

# Dell EMC PowerEdge MX840c

## Installation and Service Manual

## Notes, cautions, and warnings

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

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

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



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## About this document


This document provides an overview about the PowerEdge MX840c sled, information on installing and replacing components, technical specifications, diagnostic tools, and guidelines to be followed while installing certain components.

The PowerEdge MX840c is compatible with the PowerEdge MX7000 enclosure. For more information on the enclosure, refer to the *Installation and Service Manual* for the PowerEdge MX7000 at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals).

# Dell EMC PowerEdge MX840c overview

The PowerEdge MX840c is a double-width compute sled and supports:

- Up to four Intel Xeon Scalable Processors
- Up to 48 DIMM slots
- Up to eight 2.5 inch SAS, SATA (HDD/SSD), or NVMe drives

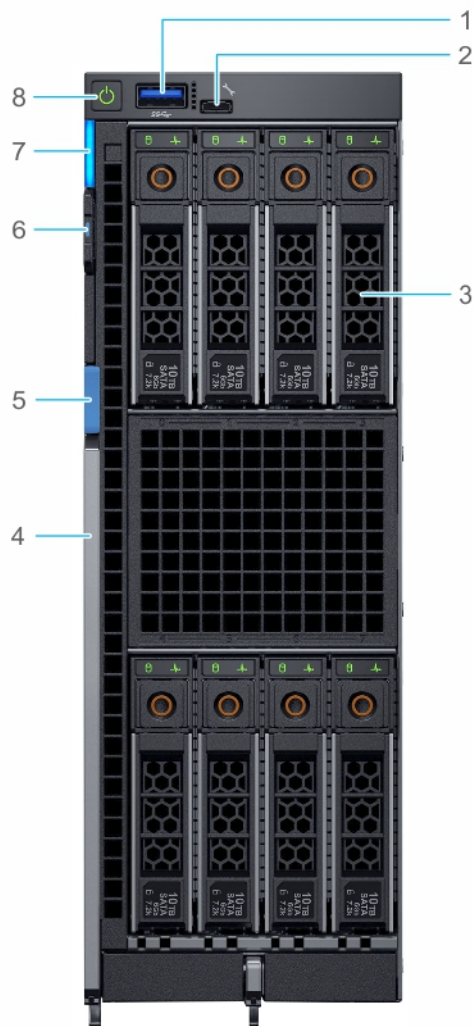
 **NOTE:** All instances of SAS, SATA, NVMe hard drives, and SSDs are referred to as drives in this document, unless specified otherwise.

## Topics:

- [Front view of the sled](#)
- [Inside the sled](#)
- [Locating the Service Tag of the sled](#)
- [System information label](#)

# Front view of the sled

The front view displays the features available on the front of the sled.



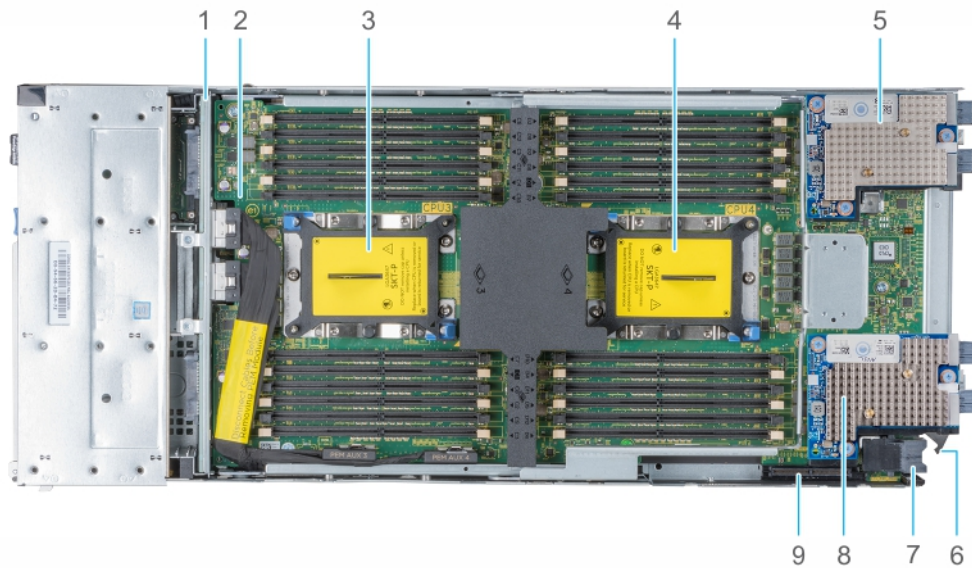
**Figure 1. Front view of the sled**

- |   |                                     |
|---|-------------------------------------|
| 1. USB 3.0 port                                       | 2. iDRAC Direct (Micro-AB USB) port |
| 3. Drives   | 4. Release lever                    |
| 5. Lever button                                       | 6. <a href="#">Information tag</a>  |
| 7. <a href="#">System ID and status LED indicator</a> | 8. <a href="#">Power button</a>     |

For more information on the drives and ports, see the *Dell EMC PowerEdge MX840c Technical Specifications* on the product documentation page.

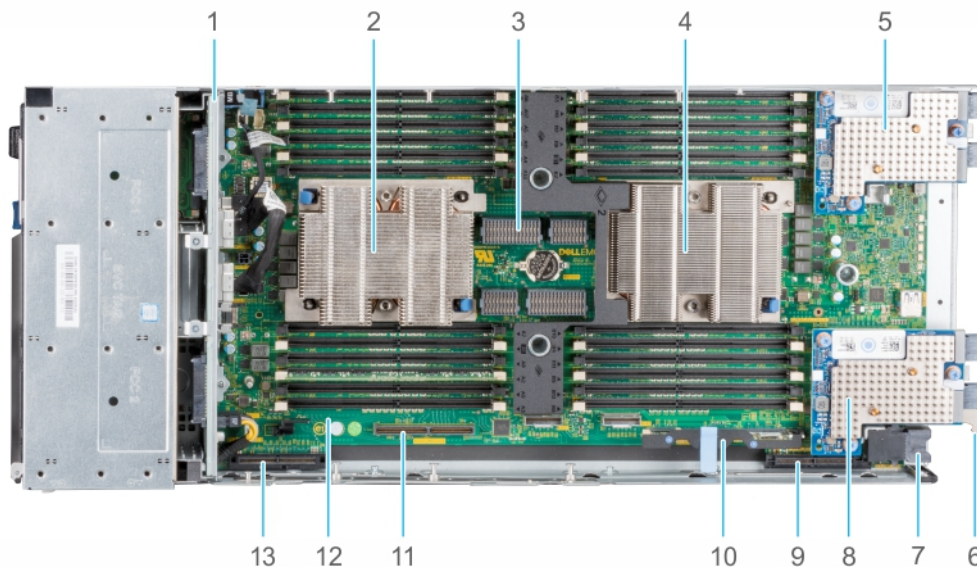
## Inside the sled

**NOTE:** Components that are hot swappable have orange touch points and the components that are not hot swappable have blue touch points.



**Figure 2. Inside the sled with PEM**

- |   |   |
|---|---|
| 1. Backplane                                      | 2. Processor expansion module (PEM) board |
| 3. Processor 3 socket                             | 4. Processor 4 socket                     |
| 5. Mezzanine card (Fabric A2 card)                | 6. Rotational guiding hook                |
| 7. Power connector                                | 8. Mezzanine card (Fabric B2 card)        |
| 9. Mini Mezzanine card (Fabric C2 card) connector |   |



**Figure 3. Inside the sled with system board**

- |   |                                    |
|---|------------------------------------|
| 1. Backplane                                      | 2. Processor 1 socket              |
| 3. PEM connector                                  | 4. Processor 2 socket              |
| 5. Mezzanine card (Fabric A1 card)                | 6. Rotational guiding hook         |
| 7. Power connector                                | 8. Mezzanine card (Fabric B1 card) |
| 9. Mini Mezzanine card (Fabric C1 card) connector | 10. iDRAC card                     |
| 11. IDSDM/BOSS module connector                   | 12. System board                   |
| 13. PERC card connector                           |                                    |

# Locating the Service Tag of the sled

The PowerEdge MX840c sled is identified by a unique Express Service Code and Service Tag number. The Express Service Code and Service Tag are found on the front of the enclosure by pulling out the Information Tag. Dell uses this information to route support calls to the appropriate personnel.

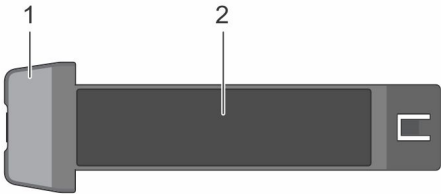


Figure 4. Information Tag of the sled

- 1. Information Tag
- 2. Service Tag

## System information label

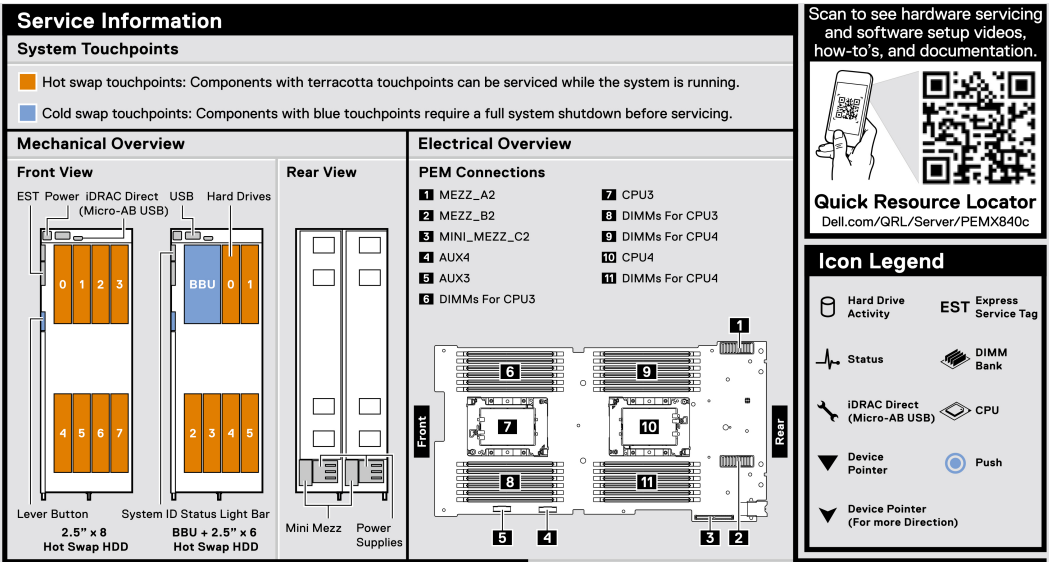
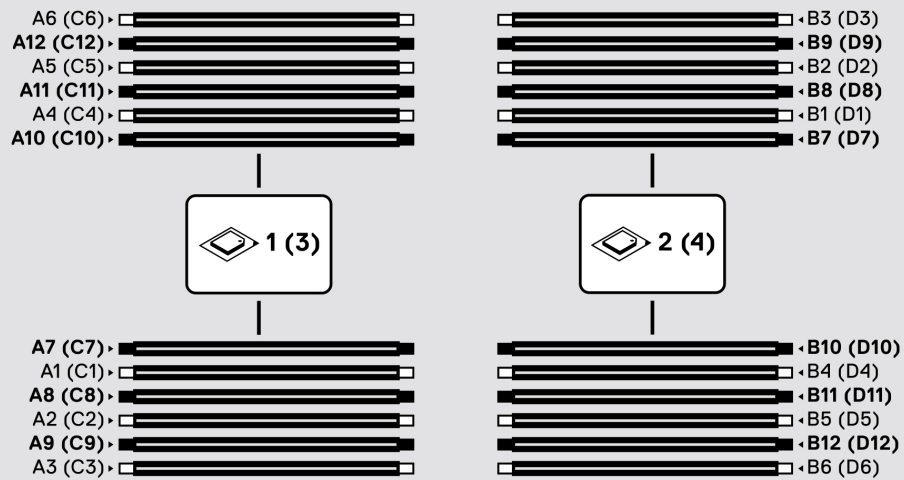


Figure 5. PowerEdge MX840c service information



## Memory Information

**Caution:** Memory (DIMMs) and CPUs may be hot during servicing.



### Memory Population

Configuration	Sequence
Optimized	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Mirroring	(1, 2, 3, 4, 5, 6), (7, 8, 9, 10, 11, 12)

Memory Sparing details are documented in the *Installation and Service Manual*.

Figure 6. PowerEdge MX840c memory information

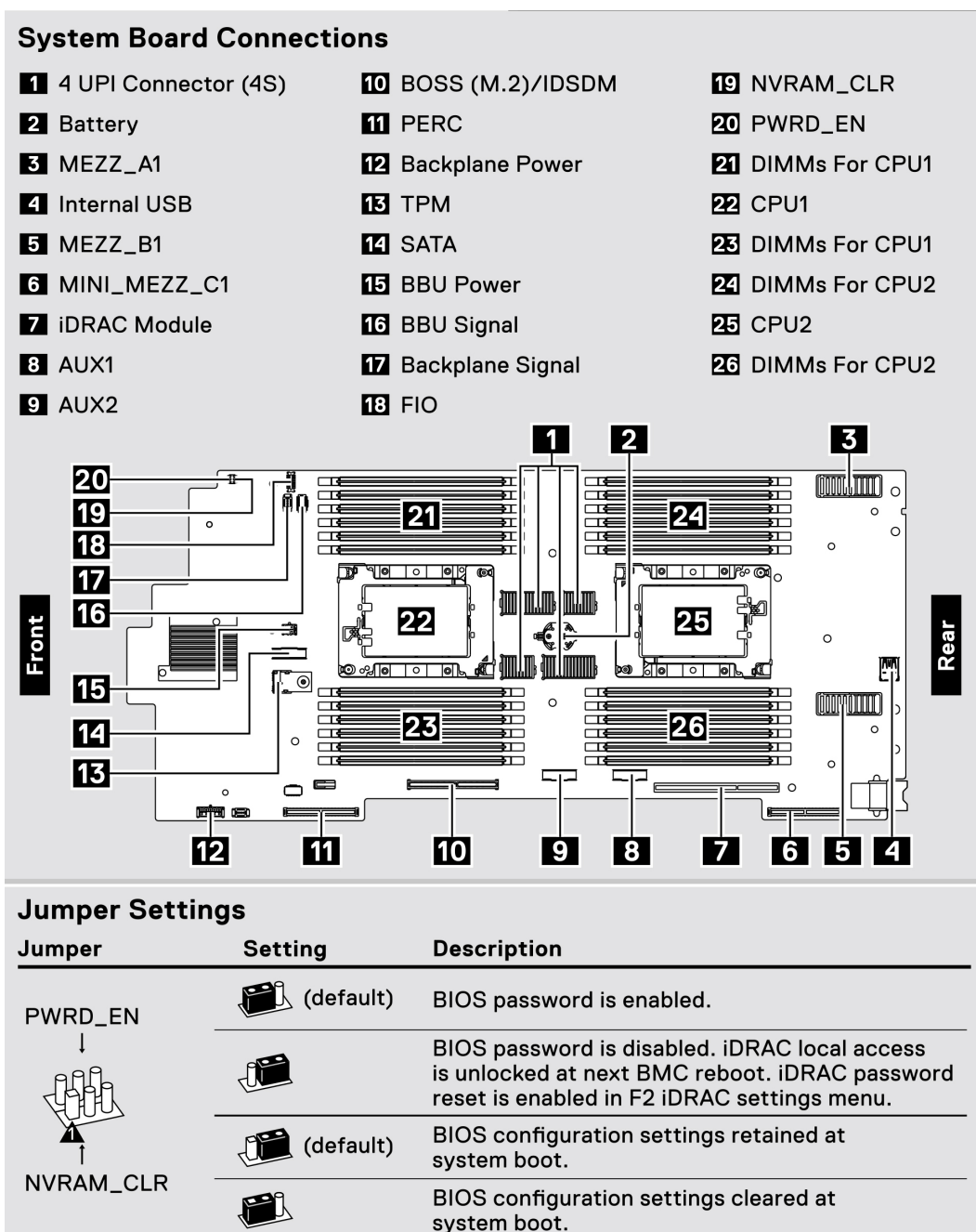


Figure 7. PowerEdge MX840c system board connections

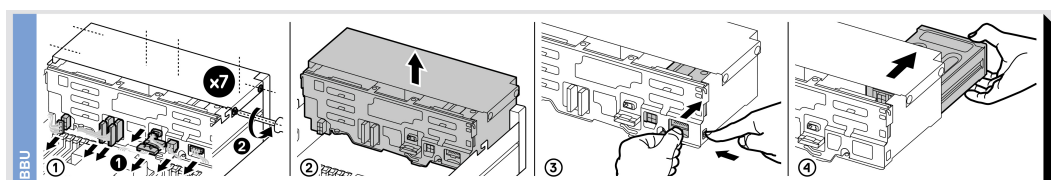


Figure 8. PowerEdge MX840c BBU module

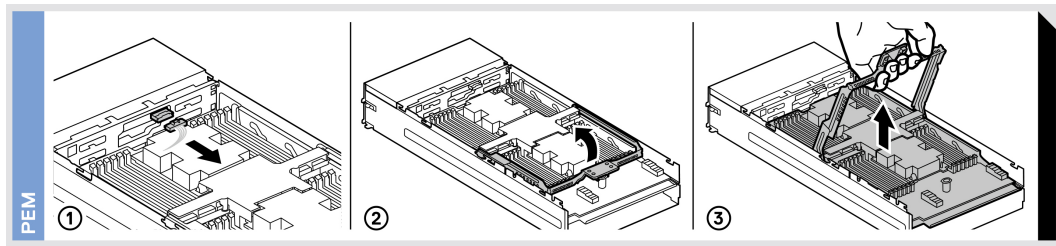


Figure 9. PowerEdge MX840c PEM removal

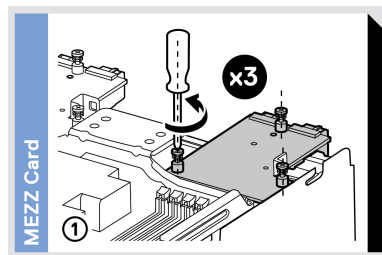


Figure 10. PowerEdge MX840c mezzanine cards removal

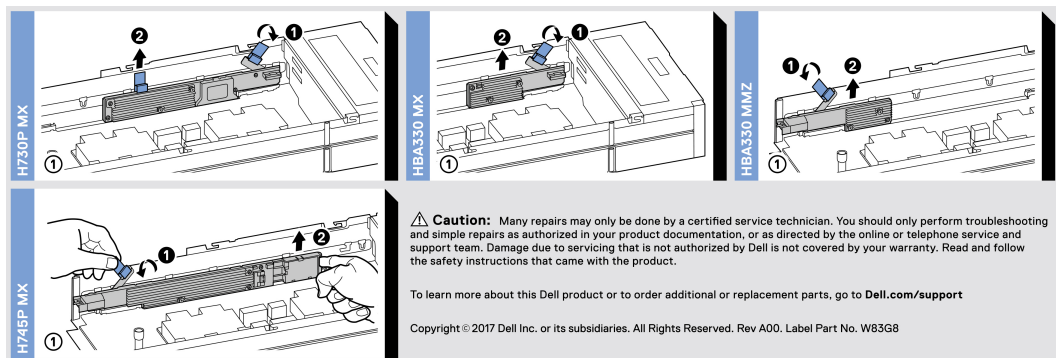


Figure 11. PowerEdge MX840c PERC cards removal

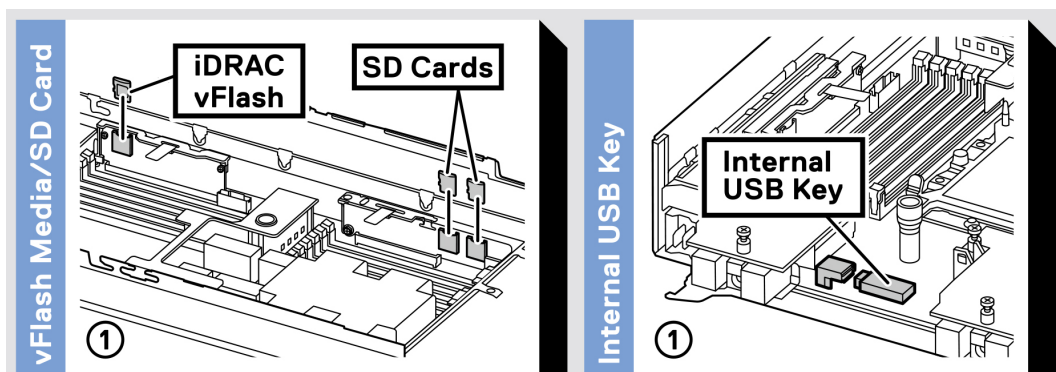


Figure 12. PowerEdge MX840c iDRAC/IDSDM module and optional internal USB key removal

# Initial system setup and configuration

## Topics:

- [Setting up your sled](#)
- [iDRAC configuration](#)
- [Options to install the operating system](#)

## Setting up your sled

Complete the following steps to set up your sled:

### Steps

1. Unpack the sled.
2. Remove the I/O connector cover from the sled connectors.



**CAUTION:** While installing the sled, ensure that it is properly aligned with the slot on the enclosure to prevent damage to the sled connectors.

3. Install the sled in the enclosure.
4. Power on the enclosure.



**NOTE:** Wait for the chassis to initialize before you press the power button.

5. Press the power button on the sled.

Alternatively, you can also power on the sled by using:

- The sled iDRAC. For more information, see the [Log in to iDRAC](#) section.
- Open Manage Enterprise modular (OME-modular), after the sled iDRAC is configured on the OME. For more information, see the OME-modular User's Guide at [www.dell.com/openmanagemanuals](http://www.dell.com/openmanagemanuals).

## iDRAC configuration

The Integrated Dell Remote Access Controller (iDRAC) is designed to make system administrators more productive and improve the overall availability of Dell systems. iDRAC alerts administrators about system issues and enables them to perform remote system management. This reduces the need for physical access to the system.

## Options to set up iDRAC IP address

You must configure the initial network settings based on your network infrastructure to enable the communication to and from iDRAC.

You can set up the IP address by using one of the following interfaces:

Interfaces	Document/Section
<b>iDRAC Settings utility</b>	See <i>Dell Integrated Dell Remote Access Controller User's Guide</i> at <a href="http://www.dell.com/poweredgemanuals">www.dell.com/poweredgemanuals</a>
<b>Dell Deployment Toolkit</b>	See <i>Dell Deployment Toolkit User's Guide</i> at <a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > OpenManage Deployment Toolkit

Interfaces	Document/Section
Dell Lifecycle Controller	See <i>Dell Lifecycle Controller User's Guide</i> at <a href="http://www.dell.com/poweredgemanuals">www.dell.com/poweredgemanuals</a>
OME Modular	See <i>Dell OpenManagement Enterprise Modular User's Guide</i> at <a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a>
iDRAC Direct	See <i>Dell Integrated Dell Remote Access Controller User's Guide</i> at <a href="http://www.dell.com/poweredgemanuals">www.dell.com/poweredgemanuals</a>

## Log in to iDRAC

You can log in to iDRAC as:

- iDRAC user
- Microsoft Active Directory user
- Lightweight Directory Access Protocol (LDAP) user

If you have opted for secure default access to iDRAC, the iDRAC secure default password is available on the back of the system Information tag. If you have not opted for secure default access to iDRAC, then the default user name and password are `root` and `calvin`. You can also log in by using Single Sign-On or Smart Card.

**NOTE:** You must have the iDRAC credentials to log in to iDRAC.

**NOTE:** Ensure that you change the default user name and password after setting up the iDRAC IP address.

**NOTE:** The Intel® Quick Assist Technology (QAT) on the Dell EMC PowerEdge MX840c is supported with chipset integration and is enabled through an optional license. The license files are enabled on the sleds through iDRAC.

For more information about drivers, documentation, and white papers on the Intel® QAT, see <https://01.org/intel-quickassist-technology>.

For more information about logging in to the iDRAC and iDRAC licenses, see the latest *Integrated Dell Remote Access Controller User's Guide* at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals)

You can also access iDRAC by using RACADM. For more information, see the *RACADM Command Line Interface Reference Guide* at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals)

## Options to install the operating system

If the system is shipped without an operating system, install a supported operating system by using one of the following resources:

**Table 1. Resources to install the operating system**

Resources	Location
iDRAC	<a href="http://www.dell.com/idracmanuals">www.dell.com/idracmanuals</a>
Lifecycle Controller	<a href="http://www.dell.com/idracmanuals">www.dell.com/idracmanuals</a> > Lifecycle Controller
OpenManage Deployment Toolkit	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > OpenManage Deployment Toolkit
Dell certified VMware ESXi	<a href="http://www.dell.com/virtualizationsolutions">www.dell.com/virtualizationsolutions</a>
Installation and How-to videos for supported operating systems on PowerEdge systems	<a href="#">Supported Operating Systems for Dell EMC PowerEdge systems</a>

## Methods to download firmware and drivers

You can download the firmware and drivers by using any of the following methods:

**Table 2. Firmware and drivers**

**Table 2. Firmware and drivers**

Methods	Location
From the Dell EMC support site	<a href="http://www.dell.com/support/home">www.dell.com/support/home</a>
Using Dell Remote Access Controller Lifecycle Controller (iDRAC with LC)	<a href="http://www.dell.com/idracmanuals">www.dell.com/idracmanuals</a>
Using Dell Repository Manager (DRM)	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > Repository Manager
Using Dell OpenManage Essentials	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > OpenManage Essentials
Using Dell OpenManage Enterprise	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > OpenManage Enterprise
Using Dell Server Update Utility (SUU)	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > Server Update Utility
Using Dell OpenManage Deployment Toolkit (DTK)	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > OpenManage Deployment Toolkit
Using iDRAC virtual media	<a href="http://www.dell.com/idracmanuals">www.dell.com/idracmanuals</a>

## Downloading drivers and firmware

Dell EMC recommends that you download and install the latest BIOS, drivers, and systems management firmware on your system.

### Prerequisites

Ensure that you clear the web browser cache before downloading the drivers and firmware.

### Steps

1. Go to [www.dell.com/support/home](http://www.dell.com/support/home).
2. In the **Drivers & Downloads** section, type the Service Tag of your system in the **Enter a Service Tag or product ID** box, and then click **Submit**.

 **NOTE:** If you do not have the Service Tag, select **Detect Product** to allow the system to automatically detect the Service Tag, or click **View products**, and navigate to your product.


3. Click **Drivers & Downloads**.  
The drivers that are applicable to your system are displayed.
4. Download the drivers to a USB drive, CD, or DVD.


# Installing and removing sled components


## Topics:


- Safety instructions
- Before working inside your sled
- After working inside your sled
- Recommended tools
- PowerEdge MX840c sled
- Sled cover
- Air shroud
- Processor expansion module
- Drives
- Drive backplane
- Cable routing
- Drive cage
- Battery backup unit
- Control panel
- System memory
- Processors and heat sinks
- iDRAC card
- PERC cards
- Optional Internal dual SD module
- M.2 BOSS module
- Mezzanine card
- Optional internal USB memory key
- System battery
- System board
- Trusted Platform Module

## Safety instructions

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

 **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 are shipped with your product.

 **NOTE:** It is recommended that you always use an antistatic mat and antistatic strap 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.

# Before working inside your sled

## Prerequisites

Follow the safety guidelines listed in the [Safety instructions](#) section.

## Steps

1. Power off the sled.
2. Remove the sled from the enclosure.
3. If applicable, install the I/O connector cover.

 **CAUTION:** To prevent damage to the I/O connectors on the sled, ensure that you cover the connectors when you remove the sled from the enclosure.

4. Remove the sled cover.

# After working inside your sled

## Prerequisites

Follow the safety guidelines listed in the [Safety instructions](#) section.

## Steps

1. Install the sled cover.
2. If installed, remove the I/O connector cover on the sled.

 **CAUTION:** To prevent damage to the I/O connectors, do not touch the connectors or the connector pins.

3. Install the sled into the enclosure.
4. Power on the sled.

 **NOTE:** The sled iDRAC has to completely initialize first for the sled to power on.

# Recommended tools

You need the following tools to perform the removal and installation procedures:

- Phillips #1 screwdriver
- Phillips #2 screwdriver
- Torx #T30 screwdriver
- 1/4 inch flat head screwdriver
- Wrist grounding strap

# PowerEdge MX840c sled

The PowerEdge MX840c sled is a compute server unit that is installed into the PowerEdge MX7000 enclosure. The sled features quad processors, processor expansion module (PEM), memory modules, mezzanine cards, mini mezzanine card, PERC cards, and onboard storage (MicroSD card and M.2 SATA).

# Removing the sled from the enclosure

## Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.



2. Power off the sled.

### Steps

1. Press the blue lever button on the sled to release the lever.
2. Holding the release lever, slide the sled out of the enclosure.



**Figure 13. Removing the sled from the enclosure**

**NOTE:** Support the sled with both hands while sliding it out of the enclosure.

3. Install the I/O connector cover on the sled.

**CAUTION:** To protect the I/O connector pins, install the I/O connector cover every time a sled is removed from the enclosure.



**Figure 14. Installing the I/O connector cover on the sled**

**CAUTION:** If you are permanently removing the sled, install a blank. Operating the enclosure for extended periods of time without a blank installed can cause the enclosure to overheat.

**NOTE:** The color of the I/O connector cover may differ.

#### Next steps

1. [Install the sled or blank into the enclosure.](#)

## Installing the sled into the enclosure

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.

#### Steps

1. Remove the I/O connector cover from the I/O connector(s) and store for future use.

**CAUTION:** To prevent damage to the I/O connectors, do not touch the connectors or the connector pins.



**Figure 15. Removing the I/O connector cover from the sled**

**NOTE:** The color of the I/O connector cover may differ.

2. Press the blue lever button on the sled to release the lever.
3. Holding the sled with two hands, align the sled with the bay in the enclosure and slide the sled into the enclosure until firmly seated.
4. Rotate the lever up until it clicks into place and secures the sled in the enclosure.



**Figure 16. Installing the sled into the enclosure**

### Next steps

1. Power on the sled.

## Sled cover

The sled cover protects the components inside the sled and helps in maintaining air flow inside the sled.

## Removing the sled cover

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Power off the sled.
3. [Remove the sled from the enclosure.](#)

### Steps

1. Press the blue release tab on the sled cover and slide the cover towards the rear of the sled.
2. Hold the cover on both sides, and lift the cover away from the sled.



Figure 17. Removing the sled cover

### Next steps

1. [Install the sled cover.](#)

## Installing the sled cover

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Ensure that all internal cables are routed correctly and connected, and no tools or extra parts are left inside the sled.



### Steps

1. Align the tabs on the sled cover with the guide slots on the sled.
2. Slide the cover towards the front of the sled until it locks in place.



**Figure 18. Installing the sled cover**

### Next steps

1. [Install the sled into the enclosure.](#)
2. Power on the sled.

# Air shroud


The air shroud aerodynamically directs the airflow across the entire sled. The airflow passes through all the critical parts of the sled thus allowing increased cooling.

The PowerEdge MX840c sled has:

- Air shroud on the processor expansion module (PEM)
- Air shroud on the system board

## Removing the air shroud from the PEM

### Prerequisites

 **CAUTION:** Never operate your system with the air shroud removed. The system may get overheated quickly, resulting in shutdown of the system and loss of data.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

### Steps

Hold the edges of the air shroud and lift it up and away from the sled.

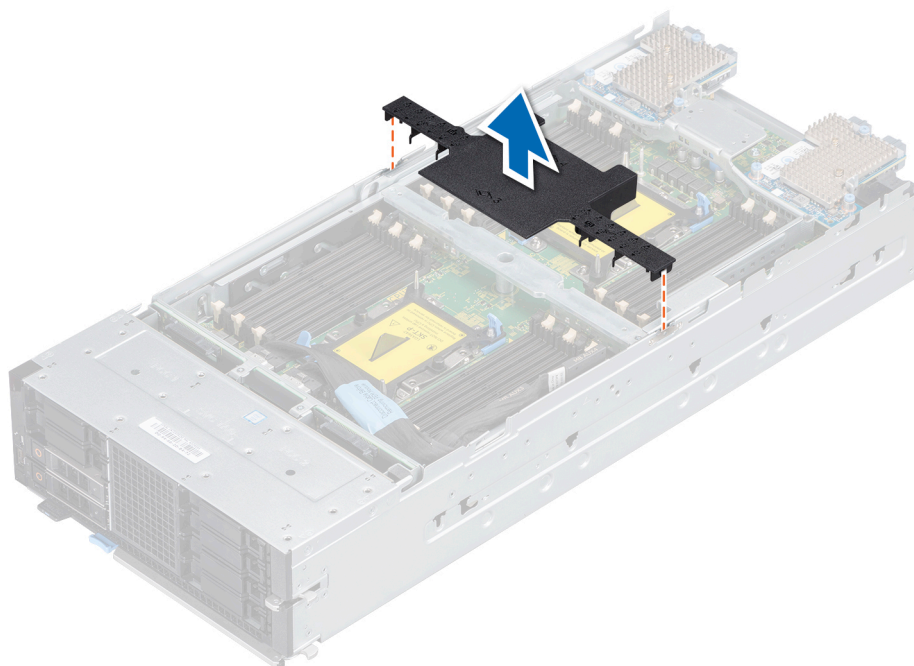


Figure 19. Removing the air shroud from the PEM

### Next steps

1. [Install the air shroud on the PEM.](#)

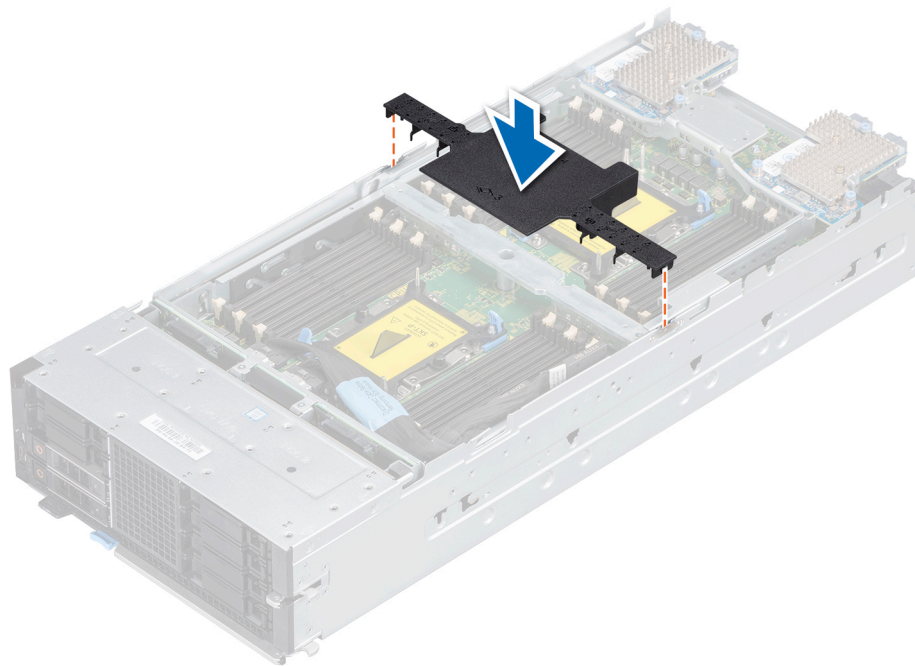
## Installing the air shroud on the PEM

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

### Steps

1. Align the tabs on the air shroud with the slots on the PEM.
2. Place the air shroud on the PEM.



**Figure 20. Installing the air shroud on the PEM**

### Next steps

1. Follow the procedure listed in the [After working inside your sled](#) section.

## Removing the air shroud from the system board

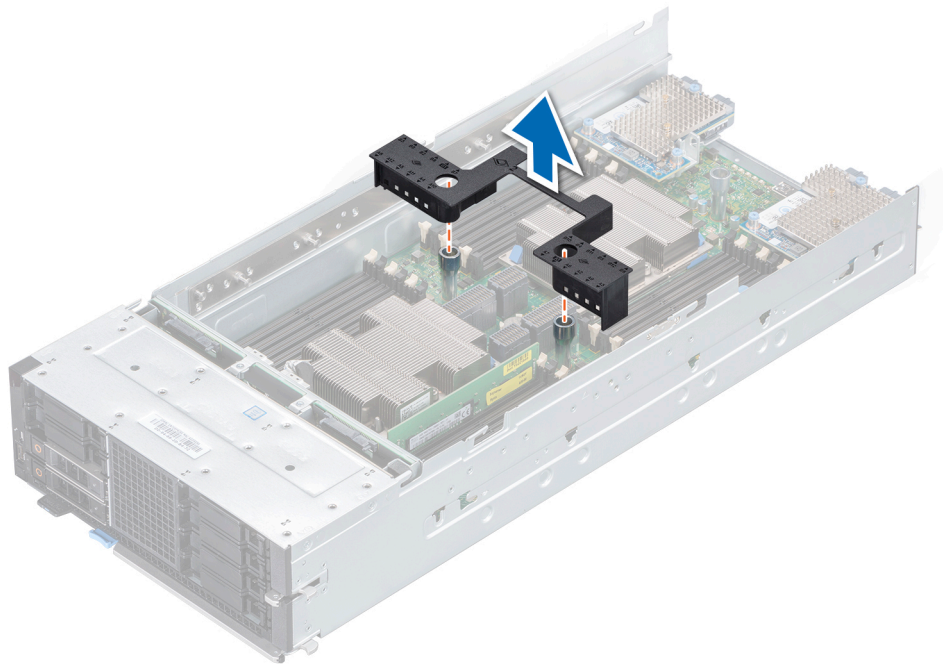
### Prerequisites

**CAUTION:** Never operate your system with the air shroud removed. The system may get overheated quickly, resulting in shutdown of the system and loss of data.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)

### Steps

Hold the edges of the air shroud, lift it up and away from the sled.



**Figure 21. Removing the air shroud from the system board**

#### **Next steps**

1. [Install the air shroud on the system board.](#)

## **Installing the air shroud on the system board**

#### **Prerequisites**

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

#### **Steps**

1. Align the slots on the air shroud with the guide pins on the system board.
2. Lower the air shroud into the sled until it is firmly seated.



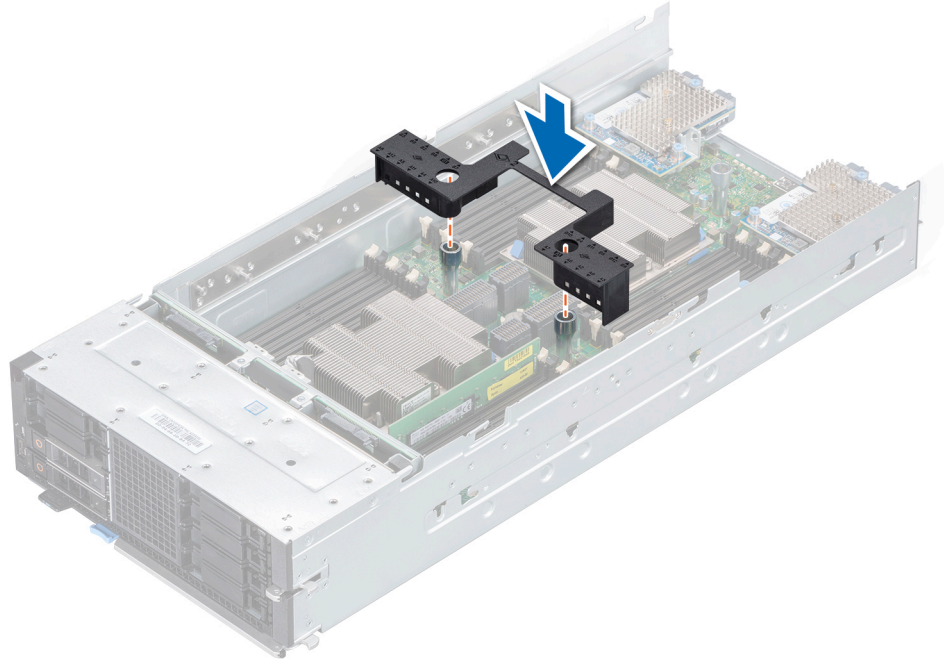


Figure 22. Installing the air shroud on the system board

#### Next steps

1. [Install the PEM.](#)
2. Follow the procedure listed in the [After working inside your sled](#) section.

## Processor expansion module

### Removing the processor expansion module

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. Disconnect the cable connecting the processor expansion module (PEM) to the backplane.
4. [Remove the air shroud from the PEM.](#)

#### Steps

1. Raise the release lever on the PEM until the PEM disengages from the sled.
2. Holding the blue handle and release lever, lift the PEM away from the sled.



**CAUTION:** To avoid damage to the components on the edges of the PEM board, carefully lift and place the PEM by holding only the blue handle and release lever.

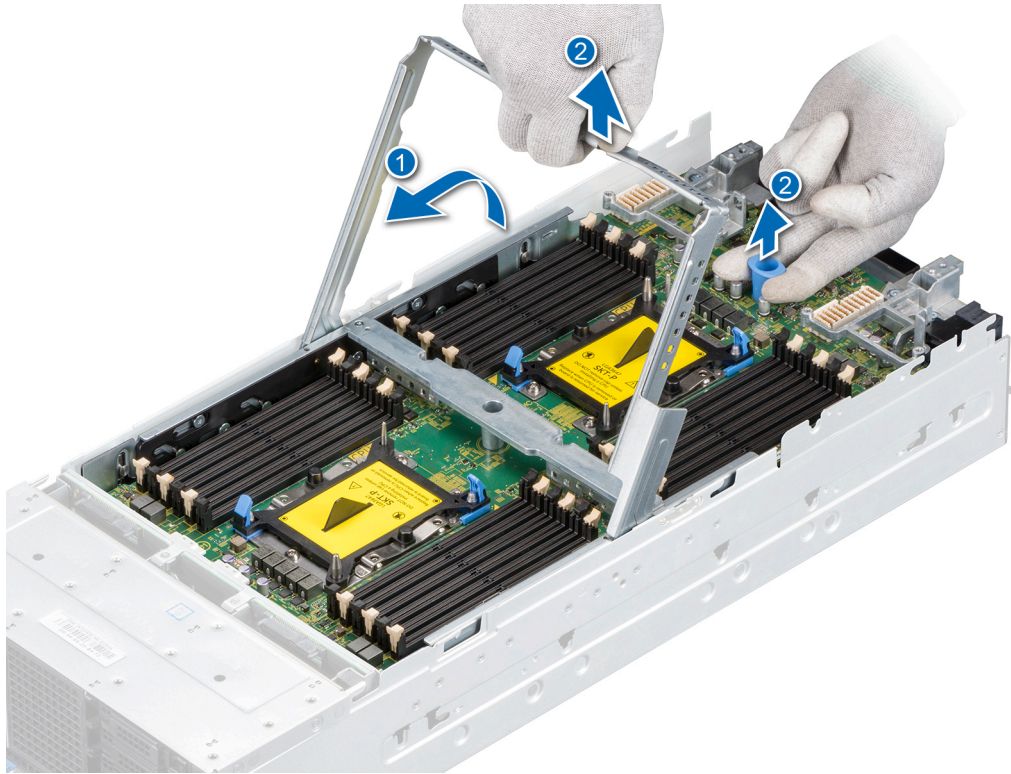


Figure 23. Removing the PEM

#### Next steps

1. [Installing the processor expansion module.](#)

## Installing the processor expansion module

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

#### Steps

1. Lift the processor expansion module (PEM) by holding the blue handle and release lever.



**CAUTION:** To avoid damage to the components on the edges of the PEM board, carefully lift and place the PEM by holding only the blue handle and release lever.

2. Align the guides on the PEM with the guide slots on the sled and place the PEM on the sled.
3. Lower the release lever until it hooks into place with the blue handle.



Figure 24. Installing the PEM

#### Next steps

1. Connect the cable on the PEM to the backplane.
2. [Install the air shroud on the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled](#) section.

## Drives

### Drive installation guidelines

Drives are available in hot-swappable drive carriers that fit in the front drive slots of the PowerEdge MX840c sled.

**CAUTION:** Before attempting to remove or install a drive while the sled is running, see the documentation for the storage controller card to ensure that the host adapter is configured correctly to support hot-swap drive removal and insertion.

**CAUTION:** Do not power off or restart your sled while the drive is being formatted. Doing so can cause a drive failure.

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

### Removing a drive blank

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.

**CAUTION:** To maintain proper system cooling, drive blanks must be installed in all empty drive slots.

 **CAUTION:** Mixing drive blanks from previous generations of PowerEdge servers is not supported.

### Steps

Press the release button, and slide the drive blank out of the drive slot.



**Figure 25. Removing a drive blank**

### Next steps

1. [Install a drive](#) or a [drive blank](#).

## Installing a drive blank

### Prerequisites

Follow the safety guidelines listed in the [Safety instructions](#) section.

 **CAUTION:** Mixing drive blanks from previous generations of PowerEdge servers is not supported.

### Steps

Insert the drive blank into the drive slot until the release button clicks into place.





Figure 26. Installing a drive blank

## Removing a drive carrier

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Using the management software, prepare the drive for removal.

If the drive is online, the green activity or fault indicator flashes while the drive is turning off. When the drive indicators are off, the drive is ready for removal. For more information, see the documentation for the storage controller.

**CAUTION:** Before attempting to remove or install a 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 drive removal and insertion.

**CAUTION:** Mixing drives carriers from previous generations of PowerEdge servers is not supported.

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

### Steps

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



Figure 27. Removing a drive carrier

#### Next steps

1. [Install a drive carrier.](#)
2. If you are not replacing the drive carrier immediately, insert a drive blank in the empty drive slot to maintain proper sled cooling.

## Installing a drive carrier

#### Prerequisites

- ⚠ **CAUTION:** Before attempting to remove or install a 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 drive removal and insertion.
- ⚠ **CAUTION:** Mixing drive carriers from previous generations of PowerEdge servers is not supported.
- ⚠ **CAUTION:** Combining SAS and SATA drives in the same RAID volume is not supported.
- ⚠ **CAUTION:** When installing a drive, ensure that the adjacent drives are fully installed. Inserting a 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 drive is installed and the system is powered on, the drive automatically begins to rebuild. Ensure that the replacement drive is blank or contains data that you wish to overwrite. Any data on the replacement drive is immediately lost after the drive is installed.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. If installed, [remove the drive blank](#).

### Steps

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



Figure 28. Installing a drive carrier

## Removing a drive from the drive carrier

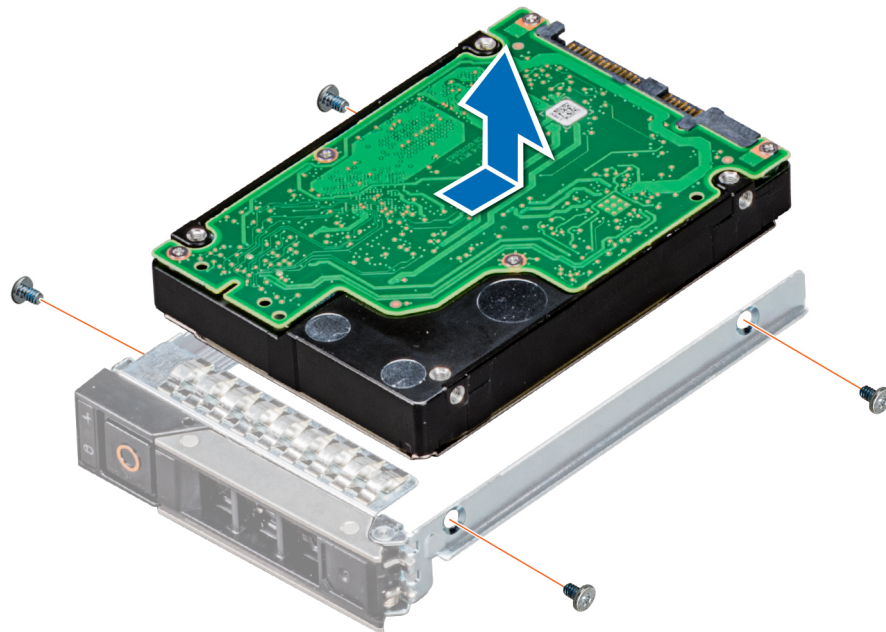
### Prerequisites

Follow the safety guidelines listed in the [Safety instructions](#) section.

**CAUTION:** Mixing drives from previous generations of PowerEdge servers is not supported.

### Steps

1. Using a Phillips #1 screwdriver, remove the screws from the slide rails on the drive carrier.
2. Lift the drive out of the drive carrier.



**Figure 29. Removing a drive from the drive carrier**

#### Next steps

1. [Install a drive into the drive carrier.](#)

## Installing a drive into the drive carrier

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.

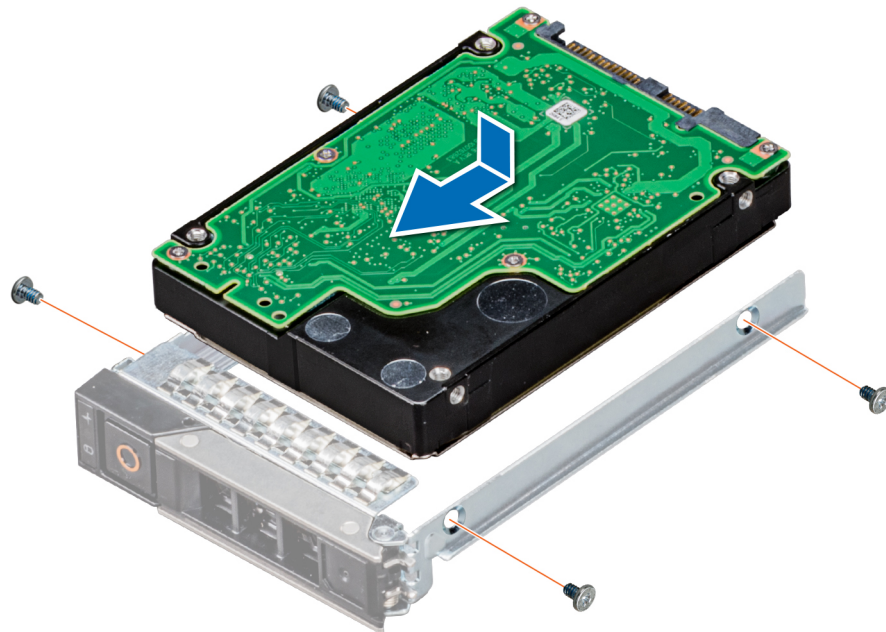
**CAUTION:** Mixing drive carriers from other generations of PowerEdge servers is not supported.

**NOTE:** When installing a drive into the drive carrier, ensure that the screws are torqued to 4 in-lbs.

#### Steps

1. Place the drive into the drive carrier with the connector end of the drive towards the back of the carrier.
2. Align the screw holes on the drive with the screws holes on the drive carrier.
3. Using a Phillips #1 screwdriver, secure the drive to the drive carrier with screws.





**Figure 30. Installing a drive into the drive carrier**

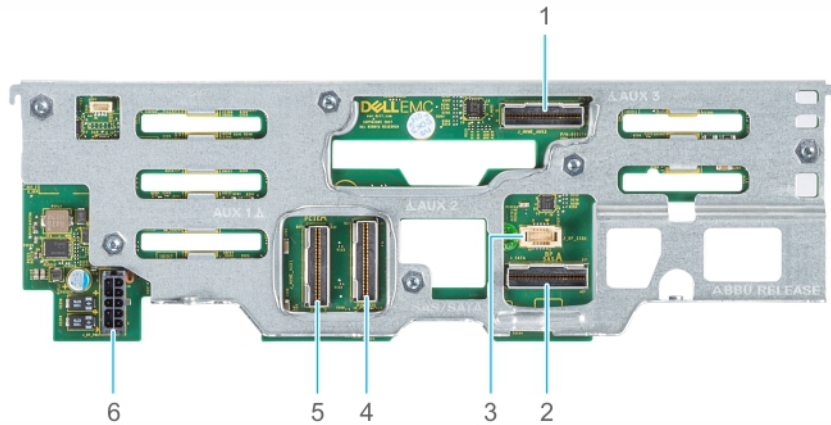
## Drive backplane

### Drive backplane connectors

Depending on the configuration, the drives supported on the PowerEdge MX840c sled are listed in the table.

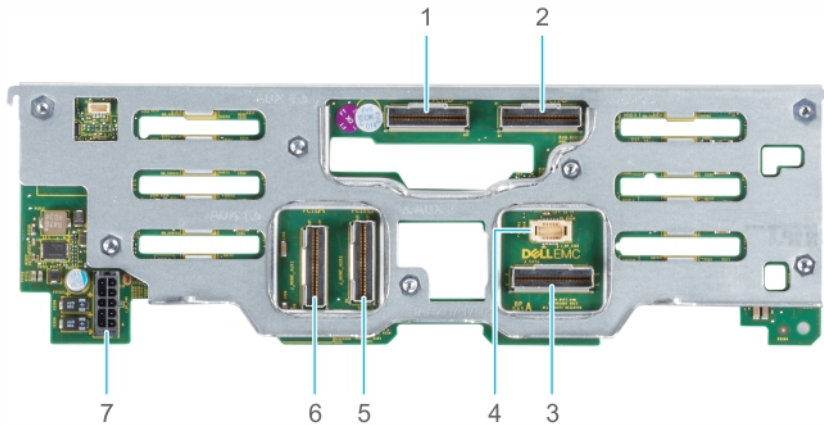
**Table 3. Supported drives options for the PowerEdge MX840c sled**

Drives	Specifications
<b>Eight drives</b>	Up to eight 2.5 inch (SAS, SATA, Nearline SAS, or NVMe) front accessible drives in slots 0 to 7.
Dual processor sled	NVMe drives are supported in the slots 4 to 7. <b>NOTE:</b> NVMe is not supported in the slots 0 to 3.
Quad processor sled	NVMe drives are supported in the slots 0 to 7.
<b>Six drives</b>	Up to six 2.5 inch (SAS, SATA, Nearline SAS, or NVMe) front accessible drives in slots 0 to 5.
Dual processor sled	NVMe drives are supported in the slots 2 to 5. <b>NOTE:</b> NVMe is not supported in the slots 0 to 1.
Quad processor sled	NVMe drives are supported in the slots 0 to 5.



**Figure 31. 6 x 2.5 inch drive backplane**

- |                          |                                   |
|--------------------------|-----------------------------------|
| 1. AUX 3 cable connector | 2. SATA/SAS connector             |
| 3. I2C cable connector   | 4. AUX 2 cable connector          |
| 5. AUX 1 cable connector | 6. Power cable connector [BP PWR] |



**Figure 32. 8 x 2.5 inch drive backplane**

- |                                   |                          |
|-----------------------------------|--------------------------|
| 1. AUX 4 cable connector          | 2. AUX 3 cable connector |
| 3. SATA/SAS connector             | 4. I2C cable connector   |
| 5. AUX 2 cable connector          | 6. AUX 1 cable connector |
| 7. Power cable connector [BP PWR] |                          |

## Removing the drive backplane

### Prerequisites

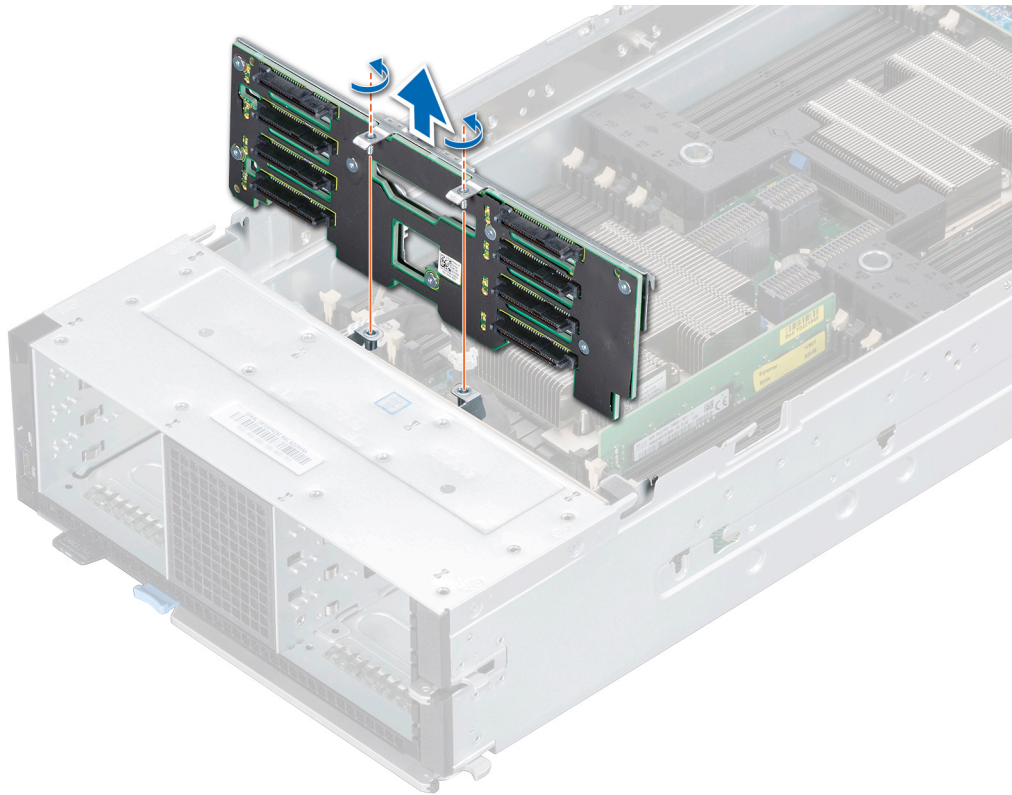
- CAUTION:** To prevent damage to the drives and backplane, remove the drives from the sled before removing the backplane.
- CAUTION:** Note the number of each drive and temporarily label them before you remove the drive so that you can replace them in the same locations.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the air shroud from the PEM.](#)
4. [Remove the PEM.](#)
5. [Remove all the drives.](#)

6. Disconnect the cables that are connected to the drive backplane.

### Steps

1. Using Phillips #2 screwdriver, loosen the two captive screws on the drive backplane.
2. Holding the edges, lift the backplane away from the sled.



**Figure 33. Removing the drive backplane**

### Next steps

1. [Install the drive backplane.](#)

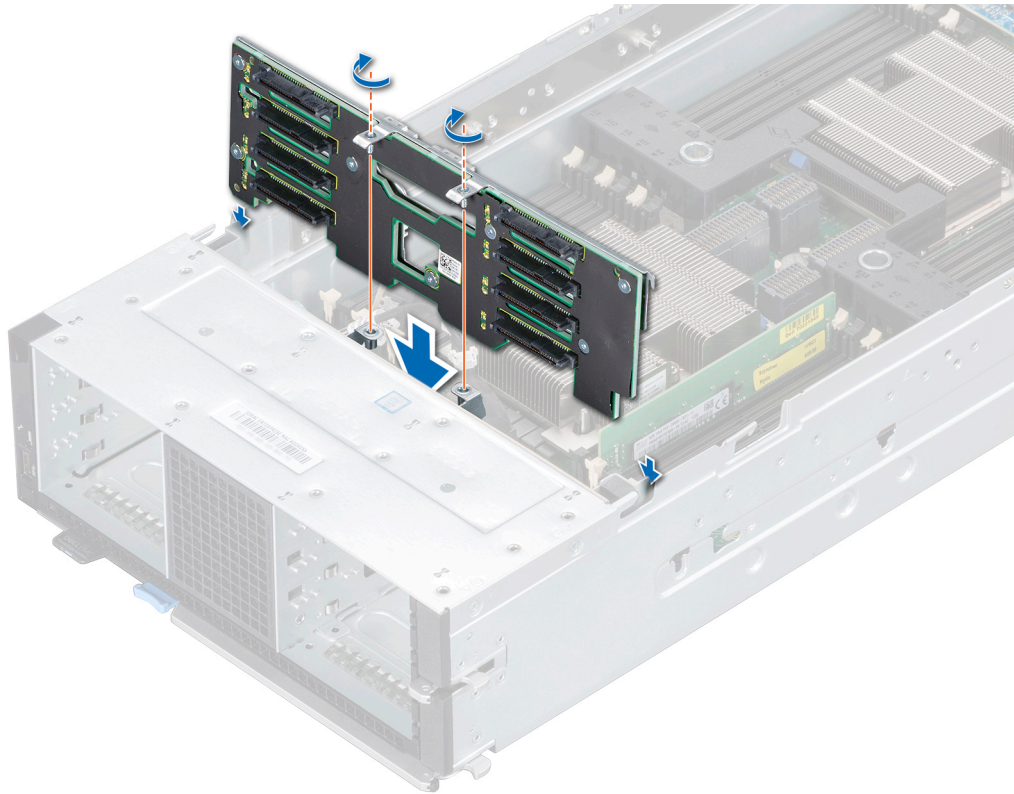
## Installing the drive backplane

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

### Steps

1. Align the hooks and captive screws on the drive backplane with the slots and screw holes on the sled.
2. Lower the drive backplane until it seat into place.
3. Using a Phillips #2 screwdriver, tighten the two captive screws to secure the drive backplane to the sled.



**Figure 34. Installing the drive backplane**

#### **Next steps**

1. Connect all the cables to the drive backplane connectors.
2. [Install the drives.](#)
3. [Install the PEM.](#)
4. [Install the air shroud on the PEM.](#)
5. Follow the procedure listed in the [After working inside your sled](#) section.

# Cable routing

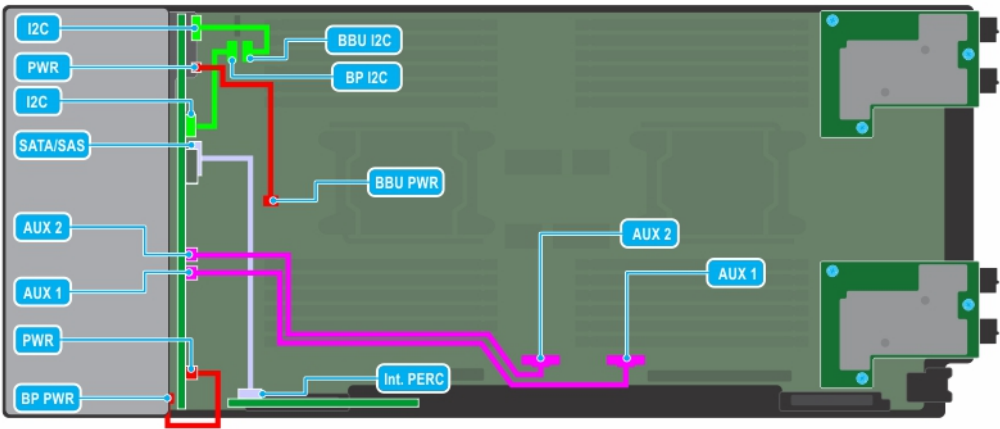


Figure 35. Cable routing - 6 x 2.5 inch drive backplane with PERC card

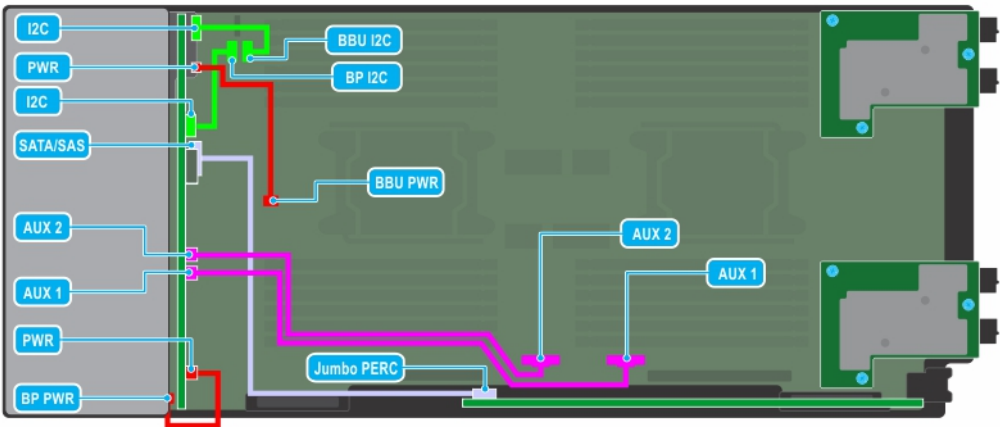


Figure 36. Cable routing - 6 x 2.5 inch drive backplane with Jumbo PERC card

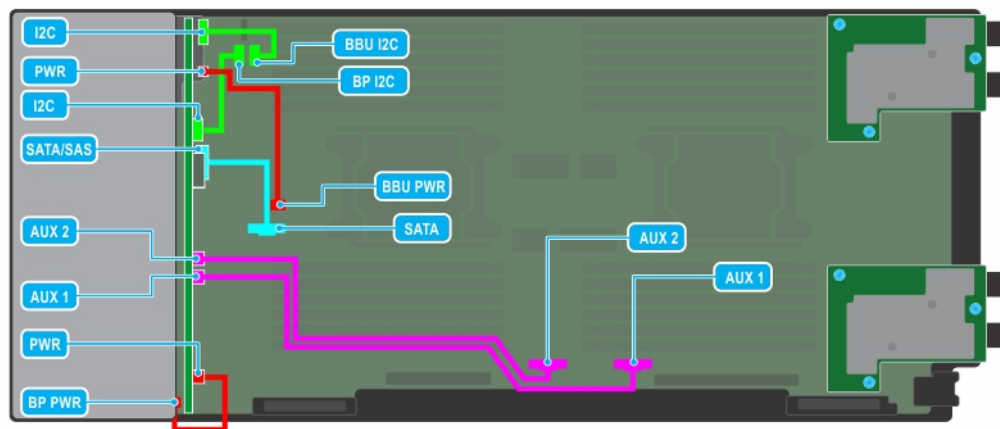


Figure 37. Cable routing - 6 x 2.5 inch drive backplane

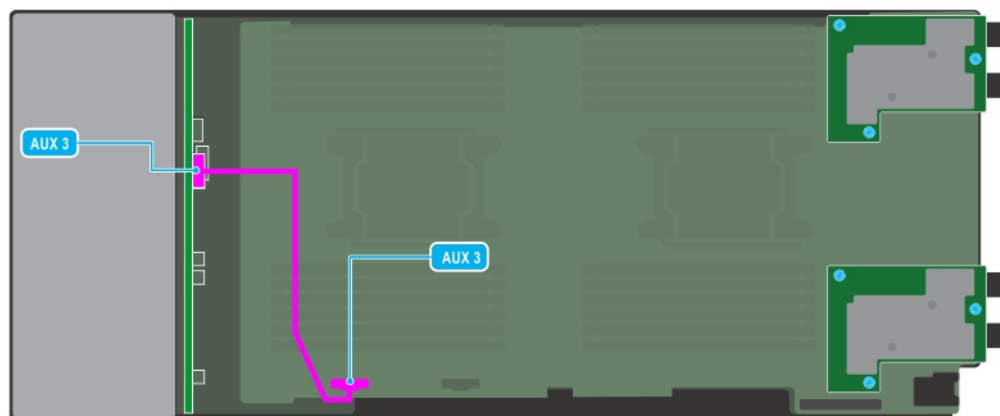


Figure 38. Cable routing - 6 x 2.5 inch drive backplane with PEM board



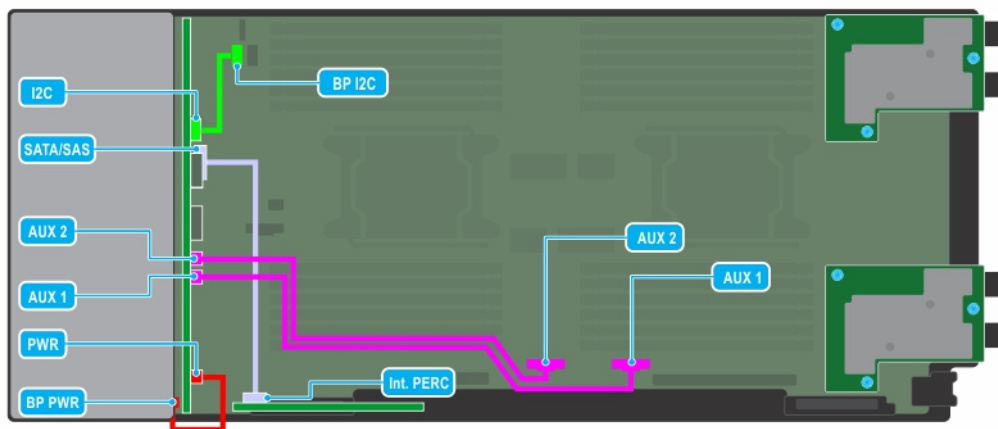


Figure 39. Cable routing - 8 x 2.5 inch drive backplane with PERC card

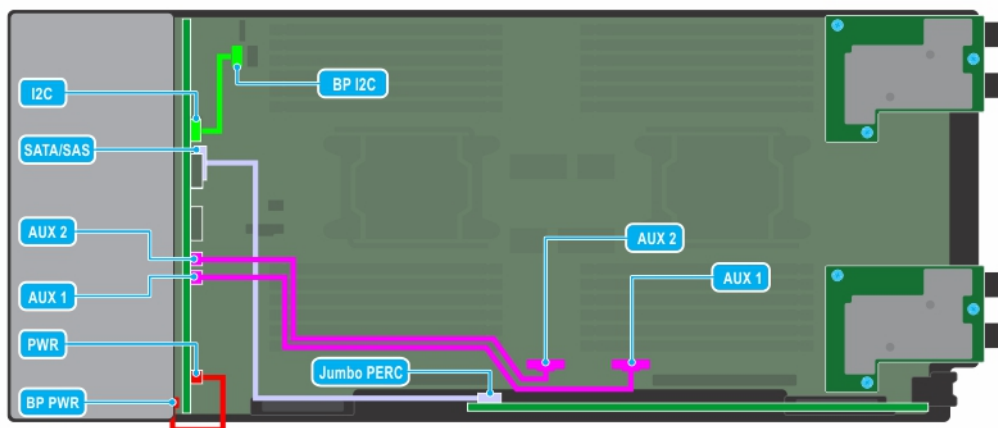


Figure 40. Cable routing - 8 x 2.5 inch drive backplane with Jumbo PERC card

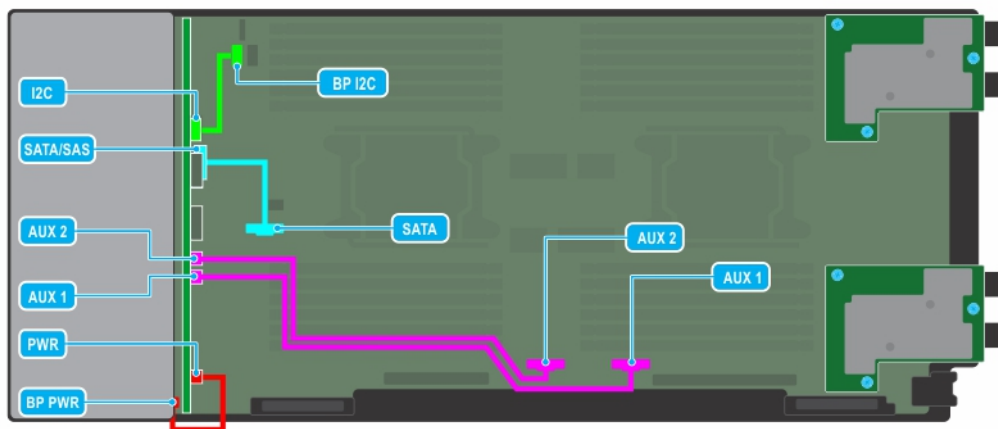


Figure 41. Cable routing - 8 x 2.5 inch drive backplane

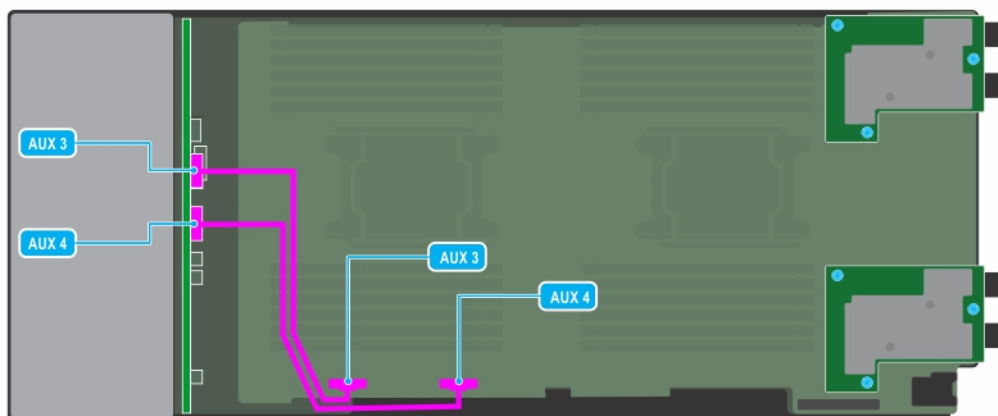


Figure 42. Cable routing - 8 x 2.5 inch drive backplane with PEM board

## Drive cage

The drive cage contains the drives and the battery backup unit module.

## Removing the drive cage

### Prerequisites

- ⚠ **CAUTION:** To prevent damage to the drives and backplane, you must remove the drives from the sled before removing the backplane.
- ⚠ **CAUTION:** You must note the slot number of each drive and temporarily label them before removal so that you can replace them in the same locations.



**NOTE:** Observe the routing of the cables on the sled as you remove them from the sled. You must route these cables properly when you replace them to prevent the cables from being pinched or crimped.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove all the drives.](#)
4. [Remove the PEM.](#)
5. Disconnect the cables that are connected to the drive backplane.
6. [Remove the drive backplane.](#)

### Steps

1. Using the Phillips #1 screwdriver, remove the screws that secure the drive cage to the sled.
2. Lift the drive cage away from the sled.

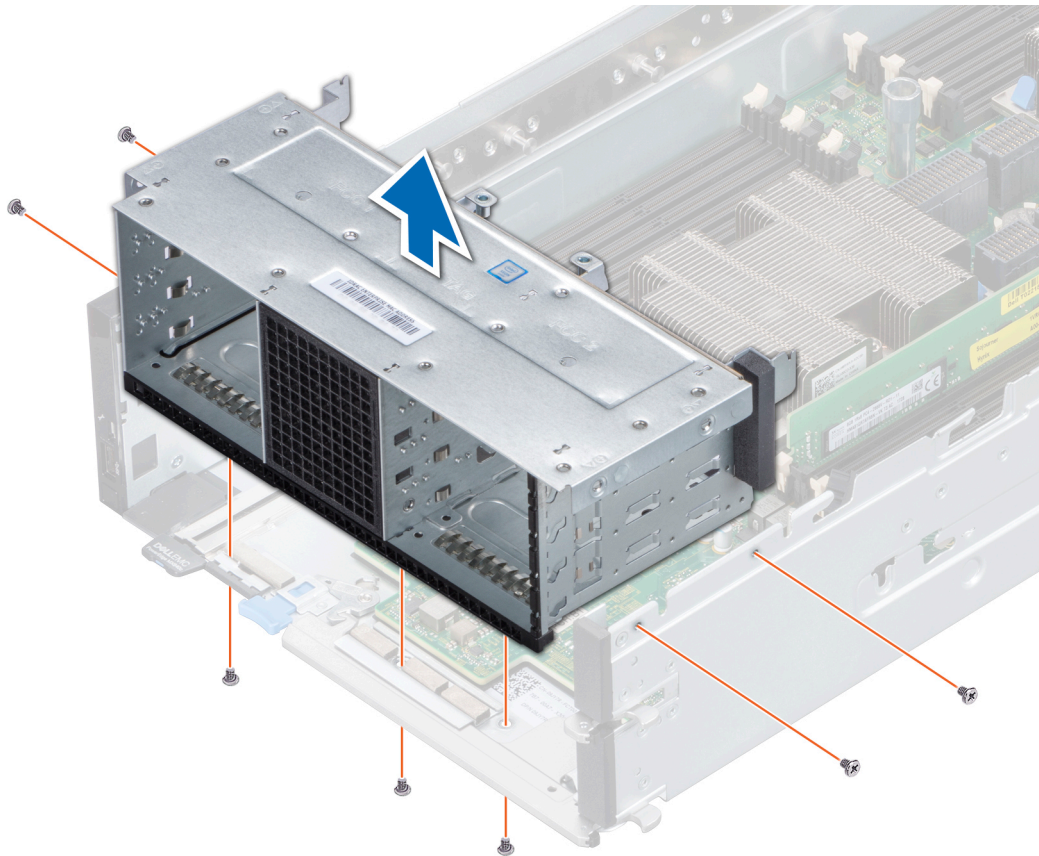


Figure 43. Removing the drive cage

### Next steps

1. [Install the drive cage.](#)

## Installing the drive cage

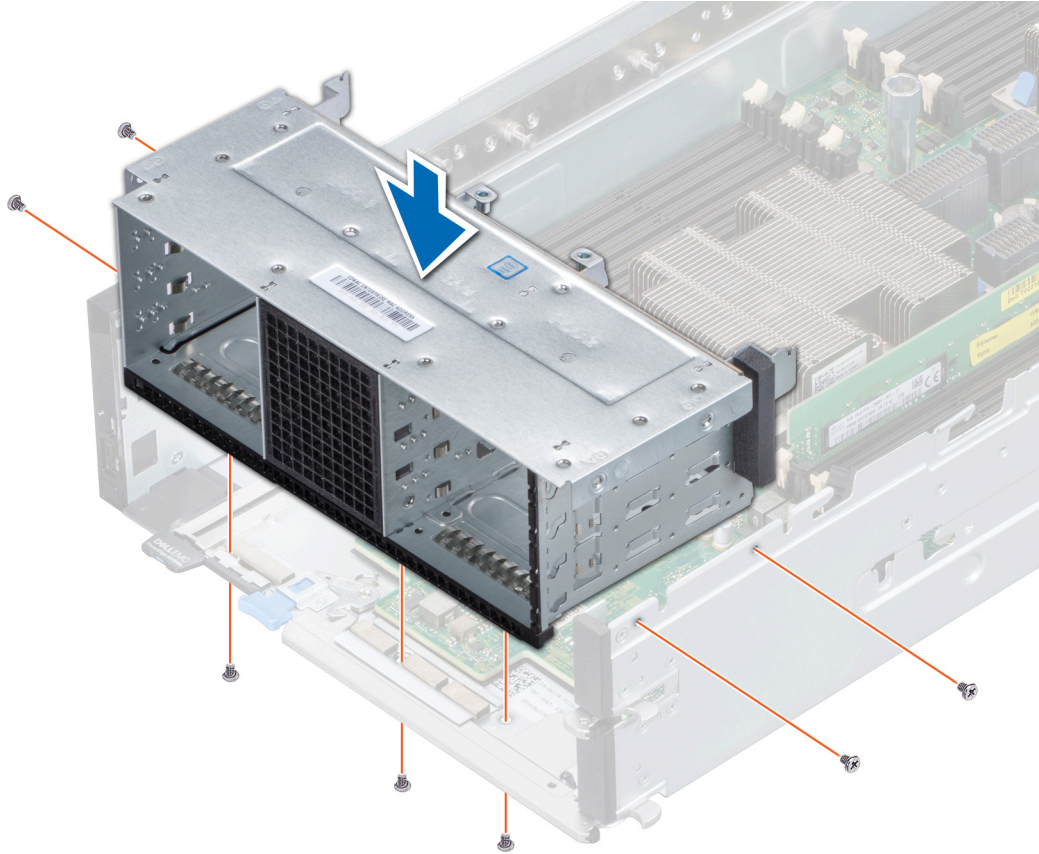
### Prerequisites

- CAUTION:** To prevent damage to the drives and backplane, you must remove the drive carriers from the system before removing the backplane.
- CAUTION:** You must note the slot numbers of each drive and temporarily label them before removal so that you can replace them in the same locations.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

### Steps

1. Place the drive cage into the sled, aligning with the screw holes on the sled.
2. Using the Phillips #1 screwdriver, secure the drive cage with screws.



**Figure 44. Installing the drive cage**

### Next steps

1. [Install the drive backplane.](#)
2. Connect the cables to the drive backplane.
3. [Install the removed drives.](#)
4. [Install the PEM.](#)
5. Follow the procedure listed in the [After working inside your sled](#) section.

## Battery backup unit

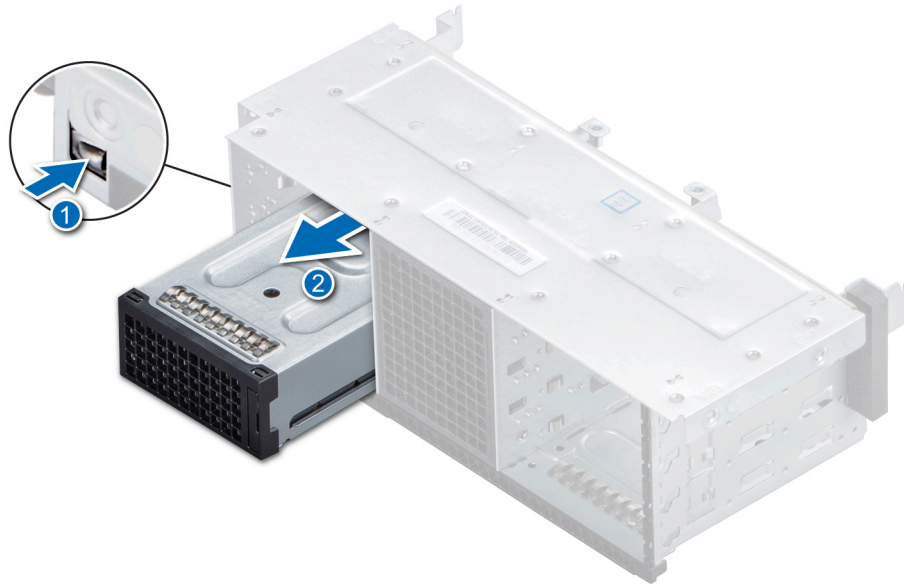
### Removing the battery backup unit module

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)
4. Disconnect the two cables from the battery backup unit (BBU) to the connectors on the system board.
5. [Remove the drive cage.](#)

### Steps

1. Press the tab on the side and push the BBU module from the rear end of the drive cage to release the BBU module.
2. Holding the BBU module by the edges, slide the BBU module out of the drive cage.



**Figure 45. Removing the BBU module**

### Next steps

1. [Remove the BBU from the BBU cage.](#)
2. [Install the BBU module.](#)

## Installing the BBU module

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Install the BBU into the BBU cage.](#)
4. [Install the drive cage.](#)

### Steps

1. Route the cables on the BBU module through the front end of the sled.
2. Slide the BBU module until it firmly locks in place with the drive cage.



**Figure 46. Installing the BBU module**

3. Connect the cables on the BBU to the connectors on the system board.

#### **Next steps**

1. [Install the PEM.](#)
2. Follow the procedure listed in the [After working inside your sled](#) section.

## **Removing the BBU from the BBU cage**

#### **Prerequisites**

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the battery backup unit module.](#)

#### **Steps**

1. Using a Phillips #1 screwdriver, loosen the captive screw securing the BBU to the BBU cage.
2. Lift and slide the BBU out of the BBU cage.



**Figure 47. Removing the BBU from the BBU cage**

#### **Next steps**

1. [Install the BBU into the BBU cage.](#)

## **Installing the BBU into the BBU cage**

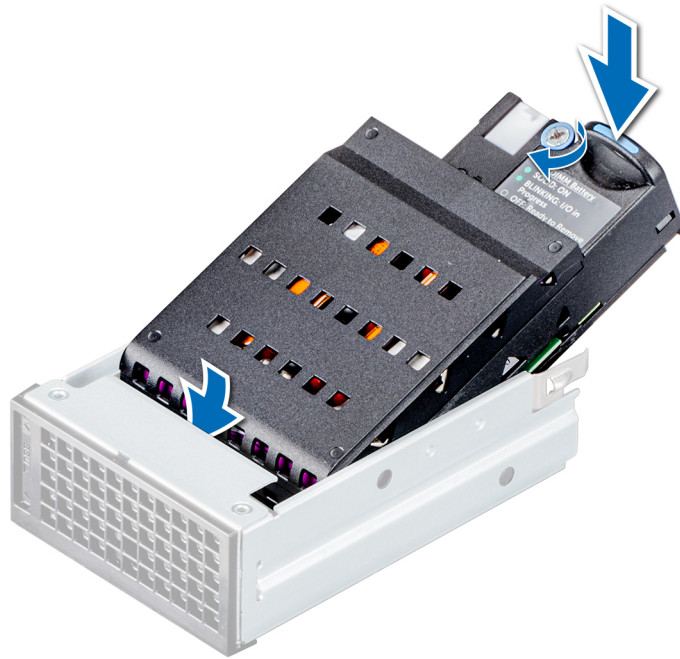
#### **Prerequisites**

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

#### **Steps**

1. Slide the BBU into the BBU cage.
2. Using a Phillips #1 screwdriver, tighten the captive screw to secure the BBU to the BBU cage.





**Figure 48. Installing the BBU into the BBU cage**

#### Next steps

1. [Install the BBU module.](#)

## Control panel

A control panel enables you to manually control the inputs to the sled. The control panel features on the PowerEdge MX840c are:

- Power button
- iDRAC Direct port
- USB 3.0 port

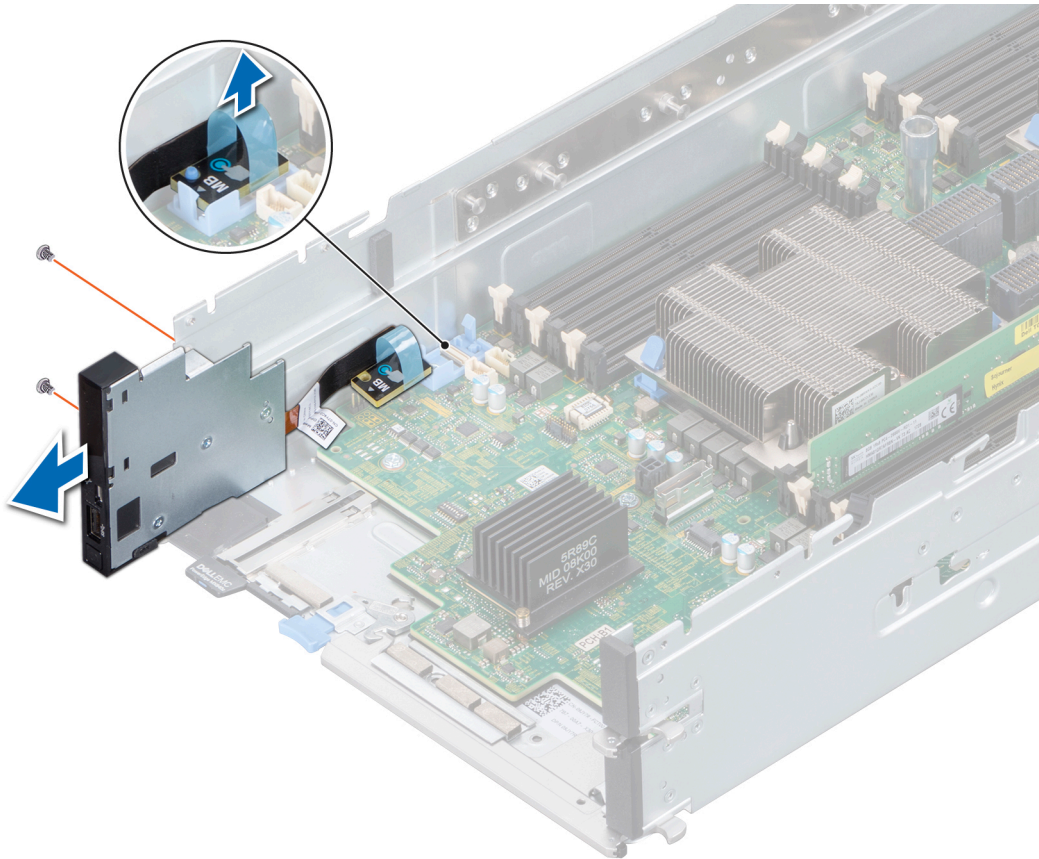
## Removing the control panel

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)
4. [Remove all the drives.](#)
5. [Remove the backplane.](#)
6. [Remove the drive cage.](#)
7. [Remove the BBU module.](#)

#### Steps

1. Pull the blue strap to disconnect the control panel cable connected to the system board.
2. Using a Phillips #1 screwdriver, remove the screws that secure the control panel to the sled.
3. Lift the control panel out of the sled.



**Figure 49. Removing the control panel**

#### Next steps

1. [Install the control panel.](#)

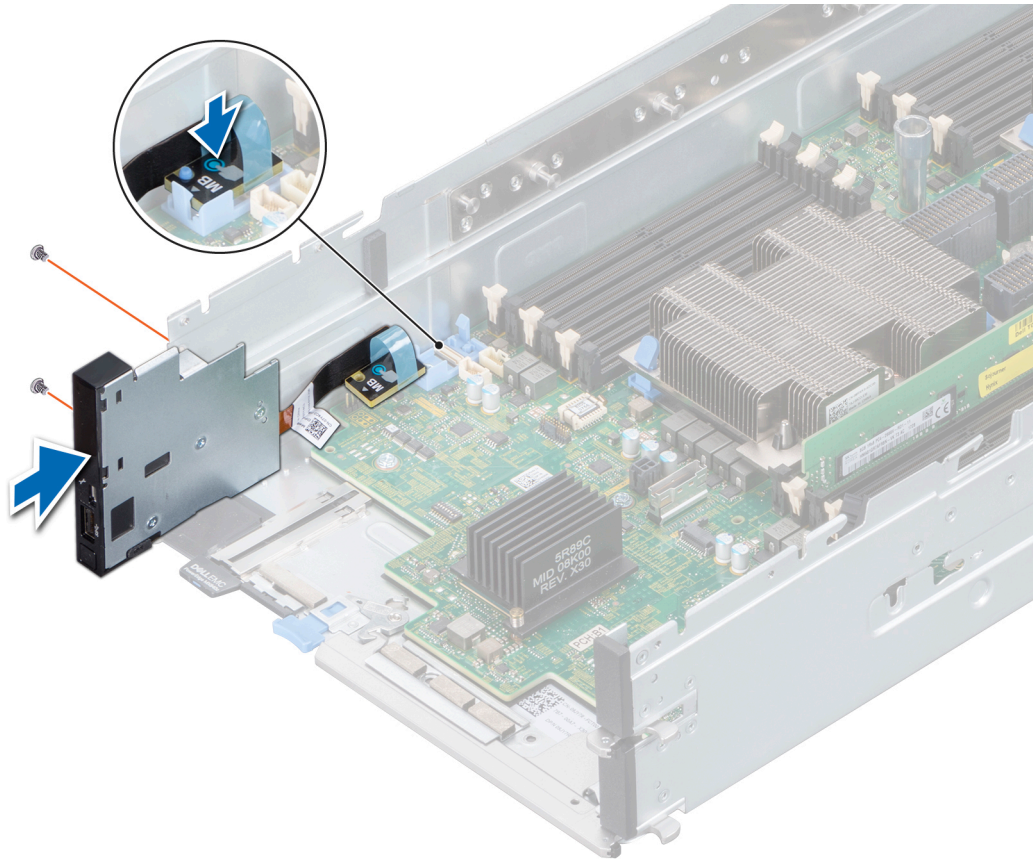
## Installing the control panel

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

#### Steps

1. Connect the control panel cable to the connector on the system board.
2. Align the control panel with the slots on the sled.
3. Using a Phillips #1 screwdriver, secure the control panel to the sled with the screws.



**Figure 50. Installing the control panel**

#### Next steps

1. [Install the BBU module.](#)
2. [Install the drive cage.](#)
3. [Install the backplane.](#)
4. [Install the drives.](#)
5. [Install the PEM.](#)
6. Follow the procedure listed in the [After working inside your sled](#) section.

## System memory

The sled supports DDR4 registered DIMMs (RDIMMs), load reduced DIMMs (LRDIMMs), Non-Volatile DIMMs (NVDIMM-Ns), and Intel Optane Data Center Persistent Memory Modules (DCPMMs) . System memory holds the instructions that are executed by the processor.

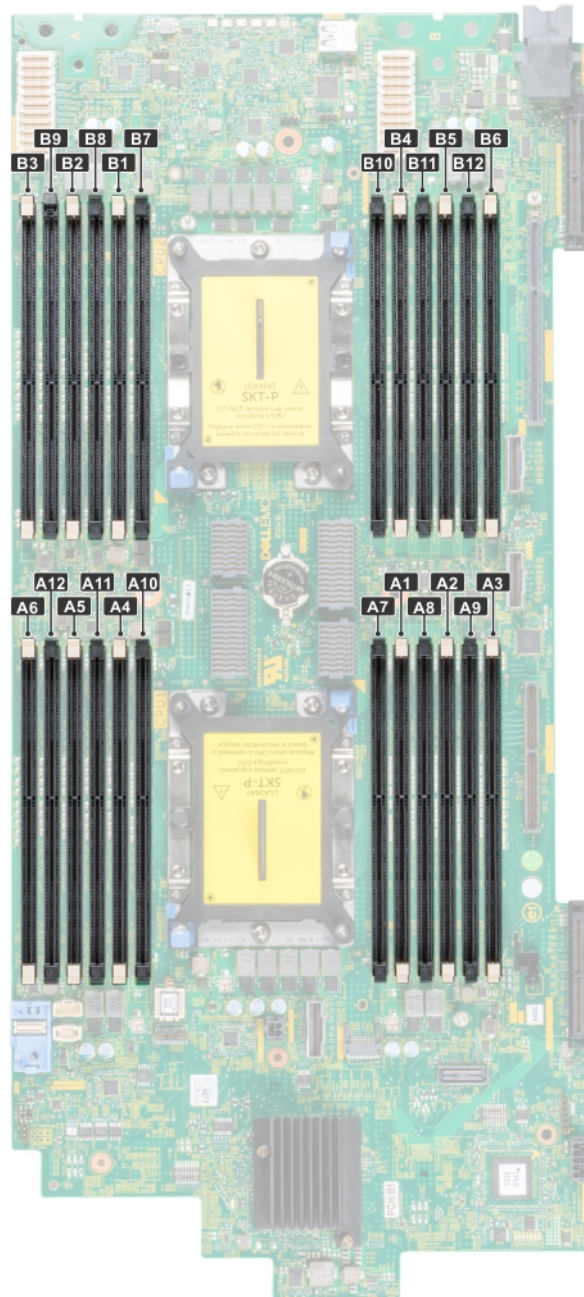
## Memory channels and population

The system supports DDR4 registered DIMMs (RDIMMs), Load Reduced DIMMs (LRDIMMs), Non-Volatile DIMMs (NVDIMM-Ns), and Intel Optane Data Center Persistent Memory Modules (DCPMMs) . System memory holds the instructions that are executed by the processor.

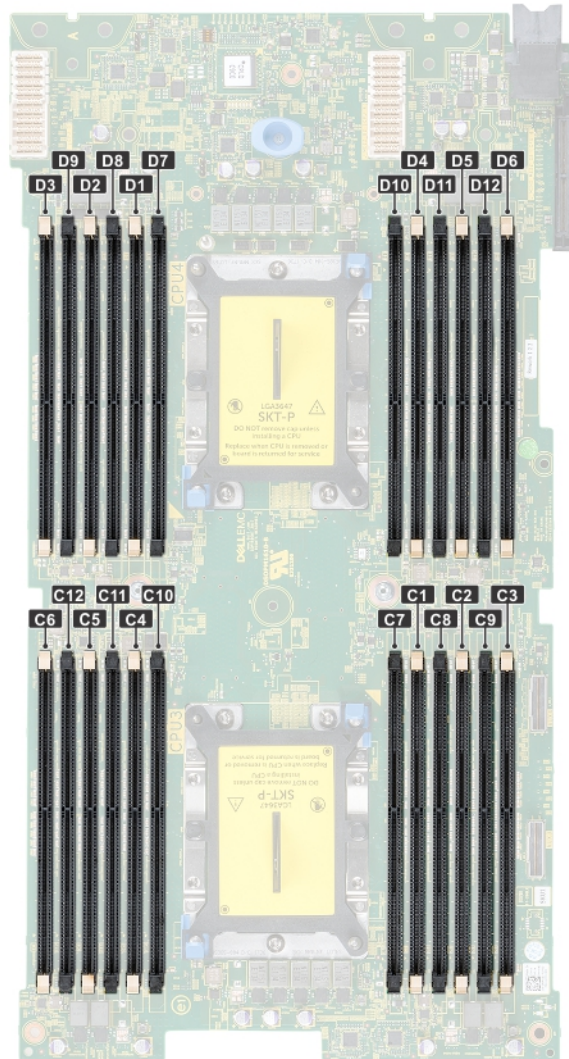
- DIMM type (RDIMM or LRDIMM or NVDIMM-N or DCPMM)
- Number of DIMMs populated per channel
- System profile selected (for example, Performance Optimized, Custom, or Dense Configuration Optimized)
- Maximum supported DIMM frequency of the processors



Your system contains 48 memory sockets that are split into two sets of 12 sockets, one set per processor. Each 12-socket set is organized into six channels. Six memory channels are allocated to each processor. In each channel, the release tabs of the first socket are marked white, and the second socket black.



**Figure 51. Memory sockets on the system board**



**Figure 52. Memory sockets on the PEM board**

Memory channels are organized as follows:

**Table 4. Memory channels**

Processor	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
Processor 1	Slots A1 and A7	Slots A2 and A8	Slots A3 and A9	Slots A4 and A10	Slots A5 and A11	Slots A6 and A12
Processor 2	Slots B1 and B7	Slots B2 and B8	Slots B3 and B9	Slots B4 and B10	Slots B5 and B11	Slots B6 and B12
Processor 3	Slots C1 and C7	Slots C2 and C8	Slots C3 and C9	Slots C4 and C10	Slots C5 and C11	Slots C6 and C12
Processor 4	Slots D1 and D7	Slots D2 and D8	Slots D3 and D9	Slots D4 and D10	Slots D5 and D11	Slots D6 and D12

The following table shows the memory populations and operating frequencies for the supported configurations:

**Table 5. Memory population**

**Table 5. Memory population**

DIMM Type	DIMM Ranking	Voltage	Operating Frequency (in MT/s)
RDIMM	1R/2R	1.2 V	2933, 2666
LRDIMM	4R/8R	1.2 V	2666, 3200*

**NOTE:** 3200\*-Memory speed will be limited to 2933MT/s due to processor limitations.

## General memory module installation guidelines

To ensure optimal performance of your system, observe the following general guidelines when configuring your system memory. If your system's memory configurations fail to observe these guidelines, your system might not boot, stop responding during memory configuration, or operate with reduced memory.

The memory bus may operate at frequency can be 3200 MT/s\*, 2933 MT/s, 2666 MT/s, 2400 MT/s, or 2133 MT/s depending on the following factors:

- System profile selected (for example, Performance Optimized, or Custom [can be run at high speed or lower])
- Maximum supported DIMM speed of the processors.
- Maximum supported DIMM speed of the processors.
- Maximum supported speed of the DIMMs

**NOTE:** MT/s indicates DIMM speed in MegaTransfers per second.

**NOTE:** 3200\*-Memory speed will be limited to 2933MT/s due to processor limitations.

The system supports Flexible Memory Configuration, enabling the system to be configured and run in any valid chipset architectural configuration. The following are the recommended guidelines for installing memory modules:

- All DIMMs must be DDR4.
- RDIMMs and LRDIMMs must not be mixed.
- 64 GB LRDIMMs that are DDP (Dual Die Package) LRDIMMs must not be mixed with 128 GB LRDIMMs that are TSV (Through Silicon Via/3DS) LRDIMMs.
- x4 and x8 DRAM based memory modules can be mixed.
- Up to two RDIMMs can be populated per channel regardless of rank count.
- Up to two LRDIMMs can be populated per channel regardless of rank count.
- A maximum of two different ranked DIMMs can be populated in a channel regardless of rank count.
- If memory modules with different speeds are installed, they will operate at the speed of the slowest installed memory module(s).
- Populate memory module sockets only if a processor is installed.
  - For dual-processor systems, sockets A1 to A12 and sockets B1 to B12 are available.
  - For quad-processor systems, sockets A1 to A12, sockets B1 to B12, sockets C1 to C12, and sockets D1 to D12 are available.
- Populate all the sockets with white release tabs first, followed by the black release tabs.
- When mixing memory modules with different capacities, populate the sockets with memory modules with the highest capacity first.

**NOTE:** For example, if you want to mix 8 GB and 16 GB memory modules, populate 16 GB memory modules in the sockets with white release tabs and 8 GB memory modules in the sockets with black release tabs.

- Memory modules of different capacities can be mixed provided other memory population rules are followed.

**NOTE:** For example, 8 GB and 16 GB memory modules can be mixed.

- In a dual-processor configuration, the memory configuration for each processor must be identical.

**NOTE:** For example, if you populate socket A1 for processor 1, then populate socket B1 for processor 2, and so on.

- Mixing of more than two memory module capacities in one systems is not supported.
- Unbalanced memory configurations will result in a performance loss so always populate memory channels identically with identical DIMMs for best performance.
- Populate six identical memory modules per processor (one DIMM per channel) at a time to maximize performance.


DIMM population update for Performance Optimized mode with quantity of 4 and 8 DIMMs per processor.

- When the DIMM quantity is 4 per processor, the population is slot 1, 2, 4, 5.
- When the DIMM quantity is 8 per processor, the population is slot 1, 2, 4, 5, 7, 8, 10, 11.

## NVDIMM-N memory module installation guidelines

The following are the recommended guidelines for installing NVDIMM-N memory modules:

- Each system supports memory configurations with 1, 2, 4, 6, or 12 NVDIMM-Ns.
- Supported configurations have dual processors and a minimum of 12x RDIMMs.
- Maximum of 12 NVDIMM-Ns can be installed on each system.
- NVDIMM-Ns or RDIMMs must not be mixed with LRDIMMs.
- DDR4 NVDIMM-Ns must be populated only on the black release tabs on processor 1 and 2.
- For systems with four processors, RDIMMs populated on processor 3 and 4 must be identical to the number of RDIMMs populated on processor 1 and 2.
- All slots on configurations 3, 6, 9, and 12 can be used, but a maximum of 12 NVDIMM-Ns can be installed in a system.

 **NOTE:** NVDIMM-N memory slots are not hot-pluggable.

For more information about the supported NVDIMM-N configurations, see the *NVDIMM-N User Guide* at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals).

**Table 6. Supported NVDIMM-N for dual processor configurations (continued)**

Configuration	Description	Memory population rules	
		RDIMMs	NVDIMM-N
Configuration 1	12x 16 GB RDIMMs, 1x NVDIMM-N	Processor1 {A1, 2, 3, 4, 5, 6} Processor2 {B1, 2, 3, 4, 5, 6}	Processor1 {A7}
Configuration 2	12x 32 GB RDIMMs, 1x NVDIMM-N	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7}
Configuration 3	23x 32 GB RDIMMs, 1x NVDIMM-N	Processor1 {A1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} Processor2 {B1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}	Processor2 {B12}
Configuration 4	12x 16 GB RDIMMs, 2x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7} Processor2 {B7}
Configuration 5	12x 32 GB RDIMMs, 2x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7} Processor2 {B7}
Configuration 6	22x 32 GB RDIMMs, 2x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11} Processor2 {B1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}	Processor1 {A12} Processor2 {B12}
Configuration 7	12x 16 GB RDIMMs, 4x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7, A8} Processor2 {B7, B8}
Configuration 8	22x 32 GB RDIMMs, 4x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7, A8} Processor2 {B7, B8}
Configuration 9	20x 32 GB RDIMMs, 4x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6, 7, 8, 9, 10}	Processor1 {A11, 12} Processor2 {B11, 12}

**Table 6. Supported NVDIMM-N for dual processor configurations**

Configuration	Description	Memory population rules	
		RDIMMs	NVDIMM-N
		Processor2 {B1, 2, 3, 4, 5, 6, 7, 8, 9, 10}	
Configuration 10	12x 16 GB RDIMMs, 6x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7, 8, 9} Processor2 {B7, 8, 9}
Configuration 11	12x 32 GB RDIMMs, 6x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7, 8, 9} Processor2 {B7, 8, 9}
Configuration 12	18x 32 GB RDIMMs, 6x NVDIMM-Ns	Processor1 {1, 2, 3, 4, 5, 6, 7, 8, 9} Processor2 {1, 2, 3, 4, 5, 6, 7, 8, 9}	Processor1 {A10, 11, 12} Processor2 {B10, 11, 12}
Configuration 13	12x 16 GB RDIMMs, 12x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7, 8, 9, 10, 11, 12} Processor2 {B7, 8, 9, 10, 11, 12}
Configuration 14	12x 32 GB RDIMMs, 12x NVDIMM-Ns	Same for all 12x RDIMM configurations. See Configuration 1.	Processor1 {A7, 8, 9, 10, 11, 12} Processor2 {B7, 8, 9, 10, 11, 12}

**Table 7. Supported NVDIMM-N for quad processor configurations**

Configuration	Description	Memory population rules	
		RDIMMs	NVDIMM-N
Configuration 1	24x 16 GB RDIMMs, 1x NVDIMM-N	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6}, Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7}
Configuration 2	24x 32 GB RDIMMs, 1x NVDIMM-N	Same for all 24x RDIMM configurations. See Configuration 1.	Processor1 {A7}
Configuration 3	47x 32 GB RDIMMs, 1x NVDIMM-N	Processor1 {A1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} , Processor2 {B1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11} , Processor3 {C1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} Processor 4 {D1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}	Processor2 {B12}
Configuration 4	24x 16 GB RDIMMs, 2x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6} Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7}, Processor2 {B7}

**Table 7. Supported NVDIMM-N for quad processor configurations (continued)**

Configuration	Description	Memory population rules	
		RDIMMs	NVDIMM-N
Configuration 5	24x 32 GB RDIMMs, 2x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6}, Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7}, Processor2 {B7}
Configuration 6	46x 32 GB RDIMMs, 2x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}, Processor2 {B1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}, Processor3 {C1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} Processor 4 {D1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}	Processor1 {A12}, Processor2 {B12}
Configuration 7	24x 16 GB RDIMMs, 4x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6}, Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7,8}, Processor2 {B7,8}
Configuration 8	24x 32 GB RDIMMs, 4x NVDIMMs	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6}, Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7,8}, Processor2 {B7,8}
Configuration 9	44x 32 GB RDIMMs, 4x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, Processor2 {B1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, Processor3 {C1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} Processor4 {D1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}	Processor1 {A11, 12}, Processor2 {B11, 12}
Configuration 10	24x 16 GB RDIMMs, 6x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6} Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7, 8, 9} Processor2 {B7, 8, 9}
Configuration 11	24x 32 GB RDIMMs, 6x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6}, Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7, 8, 9} Processor2 {B7, 8, 9}
Configuration 12	42x 32 GB RDIMMs, 6x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6, 7, 8, 9}, Processor2 {B1, 2, 3, 4, 5, 6, 7, 8, 9} Processor3 {C1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} Processor4 {D1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}	Processor1 {A10,11,12} Processor2 {B10, 11, 12}
Configuration 13	24x 16 GB RDIMMs, 12x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6},	Processor1 {A7, 8, 9, 10, 11, 12},



**Table 7. Supported NVDIMM-N for quad processor configurations**

Configuration	Description	Memory population rules	
		RDIMMs	NVDIMM-N
		Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor2 {B7, 8, 9, 10, 11, 12}
Configuration 14	24x 32 GB RDIMMs, 12x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6}, Processor3 {C1, 2, 3, 4, 5, 6} Processor4 {D1, 2, 3, 4, 5, 6}	Processor1 {A7, 8, 9, 10, 11, 12}, Processor2 {B7, 8, 9, 10, 11, 12}
Configuration 15	36x 32 GB RDIMMs, 12x NVDIMM-Ns	Processor1 {A1, 2, 3, 4, 5, 6}, Processor2 {B1, 2, 3, 4, 5, 6}, Processor3 {C1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} Processor 4 {D1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}	Processor1 {A7, 8, 9, 10, 11, 12}, Processor2 {B7, 8, 9, 10, 11, 12}

## DCPMM installation guidelines

The following are the recommended guidelines for installing data center persistent memory module (DCPMM) memory modules:

- Each system supports maximum of one DCPMM memory module per channel.
- NOTE:** If two different DCPMM capacities are mixed, an F1/F2 warning is displayed as the configuration is not supported.
- DCPMM can be mixed with RDIMM, LRDIMM, and 3DS LRDIMM.
- Mixing of DDR4 DIMM types (RDIMM, LRDIMM, and 3DS LRDIMM), within channels, for Integrated Memory Controller (iMC), or across sockets are not supported.
- Mixing of DCPMM operating modes (App Direct, Memory Mode) is not supported.
- If only one DIMM is populated on a channel, it should always go to the first slot in that channel (white slot).
- If a DCPMM and a DDR4 DIMM are populated on the same channel, always plug DCPMM on second slot (black slot).
- If the DCPMM is configured in Memory Mode, the recommended DDR4 to DCPMM capacity ratio is 1:4 to 1:16 per iMC.
- DCPMMs' cannot be mixed with other DCPMMs capacities or NVDIMMs.
- Mixing different capacities of RDIMMs and LRDIMMs are not allowed when DCPMM is installed.
- DCPMMs of different capacities are not allowed.

For more information about the supported DCPMM configurations, see the *Dell EMC DCPMM User 's Guide* at [https://www.dell.com/support/home/products/server\\_int/server\\_int\\_poweredge](https://www.dell.com/support/home/products/server_int/server_int_poweredge).

**Table 8. 2 socket DCPMM configurations**

No. of CPUs in the Server	DCPMM Population	DRAM Population	DRAM Capacity (GB)	DCPMM Capacity (GB)	Operating system Memory in Memory Mode (GB)	Total Memory (GB)	Total Memory per CPU (GB)	Ratio DRAM to Optane Memory	Requires an M or L CPU	Supported in App Direct Mode	Supported in Memory Mode
2	128 GB x 1	16 GB x 12	192	128	N/A	320	160	1 : 0.7	No	Yes	No
2	128 GB x 2	16 GB x 12	192	256	N/A	448	224	1 : 1.3	No	Yes	No
2	128 GB x 4	16 GB x 8	128	512	512	640	320	1 : 4	No	Yes	Yes
2	128 GB x 4	16 GB x 12	192	512	N/A	704	352	1 : 2.7	No	Yes	No
2	128 GB x 8	16 GB x 12	192	1,024	1,024	1,216	608	1 : 5.3	No	Yes	Yes

**Table 8. 2 socket DCPMM configurations**


No. of CPUs in the Server	DCPM M Population	DRAM Population	DRAM Capacity (GB)	DCPM M Capacity (GB)	Operating system Memory in Memory Mode (GB)	Total Memory (GB)	Total Memory per CPU (GB)	Ratio DRAM to Optane Memory	Requires an M or L CPU	Supported in App Direct Mode	Supported in Memory Mode
2	128 GB x 12	16 GB x 12	192	1,536	1,536	1,728	864	1 : 8	No	Yes	Yes
2	128 GB x 1	32 GB x 12	384	128	N/A	512	256	1 : 0.3	No	Yes	No
2	128 GB x 2	32 GB x 12	384	256	N/A	640	320	1 : 0.7	No	Yes	No
2	128 GB x 4	32 GB x 12	384	512	N/A	896	448	1 : 1.3	No	Yes	No
2	128 GB x 8	32 GB x 12	384	1,024	N/A	1,408	704	1 : 2.7	No	Yes	No
2	128 GB x 12	32 GB x 12	384	1,536	1,536	1,920	960	1 : 4	No	Yes	Yes
2	128 GB x 4	64 GB x 12	768	512	N/A	1,280	640	1 : 0.7	No	Yes	No
2	128 GB x 8	64 GB x 12	768	1,024	N/A	1,792	896	1 : 1.3	No	Yes	No
2	128 GB x 12	64 GB x 12	768	1,536	N/A	2,304	1,152	1 : 2	L SKU	Yes	No
2	128 GB x 12	128 GB x 12	1,536	1,536	N/A	3,072	1,536	1 : 1	L SKU	Yes	No
2	512 GB x 8	32 GB x 12	384	4,096	4,096	4,480	2,240	1 : 10.7	L SKU	Yes	Yes
2	512 GB x 12	32 GB x 12	384	6,144	6,144	6,528	3,264	1 : 16	L SKU	Yes	Yes
2	512 GB x 8	64 GB x 12	768	4,096	4,096	4,864	2,432	1 : 5.3	L SKU	Yes	Yes
2	512 GB x 12	64 GB x 12	768	6,144	6,144	6,912	3,456	1 : 8	L SKU	Yes	Yes
2	512 GB x 12	128 GB x 12	1,536	6,144	6,144	7,680	3,840	1 : 4	L SKU	Yes	Yes
2	256 GB x 8	16 GB x 12	192	2,048	2,048	2,240	1,120	1 : 10.7	L SKU	Yes	Yes
2	256 GB x 8	32 GB x 12	384	2,048	2,048	2,432	1,216	1 : 5.3	L SKU	Yes	Yes
2	256 GB x 12	32 GB x 12	384	3,072	3,072	3,456	1,728	1 : 8	L SKU	Yes	Yes
2	256 GB x 8	64 GB x 12	768	2,048	N/A	2,816	1,408	1 : 2.7	L SKU	Yes	No
2	256 GB x 12	64 GB x 12	768	3,072	3,072	3,840	1,920	1 : 4	L SKU	Yes	Yes

**Table 8. 2 socket DCPMM configurations**

No. of CPUs in the Server	DCPMM Population	DRAM Population	DRAM Capacity (GB)	DCPMM Capacity (GB)	Operating system Memory in Memory Mode (GB)	Total Memory (GB)	Total Memory per CPU (GB)	Ratio DRAM to Optane Memory	Requires an M or L CPU	Supported in App Direct Mode	Supported in Memory Mode
2	256 GB x 12	128 GB x 12	1,536	3,072	N/A	4,608	2,304	1 : 2	L SKU	Yes	No

**Table 9. 4 socket DCPMM configurations**

DCPMM Population . of CPUs in the Server	DRAM Population	DRAM Capacity (GB)	DCPMM Capacity (GB)	Operating system Memory in Memory Mode (GB)	Total Memory (GB)	Total Memory per CPU (GB)	Ratio DRAM to Optane Memory	Requires an M or L CPU	Supported in App Direct Mode	Supported in Memory Mode
128 GB x 16	16 GB x 24	384	2,048	2,048	2,432	608	1 : 5.3	No	Yes	Yes
128 GB x 24	16 GB x 24	384	3,072	3,072	3,456	864	1 : 8	No	Yes	Yes
128 GB x 16	32 GB x 24	768	2,048	N/A	2,816	704	1 : 2.7	No	Yes	No
128 GB x 24	32 GB x 24	768	3,072	3,072	3,840	960	1 : 4	No	Yes	Yes
128 GB x 24	64 GB x 24	1,536	3,072	N/A	4,608	1,152	1 : 2	L SKU	Yes	No
128 GB x 24	128 GB x 24	3,072	3,072	N/A	6,144	1,536	1 : 1	L SKU	Yes	No
112 GB x 16	32 GB x 24	768	8,192	8,192	8,960	2,240	1 : 10.7	L SKU	Yes	Yes
112 GB x 24	32 GB x 24	768	12,288	12,288	13,056	3,264	1 : 16	L SKU	Yes	Yes
112 GB x 16	64 GB x 24	1,536	8,192	8,192	9,728	2,432	1 : 5.3	L SKU	Yes	Yes
112 GB x 24	64 GB x 24	1,536	12,288	12,288	13,824	3,456	1 : 8	L SKU	Yes	Yes
112 GB x 24	128 GB x 24	3,072	12,288	12,288	15,360	3,840	1 : 4	L SKU	Yes	Yes
256 GB x 16	16 GB x 24	384	4,096	4,096	4,480	1,120	1 : 10.7	L SKU	Yes	Yes
256 GB x 24	16 GB x 24	384	6,144	6,144	6,528	1,632	1 : 16	L SKU	Yes	Yes
256 GB x 16	32 GB x 24	768	4,096	4,096	4,864	1,216	1 : 5.3	L SKU	Yes	Yes
256 GB x 24	32 GB x 24	768	6,144	6,144	6,912	1,728	1 : 8	L SKU	Yes	Yes
256 GB x 16	64 GB x 24	1,536	4,096	N/A	5,632	1,408	1 : 2.7	L SKU	Yes	No
256 GB x 24	64 GB x 24	1,536	6,144	6,144	7,680	1,920	1 : 4	L SKU	Yes	Yes
256 GB x 24	128 GB x 24	3,072	6,144	N/A	9,216	2,304	1 : 2	L SKU	Yes	No

 **NOTE:** There are limited configurations available for Dual Socket Servers with only one CPU populated.






## Mode-specific guidelines

The configurations allowed depend on the memory mode selected in the System BIOS.

**Table 10. Memory operating modes**



Memory Operating Mode	Description
<b>Optimizer Mode</b>	The <b>Optimizer Mode</b> if enabled, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

**Table 10. Memory operating modes (continued)**


Memory Operating Mode	Description
	 <b>NOTE:</b> DCPMM supports only Optimizer mode.
<b>Mirror Mode</b>	<p>The <b>Mirror Mode</b> if enabled, the system maintains two identical copies of data in memory, and the total available system memory is one half of the total installed physical memory. Half of the installed memory is used to mirror the active memory modules. This feature provides maximum reliability and enables the system to continue running even during a catastrophic memory failure by switching over to the mirrored copy. The installation guidelines to enable Mirror Mode require that the memory modules be identical in size, speed, and technology, and they must be populated in sets of 6 per processor.</p>
<b>Single Rank Spare Mode</b>	<p><b>Single Rank Spare Mode</b> allocates one rank per channel as a spare. If excessive correctable errors occur in a rank or channel, while the operating system is running, they are moved to the spare area to prevent errors from causing an uncorrectable failure. Requires two or more ranks to be populated in each channel.</p>
<b>Multi Rank Spare Mode</b>	<p><b>Multi Rank Spare Mode</b> allocates two ranks per channel as a spare. If excessive correctable errors occur in a rank or channel, while the operating system is running, they are moved to the spare area to prevent errors from causing an uncorrectable failure. Requires three or more ranks to be populated in each channel.</p> <p>With single rank memory sparing enabled, the system memory available to the operating system is reduced by one rank per channel.</p> <p>For example, in a dual-processor configuration with 24x 16 GB dual-rank memory modules, the available system memory is: <math>\frac{3}{4}</math> (ranks/channel) <math>\times</math> 24 (memory modules) <math>\times</math> 16 GB = 288 GB, and not 24 (memory modules) <math>\times</math> 16 GB = 384 GB. For multi rank sparing, the multiplier changes to <math>\frac{1}{2}</math> (ranks/channel).</p> <p> <b>NOTE:</b> To use memory sparing, this feature must be enabled in the BIOS menu of System Setup.</p> <p> <b>NOTE:</b> Memory sparing does not offer protection against a multi-bit uncorrectable error.</p>
<b>Dell Fault Resilient Mode</b>	<p>The <b>Dell Fault Resilient Mode</b> if enabled, the BIOS creates an area of memory that is fault resilient. This mode can be used by an OS that supports the feature to load critical applications or enables the OS kernel to maximize system availability.</p> <p> <b>NOTE:</b> This feature is only supported in Gold and Platinum Intel processors.</p> <p> <b>NOTE:</b> Memory configuration has to be of same size DIMM, speed, and rank.</p>

## Optimizer 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.

- Dual processor: Populate the slots in round robin sequence starting with processor 1.  
 **NOTE:** Processor 1 and processor 2 population should match.
- Quad processor: Populate the slots in round robin sequence starting with processor 1.  
 **NOTE:** Processor 1, processor 2, processor 3, and processor 4 population should match.

**Table 11. Memory population rules**

Processor	Configuration	Memory population	Memory population information
Dual processor (Start with processor1. processor1 and processor 2)	Optimized (Independent channel) population order	A{1}, B{1}, A{2}, B{2}, A{3}, B{3}, A{4}, B{4},	<p>Odd number of DIMM population per processor is allowed.</p> <p> <b>NOTE:</b> Odd number of DIMMs will result in unbalanced memory configurations, which</p>

**Table 11. Memory population rules (continued)**

Processor	Configuration	Memory population	Memory population information
population should match)		A{5}, B{5}, A{6}, B{6}	<p>in turn will result in performance loss. It is recommended to populate all memory channels identically with identical DIMMs for best performance.</p> <p><b>i</b> <b>NOTE:</b> For best performance, 6 DIMMs or 12 DIMMs per processor is recommended.</p> <p>Optimizer population order is not traditional for 8 and 16 DIMMs installations for dual processor.</p> <ul style="list-style-type: none"> <li>For 8 DIMMs: A1, A2, A4, A5, B1, B2, B4, B5</li> <li>For 16 DIMMs: A1, A2, A4, A5, A7, A8, A10, A11 B1, B2, B4, B5, B7, B8, B10, B11</li> </ul>
	Mirroring population order	A{1, 2, 3, 4, 5, 6}, B{1, 2, 3, 4, 5, 6}, A{7, 8, 9, 10, 11, 12}, B{7, 8, 9, 10, 11, 12}	Mirroring is supported with 6 or 12 DIMMs per processor.
	Single rank sparing population order	A{1}, B{1}, A{2}, B{2}, A{3}, B{3}, A{4}, B{4}, A{5}, B{5}, A{6}, B{6}	<ul style="list-style-type: none"> <li>DIMMs must be populated in the order specified.</li> <li>Requires two ranks or more per channel.</li> </ul>
	Multi rank sparing population order	A{1}, B{1}, A{2}, B{2}, A{3}, B{3}, A{4}, B{4}, A{5}, B{5}, A{6}, B{6}	<ul style="list-style-type: none"> <li>DIMMs must be populated in the order specified.</li> <li>Requires three ranks or more per channel.</li> </ul>
	Fault resilient population order	A{1, 2, 3, 4, 5, 6}, B{1, 2, 3, 4, 5, 6}, A{7, 8, 9, 10, 11, 12}, B{7, 8, 9, 10, 11, 12}	Supported with 6 or 12 DIMMs per processor.
Quad processor (Starting with processor 1, and processor 1, processor 2, processor 3, and processor 4 population should match)	Optimized population order (Independent channel)	A{1}, B{1}, C{1}, D{1}, A{2}, B{2}, C{2}, D{2}, A{3}, B{3}, C{3}, D{3}, A{4}, B{4}, C{4}, D{4}	<p>Odd number of DIMM population per processor is allowed.</p> <p><b>i</b> <b>NOTE:</b> Odd number of DIMMs will result in unbalanced memory configurations, which in turn will result in performance loss. It is recommended to populate all memory channels identically with identical DIMMs for best performance.</p> <p><b>i</b> <b>NOTE:</b> For best performance, 6 DIMMs or 12 DIMMs per processor is recommended.</p> <p>Optimizer population order is not traditional for 16 and 32 DIMMs installations for dual processor.</p> <ul style="list-style-type: none"> <li>For 16 DIMMs: A1, A2, A4, A5, B1, B2, B4, B5, C1, C2, C4, C5, D1, D2, D4, D5</li> <li>For 32 DIMMs:</li> </ul>


**Table 11. Memory population rules (continued)**


Processor	Configuration	Memory population	Memory population information
			A1, A2, A4, A5, A7, A8, A10, A11, B1, B2, B4, B5, B7, B8, B10, B11 C1, C2, C4, C5, C7, C8, C10, C11 D1, D2, D4, D5, D7, D8, D10, D11
	Mirroring population order	A{1, 2, 3, 4, 5, 6}, B{1, 2, 3, 4, 5, 6}, C{1, 2, 3, 4, 5, 6}, D{1, 2, 3, 4, 5, 6} A{7, 8, 9, 10, 11, 12}, B{7, 8, 9, 10, 11, 12}, C{7, 8, 9, 10, 11, 12}, D{7, 8, 9, 10, 11, 12}	Mirroring is supported with 6 or 12 DIMM slots per processor.
	Single rank sparing population order	A{1}, B{1}, C{1}, D{1}, A{2}, B{2}, C{2}, D{2}, A{3}, B{3}, C{3}, D{3}, A{4}, B{4}, C{4}, D{4}	<ul style="list-style-type: none"> <li>DIMMs must be populated in the order specified.</li> <li>Requires two ranks or more per channel.</li> </ul>
	Multi rank spare population order	A{1}, B{1}, C{1}, D{1}, A{2}, B{2}, C{2}, D{2}, A{3}, B{3}, C{3}, D{3}, A{4}, B{4}, C{4}, D{4}	<ul style="list-style-type: none"> <li>DIMMs must be populated in the order specified.</li> <li>Requires three ranks or more per channel.</li> </ul>
	Fault resilient population order	A{1, 2, 3, 4, 5, 6}, B{1, 2, 3, 4, 5, 6}, C{1, 2, 3, 4, 5, 6}, D{1, 2, 3, 4, 5, 6} A{7, 8, 9, 10, 11, 12}, B{7, 8, 9, 10, 11, 12}, C{7, 8, 9, 10, 11, 12}, D{7, 8, 9, 10, 11, 12}	Supported with 6 or 12 DIMM slots per processor.


## Removing a memory module

### Prerequisites

- Follow the safety guidelines listed in the [Safety instructions](#) section.
- Follow the procedure listed in the [Before working inside your sled](#) section.
- For removing the memory module on the PEM, [remove the air shroud from the PEM](#).
- For removing the memory module on the system board,
  - [Remove the PEM](#).
  - [Remove the air shroud on the system board](#).

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

 **CAUTION:** To ensure proper sled 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 PowerEdge MX840c Technical Specs at [www.dell.com/poweredge manuals](http://www.dell.com/poweredge manuals)

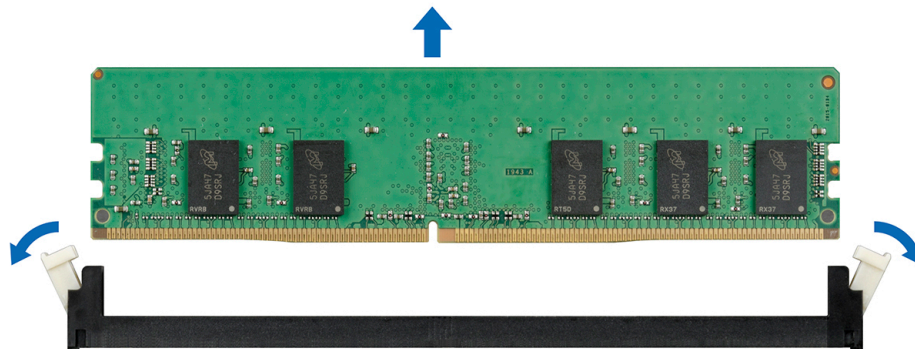
### Steps

- 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 sled or PEM.



**Figure 53. Removing a memory module from the system board or PEM**

#### Next steps

1. [Install a memory module.](#)
  2. If you are removing the memory module permanently, install a memory module blank. The procedure to install a memory module blank is similar to that of the memory module.
- NOTE:** For the minimum sled configuration, two processors are required on the system board. Install the processor/DIMM blank on the processor 3/4 sockets on the PEM board.

## Installing a memory module

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

**CAUTION:** To ensure proper sled 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 PowerEdge MX840c Technical Specs at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals)

#### Steps

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.

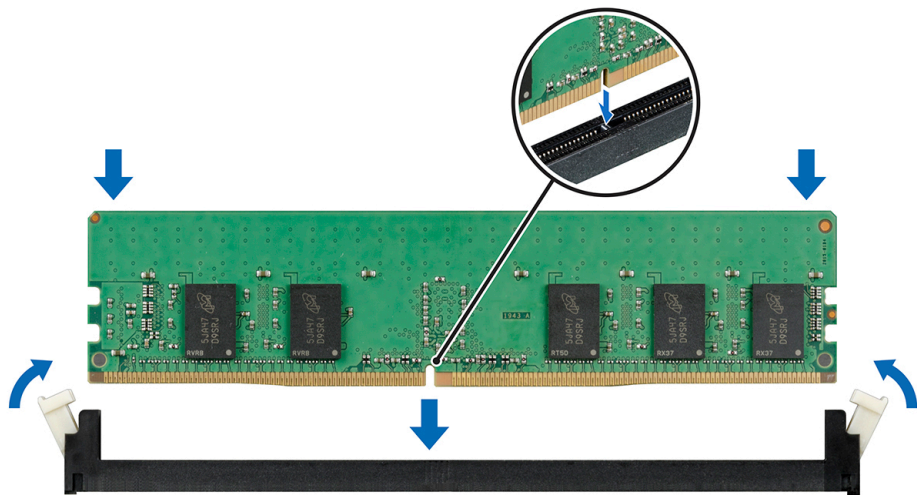


Figure 54. Installing a memory module on the system board or PEM

Next steps

1. After installing the memory module on the system board,
  - a. [Install the air shroud into the system board.](#)
  - b. [Install the PEM.](#)
2. After installing the memory module on the PEM, [install the air shroud on the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled](#) section.
4. To verify if the memory module has been installed properly, press F2 and navigate to **System Setup Main Menu > System BIOS > Memory Settings**. In the **Memory Settings** screen, the System Memory Size must reflect the updated capacity of the installed memory.
5. If the value is incorrect, one or more of the memory modules may not be installed properly. Ensure that the memory module is firmly seated in the memory module socket.
6. Run the system memory test in system diagnostics.

## Processors and heat sinks

The processor controls memory, peripheral interfaces, and other components of the system. The system can have more than one processor configurations.

The heat sink absorbs the heat generated by the processor, and helps the processor to maintain its optimal temperature level.

## Processor wattage and heat sink dimensions

Table 12. Processor wattage and heat sink dimensions

Processor configuration	Processor type	Heat sink width	Number of DIMMs, Maximum	Number of DIMMs, RAS (Reliability, Availability, and Serviceability)
All	up to 205 W	90 mm	12	12

# Removing the processor and heat sink module

## Prerequisites

**⚠ WARNING:** The heat sink may be hot to touch for some time after the sled has been powered down. Allow the heat sink to cool before removing it.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. For removing the processor and heat sink module from the PEM, [remove the air shroud from the PEM](#).
4. For removing the processor and heat sink module from the system board,
  - a. [Remove the PEM](#).
  - b. [Remove the air shroud on the system board](#).

## Steps

1. Using a Torx #T30 screwdriver, loosen the screws on the heat sink in the order below:
  - a. Loosen the first screw three turns.
  - b. Loosen the second screw completely.
  - c. Return to the first screw and loosen it completely.

**i NOTE:** It is normal for the heat sink to slip off the blue retention clips when the screws are partially loosened, continue to loosen the screws.
2. Pushing both the blue retention clips simultaneously, lift the processor and heat sink module (PHM) out of the sled or PEM.
3. Set the PHM aside with the processor side facing up.

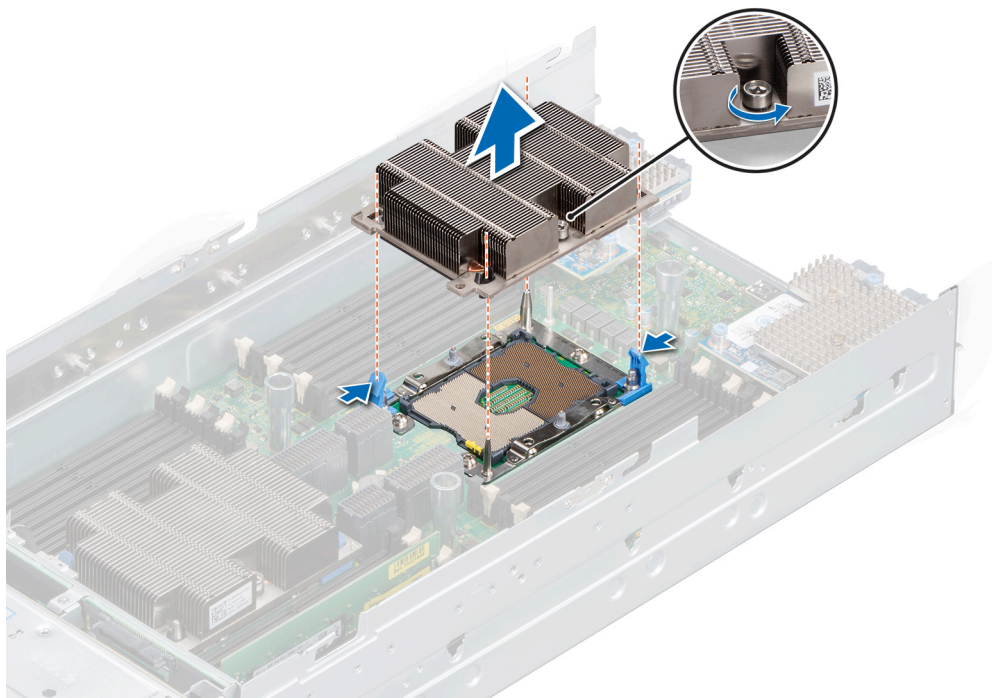


Figure 55. Removing the processor and heat sink module

## Next steps

1. [Install the processor and heat sink module](#).

# Removing the processor from the processor and heat sink module

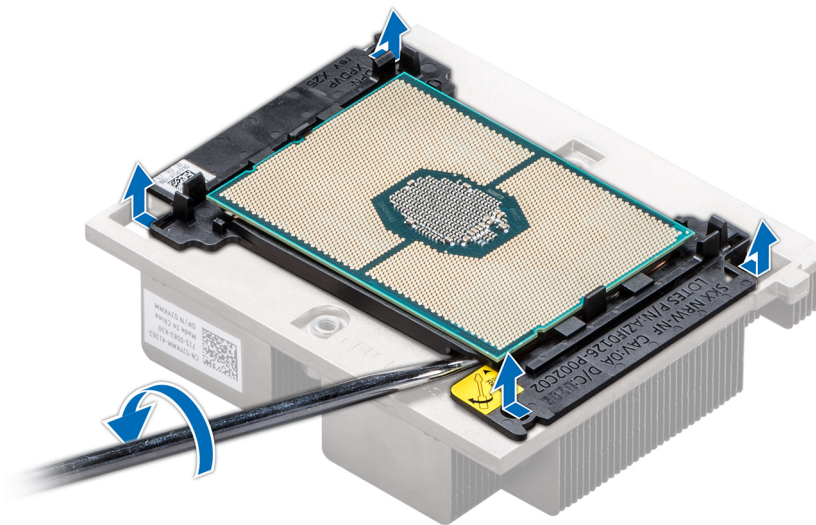
## Prerequisites

**NOTE:** Only remove the processor from the processor and heat sink module (PHM) if you are replacing the processor or heat sink. This procedure is not required when replacing a system board.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the processor and heat sink module.](#)

## Steps

1. Place the heat sink with the processor side facing up.
2. Insert a flat blade screwdriver into the release slot marked with a yellow label. Twist (do not pry) the screwdriver to break the thermal paste seal.
3. Push the retaining clips on the processor bracket to unlock the bracket from the heat sink.



**Figure 56. Loosening the processor bracket**

4. Lift the bracket and the processor away from the heat sink, and place the processor connector side down on the processor tray.
5. Flex the outer edges of the bracket to release the bracket from the processor.

**NOTE:** Ensure that the processor and the bracket are placed in the tray after you remove the heat sink.



**Figure 57. Removing the processor bracket**

#### Next steps

1. [Install the processor into the processor and heat sink module.](#)

## Installing the processor into a processor and heat sink module

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

#### Steps

1. Place the processor in the processor tray.

**NOTE:** Ensure that the pin 1 indicator on the processor tray is aligned with the pin 1 indicator on the processor.

2. Flex the outer edges of the bracket around the processor ensuring that the processor is locked into the clips on the bracket.

**NOTE:** Ensure that the pin 1 indicator on the bracket is aligned with the pin 1 indicator on the processor before placing the bracket on the processor.

**NOTE:** Ensure that the processor and the bracket are placed in the tray before you install the heat sink.



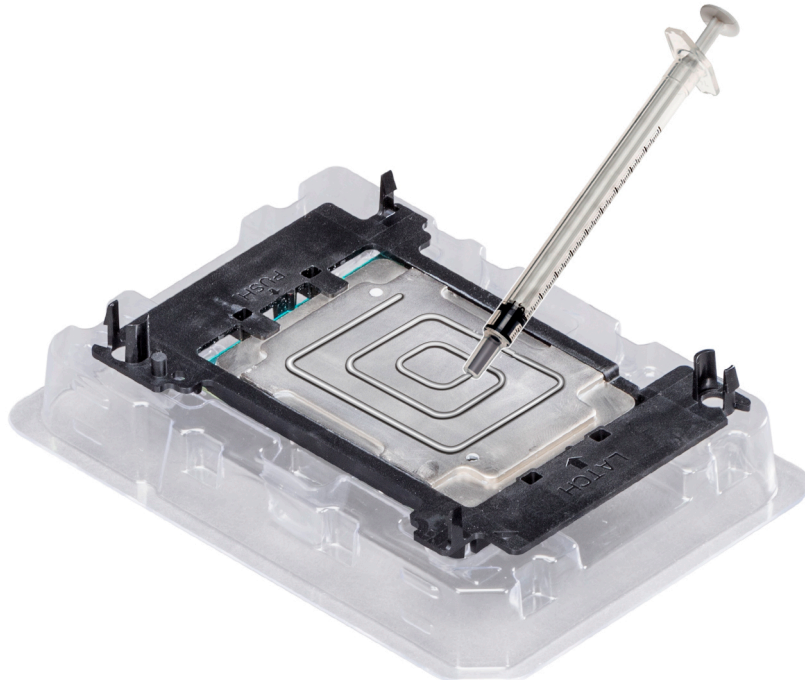


**Figure 58. Installing the processor bracket**

3. If you are using an existing heat sink, remove the thermal grease from the heat sink by using a clean lint-free cloth.
4. Use the thermal grease syringe included with your processor kit to apply the grease in a quadrilateral design on the top of the processor.

**CAUTION:** Applying too much thermal grease can result in excess grease coming in contact with and contaminating the processor socket.

**NOTE:** The thermal grease syringe is intended for single use only. Dispose the syringe after you use it.



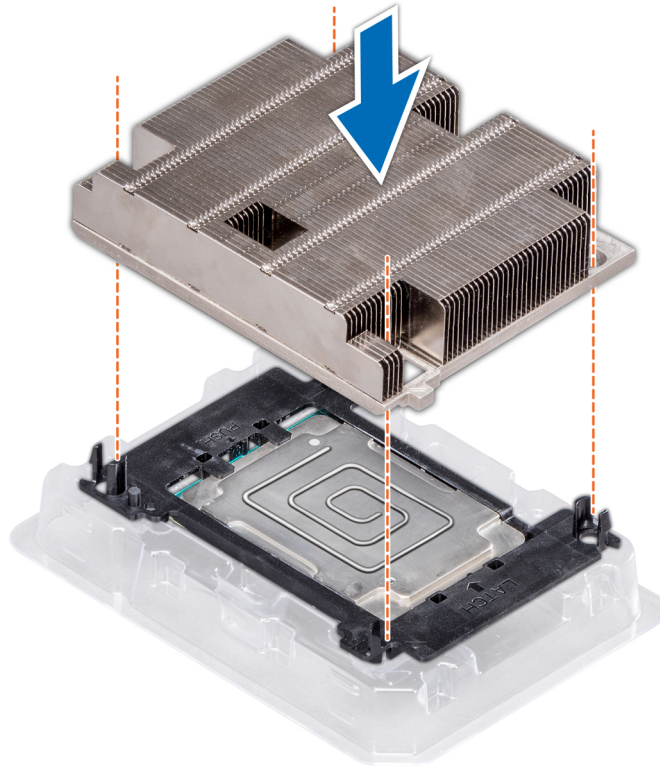
**Figure 59. Applying thermal grease on top of the processor**

5. Place the heat sink on the processor and push down on the base of the heat sink until the bracket locks onto the heat sink.

**NOTE:**

- Ensure that the two guide pin holes on the bracket match the guide holes on the heat sink.

- Do not press on the heat sink fins.
- Ensure that the pin 1 indicator on the heat sink is aligned with the pin 1 indicator on the bracket before placing the heat sink onto the processor and bracket.



**Figure 60. Installing the heat sink onto the processor**

#### Next steps

1. [Install the processor and heat sink module.](#)
2. Follow the procedure listed in the [After working inside your sled](#) section.

## Installing the processor and heat sink module

#### Prerequisites

**CAUTION:** Never remove the heat sink from a processor unless you intend to replace the processor. The heat sink is necessary to maintain proper thermal conditions.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. If installed, remove the processor dust cover.

#### Steps

1. Align the pin 1 indicator of the heat sink to the system board or PEM and then place the processor and heat sink module (PHM) on the processor socket.

**CAUTION:** To avoid damaging the fins on the heat sink, do not press down on the heat sink fins.

**NOTE:** Ensure that the PHM is held parallel to the system board or PEM to prevent damaging the components.

2. Push the blue retention clips inward to allow the heat sink to drop into place.
3. Using the Torx #T30 screwdriver, tighten the screws on the heat sink in the order below:

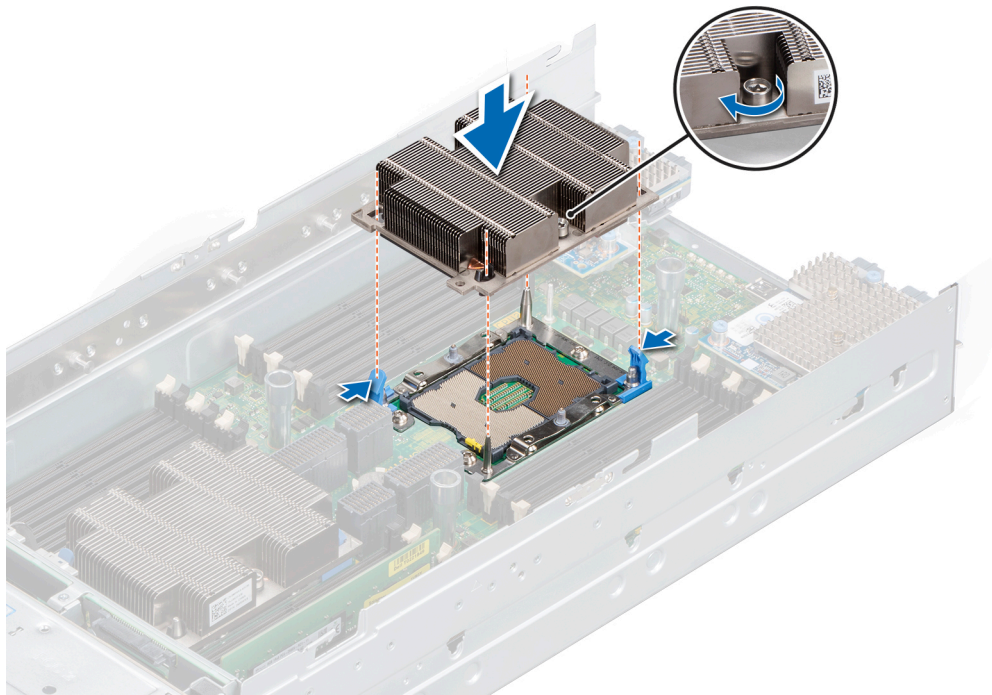


- a. Partially tighten the first screw (approximately 3 turns).
- b. Tighten the second screw completely.
- c. Return to the first screw and tighten it completely.

If the PHM slips off the blue retention clips when the screws are partially tightened, follow these steps to secure the PHM:

- a. Loosen both the heat sink screws completely.
- b. Lower the PHM on to the blue retention clips, following the procedure described in step 2.
- c. Secure the PHM to the system board or PEM, following the replacement instructions listed in step 3 above.

**NOTE:** The processor and heat sink module retention screws should not be tightened to more than 0.11 kgf-m (1.13 N.m or 10+/-0.2 in-lbf).



**Figure 61. Installing the processor and heat sink module**

#### Next steps

1. After installing the processor and heat sink module on the system board,
  - a. [Install the air shroud into the system board.](#)
  - b. [Install the PEM.](#)
2. After installing the processor and heat sink module on the PEM, [install the air shroud on the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled](#) section.

## iDRAC card

In the PowerEdge MX840c, iDRAC is not embedded on the system board. The iDRAC is a separate card different from the 14G and previous generation. The vFlash card for the PowerEdge MX840c is available on the iDRAC card.

## Removing the iDRAC card

#### Prerequisites

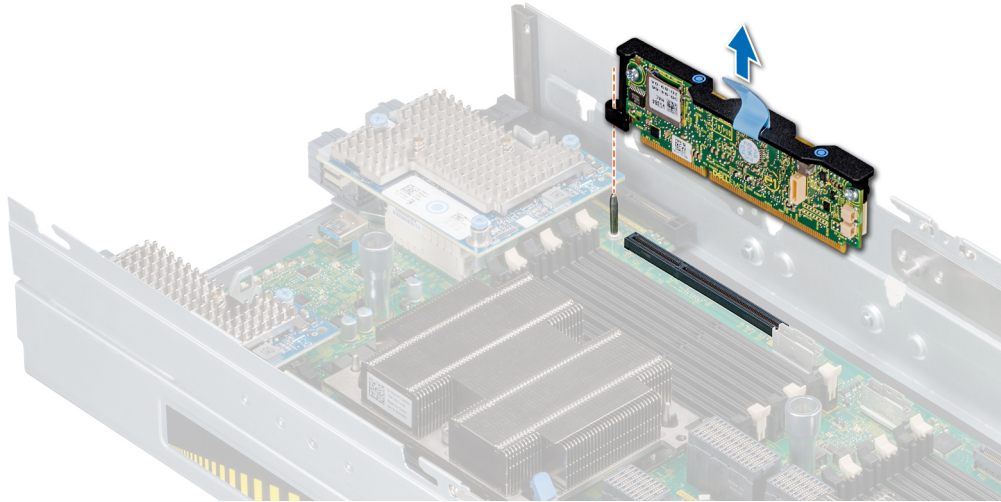
1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)

4. [Remove the air shroud from the system board.](#)

**CAUTION:** If either the system board or iDRAC card fails, it is required to replace the system board and iDRAC card simultaneously.

### Steps

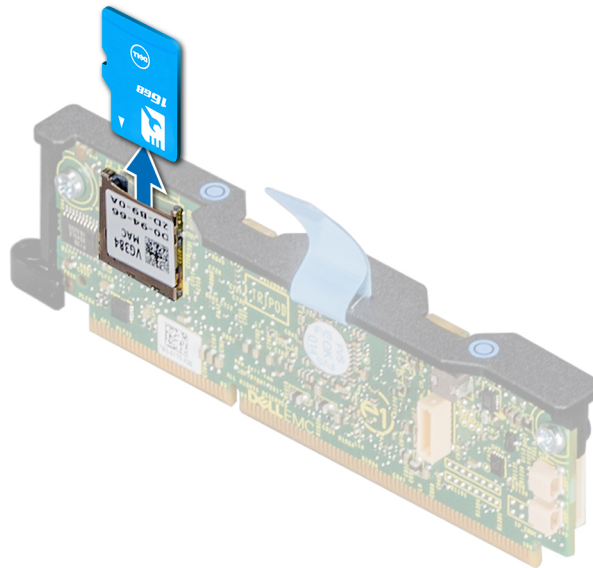
Hold the blue pull tag, and lift the iDRAC card away from the sled.



**Figure 62. Removing the iDRAC card**

**NOTE:** The iDRAC card is not swappable with other MX series sleds in the MX7000 enclosure.

**NOTE:** The procedure to remove vFlash card is similar to [removing a MicroSD card](#).



**Figure 63. Removing a vFlash card**

### Next steps

1. [Install the iDRAC card.](#)

# Installing the iDRAC card

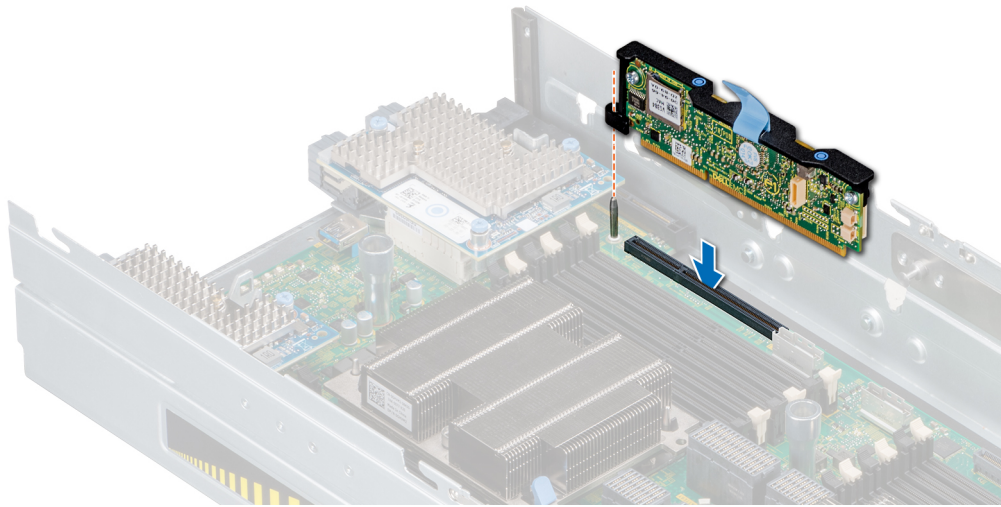
## Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

**CAUTION:** If either the system board or iDRAC card fails, it is required to replace the system board and iDRAC card simultaneously.

## Steps

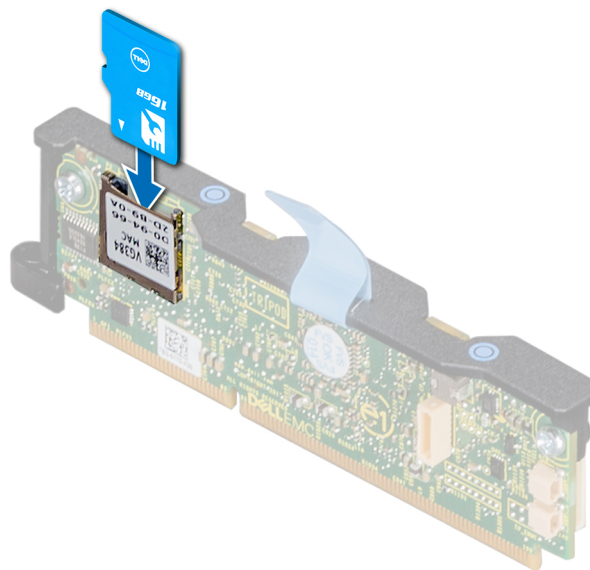
1. Align the iDRAC card with the connector and guide pin on the system board.
2. Lower the iDRAC card on the system board connector and press the blue push points until the iDRAC card is firmly seated on the system board connector.



**Figure 64. Installing the iDRAC card**

**NOTE:** The iDRAC card is not swappable with other MX series sleds in the MX7000 enclosure.

**NOTE:** The procedure to install a vFlash card is similar to [installing a MicroSD card](#).



**Figure 65. Installing a vFlash card**

### Next steps

1. [Install the air shroud on the system board.](#)
2. [Install the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled](#) section.

## PERC cards

The PowerEdge MX840c sled includes dedicated slots on the system board and PEM board for PERC cards.

## Removing the PERC card

### Prerequisites

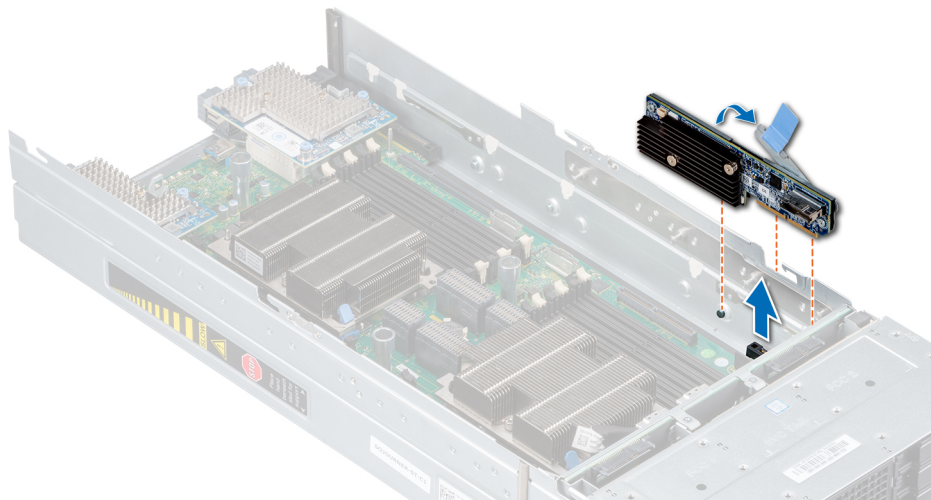
1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)
4. Disconnect the cable connected to the PERC card.

### Steps

1. Lift the blue pull tag to raise the lever up on the PERC card.

**NOTE:** For the H730P MX card, pull the two blue pull tags to raise the lever up. Rest of the procedure to remove the PERC card remains identical to HBA330 MX (non-RAID) card.

2. Holding the blue pull tag, lift the PERC card away from the sled.



**Figure 66. Removing the PERC card**

### Next steps

1. [Install the PERC card.](#)

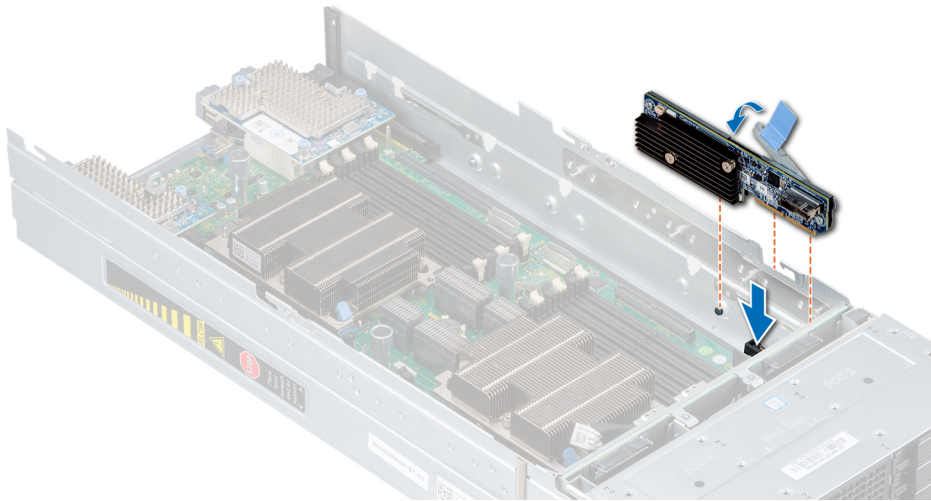
## Installing the PERC card

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

### Steps

1. Lift the blue pull tag to raise the lever up on the PERC card.
2. Align the connector and guide slots on the PERC card with the connector and guides on the sled.
3. Lower and press the PERC card to firmly seat on the system board connector and close the lever on the PERC card.



**Figure 67. Installing the PERC card**

### Next steps

1. Connect the cable to the PERC card.
2. [Install the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled](#) section.

## Removing the Jumbo PERC card

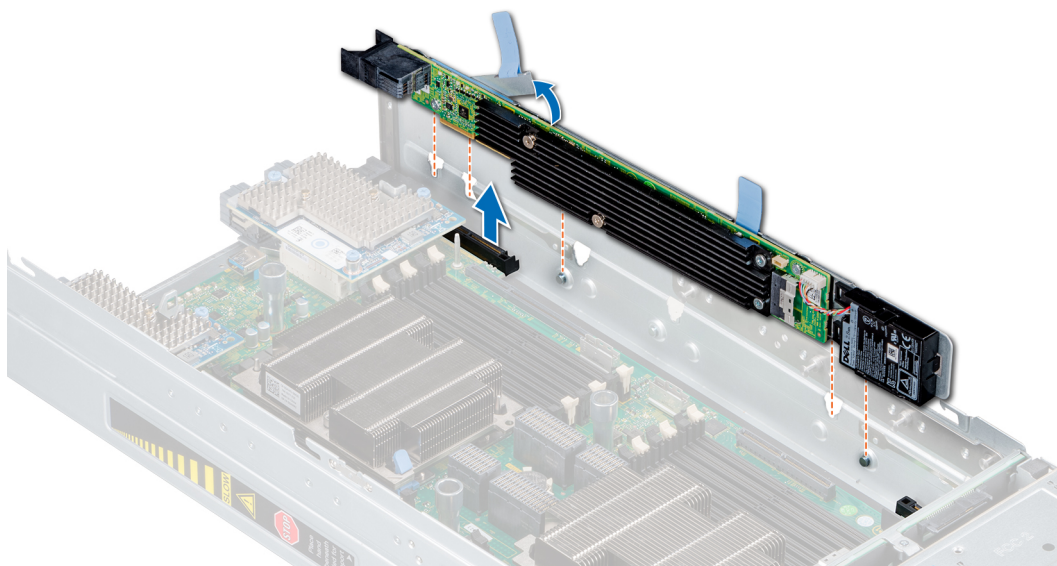
### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)
4. [Remove the air shroud from the system board.](#)
5. Disconnect the cable that is connected to the Jumbo PERC card.

### Steps

1. Lift the two blue pull tags to raise the lever up on the Jumbo PERC card.
2. Holding both the blue pull tags, lift the Jumbo PERC card away from the sled.
3. Install the connector cap on the I/O connector of the Jumbo PERC card.





**Figure 68. Removing the Jumbo PERC card**

### Next steps

1. [Install the Jumbo PERC card.](#)

## Installing the Jumbo PERC card

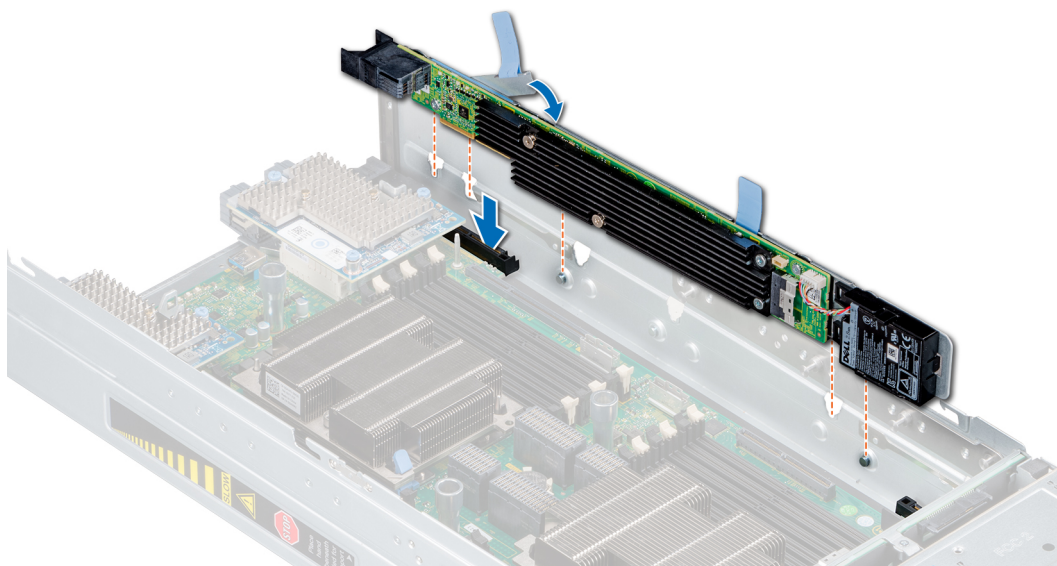
### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the iDRAC card](#) before installing the Jumbo PERC card.

### Steps

1. Remove the connector cap on the I/O connector from the Jumbo PERC card.
2. Lift the blue pull tags to raise the lever up on the Jumbo PERC card.
3. Align the connector, guides, and guide slots on the Jumbo PERC card and the sled.
4. Lower and press the Jumbo PERC card to firmly seat on the system board connector and close the lever on the Jumbo PERC card.





**Figure 69. Installing the Jumbo PERC card**

### Next steps

1. Connect the cable to the Jumbo PERC card.
2. [Install the air shroud on the system board.](#)
3. [Install the PEM.](#)
4. Follow the procedure listed in the [After working inside the sled](#) section.

## Optional Internal dual SD module

The optional internal dual SD module (IDSDM) has two MicroSD card sockets. The IDSDM is available with a single MicroSD card in slot 1 or in redundant mode with two MicroSD cards installed.

**i NOTE:** The write-protect switch is on the IDSDM module.

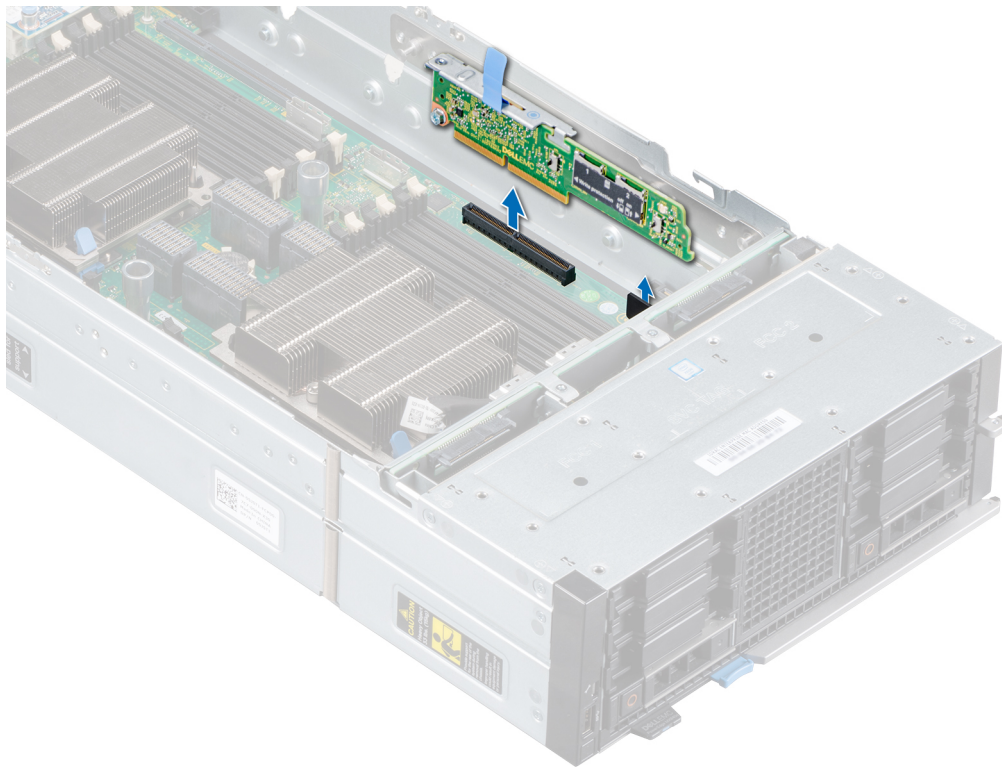
## Removing the optional IDSDM module

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
  2. Follow the procedure listed in the [Before working inside your sled](#) section.
  3. [Remove the PEM.](#)
  4. [Remove the air shroud from the system board.](#)
  5. If you are replacing the IDSDM module, [remove the MicroSD cards.](#)
- i NOTE:** Temporarily label each MicroSD card with the corresponding slot number after removal.

### Steps

1. Locate the IDSDM module connector on the system board.  
**i NOTE:** To locate IDSDM module connector, see the [System board jumpers and connectors](#) section.
2. Hold the blue pull tag, lift the IDSDM module out of the sled.



**Figure 70. Removing the IDSDM module**

#### Next steps

1. [Install the optional IDSDM module.](#)

## Installing the optional IDSDM module

#### Prerequisites

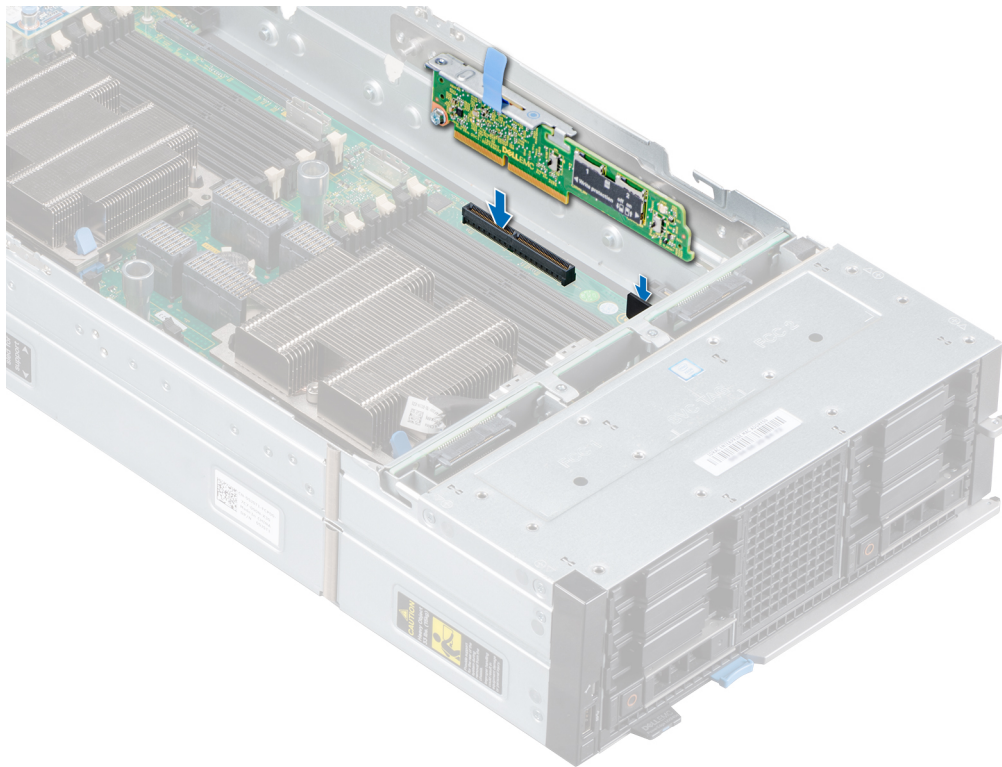
1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

#### Steps

1. Locate the IDSDM module connector on the system board.

**NOTE:** To locate IDSDM connector, see the [System board jumpers and connectors](#) section.

2. Align the IDSDM module with the connector on the system board.
3. Press the IDSDM module until it is firmly seated on the system board.



**Figure 71. Installing the IDSDM module**

#### Next steps

1. [Install the MicroSD cards.](#)  
**NOTE:** Reinstall the MicroSD cards into the same slots based on the labels you had marked on the cards during removal.
2. [Install the air shroud on the system board.](#)
3. [Install the PEM.](#)
4. Follow the procedure listed in the [After working inside your sled](#) section.

## Removing a MicroSD card

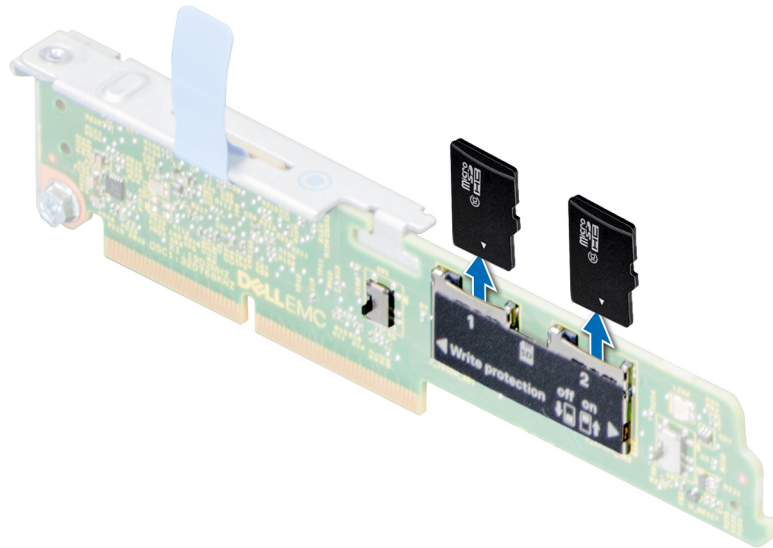
#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)
4. [Remove the IDSDM module.](#)

#### Steps

1. Locate the MicroSD card slot on the IDSDM module.
2. Press the card to partially release from the slot.
3. Hold the MicroSD card, and remove it from the slot.

**NOTE:** Temporarily label each MicroSD card with the corresponding slot number after removal.



**Figure 72. Removing a MicroSD card**

#### Next steps

1. [Install a MicroSD card.](#)

## Installing a MicroSD card

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

**NOTE:** To use an MicroSD card with your system, ensure that the **Internal SD Card Port** is enabled in System Setup.

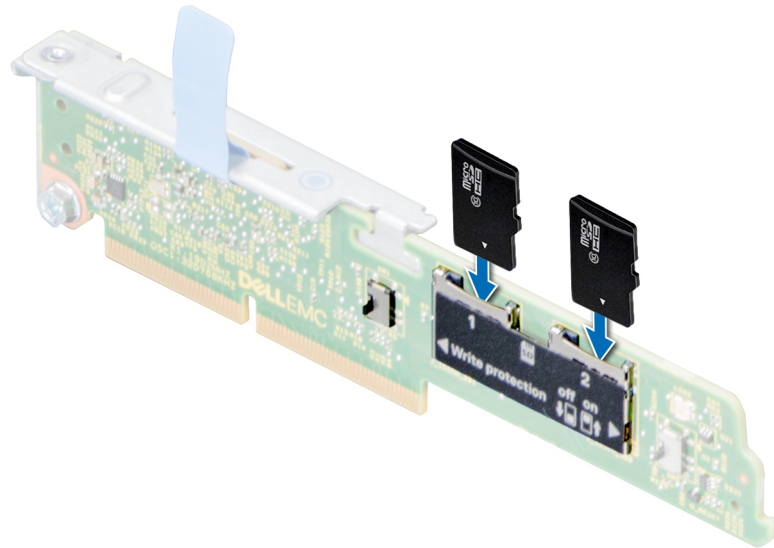
**NOTE:** If reinstalling, ensure that you install the MicroSD cards into the same slots based on the labels you had marked on the cards during removal.

#### Steps

1. Locate the MicroSD card slot on the IDSDM module. Orient the MicroSD card appropriately, and place the contact-pin end of the card into the slot.

**NOTE:** The slot is keyed to ensure correct installation of the card.

2. Press the card into the card slot to lock it into place.



**Figure 73. Installing a MicroSD card**

#### Next steps

1. [Install the IDSDM module.](#)
2. [Install the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled](#) section.

## M.2 BOSS module

The M.2 BOSS module is a simple RAID solution designed specifically for booting a server's operating system. The module supports up to two 6 Gbps M.2 SATA cards. The M.2 BOSS module has a x8 connector using PCIe gen 3.0 x2 lanes.

## Removing the M.2 BOSS module

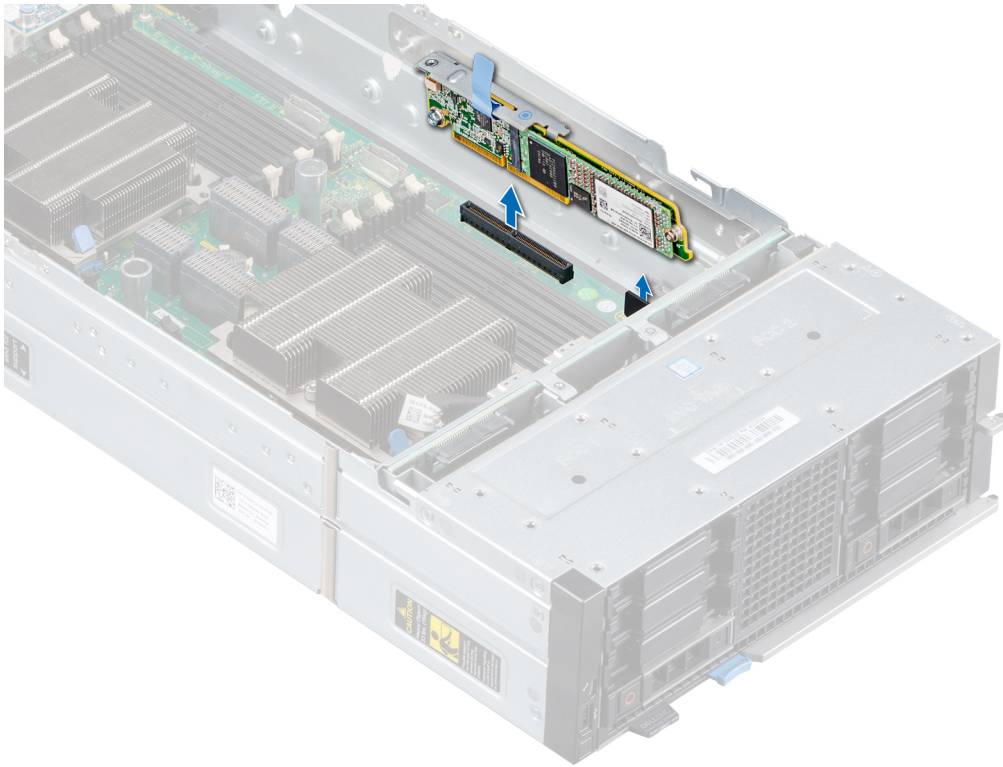
#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#).
3. [Remove the PEM.](#)
4. [Remove the air shroud from the system board.](#)

#### Steps

Hold the blue pull tag, and lift the M.2 BOSS module away from the sled.





**Figure 74. Removing the M.2 BOSS module**

#### **Next steps**

1. [Install the M.2 BOSS module.](#)

## **Installing the M.2 BOSS module**

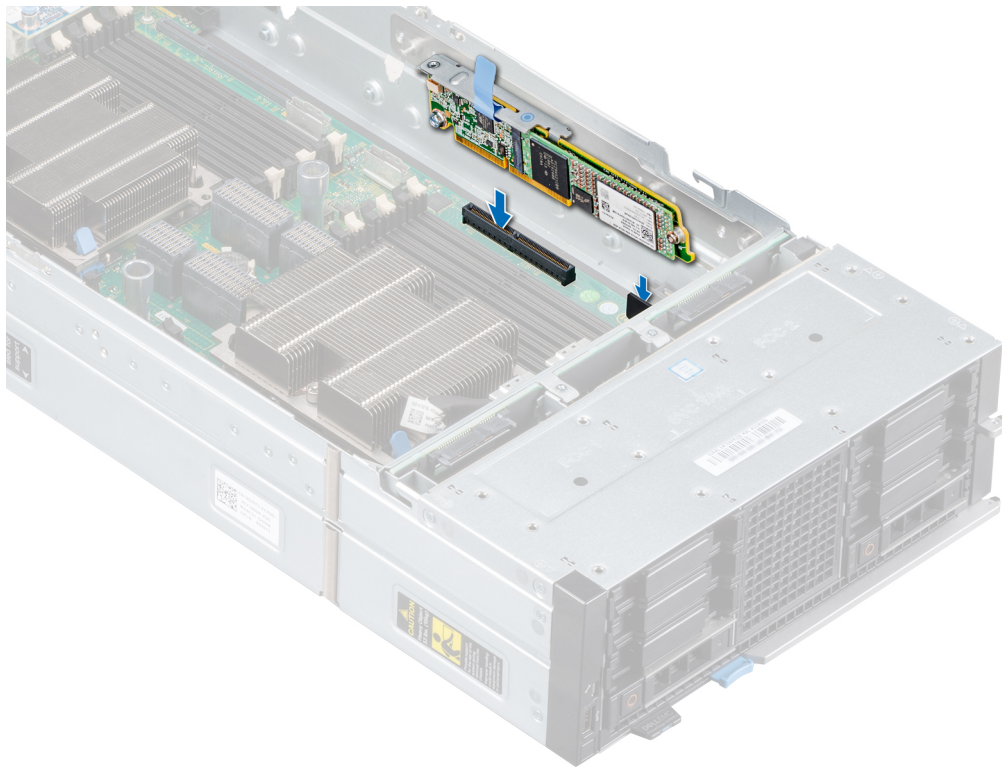
#### **Prerequisites**

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled.](#)

#### **Steps**

1. Align the M.2 BOSS module connector with the connector and guide on the system board.
2. Press on the M.2 BOSS module until it is firmly seated on the system board.





**Figure 75. Installing the M.2 BOSS module**

#### **Next steps**

1. [Install the air shroud on the system board.](#)
2. [Install the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled.](#)

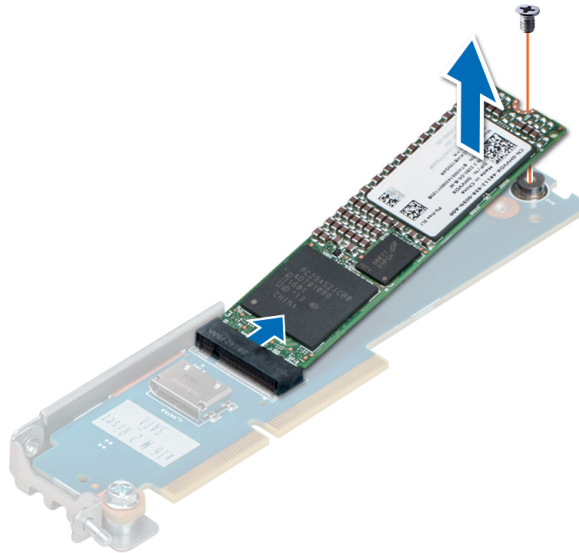
## **Removing the M.2 SATA card**

#### **Prerequisites**

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled.](#)
3. [Remove the PEM.](#)
4. [Remove the M.2 BOSS module.](#)

#### **Steps**

1. Using the Phillips #1 screwdriver, remove the screw on the M.2 BOSS module.
2. Pull the SATA card out of the connector and lift the card away from the module.



**Figure 76. Removing the M.2 SATA card**

#### Next steps

1. [Install the M.2 SATA card.](#)

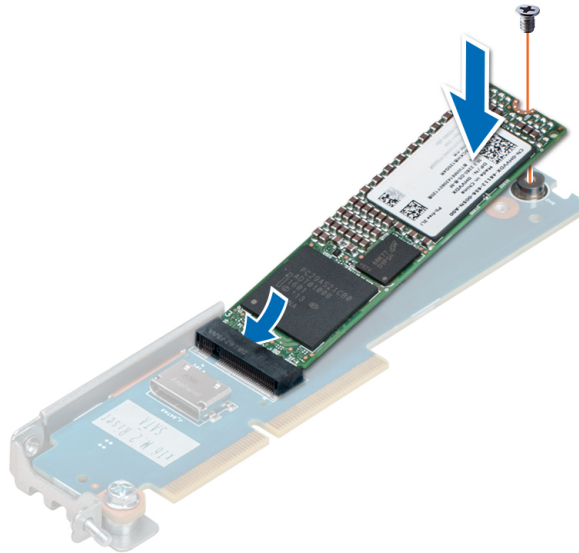
## Installing the M.2 SATA card

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled.](#)

#### Steps

1. Align the M.2 SATA card at angle of 45 degrees with the SATA connector on the M.2 BOSS module.
2. Press the M.2 SATA card into the SATA connector until firmly seated in place.
3. Push down the M.2 SATA card and using Phillips #1 screwdriver, secure the M.2 SATA card to the module.



**Figure 77. Installing the M.2 SATA card**

#### Next steps

1. [Install the M.2 BOSS module.](#)
2. [Install the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled.](#)

## Mezzanine card

### Mezzanine card installation guidelines

The PowerEdge MX840c sled supports four Mezzanine cards:

- PCIe Mezzanine card slot C supports Fabric C - This card must match the fabric type of I/O modules that are installed in I/O module bays C1 and C2.
- PCIe Mezzanine card slot A/B supports Fabric A/B - This card must match the fabric type of I/O modules that are installed in I/O module bays A1/B1 and A2/B2.

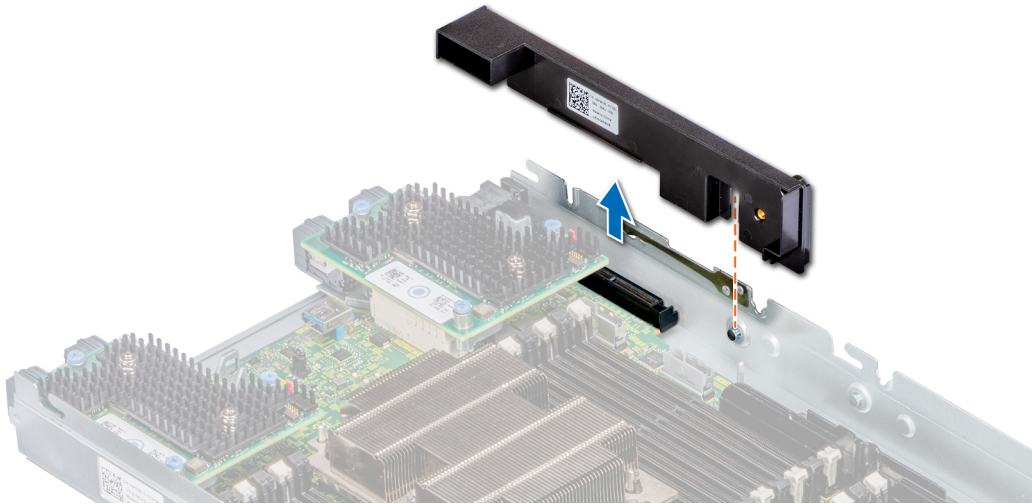
### Removing the mini Mezzanine card blank

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. For removing the mini Mezzanine card blank on the system board, [remove the PEM.](#)

#### Steps

Hold the edges and lift the mini Mezzanine card blank away from the sled or PEM.



**Figure 78. Removing the mini Mezzanine card blank**

#### Next steps

1. [Install the mini Mezzanine card blank.](#)

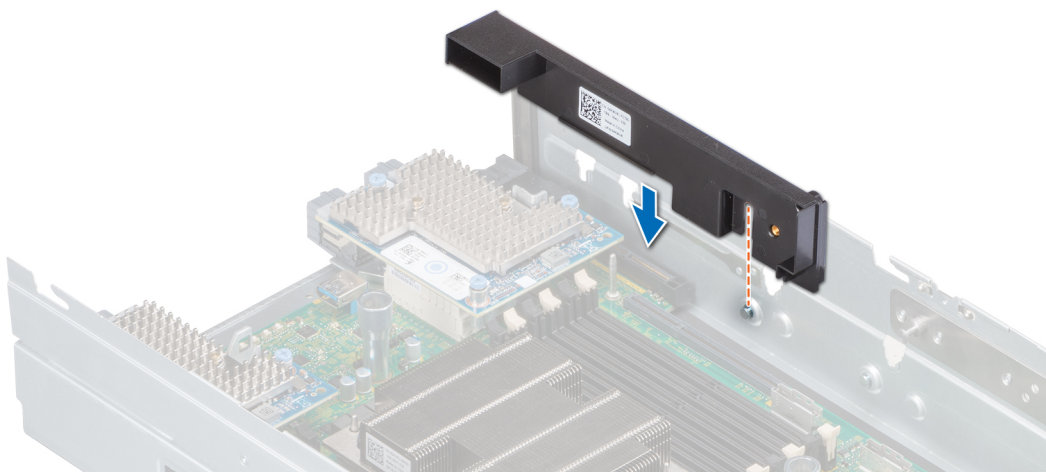
## Installing the mini Mezzanine card blank

#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

#### Steps

1. Align the slot on the Mezzanine card blank with the guide on the sled or PEM.
2. Place the mini Mezzanine card blank on the mini Mezzanine card slot on the sled or PEM.



**Figure 79. Installing the mini Mezzanine card blank**

#### Next steps

1. After installing the mini Mezzanine card blank on the system board, [install the PEM.](#)

2. Follow the procedure listed in the [After working inside the sled](#) section.

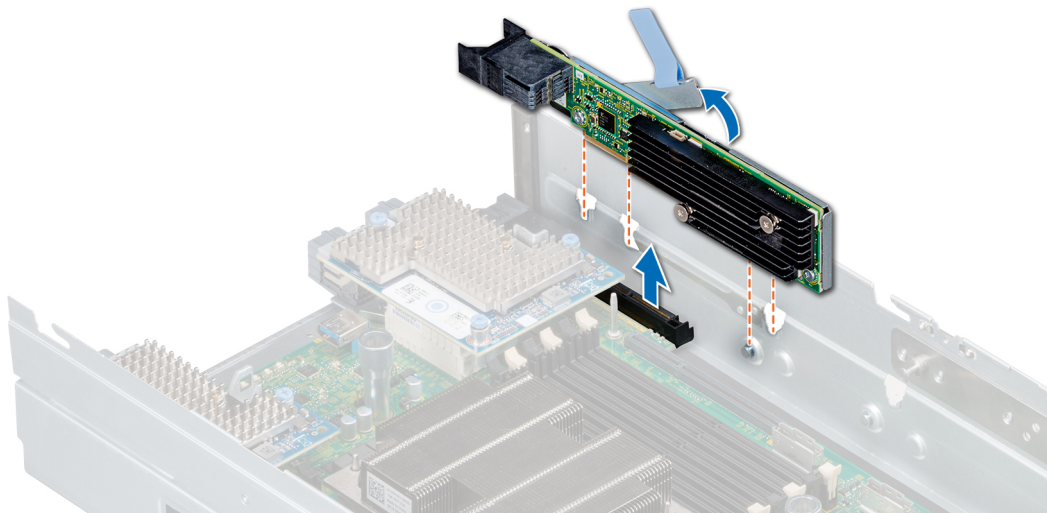
## Removing a mini Mezzanine card

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside a sled](#) section.
3. To remove the mini Mezzanine card from the system board, [remove the PEM](#).
4. [Remove the air shroud from the system board](#).

### Steps

1. Lift the blue pull tag to raise the lever up on the mini Mezzanine card.
2. Hold the lever and the edge of the mini Mezzanine card to lift the mini Mezzanine card away from the sled or PEM.



**Figure 80. Removing the mini Mezzanine card**

3. Install the connector cap on the I/O connector of the mini Mezzanine card.

**NOTE:** The PowerEdge MX840c sled supports HBA330 MMZ and Fiber channel MMZ which are installed in the mini Mezzanine card slot.

### Next steps

1. [Install the mini Mezzanine card](#) or the [mini Mezzanine card blank](#).

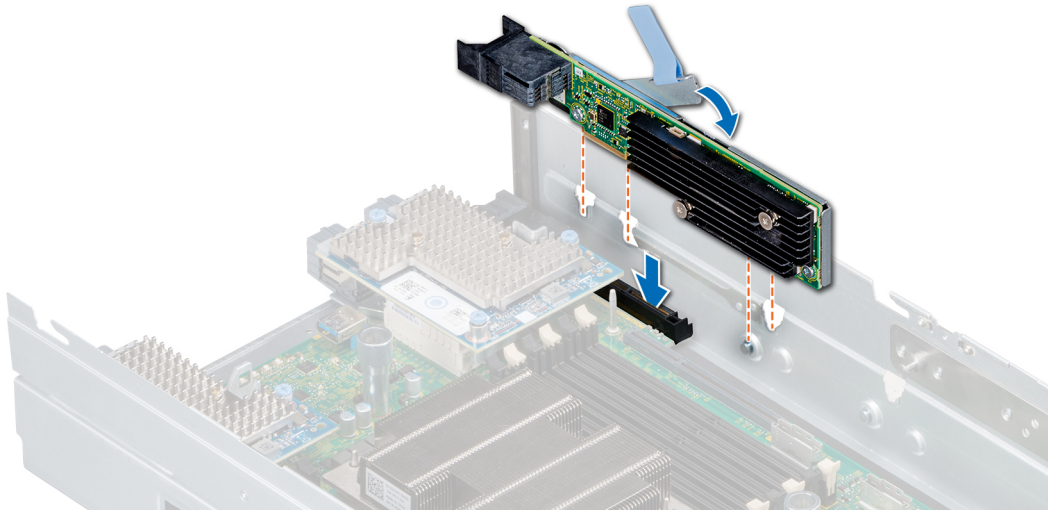
## Installing a mini Mezzanine card

### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

### Steps

1. Remove the connector cap on the I/O connector of the mini Mezzanine card.
2. Lift the blue pull tag to raise the lever up of the mini Mezzanine card.
3. Align the mini Mezzanine card connector, guides, and guide slots with the connector, guide, guide slots on the sled or PEM.
4. Lower and press the mini Mezzanine card until firmly seated.



**Figure 81. Installing the mini Mezzanine card**

**NOTE:** The PowerEdge MX840c sled supports HBA330 MMZ and Fiber channel MMZ which are installed in the mini Mezzanine card slot.

#### Next steps

1. [Install the air shroud on the system board.](#)
2. [Install the PEM.](#)
3. Follow the procedure listed in the [After working inside your sled](#) section.

## Removing the Mezzanine card

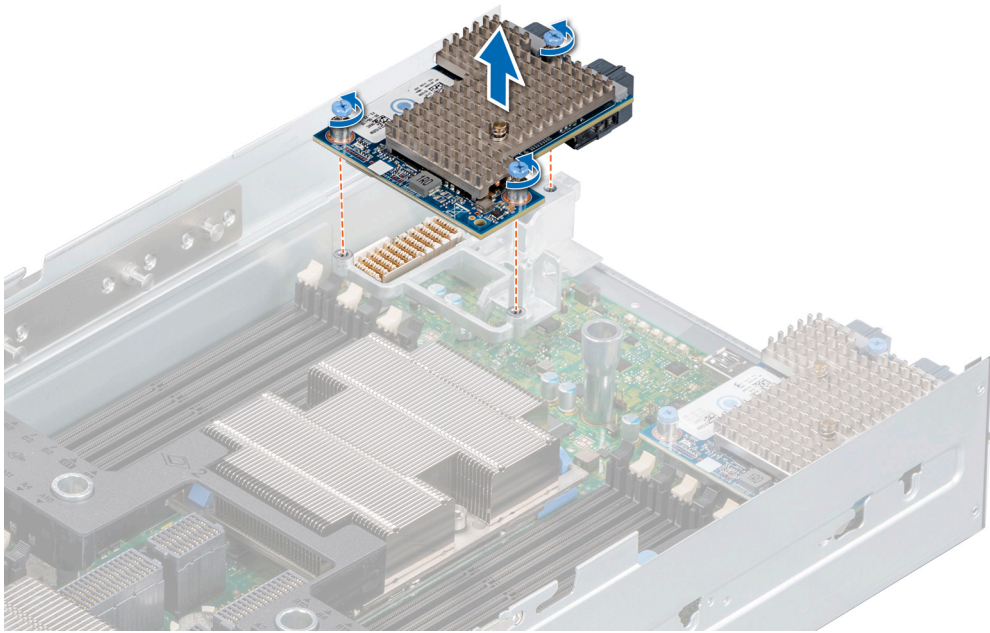
#### Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. For removing the Mezzanine card from the system board, [remove the PEM.](#)

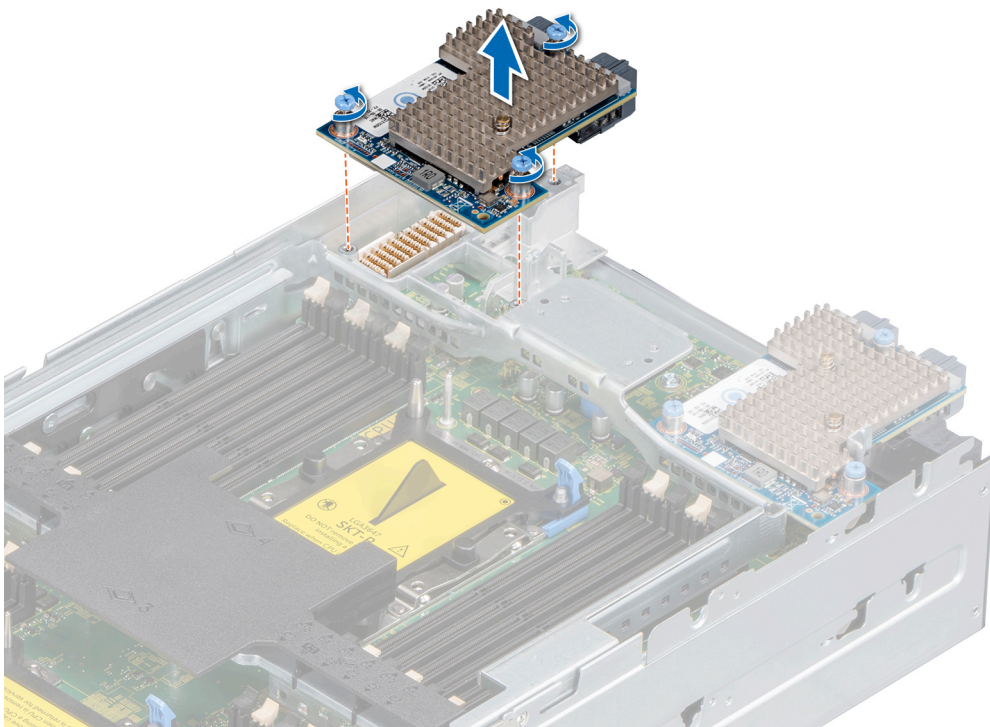
#### Steps

1. Using the Phillips #2 screwdriver, loosen the captive screws that secure the Mezzanine card to the sled or PEM.
2. Lift the Mezzanine card out of the sled or PEM.





**Figure 82. Removing the Mezzanine card from the system board**



**Figure 83. Removing the Mezzanine card from the PEM**

#### **Next steps**

1. [Install the Mezzanine card.](#)

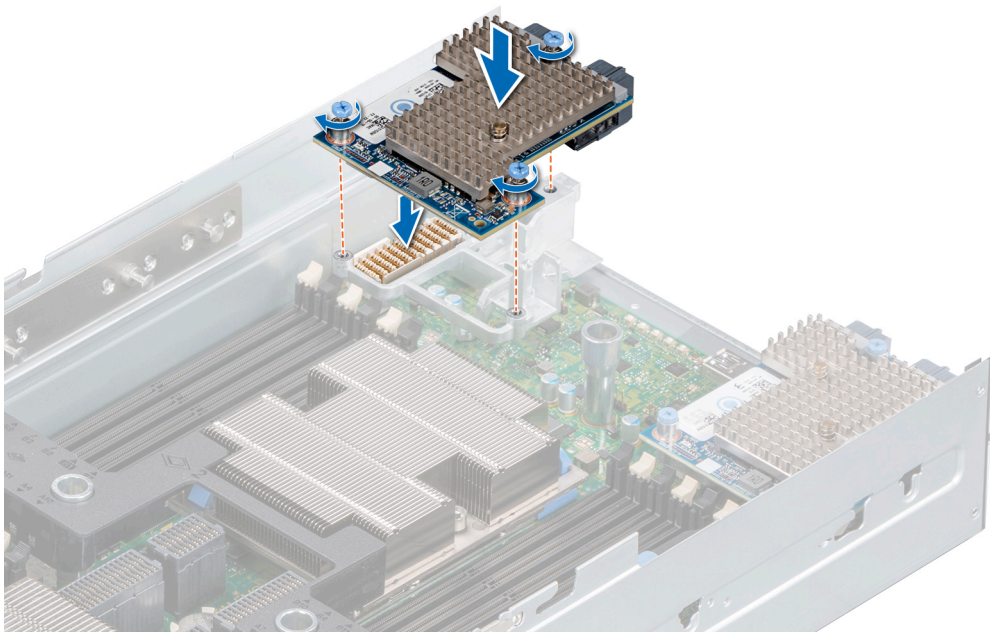
# Installing the Mezzanine card

## Prerequisites

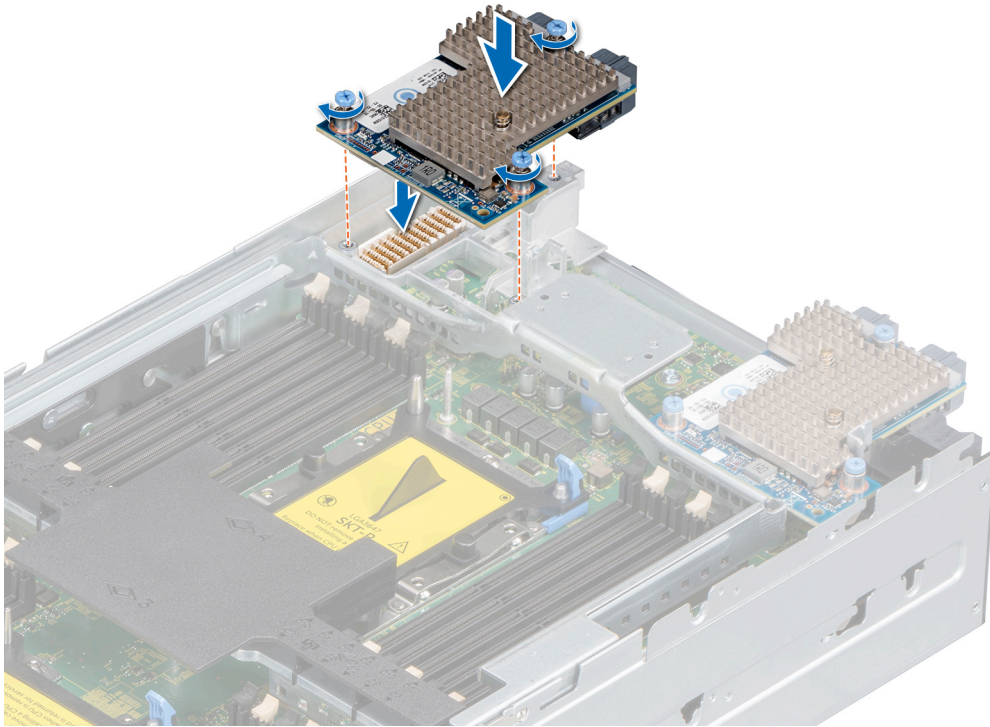
1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

## Steps

1. Align the connector on the Mezzanine card with the connector on the system board.
2. Place the Mezzanine card on the connector, and press the blue push point until firmly seated.
3. Using the Phillips #2 screwdriver, tighten the captive screw on the Mezzanine card.



**Figure 84. Installing the Mezzanine card on the system board**



**Figure 85. Installing the Mezzanine card on the PEM**

### Next steps

1. After installing the Mezzanine card on the system board, [install the PEM](#).
2. Follow the procedure listed in the [After working inside your sled](#) section.

## Optional internal USB memory key

An optional USB memory key installed inside your sled can be used as a boot device, security key, or mass storage device. To boot from the USB memory key, configure the USB memory key with a boot image and then specify the USB memory key in the boot sequence in **System Setup**.

An optional USB memory key can be installed in the internal USB 3.0 port and can be used as a boot device, security key or mass storage device.

The internal USB port is on the system board.

**NOTE:** To locate the internal USB port on the system board, see the [System board jumpers and connectors](#) section.

## Replacing the optional internal USB memory key

### Prerequisites

**CAUTION:** To avoid interference with other components in the server module, the maximum permissible dimensions of the USB memory key are 15.9 mm wide x 57.15 mm long x 7.9 mm high.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM](#).

### Steps

1. Locate the USB port or USB memory key on the system board.  
To locate the USB port, see the [System board jumpers and connectors](#) section.
2. If installed, remove the USB memory key from the USB port.
3. Place the replacement USB memory key into the USB port.

### Next steps

1. [Install the PEM.](#)
2. While booting, press F2 to enter **System Setup** and verify that the system detects the USB memory key.
3. Follow the procedure listed in the [After working inside your sled](#) section.

## System battery

The system battery is used to power the real-time clock and storing the BIOS settings of the sled.

## Replacing the system battery

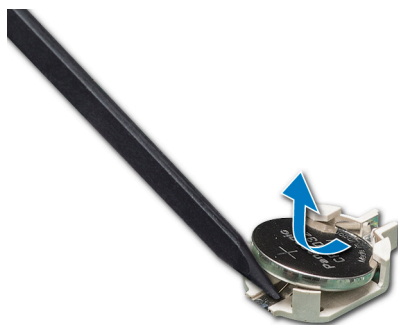
### Prerequisites

**⚠ WARNING:** There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. For more information, see the safety information that shipped with your system.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM.](#)

### Steps

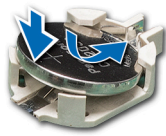
1. Locate the battery socket. For more information, see the [System board jumpers and connectors](#) section.  
**⚠ CAUTION:** To avoid damage to the battery connector, you must firmly support the connector while installing or removing a battery.
2. Use a plastic scribe to pry out the system battery.



**Figure 86. Removing the system battery**

3. To install a new system battery, hold the battery with the positive side facing up and slide it under the securing tabs.
4. Press the battery into the connector until it snaps into place.





**Figure 87. Installing the system battery**

#### Next steps

1. [Install the PEM.](#)
2. Follow the procedure listed in the [After working inside your sled](#) section.
3. While booting, press F2 to enter the **System Setup** and ensure that the battery is operating properly.
4. Enter the correct time and date in the **System Setup Time** and **Date** fields.
5. Exit the **System Setup**.

## System board

A system board (also known as the motherboard) is the main printed circuit board in the system with different connectors used to connect different components or peripherals of the system. A system board provides the electrical connections to the components in the system to communicate.

## Removing the system board

#### Prerequisites

**CAUTION:** If you are using the Trusted Platform Module (TPM) with an encryption key, you may be prompted to create a recovery key during program or System Setup. Be sure to create and safely store this recovery key. If you replace this system board, you must supply the recovery key when you restart your sled or program before you can access the encrypted data on your drives.

**CAUTION:** If either the system board or iDRAC card fails, it is required to replace the system board and iDRAC card simultaneously.

**NOTE:** It is required to reactivate the licenses after the system board replacement.

**CAUTION:** You may find the CMOS battery loss or CMOS checksum error displayed during the first instance of powering on the system after the processor or system board replacement which is expected. To fix this, simply go to setup option to configure the system settings.

**CAUTION:** Do not attempt to remove the TPM plug-in module from the system board. Once the TPM plug-in module is installed, it is cryptographically bound to that specific system board. Any attempt to remove an installed TPM plug-in module breaks the cryptographic binding, and it cannot be re-installed or installed on another system board.

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. Remove the following:
  - a. [Air shroud from the PEM](#)
  - b. [PEM](#)
  - c. [Air shroud from the system board](#)
  - d. [Heat sink and processor module](#)
  - e. Processor blanks, if installed.

**CAUTION:** To prevent damage to the processor socket when replacing a faulty system board, ensure that you cover the processor socket with the processor dust cover.

- f. [IDSDM module](#) or [M.2 BOSS module](#)

- g. Internal USB memory key (if applicable)
- h. iDRAC card
- i. PERC cards
- j. Jumbo PERC card
- k. Mezzanine card

**NOTE:** It is required to remove the mezzanine card support brackets for removing the system board from the system.

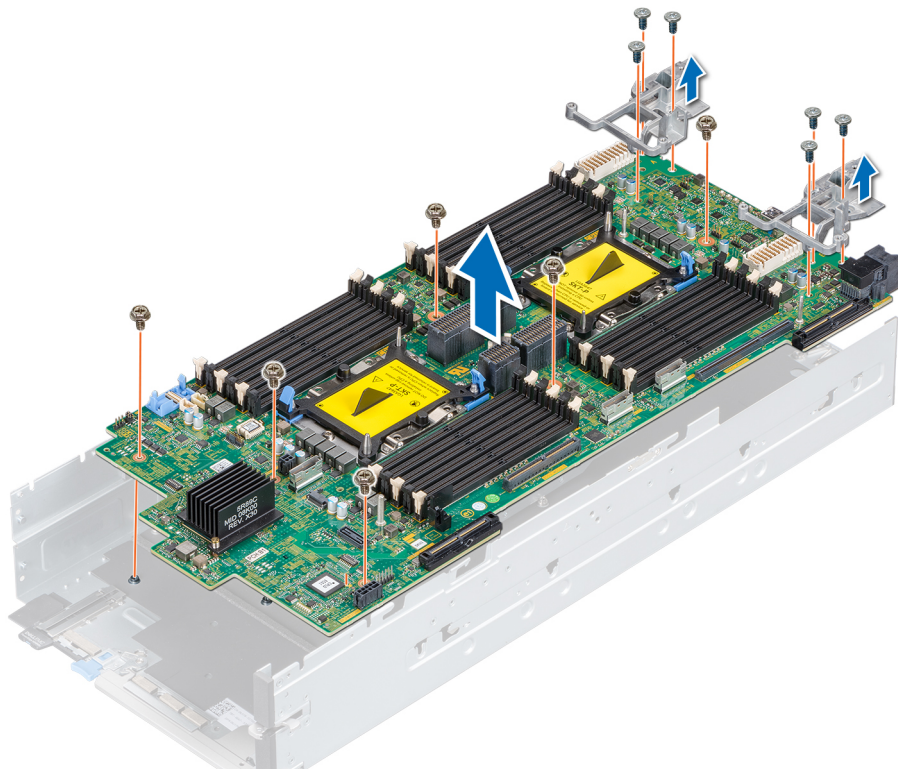
- l. Mini Mezzanine cards
- m. Memory modules and memory module blanks
- n. Drives
- o. Backplane
- p. Control panel
- q. Drive cage

### Steps

1. Disconnect all cables from the system board.

**CAUTION:** Do not lift the system board by holding a memory module, processor, or other components.

2. Using the Phillips #2 screwdriver, remove all the screws that secure the system board to the chassis.
3. Holding the edges, lift the system board out of the sled.



**Figure 88. Removing the system board**

### Next steps

1. Install the system board.



# Installing the system board

## Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.

**CAUTION:** If either the system board or iDRAC card fails, it is required to replace the system board and iDRAC card simultaneously.

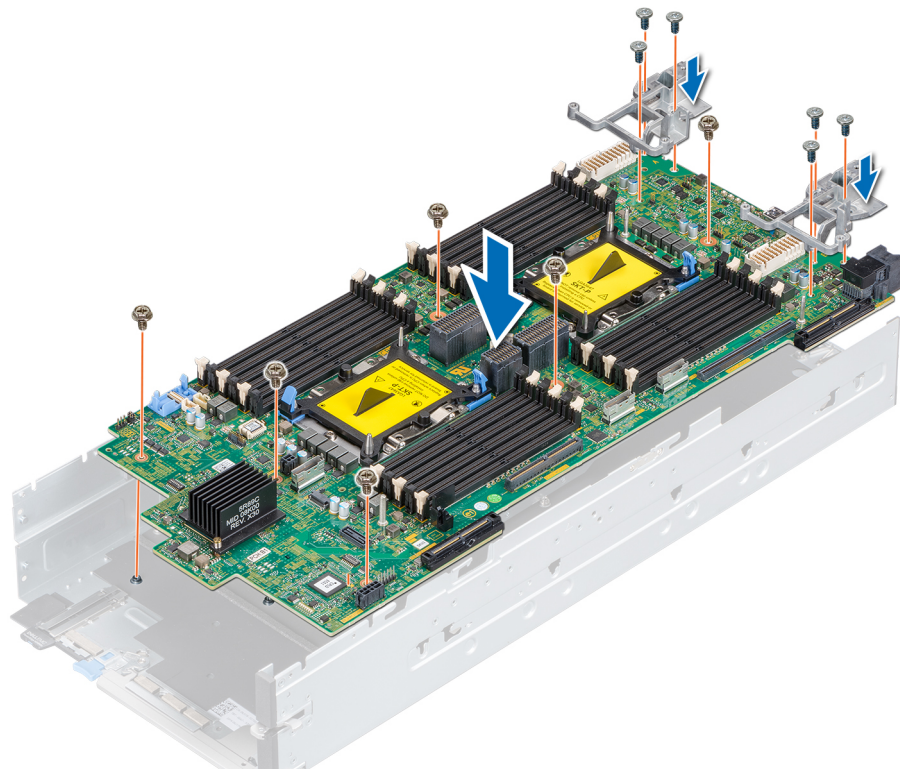
**NOTE:** It is required to reactivate the licenses after the system board replacement.

## Steps

1. Unpack the replacement system board assembly.

**CAUTION:** Do not lift the system board by holding a memory module, processor, or other components.

2. Holding the system board by the edges, place the system board into the sled.
3. Using the Phillips #2 screwdriver, secure the system board to the chassis with the screws.



**Figure 89. Installing the system board**

## Next steps


1. Replace the following:

- a. TPM

**NOTE:** The TPM module needs to be replaced only while installing a new system board.

- b. iDSDM module or M.2 BOSS module
- c. Internal USB memory key (if applicable)
- d. iDRAC card
- e. PERC cards
- f. Jumbo PERC cards

g. [Mezzanine cards](#)

 **NOTE:** Install the mezzanine card support brackets before installing the mezzanine cards.

h. [Mini Mezzanine card](#)

i. [Processors](#)

j. [Heat sink and processor modules](#)

k. [Memory modules and memory module blanks](#)

l. [Control panel](#)

m. [Drive cage](#)


n. [Backplane](#)

o. [Drives](#)

p. [Air shroud into the system board](#)

q. [PEM](#)

2. Reconnect all cables to the system board.

 **NOTE:** Ensure that the cables inside the sled are routed along the chassis wall and secured using the cable securing bracket.

3. Follow the procedure listed in the [After working inside your sled](#) section.

4. Ensure that you:

- Use the Easy Restore feature to restore the Service Tag. For more information, see the [Restoring the Service Tag by using the Easy Restore feature](#) section.
- If the Service Tag is not backed up in the backup flash device, enter the Service Tag manually. For more information, see the [Entering the system Service Tag by using System Setup](#) section.
- Update the BIOS and iDRAC versions.
- Re-enable the Trusted Platform Module (TPM). For more information, see the [Upgrading the Trusted Platform Module](#) section.

5. Import your new or existing iDRAC Enterprise license.


For more information, see Integrated Dell Remote Access Controller User's Guide, at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals)

## Entering the system Service Tag by using System Setup

If Easy Restore fails to restore the Service Tag, use System Setup to enter the Service Tag.

### Steps

- Turn on the system.
- Press F2 to enter System Setup.
- Click **Service Tag Settings**.
- Enter the Service Tag.

 **NOTE:** You can enter the Service Tag only when the **Service Tag** field is empty. Ensure that you enter the correct Service Tag. After the Service Tag is entered, it cannot be updated or changed.

- Click **OK**.
- Import your new or existing iDRAC Enterprise license.

For more information, see the *Integrated Dell Remote Access Controller User's Guide* at [www.dell.com/poweredgemanuals](http://www.dell.com/poweredgemanuals).

## Restoring the Service Tag by using the Easy Restore feature

By using the Easy Restore feature, you can restore your Service Tag, license, UEFI configuration, and the system configuration data after replacing the system board. All data is automatically backed up in a backup flash device. If BIOS detects a new system board and the Service Tag in the backup flash device, BIOS prompts the user to restore the backup information.

### Steps

- Turn on the system.  
If BIOS detects a new system board, and if the Service Tag is present in the backup flash device, BIOS displays the Service Tag, the status of the license, and the **UEFI Diagnostics** version.
- Perform one of the following steps:

- Press **Y** to restore the Service Tag, license, and diagnostics information.
- Press **N** to navigate to the Dell Lifecycle Controller based restore options.
- Press F10 to restore data from a previously created **Hardware Server Profile**.

After the restore process is complete, BIOS prompts to restore the system configuration data.

3. Perform one of the following steps:

- Press **Y** to restore the system configuration data.
- Press **N** to use the default configuration settings.

After the restore process is complete, the system restarts.

## Trusted Platform Module

Trusted Platform Module (TPM) is a dedicated microprocessor designed to secure hardware by integrating cryptographic keys into devices. Software can use a TPM to authenticate hardware devices. Because each TPM chip has a unique and secret RSA key which is embedded during the manufacture of the TPM, it is capable of performing platform authentication operation.

This section contains information about installing the TPM, and initializing the TPM for BitLocker users and Intel TXT users.

## Upgrading the Trusted Platform Module


### Prerequisites


1. Follow the safety guidelines listed in the [Safety instructions](#) section.
2. Follow the procedure listed in the [Before working inside your sled](#) section.
3. [Remove the PEM](#).

#### NOTE:

- Ensure that your operating system supports the version of the TPM module being installed.
- Ensure that you download and install the latest BIOS firmware on your system.
- Ensure that the BIOS is configured to enable UEFI boot mode.

### About this task

 **CAUTION:** If you are using the Trusted Platform Module (TPM) with an encryption key, you may be prompted to create a recovery key during program or System Setup. Work with the customer to create and safely store this recovery key. When replacing this system board, you must supply the recovery key when you restart your system or program before you can access the encrypted data on your hard drives.

 **CAUTION:** Once the TPM plug-in module is installed, it is cryptographically bound to that specific system board. Any attempt to remove an installed TPM plug-in module breaks the cryptographic binding, the removed TPM cannot be reinstalled or installed on another system board.

## Removing the TPM

### Steps

1. Locate the TPM connector on the system board.  
To locate the TPM connector, see the [System board jumpers and connectors](#) section.
2. Press to hold the module down and remove the screw using the security Torx 8-bit shipped with the TPM module.
3. Slide the TPM module out from its connector.
4. Push the plastic rivet away from the TPM connector and rotate it 90° counterclockwise to release it from the system board.
5. Pull the plastic rivet out of its slot on the system board.

## Installing the TPM

### Steps

1. To install the TPM, align the edge connectors on the TPM with the slot on the TPM connector.
2. Insert the TPM into the TPM connector such that the plastic rivet aligns with the slot on the system board.
3. Press the plastic rivet until the rivet snaps into place.

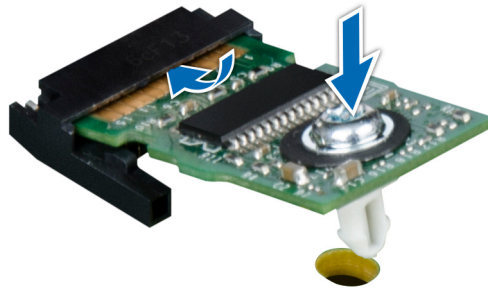


Figure 90. Installing the TPM

### Next steps

1. [Install the PEM.](#)
2. Follow the procedure listed in the [After working inside your sled](#) section.

## Initializing TPM for BitLocker users

### Steps

Initialize the TPM.

For more information, see <https://technet.microsoft.com/library/cc753140.aspx>.

The **TPM Status** changes to **Enabled, Activated**.

## Initializing the TPM 1.2 for TXT users

### Steps

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS > System Security Settings**.
3. From the **TPM Security** option, select **On with Pre-boot Measurements**.
4. From the **TPM Command** option, select **Activate**.
5. Save the settings.
6. Restart your system.
7. Enter **System Setup** again.
8. On the **System Setup Main Menu** screen, click **System BIOS > System Security Settings**.
9. From the **Intel TXT** option, select **On**.

## Initializing the TPM 2.0 for TXT users

### Steps

1. While booting your system, press F2 to enter System Setup.

2. On the **System Setup Main Menu** screen, click **System BIOS > System Security Settings**.
3. From the **TPM Security** option, select **On**.
4. Save the settings.
5. Restart your system.
6. Enter **System Setup** again.
7. On the **System Setup Main Menu** screen, click **System BIOS > System Security Settings**.
8. Select the **TPM Advanced Settings** option.
9. From the **TPM2 Algorithm Selection** option, select **SHA256**, then go back to **System Security Settings** screen.
10. On the **System Security Settings** screen, from the **Intel TXT** option, select **On**.
11. Save the settings.
12. Restart your system.

# Jumpers and connectors

This topic provides specific information about the jumpers. It also provides some basic information about jumpers and switches and describes the connectors on the various boards in the system. Jumpers on the system board help to disable the system and setup passwords. You must know the connectors on the system board to install components and cables correctly.

## Topics:

- [System board jumpers and connectors](#)
- [System board jumper settings](#)
- [Disabling forgotten password](#)

## System board jumpers and connectors

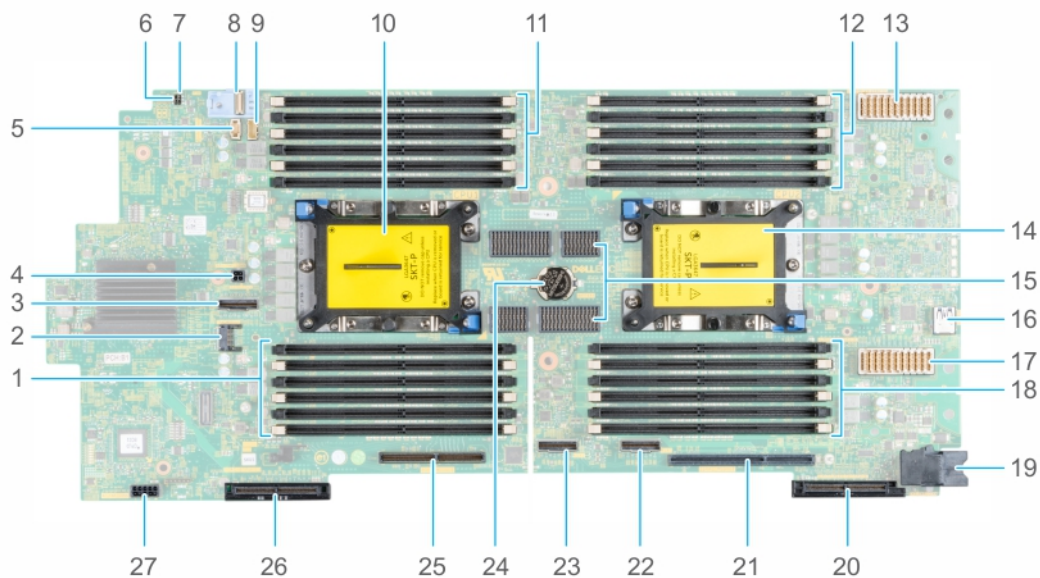


Figure 91. System board jumpers and connectors

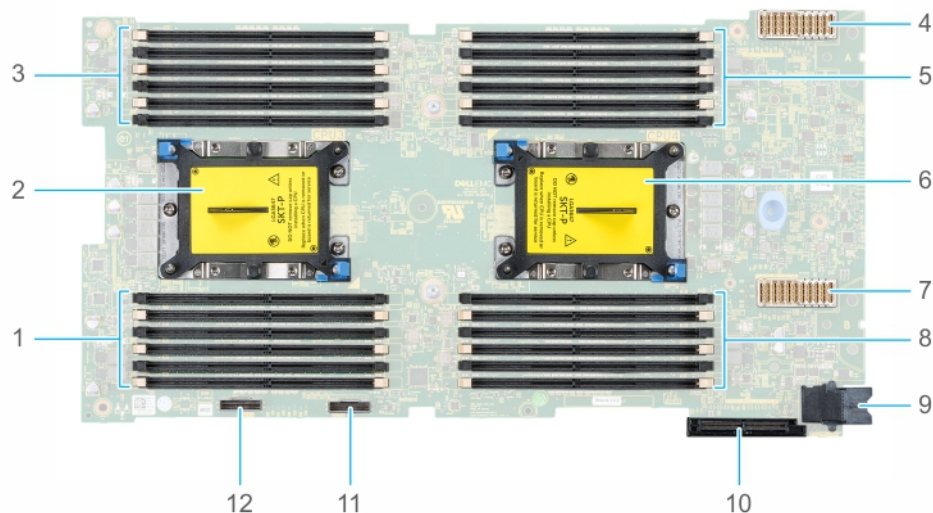
Table 13. System board jumpers and connectors

Item	Connector	Description
1.	A7, A1, A8, A2, A9, A3	Memory module sockets
2.	TPM_MODULE	TPM module connector
3.	SATA_CONN	SATA connector
4.	BBU_PWR_CONN	BBU power connector
5.	BACKPLANE_SIGNAL	Backplane signal connector
6.	PWRD_EN	System configuration jumper (enabling or disabling the password settings)
7.	NVRAM_CLR	System configuration jumper (retaining/clearing configuration settings)
8.	FIO	Control panel (FIO) connector



**Table 13. System board jumpers and connectors**

Item	Connector	Description
9.	BBU_SIGNAL	Battery Backup Unit (BBU) signal connector
10.	CPU1	Processor 1
11.	A6, A12, A5, A11, A4, A10	Memory module sockets
12.	B3, B9, B2, B8, B1, B7	Memory module sockets
13.	J_MEZZ_A1 (CPU1)	Mezzanine card (Fabric A1 card) connector
14.	CPU2	Processor 2
15.	UPI	UPI connector
16.	INTERNAL USB	Internal USB 3.0
17.	J_MEZZ_B1 (CPU2)	Mezzanine card (Fabric B1 card) connector
18.	B10, B4, B11, B5, B12, B6	Memory module sockets
19.	SYS_PWR_CONN	System power connector
20.	J_MINI_MEZZ_C1 (CPU2)	Mini Mezzanine card (Fabric C1 card) connector
21.	IDRAC_MODULE	iDRAC card connector
22.	AUX 1	AUX 1 cable connector
23.	AUX 2	AUX 2 cable connector
24.	BATTERY	System battery
25.	BOSS_MODULE/IDSDM	BOSS module/IDSDM connector
26.	PERC (CPU1)	PERC card connector
27.	BP_PWR_CONN	Backplane power connector



**Figure 92. PEM board jumpers and connectors**

**Table 14. PEM board jumpers and connectors**





**Table 14. PEM board jumpers and connectors**

Item	Connector	Description
1.	C7, C1, C8, C2, C9, C3	Memory module sockets
2.	CPU3	Processor 3
3.	C6, C12, C5, C11, C4, C10	Memory module sockets
4.	J_MEZZ_A2 (CPU3)	Mezzanine card (Fabric A2 card) connector
5.	D3, D9, D2, D8, D1, D7	Memory module sockets
6.	CPU4	Processor 4
7.	J_MEZZ_B2 (CPU4)	Mezzanine card (Fabric B2 card) connector
8.	D10, D4, D11, D5, D12, D6	Memory module sockets
9.	SYS_PWR_CONN	System power connector
10.	J_MINI_MEZZ_C2 (CPU4)	Mini Mezzanine card (Fabric C2 card ) connector
11.	AUX4	AUX 4 connector
12.	AUX3	AUX 3 connector

## System board jumper settings

For information on resetting the password jumper to disable a password, see the [Disabling a forgotten password](#) section.

**Table 15. System board jumper settings**

Jumper	Setting	Description
PWRD_EN	 (default)	The BIOS password feature is enabled.
		The BIOS password feature is disabled. iDRAC local access is unlocked at next AC power cycle. iDRAC password reset is enabled in F2 iDRAC settings menu.
NVRAM_CLR	 (default)	The BIOS configuration settings are retained at system boot.
		The BIOS configuration settings are cleared at system boot.

## Disabling forgotten password

The software security features of the sled include a system password and a setup password. The password jumper enables or disables password features and clears any password(s) currently in use.


### Prerequisites

**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 are shipped with your product.

## Steps

1. Remove the sled from the enclosure.
2. Remove the sled cover.
3. Remove the PEM.
4. Remove the drive cage.
5. Move the jumper on the system board jumper from pins 2 and 4 to pins 4 and 6.
6. Install the drive cage.
7. Install the PEM.
8. Install the sled cover.

The existing passwords are not disabled (erased) until the system boots with the jumper on pins 4 and 6. However, before you assign a new system and/or setup password, you must move the jumper back to pins 2 and 4.

 **NOTE:** If you assign a new system and/or setup password with the jumper on pins 4 and 6, the system disables the new password(s) the next time it boots.

9. Install the sled into the enclosure.
10. Remove the sled from the enclosure.
11. Remove the sled cover.
12. Remove the PEM.
13. Remove the drive cage.
14. Move the jumper on the system board jumper from pins 4 and 6 to pins 2 and 4.
15. Install the drive cage.
16. Install the PEM.
17. Install the sled cover.
18. Install the sled into the enclosure.
19. Assign a new system and/or setup password.

# System diagnostics and indicator codes

The diagnostic indicators on the system front panel display system status during system startup.

## Topics:

- [System ID and status LED indicator codes](#)
- [Power button LED](#)
- [Drive indicator codes](#)
- [System diagnostics](#)

## System ID and status LED indicator codes

The system ID indicator is located on the control panel of your sled.



**Figure 93. System ID and status LED indicators**

**Table 16. System ID and status LED indicator codes**

System ID indicator code	Condition
Off	Indicates system is in the off state.
Blinking amber or steady amber	Indicates system fault or error condition.
Steady blue	Indicates normal operating state.
Blinking blue	Indicates system ID engaged. Blink rate is 1 Hz.

## Power button LED

The power button LED is located on the front panel of your sled.



**Figure 94. Power button LED**

**Table 17. Power button LED**

Table 17. Power button LED

Power button LED indicator code	Condition
Off	Sled is not operating, regardless of power supply available.
On	Sled is operating, one or more of the non-standby power supplies are active.
Slowly blinking	Sled is performing powering on sequence and iDRAC is still booting.

## Drive indicator codes

Each drive carrier has an activity LED indicator and a status LED indicator. The indicators provide information about the current status of the drive. The activity LED indicator indicates whether the drive is currently in use or not. The status LED indicator indicates the power condition of the drive.

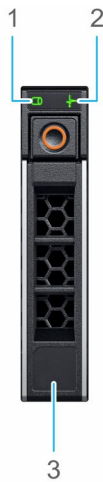


Figure 95. Drive indicators

- 1. Drive activity LED indicator
- 2. Drive status LED indicator
- 3. Drive capacity

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


Table 18. Drive indicator codes

Drive status indicator code	Condition
Flashes green twice per second	Identifying drive or preparing for removal.
Off	Drive ready for removal. <b>NOTE:</b> 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.
Flashes green for three seconds, amber for three seconds, and then turns off after six seconds	Rebuild stopped.

# System diagnostics

If you experience a problem with your system, run the system diagnostics before contacting Dell for technical assistance. The purpose of running system diagnostics is to test your system hardware without using additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

## Dell Embedded System Diagnostics

 **NOTE:** The Dell Embedded System Diagnostics is also known as Enhanced Pre-boot System Assessment (ePSA) diagnostics.

The Embedded System Diagnostics provides a set of options for particular device groups or devices allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

## Running the Embedded System Diagnostics from Boot Manager

Run the Embedded System Diagnostics (ePSA) if your system does not boot.

### Steps

1. When the system is booting, press F11.
2. Use the up arrow and down arrow keys to select **System Utilities > Launch Diagnostics**.
3. Alternatively, when the system is booting, press F10, select **Hardware Diagnostics > Run Hardware Diagnostics**.  
The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

## Running the Embedded System Diagnostics from the Dell Lifecycle Controller

### Steps

1. As the system boots, press F10.
2. Select **Hardware Diagnostics → Run Hardware Diagnostics**.  
The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

## System diagnostic controls

Menu	Description
Configuration	Displays the configuration and status information of all detected devices.
Results	Displays the results of all tests that are run.
System health	Provides the current overview of the system performance.
Event log	Displays a time-stamped log of the results of all tests run on the system. This is displayed if at least one event description is recorded.



# Getting help

## Topics:

- [Contacting Dell](#)
- [Documentation feedback](#)
- [Receiving automated support with SupportAssist](#)
- [Accessing system information by using QRL](#)
- [Quick Resource Locator for the PowerEdge MX840c sled](#)
- [Recycling or End-of-Life service information](#)

## Contacting Dell

Dell provides several online and telephone based support and service options. If you do not have an active internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical assistance, or customer service issues:

### Steps

1. Go to [www.dell.com/support/home](http://www.dell.com/support/home)
2. Select your country from the drop-down menu on the lower right corner of the page.
3. For customized support:
  - a. Enter your system Service Tag in the **Enter your Service Tag** field.
  - b. Click **Submit**.  
The support page that lists the various support categories is displayed.
4. For general support:
  - a. Select your product category.
  - b. Select your product segment.
  - c. Select your product.  
The support page that lists the various support categories is displayed.
5. For contact details of Dell Global Technical Support:
  - a. Click [Global Technical Support](#)
  - b. The **Contact Technical Support** page is displayed with details to call, chat, or e-mail the Dell Global Technical Support team.

## Documentation feedback

You can rate the documentation or write your feedback on any of our Dell EMC documentation pages and click **Send Feedback** to send your feedback.

## Receiving automated support with SupportAssist

Dell EMC SupportAssist is an optional Dell EMC Services offering that automates technical support for your Dell EMC server, storage, and networking devices. By installing and setting up a SupportAssist application in your IT environment, you can receive the following benefits:

- **Automated issue detection** — SupportAssist monitors your Dell EMC devices and automatically detects hardware issues, both proactively and predictively.

- **Automated case creation** — When an issue is detected, SupportAssist automatically opens a support case with Dell EMC Technical Support.
- **Automated diagnostic collection** — SupportAssist automatically collects system state information from your devices and uploads it securely to Dell EMC. This information is used by Dell EMC Technical Support to troubleshoot the issue.
- **Proactive contact** — A Dell EMC Technical Support agent contacts you about the support case and helps you resolve the issue.

The available benefits vary depending on the Dell EMC Service entitlement purchased for your device. For more information about SupportAssist, go to [www.dell.com/supportassist](http://www.dell.com/supportassist).

## Accessing system information by using QRL

You can use the Quick Resource Locator (QRL) to get immediate access to the information about your system. The QRL is located on the top of the system cover and provides access to generic information about your system. If you want to access information specific to the system service tag, such as configuration and warranty, you can access QR code located on the system Information tag.

### Prerequisites

Ensure that your smart phone or tablet has the QR code scanner installed.

The QRL includes the following information about your system:

- How-to videos
- Reference materials, including the Owner's Manual, LCD diagnostics, and mechanical overview
- A direct link to Dell to contact technical assistance and sales teams

### Steps

1. Go to [www.dell.com/qrl](http://www.dell.com/qrl) and navigate to your specific product or
2. Use your smart phone or tablet to scan the model-specific Quick Resource (QR) code on your PowerEdge system or in the Quick Resource Locator section.

## Quick Resource Locator for the PowerEdge MX840c sled



Figure 96. Quick Resource Locator for the PowerEdge MX840c


## Recycling or End-of-Life service information

Take back and recycling services are offered for this product in certain countries. If you want to dispose of system components, visit [www.dell.com/recyclingworldwide](http://www.dell.com/recyclingworldwide) and select the relevant country.

## Documentation resources

This section provides information about the documentation resources for your PowerEdgeMX840csystem.

To view the document that is listed in the documentation resources table:

- From the Dell EMC support site:
  1. Click the documentation link that is provided in the **Location** column in the table.
  2. Click the required product or product version.
-  **NOTE:** To locate the product name and model, see the front of your system.
- 3. On the Product Support page, click **Manuals & documents**.
- Using search engines:
  - Type the name and version of the document in the search box.

**Table 19. Documentation resources**

Task	Document	Location
Setting up your system	<p>For more information about installing and securing the system into a rack, see the Rail Installation Guide included with your rack solution.</p> <p>For information about setting up your system, see the <i>Getting Started Guide</i> document that is shipped with your system.</p>	<a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a>
Configuring your system	<p>For information about the iDRAC features, configuring and logging in to iDRAC, and managing your system remotely, see the Integrated Dell Remote Access Controller User's Guide.</p> <p>For information about understanding Remote Access Controller Admin (RACADM) subcommands and supported RACADM interfaces, see the RACADM CLI Guide for iDRAC.</p> <p>For information about Redfish and its protocol, supported schema, and Redfish Eventing implemented in iDRAC, see the Redfish API Guide.</p> <p>For information about iDRAC property database group and object descriptions, see the Attribute Registry Guide.</p> <p>For information about Intel QuickAssist Technology, see the Integrated Dell Remote Access Controller User's Guide.</p> <p>For information about Intel QuickAssist Technology, see the Integrated Dell Remote Access Controller User's Guide.</p>	<a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a>
	<p>For information about earlier versions of the iDRAC documents.</p> <p>To identify the version of iDRAC available on your system, on the iDRAC web interface, click <b>? &gt; About</b>.</p>	<a href="https://www.dell.com/idracmanuals">https://www.dell.com/idracmanuals</a>

**Table 19. Documentation resources**

Task	Document	Location
	For information about installing the operating system, see the operating system documentation.	<a href="https://www.dell.com/operatingsystemmanuals">https://www.dell.com/operatingsystemmanuals</a>
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	<a href="http://www.dell.com/support/drivers">www.dell.com/support/drivers</a>
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	<a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a>
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	<a href="http://www.dell.com/openmanagemanuals">www.dell.com/openmanagemanuals</a> > OpenManage Server Administrator
	For information about installing, using, and troubleshooting Dell OpenManage Enterprise, see the Dell OpenManage Enterprise User's Guide.	<a href="https://www.dell.com/openmanagemanuals">https://www.dell.com/openmanagemanuals</a>
	For information about installing and using Dell SupportAssist, see the Dell EMC SupportAssist Enterprise User's Guide.	<a href="https://www.dell.com/serviceabilitytools">https://www.dell.com/serviceabilitytools</a>
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	<a href="https://www.dell.com/openmanagemanuals">https://www.dell.com/openmanagemanuals</a>
Working with the Dell PowerEdge RAID controllers	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	<a href="http://www.dell.com/storagecontrollermanuals">www.dell.com/storagecontrollermanuals</a>
Understanding event and error messages	For information about the event and error messages generated by the system firmware and agents that monitor system components, go to <a href="http://qrl.dell.com">qrl.dell.com</a> > <b>Look Up</b> > <b>Error Code</b> , type the error code, and then click <b>Look it up</b> .	<a href="http://www.dell.com/qrl">www.dell.com/qrl</a>
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge MX840c system issues, see the Server Troubleshooting Guide.	<a href="https://www.dell.com/poweredgemanuals">https://www.dell.com/poweredgemanuals</a>