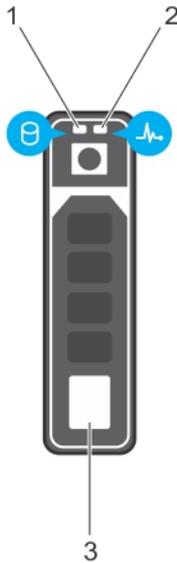
1. hard drive activity LED indicator
2. hard drive status LED indicator
3. hard drive

Note

If the hard drive is in the Advanced Host Controller Interface (AHCI) mode, the status LED indicator does not turn on.

The hard drive indicator codes table describes the indicator codes: flashing green, steady green, and amber.

Table 5 Hard drive indicator codes

Hard drive status indicator code	Condition
Flashes green twice per second	Identifying drive or preparing for removal.
Off	Drive ready for removal.
	Note
	The drive status indicator remains off until all drives are initialized after the system is turned on. Drives are not ready for removal during this time.
Flashes green, amber, and then turns off	Predicted drive failure.
Flashes amber four times per second	Drive failed.
Flashes green slowly	Drive rebuilding.
Solid green	Drive online.

Table 5 Hard drive indicator codes (continued)

Hard drive status indicator code	Condition
Flashes green for three seconds, amber for three seconds, and then turns off after six seconds	Rebuild stopped.

Identifying a failed disk from the ACM

If a disk is suspected of failing, you can check the web UI or use the FRU command line verification from the ACM.

Procedure

1. Access the web UI and check for alerts in the Health screen. Click an alert for more details.

2. From the ACM, use SSH to connect to the ACM command line by typing: `ssh [administrator name]-dp4400-[ACM url]`

   For example: `ssh admin@acme-dp4400-ACM.lab.acme.com`
   Once connected, the screen displays a command line corresponding to the ACM.

3. At the command line, type the following command: `# showfru disk`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the disks.

```
acme-dp4400-ACM:~ # showfru disk
Collecting Data............
_____
__
| ID| State  | Status| Model#        | Serial# | FW Version| Capacity| Operation|
OpStatus|
|
=================================================================================
=|
| 0 | Online | OK    | HUH721212AL5200| 8DGPKT5H| NS01        | 10.69TB | None      |
0%       |
| 1 | Online | OK    | HUH721212AL5200| 8DGPAZZH| NS01        | 10.69TB | None      |
0%       |
| 2 | Online | OK    | HUH721212AL5200| 8DGMKZDH| NS01        | 10.69TB | None      |
0%       |
| 3 | Online | OK    | HUH721212AL5200| 8DGMX46Y| NS01        | 10.69TB | None      |
0%       |
| 4 | Online | OK    | HUH721212AL5200| 8DGPHY4H| NS01        | 10.69TB | None      |
0%       |
| 5 | Offline| ERROR| HUH721212AL5200| 8DGLLZMH| NS01        | 10.69TB | None      |
0%       | *
| 6 | Online | OK    | HUH721212AL5200| 8DGPLL5Y| NS01        | 10.69TB | None      |
0%       |
| 7 | Online | OK    | HUH721212AL5200| 8DGP6V2H| NS01        | 10.69TB | None      |
0%       |
| 8 | Online | OK    | HUH721212AL5200| 8DGPML8Y| NS01        | 10.69TB | None      |
0%       |
| 9 | Online | OK    | HUH721212AL5200| 8DGPHEMH| NS01        | 10.69TB | None      |
0%       |
| 10| Online | OK    | HUH721212AL5200| 8DGNUHUH| NS01        | 10.69TB | None      |
0%       |
| 11| Online | OK    | HUH721212AL5200| 8DGPBT5H| NS01        | 10.69TB | None      |
0%       |
| 12| Online | OK    | HUH721212AL5200| 8DGPLUTY| NS01        | 10.69TB | None      |
0%       |
| 13| Online | OK    | HUH721212AL5200| 8DGPLYJY| NS01        | 10.69TB | None      |
0%       |
```

```
| 14| Online | OK   | HUH721212AL5200| 8DGRARSY| NS01        | 10.69TB | None      |
0%        |
| 15| Online | OK   | HUH721212AL5200| 8DGJRPZY| NS01        | 10.69TB | None      |
0%        |
| 16| Online | OK   | HUH721212AL5200| 8DGPKU7H| NS01        | 10.69TB | None      |
0%        |
| 17| Online | OK   | HUH721212AL5200| 8DGPHKYH| NS01        | 10.69TB | None      |
0%        |
```

In this example, disk 5 is identified as failed and should be replaced.

Remove front and rear hard drives

Hard drive access

Hard drives 0-11 are installed in the front panel, and hard drives 16 - 17 are installed in the rear panel.

The front bezel needs to be remove to access hard drives 0 - 11.

Remove the front bezel to access front panel hard drives

The procedure to remove the front bezel with the LCD panel and the front bezel without the LCD panel is the same.

Procedure

1. Unlock the bezel by using the bezel key.
2. Press the release button, and pull the left end of the bezel.
3. Unhook the right end, and remove the bezel.

   Figure 7 Removing the front bezel
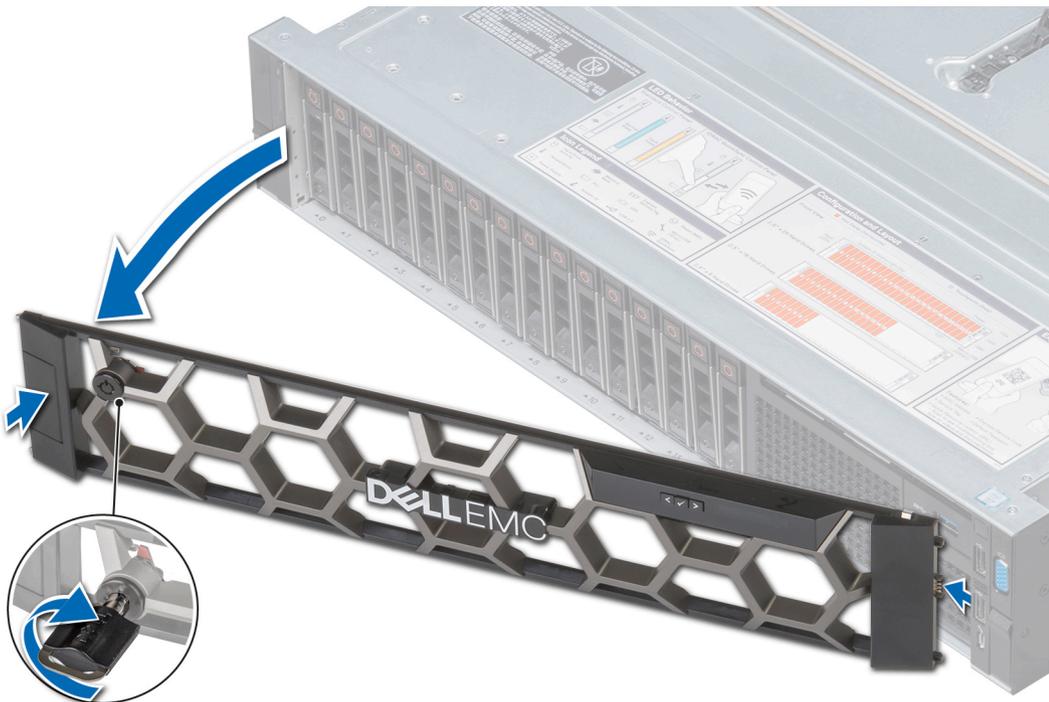
Remove the hard drive

Before you begin

1. Follow all safety guidelines.
2. If applicable, remove the front bezel.

Procedure

1. Press the release button to open the hard drive release handle.
2. Holding the handle, slide the hard drive out of the hard drive slot.

   Figure 8 Removing a hard drive

3. If you are not replacing the hard drive immediately, insert a hard drive blank in the empty hard drive slot to maintain proper system cooling.

Install the hard drives

Before you begin

⚠ **CAUTION**

Before attempting to remove or install a hard drive while the system is running, see the documentation for the storage controller card to ensure that the host adapter is configured correctly to support hard drive removal and insertion.

⚠ **CAUTION**

Mixing hard drives from previous generations of PowerEdge servers is not supported.

⚠ **CAUTION**

SATA hard drives are not supported in the DP4400.

> ⚠ **CAUTION**
>
> **When installing a hard drive, ensure that the adjacent drives are fully installed. Inserting a hard drive carrier and attempting to lock its handle next to a partially installed carrier can damage the partially installed carrier's shield spring and make it unusable.**

> ⚠ **CAUTION**
>
> **To prevent data loss, ensure that your operating system supports hot-swap drive installation. See the documentation supplied with your operating system.**

> ⚠ **CAUTION**
>
> **When a replacement hot swappable hard drive is installed and the system is powered on, the hard drive automatically begins to rebuild. Ensure that the replacement hard drive is blank or contains data that you wish to overwrite. Any data on the replacement hard drive is immediately lost after the hard drive is installed.**

1. Follow all safety guidelines.
2. If applicable, remove the hard drive blank.

Procedure

1. Press the release button on the front of the hard drive to open the release handle.
2. Insert the hard drive into the hard drive slot and slide until the hard drive connects with the backplane.
3. Close the hard drive release handle to lock the hard drive in place.

   Figure 9 Installing a hard drive

Install the front bezel

The procedure to install the front bezel with the LCD panel and the front bezel without the LCD panel is the same.

Procedure

1. Align and insert the right end of the bezel onto the system.
2. Press the release button and fit the left end of the bezel onto the system.
3. Lock the bezel by using the key.

   Figure 10 Installing the front bezel
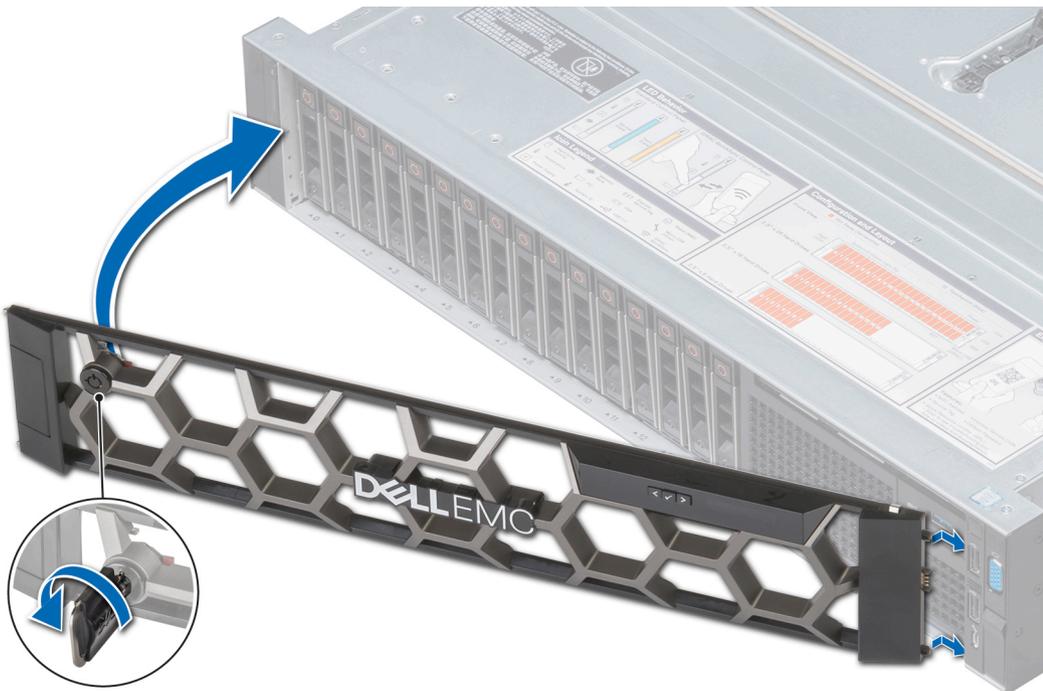
Remove internal hard drives

Extend the system from the cabinet

This procedure is used to extend the system from the cabinet so that the system cover can be removed to access the internal FRU components, or used in removing the system from the cabinet.

Note

When replacing hot-swappable components, ensure the system cables are long enough to stay connected while the unit is extended.

Procedure

1. At the front of the cabinet, locate the two rocker switches on left and right side of the system. Press the top of the rocker switches inward to release the system from the cabinet.

If the rocker switches do not disengage the system, loosen the screw under each rocker.

2. Pull the system from the cabinet until the rails lock in the extended position.

Figure 11 Release and extend system from cabinet
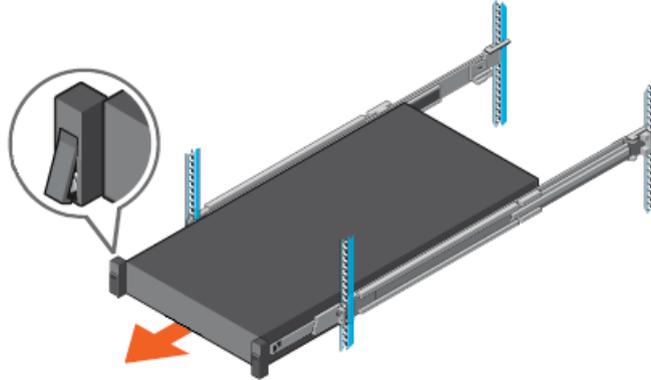
Remove the system cover

Procedure

1. Using a flat or a Phillips head screwdriver, rotate the latch release lock counter clockwise to the unlocked position.

2. Lift the latch till the system cover slides back and the tabs on the system cover disengage from the guide slots on the system.

3. Hold the cover on both sides, and lift the cover away from the system.

Figure 12 Removing the system cover

Remove hard drive carrier from the mid hard drive tray

Before you begin

> ⚠ **CAUTION**
>
> **When a replacement hot swappable hard drive is installed and the system is powered on, the hard drive automatically begins to rebuild. Ensure that the replacement hard drive is blank or contains data that you wish to overwrite. Any data on the replacement hard drive is immediately lost after the hard drive is installed.**

> ⚠ **CAUTION**
>
> **Mixing hard drive carriers from previous generations of PowerEdge servers is not supported.**

Procedure

1. Lift the hard drive carrier handle upward.
2. Press the release tab on the hard drive tray and lift the hard drive carrier handle upward to disengage the hard drive from the backplane.
3. Hold the hard drive carrier handle and lift the hard drive carrier out of the hard drive tray.

   Figure 13 Removing hard drive carrier from the mid hard drive tray
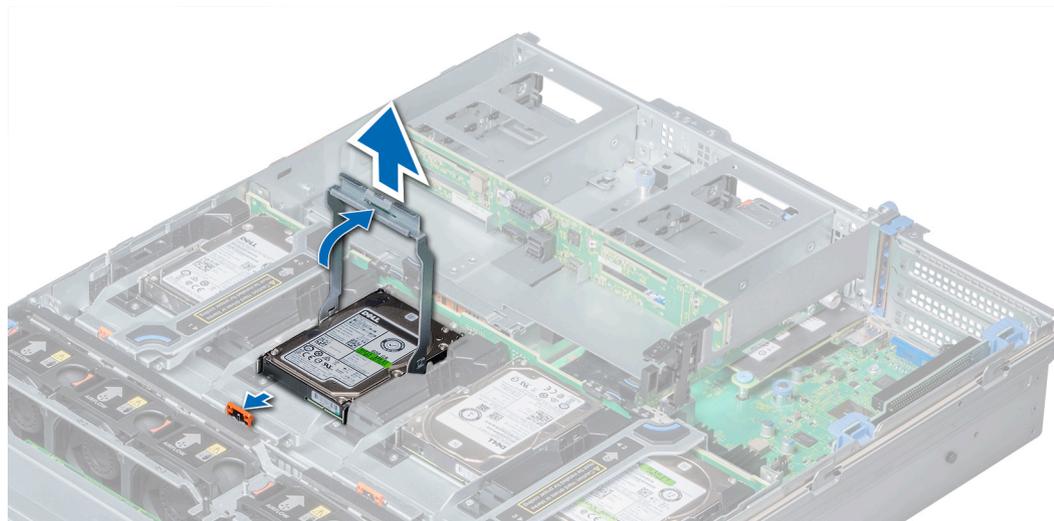
Replace a hard drive in the mid hard drive tray

Before you begin

Procedure

1. Remove the hard drive carrier from the mid hard drive tray

   Note

   To replace a hard drive that is mounted in the mid hard drive tray, perform the following steps as applicable to the type of hard drive that is installed:

2. Replace a 3.5 inch hard drive:

    a. Remove the hard drive from the carrier.

    b. Install the hard drive into the carrier.

3. Install the hard drive carrier into the mid hard drive tray.

Remove 3.5 inch hard drive from the hard drive carrier

Before you begin

Follow all safety guidelines.

> ⚠ **CAUTION**
>
> **To maintain proper system cooling, all empty hard drive slots must have hard drive blanks installed.**

Procedure

1. Push out at the edges of the carrier to disengage the tabs on the hard drive carrier from the slots on the hard drive.

2. Lift the hard drive carrier away from the hard drive.

Figure 14 Removing 3.5 inch hard drive from the hard drive carrier
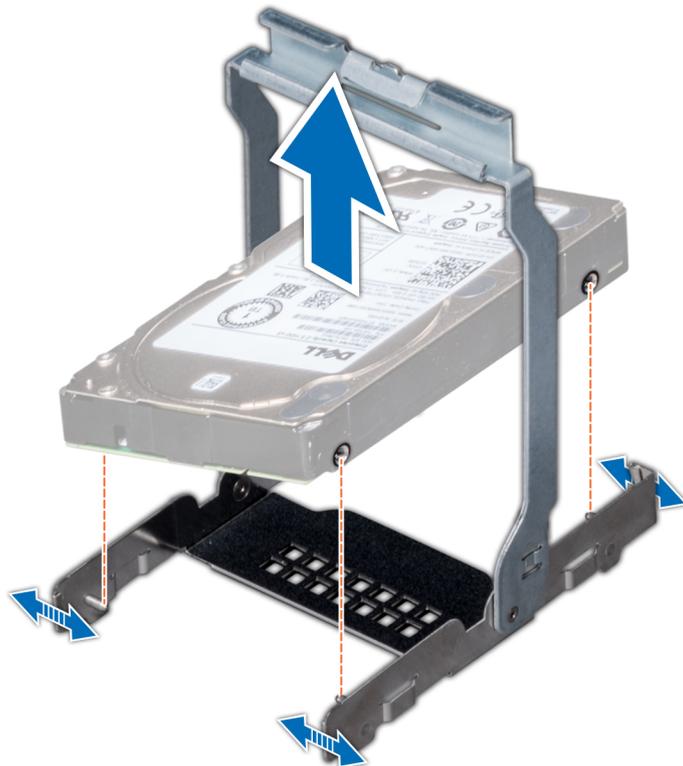
Install hard drive carrier into mid hard drive tray

Before you begin

Follow all safety guidelines.

> ⚠ **CAUTION**
>
> **Use only hard drives that have been tested and approved for use with the hard drive backplane.**

> ⚠ **CAUTION**
>
> **When installing a hard drive, ensure that the adjacent drives are fully installed. Inserting a hard drive carrier and attempting to lock its handle next to a partially installed carrier can damage the partially installed carrier's shield spring and make it unusable.**

> ⚠ **CAUTION**
>
> **To prevent data loss, ensure that your operating system supports hot-swap drive installation. See the documentation supplied with your operating system.**

> ⚠ **CAUTION**
>
> **Mixing hard drive carriers from previous generations of PowerEdge servers is not supported.**

> ⚠ **CAUTION**
>
> **When a replacement hot swappable hard drive is installed and the system is powered on, the hard drive automatically begins to rebuild. Ensure that the replacement hard drive is blank or contains data that you wish to overwrite. Any data on the replacement hard drive is immediately lost after the hard drive is installed.**

Procedure

1. Lift the hard carrier handle.
2. If a hard drive blank is installed in the hard drive slot, remove it.
3. Insert the hard drive carrier into the hard drive tray.
4. Lower the hard drive carrier handle to engage the hard drive to the connector on the backplane and lock the hard drive in place.

Figure 15 Installing hard drive carrier into mid hard drive tray
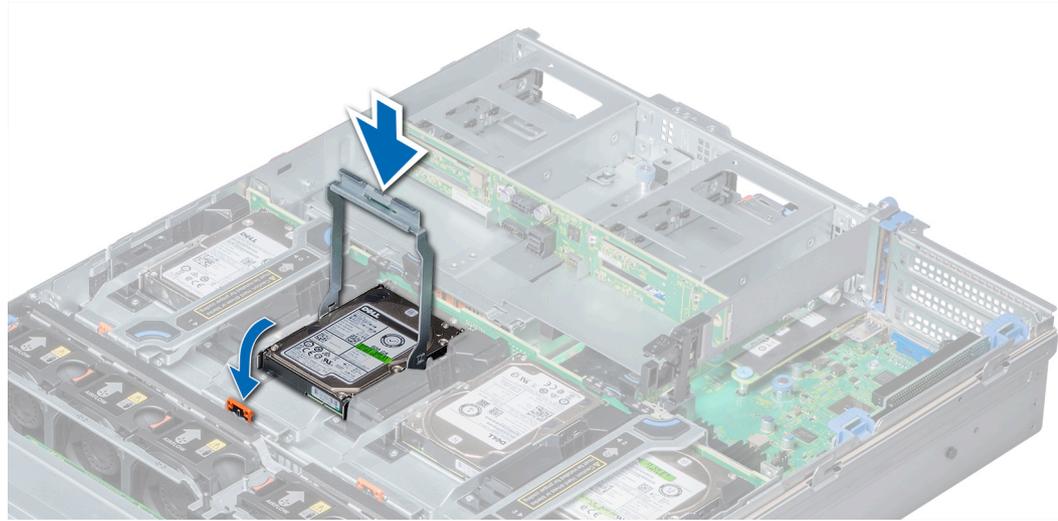
Install the system cover

Procedure

1. Align the tabs on the system cover with the guide slots on the system.

2. Push the system cover latch down.

   The system cover slides forward, the tabs on the system cover engage with the guide slots on the system and the system cover latch locks into place.

3. Using a flat or Phillips head screwdriver, rotate the latch release lock clockwise to the locked position.

   Figure 16 Install the system cover

Slide the system into the cabinet

Procedure

1. At the front of the cabinet, push the system inward until the lock levers click into place.

2. Push the blue slide release lock tabs forward on both rails and slide the system into the cabinet. The slam latches will engage to secure the system in the cabinet.

Figure 17 Slide the system into the cabinet
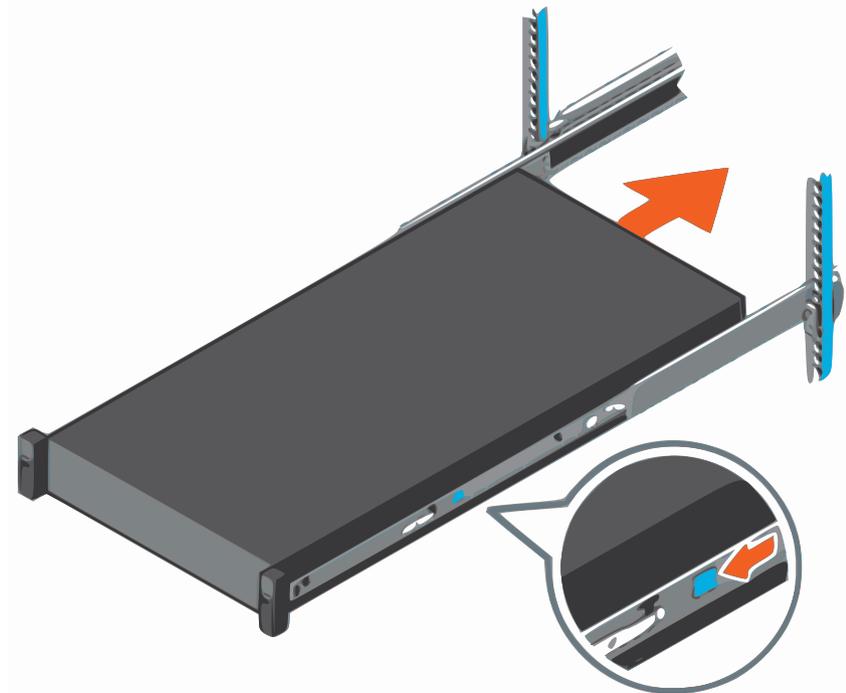
Verifying successful disk replacement from the ACM

After a disk is replaced, you can run the FRU command line verification from the ACM to ensure that the replacement was successful.

Procedure

1. From the ACM, type the following command: `# showfru disk`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the disks.

```
acme-dp4400-ACM:~ # showfru disk
Collecting Data............
_____
__
| ID| State | Status| Model#          | Serial# | FW Version| Capacity| Operation|
OpStatus|
|
=================================================================================
=|
| 0 | Online| OK    | HUH721212AL5200| 8DGPKT5H| NS01        | 10.69TB | None     |
0%         |
| 1 | Online| OK    | HUH721212AL5200| 8DGPAZZH| NS01        | 10.69TB | None     |
```

```
0%       |
| 2 | Online| OK    | HUH721212AL5200| 8DGMKZDH| NS01        | 10.69TB | None     |
0%       |
| 3 | Online| OK    | HUH721212AL5200| 8DGMX46Y| NS01        | 10.69TB | None     |
0%       |
| 4 | Online| OK    | HUH721212AL5200| 8DGPHY4H| NS01        | 10.69TB | None     |
0%       |
| 5 | Online| OK    | HUH721212AL5200| 8DGLLZMH| NS01        | 10.69TB | Rebuild  |
65%      | *
| 6 | Online| OK    | HUH721212AL5200| 8DGPLL5Y| NS01        | 10.69TB | None     |
0%       |
| 7 | Online| OK    | HUH721212AL5200| 8DGP6V2H| NS01        | 10.69TB | None     |
0%       |
| 8 | Online| OK    | HUH721212AL5200| 8DGPML8Y| NS01        | 10.69TB | None     |
0%       |
| 9 | Online| OK    | HUH721212AL5200| 8DGPHEMH| NS01        | 10.69TB | None     |
0%       |
| 10| Online| OK    | HUH721212AL5200| 8DGNUHUH| NS01        | 10.69TB | None     |
0%       |
| 11| Online| OK    | HUH721212AL5200| 8DGPBT5H| NS01        | 10.69TB | None     |
0%       |
| 12| Online| OK    | HUH721212AL5200| 8DGPLUTY| NS01        | 10.69TB | None     |
0%       |
| 13| Online| OK    | HUH721212AL5200| 8DGPLYJY| NS01        | 10.69TB | None     |
0%       |
| 14| Online| OK    | HUH721212AL5200| 8DGRARSY| NS01        | 10.69TB | None     |
0%       |
| 15| Online| OK    | HUH721212AL5200| 8DGJRPZY| NS01        | 10.69TB | None     |
0%       |
| 16| Online| OK    | HUH721212AL5200| 8DGPKU7H| NS01        | 10.69TB | None     |
0%       |
| 17| Online| OK    | HUH721212AL5200| 8DGPHKYH| NS01        | 10.69TB | None     |
0%       |
```

2. Verify the state for all disks is "Online," and that the status for all disks is "OK".

Remove fans

Cooling fans

The cooling fans are integrated into the system to dissipate the heat generated by the functioning of the system. These fans provide cooling for the processors, expansion cards, and memory modules.

Your system supports up to six standard or high performance hot swappable cooling fans.

⚠️ **CAUTION**

Mixing of standard and high performance cooling fans is not supported.

Note

Each fan is listed in the systems management software, referenced by the respective fan number. If there is a problem with a particular fan, you can easily identify and replace the proper fan by noting the fan numbers on the cooling fan assembly.

Identifying a failed fan from the ACM

If a fan is suspected of failing, you can check the web UI or use the FRU command line verification from the ACM.

Procedure

1. Access the web UI and check for alerts in the Health screen. Click an alert for more details.

2. From the ACM, use SSH to connect to the ACM command line by typing: `ssh [administrator name]-dp4400-[ACM url]`

   For example: `ssh admin@acme-dp4400-ACM.lab.acme.com`
   Once connected, the screen displays a command line corresponding to the ACM.

3. At the command line, type the following command: `# showfru fan`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the fans.

   ```
   Collecting Data............
   _____
   | ID| Status| Redundancy| PWM| Reading |
   |===================================|
   | 1 | OK     | Full      | 36%| 9000 RPM|
   | 2 | OK     | Full      | 36%| 9000 RPM|
   | 3 | Error  | NA        | 12%| 0237 RPM| *
   | 4 | OK     | Full      | 38%| 8880 RPM|
   | 5 | OK     | Full      | 38%| 9000 RPM|
   | 6 | OK     | Full      | 38%| 9000 RPM|
   ```

   In this example, fan 3 is identified as failed and should be replaced.

Extend the system from the cabinet

This procedure is used to extend the system from the cabinet so that the system cover can be removed to access the internal FRU components, or used in removing the system from the cabinet.

Note

When replacing hot-swappable components, ensure the system cables are long enough to stay connected while the unit is extended.

Procedure

1. At the front of the cabinet, locate the two rocker switches on left and right side of the system. Press the top of the rocker switches inward to release the system from the cabinet.

   If the rocker switches do not disengage the system, loosen the screw under each rocker.

2. Pull the system from the cabinet until the rails lock in the extended position.

Figure 18 Release and extend system from cabinet
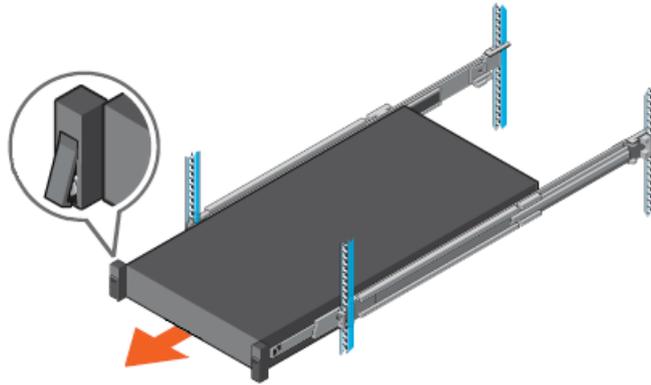
Remove the system cover

Procedure

1. Using a flat or a Phillips head screwdriver, rotate the latch release lock counter clockwise to the unlocked position.

2. Lift the latch till the system cover slides back and the tabs on the system cover disengage from the guide slots on the system.

3. Hold the cover on both sides, and lift the cover away from the system.

Figure 19 Removing the system cover

Remove the cooling fan

The procedure for removing standard and high performance fans is identical.

Before you begin

⚠ WARNING

Opening or removing the system cover when the system is on may expose you to a risk of electric shock. Exercise utmost care while removing or installing cooling fans.

⚠ CAUTION

The cooling fans are hot swappable. To maintain proper cooling while the system is on, replace only one fan at a time.

Procedure

1. Press the release tab and lift the cooling fan out of the cooling fan assembly.

   Figure 20 Removing cooling fan
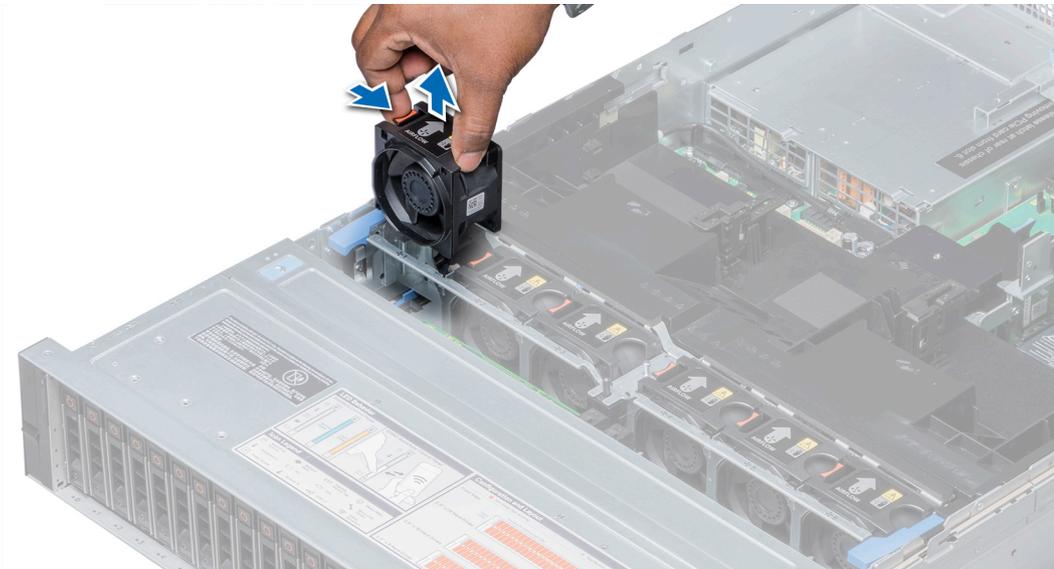
Install the cooling fan

The procedure for installing standard and high performance fans is identical.

Procedure

1. Holding the release tab, align the connector at the base of the cooling fan with the connector on the system board.

Figure 21 Installing cooling fan
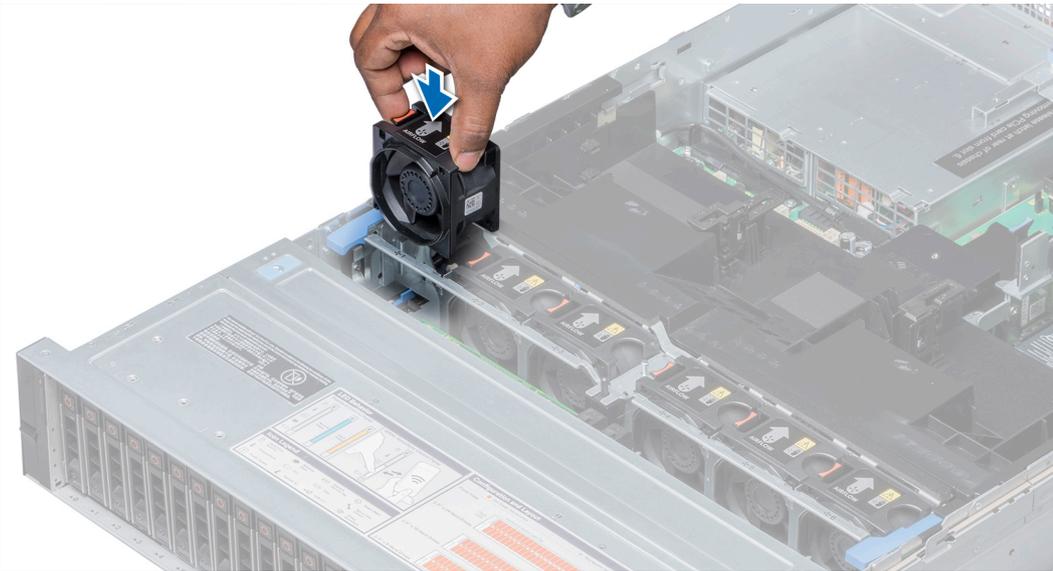
Verifying successful fan replacement from the ACM

After a fan is replaced, you can run the FRU command line verification from the ACM to ensure that the replacement was successful.

Procedure

1. From the ACM, type the following command: `# showfru fan`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the fans.

   ```
   acme-dp4400-ACM:~ # showfru fan
   Collecting Data............
   _____
   | ID| Status| Redundancy| PWM| Reading |
   |=====================================|
   | 1 | OK      | Full      | 36%| 9000 RPM|
   | 2 | OK      | Full      | 36%| 9000 RPM|
   | 3 | OK      | Full      | 36%| 9000 RPM|  *
   | 4 | OK      | Full      | 38%| 8880 RPM|
   | 5 | OK      | Full      | 38%| 9000 RPM|
   | 6 | OK      | Full      | 38%| 9000 RPM|
   ```

2. Verify the status for all fans is "OK".

Install the system cover

Procedure

1. Align the tabs on the system cover with the guide slots on the system.

2. Push the system cover latch down.

   The system cover slides forward, the tabs on the system cover engage with the guide slots on the system and the system cover latch locks into place.

3. Using a flat or Phillips head screwdriver, rotate the latch release lock clockwise to the locked position.

Figure 22 Install the system cover

Slide the system into the cabinet

Procedure

1. At the front of the cabinet, push the system inward until the lock levers click into place.

2. Push the blue slide release lock tabs forward on both rails and slide the system into the cabinet. The slam latches will engage to secure the system in the cabinet.

Figure 23 Slide the system into the cabinet
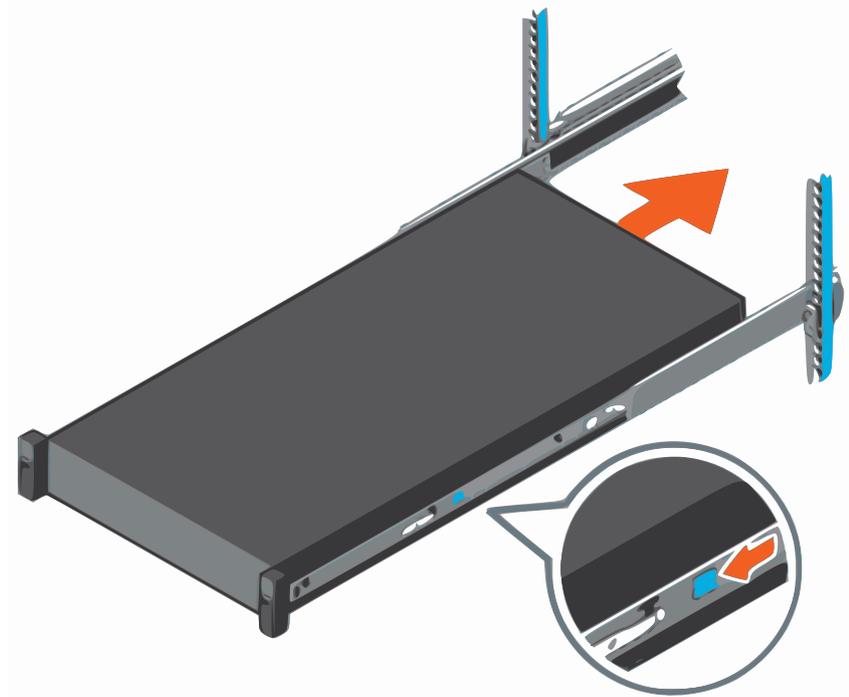
DIMM remove and replace

Depending on the storage configuration, the DD4400 system has three possible memory configurations. The following table lists the memory capacity and the number of DIMMs for each storage configuration.

Storage configuration	Memory capacity	Number of DIMMs
4 TB	16 GB	2 x 8 GB
16 TB	48 GB	6 x 8 GB
32 TB	64 GB	8 x 8 GB

DIMMs are not hot-swappable, and require a system shutdown.

⚠ **CAUTION**

If any components are not fully seated, the system may not boot upon completion of the procedure. When installing a component into the system, verify it is fully seated before proceeding to the next step.

Indications of a memory error

At the front of the system, check the left control panel Memory indicator as described in Status LED Indicators.

Status LED indicators

Table 6 Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air shroud, memory module blank, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed.
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU.
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card.

Identifying a failed DIMM from the ACM

If a DIMM is suspected of failing, you can check the web UI or use the FRU command line verification from the ACM.

The DD4400 system has 24 memory slots distributed across two memory channels. The following figure shows the physical layout of the memory slots. The bottom of the image represents the front of the cabinet.

Figure 24 DIMM slot configuration
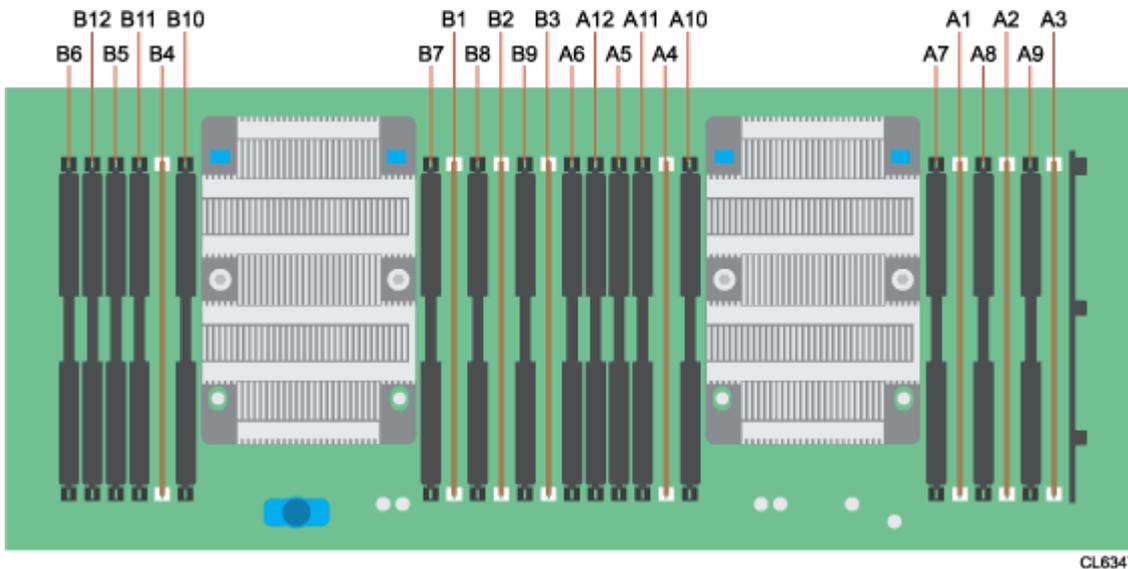
The following tables lists the memory channel mapping, and the DIMM configuration for each capacity point.

Table 7 DIMM memory channel mapping

Processor	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
1	A1 + A7	A2 + A8	A3 + A9	A4 + A10	A5 + A11	A6 + A12
2	B1 + B7	B2 + B8	B3 + B9	B4 + B10	B5 + B11	B6 + B12

Table 8 Storage configuration to memory slot mapping

Storage configuration	Memory slots used
4 TB	A1, A2
16 TB	A1, A2, A3, A4, A5, A6
32 TB	A1, A2 A3, A4, A5, A6, A7, A8

Procedure

1. Access the web UI and check for alerts in the Health screen. Click an alert for more details.

2. From the ACM, use SSH to connect to the ACM command line by typing the following command: `ssh [administrator name]-dp4400-[ACM url]`

   For example: `ssh admin@acme-dp4400-ACM.lab.acme.com`

Once connected, the screen displays a command line corresponding to the ACM.

3. At the command line, type the following:

    # showfru dimm

The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the DIMMs.

```
acme-dp4400-ACM:~ # showfru dimm
Collecting Data............
_____
| ID| Status| Manufacturer| Part#            | Serial# | Size     |
|=========================================================|
| A1| OK     | Samsung      | M393A4K40BB2-CTD| 364BB912| 32768 MB|
| A2| ERROR  | Samsung      | M393A4K40BB2-CTD| 364B9A1B| 32768 MB| *
| A3| OK     | Samsung      | M393A4K40BB2-CTD| 364BA009| 32768 MB|
| A4| OK     | Samsung      | M393A4K40BB2-CTD| 36324964| 32768 MB|
| B1| OK     | Samsung      | M393A4K40BB2-CTD| 36324B7D| 32768 MB|
| B2| OK     | Samsung      | M393A4K40BB2-CTD| 3632553D| 32768 MB|
| B3| OK     | Samsung      | M393A4K40BB2-CTD| 36325451| 32768 MB|
| B4| OK     | Samsung      | M393A4K40BB2-CTD| 36324988| 32768 MB|
```

In this example, DIMM A2 is identified as failed and should be replaced.

Disconnect the power cords and I/O cables

This procedure is used to disconnect the system from electrical power and disconnect the peripherals.

Note

Before performing the following steps, ensure that the system is prepared for removal. Use the management GUI to ensure that the system is not visible.

Procedure

1. Label each power cord and I/O cable so you can easily identify them when you need to plug them in to restore the system.

2. Unplug power cords from the power supplies and disconnect the I/O cables from the system.

Extend the system from the cabinet

This procedure is used to extend the system from the cabinet so that the system cover can be removed to access the internal FRU components, or used in removing the system from the cabinet.

Note

When replacing hot-swappable components, ensure the system cables are long enough to stay connected while the unit is extended.

Procedure

1. At the front of the cabinet, locate the two rocker switches on left and right side of the system. Press the top of the rocker switches inward to release the system from the cabinet.

    If the rocker switches do not disengage the system, loosen the screw under each rocker.

2. Pull the system from the cabinet until the rails lock in the extended position.

Figure 25 Release and extend system from cabinet
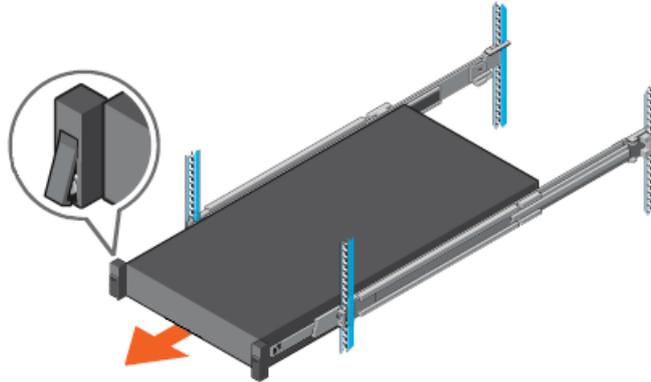
Remove the system cover

Before you begin

1. Follow all safety guidelines.

2. Turn off the system, including any attached peripherals.

3. Disconnect the system from the electrical outlet and disconnect the peripherals.

Procedure

1. Using a flat or a Phillips head screwdriver, rotate the latch release lock counter clockwise to the unlocked position.

2. Lift the latch till the system cover slides back and the tabs on the system cover disengage from the guide slots on the system.

3. Hold the cover on both sides, and lift the cover away from the system.

Figure 26 Remove the system cover

Remove mid hard drive tray

Follow the following procedure to remove the middle hard drive tray.

Before you begin

⚠️ **CAUTION**

The hard drive tray is hot to touch for some time after the system has been powered down. Allow time for the hard drive tray to cool before handling it.

Procedure

1. Disconnect all the cables from the hard drive backplane.
2. Lift the hard drive tray handles 90 degrees upward.
3. Hold the hard drive tray handles, and lift the hard drive tray out of the system.

Figure 27 Removing mid hard drive tray
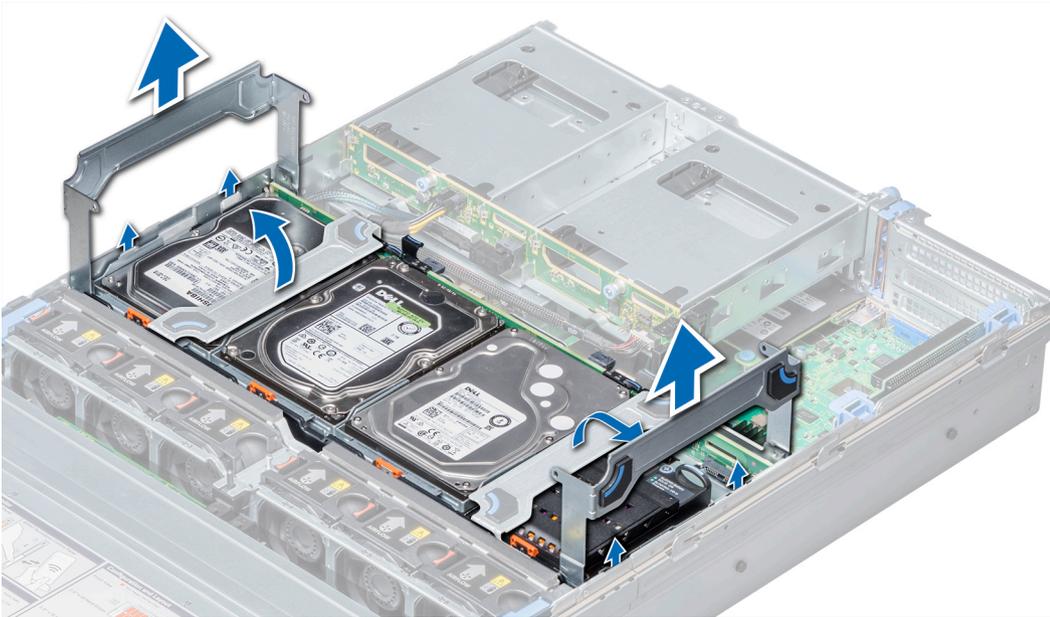
Remove the memory module

The procedure for removing a memory module and NVDIMM-N is identical.

Before you begin

⚠️ **WARNING**

Allow the memory modules to cool after you power off the system. Handle the memory modules by the card edges and avoid touching the components or metallic contacts on the memory module.

⚠️ **CAUTION**

To ensure proper system cooling, memory module blanks must be installed in any memory socket that is not occupied. Remove memory module blanks only if you intend to install memory modules in those sockets.

Note

You must follow the thermal restriction while using DIMM blanks.

Procedure

1. Locate the appropriate memory module socket.

   ⚠️ **CAUTION**

   Handle each memory module only by the card edges, ensuring not to touch the middle of the memory module or metallic contacts.

2. Push the ejectors outward on both ends of the memory module socket to release the memory module from the socket.

3. Lift and remove the memory module from the system.

Figure 28 Removing a memory module
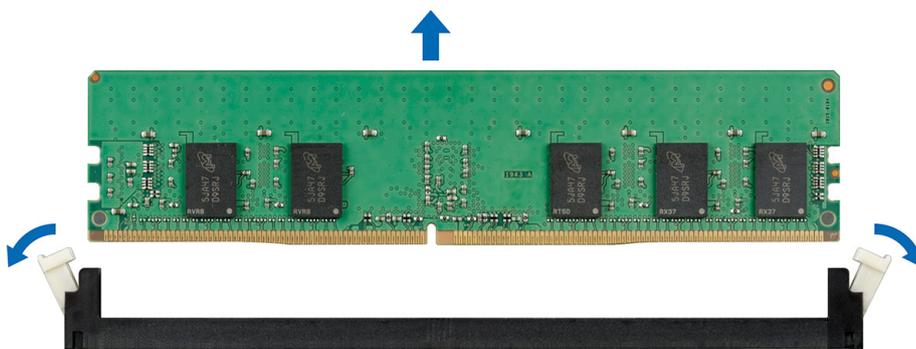
Install the memory module

The procedure for installing a memory module and NVDIMM-N is identical.

Before you begin

Follow all safety guidelines. Ensure that you where an ESD wrist strap when handling DIMMs and other internal components.

> ⚠ **CAUTION**
>
> **Ensure that you install the NVDIMM-N battery if you are using NVDIMM-N.**

> ⚠ **CAUTION**
>
> **To prevent data loss and potential damage to your system, ensure that your system, LEDs on system, LEDs on NVDIMM-N and LEDs on NVDIMM-N battery are turned off before installing the NVDIMM-N battery.**

> ⚠ **CAUTION**
>
> **To ensure proper system cooling, memory module blanks must be installed in any memory socket that is not occupied. Remove memory module blanks only if you intend to install memory modules in those sockets.**

Note

You must follow the thermal restriction while using DIMM blank. For information about thermal restriction, see the Thermal restrictions section.

Procedure

1. Locate the appropriate memory module socket.

   > ⚠ **CAUTION**
   >
   > **Handle each memory module only by the card edges, ensuring not to touch the middle of the memory module or metallic contacts.**

⚠ **CAUTION**

To prevent damage to the memory module or the memory module socket during installation, do not bend or flex the memory module. You must insert both ends of the memory module simultaneously.

2. Open the ejectors on the memory module socket outward to allow the memory module to be inserted into the socket.

3. Align the edge connector of the memory module with the alignment key of the memory module socket, and insert the memory module in the socket.

⚠ **CAUTION**

Do not apply pressure at the center of the memory module; apply pressure at both ends of the memory module evenly.

Note

The memory module socket has an alignment key that enables you to install the memory module in the socket in only one orientation.

4. Press the memory module with your thumbs until the socket levers firmly click into place.

Figure 29 Installing a memory module
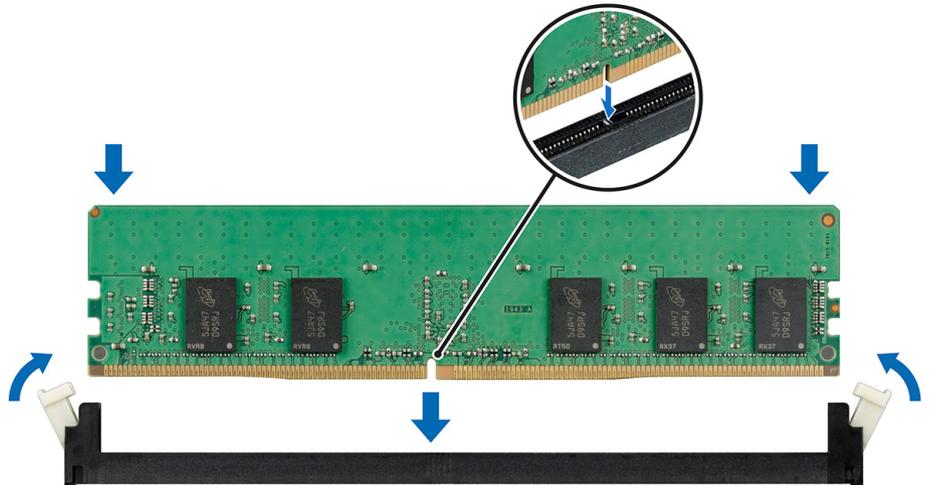
Install the mid hard drive tray

Perform the following steps to replace the mid hard drive tray.

Procedure

1. Lift the hard drive tray handles to 90 degrees upward.

2. Hold the hard drive tray handles, and align the slots on the hard drive tray with the guide pins on the system.

3. Lower the hard drive tray into the system.

4. Lower the hard drive tray handles to lock the hard drive tray in place.

5. Connect all the cables to the hard drive backplane.

Figure 30 Installing the mid hard drive tray
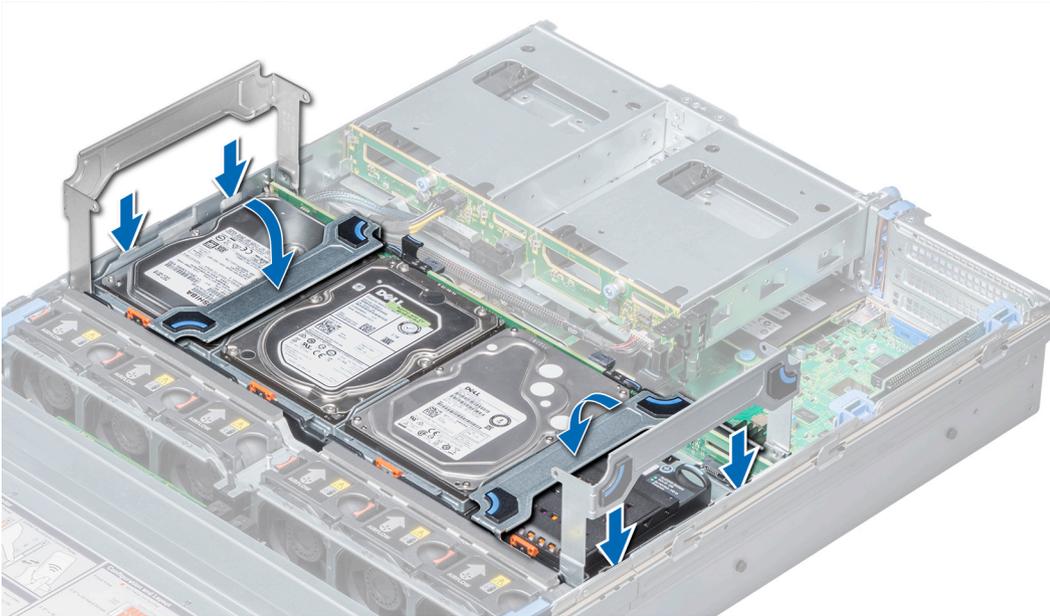
Install the system cover

Procedure

1. Align the tabs on the system cover with the guide slots on the system.

2. Push the system cover latch down.

   The system cover slides forward, the tabs on the system cover engage with the guide slots on the system and the system cover latch locks into place.

3. Using a flat or Phillips head screwdriver, rotate the latch release lock clockwise to the locked position.

Figure 31 Install the system cover

Slide the system into the cabinet

Procedure

1. At the front of the cabinet, push the system inward until the lock levers click into place.

2. Push the blue slide release lock tabs forward on both rails and slide the system into the cabinet. The slam latches will engage to secure the system in the cabinet.

Figure 32 Slide the system into the cabinet
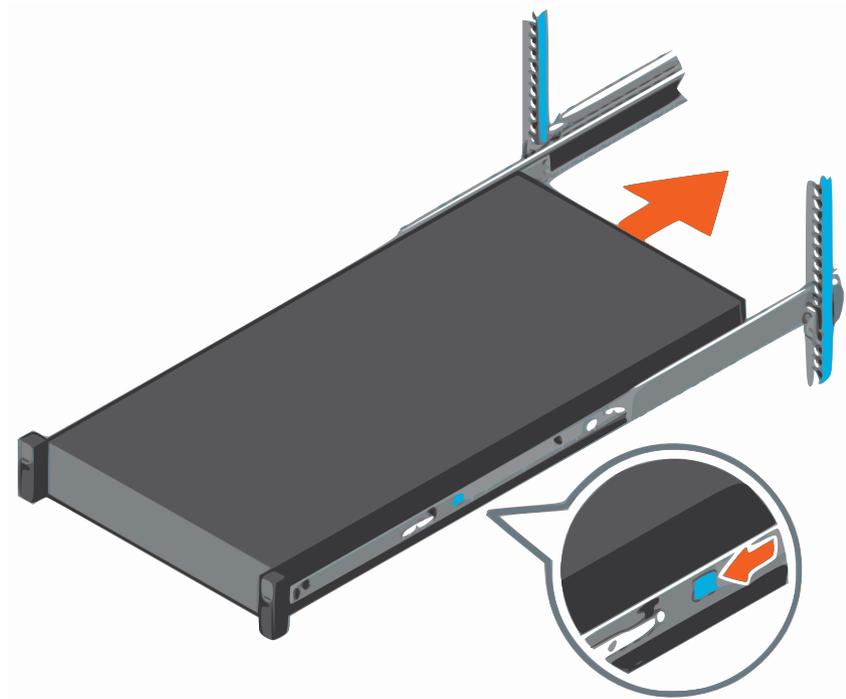
Connect the I/O cables and power cords

This procedure is used to connect the peripherals and power to the system.

Procedure

1. Using the connection information recorded on the labels, connect the I/O cables to the system.

2. Plug the power cords into the power supplies.

Verifying successful DIMM replacement from the ACM

After a DIMM is replaced and power has been re-applied, you can run the FRU command line verification from the ACM to ensure that the replacement was successful.

Procedure

1. From the ACM, type the following command: `# showfru dimm`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the DIMMs.

```
acme-dp4400-ACM:~ # showfru dimm
Collecting Data...........

_____
| ID| Status| Manufacturer| Part#           | Serial# | Size    |
|===========================================================|
| A1| OK     | Samsung      | M393A4K40BB2-CTD| 364BB912| 32768 MB|
| A2| OK     | Samsung      | M393A4K40BB2-CTD| 364B9A1B| 32768 MB| *
| A3| OK     | Samsung      | M393A4K40BB2-CTD| 364BA009| 32768 MB|
| A4| OK     | Samsung      | M393A4K40BB2-CTD| 36324964| 32768 MB|
| B1| OK     | Samsung      | M393A4K40BB2-CTD| 36324B7D| 32768 MB|
| B2| OK     | Samsung      | M393A4K40BB2-CTD| 3632553D| 32768 MB|
| B3| OK     | Samsung      | M393A4K40BB2-CTD| 36325451| 32768 MB|
| B4| OK     | Samsung      | M393A4K40BB2-CTD| 36324988| 32768 MB|
```

2. Verify that the status for all DIMMs is "OK".

M2 memory remove and replace

Identifying a failed M.2 from the ACM

If an M.2 is suspected of failing, you can check the web UI or use the FRU command line verification from the ACM.

Procedure

1. Access the web UI and check for alerts in the Health screen. Click an alert for more details.

2. From the ACM, use SSH to connect to the ACM command line by typing the following command: `ssh [administrator name]-dp4400-[ACM url]`

   For example: `ssh admin@acme-dp4400-ACM.lab.acme.com`
   Once connected, the screen displays a command line corresponding to the ACM.

3. At the command line, type the following command `# showfru boss`:

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the BOSS card and both M.2 cards.

```
Collecting Data............
_____
| ID     | State| Status| FW Version |
|===============================|
| BOSS-S1| 0     | OK     | 2.5.13.2008|

_____
| ID | State | Status| Model#         | Serial#           | FW Version| Capacity|
Operation| OpStatus|
|
=========================================================================================
=========|
| 0-0| Online| OK     | SSDSCKJB120G7R| PHDW739100YV150A| N201DL43  | 111.79GB| None
| 0%     |
| 1-1|Offline| Error  | SSDSCKJB120G7R| PHDW739101RK150A| N201DL43  | 111.79GB| None
| 0%      | *
```

In this example, M.2 1-1 is identified as failed and should be replaced.

Disconnect the power cords and I/O cables

This procedure is used to disconnect the system from electrical power and disconnect the peripherals.

Note

Before performing the following steps, ensure that the system is prepared for removal. Use the management GUI to ensure that the system is not visible.

Procedure

1. Label each power cord and I/O cable so you can easily identify them when you need to plug them in to restore the system.

2. Unplug power cords from the power supplies and disconnect the I/O cables from the system.

Extend the system from the cabinet

This procedure is used to extend the system from the cabinet so that the system cover can be removed to access the internal FRU components, or used in removing the system from the cabinet.

Note

When replacing hot-swappable components, ensure the system cables are long enough to stay connected while the unit is extended.

Procedure

1. At the front of the cabinet, locate the two rocker switches on left and right side of the system. Press the top of the rocker switches inward to release the system from the cabinet.

   If the rocker switches do not disengage the system, loosen the screw under each rocker.

2. Pull the system from the cabinet until the rails lock in the extended position.

   Figure 33 Release and extend system from cabinet
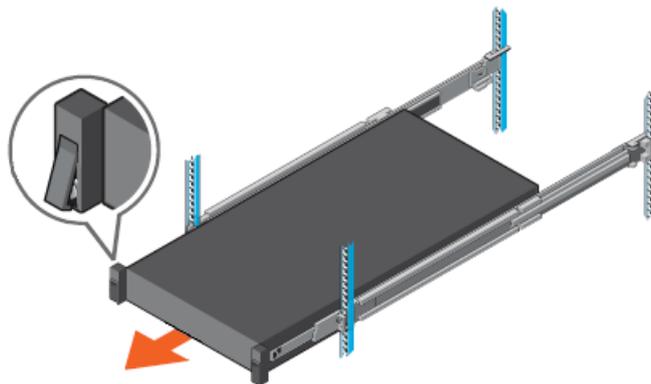
Remove the system cover

Before you begin

1. Follow all safety guidelines.

2. Turn off the system, including any attached peripherals.

3. Disconnect the system from the electrical outlet and disconnect the peripherals.

Procedure

1. Using a flat or a Phillips head screwdriver, rotate the latch release lock counter clockwise to the unlocked position.

2. Lift the latch till the system cover slides back and the tabs on the system cover disengage from the guide slots on the system.

3. Hold the cover on both sides, and lift the cover away from the system.

Figure 34 Remove the system cover

Replace an M.2 module

The M.2 modules are installed on the BOSS card, which is installed on expansion card riser 1. The BOSS card is removed from the expansion card riser so that the M.2 modules can be accessed.

Remove BOSS card from expansion card riser 1

Procedure

1. Pull the expansion card latch out of the slot.
2. Hold the BOSS card by its edges, and pull the card until the card edge connector disengages from the expansion card connector on the riser.

Figure 35 Removing the BOSS card from expansion card riser 1
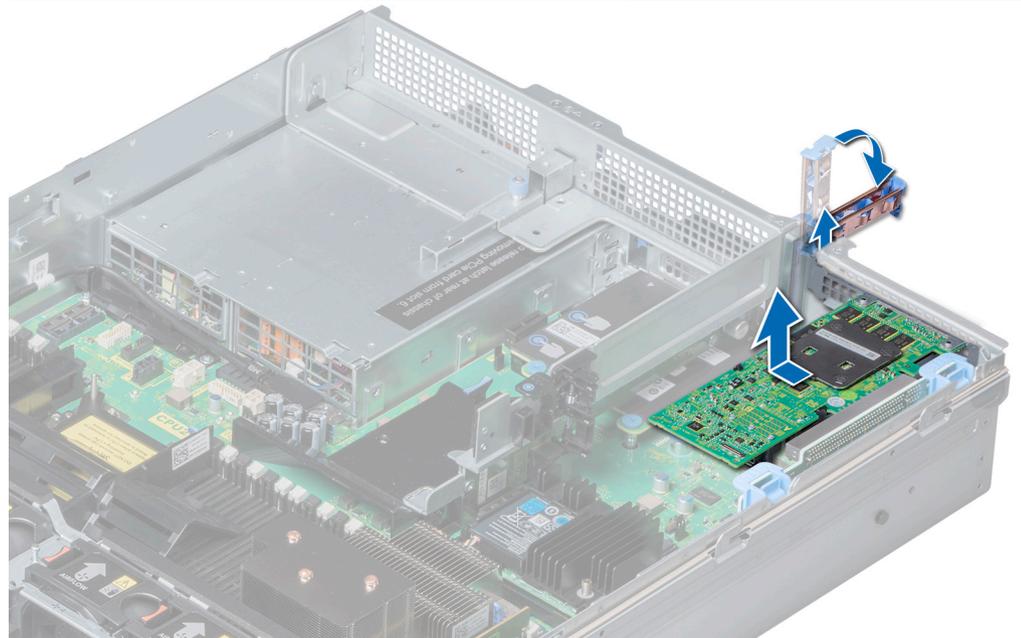
Remove M.2 module from the BOSS Card

Procedure

1. Identify the M.2 module to be replaced.

   The bottom M.2 module is in Slot 0, and the top M.2 module is in Slot 1.

2. Unscrew the screw that secures the M.2 module on the BOSS card.

3. Lift the M.2 module away from the BOSS card.

   Figure 36 Removing the M.2 module
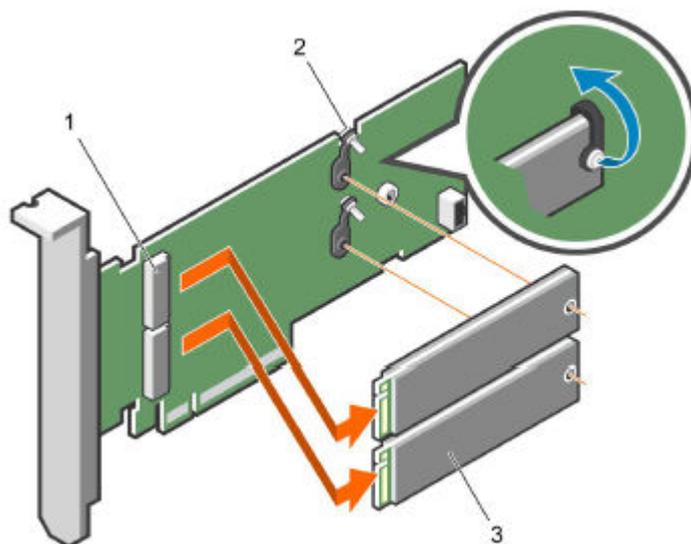
   1. module connector (2)
   2. screws (2)

3. modules (2)

Install M.2 module on the BOSS Card

Procedure

1. Align the M.2 module connectors with the connectors on the BOSS card.

2. Tilt the M.2 module downwards until the module is seated firmly on the card.

3. Tighten the screw that secures the M.2 module on the BOSS card.

Figure 37 Installing the M.2 module
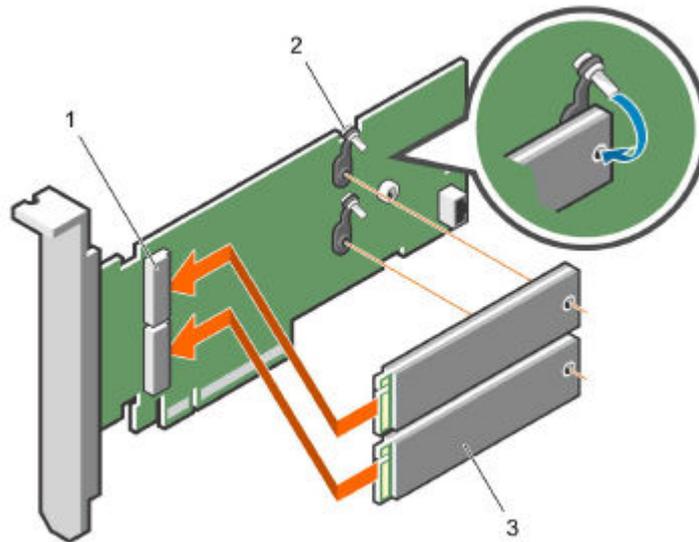
1. module connector (2)
2. screws (2)
3. modules (2)

Install BOSS card onto expansion card riser 1

Procedure

1. Pull the expansion card latch out of the slot.

2. Hold the BOSS card by its edges, and align the card edge connector with the expansion card connector on the riser.

3. Insert the BOSS card edge connector firmly into the expansion card connector until the card is fully seated.

4. Push the expansion card latch into the slot.

Figure 38 Installing the BOSS card in expansion card riser 1
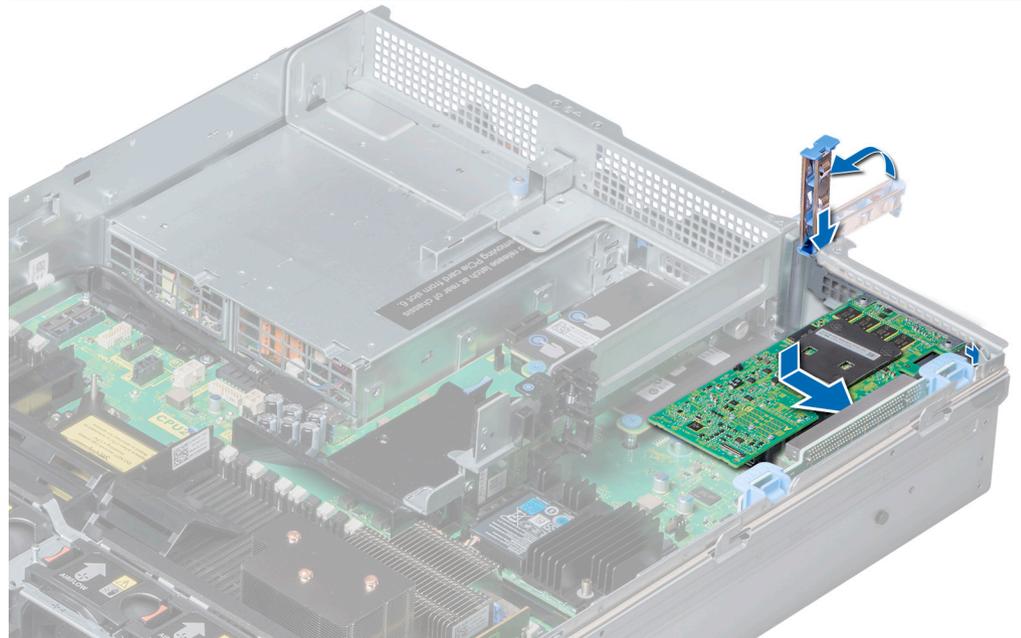
Install the system cover

Procedure

1. Align the tabs on the system cover with the guide slots on the system.

2. Push the system cover latch down.

   The system cover slides forward, the tabs on the system cover engage with the guide slots on the system and the system cover latch locks into place.

3. Using a flat or Phillips head screwdriver, rotate the latch release lock clockwise to the locked position.

Figure 39 Install the system cover

## Slide the system into the cabinet

Procedure

1. At the front of the cabinet, push the system inward until the lock levers click into place.

2. Push the blue slide release lock tabs forward on both rails and slide the system into the cabinet. The slam latches will engage to secure the system in the cabinet.

Figure 40 Slide the system into the cabinet
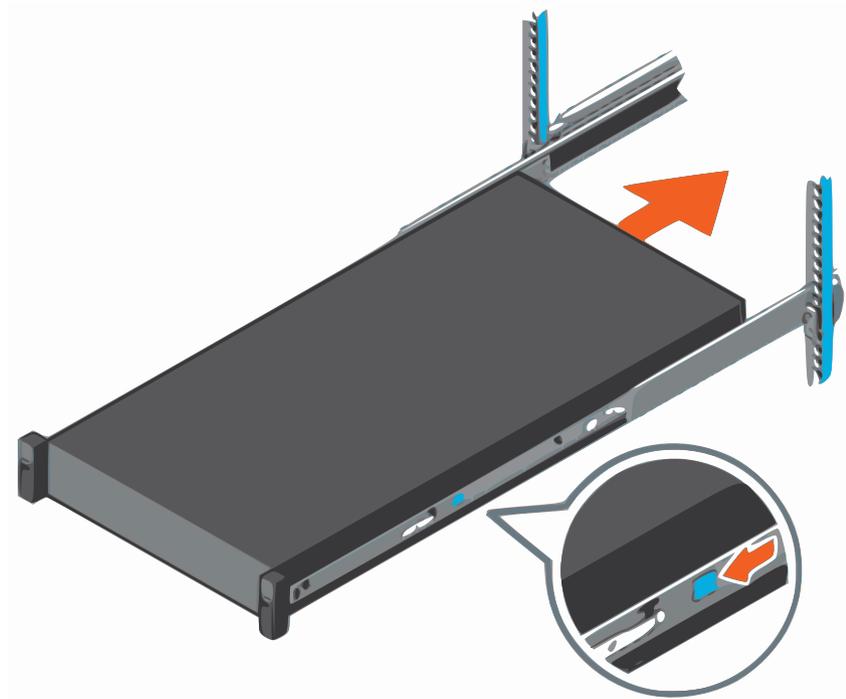
Connect the I/O cables and power cords

This procedure is used to connect the peripherals and power to the system.

Procedure

1. Using the connection information recorded on the labels, connect the I/O cables to the system.

2. Plug the power cords into the power supplies.

Verifying successful M.2 card replacement from the ACM

After an M.2 card is replaced and power has been re-applied, you can run the FRU command line verification from the ACM to ensure that the replacement was successful.

Procedure

1. From the ACM, type the following command # showfru boss:

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the BOSS card and both M.2 cards.

```
acme-dp4400-ACM:~ # showfru boss
Collecting Data............

_____
| ID     | State| Status| FW Version |
|================================|
| BOSS-S1| 0     | OK     | 2.5.13.2008|


_____
_____
| ID | State | Status| Model#        | Serial#            | FW Version| Capacity|
Operation| OpStatus|
|
================================================================================
```

```
========|
| 0-0| Online| OK    | SSDSCKJB120G7R| PHDW739100YV150A| N201DL43  | 111.79GB| None
| 0%       |
| 1-1| Online| OK    | SSDSCKJB120G7R| PHDW739101RK150A| N201DL43  | 111.79GB| None
| 0%       | *
```

2. Verify that the status for the BOSS card is "OK". Verify that the state for both M.2 cards is "Online" and the statuses are "OK".

Remove and replace NIC cards

Network daughter card

The network daughter card (NDC) is a small, removable mezzanine card, which provides the flexibility of selecting different network connectivity options. The network interface controller (NIC) ports that are integrated on the NDC provide network connectivity.

Network Interface Controller (NIC) ports

The DP4400 supports up to four SFP+ ports that support up to 10 Gbps that are integrated on the network daughter card (NDC) .

Identifying a failed NIC from the ACM

If the NIC is suspected of failing, you can check the web UI or use the FRU command line verification from the ACM.

Procedure

1. Access the web UI and check for alerts in the Health screen. Click an alert for more details.

2. From the ACM, use SSH to connect to the ACM command line by typing: `ssh [administrator name]-dp4400-[ACM url]`

   For example: `ssh admin@acme-dp4400-ACM.lab.acme.com`
   Once connected, the screen displays a command line corresponding to the ACM.

3. At the command line, type the following command: `# showfru network`

   The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for the ports on the NIC.

```
acme-dp4400-ACM:~ # showfru network
Collecting Data............

_____
| Name             | Port| Link Status| Model Name                            |
|==============================================================================|
| NIC Integrated 1| 1   | Up          | Ethernet 10G 4P X710 SFP+ rNDC        |
| NIC Integrated 1| 2   | Error       | Ethernet 10G X710 rNDC                |
| NIC Integrated 1| 3   | Down        | Ethernet 10G X710 rNDC                |
| NIC Integrated 1| 4   | Down        | Ethernet 10G X710 rNDC                |
| NIC Slot 1       | 1   | Down        | Ethernet Converged Network Adapter X710|
| NIC Slot 1       | 2   | Down        | Ethernet Converged Network Adapter X710|
| NIC Slot 1       | 3   | Down        | Ethernet Converged Network Adapter X710|
| NIC Slot 1       | 4   | Down        | Ethernet Converged Network Adapter X710|
| NIC Slot 2       | 1   | Up          | Gigabit 2P I350-t Adapter             |
```

In this example, port 2 of Integrated NIC 1 is faulted, indicating it needs to be replaced.

Disconnect the power cords and I/O cables

This procedure is used to disconnect the system from electrical power and disconnect the peripherals.

Note

Before performing the following steps, ensure that the system is prepared for removal. Use the management GUI to ensure that the system is not visible.

Procedure

1. Label each power cord and I/O cable so you can easily identify them when you need to plug them in to restore the system.

2. Unplug power cords from the power supplies and disconnect the I/O cables from the system.

Extend the system from the cabinet

This procedure is used to extend the system from the cabinet so that the system cover can be removed to access the internal FRU components, or used in removing the system from the cabinet.

Note

When replacing hot-swappable components, ensure the system cables are long enough to stay connected while the unit is extended.

Procedure

1. At the front of the cabinet, locate the two rocker switches on left and right side of the system. Press the top of the rocker switches inward to release the system from the cabinet.

   If the rocker switches do not disengage the system, loosen the screw under each rocker.

2. Pull the system from the cabinet until the rails lock in the extended position.

   Figure 41 Release and extend system from cabinet
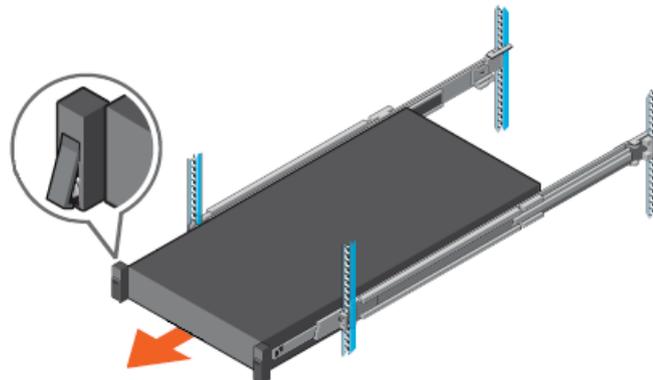
Remove the system cover

Before you begin

1. Follow all safety guidelines.
2. Turn off the system, including any attached peripherals.
3. Disconnect the system from the electrical outlet and disconnect the peripherals.

Procedure

1. Using a flat or a Phillips head screwdriver, rotate the latch release lock counter clockwise to the unlocked position.
2. Lift the latch till the system cover slides back and the tabs on the system cover disengage from the guide slots on the system.
3. Hold the cover on both sides, and lift the cover away from the system.

   Figure 42 Remove the system cover

NIC indicator codes

Each NIC on the back panel has indicators that provide information about the activity and link status. The activity LED indicator indicates if data is flowing through the NIC, and the link LED indicator indicates the speed of the connected network.

Figure 43 NIC indicator codes
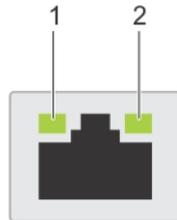
1. link LED indicator

2. activity LED indicator

Table 9 NIC indicator codes

Status	Condition
Link and activity indicators are off	The NIC is not connected to the network.
Link indicator is green and activity indicator is blinking green	The NIC is connected to a valid network at its maximum port speed and data is being sent or received.
Link indicator is amber and activity indicator is blinking green	The NIC is connected to a valid network at less than its maximum port speed and data is being sent or received.
Link indicator is green and activity indicator is off	The NIC is connected to a valid network at its maximum port speed and data is not being sent or received.
Link indicator is amber and activity indicator is off	The NIC is connected to a valid network at less than its maximum port speed and data is not being sent or received.
Link indicator is blinking green and activity is off	NIC identify is enabled through the NIC configuration utility.

Remove the rear hard drive cage

The rear hard drive cage is removed to access the network daughter card.

Procedure

1. Disconnect all the cables from the rear hard drive backplane.

2. Using Phillips #2 screwdriver, loosen the screws that secure the hard drive cage to the system.

3. Hold the hard drive cage by its sides, and lift it away from the system.

Figure 44 Removing the 3.5 inch hard drive rear cage
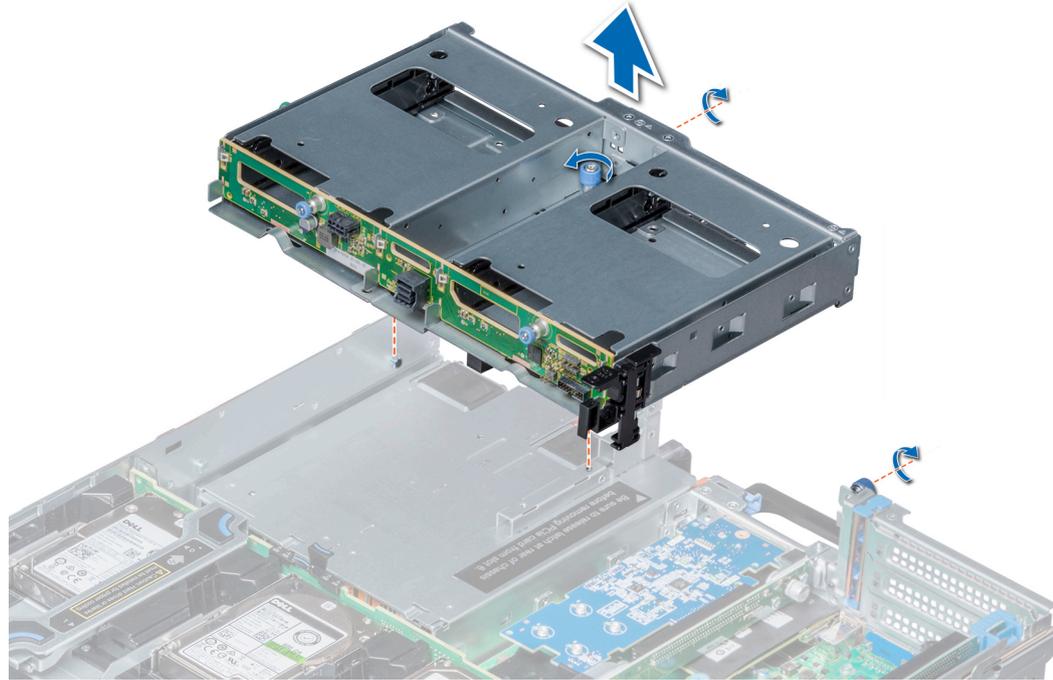
Remove the network daughter card

Procedure

1. Using a Phillips #2 screwdriver, loosen the captive screws that secure the network daughter card (NDC) to the system board.

2. Hold the NDC by the edges on either side of the touch points, and lift to remove it from the connector on the system board.

3. Slide the NDC towards the front of the system until the Ethernet connectors are clear of the slot in the back panel.

Figure 45 Removing the network daughter card
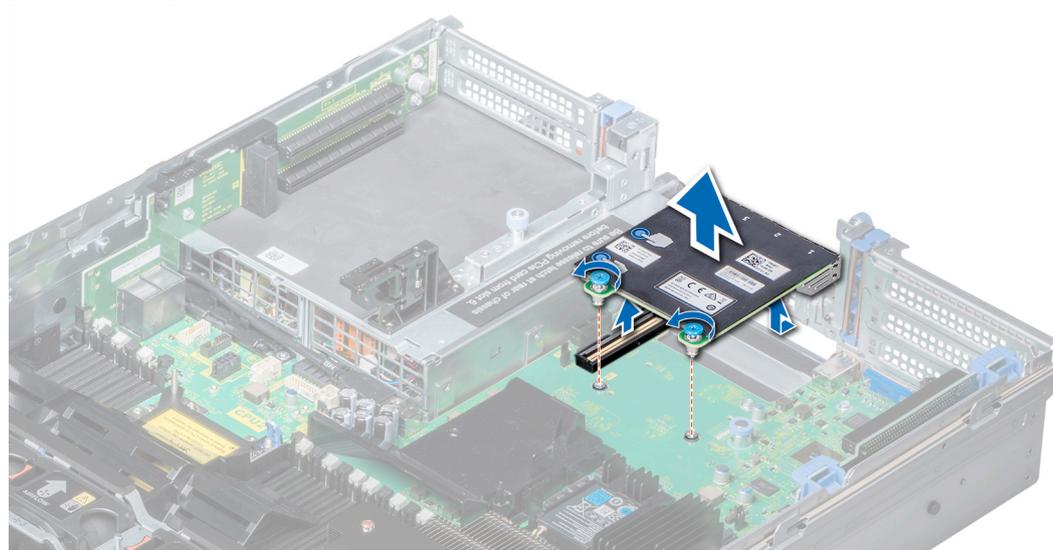
Install the network daughter card

Procedure

1. Orient the NDC so that the Ethernet connectors fit through the slot in the chassis.
2. Align the captive screws at the back-end of the card with the screw holes on the system board.
3. Press the touch points on the card until the card connector is firmly seated on the system board connector.
4. Using a Phillips #2 screwdriver, tighten the captive screws to secure the NDC to the system board.

**Figure 46** Installing the network daughter card
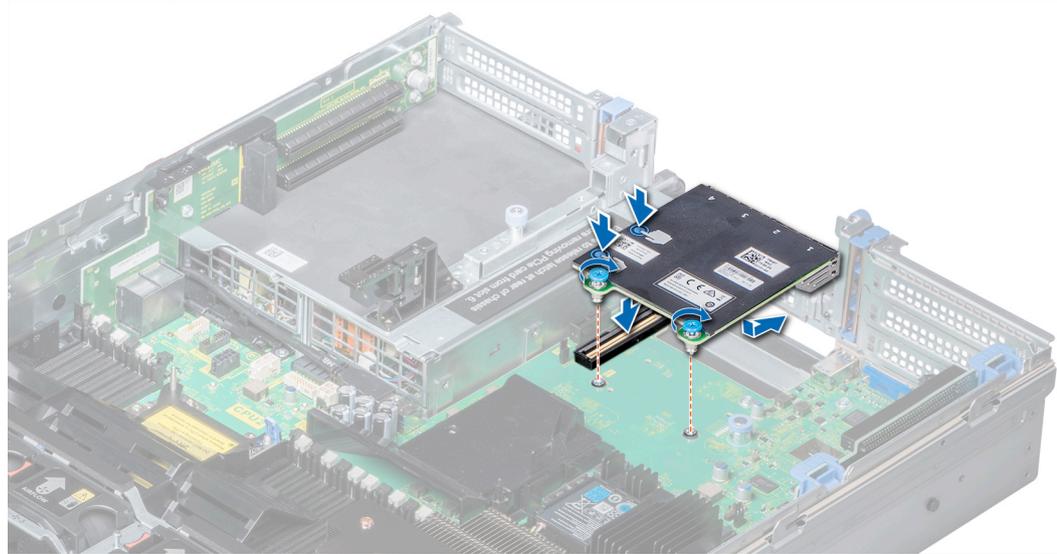
Install the rear hard drive cage

Procedure

1. Align the screws on the hard drive cage with the screw holes on the system.
2. Lower the hard drive cage into the system until it is firmly seated.
3. Using Phillips #2 screwdriver, tighten the screws to secure the hard drive cage to the system.
4. Connect all the cables to the rear hard drive backplane.

Figure 47 Installing the 3.5 inch rear hard drive cage
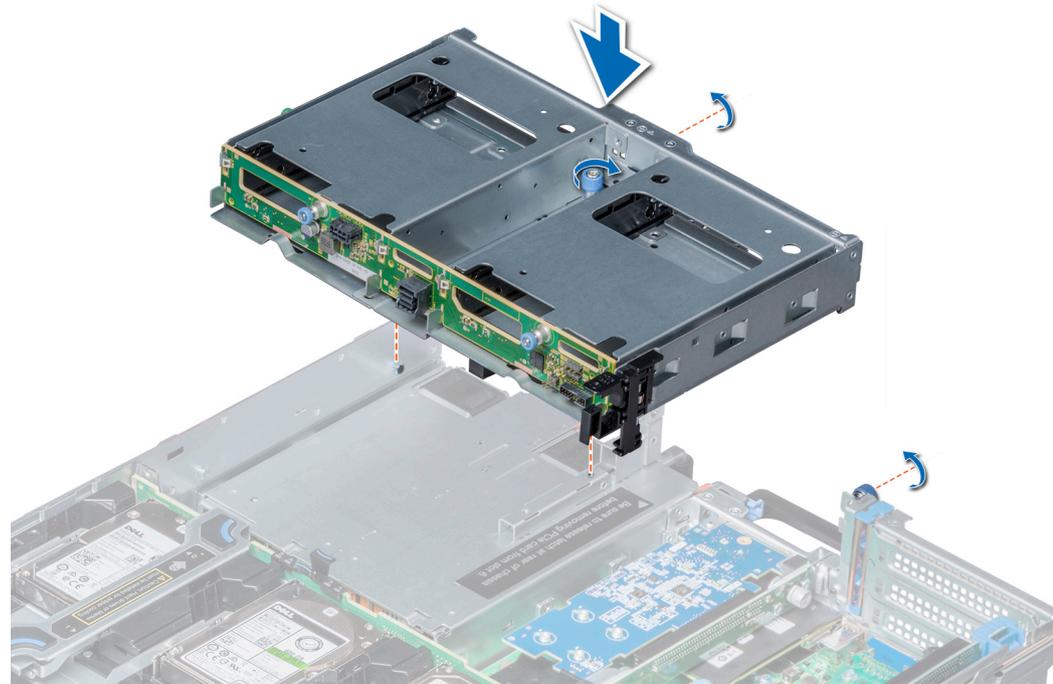
Install the network interface card into expansion card riser 1

Before you begin

Follow all safety guidelines.
Procedure

1. Unpack the network interface card and prepare it for installation.

   Note

   For instructions, see the documentation accompanying the card.

2. Pull the expansion card latch.
3. If installed, remove the filler bracket.

   Note

   Store the filler bracket for future use. Filler brackets must be installed in empty expansion card slots to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

4. Hold the network interface card by its edges, and align the card edge connector with the expansion card connector on the riser.
5. Insert the card edge connector firmly into the expansion card connector until the card is fully seated.
6. Push the expansion card latch into the slot.

Figure 48 Installing the BOSS card in expansion card riser 1
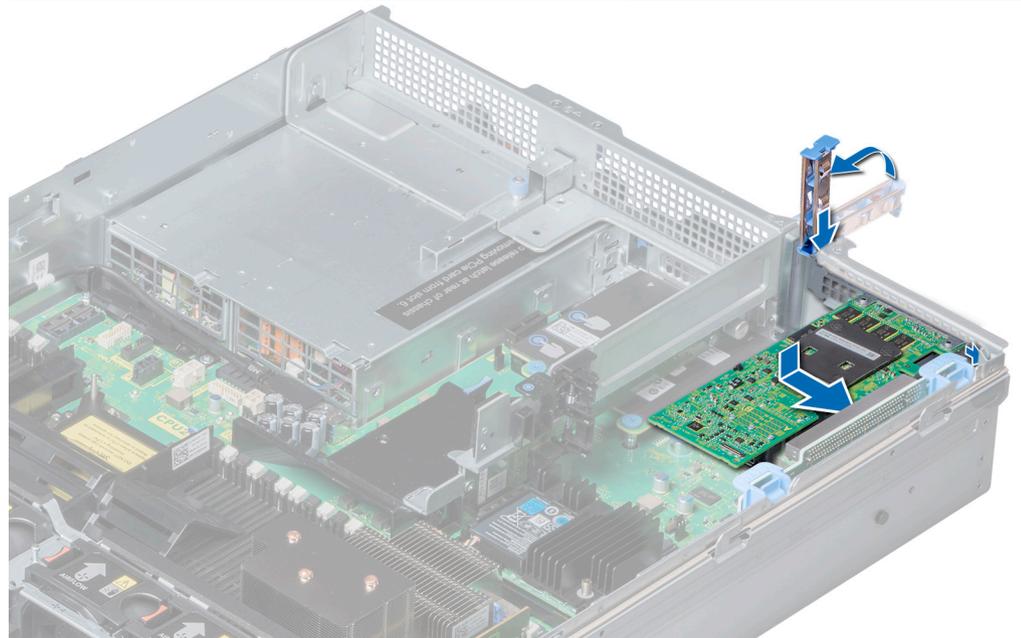
Install the system cover

Procedure

1. Align the tabs on the system cover with the guide slots on the system.

2. Push the system cover latch down.

    The system cover slides forward, the tabs on the system cover engage with the guide slots on the system and the system cover latch locks into place.

3. Using a flat or Phillips head screwdriver, rotate the latch release lock clockwise to the locked position.

Figure 49 Install the system cover

Slide the system into the cabinet

Procedure

1. At the front of the cabinet, push the system inward until the lock levers click into place.

2. Push the blue slide release lock tabs forward on both rails and slide the system into the cabinet. The slam latches will engage to secure the system in the cabinet.

Figure 50 Slide the system into the cabinet
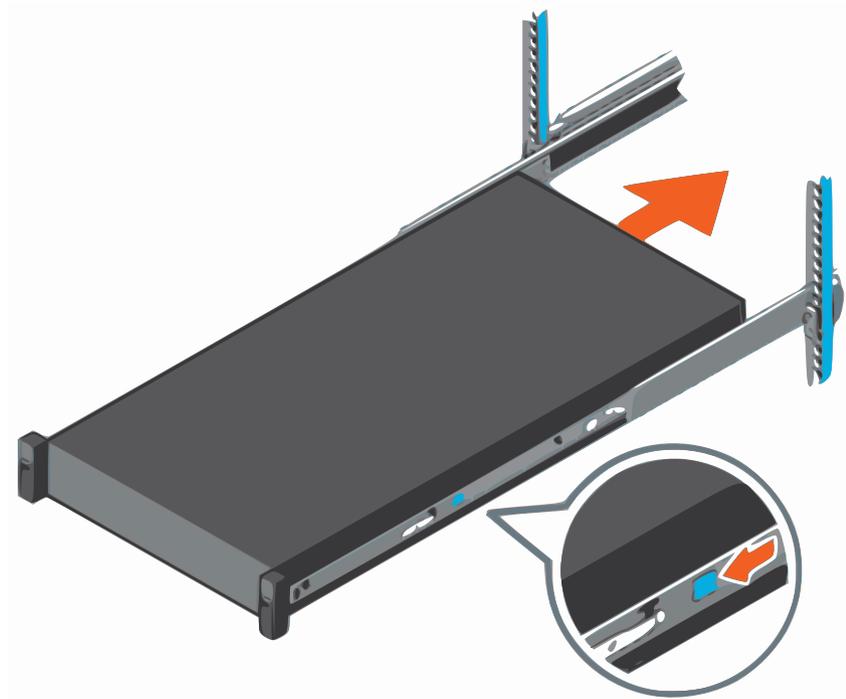
Connect the I/O cables and power cords

This procedure is used to connect the peripherals and power to the system.

Procedure

1. Using the connection information recorded on the labels, connect the I/O cables to the system.

2. Plug the power cords into the power supplies.

Verifying successful NIC replacement from the ACM

After the NIC is replaced and power has been re-applied, you can run the FRU command line verification from the ACM to ensure that the replacement was successful.

Procedure

1. From the ACM, type the following command: # showfru network

The screen displays that the system is collecting data. When the data collection is completed, the screen displays status information for ports the NIC.

```
acme-dp4400-ACM:~ # showfru network
Collecting Data............

_____
| Name             | Port| Link Status| Model Name                        |
|==========================================================================|
| NIC Integrated 1| 1    | Up         | Ethernet 10G 4P X710 SFP+ rNDC    |
| NIC Integrated 1| 2    | Up         | Ethernet 10G X710 rNDC            |
| NIC Integrated 1| 3    | Down       | Ethernet 10G X710 rNDC            |
| NIC Integrated 1| 4    | Down       | Ethernet 10G X710 rNDC            |
| NIC Slot 1      | 1    | Down       | Ethernet Converged Network Adapter X710|
| NIC Slot 1      | 2    | Down       | Ethernet Converged Network Adapter X710|
| NIC Slot 1      | 3    | Down       | Ethernet Converged Network Adapter X710|
| NIC Slot 1      | 4    | Down       | Ethernet Converged Network Adapter X710|
```

```
| NIC Slot 2       | 1   | Up     | Gigabit 2P I350-t Adapter      |
| NIC Slot 2       | 2   | Down   | Gigabit 2P I350-t Adapter      |
```

2. Verify that the status information for the NIC matches the information shown in the example output.

Start up the IDPA

You can start the IDPA from Dell server or through iDRAC.

Start up the IDPA from Dell server

Switch on the power button present on the Dell server.

Note

No other action is required to start the IDPA model DP4400.

Start up the IDPA from iDRAC

Procedure

1. Turn on the iDRAC and log in to iDRAC from its UI using `root` user and iDRAC password.

2. Click the **Power On System** button.

   Note

   The ESX UI will be accessible within a maximum time of 15 minutes.

3. Login to ESXi UI.

   The ESX exits from maintenance mode and the DataProtection-ACM VM starts all the VMs present in IDPA in the following order, by default:

   a. DataProtection-VSCA

   b. DataProtection-ACM

   c. DDVE

   d. AVE

   e. DPC

   f. DPADatastoreServer

   g. DPAApplicationServer

   h. DPSIndexMaster

   i. CDRA

   j. AVProxy

   Note

   You can also observe the activity from the **Recent tasks** section at the bottom of ESX UI page.

4. Connect to the ACM by accessing the *https://<ACM_IP>:8543* URL from the browser.

Document references for the IDPA

The IDPA documentation set includes the following publications:

- *Integrated Data Protection Appliance DP4400 Installation Guide*
  Instruction for installing the IDPA DP4400 hardware.

- *Integrated Data Protection Appliance DP4400 Getting Started Guide*
  Explains how to perform initial IDPA configuration tasks and how to get started with basic functionality like backup and restore.

- *Integrated Data Protection Appliance Product Guide*
  Provides the overview and administration information about the IDPA system.

- *Integrated Data Protection Appliance Release Notes*
  Product information about the current IDPA release.

- *Integrated Data Protection Appliance DP4400 Service Procedure Guide*
  Procedures for replacing or upgrading hardware components of the IDPA.

- *Integrated Data Protection Appliance Security Configuration Guide*
  Information about the security features that are used to control user and network access, monitor system access and use, and support the transmission of storage data.

- *Integrated Data Protection Appliance Software Compatibility Guide*
  Information about software components and versions used in the IDPA product.

Document references for the IDPA

Service video resources

You can obtain additional service video training and information at https:// education.emc.com. Videos include:

- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance Power Supply Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance Power Front Drive Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance Power Mid-Drive Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance Power Rear Drive Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance Cooling Fan Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance DIMM Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance BOSS Card M2 Storage Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance NIC Card Slot 1 Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance NIC Card Slot 2 Replacement
- Integrated Data Protection Appliance (IDPA) DP4400 CRU Maintenance NIC Daughter Card Replacement

Service video resources