

Dell PowerEdge MX760c

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 system, information about installing and replacing components, diagnostic tools, and guidelines to be followed while installing certain components.

Dell PowerEdge MX760c system configurations and features

The PowerEdge MX760c system is a 2S single width compute sled that supports:

- Up to two 4th Generation Intel Xeon Scalable processors with up to 56 cores
- Up to 32 DDR5 DIMM slots
- Up to 4 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) drives
- Up to 6 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) drives
- Up to 8 x E3.sNVMe (SSD) drives
- MX7000 Gold Grade (Hardware version 2, Gen2) fans

NOTE: For more information about how to hot swap NVMe PCIe SSD U.2 device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at <https://www.dell.com/support> > **Browse all products** > **Infrastructure** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Select This Product** > **Documentation** > **Manuals and Documents**.

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

CAUTION: Do not install GPUs, network cards, or other PCIe devices on your system that are not validated and tested by Dell. Damage caused by unauthorized and invalidated hardware installation will null and void the system warranty.

Topics:

- [System configurations - front view for PowerEdge MX760c](#)
- [System configurations - inside view for PowerEdge MX760c](#)
- [Locating the Express Service Code and Service Tag](#)
- [System information label](#)

System configurations - front view for PowerEdge MX760c

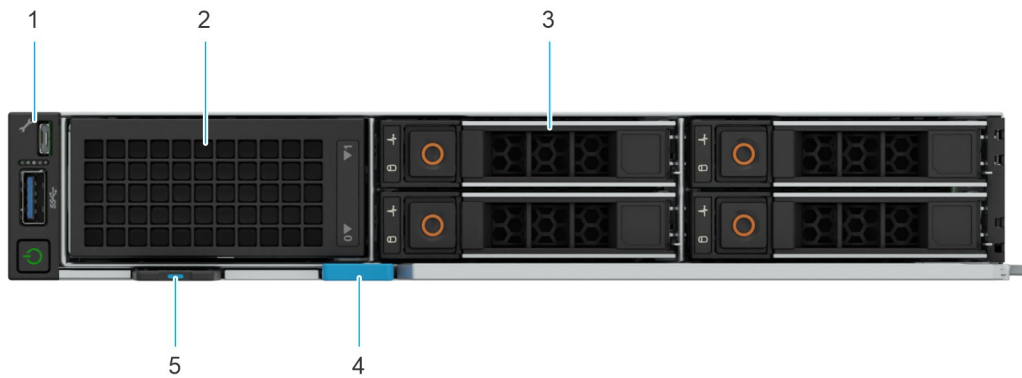


Figure 1. Front view of the 4 x 2.5-inch drive system

1. Front I/O module
2. Drive blank
3. Drives
4. Release handle
5. Express service tag

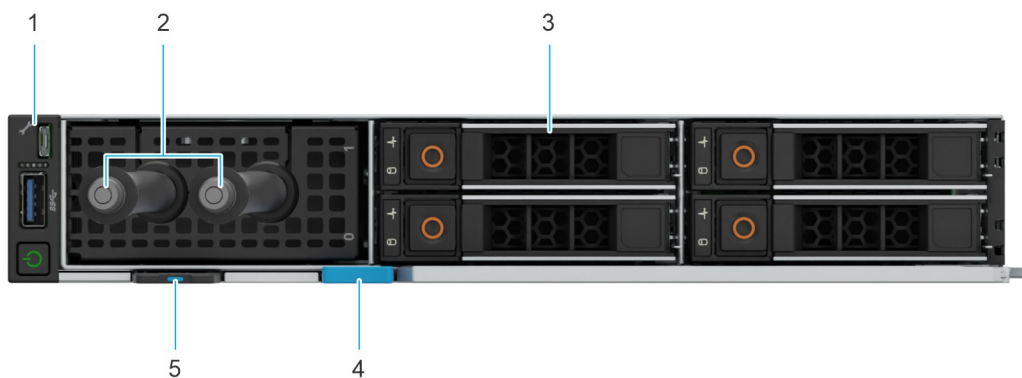


Figure 2. Front view of the 4 x 2.5-inch drive system with liquid cooling

1. Front I/O module
2. Liquid cooling tubes

- 3. Drives
- 5. Express service tag

- 4. Release handle



Figure 3. Front view of the 6 x 2.5-inch drive system

- 1. Front I/O module
- 2. Drives
- 3. Release handle
- 4. Express service tag

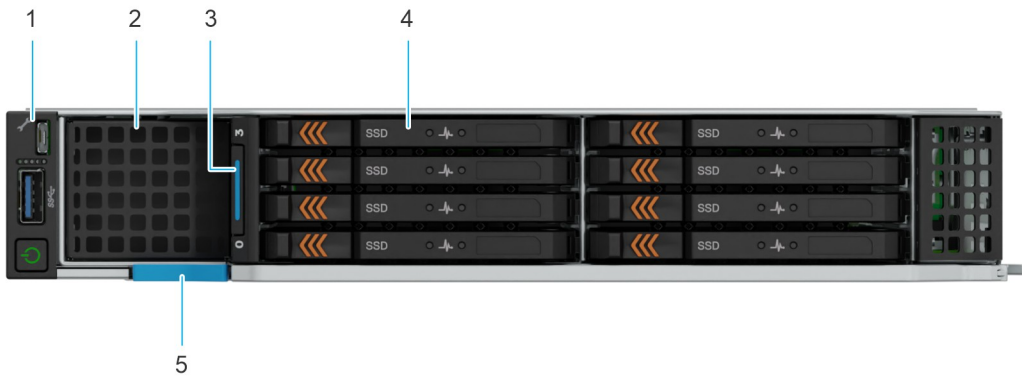


Figure 4. Front view of the 8 x E3.s drive system

- 1. Front I/O module
- 2. Drive blank
- 3. Express service tag
- 4. Drives
- 5. Release handle

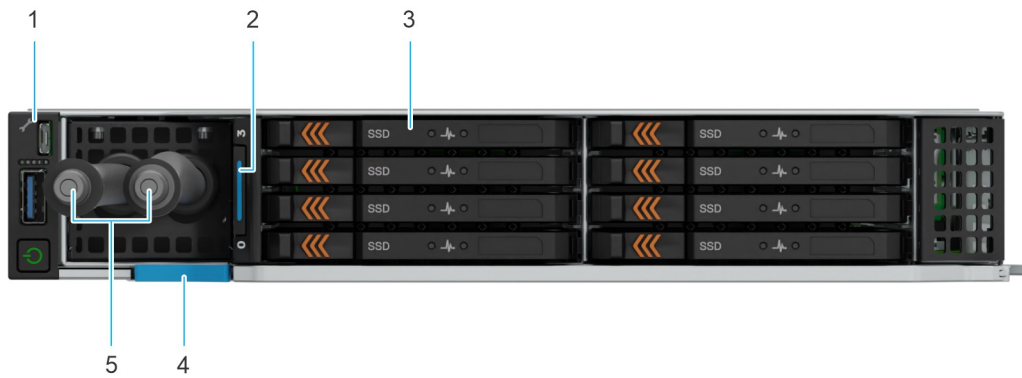


Figure 5. Front view of the 8 x E3.s drive system with liquid cooling

- 1. Front I/O module
- 2. Express service tag
- 3. Drives
- 4. Release handle
- 5. Liquid cooling tubes

Left control panel view

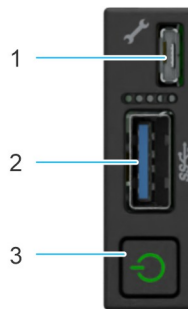


Figure 6. Front I/O module

- 1. iDRAC direct port
- 2. USB 3.0 port
- 3. Power button

System configurations - inside view for PowerEdge MX760c

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

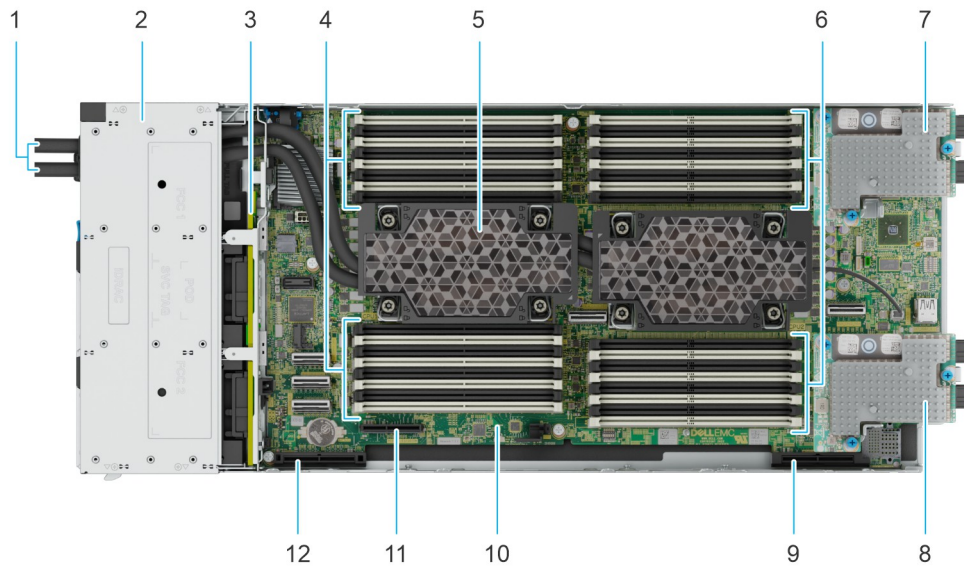


Figure 7. Inside the system (4 x 2.5-inch drive sled) with liquid cooling

1. Liquid cooling tubes
2. Drive cage
3. Backplane
4. Memory modules for Processor 1
5. Liquid cooling with Processor and heat sink module 1 and 2
6. Memory modules for Processor 2
7. Mezzanine card A
8. Mezzanine card B
9. Mini Mezzanine connector C
10. System board
11. BOSS-N1 (M.2)
12. PERC connector (H755 MX, H965i MX, HBA350i MX)

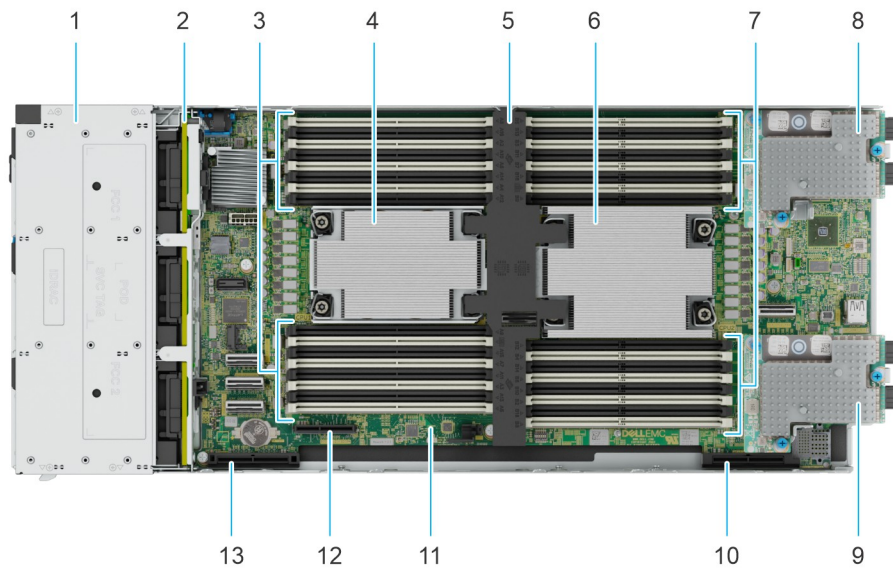


Figure 8. Inside the system (6 x 2.5-inch drive sled)

- | | |
|--|-------------------------------------|
| 1. Drive cage | 2. Backplane |
| 3. Memory modules for Processor 1 | 4. Processor and heat sink module 1 |
| 5. Air shroud | 6. Processor and heat sink module 2 |
| 7. Memory modules for Processor 2 | 8. Mezzanine card A |
| 9. Mezzanine card B | 10. Mini Mezzanine connector C |
| 11. System board | 12. BOSS-N1 (M.2) |
| 13. PERC connector (H755 MX, H965i MX, HBA350i MX) | |

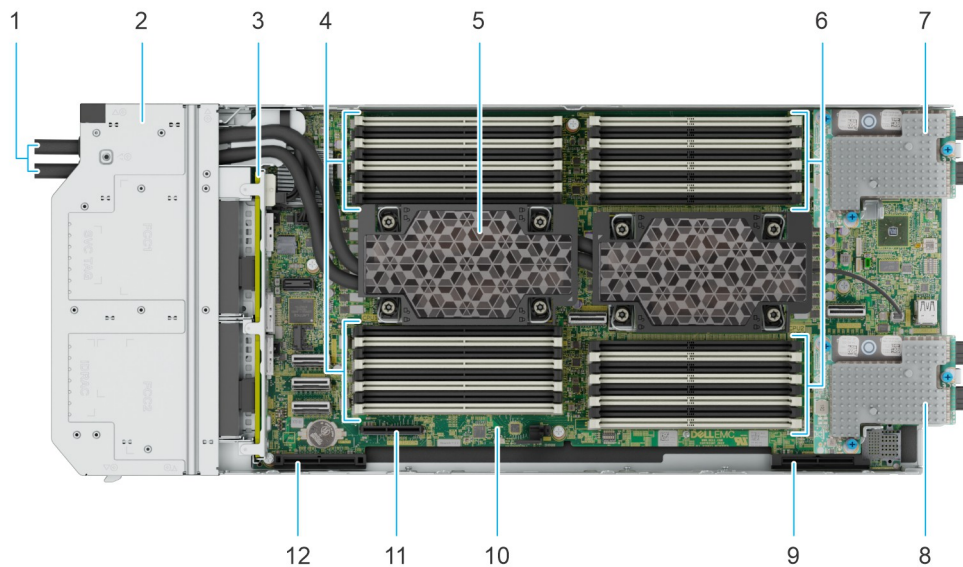


Figure 9. Inside the system (8 x E3.s drive sled) with liquid cooling

- | | |
|---|-----------------------------------|
| 1. Liquid cooling tubes | 2. Drive cage |
| 3. Backplane | 4. Memory modules for Processor 1 |
| 5. Liquid cooling with Processor and heat sink module 1 and 2 | 6. Memory modules for v 2 |
| | 7. Mezzanine card A |

- 7. Mezzanine card A
- 8. Mezzanine card B
- 9. Mini Mezzanine connector C
- 10. System board
- 11. BOSS-N1 (M.2)
- 12. PERC connector (H755 MX, H965i MX, HBA350i MX)

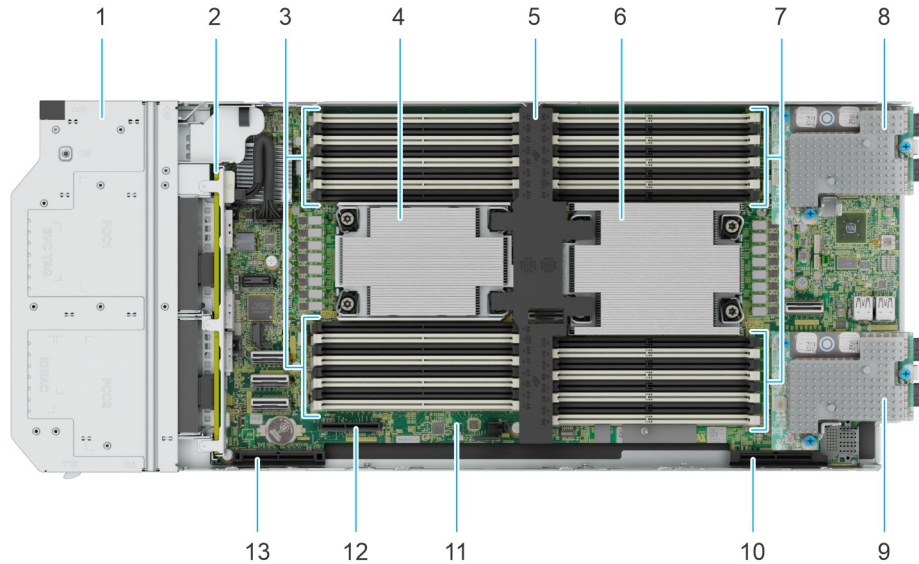


Figure 10. Inside the system (8 x E3.s drive sled)

- 1. Drive cage
- 2. Backplane
- 3. Memory modules for Processor 1
- 4. Processor and heat sink module 1
- 5. Air shroud
- 6. Processor and heat sink module 2
- 7. Memory modules for Processor 2
- 8. Mezzanine card A
- 9. Mezzanine card B
- 10. Mini Mezzanine connector C
- 11. System board
- 12. BOSS-N1 (M.2)
- 13. PERC connector (H755 MX, H965i MX, HBA350i MX)

Locating the Express Service Code and Service Tag

The Express Service tag is located on the front of the sled that includes system information such as the Service Tag, Express Service Code, Manufacture date, QRL label, and so on.

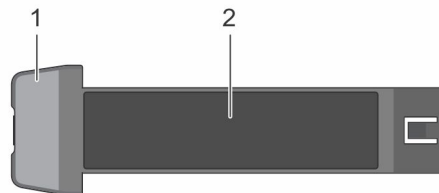


Figure 11. Locating Service Tag of your system

- 1. Service Tag, Express Service Code, Manufacture date, QRL label
- 2. Express Service tag

The Mini Enterprise Service Tag (MEST) label is located on the rear of the system that includes the Service Tag (ST), Express Service Code (Exp Svc Code), and Manufacture Date (Mfg. Date). The Exp Svc Code is used by Dell to route support calls to the appropriate personnel.

Alternatively, the Service Tag information is located on a label on the left wall of the chassis.

System information label

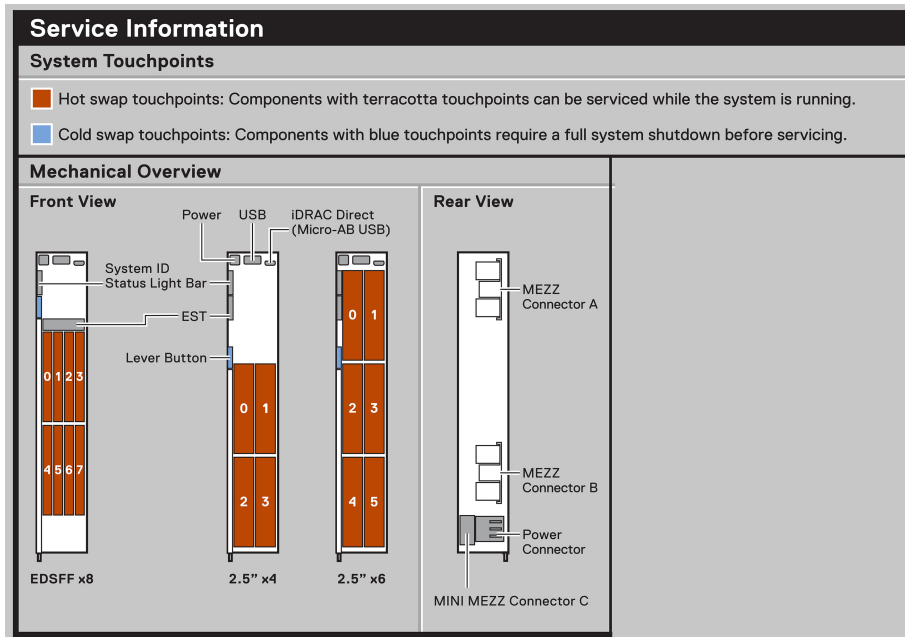


Figure 12. Mechanical overview

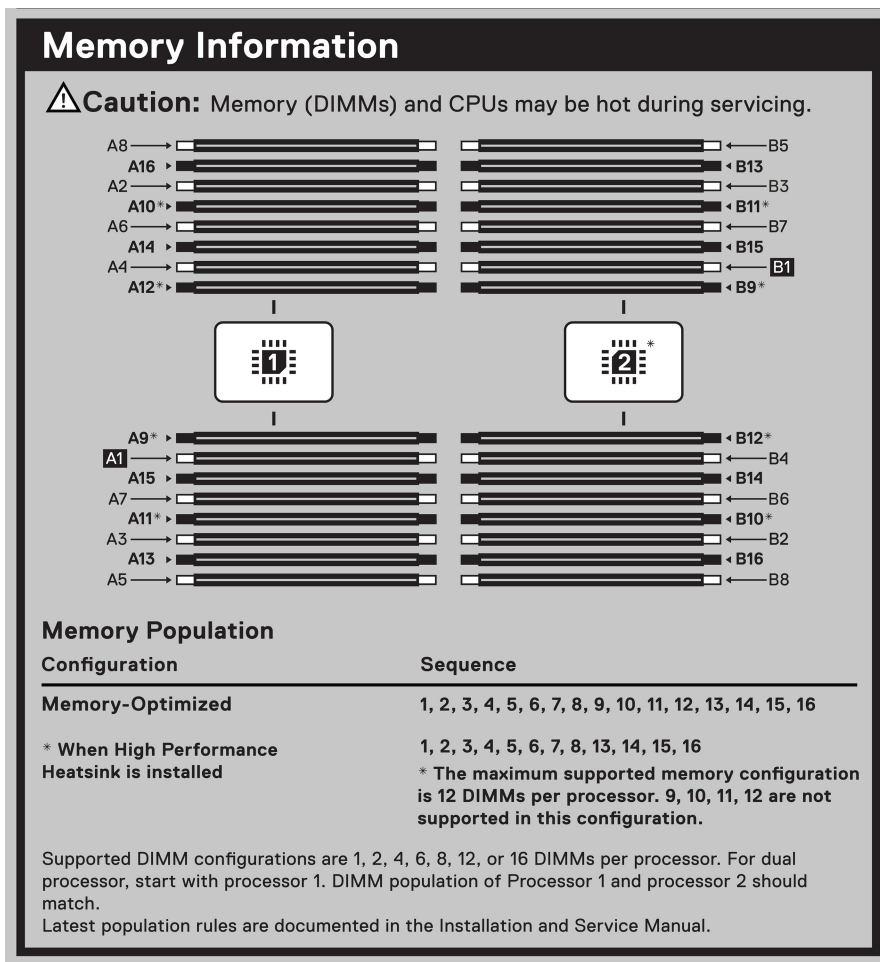


Figure 13. Memory overview

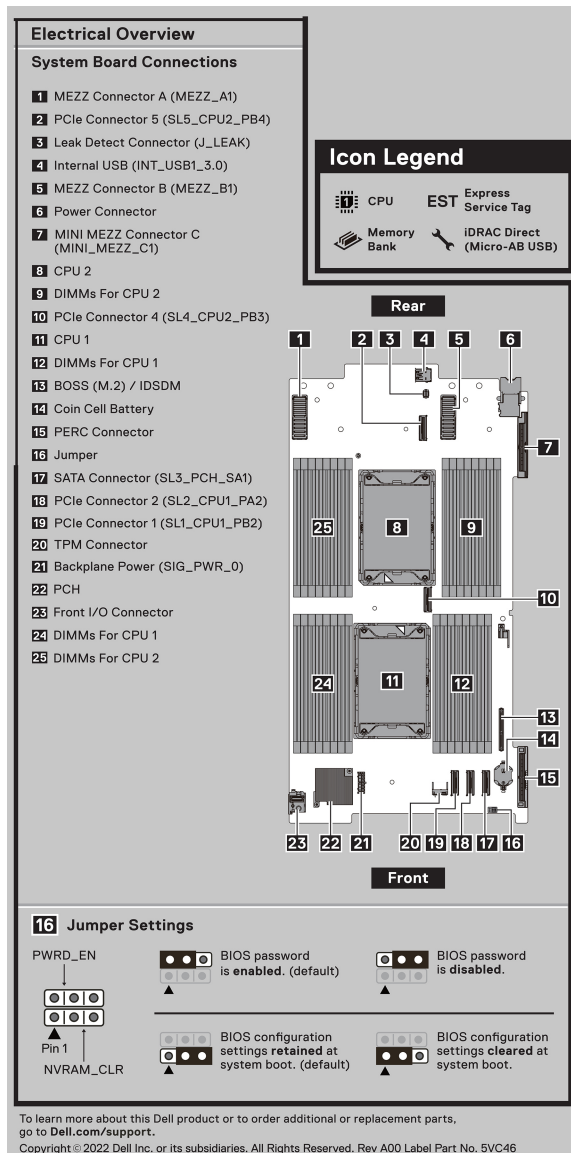


Figure 14. System board and jumper settings



Figure 15. Quick Resource Locator

⚠ 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 Technologies is not covered by your warranty. Read and follow the safety instructions that came with the product.

To learn more about this Dell product or to order additional or replacement parts, go to Dell.com/support.
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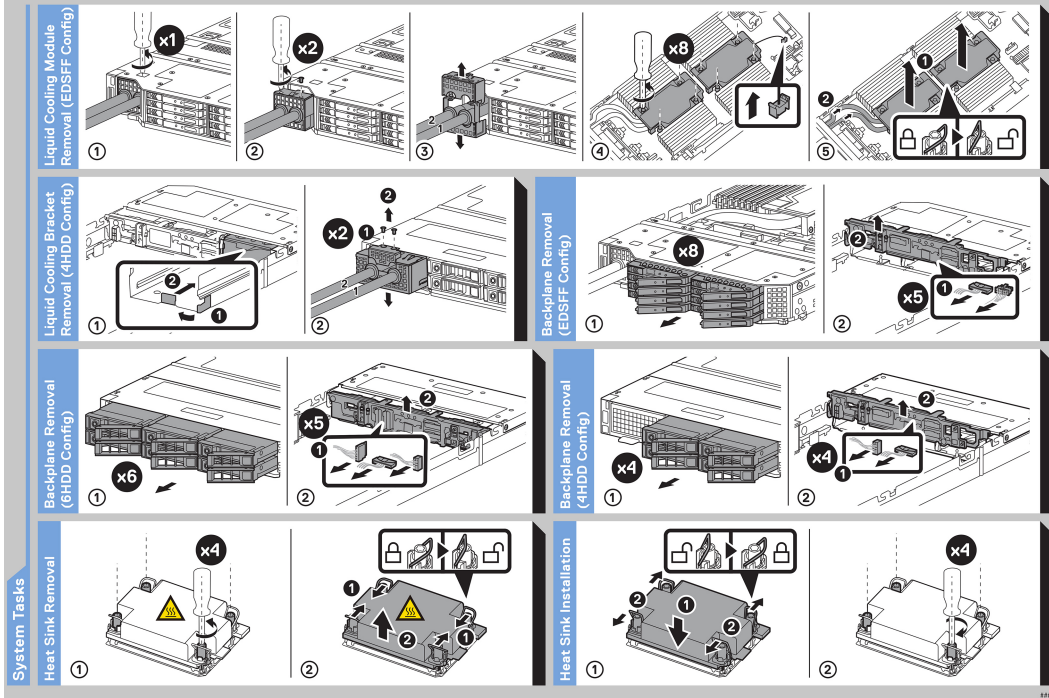


Figure 16. System tasks

Technical specifications

The technical and environmental specifications of your system are outlined in this section.

Topics:

- Sled dimensions
- Sled weight
- Processor specifications
- Supported operating systems
- System battery specifications
- Memory specifications
- PERC, Mezzanine and Mini Mezzanine slots specifications
- Drives
- Storage controller specifications
- Ports and connectors specifications
- Video specifications
- Environmental specifications

Sled dimensions

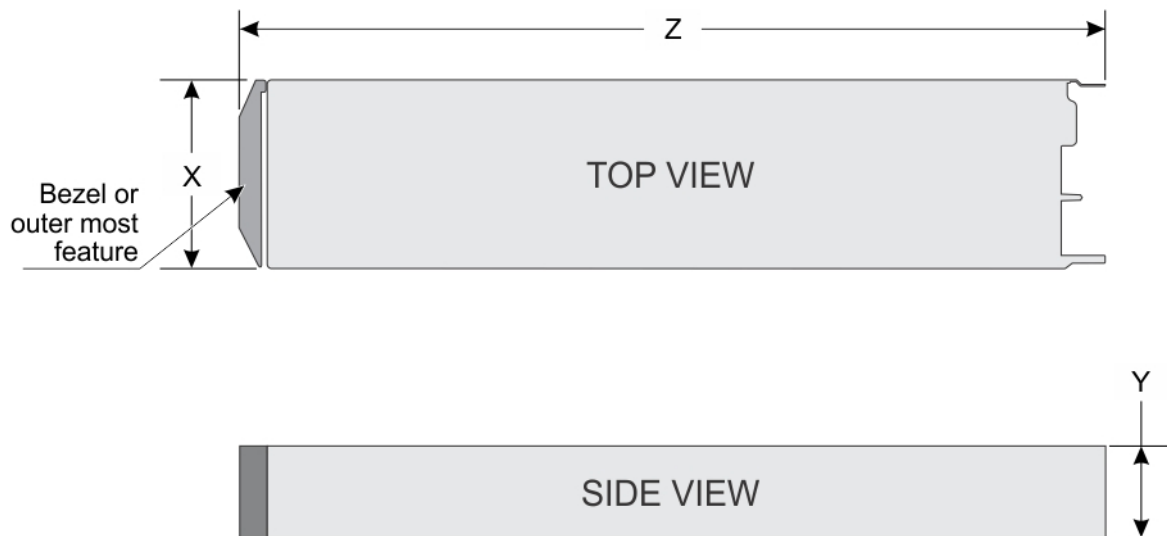


Figure 17. Sled dimensions

Table 1. PowerEdge MX760c sled dimensions

System configuration	X	Y	Z (handle closed).
4 x 2.5-inch or 6 x 2.5-inch	257.0 mm (10 inches)	51.0 mm (2 inches)	622.35 mm (24.5 inches)
8 x E3.s	257.0 mm (10 inches)	51.0 mm (2 inches)	631.77 mm (24.8 inches)

Sled weight

Table 2. PowerEdge MX760c sled weight

System configuration	Maximum weight (with all drives/SSDs)
4 x 2.5-inch	8.27 kg (18.23 pound)
6 x 2.5-inch	8.38 kg (18.47 pound)
8 x E3.s	8.59 kg (18.93 pound)

Processor specifications

Table 3. PowerEdge MX760c processor specifications

Supported processor	Number of processors supported
4 th Generation Intel Xeon Scalable processors with up to 56 cores	Up to two

Supported operating systems

The PowerEdge MX760c system supports the following operating systems:

- Canonical Ubuntu Server LTS
- Microsoft Windows Server with Hyper-V
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware vSAN/ESXi

For more information, go to www.dell.com/ossupport.

System battery specifications

The PowerEdge MX760c system supports CR 2032 3.0-V lithium coin cell system battery.

Memory specifications

The PowerEdge MX760c system supports the following memory specifications for optimized operation.

Table 4. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
			Minimum system capacity	Maximum system capacity	Minimum system capacity	Maximum system capacity
RDIMM	Single rank	16 GB	16 GB	256 GB	32 GB	512 GB
	Dual rank	32 GB	32 GB	512 GB	64 GB	1 TB
		64 GB	64 GB	1 TB	128 GB	2 TB
	Quad rank	128 GB	128 GB	2 TB	256 GB	4 TB
	Octa Rank	256 GB	256 GB	4 TB	512 GB	8 TB

Table 5. Memory module sockets

Memory module sockets	Speed
32 (288-pin)	4000 MT/s, 4400 MT/s, or 4800 MT/s

NOTE: Memory DIMM slots are not hot pluggable.

Memory restriction

- Min config: one DIMM required per CPU.
- Mixing RDIMM with different capacities and types is not supported. Mixing RDIMMs of different speeds will results all RDIMMs to run at the lowest speed
- ASHRAE A3/A4: CPS DIMMs are not supported. Note: ASHRAE A3 is for 40C ambient support and A4 is for 45C ambient support.
- ASHRE A3/A4: DDR5≥ 128GB is not supported. Note: ASHRAE A3 is for 40C ambient support and A4 is for 45C ambient support
- Non-populated DIMM slots, should installed with solid DIMM blanks.
- Processor 2 has a max DIMM count of 12 when using Processor 2 HPR heatsink. In configurations utilizing the HPR heatsink, total max DIMM count for Processor 1 and Processor 2 is 24.

PERC, Mezzanine and Mini Mezzanine slots specifications

The PowerEdge MX760c system supports:

- One x16 PCIe Gen4 slot for PERC – connected to processor 1
- One x16 PCIe Gen4 slot for Mezz A – connected to processor 1
- One x16 PCIe Gen5 slot for Mezz B – connected to processor 2
- One x16 PCIe Gen4 slot for Mini Mezz – connected to processor 1
- One x4 PCIe Gen4 slot for BOSS-N1 – connected to processor 1

Drives

The PowerEdge MX760c system supports:

- 4 x 2.5-inch hot-swappable SAS, SATA, NVMe (HDD/SSD) drives on x4 universal backplane configuration.
- 6 x 2.5-inch hot-swappable SAS, SATA,NVMe (HDD/SSD) drives on x6 universal backplane configuration.
- 6 x 2.5-inch hot-swappable SAS, SATA (HDD/SSD) drives on x6 SAS/SATA backplane configuration.
- 8 x E3.s hot-swappable NVMe SSD drives on E3x8 backplane configuration.

NOTE: For more information about how to hot swap NVMe PCIe SSD U.2 device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at <https://www.dell.com/support> > **Browse all products** > **Infrastructure** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Select This Product** > **Documentation** > **Manuals and Documents**.

Storage controller specifications

The PowerEdge MX760c system supports the following controller cards:

Table 6. Storage controller cards

Supported storage controller cards
Internal controllers <ul style="list-style-type: none">• PERC H755 MX

Table 6. Storage controller cards (continued)

Supported storage controller cards
<ul style="list-style-type: none"> PERC H965i MX HBA350i MX
Internal Boot <ul style="list-style-type: none"> Boot Optimized Storage Subsystem (BOSS-N1): HWRAID 2 x M.2 SSDs 480 GB or 960 GB
Software RAID <ul style="list-style-type: none"> S160

Ports and connectors specifications

USB ports specifications

Table 7. PowerEdge MX760c USB specifications

Front		Internal (Optional)	
USB port type	No. of ports	USB port type	No. of ports
USB 3.0-compliant port	One	Internal USB 3.0-compliant port	One
iDRAC Direct port (Micro-AB USB 2.0-compliant port)	One		

i **NOTE:** The micro USB 2.0 compliant port can only be used as an iDRAC Direct or a management port.

Video specifications

The PowerEdge MX760c system supports Matrox G200 W3 graphics controller integrated with iDRAC with 16 MB of video frame buffer.

Table 8. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1400 x 900	60	8, 16, 32
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

Environmental specifications

i **NOTE:** For additional information about environmental certifications, refer to the *Product Environmental Datasheet* located with the *Documentation* on www.dell.com/support/home.

Table 9. Operational climatic range category A2

Temperature	Specifications
Allowable continuous operations	
Temperature ranges for altitudes <= 900 m (<= 2953 ft)	10–35°C (50–95°F) with no direct sunlight on the equipment
Humidity percent ranges (non-condensing at all times)	8% RH with -12°C minimum dew point to 80% RH with 21°C (69.8°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/300 m (1.8°F/984 Ft) above 900 m (2953 Ft)

Table 10. Operational climatic range category A3

Temperature	Specifications
Allowable continuous operations	
Temperature ranges for altitudes <= 900 m (<= 2953 ft)	5–40°C (41–104°F) with no direct sunlight on the equipment
Humidity percent ranges (non-condensing at all times)	8% RH with -12°C minimum dew point to 85% RH with 24°C (75.2°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/175 m (1.8°F/574 Ft) above 900 m (2953 Ft)

Table 11. Operational climatic range category A4

Temperature	Specifications
Allowable continuous operations	
Temperature ranges for altitudes <= 900 m (<= 2953 ft)	5–45°C (41–113°F) with no direct sunlight on the equipment
Humidity percent ranges (non-condensing at all times)	8% RH with -12°C minimum dew point to 90% RH with 24°C (75.2°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/125 m (1.8°F/410 Ft) above 900 m (2953 Ft)

Table 12. Shared requirements across all categories

Temperature	Specifications
Allowable continuous operations	
Maximum temperature gradient (applies to both operation and non-operation)	20°C in an hour* (36°F in an hour) and 5°C in 15 minutes (9°F in 15 minutes), 5°C in an hour* (9°F in an hour) for tape i NOTE: * - Per ASHRAE thermal guidelines for tape hardware, these are not instantaneous rates of temperature change.
Non-operational temperature limits	-40 to 65°C (-40 to 149°F)
Non-operational humidity limits	5% to 95% RH with 27°C (80.6°F) maximum dew point
Maximum non-operational altitude	12,000 meters (39,370 feet)
Maximum operational altitude	3,050 meters (10,006 feet)

Table 13. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26 G _{rms} at 5 Hz to 350 Hz (all operation orientations)
Storage	1.88 G _{rms} at 10 Hz to 500 Hz for 15 minutes (all six sides tested)

Table 14. Maximum shock pulse specifications

Maximum shock pulse	Specifications
Operating	Six consecutively executed shock pulses in the positive and negative x, y, and z axis of 6 G for up to 11 ms.
Storage	Six consecutively executed shock pulses in the positive and negative x, y, and z axis (one pulse on each side of the system) of 71 G for up to 2 ms.

Thermal restriction matrix

Table 15. The PowerEdge MX760c thermal restriction matrix

Configuration			6 x 2.5-inch BP		6 x 2.5-inch BP		4 x 2.5-inch BP		8 x E3.s BP		Diskless in 4 x 2.5" BP	
Adjacent Sled Condition Support			Not Limited		Optimized*		Not Limited		Not Limited		Not Limited	
Front Storage Type			SAS drive	NVMe drive	SAS drive	NVMe drive	SAS drive	NVMe drive	E3 drive		No drive	
SPR XCC CPU	6430/645 4S	270W	Not Supported		35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	8461V	300W 1S	Not Supported		35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	8452Y/ 8460Y+	300W	Not Supported		Not Supported		30°C	30°C	30°C	30°C	35°C	35°C
	8468V	330W	Not Supported		Not Supported		Liquid Cooling Required		Liquid Cooling Required		Liquid Cooling Required	
	8468/848 0+/ 8470/847 0Q/8458P	350W	Not Supported		Not Supported		Liquid Cooling Required		Liquid Cooling Required		Liquid Cooling Required	
SPR MCC	3408U	125W 1S	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C
	5416S	150W	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C
	4416+	165W	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C
	5418Y/ 6426Y	185W	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C
	6434	195W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	5420+/ 6438Y+/ 6438M	205W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	6448Y/ 6442Y	225W	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	6444Y	270W	Not Supported		35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	8462Y+	300W	Not Supported		Not Supported		30°C	30°C	30°C	30°C	35°C	35°C

Table 15. The PowerEdge MX760c thermal restriction matrix (continued)

Configuration			6 x 2.5-inch BP		6 x 2.5-inch BP		4 x 2.5-inch BP		8 x E3.s BP		Diskless in 4 x 2.5" BP	
Adjacent Sled Condition Support			Not Limited		Optimized*		Not Limited		Not Limited		Not Limited	
Front Storage Type			SAS drive	NVMe drive	SAS drive	NVMe drive	SAS drive	NVMe drive	E3 drive		No drive	
	6458Q	350W	Not Supported		Not Supported		Liquid Cooling Required		Liquid Cooling Required		Liquid Cooling Required	
Memory (System Is Air Cooled, No Liquid)	256 GB RDIMM 4800	13.2W, 2 DPC	30°C	30°C	30°C	30°C	35°C	35°C	35°C	35°C	35°C	35°C
	128 GB RDIMM 4800	9.7W, 2 DPC	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C	35°C
	64 GB RDIMM 4800	8.5W, 2 DPC	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C
	32 GB RDIMM 4800	4.2W, 2 DPC	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C
PCI Card	Mezzanine card, Tier2, ≤ 30 W		45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C
	Mini Mezzanine card		45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C	45°C
Notes	<p>* Optimized sled condition is to recommend the nearby sleds population with same storage configuration or sled blank for thermally optimization by air cooling.</p> <p>** Wider HPR heatsink is required for > 225W CPUs</p> <p>*** Max DIMM count support for wider HPR heatsink is 24 pcs depended on DIMM population guidance.</p> <p>**** Liquid cooling solution can support all CPU SKUs, but is limited in 4 drives BP and E3.s BP configurations due to ME constrain</p>											

Extended ambient restrictions

ASHRAE A3 environment

- Do not perform a cold startup below 5°C
- The operating temperature specified is for a maximum altitude of 3050 m (10,000 ft).
- With Air Cooling Solution, Higher wattage processors, Thermal Design Power (TDP) > 185 W are not supported.
- With Liquid Cooling Solution, all processors are supported.
- Non-Dell qualified peripheral cards or peripheral cards greater than 30 W are not supported.
- PCIe SSD is not supported.
- 128 GB or higher capacity RDIMM is not supported.
- E3.s drive is not supported.

ASHRAE A4 environment

- Do not perform a cold startup below 5°C.
- The operating temperature specified is for a maximum altitude of 3050 m (10,000 ft).
- With Air Cooling Solution, Higher wattage processors, Thermal Design Power (TDP) > 165 W are not supported.
- With Liquid Cooling Solution, all processors are supported.

- Non-Dell qualified peripheral cards or peripheral cards greater than 30 W are not supported.
- PCIe SSD is not supported.
- 128 GB or higher capacity RDIMM is not supported.
- E3.s drive is not supported.

Initial system setup and configuration

This section describes the tasks for initial setup and configuration of the Dell system. The section also provides general steps to set up the system and the reference guides for detailed information.

Topics:


- [Setting up the system](#)
- [MX Infrastructure Thermal Management feature for MX760c sleds tech sheet](#)
- [iDRAC configuration](#)
- [Resources to install operating system](#)

Setting up the system


Perform the following steps to set up the system:

Steps

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

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

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


 **NOTE:** Wait for the enclosure to initialize before powering on the enclosure.

5. Power on the sled.

Alternatively, you can also power on the system by using iDRAC by any of the below :

- For more information about powering on the system using iDRAC, see the [Options to log in to iDRAC](#).
- Open OpenManage Enterprise-Modular (OME-M 2.0 or later versions), after the iDRAC is configured on the OME. For more information, see the *OME-Modular User's Guide* at <https://www.dell.com/poweredgemanuals>.

For more information about setting up the system, see the *Getting Started Guide* that is shipped with your system.

 **NOTE:** For information about managing the basic settings and features of the system, see the [Pre-operating system management applications](#) chapter.

MX Infrastructure Thermal Management feature for MX760c sleds tech sheet

This tech sheet provides information about PowerEdge thermal and power optimization for MX7000 with MX760c for customers who purchased MX760c sled after-point-of-sale (APOS) and installs it in an MX7000 chassis with sled configuration requiring a thermally optimized chassis.

MX760c configurations that require a thermally optimized chassis will have a specific component on the order

Table 16. MX760c component configurations that require a thermally optimized chassis

Component	description
SKU 389-EEXH	High Performance Component

Table 16. MX760c component configurations that require a thermally optimized chassis (continued)

Component	description
MOD MDW67	MOD, INFO, HIGH PERFORM COMPONENT

MX7000 chassis upgrade requirement:

1. MX7000 Gold Grade (Hardware version 2, Gen2) fans (customer kit PN: H2YC5/SKU: SKU 750-ADWN; included in MX solutions orders with MX760c)
2. OME-M (OpenManage Enterprise - Modular) FW 2.00.00.
(scan the QR code to download the firmware)



3. iDRAC FW 05.10.25/06.10.05
(scan the QR code to download the drivers on sleds installed in MX7000 chassis)



4. Enterprise Infrastructure Planning Tool (EIPT)
(scan the QR code to access the EIPT)



NOTE: When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Enterprise Infrastructure Planning Tool available at Dell.com/calculator.

NOTE: To generate the thermally optimized sled-to-slot assignments, enter the MX configuration in the EIPT tool and click **Optimize**

To setup the sled:

1. Power off the MX7000 chassis.
2. Install the eight, MX760csleds at front of the enclosure.
3. Install the four, 60 mm gold grade (Gen 2) fans at the front and the five, 80 mm gold grade (Gen 2) fans at the rear of the MX7000 chassis
4. To verify if correct gold grade fans are installed, use one of the following methods:

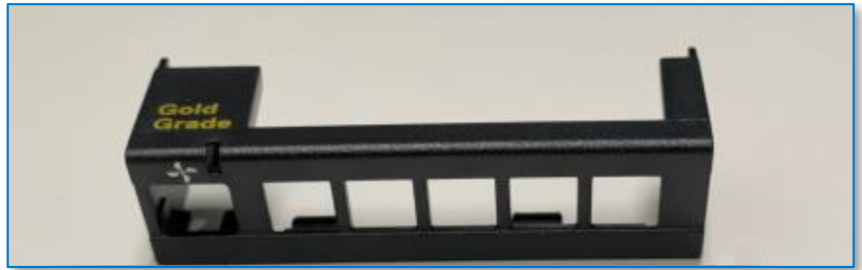
Physical Verification:

1. Identify the Gold Grade silkscreen on the fan module

Front Fans:



Rear Fans:



Remote verification via OME-M API:

1. Open a browser and type this URL - **<https://<your chassis management IP>/api/DeviceService/ Devices>**
2. Press Ctrl+F to find the first instance of "**ChassisId**"
3. Replace the Devices number in this URL: **[https://<your chassis management IP>/api/DeviceService/ Devices\(<ChassisId>\)/InventoryDetails\('chassisFansList'\)](https://<your chassis management IP>/api/DeviceService/ Devices(<ChassisId>)/InventoryDetails('chassisFansList'))** and press Enter to view the fan hardware version.

Remote verification via OME-M GUI:

1. Click **MM GUI >Hardware > Fans**
2. **Results** Gold Grade fans are shown under Hardware Version as 2.
3. **Results** Silver Grade fans are shown under Hardware Version as 1.

NOTE: Silver Grade fans do not have "Silver" silkscreen on fan assembly

NOTE: For more information, go to **<https://www.dell.com/poweredgemanuals>Modular Infrastructure>Upgrade Kits>MX Infrastructure Thermal Management features for MX series sleds>**

iDRAC configuration

The Integrated Dell Remote Access Controller (iDRAC) is designed to make you more productive as a system administrator and improve the overall availability of Dell servers. iDRAC alerts you to system issues, helps you to perform remote management, and reduces the need for physical access to the system.

Options to set up iDRAC IP address

To enable communication between your system and iDRAC, you must first configure the network settings based on your network infrastructure. The network settings option is set to **DHCP**, by default.

NOTE: For static IP configuration, you must request for the settings at the time of purchase.

You can set up the iDRAC IP address using one of the interfaces in the table below. For information about setting up iDRAC IP address, see the documentation links provided in the table below.

Table 17. Interfaces to set up iDRAC IP address

Interface	Documentation links
iDRAC Settings utility	<p><i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i>, go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation.</p> <p>NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article https://www.dell.com/support/article/sln308699.</p>
OpenManage Deployment Toolkit	<p><i>Dell OpenManage Deployment Toolkit User's Guide</i> available at https://www.dell.com/openmanagemanuals > Open Manage Deployment Toolkit.</p>
iDRAC Direct	<p><i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i>, go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation.</p> <p>NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article https://www.dell.com/support/article/sln308699.</p>
Lifecycle Controller	<p><i>Dell Lifecycle Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Dell Lifecycle Controller User's Guide</i>, go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation.</p> <p>NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article https://www.dell.com/support/article/sln308699.</p>
OME Modular	<p><i>Dell EMC OpenManagement Enterprise Modular User's Guide</i> at https://www.dell.com/openmanagemanuals > Dell OpenManage Enterprise > Dell OpenManage Enterprise-Modular > Documentation</p>

NOTE: To access iDRAC, ensure that you connect the ethernet cable to the iDRAC dedicated network port or use the iDRAC Direct port by using the micro USB (type AB) cable. You can also access iDRAC through the shared mode on the Mezz cards in Fabric A.

Options to log in to iDRAC

To log in to the iDRAC Web User Interface, open a browser and enter the IP address.

You can log in to iDRAC as:

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

In the login screen displayed, if you have opted for secure default access to iDRAC, the default username is `root` and enter the iDRAC secure default password available on back of the Information Tag. If you opted for legacy password, use the iDRAC legacy username and password - `root` and `calvin`, the iDRAC default password will be blank on the information tag. Then you will be prompted and required to create a password of your choice before proceeding. You can also log in by using your Single Sign-On or Smart Card.

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

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/idracmanuals.

NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article <https://www.dell.com/support/article/sln308699>.

You can also access iDRAC using command-line protocol - RACADM. For more information, see the *Integrated Dell Remote Access Controller RACADM CLI Guide* available at <https://www.dell.com/idracmanuals>.

You can also access iDRAC using automation tool - Redfish API. For more information, see the *Integrated Dell Remote Access Controller User's Guide Redfish API Guide* available at <https://developer.dell.com>.

Resources to install operating system

If the system is shipped without an operating system, you can install a supported operating system by using one of the resources provided in the table below. For information about how to install the operating system, see the documentation links provided in the table below.

Table 18. Resources to install the operating system

Resource	Documentation links
iDRAC	<i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> , go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation . NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at https://www.dell.com/support/article/sln308699 .
Lifecycle Controller	<i>Dell Lifecycle Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Dell Lifecycle Controller User's Guide</i> , go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation . Dell recommends using Lifecycle Controller to install the OS, since all required drivers are installed on the system. NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see KB article at https://www.dell.com/support/article/sln308699 .
OpenManage Deployment Toolkit	www.dell.com/openmanagemanuals > OpenManage Deployment Toolkit
Dell certified VMware ESXi	www.dell.com/virtualizationsolutions

NOTE: For more information about installation and how-to videos for operating systems supported on PowerEdge systems, see [Supported Operating Systems for Dell PowerEdge systems](#).

Options to download drivers and firmware

You can download firmware from the Dell support site. For information about downloading firmware, see the [Downloading drivers and firmware](#) section.

You can also choose any one of the following options to download the firmware. For information about how to download the firmware, see the documentation links provided in the table below.

Table 19. Options to download firmware

Option	Documentation link
Using Integrated Dell Remote Access Controller Lifecycle Controller (iDRAC with LC)	www.dell.com/idracmanuals
Using Dell Repository Manager (DRM)	www.dell.com/openmanagemanuals > Repository Manager
Using Dell Server Update Utility (SUU)	www.dell.com/openmanagemanuals > Server Update Utility


Table 19. Options to download firmware (continued)

Option	Documentation link
Using Dell OpenManage Deployment Toolkit (DTK)	www.dell.com/openmanagemanuals > OpenManage Deployment Toolkit
Using iDRAC virtual media	www.dell.com/idracmanuals

Options to download and install OS drivers

You can choose any one of the following options to download and install OS drivers. For information about how to download or install OS drivers, see the documentation links provided in the table below.

Table 20. Options to download and install OS drivers

Option	Documentation
Dell support site	Downloading drivers and firmware section.
iDRAC virtual media	<i>Integrated Dell Remote Access Controller User's Guide</i> at https://www.dell.com/idracmanuals or for system specific <i>Integrated Dell Remote Access Controller User's Guide</i> , go to https://www.dell.com/poweredgemanuals > Product Support page of your system > Documentation .  NOTE: To determine the most recent iDRAC release for your platform and for latest documentation version, see https://www.dell.com/support/article/sln308699 .

Downloading drivers and firmware

It is recommended that you download and install the latest BIOS, drivers, and systems management firmware on the system.

Prerequisites

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

Steps

1. Go to www.dell.com/support/drivers.
2. Enter the Service Tag of the system in the **Enter a Dell Service Tag, Dell Product ID or Model** field, and then press Enter.

 **NOTE:** If you do not have the Service Tag, click **Browse all products**, and navigate to your product.

3. On the displayed product page, click **Drivers & Downloads**.
On the **Drivers & Downloads** page, all drivers that are applicable to the system are displayed.
4. Download the drivers to a USB drive, CD, or DVD.

Pre-operating system management applications

You can manage basic settings and features of a system without booting to the operating system by using the system firmware.

Options to manage the pre-operating system applications

You can use any one of the following options to manage the pre-operating system applications:

- System Setup
- Dell Lifecycle Controller
- Boot Manager
- Preboot Execution Environment (PXE)

Topics:

- [System Setup](#)
- [Dell Lifecycle Controller](#)
- [Boot Manager](#)
- [PXE boot](#)

System Setup

Using the


System Setup option, you can configure the BIOS settings, iDRAC settings, and device settings of the system.

You can access system setup by using any one of the following interfaces:

- Graphical User interface — To access go to iDRAC Dashboard, click **Configurations > BIOS Settings**.
- Text browser — To enable the text browser, use the Console Redirection.

To view

System Setup, power on the system, press F2, and click **System Setup Main Menu**.

 **NOTE:** If the operating system begins to load before you press F2, wait for the system to finish booting, and then restart the system and try again.

The options on the

System Setup Main Menu screen are described in the following table:

Table 21. System Setup Main Menu

Option	Description
System BIOS	Enables you to configure the BIOS settings.
iDRAC Settings	Enables you to configure the iDRAC settings. The iDRAC settings utility is an interface to set up and configure the iDRAC parameters by using UEFI (Unified Extensible Firmware Interface). You can enable or disable various iDRAC parameters by using the iDRAC settings utility. For more information about this utility, see <i>Integrated Dell Remote Access Controller User's Guide</i> at www.dell.com/poweredgemanuals .

Table 21. System Setup Main Menu (continued)

Option	Description
Device Settings	Enables you to configure device settings for devices such as storage controllers or network cards.
Service Tag Settings	Enables you to configure the System Service Tag.

System BIOS

To view the **System BIOS** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS**.

Table 22. System BIOS details

Option	Description
System Information	Provides information about the system such as the system model name, BIOS version, and Service Tag.
Memory Settings	Specifies information and options related to the installed memory.
Processor Settings	Specifies information and options related to the processor such as speed and cache size.
SATA Settings	Specifies options to enable or disable the integrated SATA controller and ports.
NVMe Settings	Specifies options to change the NVMe settings.
Boot Settings	Specifies options to specify the Boot mode (BIOS or UEFI). Enables you to modify UEFI and BIOS boot settings.
Network Settings	Specifies options to manage the UEFI network settings and boot protocols. Legacy network settings are managed from the Device Settings menu.
Integrated Devices	Specifies options to manage integrated device controllers and ports, specifies related features, and options.
Serial Communication	Specifies options to manage the serial ports, its related features, and options.
System Profile Settings	Specifies options to change the processor power management settings, memory frequency.
System Security	Specifies options to configure the system security settings, such as system password, setup password, Trusted Platform Module (TPM) security, and UEFI secure boot. It also manages the power button on the system.
Redundant OS Control	Sets the redundant OS information for redundant OS control.
Miscellaneous Settings	Specifies options to change the system date and time.

System Information

To view the **System Information** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > System Information**.

Table 23. System Information details

Option	Description
System Model Name	Specifies the system model name.
System BIOS Version	Specifies the BIOS version installed on the system.
System Management Engine Version	Specifies the current version of the Management Engine firmware.
System Service Tag	Specifies the system Service Tag.

Table 23. System Information details (continued)

Option	Description
System Manufacturer	Specifies the name of the system manufacturer.
System Manufacturer Contact Information	Specifies the contact information of the system manufacturer.
System CPLD Version	Specifies the current version of the system Complex Programmable Logic Device (CPLD) firmware.
UEFI Compliance Version	Specifies the UEFI compliance level of the system firmware.

Memory Settings

To view the **Memory Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Memory Settings**.

Table 24. Memory Settings details

Option	Description
System Memory Size	Specifies the size of the system memory.
System Memory Type	Specifies the type of memory installed in the system.
System Memory Speed	Specifies the speed of the system memory.
Video Memory	Specifies the size video memory.
System Memory Testing	Specifies whether the system memory tests are run during system boot. The two options available are Enabled and Disabled . This option is set to Disabled by default.
Memory Operating Mode	Specifies the memory operating mode. The option is available and is set to Optimizer Mode , by default. Options such as Fault Resilient Mode and NUMA Fault Resilient Mode are available for support when the Advanced RAS capability processor is installed on the system.
Current State of Memory Operating Mode	Specifies the current state of the memory operating mode.
Node Interleaving	Enables or disables the Node interleaving option. Specifies if the Non-Uniform Memory Architecture (NUMA) is supported. If this field is set to Enabled , memory interleaving is supported if a symmetric memory configuration is installed. If the field is set to Disabled , the system supports NUMA (asymmetric) memory configurations. This option is set to Disabled by default.
Memory training	<p>When option is set to Fast and memory configuration is not changed, the system uses previously saved memory training parameters to train the memory subsystems and system boot time is also reduced. If memory configuration is changed, the system automatically enables Retrain at Next boot to force one-time full memory training steps, and then go back to Fast afterward.</p> <p>When option is set to Retrain at Next boot, the system performs the force one-time full memory training steps at next power on and boot time is slowed on next boot.</p> <p>When option is set to Enable, the system performs the force full memory training steps on every power on and boot time is slowed on every boot.</p>
DIMM Self Healing (Post Package Repair) on Uncorrectable Memory Error	Enables or disables Post Packing Repair (PPR) on uncorrectable memory error. This option is set to Enabled by default.
Correctable Error Logging	Enables or disables correctable error logging. This option is set to Disabled by default.

Table 24. Memory Settings details (continued)

Option	Description
Memory Map Out	This option controls DIMMs slots on the system. This option is set to Enabled by default. It allows to disable system installed DIMMs.

Processor Settings

To view the **Processor Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Processor Settings**.

Table 25. Processor Settings details


Option	Description
Logical Processor	Each processor core supports up to two logical processors. If this option is set to Enabled , the BIOS displays all the logical processors. If this option is set to Disabled , the BIOS displays only one logical processor per core. This option is set to Enabled by default.
CPU Interconnect Speed	<p>Enables you to govern the frequency of the communication links among the processors in the system.</p> <p> NOTE: The standard and basic bin processors support lower link frequencies.</p> <p>The options available are Maximum data rate, 16.0 GT/s, 14.4 GT/s, and 12.8 GT/s. This option is set to Maximum data rate by default.</p> <p>Maximum data rate indicates that the BIOS runs the communication links at the maximum frequency supported by the processors. You can also select specific frequencies that the processors support, which can vary.</p> <p>For best performance, you should select Maximum data rate. Any reduction in the communication link frequency affects the performance of non-local memory access and cache coherency traffic. In addition, it can slow access to non-local I/O devices from a particular processor.</p> <p>However, if power saving considerations outweigh performance, reduce the frequency of the processor communication links. Before reducing the frequency, you must localize the memory and I/O access to the nearest NUMA node to minimize the impact to system performance.</p>
Virtualization Technology	Enables or disables the virtualization technology for the processor. This option is set to Enabled by default.
Kernel DMA Protection	This option is set to Disabled by default. It is enabled for Secure Launch (Firmware Protection) support on Windows 2022.
Address Translation Services(ATS)	This option is set to Enabled by default. ATS provides an interface between Chipset's address translation and protection table to translate DMA addresses to host addresses.
Directory Mode	Enables or disables the directory mode. This option is set to Enabled by default.
Adjacent Cache Line Prefetch	Optimizes the system for applications that need high utilization of sequential memory access. This option is set to Enabled by default. You can disable this option for

Table 25. Processor Settings details (continued)


Option	Description
	applications that need high utilization of random memory access.
Hardware Prefetcher	Enables or disables the hardware prefetcher. This option is set to Enabled by default.
DCU Streamer Prefetcher	Enables or disables the Data Cache Unit (DCU) streamer prefetcher. This option is set to Enabled by default.
DCU IP Prefetcher	Enables or disables the Data Cache Unit (DCU) IP prefetcher. This option is set to Enabled by default.
System Isochronous Mode	This feature reduces latency of memory transactions at the expense of bandwidth. Enabling it may be best for real-time audio and video streaming applications. Disabling it may be best for applications needing highest memory bandwidth especially with large number of cores under heavy utilization. This option is set to Disabled by default.
Sub NUMA Cluster	Enables or disables the Sub NUMA Cluster. This option is set to Disabled by default.
MADT Core Enumeration	Specifies the MADT Core Enumeration. This option is set to default in Round Robin . Linear option supports industry core enumeration whereas, Round Robin option supports Dell optimized core enumeration.
UPI Prefetch	Enables you to get the memory read started early on DDR bus. The Ultra Path Interconnect (UPI) Rx path spawns the speculative memory that is read to Integrated Memory Controller (iMC) directly. This option is set to Enabled by default.
XPT Prefetch	This option is set to Enabled by default.
LLC Prefetch	Enables or disables the LLC Prefetch on all threads. This option is set to Enabled by default.
Dead Line LLC Alloc	Enables or disables the Dead Line LLC Alloc. This option is set to Enabled by default. You can enable this option to enter the dead lines in LLC or disable the option to not enter the dead lines in LLC.
Directory AtoS	Enables or disables the Directory AtoS. AtoS optimization reduces remote read latencies for repeat read accesses without intervening writes. This option is set to Disabled by default.
AVX P1	Enables you to reconfigure the processor Thermal Design Power (TDP) levels during POST based on the power and thermal delivery capabilities of the system. TDP verifies the maximum heat the cooling system is must dissipate. This option is set to Normal by default.  NOTE: This option is only available on certain stock keeping units (SKUs) of the processors.
Dynamic SST-Performance Profile	Enables you to reconfigure the processor using Dynamic or Static Speed Select Technology. This option is set to Disabled by default.
SST-Performance Profile	Enables you to reconfigure the processor using Speed Select Technology.
Intel SST-BF	Enables Intel SST-BF. This option is displayed if Performance Per Watt (operating system) or Custom (when OSPM is

Table 25. Processor Settings details (continued)

Option	Description
	enabled) system profiles are selected. This option is set to Disabled by default.
Intel SST-CP	Enables Intel SST-CP. This option is displayed and selectable for each system profile mode. This option is set to Disabled by default.
x2APIC Mode	Enables or disables x2APIC mode. This option is set to Enabled by default. i NOTE: For two processors 64 cores configuration, x2APIC mode is not switchable if 256 threads are enabled (BIOS settings: All CCD, cores, and logical processors enabled).
AVX ICCP Pre-Grant License	Enables or disables AVX ICCP Pre-Grant License. This option is set to Disabled by default.
AVX ICC Pre-Grant Level	Enables you to select between the different AVX ICC transition levels offered by Intel. This option is set to 128 heavy by default.
Dell Controlled Turbo	
Dell Controlled Turbo Settings	Controls the turbo engagement. Enable this option only when System Profile is set to Performance or Custom , and CPU Power Management is set to Performance . This item can be selected for each system profile mode. This option is set to Disabled by default. i NOTE: Depending on the number of installed processors, there might be up to two processor listings.
Dell AVX Scaling Technology	Enables you to configure the Dell AVX scaling technology. This option is set to 0 by default. Enter the value from 0 to 12 bins. The value that is entered decreases the Dell AVX Scaling Technology frequency when the Dell-controlled Turbo feature is enabled.
Optimizer Mode	Enables or disables the CPU performance. When this option is set to Auto , set the CPU Power Management to Max Performance. When set to Enabled , enables the CPU Power Management settings. When set to Disabled , the CPU Power Management option is disabled. This option is set to Auto by default.
Number of Cores per Processor	Controls the number of enabled cores in each processor. This option is set to All by default.
CPU Physical Address Limit	Limit CPU physical address to 46 bits to support older Hyper-V. If enabled, automatically disables TME-MT. This option is set to Enabled by default.
Processor Core Speed	Specifies the maximum core frequency of the processor.
Processor Bus Speed	Specifies the bus speed of the processor. i NOTE: The processor bus speed option displays only when both processors are installed.
Local Machine Check Exception	Enables or disables the local machine check exception. This is an extension of the MCA Recovery mechanism providing the capability to deliver Uncorrected Recoverable (UCR) Software Recoverable Action Required (SRAR) errors to one or more specific logical processors threads receiving previously poisoned or corrupted data. When enabled, the UCR SRAR Machine Check Exception is delivered only to the

Table 25. Processor Settings details (continued)


Option	Description
	affected thread rather than broadcast to all threads in the system. The feature supports operating system recovery for cases of multiple recoverable faults that are detected close, which would otherwise result in a fatal machine check event. The feature is available only on Advanced RAS processors. This option is set to Disabled by default.
Processor n	<p> NOTE: Depending on the number of processors, there might be up to n processors listed.</p> <p>The following settings are displayed for each processor:</p>

Table 26. Processor n details

Option	Description
Family-Model-Stepping	Specifies the family, model, and stepping of the processor as defined by Intel.
Brand	Specifies the brand name.
Level 2 Cache	Specifies the total L2 cache.
Level 3 Cache	Specifies the total L3 cache.
Number of Cores	Specifies the number of cores per processor.
Microcode	Specifies the processor microcode version.

SATA Settings

To view the **SATA Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > SATA Settings**.

Table 27. SATA Settings details


Option	Description
Embedded SATA	<p>Enables the embedded SATA option to be set to Off, AHCI mode, or RAID modes. This option is set to AHCI Mode by default.</p> <p> NOTE:</p> <ol style="list-style-type: none"> 1. You might also need to change the Boot Mode setting to UEFI. Otherwise, you should set the field to Non-RAID mode. 2. No ESXi and Ubuntu OS support under RAID mode.
Security Freeze Lock	Sends Security Freeze Lock command to the embedded SATA drives during POST. This option is applicable only for AHCI Mode. This option is set to Enabled by default.
Write Cache	Enables or disables the command for the embedded SATA drives during POST. This option is applicable only for AHCI Mode. This option is set to Disabled by default.
Port n	<p>Sets the drive type of the selected device.</p> <p>For AHCI Mode, BIOS support is always enabled.</p>

Table 28. Port n

Options	Descriptions
Model	Specifies the drive model of the selected device.
Drive Type	Specifies the type of drive attached to the SATA port.

Table 28. Port n (continued)

Options	Descriptions
Capacity	Specifies the total capacity of the drive. This field is undefined for removable media devices such as optical drives.

NVMe Settings

This option sets the NVMe drive mode. If the system contains NVMe drives that you want to configure in a RAID array, you must set both this field and the Embedded SATA field on the SATA settings menu to RAID Mode. You may also need to change the Boot Mode setting to UEFI.

To view the **NVMe Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > NVMe Settings**.


Table 29. NVMe Settings details

Option	Description
NVMe mode	Enables or disables the boot mode. The option is set to Non-RAID mode by default.
BIOS NVMe Driver	Sets the drive type to boot the NVMe driver. The available options are Dell Qualified Drives and All Drives . This option is set to Dell Qualified Drives by default.

Boot Settings

You can use the **Boot Settings** screen to set the boot mode to either **BIOS** or **UEFI**. It also enables you to specify the boot order. The **Boot Settings** only support **UEFI** mode.

- **UEFI:** The Unified Extensible Firmware Interface (UEFI) is a new interface between operating systems and platform firmware. The interface consists of data tables with platform related information, boot and runtime service calls that are available to the operating system and its loader. The following benefits are available when the **Boot Mode** is set to **UEFI**:
 - Support for drive partitions larger than 2 TB.
 - Enhanced security (e.g., UEFI Secure Boot).
 - Faster boot time.

 **NOTE:** You must use only the UEFI boot mode in order to boot from NVMe drives.

- **BIOS:** The **BIOS Boot Mode** is the legacy boot mode. It is maintained for backward compatibility.

To view the **Boot Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Boot Settings**.

Table 30. Boot Settings details



Option	Description
Boot Mode	Enables you to set the boot mode of the system. If the operating system supports UEFI, you can set this option to UEFI. Setting this field to BIOS allows compatibility with non-UEFI operating systems. This option is set to UEFI by default.  CAUTION: Switching the boot mode may prevent the system from booting if the operating system is not installed in the same boot mode.  NOTE: Setting this field to UEFI disables the BIOS Boot Settings menu.
Boot Sequence Retry	Enables or disables the Boot sequence retry feature or resets the system. When this option is set to Enabled and the system fails to boot, the system re-attempts the boot sequence after 30 seconds. When this option is set to Reset and the system fails to boot, the system reboots immediately. This option is set to Enabled by default.
Hard-disk Failover	Enables or disables the Hard-disk failover. This option is set to Disabled by default.
Generic USB Boot	Enables or disables the generic USB boot placeholder. This option is set to Disabled by default.

Table 30. Boot Settings details (continued)


Option	Description
Hard-disk Drive Placeholder	Enables or disables the Hard-disk drive placeholder. This option is set to Disabled by default.
Clean all Sysprep variables and order	When this option is set to None , BIOS will do nothing. When set to Yes , BIOS will delete variables of SysPrep #### and SysPrepOrder this option is a onetime option, will reset to none when deleting variables. This setting is only available in UEFI Boot Mode . This option is set to None by default.
UEFI Boot Settings	Specifies the UEFI boot sequence. Enables or disables UEFI Boot options.  NOTE: This option controls the UEFI boot order. The first option in the list will be attempted first.

Table 31. UEFI Boot Settings


Option	Description
UEFI Boot Sequence	Enables you to change the boot device order.
Boot Options Enable/Disable	Enables you to select the enabled or disabled boot devices

Choosing system boot mode


System Setup enables you to specify one of the following boot modes for installing your operating system:


- UEFI boot mode (the default), is an enhanced 64-bit boot interface. If you have configured your system to boot to UEFI mode, it replaces the system BIOS.

1. From the **System Setup Main Menu**, click **Boot Settings**, and select **Boot Mode**.
2. Select the UEFI boot mode you want the system to boot into.

 **CAUTION: Switching the boot mode may prevent the system from booting if the operating system is not installed in the same boot mode.**

3. After the system boots in the specified boot mode, proceed to install your operating system from that mode.

 **NOTE:** Operating systems must be UEFI-compatible to be installed from the UEFI boot mode. DOS and 32-bit operating systems do not support UEFI and can only be installed from the BIOS boot mode.

 **NOTE:** For the latest information about supported operating systems, go to www.dell.com/ossupport.

Changing boot order


About this task

You may have to change the boot order if you want to boot from a USB key or an optical drive. The following instructions may vary if you have selected **BIOS** for **Boot Mode**.

 **NOTE:** Changing the drive boot sequence is only supported in BIOS boot mode.

Steps

1. On the **System Setup Main Menu** screen, click **System BIOS > Boot Settings > UEFI Boot Settings > UEFI Boot Sequence**.
2. Use the arrow keys to select a boot device, and use the plus (+) and minus (-) sign keys to move the device down or up in the order.
3. Click **Exit**, and then click **Yes** to save the settings on exit.

 **NOTE:** You can also enable or disable boot order devices as needed.

Network Settings

To view the **Network Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Network Settings**.


 **NOTE:** Network Settings are not supported in BIOS boot mode.

Table 32. Network Settings details

Option	Description
UEFI PXE Settings	Enables you to control the configuration of the UEFI PXE device.
Number of PXE Devices	This field specifies the number of PXE devices. This option is set to 4 by default.
PXE Device n (n = 1 to 4)	Enables or disables the device. When enabled, a UEFI PXE boot option is created for the device.
PXE Device n Settings (n = 1 to 4)	Enables you to control the configuration of the PXE device.
UEFI HTTP Settings	Enables you to control the configuration of the UEFI HTTP device.
HTTP Device n (n = 1 to 4)	Enables or disables the device. When enabled, a UEFI HTTP boot option is created for the device.
HTTP Device n Settings (n = 1 to 4)	Enables you to control the configuration of the HTTP device.
UEFI iSCSI Settings	Enables you to control the configuration of the iSCSI device.
iSCSI Initiator Name	Specifies the name of the iSCSI initiator in IQN format.
iSCSI Device1	Enables or disables the iSCSI device. When enabled, a UEFI boot option is created for the iSCSI device automatically. This is set to Disabled by default.
iSCSI Device1 Settings	Enables you to control the configuration of the iSCSI device.
UEFI NVMe-oF Settings	Enables you to control the configuration of the NVMe-oF devices.
NVMe-oF	Enables or disables the NVMe-oF feature. When enabled, it allows to configure the host and target parameters needed for fabric connection. This is set to Disabled by default.
NVMe-oF Host NQN	This field specifies the name of the NVMe-oF host NQN. Allowed input is in the following format: nqn.yyyy-mm.<Reserved Domain Name>:<Unique String>. Leave it empty to use system generated value with following format: nqn.1988-11.com.dell:<Model name>.<Model number>.<Service Tag>. This is set to nqn.1988-11.com.dell:<model name>.<model number>.<service tag> by default.
NVMe-oF Host Id	This field specifies a 16 bytes value of the NVMe-oF host identifier that uniquely identifies this host with the controller in the NVM subsystem. Allowed input is a hexadecimal-encoded string in this format: 00112233-4455-6677-8899-aabbccddeeff. Leave it empty to use system generated value. A value of all FF is not allowed.
Host Security Key Path	This field specifies the Host security key path.
NVMe-oF SubSystem Settings (n = 1 to 4)	This field controls the parameters for the NVMe-oF subsystem n connections.

Table 33. TLS Authentication Configuration screen details

Option	Description
TLS Authentication Mode	View or modify the device's boot TLS Authentication Mode. This option is set to One Way by default. None means the HTTP server and the client will not authenticate each other for this boot.
Root Certificate Configuration	Import, delete, or export the root certificate.

Table 34. NVMe-oF SubSystem Settings screen details

Option	Description
NVMe-oF SubSystem n (n = 1 to 4)	Enables or disables NVMe-oF SubSystem. This option is set to Disabled by default.
NVMe-oF SubSystem n Settings (n = 1 to 4)	Enables you to control the configuration of the NVMe-oF SubSystem, if Enabled .

Table 35. NVMe-oF SubSystem n Settings

Option	Description
Interface	NIC interface used for NVMe-oF connections.
Transport Type	This field sets the value of transport type for NVMe-oF connection. This option is set to TCP by default.
Protocol	This field sets the value of protocol type for NVMe-oF connection. This option is set to IPv4 by default.
VLAN	Enables or disables VLAN for this NVMe-oF connections. This option is set to Disabled by default.
VLAN Id	Specifies the VLAN Id for this NVMe-oF connection. This option is set to 1 by default.
VLAN Priority	Specifies the VLAN priority for this NVMe-oF connection. This option is set to 0 by default.
Retry Count	Specifies the retry count for this NVMe-oF connection. This option is set to 3 by default.
Timeout	Specifies the time out for this NVMe-oF connection. This option is set to 10000 by default.
DHCP	Enables and disables the DHCP for this NVMe-oF connection. This option is set to Disabled by default.
Host IP Address	Specifies the Host IP Address for this NVMe-oF connection.
Host Subnet Mask	Specifies the Host Subnet Mask for this NVMe-oF connection.
Host Gateway	Specifies the Host Gateway for this NVMe-oF connection.
NVMe-oF subsystem info via DHCP	Enables and disables the NVMe-oF subsystem's DHCP for this connection. This option is set to Disabled by default.
NVMe-oF subsystem NQN	Specifies the NVMe-oF subsystem's NQN for this connection.
NVMe-oF subsystem Address	Specifies the NVMe-oF subsystem's IP address for this connection.
NVMe-oF subsystem Port	Specifies the NVMe-oF subsystem's port for this connection. This option is set to 4420 by default.
NVMe-oF subsystem NID	Specifies the NamespaceID (NID) for this NVMe-oF connection.
NVMe-oF subsystem Controller ID	Specifies the NVMe-oF subsystem's Controller ID for this connection. This option is set to 0 by default.
Security	Enables or disables the security option for this NVMe-oF connection. This option is set to Disabled by default.
Authentication Type	Specifies the authentication type for this NVMe-oF connection. This option is set to None by default.
Securitykeypath	Specifies the Securitykeypath for this NVMe-oF connection.

Integrated Devices

To view the **Integrated Devices** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Integrated Devices**.

Table 36. Integrated Devices details

Option	Description
User Accessible USB Ports	<p>Configures the user accessible USB ports. Selecting All Ports Off (Dynamic) disables all front and back USB ports during POST. Selecting All Ports Off disables all front and back USB ports. This option is set to All Ports On by default. When user accessible USB ports are set to All Ports Off (Dynamic) the Enable Front Ports Only option is enabled.</p> <ul style="list-style-type: none"> • Enable Front Ports Only: Enables or disables the front USB ports during the operating system runtime. <p>The USB keyboard and mouse still function in certain USB ports during the boot process, depending on the selection. After the boot process is complete, the USB ports will be enabled or disabled as per the setting.</p>
Internal USB Port	Enables or disables the internal USB port. This option is set to On or Off . This option is set to On by default.
iDRAC Direct USB Port	The iDRAC Direct USB port is managed by iDRAC exclusively with no host visibility. This option is set to ON or OFF . When set to OFF , iDRAC does not detect any USB devices installed in this managed port. This option is set to On by default.
I/OAT DMA Engine	Enables or disables the I/O Acceleration Technology (I/OAT) option. I/OAT is a set of DMA features designed to accelerate network traffic and lower CPU utilization. Enable only if the hardware and software support the feature. This option is set to Disabled by default.
Embedded Video Controller	<p>Enables or disables the use of Embedded Video Controller as the primary display. When set to Enabled, the Embedded Video Controller will be the primary display even if add-in graphic cards are installed. When set to Disabled, an add-in graphics card is used as the primary display. BIOS will output displays to both the primary add-in video and the embedded video during POST and preboot environment. The embedded video will then be disabled right before the operating system boots. This option is set to Enabled by default.</p> <p>NOTE: When there are multiple add-in graphic cards installed in the system, the first card discovered during PCI enumeration is selected as the primary video. You might have to rearrange the cards in the slots in order to control which card is the primary video.</p>
I/O Snoop HoldOff Response	Selects the number of cycles PCI I/O can withhold snoop requests, from the CPU, to allow time to complete its own write to LLC. This setting can help improve performance on workloads where throughput and latency are critical. The options available are 256 Cycles, 512 Cycles, 1K Cycles, 2K Cycles, 4K Cycles, 8K Cycles, 16K Cycles, 32K Cycles, 64K Cycles and 128K Cycles . This option is set to 2K Cycles by default.
Current State of Embedded Video Controller	Displays the current state of the embedded video controller. The Current State of Embedded Video Controller option is a read-only field. If the Embedded Video Controller is the only display capability in the system (that is, no add-in graphics card is installed), then the Embedded Video Controller is automatically used as the primary display even if the Embedded Video Controller setting is set to Disabled .
SR-IOV Global Enable	Enables or disables the BIOS configuration of Single Root I/O Virtualization (SR-IOV) devices. This option is set to Disabled by default.
OS Watchdog Timer	If your system stops responding, this watchdog timer aids in the recovery of your operating system. When this option is set to Enabled , the operating

Table 36. Integrated Devices details (continued)

Option	Description
	system initializes the timer. When this option is set to Disabled (the default), the timer does not have any effect on the system.
Empty Slot Unhide	Enables or disables the root ports of all the empty slots that are accessible to the BIOS and operating system. This option is set to Disabled by default.
Mezzanine Slot Disablement	<p>Enables or disables or boot driver disables the available mezzanine slots on your system. The slot disablement feature controls the configuration of the Mezzanine cards installed in the specified slot. Slots must be disabled only when the installed peripheral card prevents booting into the operating system or causes delays in system startup. If the slot is disabled, both the Option ROM and UEFI drivers are disabled. Only mezzanine slots that are present on the system will be available for control. When this option is set to boot driver disabled, both the Option ROM and UEFI driver from the slot will not run during POST. The system will not boot from the card and its pre-boot services will not be available. However, the card is available to the operating system.</p> <p>Slot n: Enables or disables or only the boot driver is disabled for the PCIe slot n. This option is set to Enabled by default.</p>

Serial Communication

To view the **Serial Communication** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Serial Communication**.


 **NOTE:** The serial port is optional for the PowerEdge MX760c system. The Serial Communication option is applicable only if the serial COM port is installed in the system.

Table 37. Serial Communication details



Option	Description
Serial Communication	<p>Enables the serial communication options. Selects serial communication devices (Serial Device 1 and Serial Device 2) Serial Device 1 in BIOS. BIOS console redirection can also be enabled, and the port address can be specified.</p> <p>The options available for System without serial COM port (DB9) are On without Console Redirection, On with Console Redirection, Off. This option is set to Off by default.</p> <p>The options available for System with serial COM port (DB9) are On without Console Redirection, On with Console Redirection via Com1, On with Console Redirection via Com2, Off, Auto. This option is set to Auto by default.</p> <p>The options available for System are On without Console Redirection, On with Console Redirection via Com1, On with Console Redirection via Com2, Off, Auto. This option is set to Off by default.</p>
Serial Port Address	<p>Enables you to set the port address for serial devices. This option is set to COM1 by default.</p> <p> NOTE: You can use only Serial Device 2 for the Serial Over LAN (SOL) feature. To use console redirection by SOL, configure the same port address for console redirection and the serial device.</p> <p> NOTE: Every time the system boots, the BIOS syncs the serial MUX setting that is saved in iDRAC. The serial MUX setting can independently be changed in iDRAC. Loading the BIOS default settings from within the</p>

Table 37. Serial Communication details (continued)

Option	Description
	BIOS setup utility may not always revert the serial MUX setting to the default setting of Serial Device 1.
External Serial Connector	<p>Enables you to associate the External Serial Connector to Serial Device 1 by using this option. This option is set to Serial Device 1 by default.</p> <p>i NOTE: Only Serial Device 2 can be used for Serial Over LAN (SOL). To use console redirection by SOL, configure the same port address for console redirection and the serial device.</p> <p>i NOTE: Every time the system boots, the BIOS syncs the serial MUX setting saved in iDRAC. The serial MUX setting can independently be changed in iDRAC. Loading the BIOS default settings from within the BIOS setup utility may not always revert this setting to the default setting of Serial Device 1.</p>
Failsafe Baud Rate	Specifies the failsafe baud rate for console redirection. The BIOS attempts to determine the baud rate automatically. This failsafe baud rate is used only if the attempt fails, and the value must not be changed. This option is set to 115200 by default.
Remote Terminal Type	Sets the remote console terminal type. This option is set to VT100/VT220 by default.
Redirection After Boot	Enables or disables the BIOS console redirection when the operating system is loaded. This option is set to Enabled by default.

System Profile Settings

To view the **System Profile Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > System Profile Settings**.

Table 38. System Profile Settings details

Option	Description
System Profile	<p>Sets the system profile. If you set the System Profile option to a mode other than Custom, the BIOS automatically sets the rest of the options. You can only change the rest of the options if the mode is set to Custom. This option is set to Performance Per Watt (DAPC) by default. Other options include Performance, Performance Per Watt (OS), Workstation Performance and Custom.</p> <p>i NOTE: All the parameters on the system profile setting screen are available only when the System Profile option is set to Custom.</p>
CPU Power Management	Sets the CPU power management. This option is set to System DBPM (DAPC) by default. Other option includes Maximum Performance, OS DBPM .
Memory Frequency	Sets the speed of the system memory. You can select Maximum Performance, Maximum Reliability or a specific speed. This option is set to Maximum Performance by default.
Turbo Boost	Enables or disables the processor to operate in the turbo boost mode. This option is set to Enabled by default.
C1E	Enables or disables the processor to switch to a minimum performance state when it is idle. This option is set to Enabled by default.
C States	Enables or disables the processor to operate in all available power states. C States allow the processor to enter lower power states when idle. When set to Enabled (OS controlled) or when set to Autonomous (if hardware controlled is supported), the processor can operate in all available Power States to save power, but may increase memory latency and frequency jitter. This option is set to Enabled by default.
Memory Patrol Scrub	Sets the memory patrol scrub mode. This option is set to Standard by default.

Table 38. System Profile Settings details (continued)

Option	Description
Memory Refresh Rate	Sets the memory refresh rate to either 1x or 2x. This option is set to 1x by default.
Uncore Frequency	Enables you to select the Uncore Frequency option. Dynamic mode enables the processor to optimize power resources across cores and uncores during runtime. The optimization of the uncore frequency to either save power or optimize performance is influenced by the setting of the Energy Efficiency Policy option.
Energy Efficient Policy	Enables you to select the Energy Efficient Policy option. The CPU uses the setting to manipulate the internal behavior of the processor and determines whether to target higher performance or better power savings. This option is set to Balanced Performance by default.
Monitor/Mwait	Enables the Monitor/Mwait instructions in the processor. This option is set to Enabled for all system profiles, except Custom by default. <i>i</i> NOTE: This option can be disabled only if the C States option in the Custom mode is set to disabled. <i>i</i> NOTE: When C States is set to Enabled in the Custom mode, changing the Monitor/Mwait setting does not impact the system power or performance.
Workload Profile	This option allows the user to specify the targeted workload of a server. It allows optimization of performance based on the workload type. This option is set to Not Configured by default.
CPU Interconnect Bus Link Power Management	Enables or disables the CPU Interconnect Bus Link Power Management. This option is set to Enabled by default.
PCI ASPM L1 Link Power Management	Enables or disables the PCI ASPM L1 Link Power Management . This option is set to Enabled by default.

System Security

To view the **System Security** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > System Security**.

Table 39. System Security details

Option	Description
CPU AES-NI	Improves the speed of applications by performing encryption and decryption by using the Advanced Encryption Standard Instruction Set (AES-NI). This option is set to Enabled by default.
System Password	Sets the system password. This option is read-only if the password jumper is not installed in the system.
Setup Password	Sets the setup password. This option is read-only if the password jumper is not installed in the system.
Password Status	Locks the system password. This option is set to Unlocked by default.
TPM Information	Indicates the type of Trusted Platform Module, if present.

Table 40. TPM 2.0 security information

Option	Description
TPM Information	
TPM Security	<i>i</i> NOTE: The TPM menu is available only when the TPM module is installed. Enables you to control the reporting mode of the TPM. When set to Off, the presence of the TPM is not reported to the OS. When set to On, the presence of the TPM is reported to the OS. The TPM Security option is set to Off by default.

Table 40. TPM 2.0 security information (continued)

Option	Description
	When TPM 2.0 is installed, the TPM Security option is set to On or Off . This option is set to Off by default.
TPM Information	Indicates the type of Trusted Platform Module, if present.
TPM Firmware	Indicates the firmware version of the TPM.
TPM Hierarchy	Enables, disables, or clears the storage and endorsement hierarchies. When set to Enabled , the storage and endorsement hierarchies can be used.
	When set to Disabled , the storage and endorsement hierarchies cannot be used.
	When set to Clear , the storage and endorsement hierarchies are cleared of any values, and then reset to Enabled .
TPM Advanced Settings	Specifies TPM Advanced Settings details.

Table 41. System Security details



Option	Description
Intel(R) TXT	Enables you to set the Intel Trusted Execution Technology (TXT) option. To enable the Intel TXT option, virtualization technology and TPM Security must be enabled with Pre-boot measurements. This option is set to Off by default. It is set On for Secure Launch (Firmware Protection) support on Windows 2022.
Memory Encryption	Enables or disables the Intel Total Memory Encryption (TME) and Multi-Tenant (Intel® TME-MT). When option is set to Disabled , BIOS disables both TME and MK-TME technology. When option is set to Single Key BIOS enables the TME technology. When option is set to Multiple Keys , BIOS enables the TME-MT technology. This option is set to Disabled by default.
TME Encryption Bypass	Allows the option to bypass the Intel Total Memory Encryption. This option is set to Disabled by default.
Intel(R) SGX	Enables you to set the Intel Software Guard Extension (SGX) option. To enable the Intel SGX option, processor must be SGX capable, memory population must be compatible (minimum x8 identical DIMM1 to DIMM8 per CPU socket, not support on persistent memory configuration), memory operating mode must be set at optimizer mode, memory encryption must be enabled and node interleaving must be disabled. This option is set to Off by default. When this option is to Off , BIOS disables the SGX technology. When this option is to On , BIOS enables the SGX technology.
Power Button	Enables or disables the power button on the front of the system. This option is set to Enabled by default.
AC Power Recovery	Sets how the system behaves after AC power is restored to the system. This option is set to Last by default.  NOTE: The host system will not power on up until iDRAC Root of Trust (RoT) is completed, host power on will be delayed by minimum 90 seconds after the AC applied.
UEFI Variable Access	Provides varying degrees of securing UEFI variables. When set to Standard (the default), UEFI variables are accessible in the operating system per the UEFI specification. When set to Controlled , selected UEFI variables are protected in the environment and new UEFI boot entries are forced to be at the end of the current boot order.
In-Band Manageability Interface	When set to Disabled , this setting hides the Management Engine's (ME), HECI devices, and the system's IPMI devices from the operating system. This prevents the operating system from changing the ME power capping settings, and blocks access to all in-band management tools. All management should be managed through out-of-band. This option is set to Enabled by default.


Table 41. System Security details (continued)

Option	Description
	<p> NOTE: BIOS update requires HECI devices to be operational and DUP updates require IPMI interface to be operational. This setting needs to be set to Enabled to avoid updating errors.</p>
SMM Security Migration	Enables or disables the UEFI SMM security migration protections. It is enabled for Windows 2022 support.
Secure Boot	Enables Secure Boot, where the BIOS authenticates each pre-boot image by using the certificates in the Secure Boot Policy. Secure Boot is set to Disabled by default.
Secure Boot Policy	When Secure Boot policy is set to Standard , the BIOS uses the system manufacturer's key and certificates to authenticate pre-boot images. When Secure Boot policy is set to Custom , the BIOS uses the user-defined key and certificates. Secure Boot policy is set to Standard by default.
Secure Boot Mode	<p>Configures how the BIOS uses the Secure Boot Policy Objects (PK, KEK, db, dbx).</p> <p>If the current mode is set to Deployed Mode, the available options are User Mode and Deployed Mode. If the current mode is set to User Mode, the available options are User Mode, Audit Mode, and Deployed Mode</p> <p>Below are the details of different boot modes available in the Secure Boot Mode option.</p> <p>User Mode In User Mode, PK must be installed, and BIOS performs signature verification on programmatic attempts to update policy objects. The BIOS allows unauthenticated programmatic transitions between modes.</p> <p>Audit mode In Audit Mode, PK is not present. BIOS does not authenticate programmatic update to the policy objects and transitions between modes. The BIOS performs a signature verification on pre-boot images and logs the results in the image Execution Information Table, but executes the images whether they pass or fail verification. Audit Mode is useful for programmatic determination of a working set of policy objects.</p> <p>Deployed Mode Deployed Mode is the most secure mode. In Deployed Mode, PK must be installed and the BIOS performs signature verification on programmatic attempts to update policy objects. Deployed Mode restricts the programmatic mode transitions.</p>
Secure Boot Policy Summary	Specifies the list of certificates and hashes that secure boot uses to authenticate images.
Secure Boot Custom Policy Settings	Configures the Secure Boot Custom Policy. To enable this option, set the Secure Boot Policy to Custom option.

Creating a system and setup password


Prerequisites

Ensure that the password jumper is enabled. The password jumper enables or disables the system password and setup password features. For more information, see the System board jumper settings section.

 **NOTE:** If the password jumper setting is disabled, the existing system password and setup password are deleted and you need not provide the system password to boot the system.

Steps

1. To enter System Setup, press F2 immediately after turning on or rebooting your system.
2. On the **System Setup Main Menu** screen, click **System BIOS > System Security**.

3. On the **System Security** screen, verify that **Password Status** is set to **Unlocked**.
 4. In the **System Password** field, type your system password, and press Enter or Tab.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 A message prompts you to reenter the system password.
 5. Reenter the system password, and click **OK**.
 6. In the **Setup Password** field, type your setup password and press Enter or Tab.
A message prompts you to reenter the setup password.
 7. Reenter the setup password, and click **OK**.
 8. Press Esc to return to the System BIOS screen. Press Esc again.
A message prompts you to save the changes.
-  **NOTE:** Password protection does not take effect until the system reboots.

Using your system password to secure your system

About this task


If you have assigned a setup password, the system accepts your setup password as an alternate system password.

Steps

1. Turn on or reboot your system.
2. Type the system password and press Enter.


Next steps

When **Password Status** is set to **Locked**, type the system password and press Enter when prompted at reboot.


-  **NOTE:** If an incorrect system password is typed, the system displays a message and prompts you to reenter your password. You have three attempts to type the correct password. After the third unsuccessful attempt, the system displays an error message that the system has stopped functioning and must be turned off. Even after you turn off and restart the system, the error message is displayed until the correct password is entered.

Deleting or changing system and setup password

Prerequisites

-  **NOTE:** You cannot delete or change an existing system or setup password if the **Password Status** is set to **Locked**.

Steps

1. To enter System Setup, press F2 immediately after turning on or restarting your system.
 2. On the **System Setup Main Menu** screen, click **System BIOS > System Security**.
 3. On the **System Security** screen, ensure that **Password Status** is set to **Unlocked**.
 4. In the **System Password** field, alter or delete the existing system password, and then press Enter or Tab.
 5. In the **Setup Password** field, alter or delete the existing setup password, and then press Enter or Tab.
If you change the system and setup password, a message prompts you to reenter the new password. If you delete the system and setup password, a message prompts you to confirm the deletion.
 6. Press Esc to return to the **System BIOS** screen. Press Esc again, and a message prompts you to save the changes.
 7. Select **Setup Password**, change, or delete the existing setup password and press Enter or Tab.
-  **NOTE:** If you change the system password or setup password, a message prompts you to reenter the new password. If you delete the system password or setup password, a message prompts you to confirm the deletion.

Operating with setup password enabled

If **Setup Password** is set to **Enabled**, type the correct setup password before modifying the system setup options.

If you do not type the correct password in three attempts, the system displays the following message:

```
Invalid Password! Number of unsuccessful password attempts: <x> System Halted! Must power down.
```

```
Number of unsuccessful password attempts: <3> Maximum number of password attempts exceeded. System Halted!
```

Even after you power off and restart the system, the error message is displayed until the correct password is typed. The following options are exceptions:

- If **System Password** is not set to **Enabled** and is not locked through the **Password Status** option, you can assign a system password. For more information, see the System Security Settings screen section.
- You cannot disable or change an existing system password.

NOTE: You can use the password status option with the setup password option to protect the system password from unauthorized changes.

Redundant OS Control

To view the **Redundant OS Control** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Redundant OS Control**.


Table 42. Redundant OS Control details

Option	Description
Redundant OS Location	<p>Enables you to select a backup disk from the following devices:</p> <ul style="list-style-type: none"> • None • SATA Ports in AHCI mode • SATA ports <p>NOTE: RAID configurations and NVMe cards are not included, as BIOS does not have the ability to distinguish between individual drives in those configurations.</p> • BOSS PCIe Cards (Internal M.2 Drives) • Internal USB <p>NOTE: RAID configurations and NVMe cards are not included, as BIOS does not have the ability to distinguish between individual drives in those configurations.</p>
Redundant OS State	<p>NOTE: This option is disabled if Redundant OS Location is set to None.</p> <p>When set to Visible, the backup disk is visible to the boot list and OS. When set to Hidden, the backup disk is disabled and is not visible to the boot list and OS. This option is set to Visible by default.</p> <p>NOTE: BIOS disables the device in hardware, so it is not accessed by the OS.</p>
Redundant OS Boot	<p>NOTE: This option is disabled if Redundant OS Location is set to None or if Redundant OS State is set to Hidden.</p> <p>When set to Enabled, BIOS boots to the device specified in Redundant OS Location. When set to Disabled, BIOS preserves the current boot list settings. This option is set to Disabled by default.</p>

Miscellaneous Settings

To view the **Miscellaneous Settings** screen, power on the system, press F2, and click **System Setup Main Menu > System BIOS > Miscellaneous Settings**.

Table 43. Miscellaneous Settings details

Option	Description
System Time	Enables you to set the time on the system.
System Date	Enables you to set the date on the system.
Asset Tag	Specifies the asset tag and enables you to modify it for security and tracking purposes.
Keyboard NumLock	Enables you to set whether the system boots with the NumLock enabled or disabled. This option is set to On by default.  NOTE: This option does not apply to 84-key keyboards.
F1/F2 Prompt on Error	Enables or disables the F1/F2 prompt on error. This option is set to Enabled by default. The F1/F2 prompt also includes keyboard errors.
Load Legacy Video Option ROM	Enables or disables the Load Legacy Video Option ROM option. This option is set to Disabled by default.
Dell Wyse P25/P45 BIOS Access	Enables or disables the Dell Wyse P25/P45 BIOS Access. This option is set to Enabled by default.
Power Cycle Request	Enables or disables the Power Cycle Request. This option is set to None by default.

iDRAC Settings

The iDRAC settings is an interface to set up and configure the iDRAC parameters by using UEFI. You can enable or disable various iDRAC parameters by using the iDRAC settings.

 **NOTE:** Accessing some of the features on the iDRAC settings needs the iDRAC Enterprise License upgrade.

For more information about using iDRAC, see *Dell Integrated Dell Remote Access Controller User's Guide* at <https://www.dell.com/idracmanuals>.

Device Settings

Device Settings enables you to configure device parameters such as storage controllers or network cards.

Service Tag Settings


Service Tag Settings enables you to configure the System Service Tag.

Dell Lifecycle Controller

Dell Lifecycle Controller (LC) provides advanced embedded systems management capabilities including system deployment, configuration, update, maintenance, and diagnosis. LC is delivered as part of the iDRAC out-of-band solution and Dell system embedded Unified Extensible Firmware Interface (UEFI) applications.

Embedded system management

The Dell Lifecycle Controller provides advanced embedded system management throughout the lifecycle of the system. The Dell Lifecycle Controller is started during the boot sequence and functions independently of the operating system.

 **NOTE:** Certain platform configurations may not support the full set of features provided by the Dell Lifecycle Controller.

For more information about setting up the Dell Lifecycle Controller, configuring hardware and firmware, and deploying the operating system, see the Dell Lifecycle Controller documentation at <https://www.dell.com/idracmanuals>.

Boot Manager

The **Boot Manager** option enables you to select boot options and diagnostic utilities.

To enter **Boot Manager**, power on the system and press F11.

Table 44. Boot Manager details

Option	Description
Continue Normal Boot	The system attempts to boot to devices starting with the first item in the boot order. If the boot attempt fails, the system continues with the next item in the boot order until the boot is successful or no more boot options are found.
One-shot Boot Menu	Enables you to access boot menu, where you can select a one-time boot device to boot from.
Launch System Setup	Enables you to access System Setup.
Launch Lifecycle Controller	Exits the Boot Manager and invokes the Dell Lifecycle Controller program.
System Utilities	Enables you to launch System Utilities menu such as Launch Diagnostics, BIOS update File Explorer, Reboot System.

PXE boot

You can use the Preboot Execution Environment (PXE) option to boot and configure the networked systems remotely.

To access the **PXE boot** option, boot the system and then press F12 during POST instead of using standard Boot Sequence from BIOS Setup. It does not pull any menu or allows managing of network devices.

Minimum to POST and system management configuration validation

This section describes the minimum to POST system requirement and system management configuration validation of the Dell system.

Topics:

- [Minimum configuration to POST](#)
- [Configuration validation](#)

Minimum configuration to POST

The components listed below are the minimum configuration to POST:

- System board
- One processor in socket processor 1
- One memory module (DIMM) installed in the socket A1

Configuration validation

The new generation of Dell systems have added interconnect flexibility and advanced iDRAC management features to collect precise system configuration information and report configuration errors.

When the system is powered on, information about installed cables, backplanes, floating card (adapter PERC, BOSS), and processor is obtained from the CPLD and backplane memory maps are analyzed. This information forms a unique configuration, which is compared with one of the qualified configurations that are stored in a table maintained by iDRAC.

One or more sensors are assigned to each of the configuration elements. During POST, any configuration validation error is logged in the System Event Log (SEL)/LifeCycle (LC) log. The reported events are categorized in the configuration validation error table.

Table 45. Configuration validation error

Error	Description	Possible cause and recommendations	Example
Config Error	A configuration element within the closest match contains something that is unexpected and does not match any Dell qualified configuration.	Wrong configuration	Config Error: Backplane cable CTRS_SRC_SA1 and BP-DST_SA1
		The element reported in HWC8010 errors are assembled incorrectly. Verify element (cable etc) placement in the system.	Config Error : SL Cable PLANAR_SL7 and CTRL_DST_PA1
Config Missing	iDRAC found a configuration element missing within the closest match detected.	Missing or damaged cable, device, or part	Config Missing: adapter PERC/HBA
		Missing element or cable is reported in HWC8010 error logs. Install the missing element (cable etc).	Config Missing : SL cable PLANAR_SL8 and CTRL_DST_PA1

Table 45. Configuration validation error (continued)

Error	Description	Possible cause and recommendations	Example
Comm Error	A configuration element is not responding to iDRAC using the management interface while running an inventory check.	System management sideband communication Unplug AC Power, reseal the element and replace the element if the problem persists.	Comm Error: Backplane 2

Error messages

This section describes the error messages displayed on the screen during POST or captured in the system event log (SEL)/ LifeCycle (LC) log.

Table 46. Error message HWC8010

Error code	HWC8010
Message	The System Configuration Check operation resulted in the following issue involving the indicated component type
Arguments	Riser, floating card (adapter PERC like BOSS), backplane, processor, cable, or other components
Detailed Description	The issue identified in the message is observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: <ol style="list-style-type: none"> 1. Disconnect the input power. 2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.
Category	System Health (HWC = Hardware Config)
Severity	Critical
Trap/EventID	2329

Table 47. Error message HWC8011

Error code	HWC8011
Message	The System Configuration Check operation resulted in multiple issues involving the indicated component type
Arguments	Riser, floating card (adapter PERC like BOSS), backplane, processor, cable, or other components
Detailed Description	Multiple issues are observed in the System Configuration Check operation.
Recommended Response Action	Do the following and retry the operation: <ol style="list-style-type: none"> 1. Disconnect the input power. 2. Check for proper cable connection and component placement. If the issue persists, contact the service provider.
Category	System Health (HWC = Hardware Config)
Severity	Critical

Installing and removing system components

Topics:

- Safety instructions
- Before working inside your system
- After working inside your system
- Recommended tools
- PowerEdge MX760c sled
- Sled cover
- Air shroud
- Processor and memory module blank
- Drives
- Drive backplane
- Drive cage
- Cable routing
- Front I/O module
- System memory
- Processor and heat sink module
- Liquid cooling
- PERC card
- M.2 SSD module
- Mezzanine cards
- Optional internal USB memory key
- System battery
- System board
- Trusted Platform Module

Safety instructions

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

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

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

ⓘ NOTE: While replacing faulty storage controller, FC, or NIC card with the same type of card, after you power on the system, the new card automatically updates to the same firmware and configuration of the faulty one. For updating to the latest firmware and changing the configuration, see the *Lifecycle Controller User's Guide* at <https://www.dell.com/idracmanuals>.

Before working inside your system

Prerequisites

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

Steps

If applicable install the I/O connector cover.

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

After working inside your system

Prerequisites

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

Steps

1. If applicable, remove the I/O connector cover from the system connectors. Install the sled into the enclosure.
2. Reconnect the peripherals and connect the system to the electrical outlet, and then power on the system.

Recommended tools

You may need some or all of the following tools to perform the removal and installation procedures:

- Phillips 1 screwdriver
- Phillips 2 screwdriver
- Torx T30 screwdriver
- 5 mm hex nut screwdriver
- Plastic scribe
- 1/4-inch flat blade screwdriver
- Wrist grounding strap connected to the ground
- ESD mat
- Needle-nose pliers

You need the following tools to assemble the cables for a DC power supply unit:

- AMP 90871-1 hand-crimping tool or equivalent
- Tyco Electronics 58433-3 or equivalent
- Wire-stripper pliers to remove insulation from size 10 AWG solid or stranded, insulated copper wire

 **NOTE:** Use alpha wire part number 3080 or equivalent (65/30 stranding).

PowerEdge MX760c sled

The PowerEdge MX760c sled is a server unit that is installed into the PowerEdge MX7000 enclosure.

Removing the sled from enclosure

Prerequisites

1. Follow the safety guidelines listed in [Safety instructions](#).
2. Power off the sled.

Steps

1. Press the blue release button on the sled to release the sled handle.
2. Holding the sled handle, slide the sled out of the enclosure.
 - i** **NOTE:** Support the system with both hands while sliding it out of the enclosure.
 - i** **NOTE:** Removing the sled with the enclosure powered on is supported if you shut down the sled before removal.



Figure 18. Removing the sled from 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 19. Installing the I/O connector cover on sled

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

CAUTION: If you are permanently removing the sled, install a sled blank promptly. Operating the enclosure without a blank, for an extended time can result in overheating or performance loss.

Next steps

1. [Installing the sled into enclosure.](#)

Installing the sled into enclosure

Prerequisites

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

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

Steps

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

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



Figure 20. Removing the I/O connector cover from sled

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

2. Press the blue release button on the sled to release the sled handle.
3. Holding the sled with both hands, align the sled with the compute sled-bay in the enclosure.
4. Slide the sled into the enclosure, until the sled handle is in the lock position.
5. Push the sled handle inwards so that it locks into place to secure the sled in the enclosure.

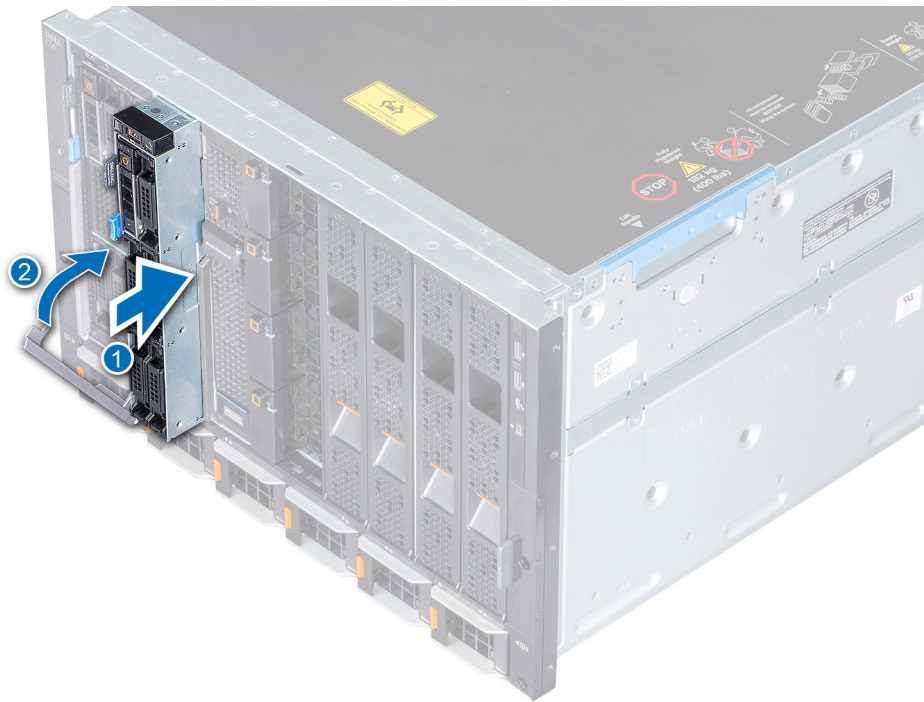


Figure 21. Installing the sled into enclosure

Next steps

1. Power on the sled.

Sled cover

Removing the sled cover

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Power off the sled.
3. [Remove the sled from the enclosure](#).
4. Place the sled on the flat surface with the top cover facing upwards.

Steps

1. Press the blue release tab and slide the cover towards the rear of the system.
2. Lift the cover away from the system.

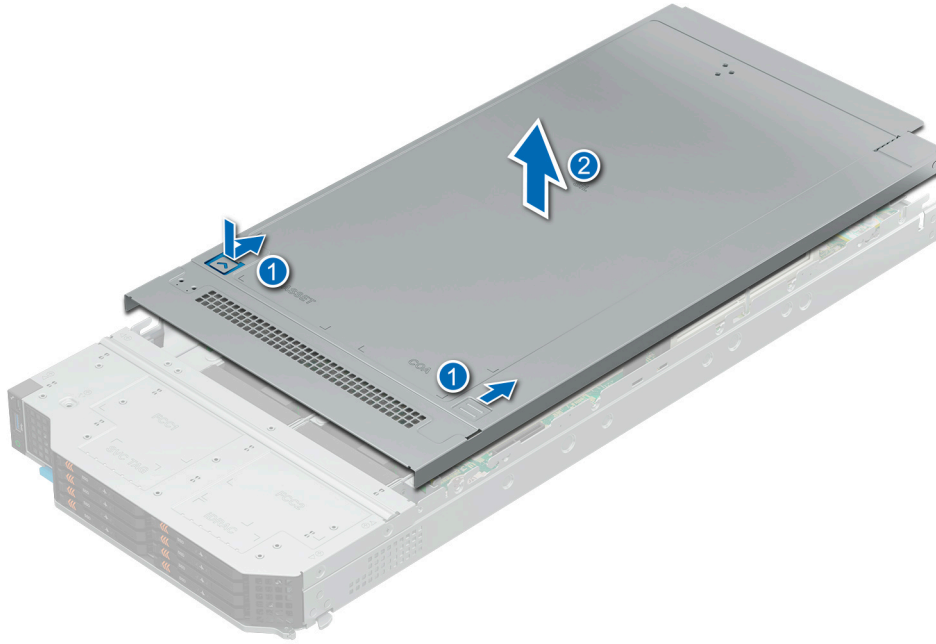


Figure 22. Removing the sled cover

Next steps

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

Installing the sled cover

Prerequisites

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

Steps

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



Figure 23. Installing the sled cover

Next steps

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

Air shroud

Removing the air shroud

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](#).
2. Follow the procedure listed in [Before working inside your system](#).

Steps

Holding the air shroud at both ends, lift the air shroud out of the system.

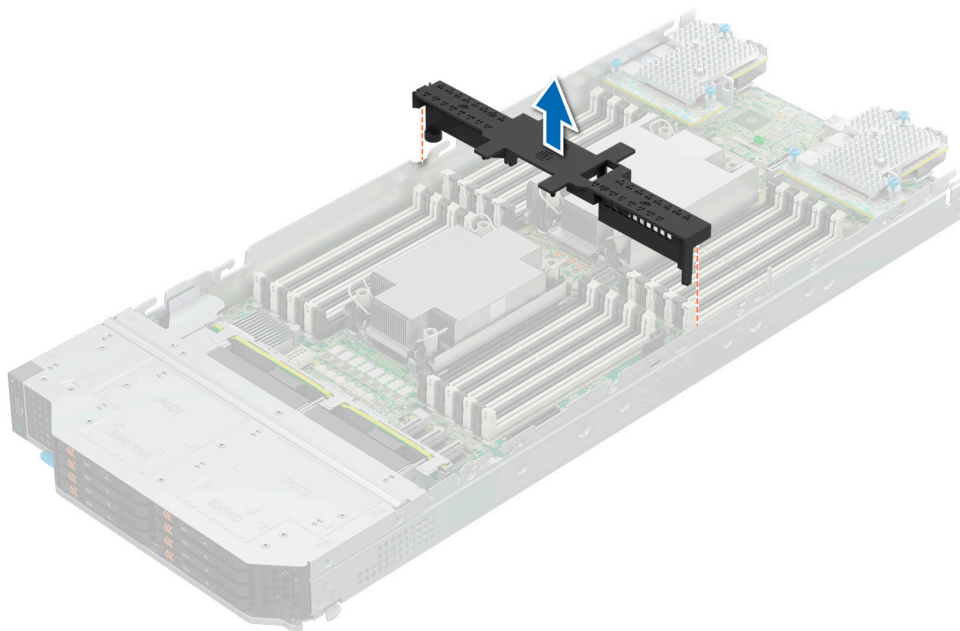


Figure 24. Removing the air shroud

Next steps

1. [Installing the air shroud](#).

Installing the air shroud

Prerequisites

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

Steps

1. Align the slot on the air shroud with the tabs on the chassis wall.
2. Lower the air shroud into the system until it is firmly seated.

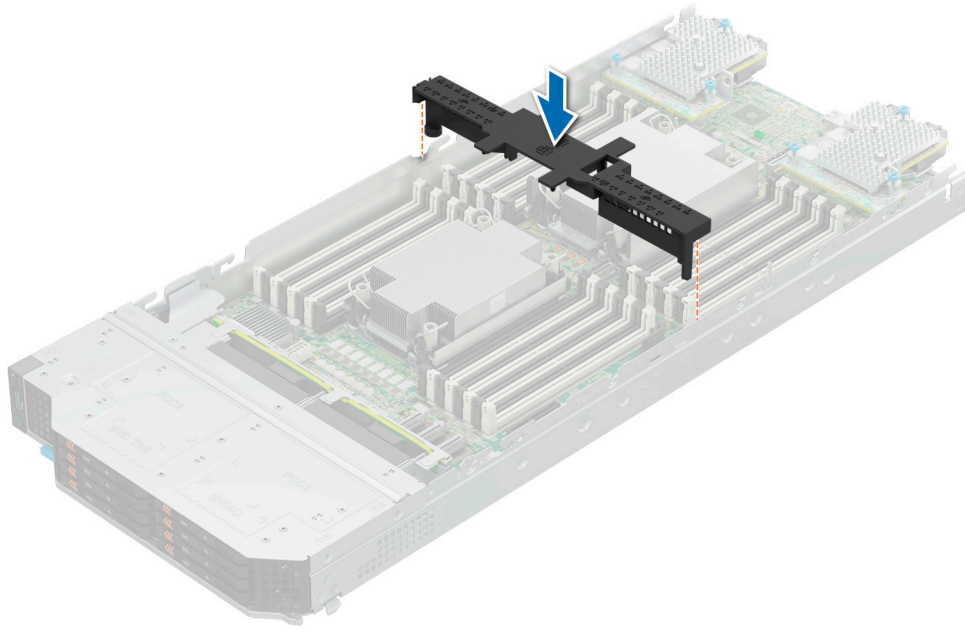


Figure 25. Installing the air shroud

Next steps

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

Processor and memory module blank

Removing the processor and memory module blank

Prerequisites

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

Steps

1. To release the processor and memory module blank from the socket, simultaneously press the ejectors on both ends of the memory module socket to fully open.
2. Lift the processor and memory module blank away from the system.

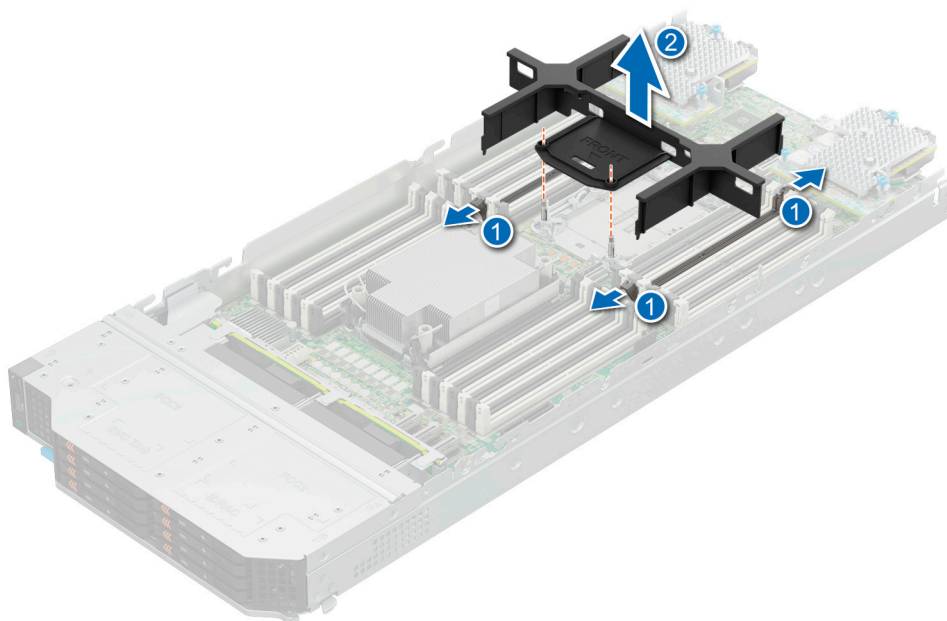


Figure 26. Removing the processor and memory module blank

Next steps

Replace the processor and memory module blank.

Installing the processor and memory module blank

Prerequisites

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

Steps

1. To install the processor and memory module blank, first align the two guide pin in bolster with the hole of the blank.

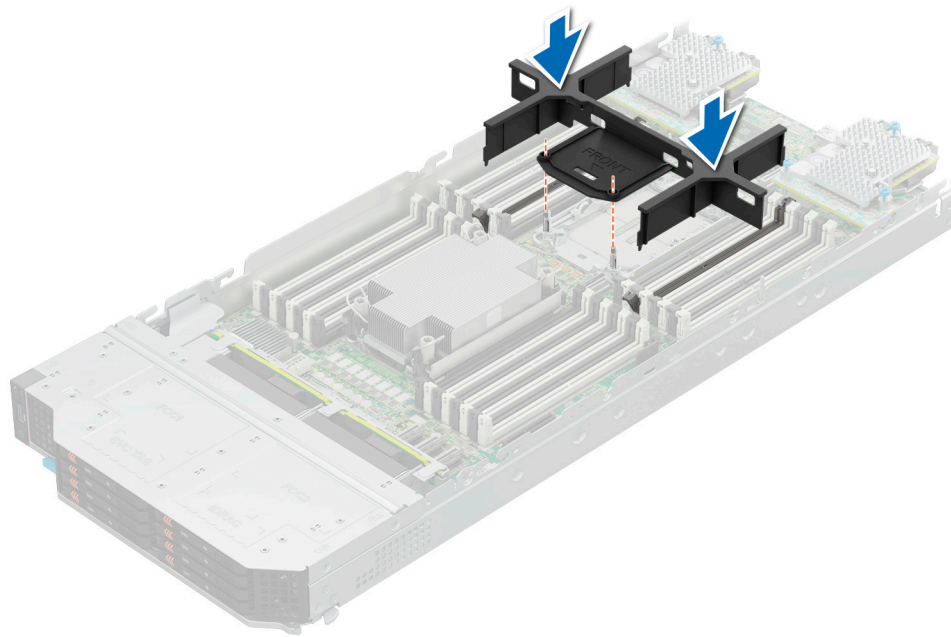


Figure 27. Installing the processor and memory module blank

2. Align the edges of the processor and memory module blank with the alignment key of the memory module socket, and insert the blank in the socket.
3. Press the blank with your thumbs until the ejectors firmly click into place.

Next steps

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

Drives

Removing a drive blank

Prerequisites

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

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

Steps

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

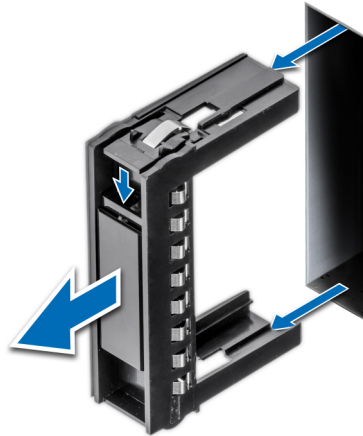


Figure 28. Removing drive blank

Next steps

1. Install a drive carrier or installing a drive blank.

Installing a drive blank

Prerequisites

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

Steps

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



Figure 29. Installing drive blank

Removing an E3.s drive blank

Prerequisites

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

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

Steps

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



Figure 30. Removing an E3.s drive blank

Next steps

1. [Replace the E3.s drive blank.](#)

Installing an E3.s drive blank

Prerequisites

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

Steps

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



Figure 31. Installing the E3.s drive blank

Removing the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Using the management software, prepare the drive for removal. If the drive is online, the green activity or fault indicator blinks while the drive is powering 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 installation.

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

CAUTION: To maintain proper system cooling, all empty drive bays must have drive blanks installed.

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.

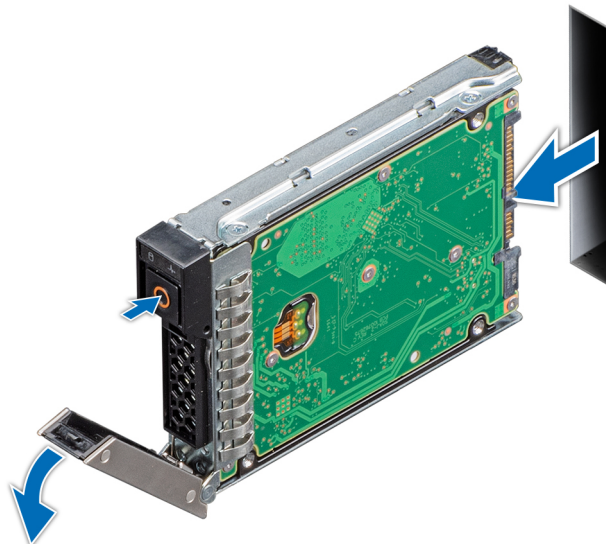


Figure 32. Removing drive carrier

Next steps

install a drive carrier or install a drive blank.

Installing the drive carrier

Prerequisites

CAUTION: Before removing or installing 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: 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.

NOTE: 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.

NOTE: Ensure that the drive carrier's release handle is in the open position before inserting the carrier into the slot.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Remove the drive carrier or remove the drive blank when you want to assemble the drives in to the system.

Steps

1. Slide the drive carrier into the drive slot.
2. Close the drive carrier release handle to lock the drive in place.

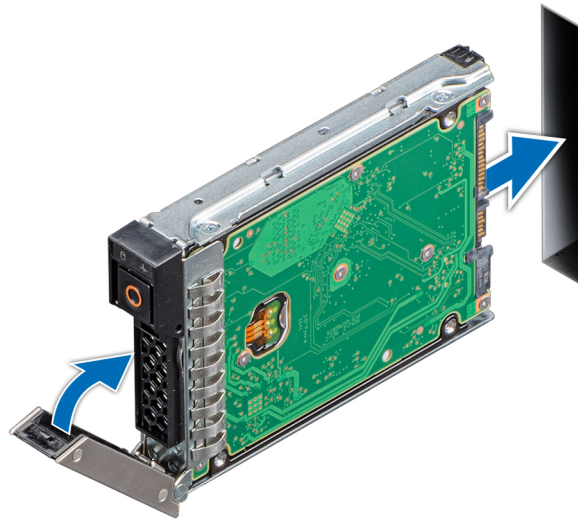


Figure 33. Installing drive carrier

Removing the E3.s drive carrier

Prerequisites

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

Steps

1. Push the release button towards the left to pop out the release handle.
2. Holding the drive carrier release handle, slide the drive carrier out of the drive slot.

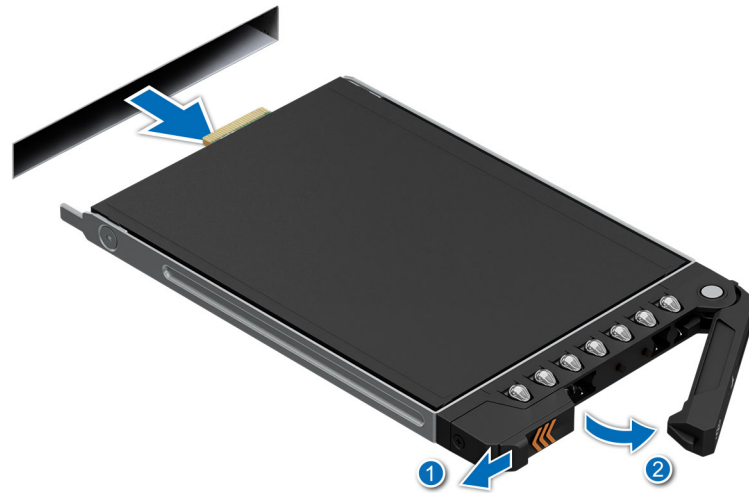


Figure 34. Removing the E3.s drive carrier

Next steps

1. [Installing the E3.s drive carrier](#)

Installing the E3.s drive carrier

Prerequisites

- CAUTION:** Before removing or installing 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:** 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.
- NOTE:** When a replacement hot swappable drive is installed while the system is powered on, the drive automatically begins to rebuild. Ensure that the replacement drive is blank. Any data on the replacement drive is immediately lost once the drive is installed.
- NOTE:** Ensure that the drive carrier's release handle is in the open position before inserting the carrier into the slot.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Remove the drive carrier or remove the drive blank when you want to assemble the drives in to the system.

Steps

1. Slide the drive carrier into the drive slot.
2. Close the drive carrier release handle to lock the drive in place.



Figure 35. Installing the E3.s drive carrier


Removing the drive from the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#)
2. [remove a drive carrier](#)

Steps

1. Using the Phillips #1 screwdriver, remove the screws from the slide rails on the drive carrier.

i **NOTE:** If the hard drive or SSD carrier has Torx screw, use Torx 6 (for 2.5-inch drive) or Torx 8 (for 3.5-inch drive) screwdriver to remove the drive. 

2. Lift the drive out of the drive carrier.

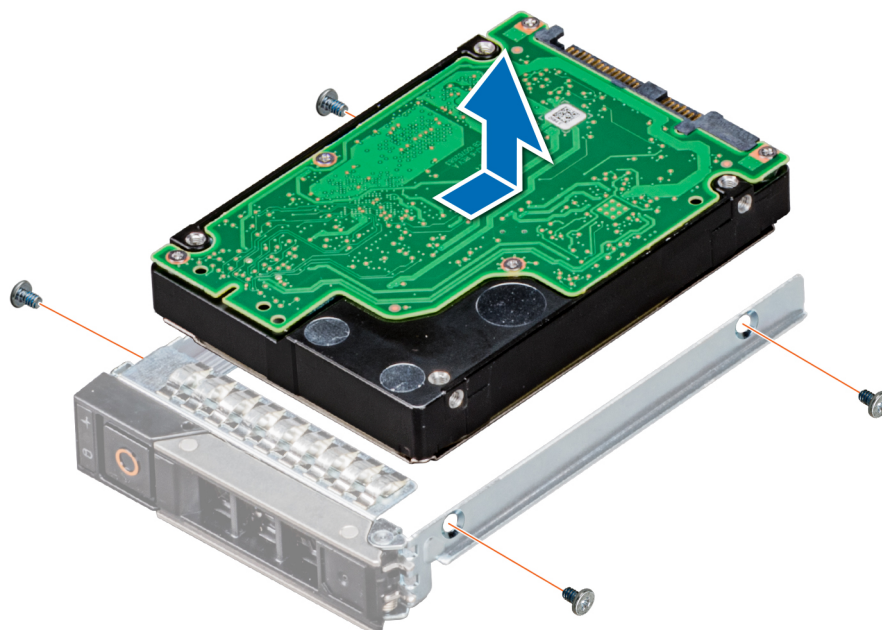


Figure 36. Removing a drive from drive carrier

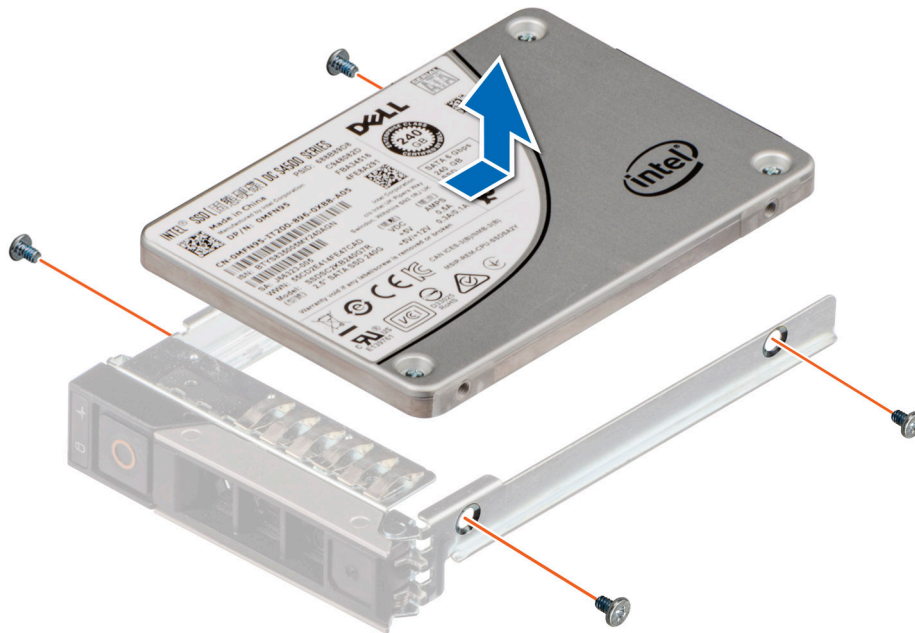


Figure 37. Removing a SSD from drive carrier

Next steps

install the drive into drive carrier.

Installing the drive into the drive carrier


Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. [remove a drive carrier](#).

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

Steps

1. Insert the drive into the drive carrier with the drive connector facing towards the rear of the carrier.
2. Align the screw holes on the drive with the screw holes on the drive carrier.
3. Using the Phillips #1 screwdriver, secure the drive to the drive carrier with the screws.

NOTE: If the hard drive or SSD carrier has Torx screw, use Torx 6 (for 2.5-inch drive) screwdriver to install the drive. 

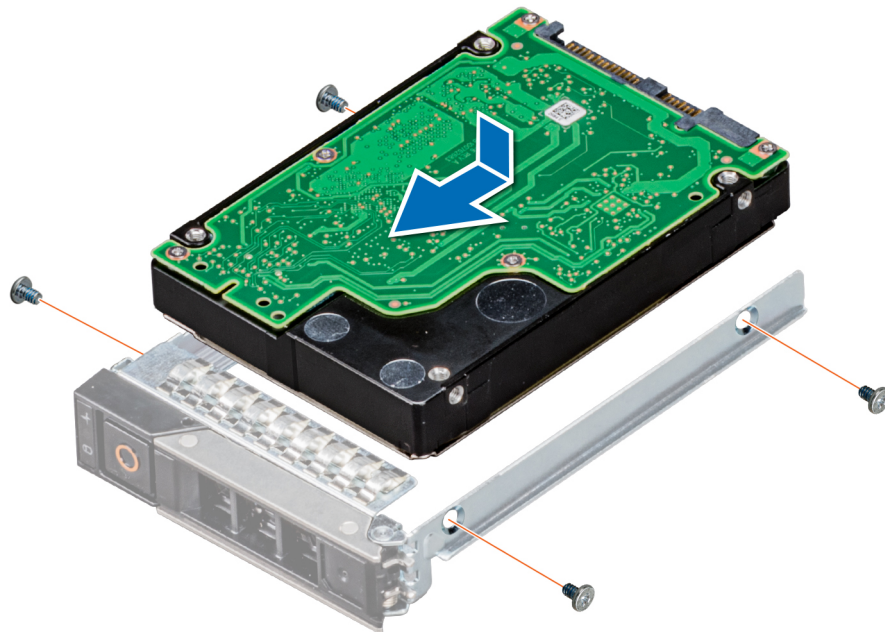


Figure 38. Installing a drive into drive carrier

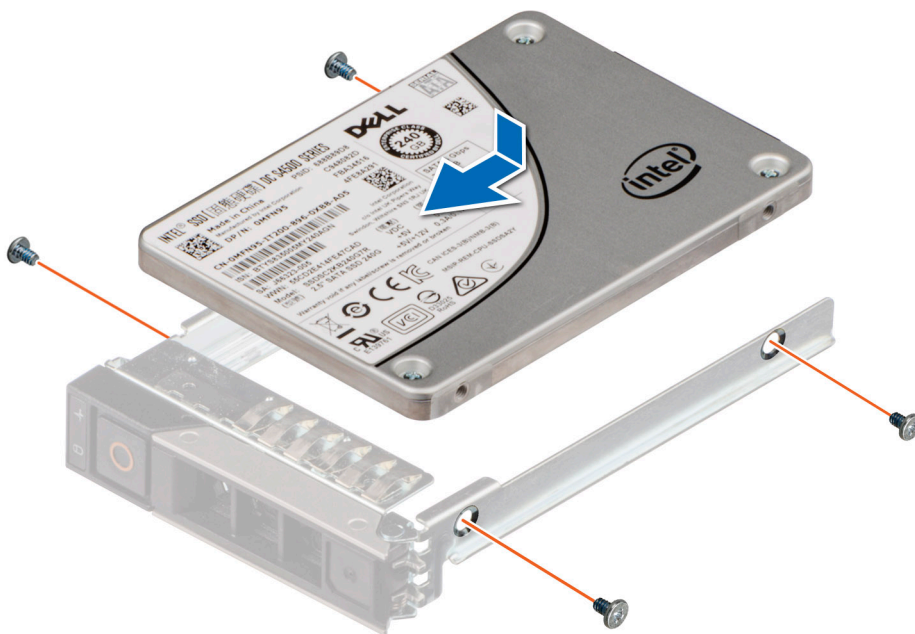


Figure 39. Installing a SSD into drive carrier

Next steps

install the drive carrier.

Removing the E3.s drive from the drive carrier

Prerequisites

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

If the drive is online, the green activity or fault indicator blinks while the drive is powering 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: To prevent data loss, ensure that your operating system supports drive installation. For more information about the drives installation or uninstallation requirements, see the operating system's user guide.

Steps

1. Using a Phillips 1 screw driver, remove the screws from the slide rails on the drive carrier.

NOTE: If the hard drive or SSD carrier has Torx screw, use Torx 6 (for 2.5-inch drive) screwdriver to remove the drive.



2. Slide the drive out from the drive carrier.

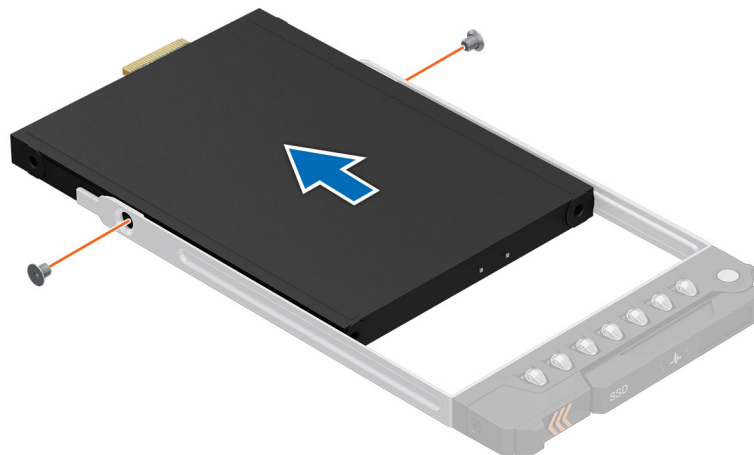


Figure 40. Removing the E3.s drive from the drive carrier

Next steps

1. [Installing an E3.s drive in to the drive carrier.](#)

Installing the E3.s drive into the drive carrier

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. [Remove the E3.s drive blank.](#)

Steps

1. Insert the drive into the drive carrier with the drive connector facing towards the rear 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 the screws.

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

NOTE: If the hard drive or SSD carrier has Torx screw, use Torx 6 (for 2.5-inch drive) screwdriver to install the drive.

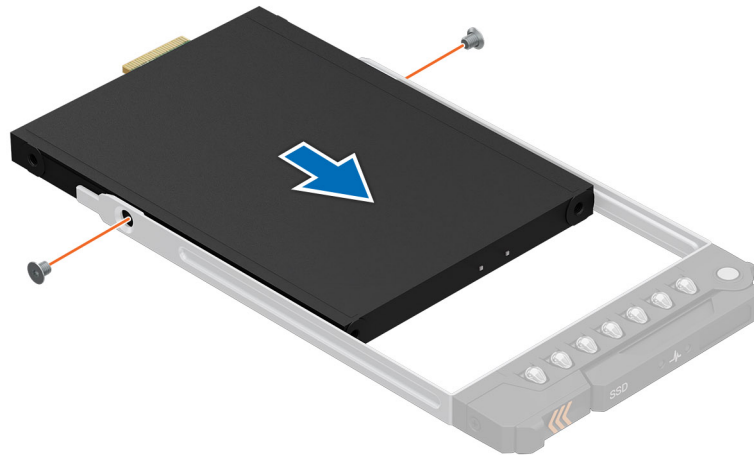
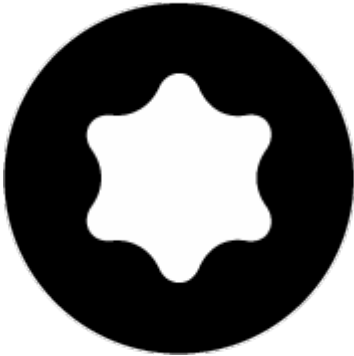


Figure 41. Installing the E3.s drive into the drive carrier

Next steps

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

Drive backplane

This is a service technician replaceable part only.

Drive backplane details

Depending on the configuration, your system supports:

- 2.5-inch (x6) Universal backplane
- 2.5-inch (x6) SAS/SATA backplane
- 2.5-inch (x4) Universal backplane
- E3.s (x8) backplane

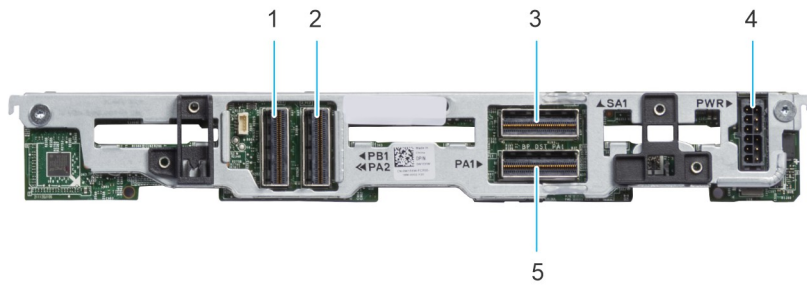


Figure 42. 6 x 2.5-inch SAS/SATA backplane

- | | |
|--|--------------------------------------|
| 1. BP_DST_PA2 (PCIe cable connector) | 2. BP_DST_PB1 (PCIe cable connector) |
| 3. BP_DST_SA1 (SAS/SATA cable connector) | 4. BP_PWR_1 (Power cable connector) |
| 5. BP_DST_PA1 (PCIe cable connector) | |



Figure 43. 6 x 2.5-inch universal backplane

- | |
|--|
| 1. BP_DST_SA1 (SAS/SATA cable connector) |
| 2. BP_PWR_1 (Power cable connector) |

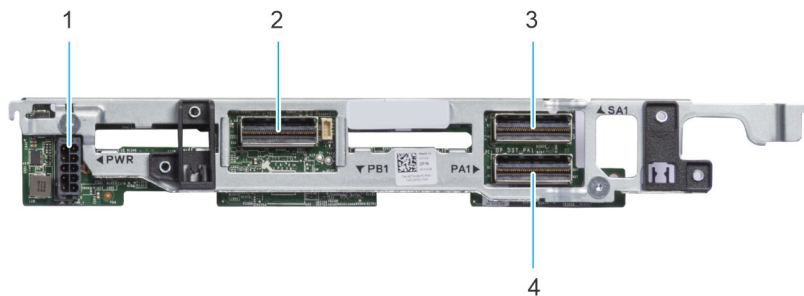


Figure 44. 4 x 2.5-inch universal backplane

- | | |
|--|--------------------------------------|
| 1. BP_PWR_1 (Power cable connector) | 2. BP_DST_PB1 (PCIe cable connector) |
| 3. BP_DST_SA1 (SAS/SATA cable connector) | 4. BP_DST_PA1 (PCIe cable connector) |

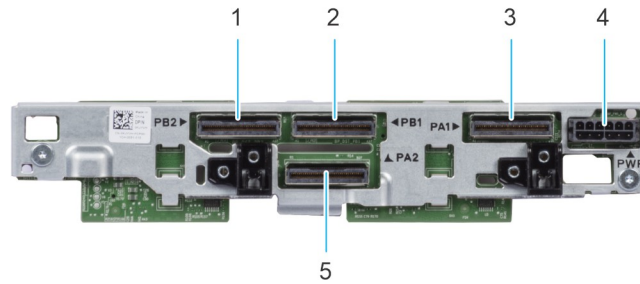


Figure 45. 8 x E3.s backplane

- | | |
|--------------------------------------|--------------------------------------|
| 1. BP_DST_PA2 (PCIe cable connector) | 2. BP_DST_PB1 (PCIe cable connector) |
| 3. BP_DST_PB2 (PCIe cable connector) | 4. BP_PWR_1 (Power cable connector) |
| 5. BP_DST_PA1 (PCIe cable connector) | |

Removing drive backplane

Prerequisites

CAUTION: To prevent damage to the drives and backplane, remove the drives from the system before removing the backplane.

CAUTION: Note the number of each drive and temporarily label them before you remove the drive so that you can reinstall them in the same location.

NOTE: The procedure to remove the backplane is similar for all backplane configurations.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. Disconnect the drive backplane cables from the connectors on the system board.
4. [Remove all the drives](#).

Steps

1. Holding the drive backplane by the edges, lift it upwards to disengage the backplane from the guide pins.
2. Lift the backplane out of the sled.

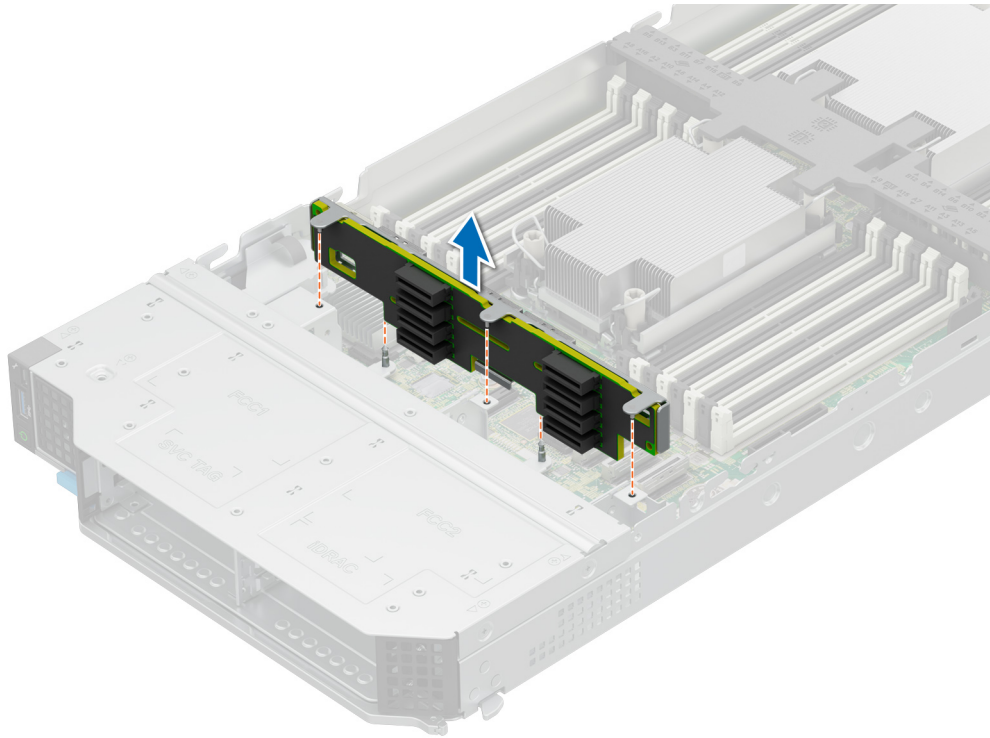


Figure 46. Removing the drive backplane

Next steps

1. [Replace the drive backplane](#)

Installing drive backplane

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove all the drives](#).

Steps

1. Verify backplane connector pins are not bent and then connect the signal cable to the backplane.
2. Align the guide pins on the backplane with the guides on the sled.
3. Insert the backplane into the guides and lower the backplane firmly until it is fully seated.

NOTE: To install the backplane, ensure the two pins on the backplane tab seat into the two slots on the system chassis.

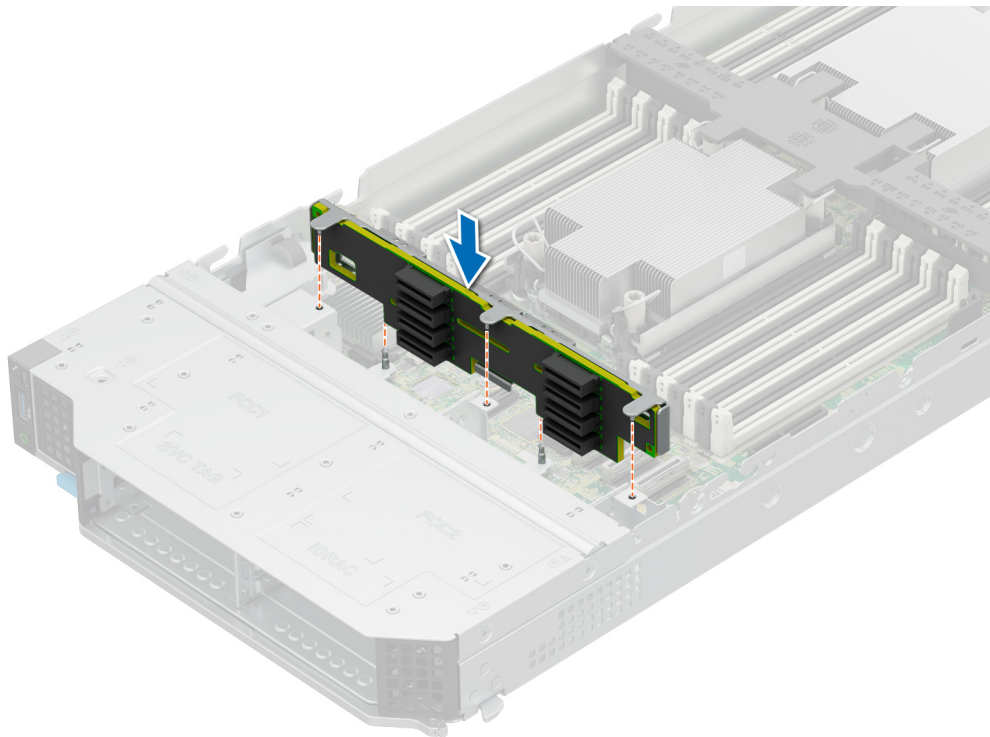


Figure 47. Installing the drive backplane

Next steps

1. Connect the incoming power cable to the backplane and then verify both power and signal cable connections are fully seated to the backplane and system board.
2. Connect the integrated cable to the backplane and system board if there is no PERC card installed in the system.
3. [Install all drives.](#)
4. Follow the procedure listed in [After working inside your system.](#)

Drive cage

This is a service technician replaceable part only.

Removing the drive cage

Prerequisites

CAUTION: To prevent damage to the drives and backplane, you must remove the drives from the system before removing the backplane.

CAUTION: Temporarily label drives before you remove the drives so that you can replace them in the same slots.

NOTE: Observe the routing of the cables on the chassis as you remove them from the system. 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.](#)
2. Follow the procedure listed in [Before working inside your system.](#)
3. Disconnect the drive backplane cables from the connectors on the system board.
4. [Remove all the drives.](#)
5. [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.

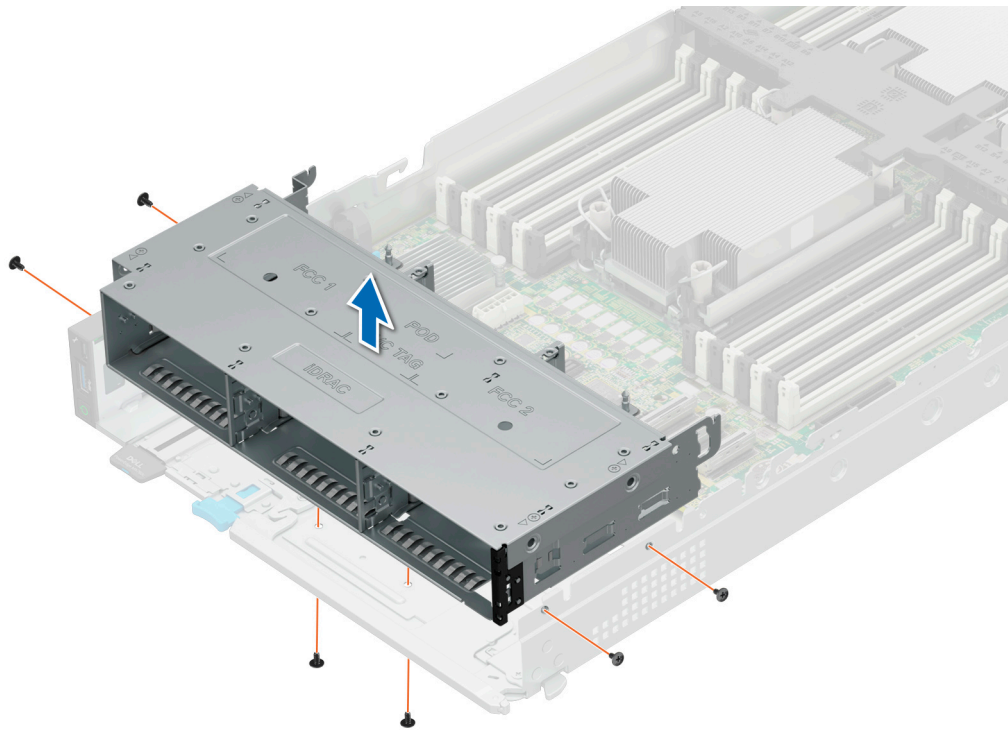


Figure 48. Removing the drive cage of 6 x 2.5-inch drive sled

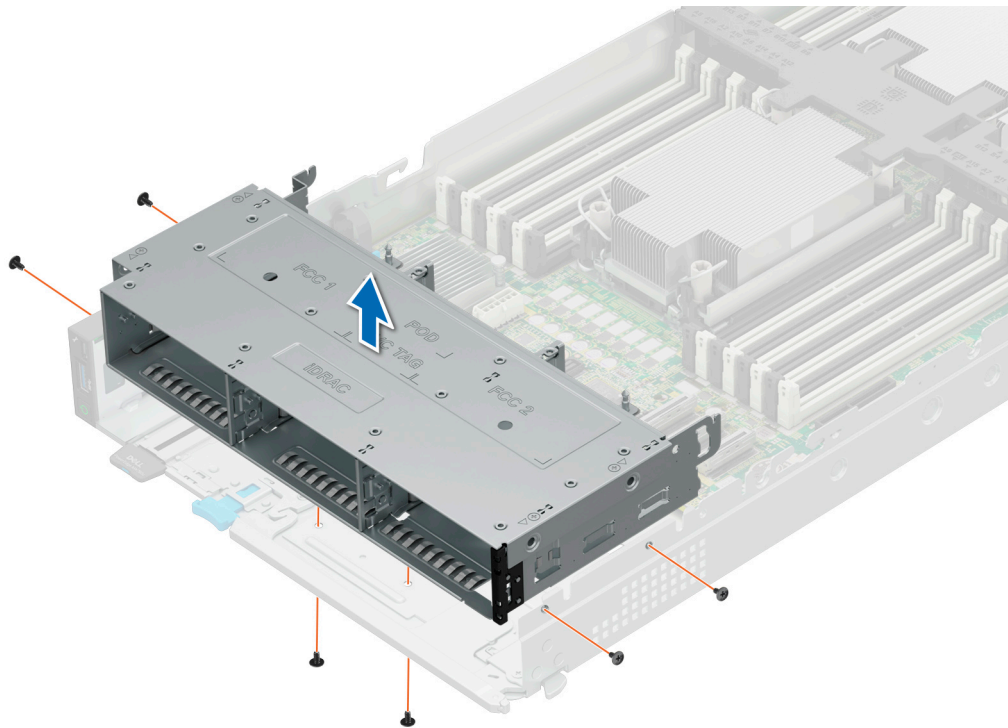


Figure 49. Removing the drive cage of 8 x E.3s inch drive sled

Next steps

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

Installing the drive cage

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. Disconnect the drive backplane cables from the connectors on the system board.

Steps

1. Place the drive cage into the system, aligning with the screw holes on the system.
2. Using the Phillips #1 screwdriver, tighten the screws to secure the drive cage in place.

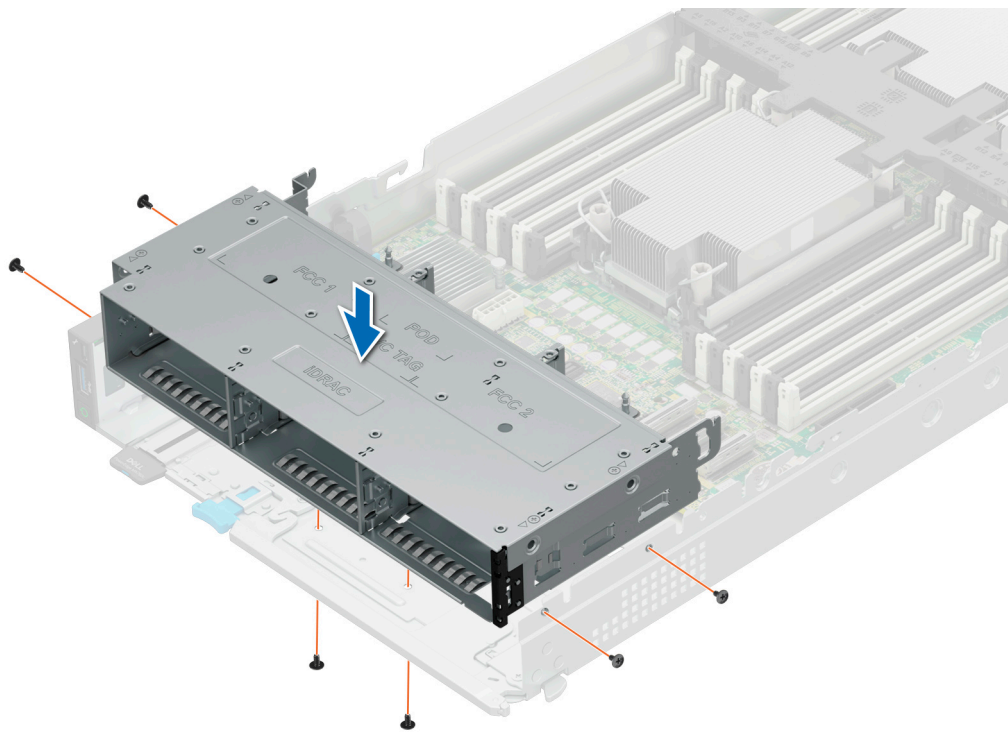


Figure 50. Installing the drive cage of 6 x 2.5-inch drive sled

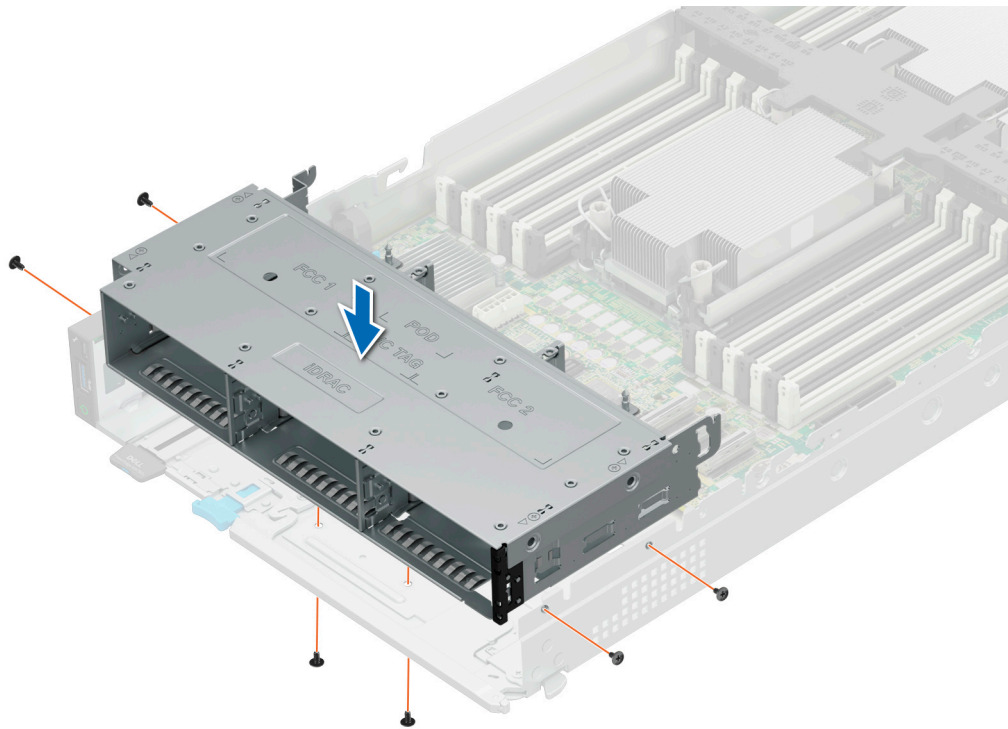


Figure 51. Installing the drive cage of 8 x E3.s drive sled

Next steps

1. Install the drive backplane.
2. Install all drives.
3. Follow the procedure listed in [After working inside your system](#).

Cable routing

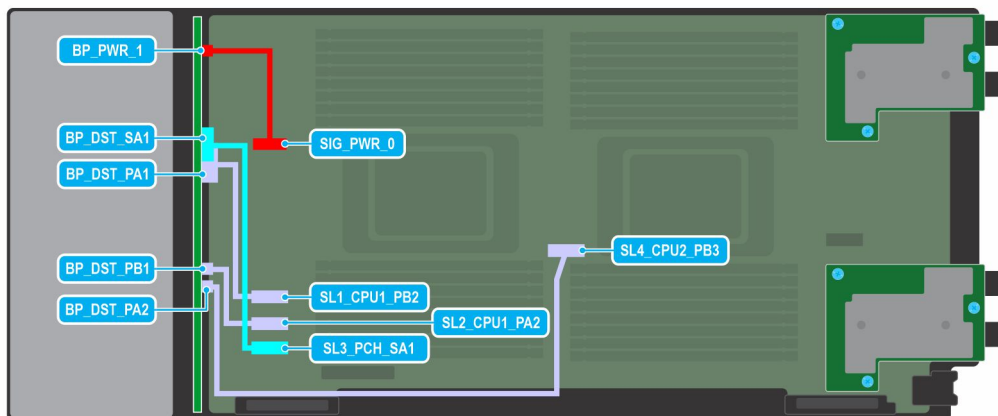


Figure 52. SAS/SATA/NVMe cabling diagram of configuration 0 - 6 x 2.5-inch universal backplane

Table 48. Connector descriptions for SATA/NVMe

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_SA1 (backplane SATA connector)	SL3_PCH_SA1 (signal connector on the system board)
BP_DST_PA1(backplane PCIe cable connector)	SL1_CPU1_PB2 (signal connector on the system board)
BP_DST_PB1 (backplane PCIe cable connector)	SL2_CPU1_PA2 (signal connector on the system board)
BP_DST_PA2 (backplane PCIe cable connector)	SL4_CPU2_PB3 (signal connector on the system board)

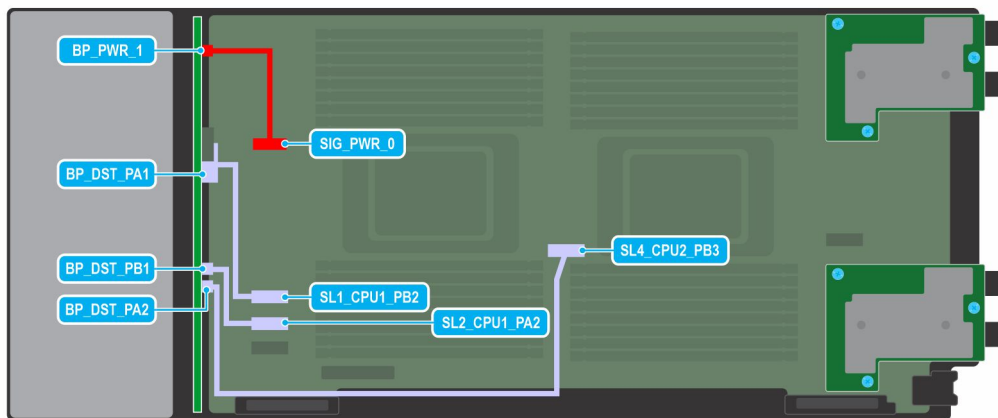


Figure 53. NVMe cabling diagram of configuration 1 - 6 x 2.5-inch universal backplane

Table 49. Connector descriptions for NVMe

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_PA1(backplane PCIe cable connector)	SL1_CPU1_PB2 (signal connector on the system board)
BP_DST_PB1 (backplane PCIe cable connector)	SL2_PCU1_PA2 (signal connector on the system board)
BP_DST_PA2 (backplane PCIe cable connector)	SL4_CPU2_PB3 (signal connector on the system board)

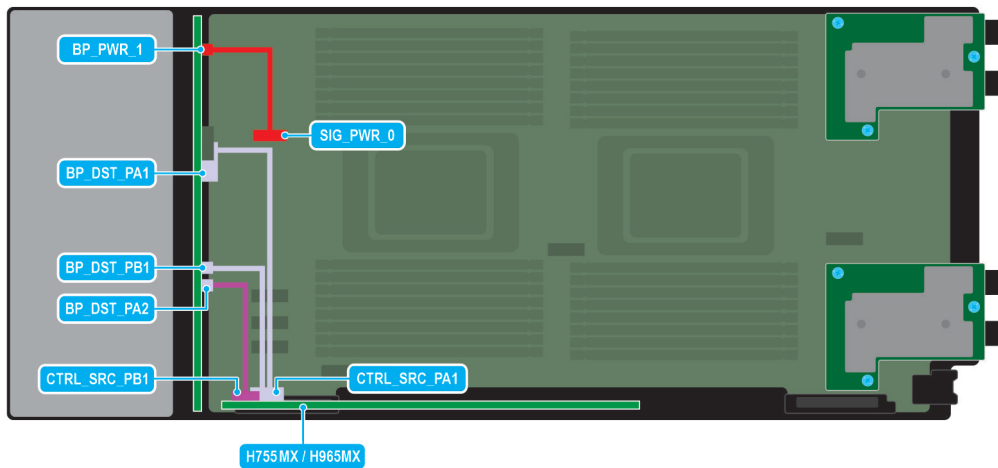


Figure 54. NVMe RAID cabling diagram of configuration 2 - 6 x 2.5-inch universal backplane with H755 MX or H965i MX

Table 50. Connector descriptions for NVMe with H755 MX or H965i MX

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_PA1(backplane PCIe cable connector)	CTRL_SRC_PA1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PA1)
BP_DST_PB1 (backplane PCIe cable connector)	CTRL_SRC_PA1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PA1)
BP_DST_PA2 (backplane PCIe cable connector)	CTRL_SRC_PB1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PB1)

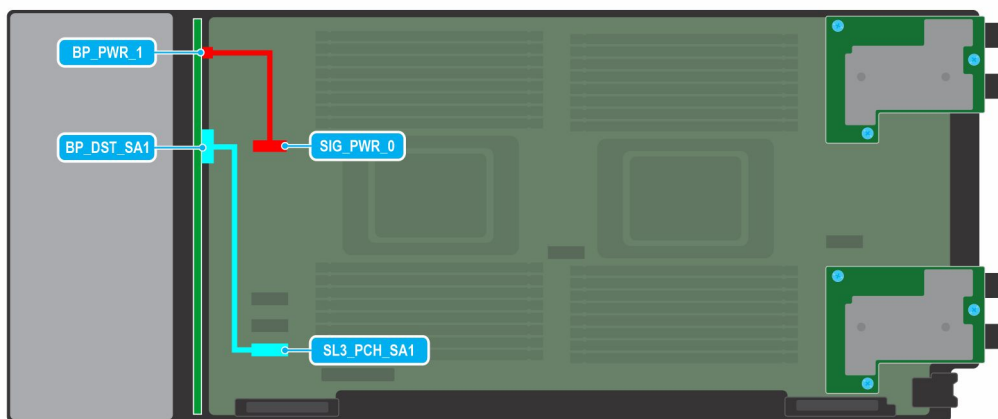


Figure 55. SATA cabling diagram of configuration 3 - 6 x 2.5-inch SAS/SATA backplane

Table 51. Connector descriptions for SATA

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_SA1 (backplane SATA connector)	SL3_PCH_SA1 (signal connector on the system board)

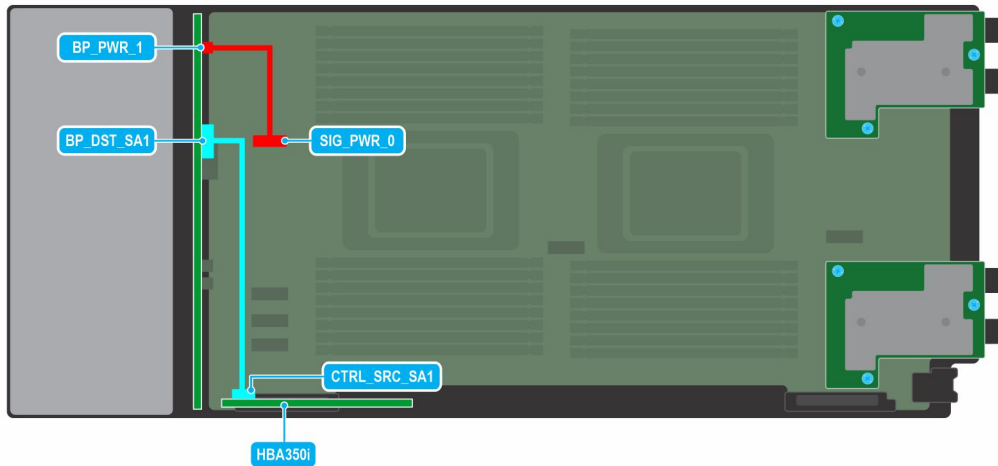


Figure 56. SAS/SATA cabling diagram of configuration 4 - 6 x 2.5-inch SAS/SATA backplane with HBA350i MX

Table 52. Connector descriptions for SAS with HBA350i MX

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_SA1 (backplane SAS/SATA connector)	CTRL_SRC_SA1 (HBA350i MX controller connector on the system board)

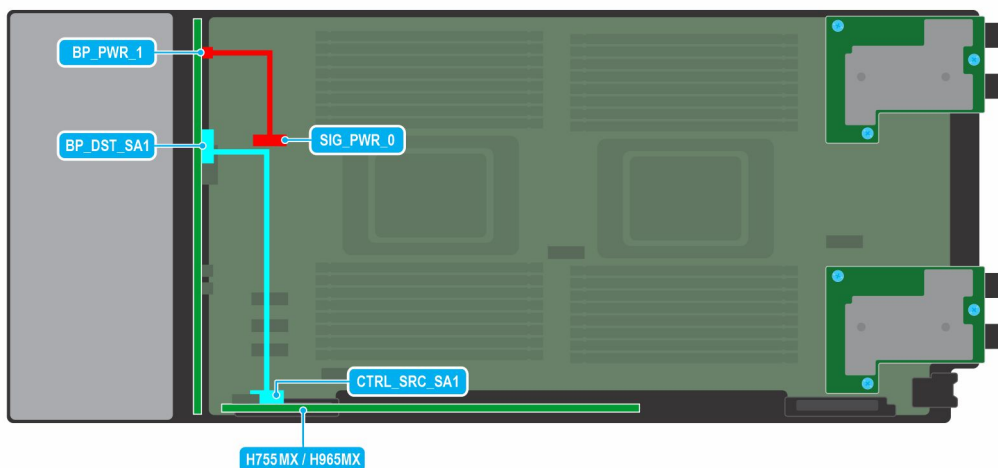


Figure 57. SAS/SATA cabling diagram of configuration 5 - 6 x 2.5-inch SAS/SATA backplane with H755 MX or H965i MX

Table 53. Connector descriptions for SAS with H755 MX or H965i MX

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_SA1 (backplane SAS/SATA connector)	CTRL_SRC_SA1 (H755 MX or H965i MX controller connector on the system board)

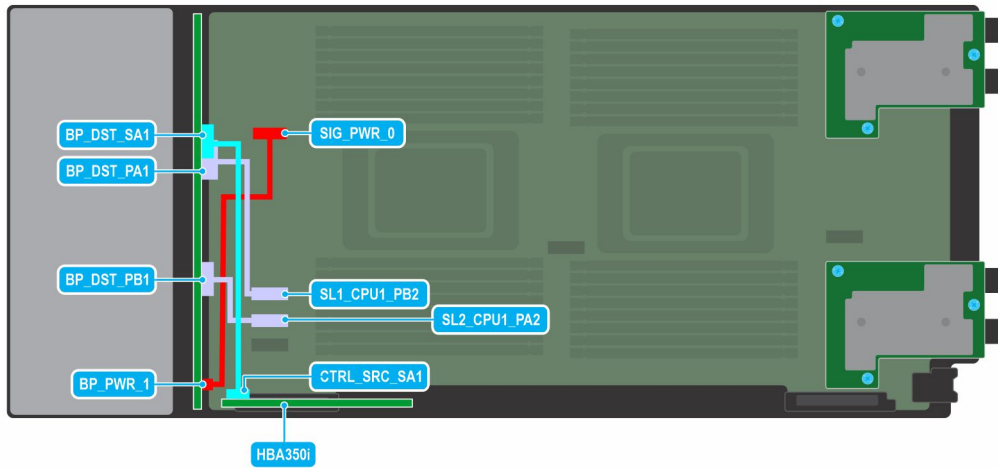


Figure 58. SATA//SAS/NVMe cabling diagram of configuration 7 - 4 x 2.5-inch universal backplane with HBA350i MX

Table 54. Connector descriptions for SATA//SAS/NVMe with HBA350i MX

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_SA1 (backplane SAS/SATA connector)	CTRL_SRC_SA1 (HBA350i MX controller connector on the system board)
BP_DST_PA1 (backplane PCIe cable connector)	SL1_CPU1_PB2 (signal connector on the system board)
BP_DST_PB1 (backplane PCIe cable connector)	SL2_CPU1_PA2 (signal connector on the system board)

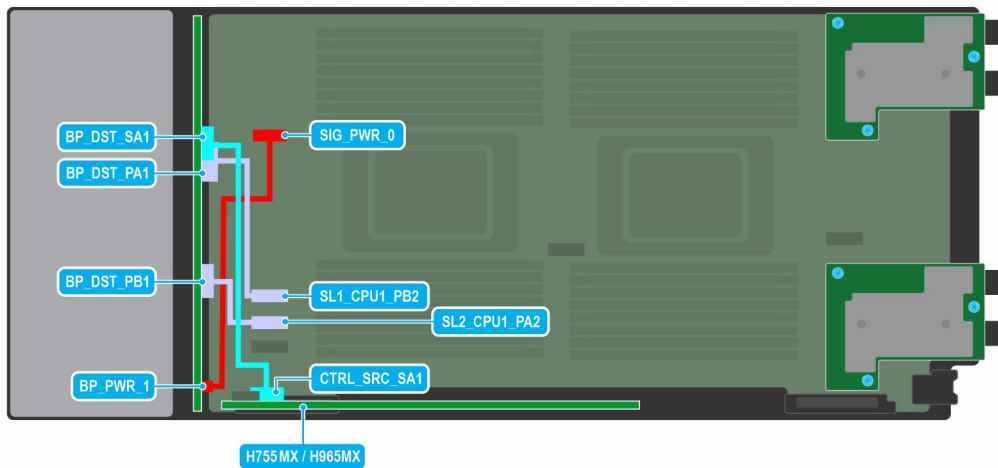


Figure 59. SAS/SATA/NVMe cabling diagram of configuration 8- 4 x 2.5-inch universal backplane with H755 MX or H965i MX

Table 55. Connector descriptions for NVMe with H755 MX or H965i MX

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_PA1(backplane PCIe cable connector)	SL1_CPU1_PB2 (signal connector on the system board)
BP_DST_PB1 (backplane PCIe cable connector)	SL2_CPU1_PA2 (signal connector on the system board)
BP_DST_SA1 (backplane SAS/SATA connector)	CTRL_SRC_SA1 (SAS/SATA connector of H755 MX or H965i MX controller card, cable marking CTRL_PB1)

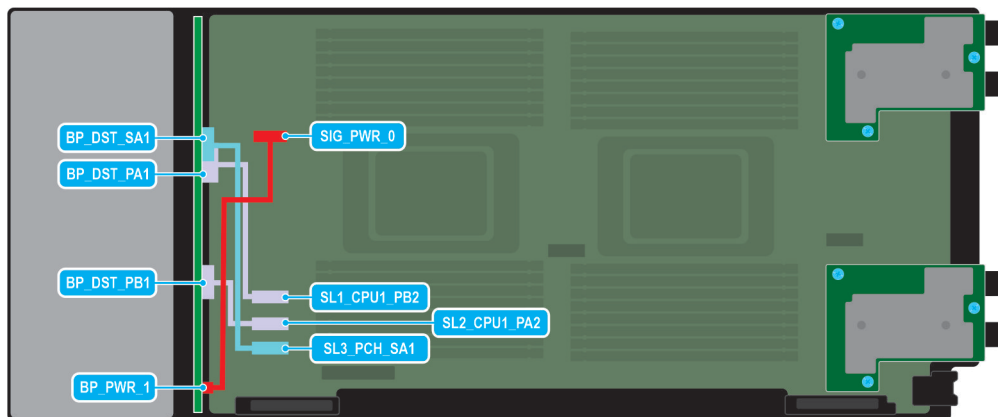


Figure 60. SAS/SATA/NVMe cabling diagram of configuration 10- 4 x 2.5-inch universal backplane

Table 56. Connector descriptions for SAS/SATA/NVMe

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_SA1 (backplane SATA connector)	SL3_PCH_SA1 (signal connector on the system board)
BP_DST_PA1(backplane PCIe cable connector)	SL1_CPU1_PB2 (signal connector on the system board)
BP_DST_PB1 (backplane PCIe cable connector)	SL2_CPU1_PA2 (signal connector on the system board)

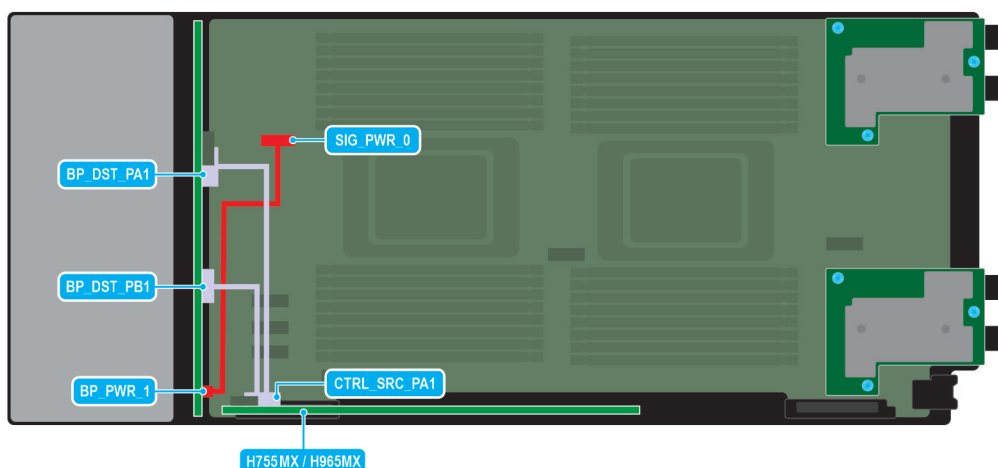


Figure 61. NVMe RAID cabling diagram of configuration 11- 4 x 2.5-inch universal backplane with H755 MX or H965i MX

Table 57. Connector descriptions for NVMe with H755 MX or H965i MX

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_PA1(backplane PCIe cable connector)	CTRL_SRC_PA1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PA1)
BP_DST_PB1 (backplane PCIe cable connector)	CTRL_SRC_PA1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PA1)

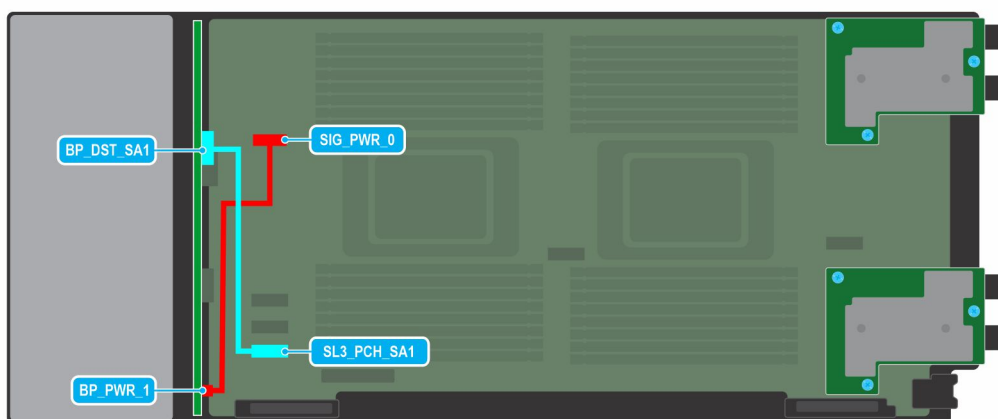


Figure 62. SATA cabling diagram of configuration 12 - 4 x 2.5-inch universal backplane

Table 58. Connector descriptions for SATA

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)

Table 58. Connector descriptions for SATA (continued)

From	To
BP_DST_SA1 (backplane SATA connector)	SL3_PCH_SA1 (signal connector on the system board)

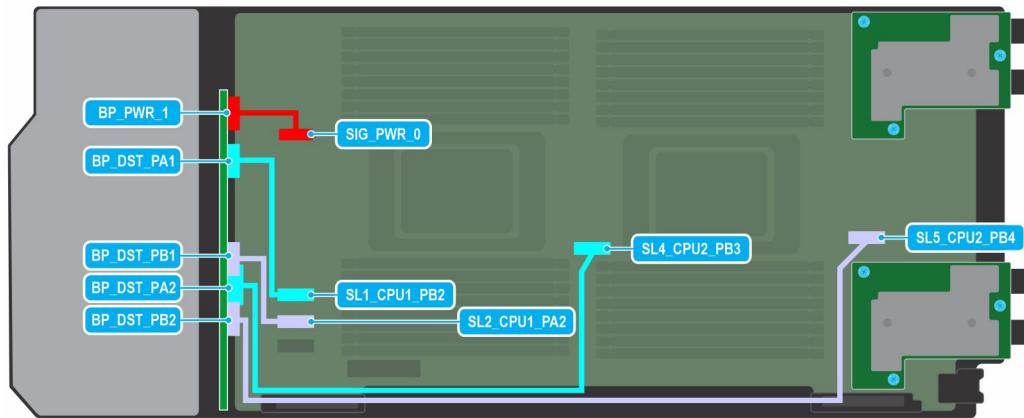


Figure 63. NVMe cabling diagram of configuration 13 - 8 x E3.s backplane

Table 59. Connector descriptions for NVMe

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_PA1 (PCIe cable connector)	SL1_CPU1_PB2(signal connector on the system board)
BP_DST_PB1 (PCIe cable connector)	SL2_CPU1_PA2 (signal connector on the system board)
BP_DST_PA2 (PCIe cable connector)	SL4_CPU2_PB3 (signal connector on the system board)
BP_DST_PB2 (PCIe cable connector)	SL5_CPU2_PB4 (signal connector on the system board)

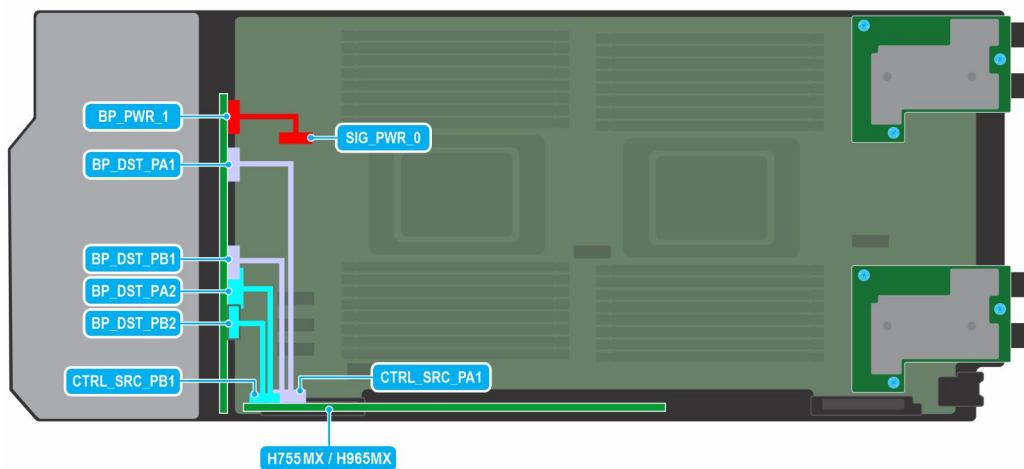


Figure 64. NVMe cabling diagram of configuration 14 - 8 x E3.s backplane with H755 MX or H965i MX

Table 60. Connector descriptions for NVMe with H755 MX or H965i MX

From	To
BP_PWR_1 (backplane power connector)	SIG_PWR_0 (system board power connector)
BP_DST_PA1 (PCIe cable connector)	CTRL_SRC_PA1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PA1)
BP_DST_PB1 (PCIe cable connector)	CTRL_SRC_PA1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PA1)
BP_DST_PA2 (PCIe cable connector)	CTRL_SRC_PB1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PB1)
BP_DST_PB2 (PCIe cable connector)	CTRL_SRC_PB1 (PCIe connector of H755 MX or H965i MX controller card, cable marking CTRL_PB1)

Front I/O module

This is a service technician replaceable part only.


Removing the front I/O module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#)
3. [Remove all the drives](#).
4. [Remove the drive cage](#).

Steps

1. Releasing the blue latches, pull the blue strap to disconnect the front I/O module cable connected to the system board.
2. Using the Phillips #1 screwdriver, remove the screws that secure the front I/O module to the system.
3. Holding the front I/O module, remove the front I/O module along with the cable from the system.

 **NOTE:** The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

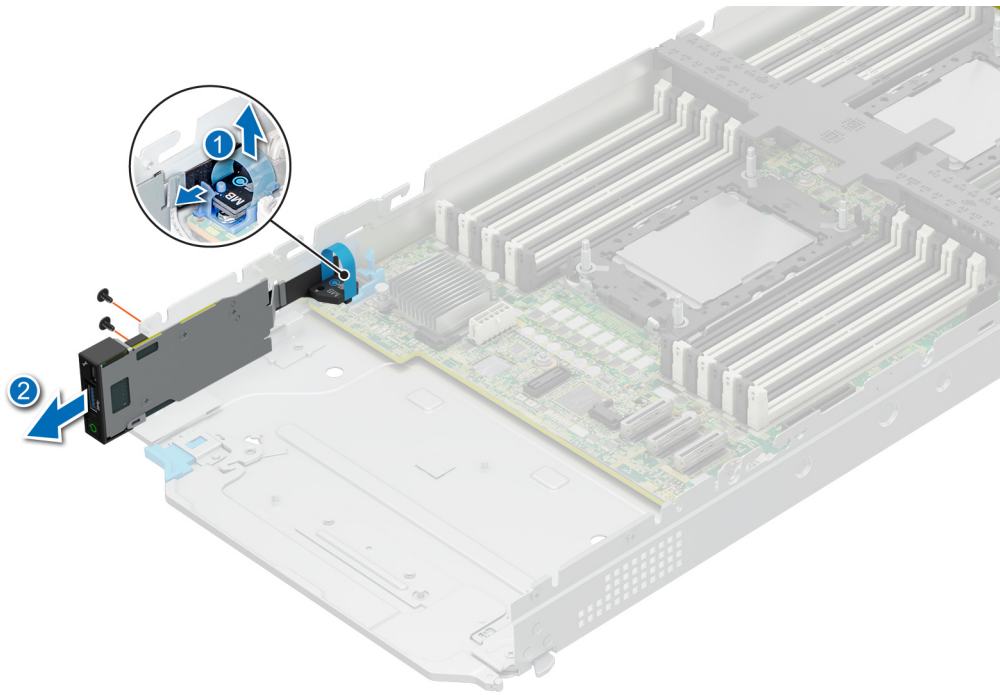


Figure 65. Removing the front I/O module

Next steps

1. [Replace the front I/O module.](#)

Installing the front I/O module

Prerequisites

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove all the drives.](#)
4. [Remove the drive cage.](#)

Steps

1. Align and insert the front I/O module in the slot on the system.
2. Connect the front I/O module cable to the connector on the system board.
3. Using a Phillips #1 screwdriver, tighten the screws that secure the front I/O module to the system.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

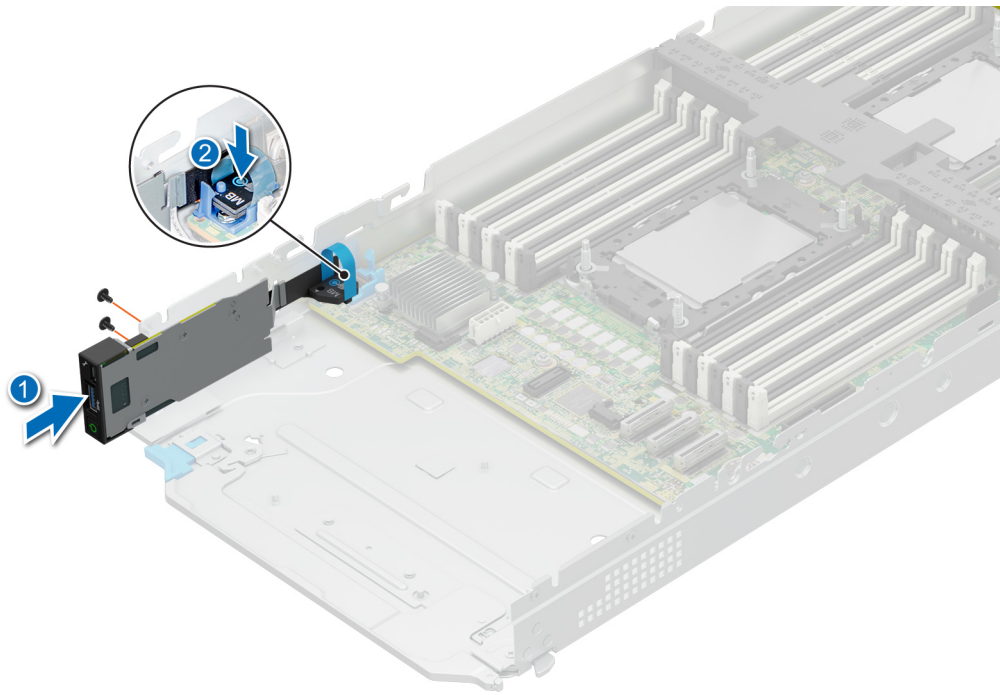


Figure 66. Installing the front I/O module

Next steps

1. [Install the drive cage.](#)
2. [Install all drives.](#)
3. Follow the procedure listed in [After working inside your system.](#)

System memory

System memory guidelines

The PowerEdge MX760c system supports DDR5 registered DIMMs (RDIMMs). System memory holds the instructions that are executed by the processor.

Your system contains 32 memory sockets that are split into two sets of 16 sockets, one set per processor. Each 16-socket set is organized into eight channels. Eight 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.

Memory channels are organized as follows:

Table 61. Memory channels

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
Processor 1	Slots A1 and A9	Slots A7 and A15	Slots A3 and A11	Slots A5 and A13	Slots A12 and A4	Slots A14 and A6	Slots A10 and A2	Slots 16 and A8
Processor 2	Slots B1 and B9	Slots B15 and B7	Slots B3 and B11	Slots B13 and B5	Slots B12 and B4	Slots B6 and B14	Slots B10 and B2	Slots B8 and B16

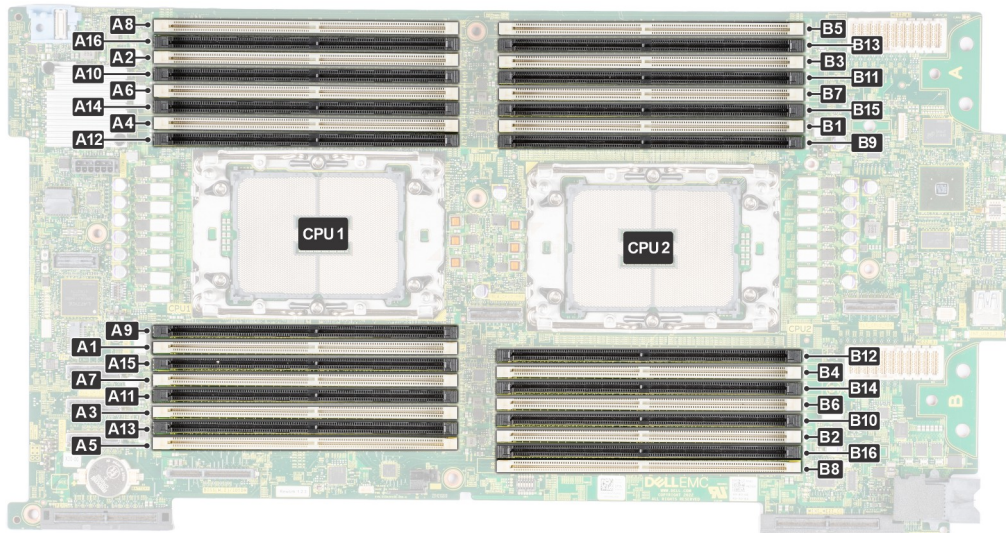


Figure 67. Memory sockets on the system board

NOTE: When High Performance CPU is installed, DIMM 9, 10,11,12 are not supported

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

Table 62. Supported memory matrix

DIMM Type	DIMM Ranking	Capacity	Voltage	Operating Frequency (in MT/s)
RDIMM	1R	16 GB	1.1 V	4800
RDIMM	2R	32 GB	1.1 V	4800
RDIMM	2R	64GB	1.1 V	4800
RDIMM	4R	128 GB	1.1 V	4800
RDIMM	8R	256 GB	1.1 V	4800

Memory restriction

- Maximum DIMMs supported in MX760c is 16 per CPU (total 32 DIMMs)
- Min config: one DIMM required per CPU.
- Mixing RDIMM with different capacities and types is not supported. Mixing RDIMMs of different speeds will result all RDIMMs to run at the lowest speed
- ASHRAE A3/A4: Note: ASHRAE A3 is for 40C ambient support and A4 is for 45C ambient support.
- ASHRE A3/A4: DDR5 ≥ 128GB is not supported. Note: ASHRAE A3 is for 40C ambient support and A4 is for 45C ambient support
- Non-populated DIMM slots, should be installed with solid DIMM blanks.
- CPU2 has a max DIMM count of 12 when using CPU2 HPR heatsink (DPN:79TTV). In configurations utilizing the HPR heatsink, total max DIMM count for CPU1 and CPU2 is 24.


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 configuration fails 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 speeds of 4800 MT/s, or 4400 MT/s depending on the following factors:

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


- Maximum supported speed of the DIMMs

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

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 DDR5.
- Mixing of non-3DS and 3DS RDIMMs is not allowed.
 - 3DS is a DRAM technology used to manufacture the highest capacity DIMMs. Refer to your DIMM documentation for additional details.
- x4 and x8 DRAM based memory modules cannot be mixed.
- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory module(s).
- Populate memory module sockets only if a processor is installed.
 - For single-processor systems, sockets A1 to A16 are available.
 - For dual-processor systems, sockets A1 to A16 and sockets B1 to B16 are available.
 - A minimum of 1 DIMM must be populated for each installed processor.
- In **Optimizer Mode**, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

Table 63. Memory population rules


Processor	Configuration	Memory population	Memory population information
Single processor	Optimizer (Independent channel) population order	A{1}, A{2}, A{3}, A{4}, A{5}, A{6}, A{7}, A{8}, A{9}, A{10}, A{11}, A{12}, A{13}, A{14}, A{15}, A{16}	1, 2, 4, 6, 8, 12 or 16 DIMMs are allowed.
Dual processor (Start with processor1. Processor 1 and processor 2 population should match)	Optimizer (Independent channel) 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}, A{7}, B{7}, A{8}, B{8}, A{9}, B{9}, A{10}, B{10}, A{11}, B{11}, A{12}, B{12}, A{13}, B{13}, A{14}, B{14}, A{15}, B{15}, A{16}, B{16}	2, 4, 8, 12, 16, 24 and 32 DIMMs are supported per system.  NOTE: Optimizer population order is not traditional for 8 and 16 DIMMs installations for dual processor.


- Populate all the sockets with white release tabs first, followed by the sockets with black release tabs.
- Mixing of more than two memory module capacities in a system is not supported.
- Unbalanced or odd memory configurations result in a performance loss, and the system may not identify the memory modules being installed. Always populate memory channels identically with equal DIMMs for best performance.
- Supported RDIMM configurations are 1, 2, 4, 6, 8, 12, or 16 DIMMs per processor.

Removing a memory module

Prerequisites

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

 **WARNING:** The memory modules are hot to touch for some time after the system has been powered off. Allow the memory modules to cool before handling them.

 **CAUTION:** To ensure proper system cooling, memory module blanks must be installed in any memory socket that is not occupied. The memory module blanks compatible with the MX760c are DDR5 gray color blanks. Remove memory module blanks only if you intend to install memory modules in those sockets.

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.

2. To release the memory module from the socket, simultaneously press the ejectors on both ends of the memory module socket to fully open.
3. Lift the memory module away from the system.

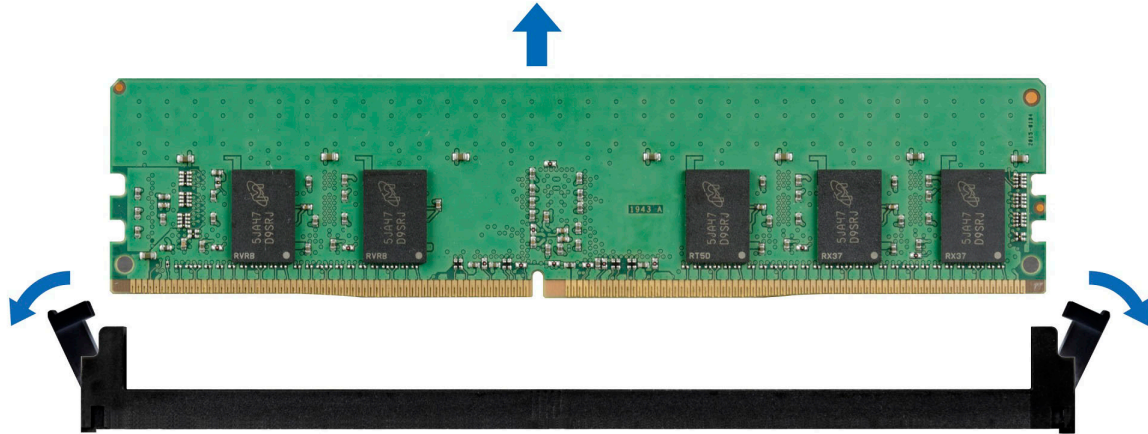


Figure 68. Removing a memory module

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: When operating your system with single processor, install processor DIMM blanks/brackets in processor 2 memory sockets.

Installing a memory module

Prerequisites

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

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

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.

2. If a memory module is installed in the socket, remove it.

NOTE: Ensure the socket ejector latches are fully open, before installing the memory module.

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

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

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

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

When the memory module is properly seated in the socket, the levers on the memory module socket align with the levers on the other sockets that have memory modules installed.

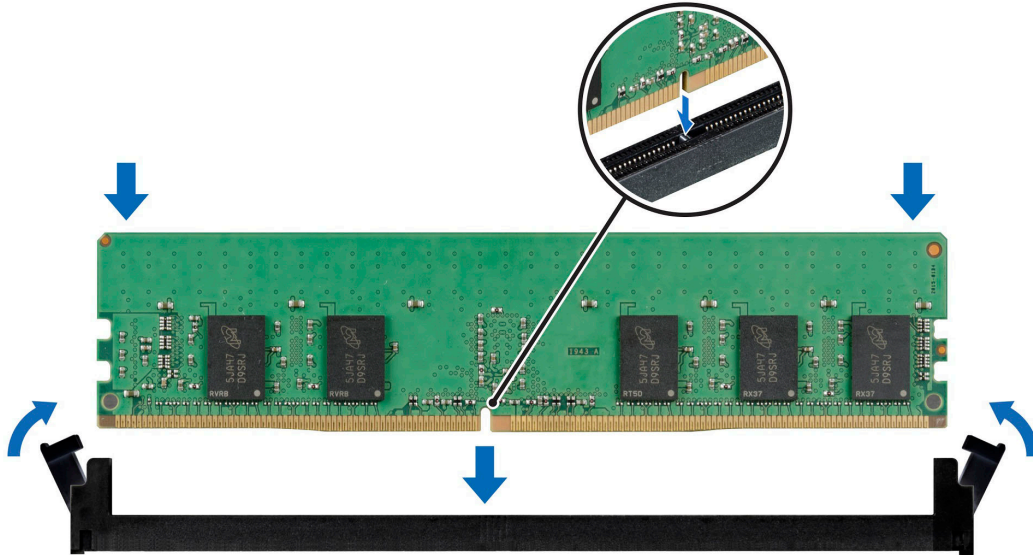


Figure 69. Installing a memory module

Next steps

1. Install the air shroud
2. Follow the procedure listed in [After working inside your system](#).
3. 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.
4. If the **System Memory Size** is incorrect, one or more of the memory modules may not be installed properly. Ensure that the memory modules are firmly seated in their sockets.
5. Run the system memory test in the system diagnostics.

Processor and heat sink module

This is a service technician replaceable part only.

Removing a processor and heat sink module

Prerequisites

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

NOTE: The heat sink and processor are too hot to touch for some time after the system has been powered down. Allow the heat sink and processor to cool down before handling them.

Steps

1. Ensure all four anti-tilt wires are in the locked position (outward position), and then using a Torx T30 tool, loosen the captive nuts on the heat sink in the order that is mentioned below:
 - a. Loosen the first nut three turns.
 - b. Loosen the nut diagonally opposite to the nut you loosened first.
 - c. Repeat the procedure for the remaining two nuts.
 - d. Return to the first nut to loosen it completely.
2. Set the anti-tilt wires to the unlocked position (inward position).

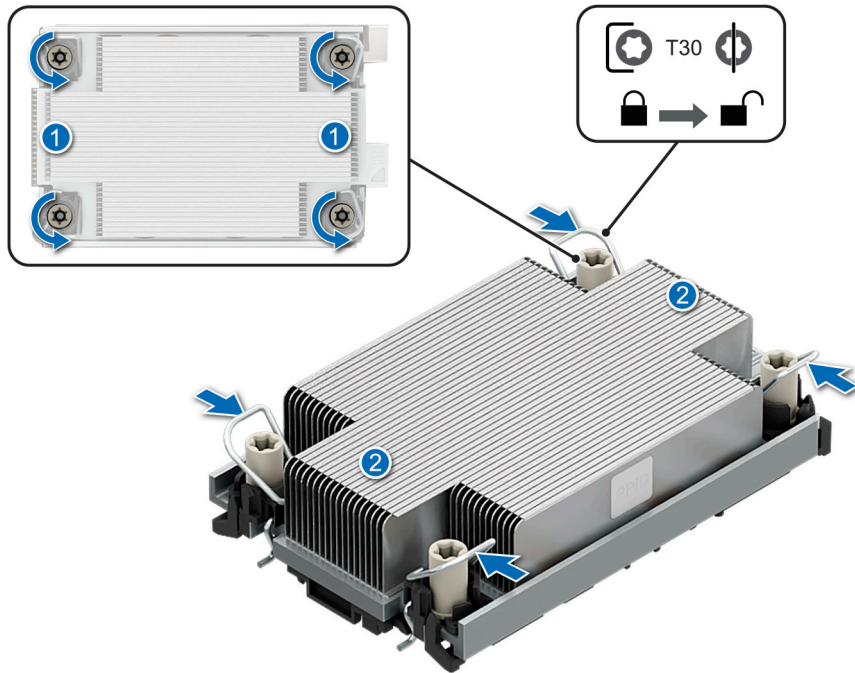


Figure 70. Loosening the nuts and set the anti-tilt wires to the unlocked position

3. Lift the processor and heat sink module (PHM) from the system and set the PHM aside with the processor side facing up.

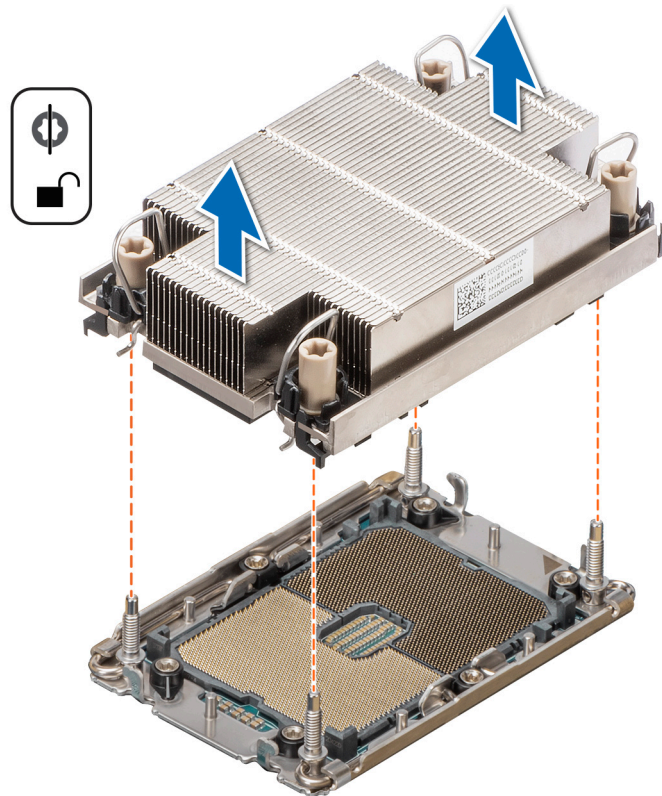


Figure 71. Removing a processor and heat sink module

Next steps

Remove the processor from the processor and heat sink module.

Removing the processor from the processor and heat sink module

Prerequisites

WARNING: Remove the processor from the processor and heat sink module (PHM) only if you are replacing the processor or heat sink.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#)
3. [Remove the air shroud](#)
4. [Remove the processor and heat sink module \(PHM\)](#).

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

CAUTION: An expected CMOS battery loss or CMOS checksum error message may be displayed during the first instance of powering on the system after replacing the processor or system board. To resolve this issue, go to [setup option](#) to configure the system settings.

Steps

1. Place the heat sink with the processor side facing up.
2. Using your thumb lift up the Thermal Interface Material (TIM) break lever to release the processor from the TIM and carrier.

NOTE: Ensure to hold the retaining clip to the heat sink as you lift the TIM break lever.

3. Holding the processor by its edges, lift the processor away from the retaining clip, and then place the processor connector side down on the processor tray. Ensure pin 1 marks are aligned.

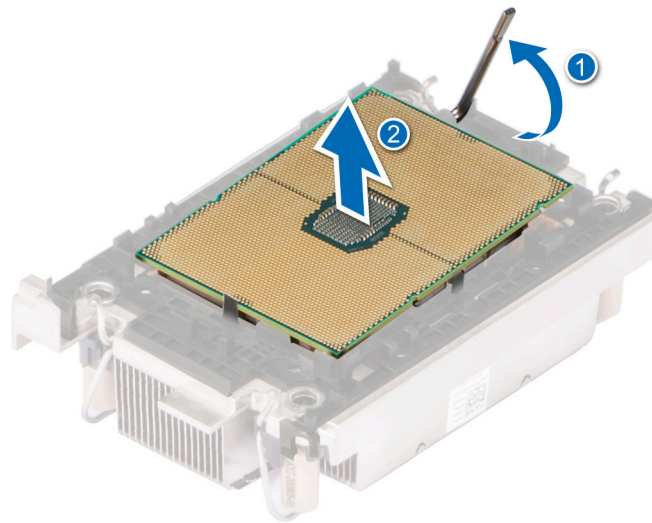


Figure 72. Lift up the TIM break lever

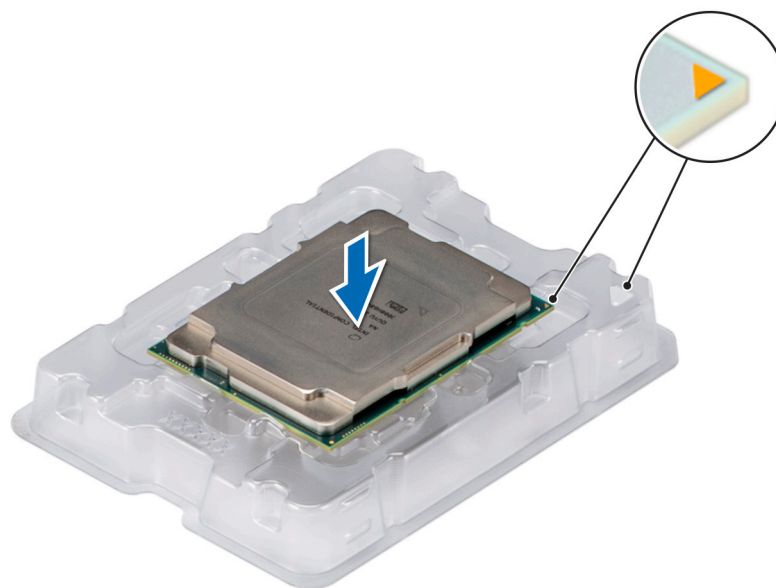


Figure 73. Aligning pin 1 marks of processor with tray

NOTE: Ensure that to return the TIM break lever back to its original position.

4. Using your thumb and index finger, first hold the retaining clip release tab at the pin 1 connector, pull out the tip of the retaining clip release tab, and then lift the retaining clip partially from the heat sink.
5. Repeat the procedure at the remaining three corners of the retaining clip.
6. After all the corners are released from the heat sink, lift the retaining clip from the pin 1 corner of the heat sink.

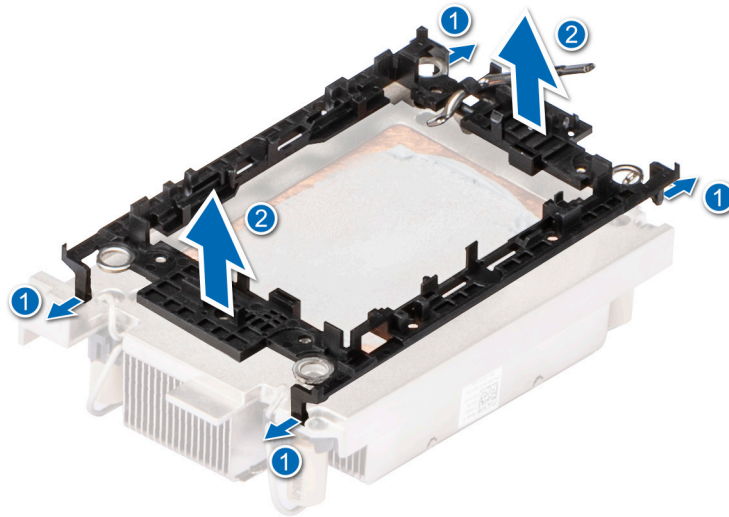


Figure 74. Removing the processor retaining clip

Next steps

Replace the processor into a processor and heat sink module (PHM).

Installing the processor into a processor and heat sink module

Prerequisites

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

NOTE: The CPU assembly orientation between CPU 1 and CPU2 is reverse.

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. Place the processor retaining clip on top of the processor that is in the processor tray aligning pin 1 indicator on the processor.

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

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

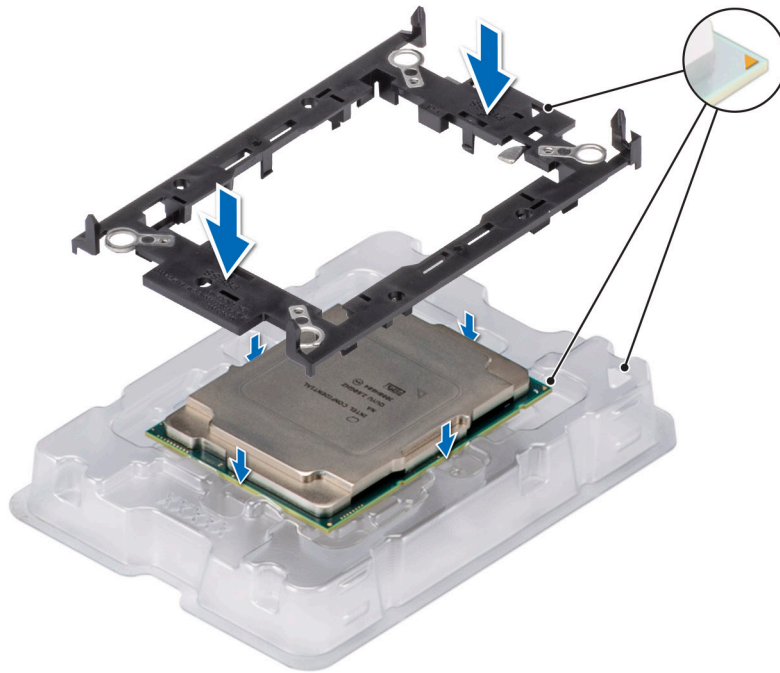


Figure 75. Installing the processor carrier

3. Align the processor with processor retaining clip by using your fingers to press the retaining clip on all the four sides until it clicks into place.

i **NOTE:** Ensure that the processor is securely latched to the processor retaining clip.

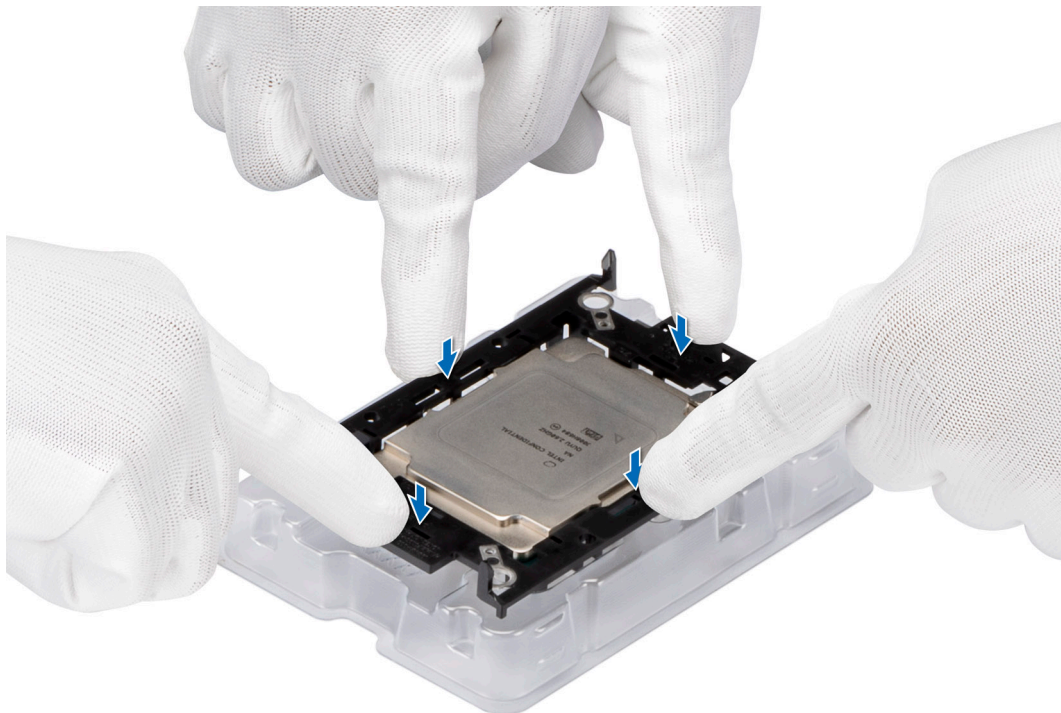


Figure 76. Press the retaining clip on the four sides

4. If you are using an existing heat sink, remove the thermal grease on the heat sink by using a clean lint-free cloth.
5. Use the thermal grease syringe included with your processor kit to apply the grease in a thin spiral on the bottom of the heat sink.

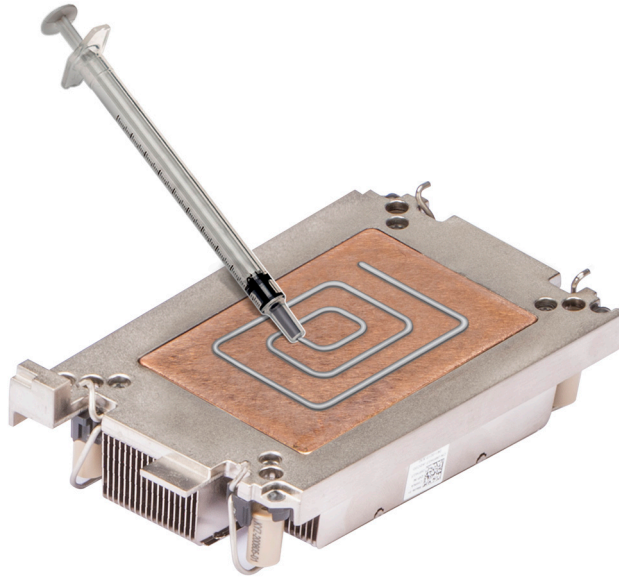


Figure 77. Applying thermal grease

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 of the syringe after you use it.

6. Remove the Thermal Interface Material (TIM) protective film from the base of heat sink.

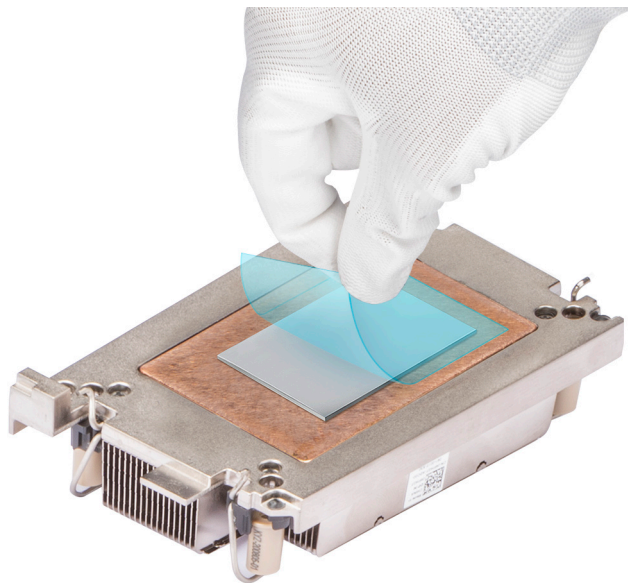


Figure 78. Remove the Thermal Interface Material (TIM) protective film

7. Place the heat sink on the processor and press the heat sink until the retaining clip locks onto the heat sink at all the four corners.

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

NOTE: Ensure that the pin 1 indicator on the heat sink is aligned with the pin 1 indicator on the retaining clip before placing the heat sink onto the processor retaining clip.

NOTE: Ensure latching features on processor retaining clip and heat sink are aligned during assembly.

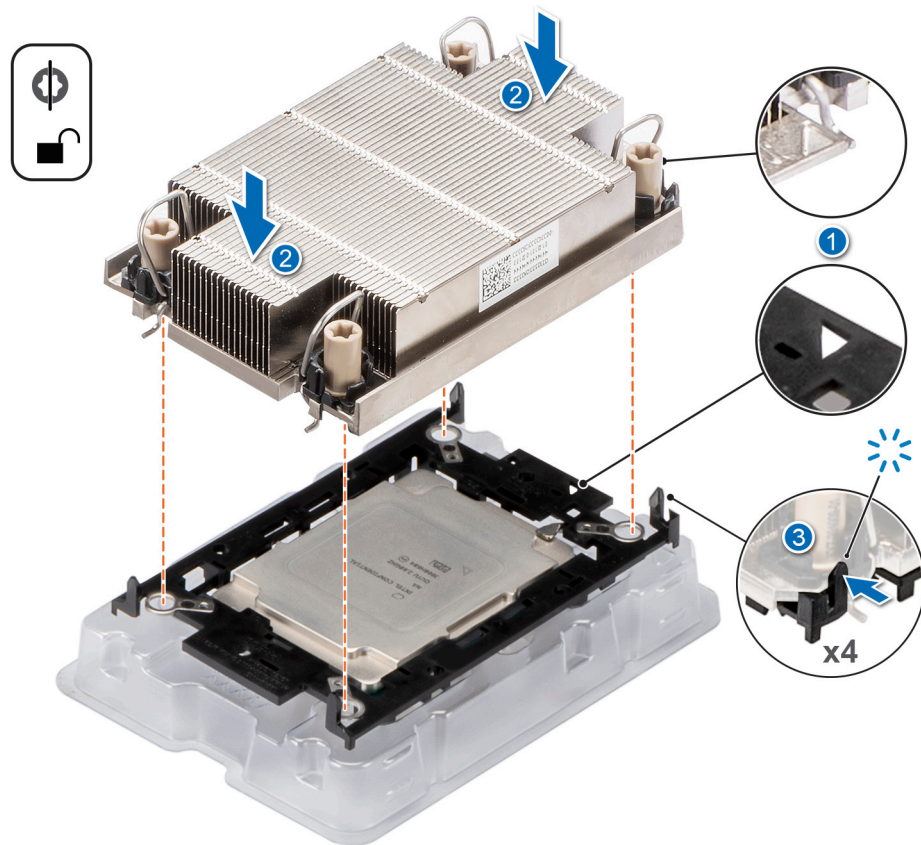


Figure 79. Installing the heat sink onto the processor

Next steps

1. Install the processor and heat sink module.
2. Install the air shroud.
3. Follow the procedure listed in [After working inside your system](#).

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](#).
2. Follow the procedure listed in [Before working inside your system](#).
3. [Remove the air shroud](#)
4. If installed, remove the processor dust cover.

Steps

1. Set the anti-tilt wires to the unlocked position on the heat sink (inward position).
2. Align the pin-1 indicator of the heat sink to the system board, and then place the processor and heat sink 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 processor and heat sink is held parallel to the system board to prevent damaging the components.

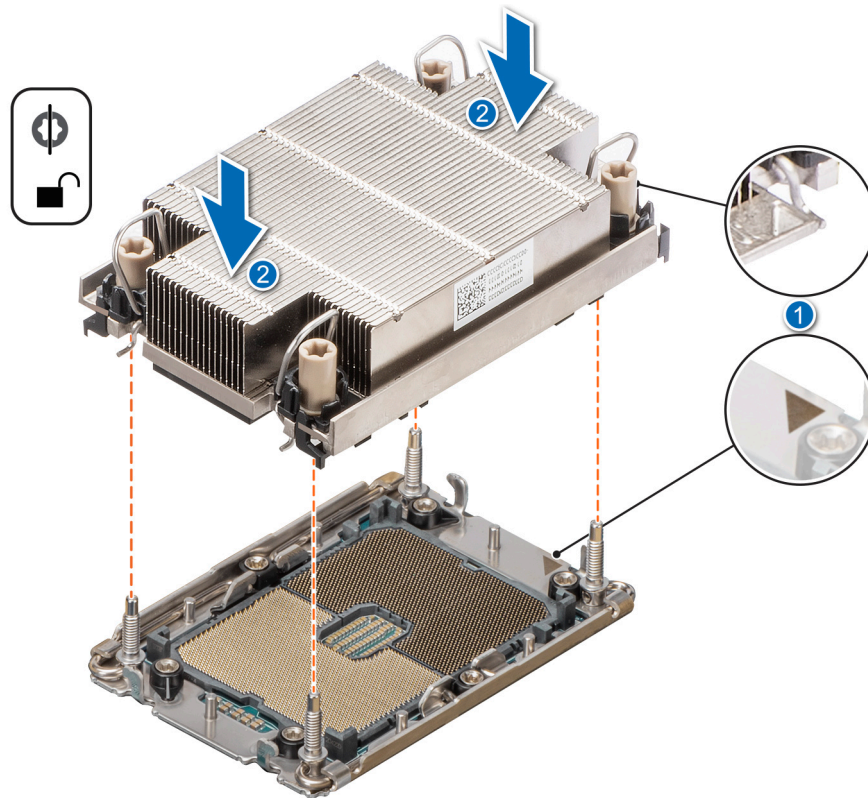


Figure 80. Installing the processor and heat sink (PHM)

3. Set the anti-tilt wires to the locked position (outward position), and then using the Torx T30 tool, tighten the captive nuts (8 in-lbf) on the heat sink in the order below:
 - a. In a random order, tighten the first nut three turns.
 - b. Tighten the nut diagonally opposite to the nut you tighten first.
 - c. Repeat the procedure for the remaining two nuts.
 - d. Return to the first nut to tighten it completely.
 - e. Check all the nuts to ensure they are firmly secured.

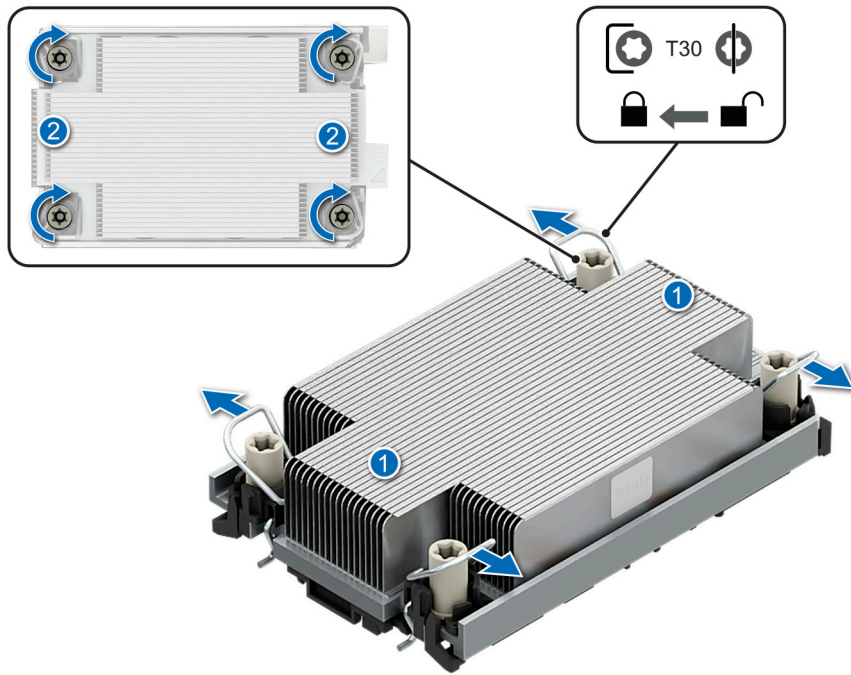


Figure 81. Set the anti-tilt wires to the locked position and tightening the captive nuts

Next steps

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

Liquid cooling

Removing the x4 2.5-inch and x8 E3.s liquid cooling assembly

Steps

1. Disconnect the leak sensor cable from the system board.

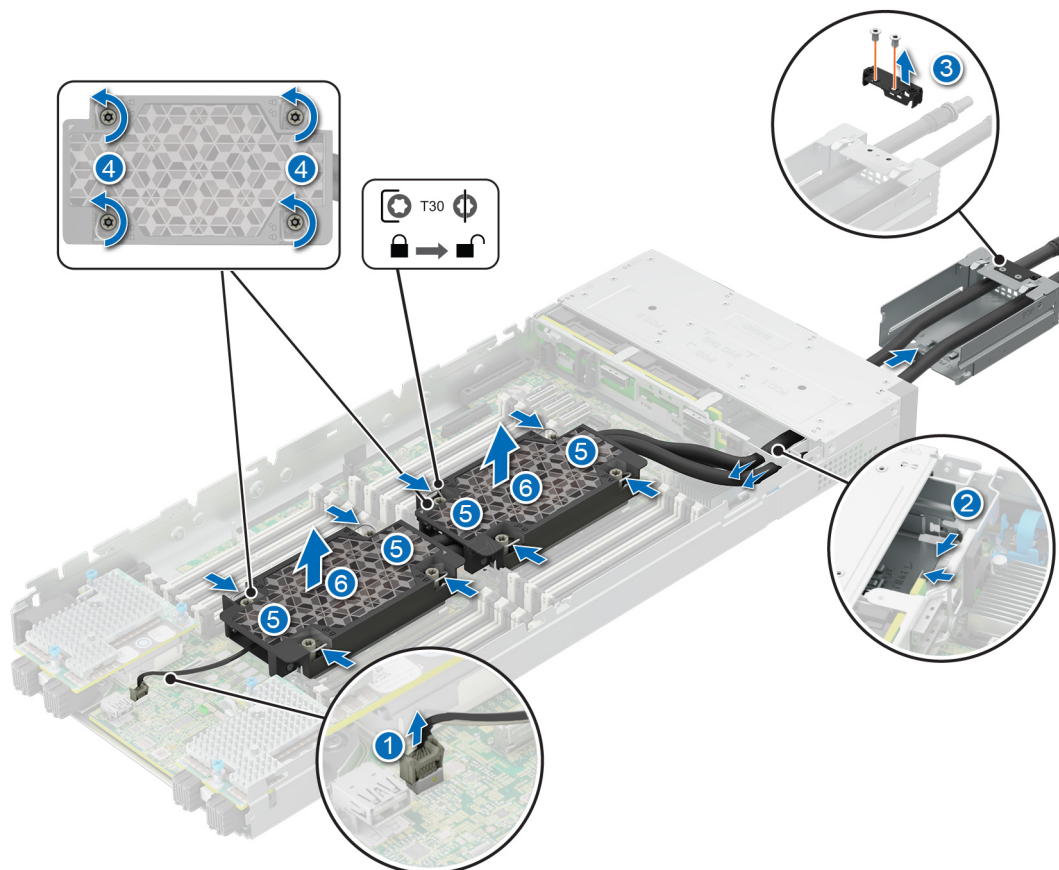


Figure 82. Removing the x4 2.5-inch liquid cooling assembly

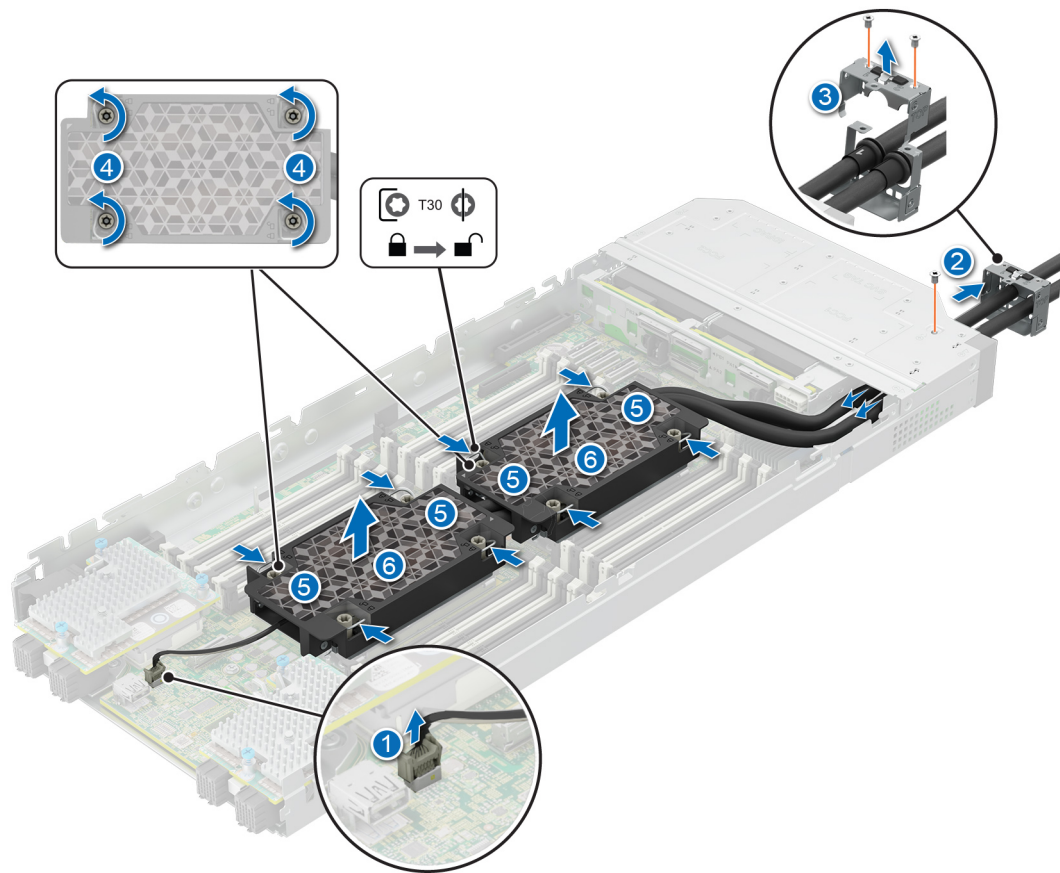


Figure 83. Removing the x8 E3.s liquid cooling assembly

2. For x4 2.5-inch liquid cooling assembly, pull the metal latch to release the latch and then push the guide feature to remove the liquid cooling cage. For x8 E3.s liquid cooling assembly, release one screw on hard drive cage to remove the liquid cooling cage.
 3. Using a Phillips #1 screwdriver, remove the screws that secure the liquid cooling cage front cover, and lift the liquid cooling pipe from the groves in the rear bracket.
 4. Ensure all four Anti-Tilt wires are in the locked position (outward position), and then using a Torx #T30 screwdriver, loosen the screws on the cold plate in the order that is mentioned below:
 - a. Loosen the first screw.
 - b. Loosen the screw diagonally opposite to the screw you loosened first.
 - c. Repeat the procedure for the remaining two screws.
 5. Set the Anti-Tilt wires to the unlocked position (inward position).
- NOTE:** Repeat step 4 and 5 for the other cold plate.
6. Lift the liquid cooling assembly from the system and set aside with the processor side facing up.

Removing the processor from the cold plate

Prerequisites

WARNING: Remove the processors from the liquid cooling only if you are replacing the processors or need to install a complete new cold plate assembly and transferring both the processors.

CAUTION: An expected CMOS battery loss or CMOS checksum error message may be displayed during the first instance of powering on the system after replacing the processor or system board. To resolve this issue, go to setup option to configure the system settings.

Steps

1. Start with the cold plate assembly lying on the ESD surface with their processor side facing up.
2. Lift up the Thermal Interface Material (TIM) break lever to release the processor from the TIM and retaining clip.
 - i** **NOTE:** Ensure to hold the retaining clip to the cold plate as you lift the TIM break lever.
 - i** **NOTE:** Ensure to remove one processor at a time.
3. Holding the processor by its edges, lift the processor away from the retaining clip, and then place the processor connector side down in the processor tray. Ensure pin 1 marks are aligned.

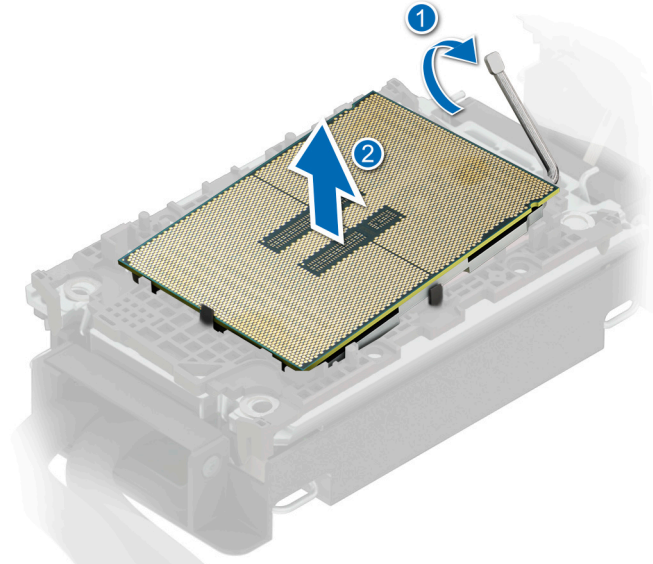


Figure 84. Lift the TIM break lever

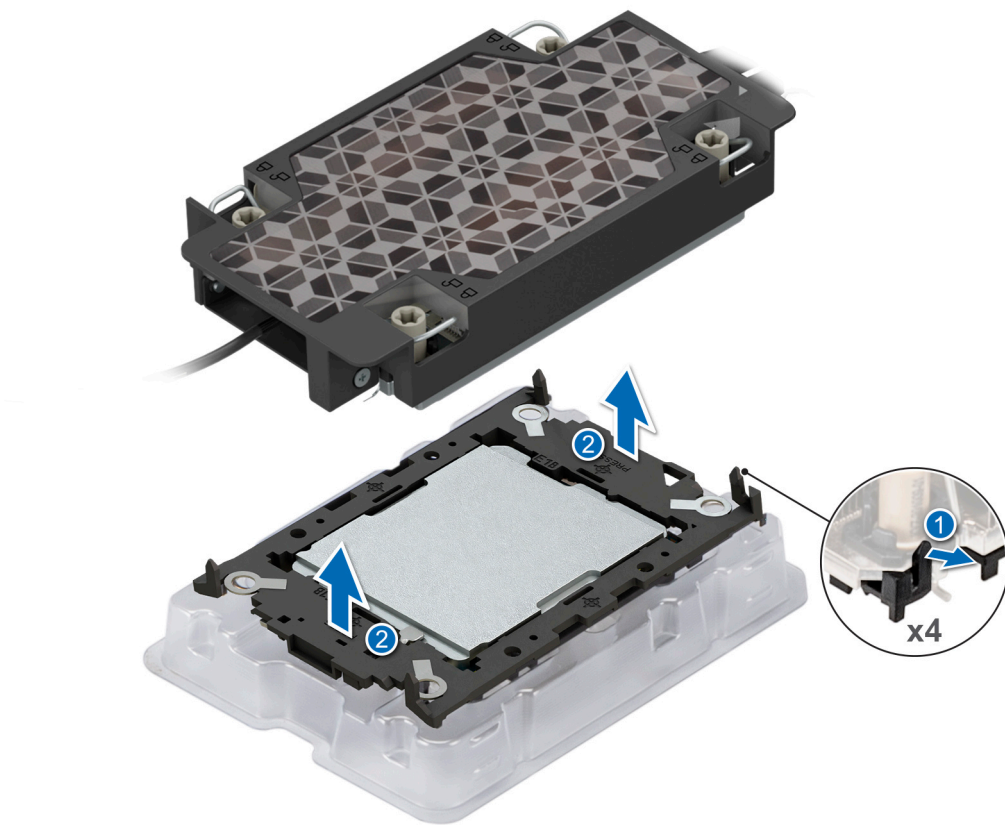


Figure 85. Aligning pin 1 marks of processor with tray

NOTE: Ensure that to return the TIM break lever back to its original position.

4. To remove the plastic retainer from the cold plate, first hold the retaining clip release tab at the pin 1 connector, pull out the tip of the retaining clip release tab, and then lift the retaining clip partially from the cold plate.
5. Repeat the procedure at the remaining three corners of the retaining clip.
6. After all the corners are released from the cold plate, lift the retaining clip from the pin 1 corner of the cold plate.

NOTE: Ensure to follow the same procedure for second processor.

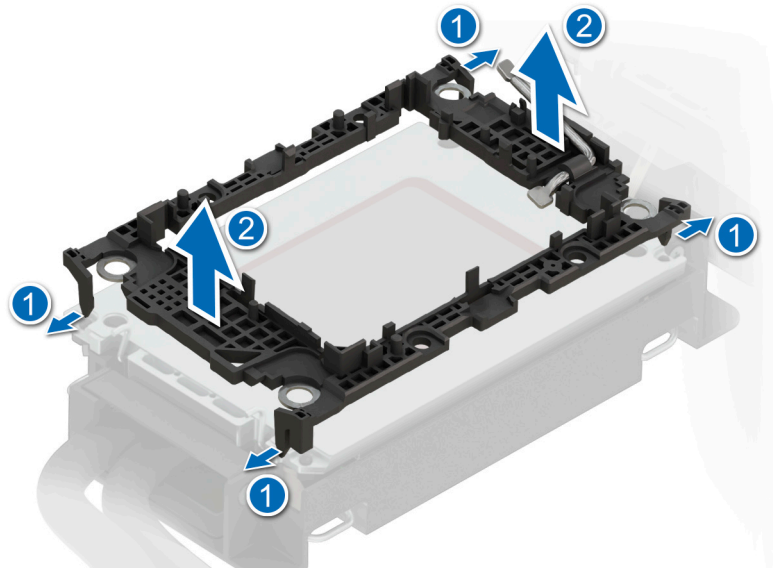


Figure 86. Removing the processor retaining clip

Installing the processor into a liquid cooling cold plate

Prerequisites

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

i **NOTE:** The CPU assembly orientation between CPU 1 and CPU2 is reverse.

Steps

1. Place the processor in the processor tray.
Ensure to install one processor at a time.

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

2. Place the processor retaining clip on top of the processor that is in the processor tray aligning pin 1 indicator on the processor.

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

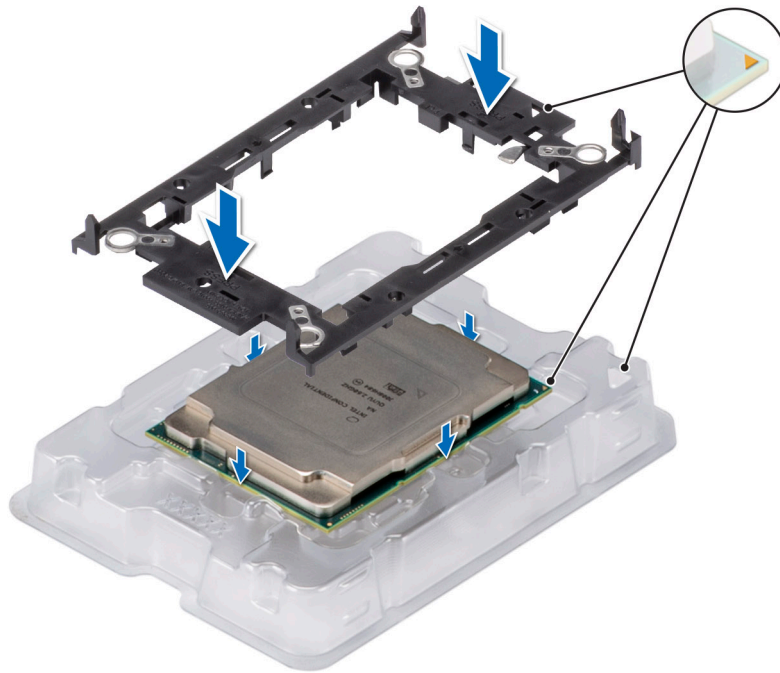


Figure 87. Installing the processor retaining clip

3. Align the processor with processor retaining clip by using your fingers to press the retaining clip on all the four sides until it clicks into place.

i **NOTE:** Ensure that the processor is securely latched to the processor retaining clip.

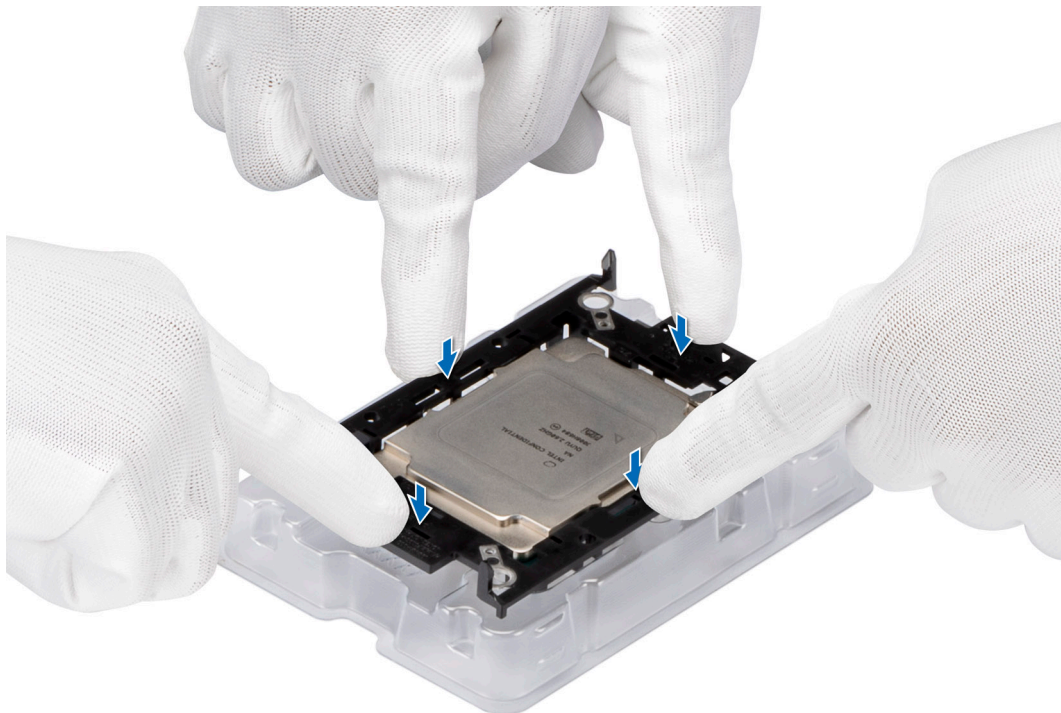


Figure 88. Press the retaining clip on the four sides

4. If you are using an existing cold plate, remove the thermal grease on the cold plate by using a clean lint-free cloth.
5. Use the thermal grease syringe included with your processor kit to apply the grease in a thin spiral on the bottom of the cold plate.

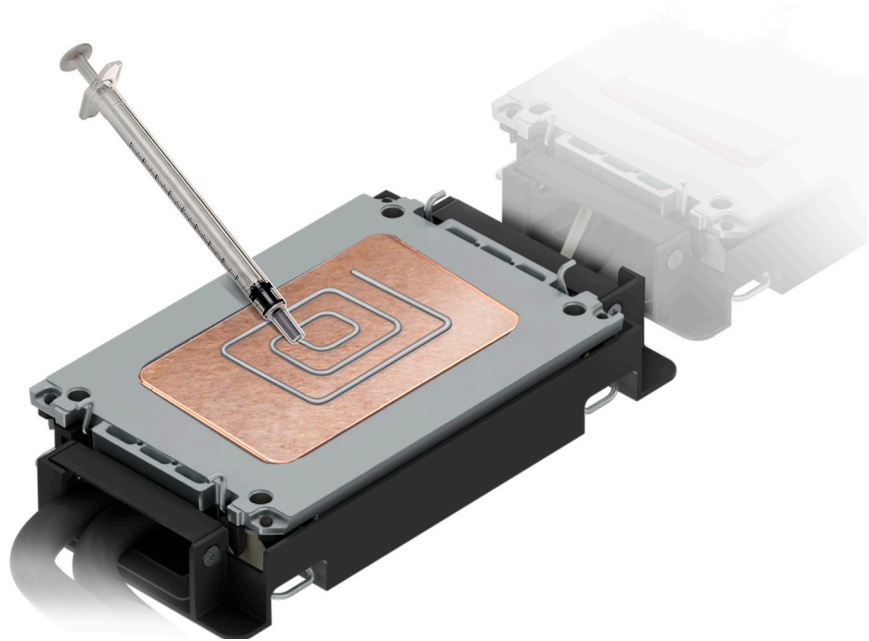


Figure 89. Applying thermal grease

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 of the syringe after you use it.

6. For new cold plate, remove the plastic cover and then Thermal Interface Material (TIM) protective film from the base of cold plate.

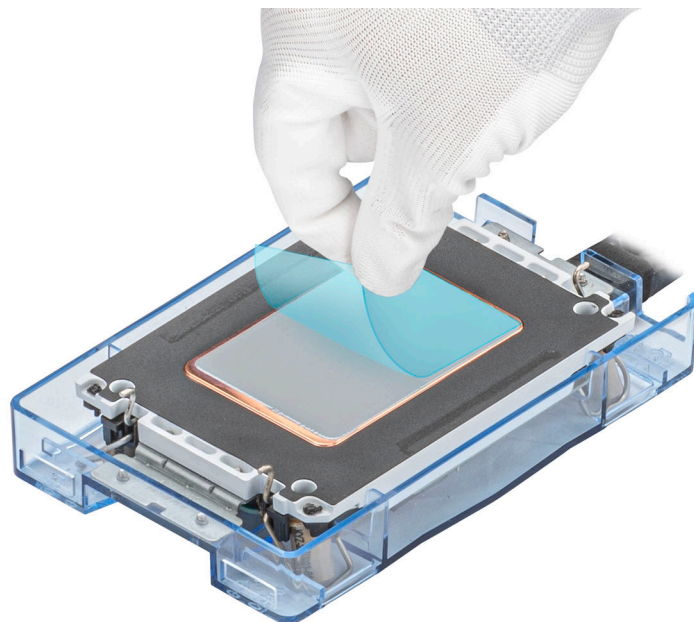


Figure 90. Remove the Thermal Interface Material (TIM) protective film

7. Place the cold plate on the processor and press the cold plate until the retaining clip locks onto the cold plate at all the four corners.

CAUTION: To avoid damaging to the tubes, do not press down on the tubes.

- NOTE:** Ensure that the pin 1 indicator on the cold plate is aligned with the pin 1 indicator on the retaining clip before placing the cold plate onto the processor retaining clip.
- NOTE:** Ensure latching features on processor retaining clip and cold plate are aligned during assembly.

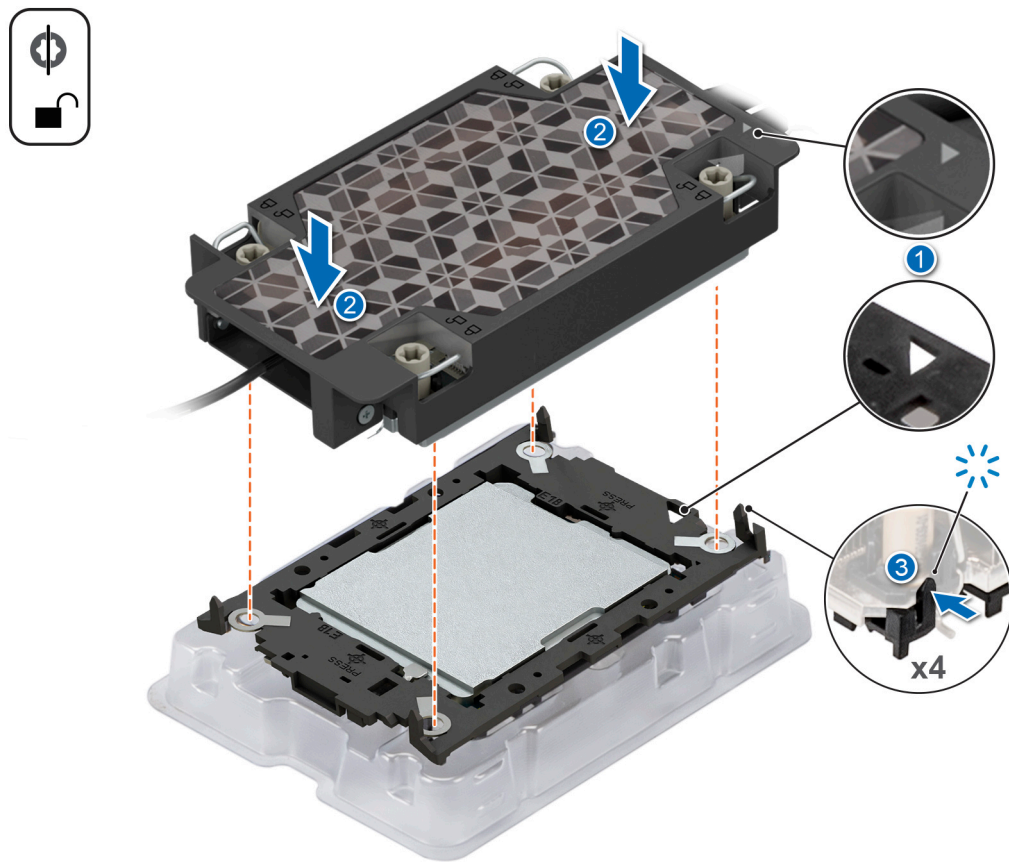


Figure 91. Installing the cold plate onto the processor

Next steps

1. Installing a x4 2.5-inch and x8 E3.s liquid cooling assembly.
2. Follow the procedure listed in [After working inside your system.](#)

Installing a x4 2.5-inch and x8 E3.s liquid cooling assembly

Steps

1. Set the Anti-Tilt wires to the unlocked position on the cold plate (inward position).
2. Align the pin 1 indicator of the cold plate to the system board, and then place the cold plate assembly unto the processor sockets.

CAUTION: To avoid damaging to the tubes, do not press down on the tubes.

- NOTE:** Ensure that the processor and cold plate is held parallel to the system board to prevent damaging the components.

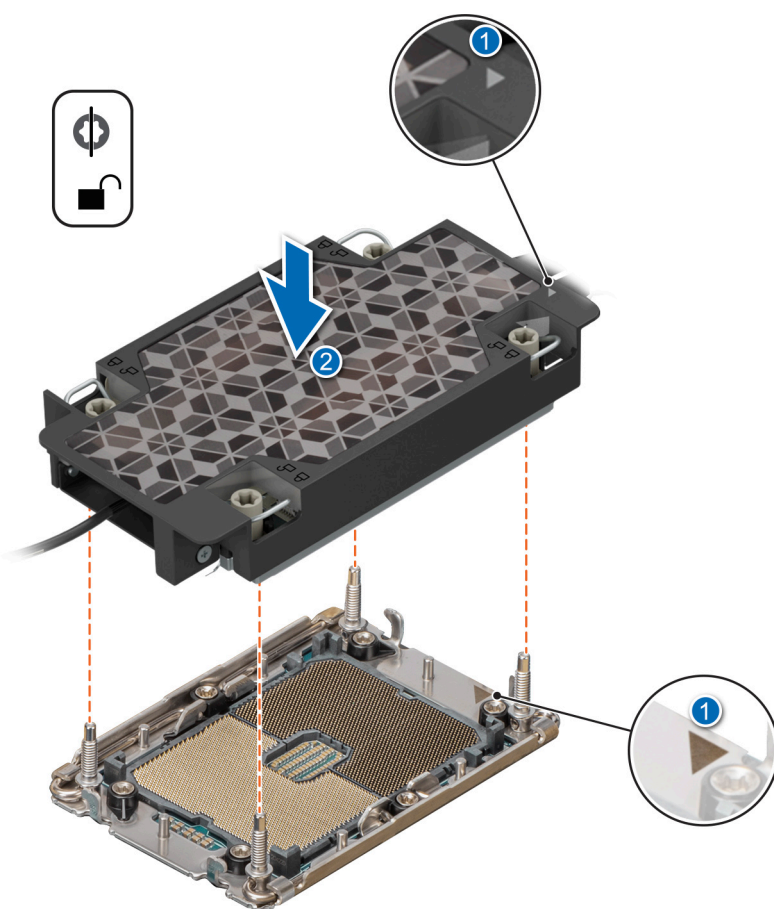


Figure 92. Installing the processor and liquid cooling cold plate

3. Set the Anti-Tilt wires to the locked position (outward position), and then using the Torx #T30 screwdriver, tighten the screws on each cold plate, one at a time, in the order below:
 - a. Tighten the first screw.
 - b. Tighten the screw diagonally opposite to the screw you tighten first.
 - c. Repeat the procedure for the remaining two screws.
4. Place the liquid cooling pipe down into the cutout features on the rear wall and tighten two screws to secure the liquid cooling cage front cover.
5. For x4 2.5-inch liquid cooling assembly, insert the liquid cooling cage into the hard drive cage until it's secure by the latch. For x8 E3.s liquid cooling assembly, insert the liquid cooling cage into the hard drive cage and secure with one screw.
6. Reconnect the leak sensor connector cable back to the system board.

i **NOTE:** It is critical to ensure the sensor cable is connected.

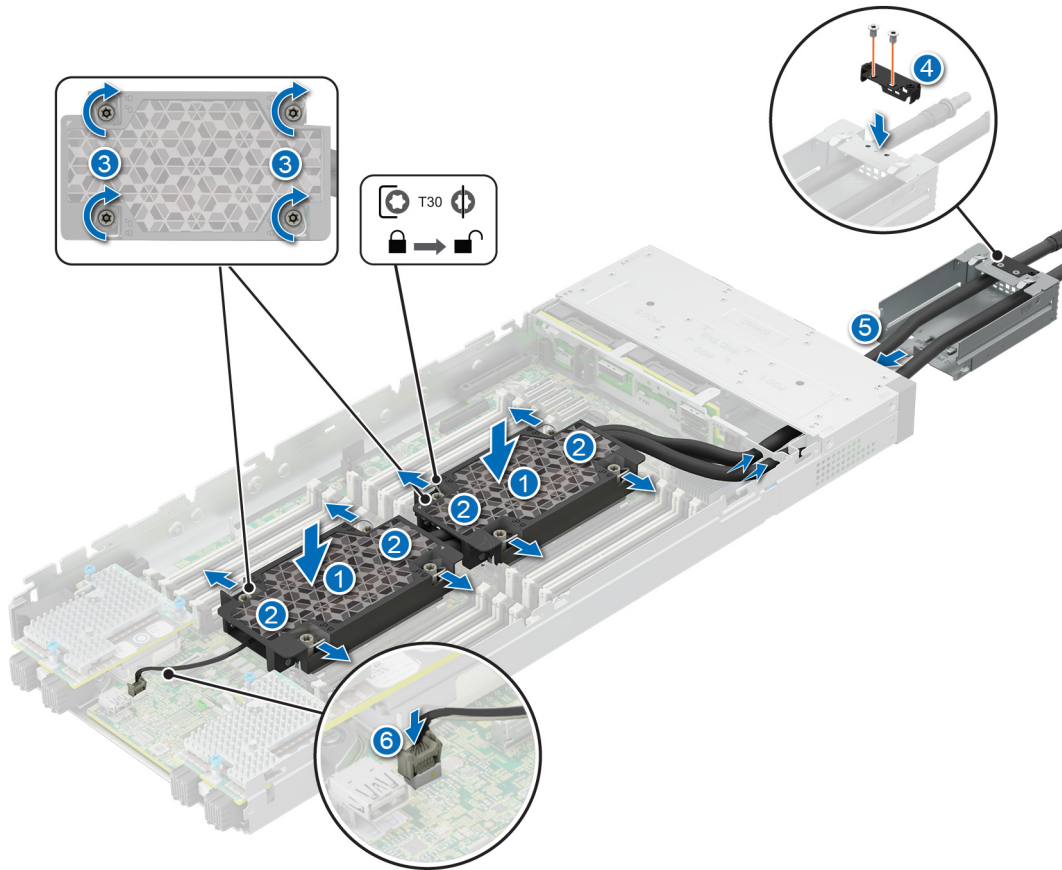


Figure 93. Installing a x4 2.5-inch liquid cooling assembly

NOTE: It is critical to ensure the sensor cable is connected.

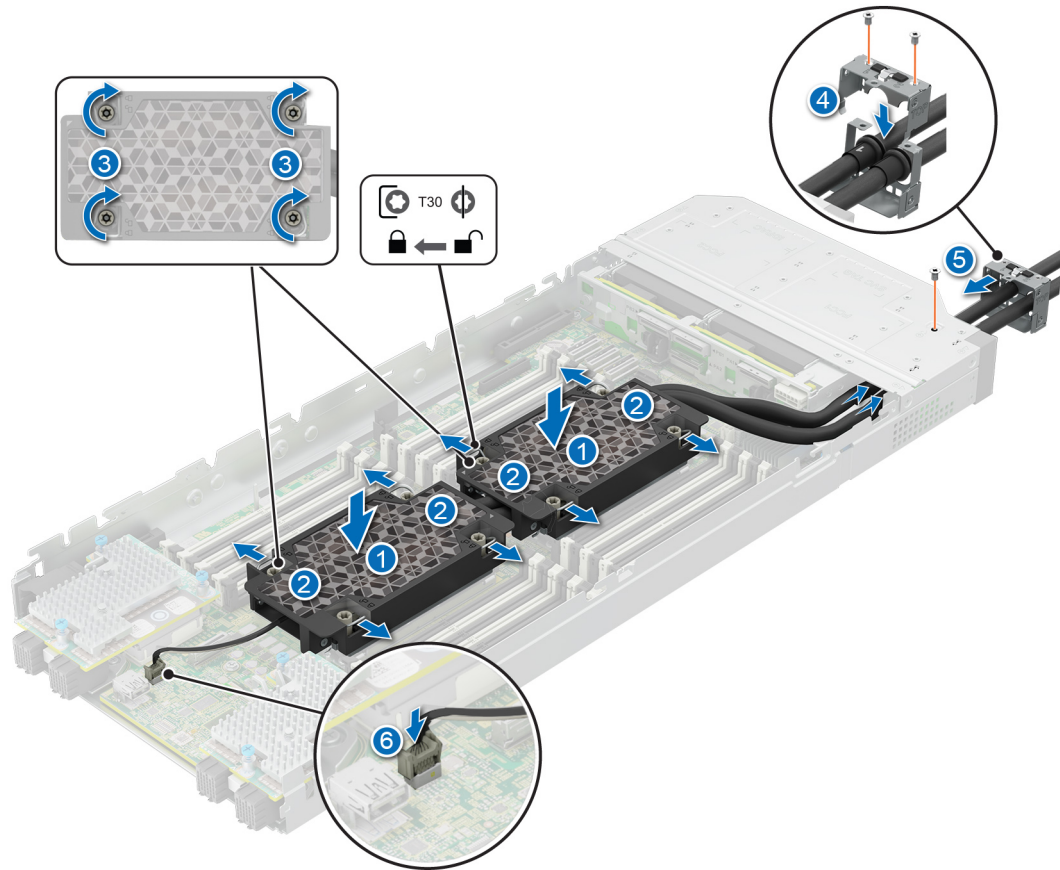


Figure 94. Installing a x8 E3.s liquid cooling assembly

PERC card

Your system includes dedicated slots on the system board for PERC cards.

Removing the PERC card

Prerequisites

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

Steps

1. Pull the blue pull tag to lift the lever up on the PERC card.
2. Holding the blue pull tag, lift the PERC card out of the system.

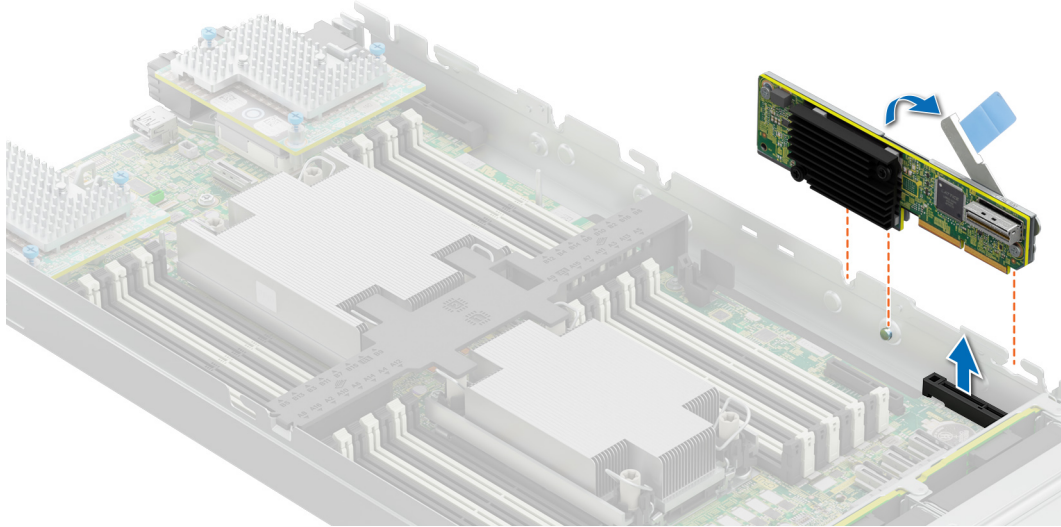


Figure 95. Removing the PERC card (HBA350i MX)

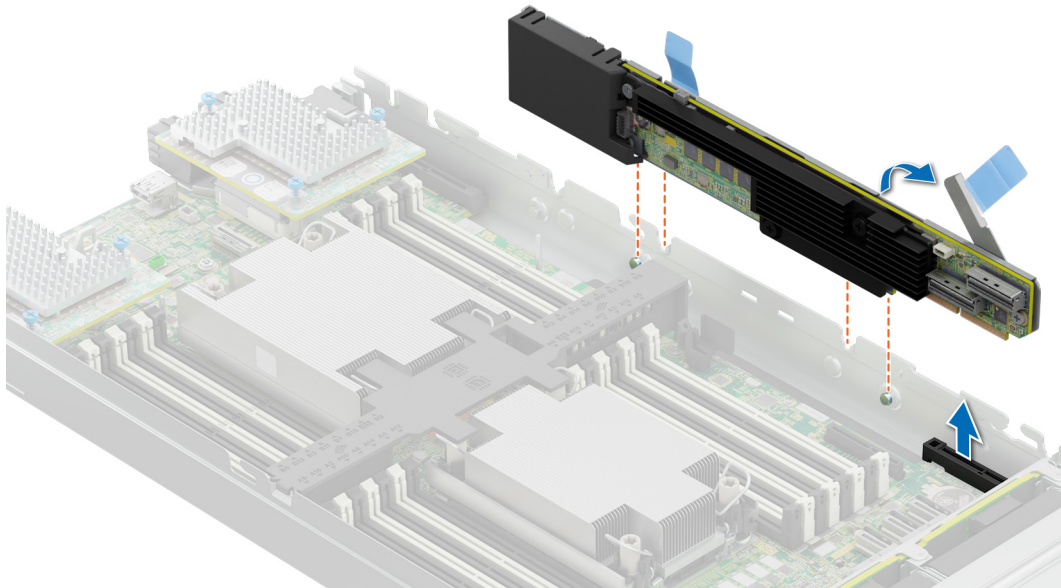


Figure 96. Removing the PERC card (H965i MX)

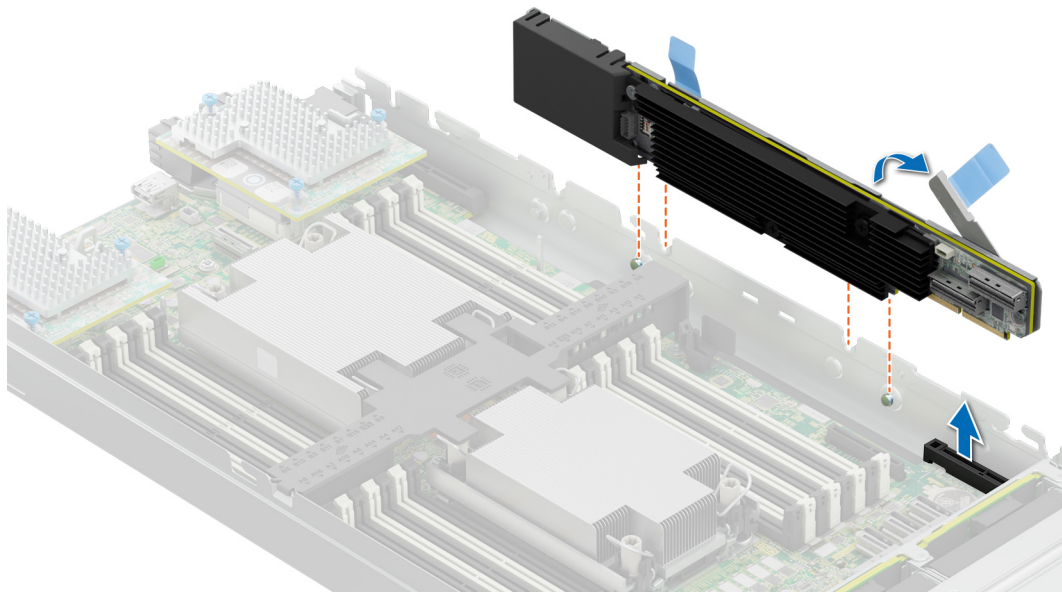


Figure 97. Removing the PERC card (H755 MX)

Next steps

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

Installing the PERC card

Prerequisites

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

Steps

1. Pull the blue pull tag to raise the lever up on the PERC card.
2. Align the connector on the PERC card with the connector on the system board.
3. Align the guides on the PERC card with the slots on the system.
4. Press the PERC card firmly until it is fully seated.
5. Close the lever on the PERC card.

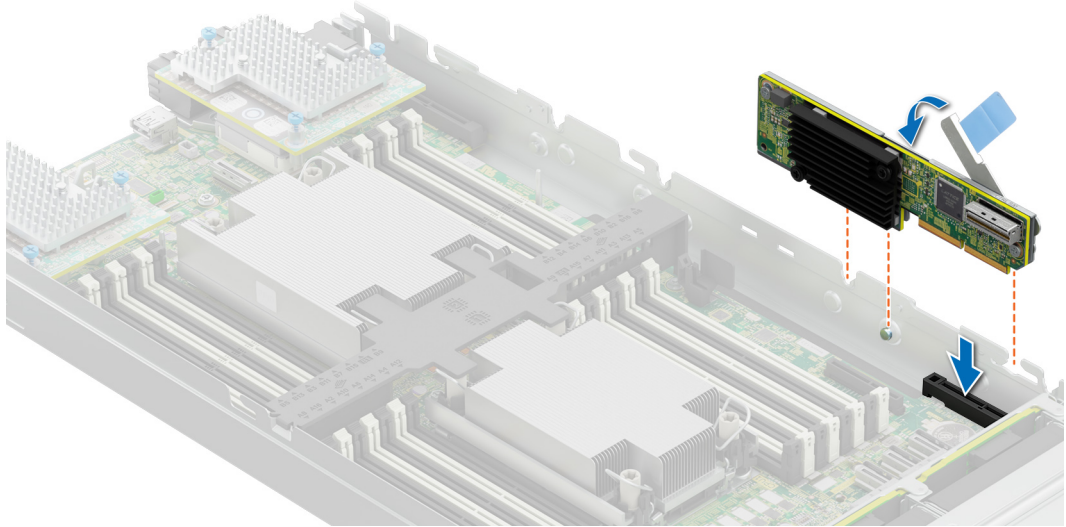


Figure 98. Installing the PERC card (HBA350i MX)

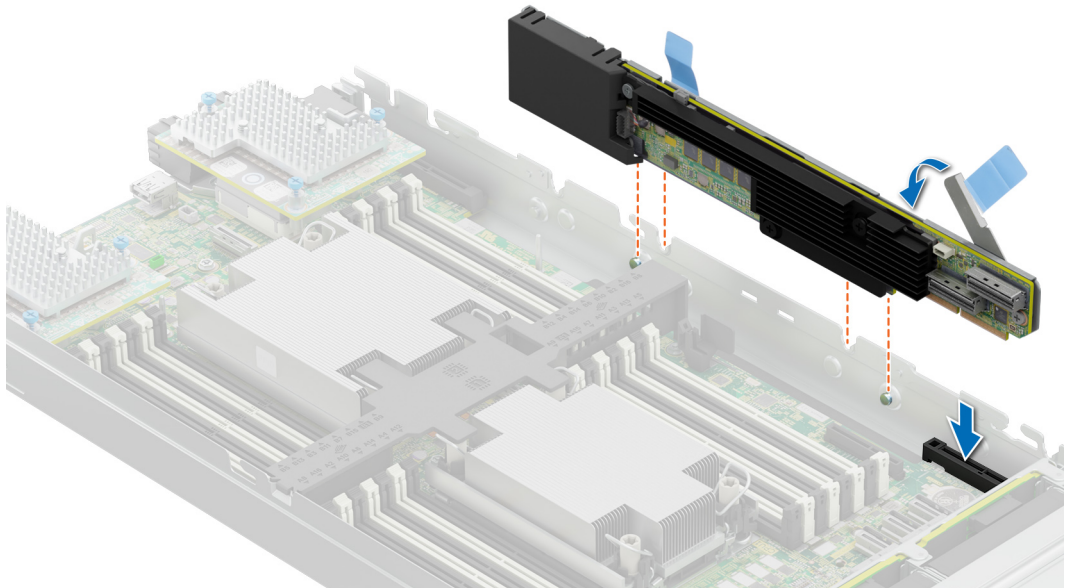


Figure 99. Installing the PERC card (H965i MX)

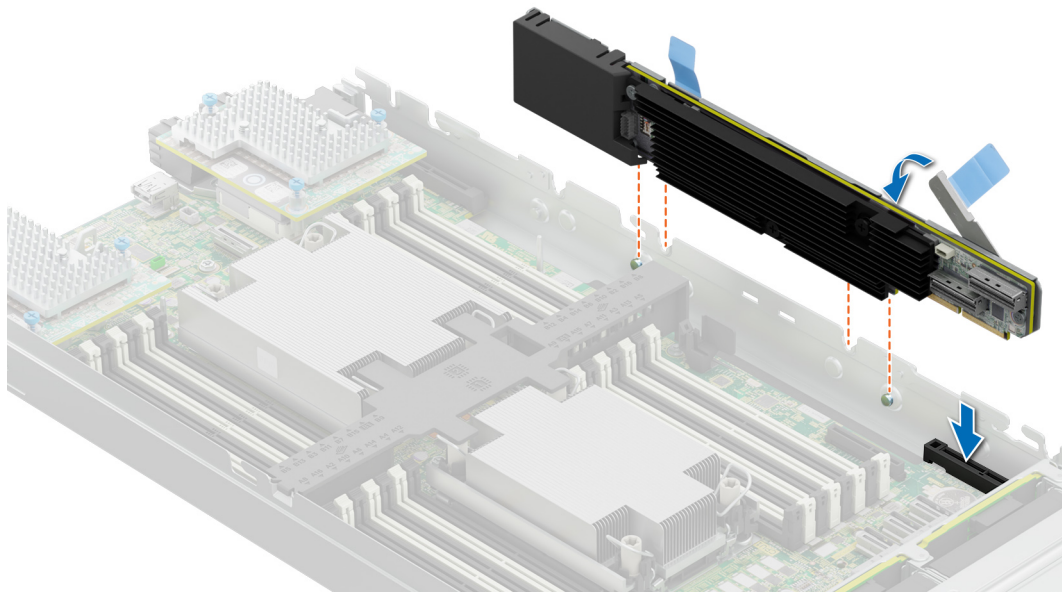


Figure 100. Installing the PERC card (H755 MX)

Next steps

1. Connect the cable to the PERC card.
2. Follow the procedure listed in [After working inside your system](#).

M.2 SSD module

Removing the M.2 BOSS card

Prerequisites

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

Steps

Holding the blue tag, lift the M.2 BOSS card out of the system.

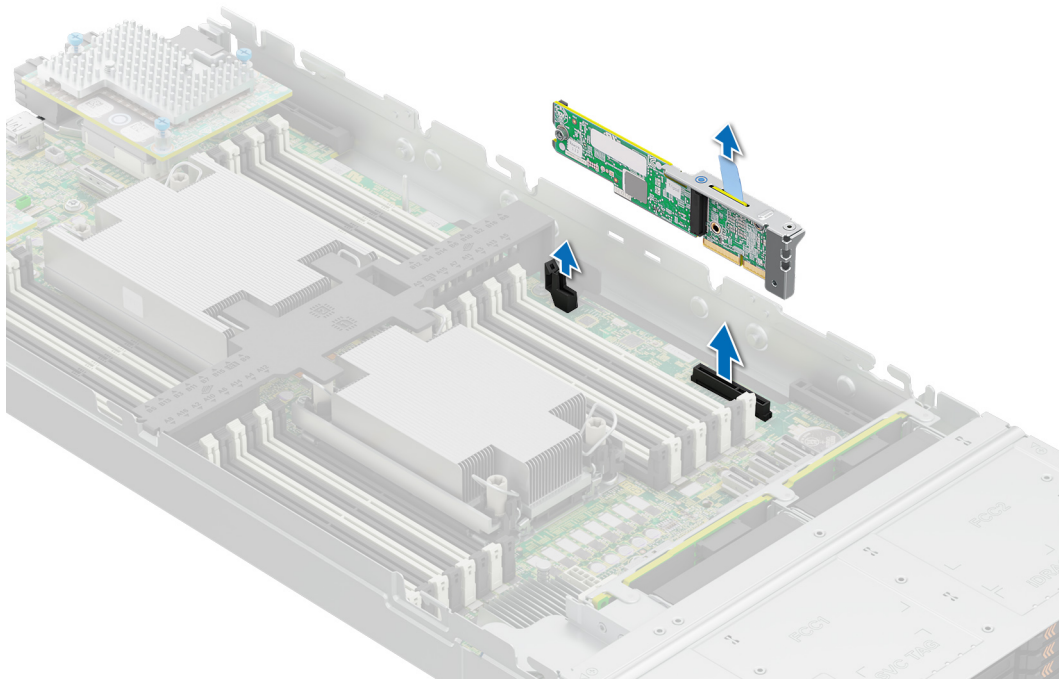


Figure 101. Removing the M.2 BOSS card

Next steps

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

Installing the M.2 BOSS card

Prerequisites

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

Steps

1. Align the M.2 BOSS card connector with the connectors on the system board and the guide on the M.2 BOSS card with the guiding slot on the system board.
2. Press the touch point on the M.2 BOSS card firmly until it is fully seated.

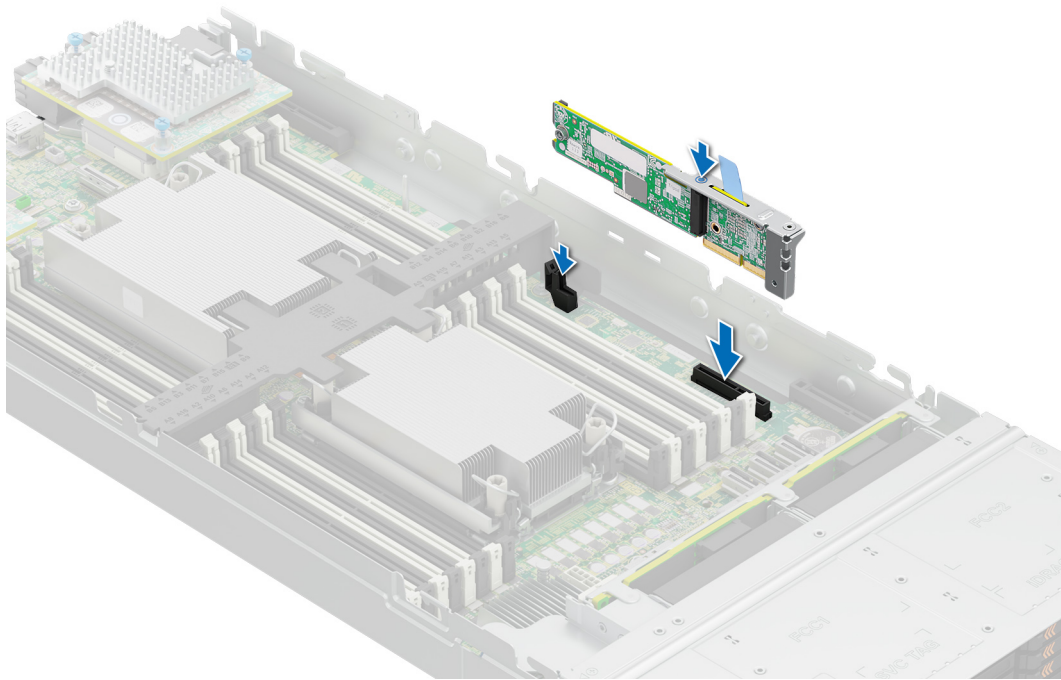


Figure 102. Installing the M.2 BOSS card

Next steps

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

Removing the M.2 SSD module

Prerequisites

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

Steps

1. Using the Phillips #1 screwdriver, remove the screws that secure the M.2 SSD module to the M.2 BOSS card.
2. Pull the M.2 SSD module to remove it from the M.2 BOSS card.

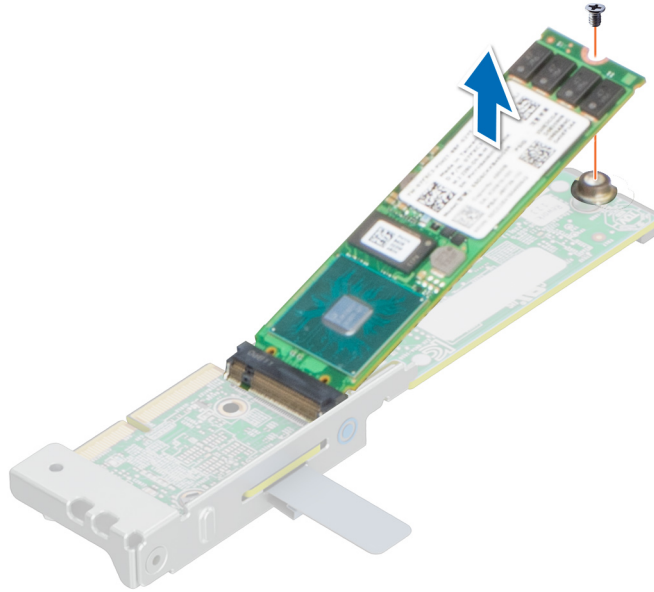


Figure 103. Removing the M.2 SSD module

Next steps

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

Installing the M.2 SSD module

Prerequisites

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

Steps

1. Align the M.2 SSD module at an angle with the M.2 BOSS card connector.
2. Insert the M.2 SSD module firmly until it is fully seated in the M.2 BOSS card connector.
3. Using the Phillips #1 screwdriver, secure the M.2 SSD module on the M.2 BOSS card.

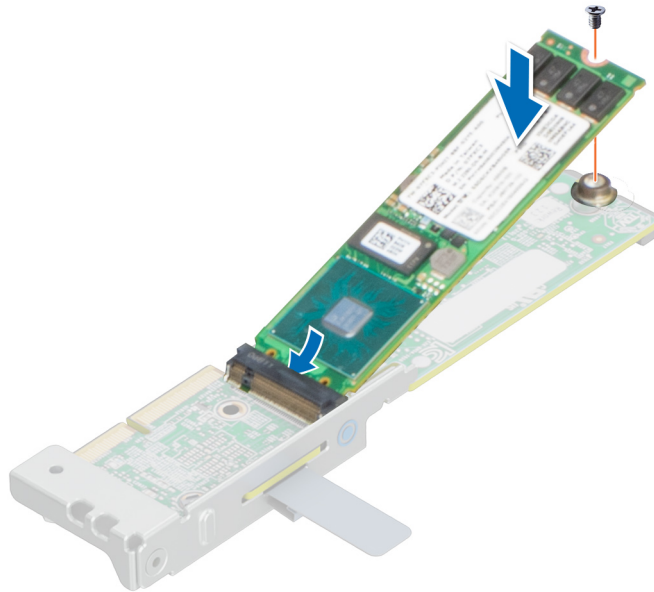


Figure 104. Installing the M.2 SSD module

Next steps

1. [Install the M.2 SSD module.](#)
2. Follow the procedure listed in [After working inside your system.](#)

Mezzanine cards

The PowerEdge MX760c system supports:

- One x16 PCIe Gen4 slot for PERC – connected to processor 1
- One x16 PCIe Gen4 slot for Mezz A – connected to processor 1
- One x16 PCIe Gen5 slot for Mezz B – connected to processor 2
- One x16 PCIe Gen4 slot for mini-Mezz card – connected to processor 2

Mezzanine card installation guidelines

The following table describes the supported mezzanine cards:

Table 64. Mezzanine card configurations

Mezzanine card category	Description	Slot priority	Maximum cards (FI)
Ethernet Mezz	Broadcom PCIe Gen4 Quad-Port 25Gb NIC	Mezzanine slot A or B (populate A first)	2
	QLogic PCIe Gen3 QL41262 DP 25Gb CNA	Mezzanine slot A or B (populate A first)	2
	Intel PCIe Gen3 DP 25Gb CNA	Mezzanine slot A or B (populate A first)	2
Fibre channel HBAs	Emulex (FC32 DP)	Mezzanine slot C (mini-Mezz slot)	1

Table 64. Mezzanine card configurations (continued)

Mezzanine card category	Description	Slot priority	Maximum cards (FI)
	QLogic QME2742 (FC32 DP)	Mezzanine slot C (mini-Mezz slot)	1

Removing the Mezzanine card

Prerequisites

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

Steps

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

NOTE: To prevent damage to Mezzanine card, you must hold the card only by its edges.

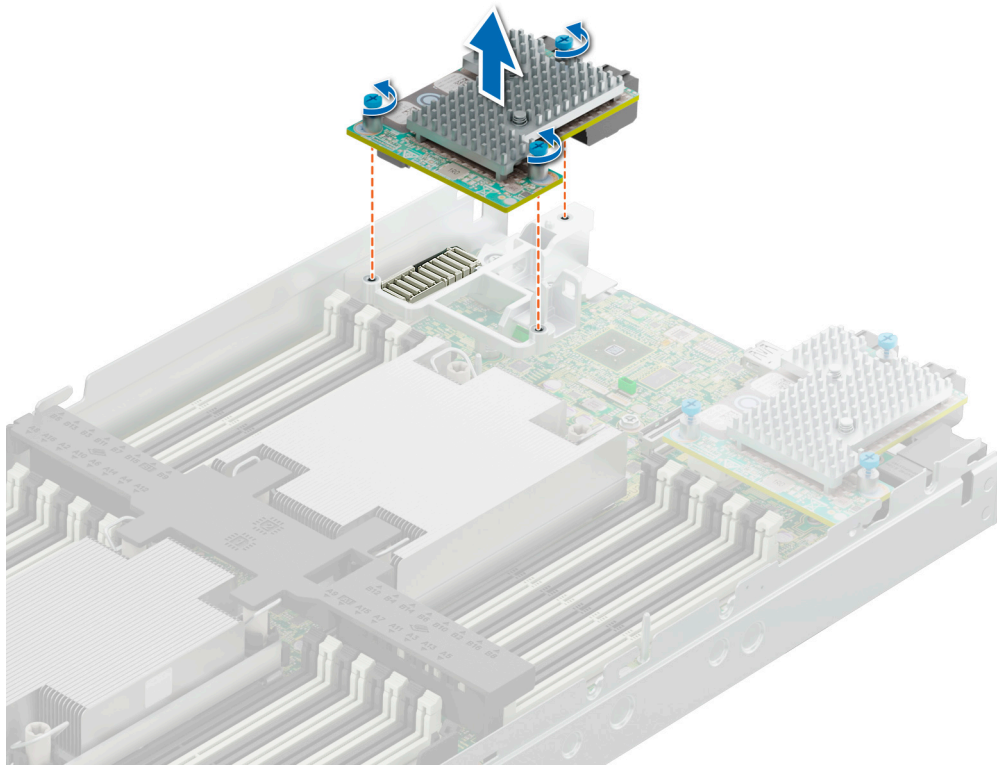


Figure 105. Removing the Mezzanine-A card

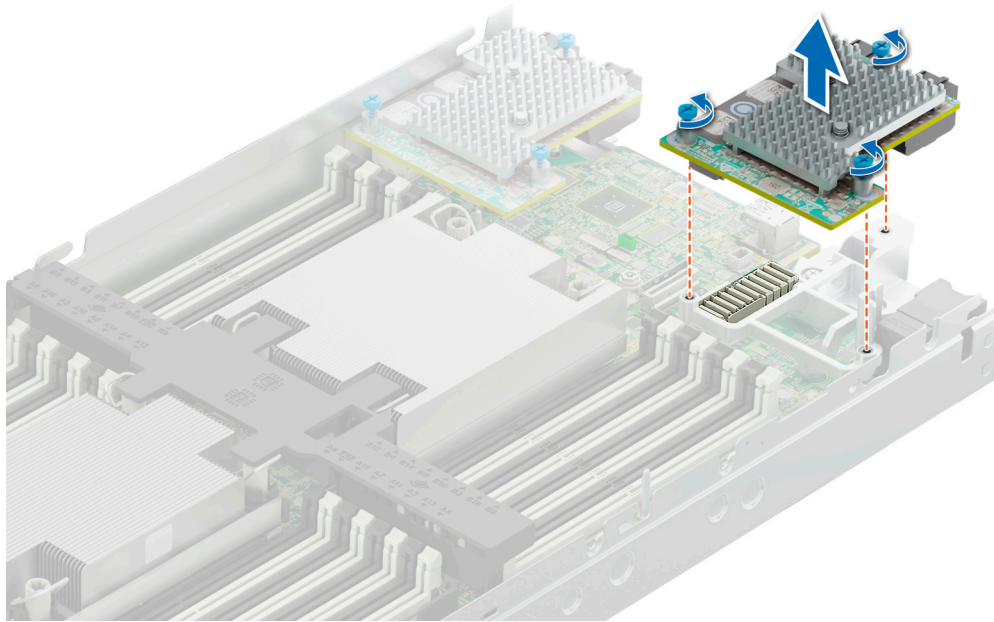


Figure 106. Removing the Mezzanine-B card

Next steps

1. [Install the mezzanine card.](#)
2. Follow the procedure listed in [After working inside your system.](#)

Installing the Mezzanine card

Prerequisites

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

i **NOTE:** Mezzanine B card is supported only on dual-processor configuration.

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 touch point firmly until it is fully seated.
3. Using the Phillips #2 screwdriver, tighten the captive screws on the Mezzanine card.

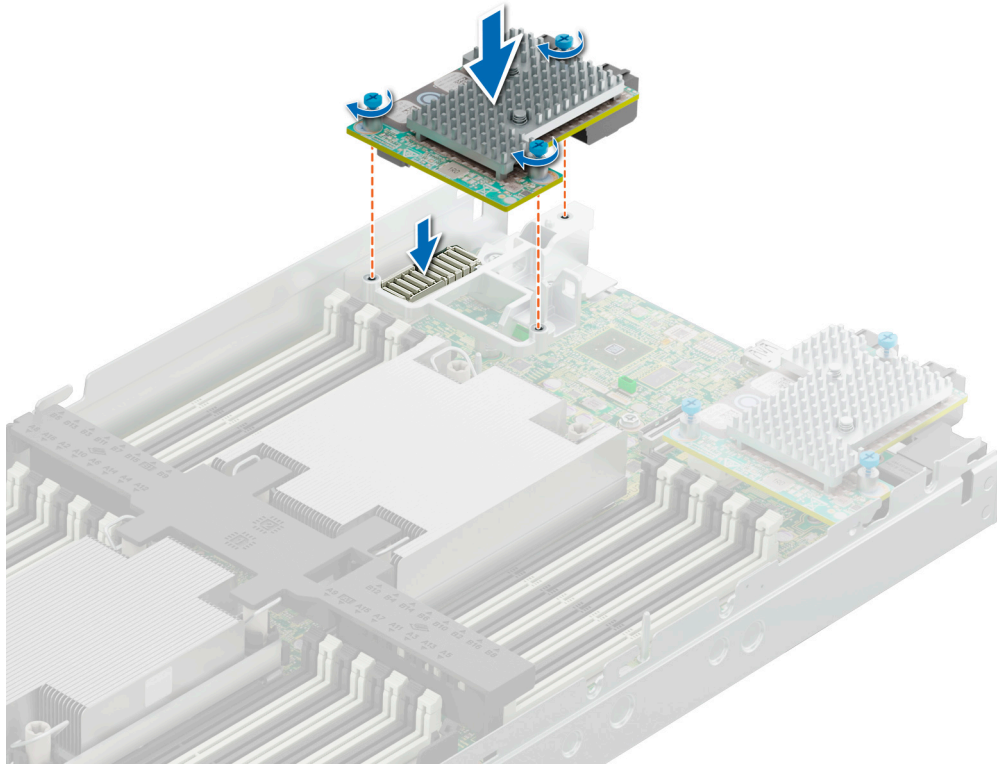


Figure 107. Installing the Mezzanine-A card

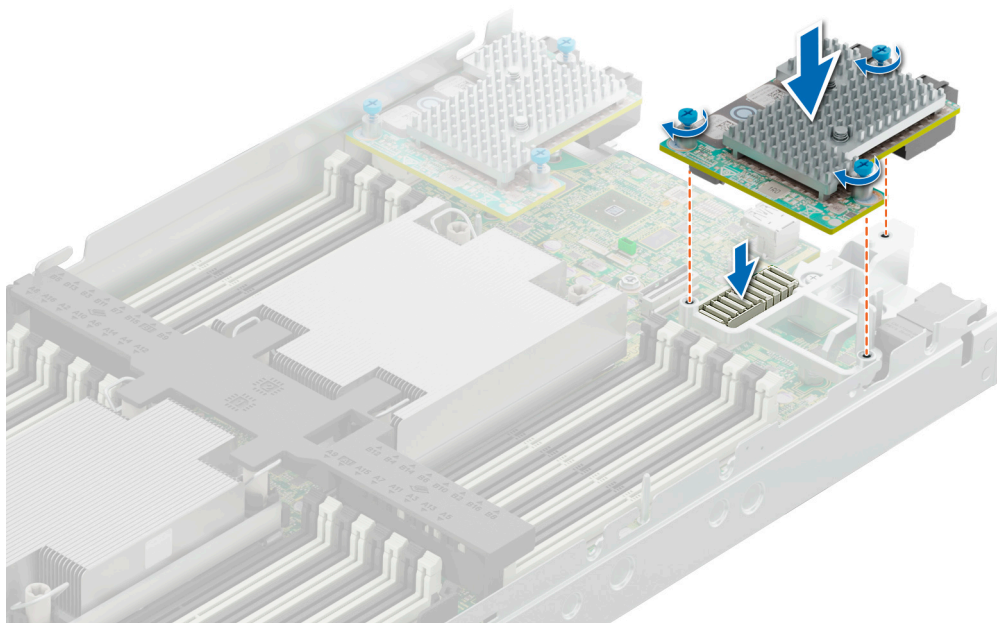


Figure 108. Installing the Mezzanine-B card

Next steps

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

Removing the mini Mezzanine card blank

Prerequisites

CAUTION: To ensure proper system cooling, the mini Mezzanine blank must be installed in the mini Mezzanine socket.

NOTE: The removal of the blank is recommended only if you intend to install a mini Mezzanine card in the socket.

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

Steps

Lift the mini Mezzanine card blank from the slot to remove it from the system.

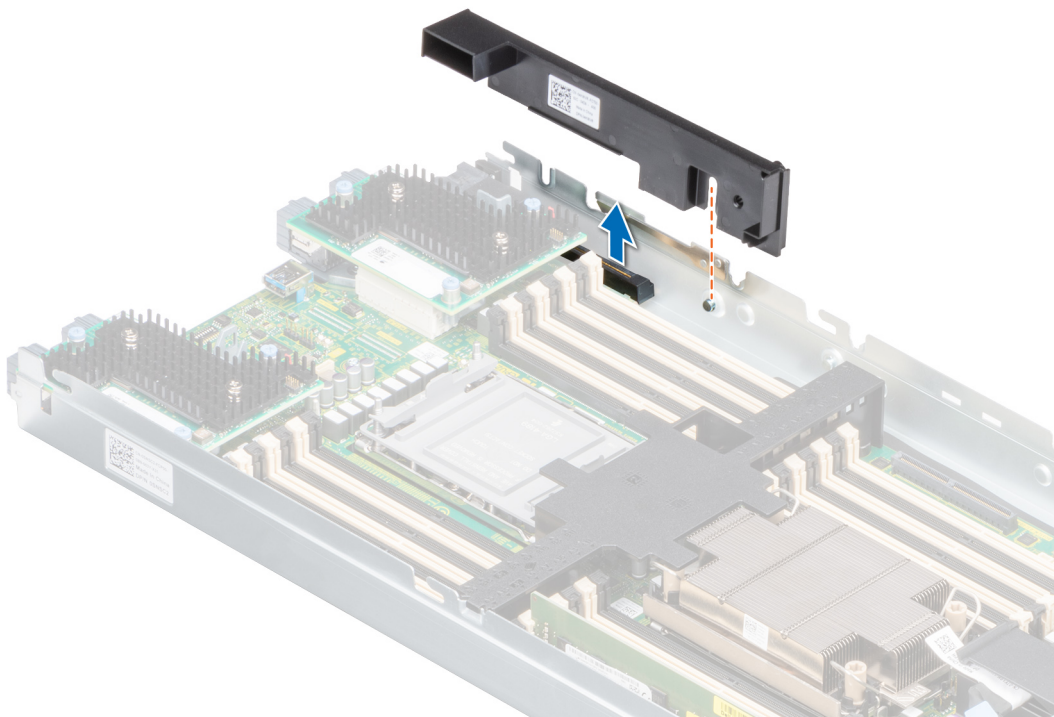


Figure 109. Removing the mini Mezzanine card blank

Next steps

Follow the procedure listed in [After working inside your system](#).

Installing the mini Mezzanine card blank

Prerequisites

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

Steps

1. Align the slot on the blank with the guiding pin on the system.
2. Insert and press the blank firmly until it is fully seated.

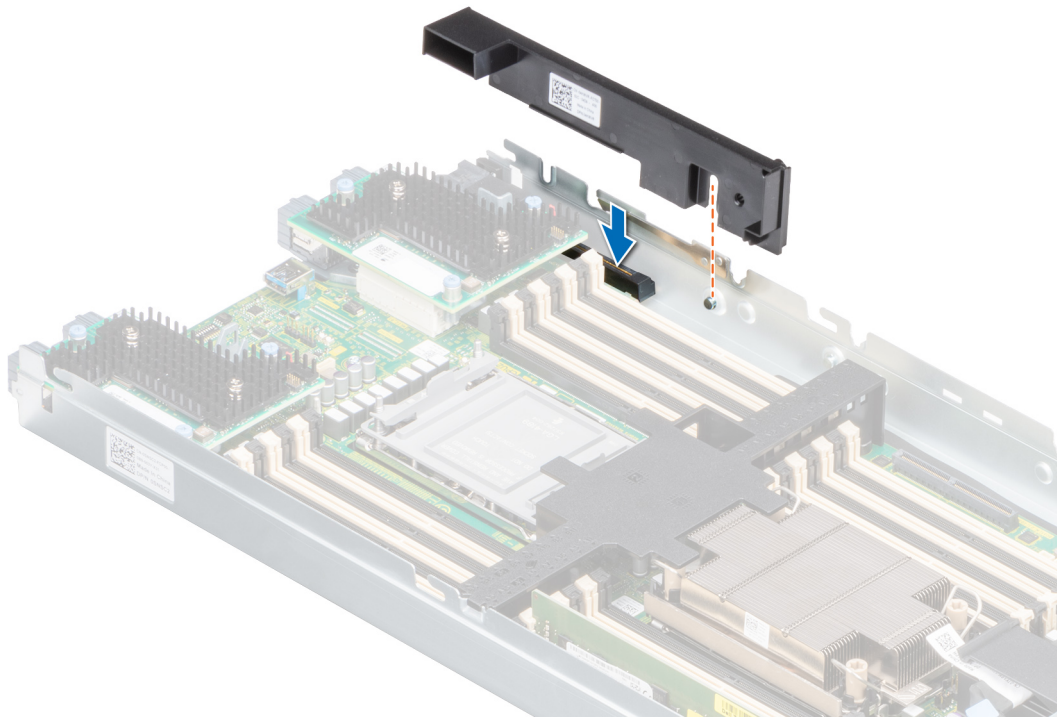


Figure 110. Installing the mini Mezzanine card blank

Next steps

Follow the procedure listed in [After working inside your system](#).

Removing the mini Mezzanine card

Prerequisites

CAUTION: To ensure proper system cooling, mini Mezzanine blank must be installed in the mini Mezzanine socket.

NOTE: It is recommended to remove the mini Mezzanine blank only if you intend to install mini Mezzanine card in the sockets.

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

Steps

1. Pull the blue pull tag to lift the lever up of the mini Mezzanine card.
2. Holding the lever and the edge of the mini Mezzanine card, lift the mini Mezzanine card from the system.

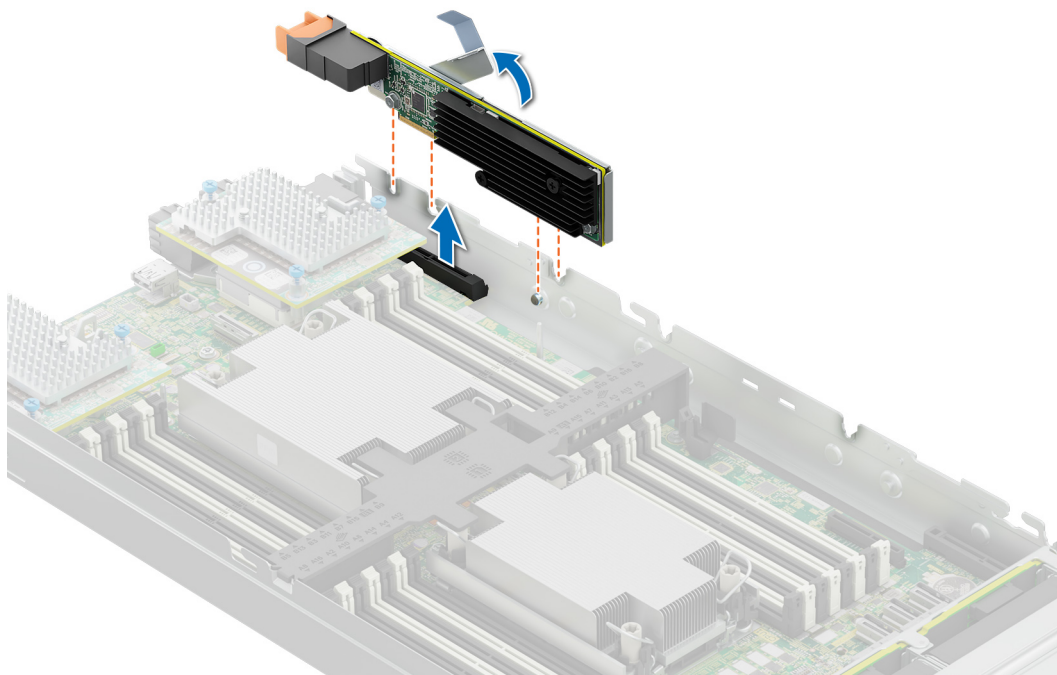


Figure 111. Removing the mini Mezzanine card

NOTE: Install the connector cap on the I/O connector of the mini Mezzanine card, when not installed on system board.

Next steps

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

Installing the mini Mezzanine card

Prerequisites

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

NOTE: The mini Mezzanine card is supported only on systems with two processors.

Steps

1. Remove the connector cap on the I/O connector of the mini Mezzanine card.
2. Pull the blue pull tag to raise the lever on the mini Mezzanine card.
3. Align the mini Mezzanine card connector with the connector on the system board.
4. Insert the mini Mezzanine card firmly until it is fully seated.

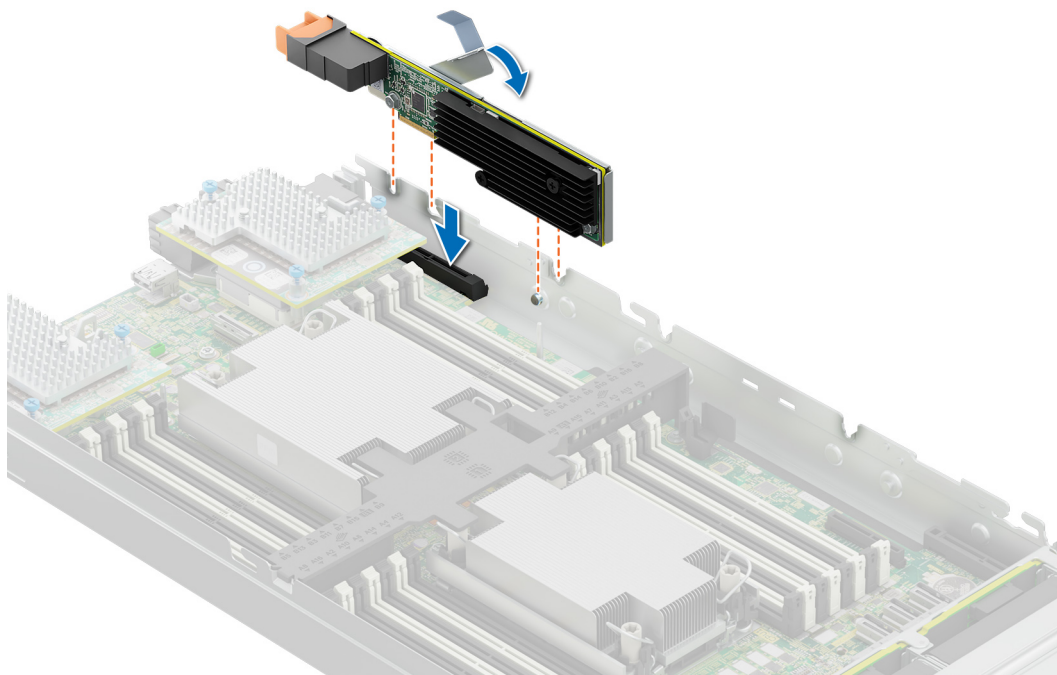


Figure 112. Installing the mini Mezzanine card

5. Close the lever on the mini Mezzanine card.

Next steps

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

Optional internal USB memory key

Replacing the optional internal USB memory key

Prerequisites

CAUTION: To avoid interference with other components in the server, the maximum permissible dimensions of the USB memory key: 15.9 mm width x 57.15 mm length x 7.9 mm height.

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

Steps

1. Locate the USB port or USB memory key on the system board.
2. If installed, remove the USB memory key from the USB port.

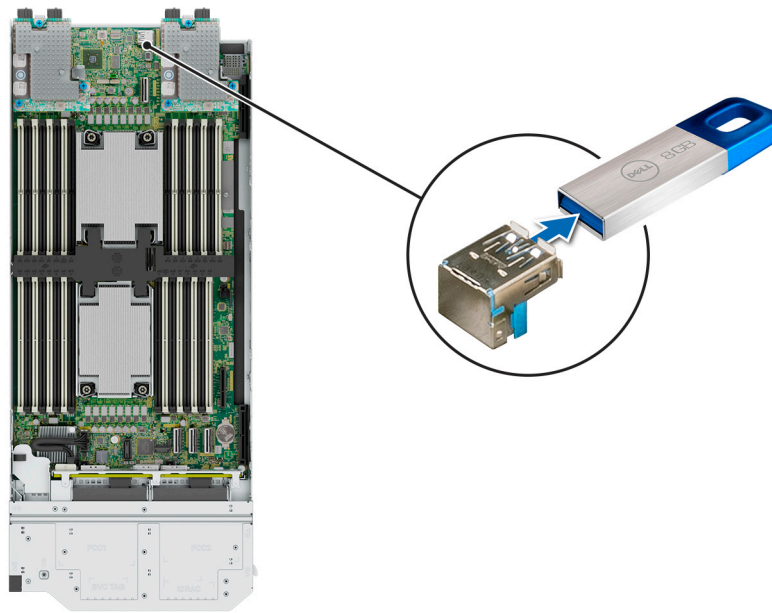


Figure 113. Removing the internal USB memory key

3. Insert the replacement USB memory key into the USB port.

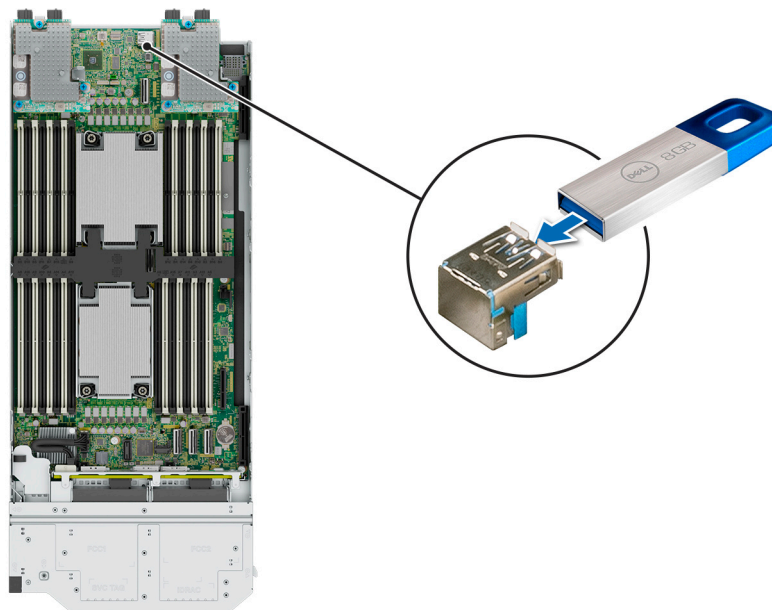


Figure 114. Installing the internal USB memory key

Next steps

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

System battery

This is a service technician replaceable part only.

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 that is recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. See the Safety instructions that came with your system for more information.

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

Steps

1. To remove the battery:
 - a. Use a plastic scribe to pry out the system battery.

⚠ CAUTION: To avoid damage to the battery connector, you must firmly support the connector while installing or removing a battery.

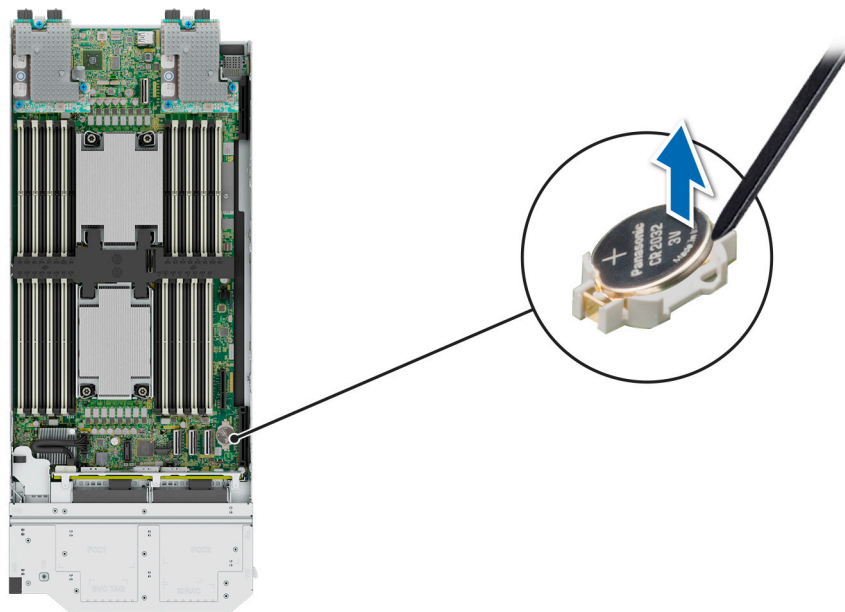


Figure 115. Removing the system battery

2. To install a new system battery:
 - a. Hold the battery with the positive side facing up and slide it under the securing tabs.
 - b. Press the battery into the connector until it snaps into place.

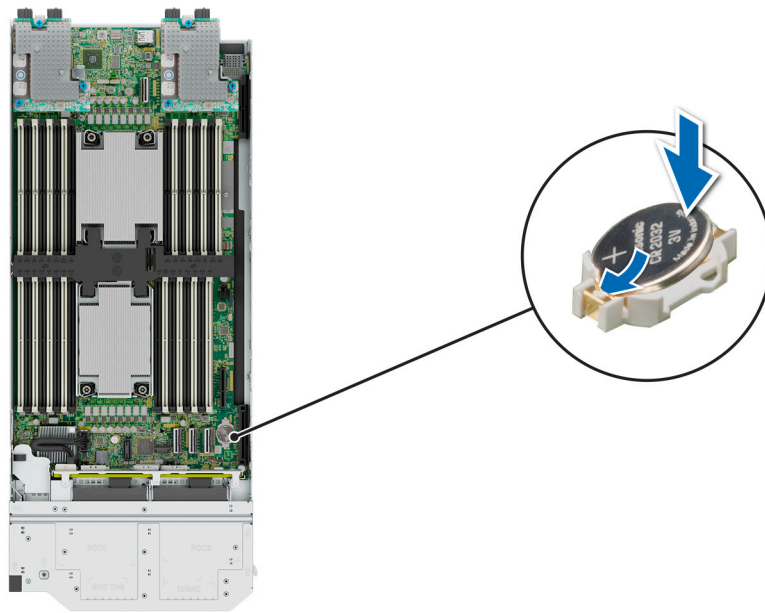


Figure 116. Installing the system battery

Next steps

1. Follow the procedure listed in [After working inside your system](#).
2. Confirm that the battery is operating properly, by performing the following steps:
 - a. Enter the System Setup, while booting, by pressing F2.
 - b. Enter the correct time and date in the System Setup **Time** and **Date** fields.
 - c. **Exit** the System Setup.
 - d. To test the newly installed battery, remove the system from the enclosure for at least an hour.
 - e. Reinstall the system into the enclosure after an hour.
 - f. Enter the System Setup and if the time and date are still incorrect, see [getting help](#) section.

System board

This is a service technician replaceable part only.

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 system or program before you can access the encrypted data on your drives.

1. Follow the safety guidelines listed in the [Safety instructions](#).
 2. Follow the procedure listed in [Before working inside your system](#)
 3. Remove the following components:
 - a. [Air shroud](#)
 - b. [Memory modules](#)
 - c. [Processor and heat sink module](#)
 - d. [Drives](#)
- NOTE:** Note the number of each drive and temporarily label them before you remove the drive so that you can reinstall them in the same location.

- e. Drive backplane
- f. Drive cage
- g. PERC card
- h. Mezzanine cards
- i. Mini Mezzanine cards
- j. Internal USB key

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.

- k. Disconnect all the cables from the system board.

CAUTION: Take care not to damage the system identification button while removing the system board from the system.

Steps

1. Using the Phillips #2 screwdriver, remove the screws that secure the Mezz card brackets to the system board.
2. Holding the brackets by the edges, lift the brackets out of the system.
3. Using the Phillips #2 screwdriver, remove the screws that secure the system board to the chassis.
4. Lift the system board out of the chassis.

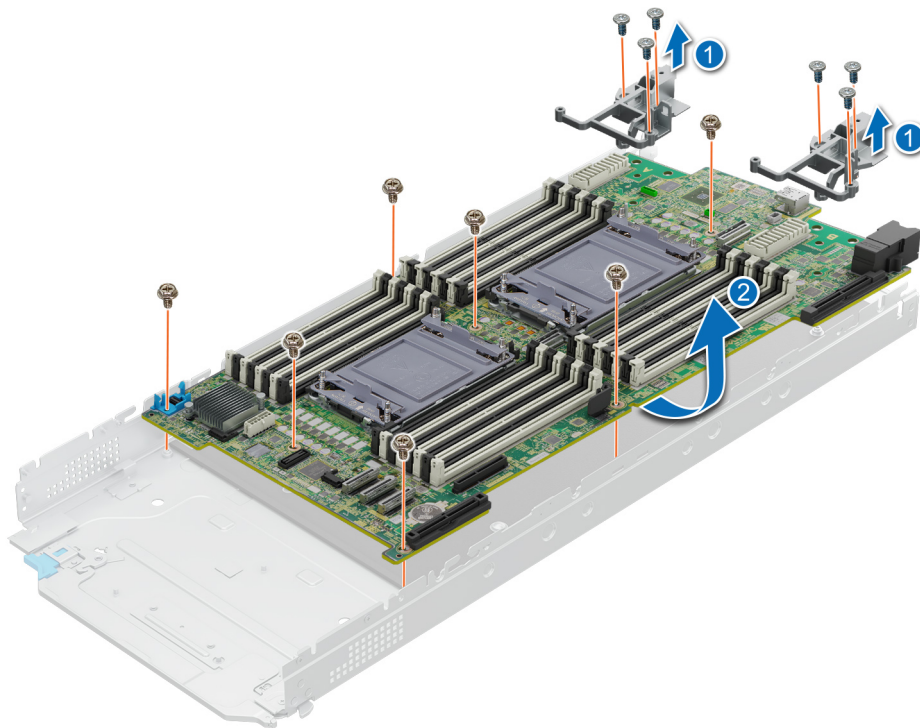


Figure 117. Removing the system board

Next steps

1. Replace the system board.

Installing the system board

Prerequisites

NOTE: Before replacing the system board, replace the old iDRAC MAC address label in the Information tag with the iDRAC MAC address label of the replacement system board.

1. Follow the safety guidelines listed in the [Safety instructions](#).
2. Follow the procedure listed in [Before working inside your system](#)
3. If you are replacing the system board, remove all the components that are listed in the [Remove the system board](#) section.

Steps

1. Unpack the new system board assembly.

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

CAUTION: Take care not to damage the system identification button while placing the system board into the chassis.

2. Holding the system board by its edges, lower the system board into the chassis.

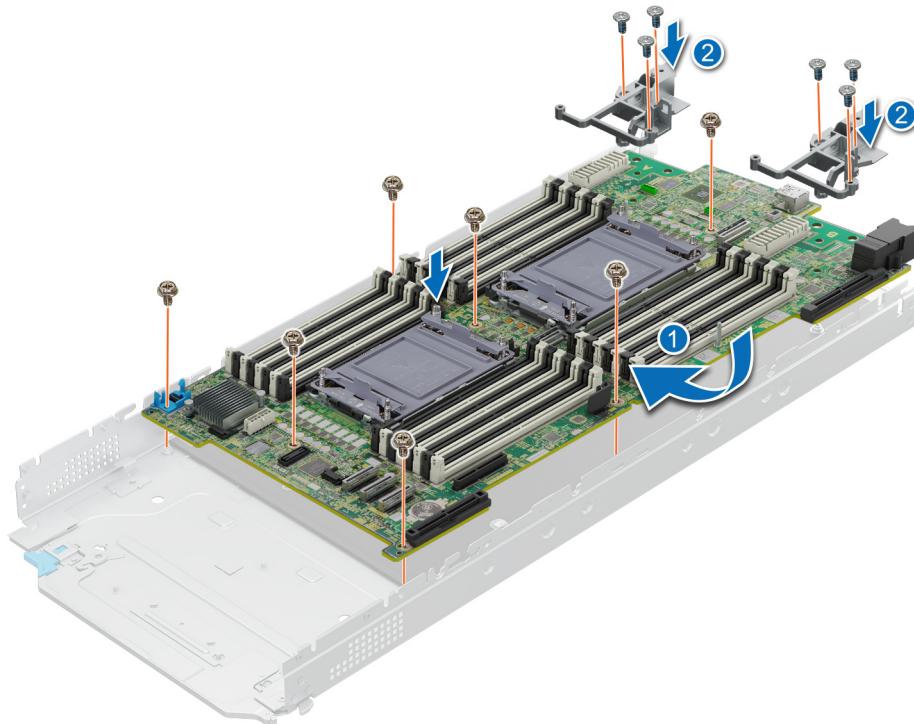


Figure 118. Installing the system board

3. Holding the Mezz card brackets by its edges, lower the brackets into the system board.
4. Using the Phillips #2 screwdriver, tighten the screws that secure the system board to the chassis.
5. Using the Phillips #2 screwdriver, tighten the screws that secure the Mezz card brackets to the system board.


Next steps


1. Replace the following components:

- a. [Trusted Platform Module\(TPM\)](#)

NOTE: The TPM Module must be replaced only while installing new system board.

- b. [Internal USB key](#)
- c. [M.2 BOSS module](#)
- d. [Mini Mezzanine](#)
- e. [Mezzanine cards](#)
- f. [PERC card](#)
- g. [Drive cage](#)
- h. [Drive backplane](#)
- i. [Drives](#)

 **NOTE:** Ensure that you reinstall the drives in their original locations.



- j. [Memory modules](#)
 - k. [Processor and heat sink module](#)
 - l. [Air shroud](#)
2. Reconnect the cables to the system board.
-  **NOTE:** Ensure that the cables inside the system are routed along the chassis wall and secured using the cable securing bracket.
3. Remove the plastic I/O connector cover from the rear of the system.
 4. Install the sled in the enclosure.
 5. Follow the procedure listed in [After working inside your system](#).
 6. Ensure that you perform the following steps:
 - a. Use the Easy Restore feature to restore the Service Tag.
 - b. If the Service Tag is not backed up in the backup flash device, enter the system service tag manually.
 - c. Update the BIOS and iDRAC versions.
 - d. Re-enable the Trusted Platform Module (TPM). See the [Upgrade the Trusted Platform Module](#) section.
 7. If you are not using Easy restore, import your new or existing iDRAC Enterprise license. For more information, see the *Integrated Dell Remote Access Controller User's Guide*, available at <https://www.dell.com/idracmanuals>.

Restoring the system using Easy Restore

The Easy Restore feature enables you to restore your service tag, license, UEFI configuration, and the system configuration data after replacing the system board. All data is backed up in a backup flash device automatically. 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.

About this task

Below is a list of options/steps available:

- Restore the service tag, license, and diagnostics information, press **Y**
- Navigate to the Lifecycle Controller based restore options, press **N**
- Restore data from a previously created **Hardware Server Profile**, press **F10**
-  **NOTE:** When the restore process is complete, BIOS prompts to restore the system configuration data.
- Restore data from a previously created **Hardware Server Profile**, press **F10**
- To restore the system configuration data, press **Y**
- To use the default configuration settings, press **N**
-  **NOTE:** After the restore process is complete, system reboots.


Manually update the Service Tag

After replacing a system board, if Easy Restore fails, follow this process to manually enter the Service Tag, using **System Setup**.

About this task

If you know the system service tag, use the **System Setup** menu to enter the service tag.

Steps

1. Power on the system.
2. To enter the **System Setup**, press **F2**.
3. Click **Service Tag Settings**.
4. 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. Once the service tag is entered, it cannot be updated or changed.
5. Click **OK**.

Trusted Platform Module

This is a service technician replaceable part only.

Upgrading the Trusted Platform Module


Removing the TPM

Prerequisites

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

NOTE:

- Ensure the operating system is compatible with the TPM version you are installing.
- Ensure that you download and install the latest BIOS firmware on your system.
- Ensure that the BIOS is configured to enable UEFI boot mode.

 **CAUTION:** The TPM plug-in module is cryptographically bound to that particular system board after it is installed. When the system is powered on, any attempt to remove an installed TPM plug-in module breaks the cryptographic binding, and the removed TPM cannot be installed on another system board. Ensure any keys you have stored on the TPM have been securely transferred.

Steps

1. Locate the TPM connector on the system board. For more information, see [system board connectors](#).
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

Prerequisites

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

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.
4. Replace the screw that secures the TPM to the system board.

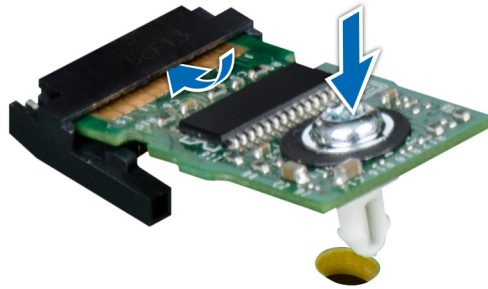


Figure 119. Installing the TPM

Initializing TPM for users

Steps

1. Initialize the TPM.
For more information, see [Initializing the TPM for users](#).
2. The **TPM Status** changes to **Enabled, Activated**.

Initializing the TPM 2.0 for 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.

Upgrade Kits

NOTE: Kit includes SATA, SAS, and PCIe cables. The cables are required based on configurations and not all cables are required for a configuration.

Table 65. Upgrade kits

Kits	Related links to service instructions
PERC H755 MX	See Installing the H755 MX card
PERC H965 MX	See Installing the H965 MX card
HBA350i MX	See Installing the HBA350i MX card

1. Identify the backplane (see column **Backplane configuration** in the table).



Figure 120. x6 universal backplane



Figure 121. x4 universal backplane



Figure 122. x6 SAS/SATA backplane

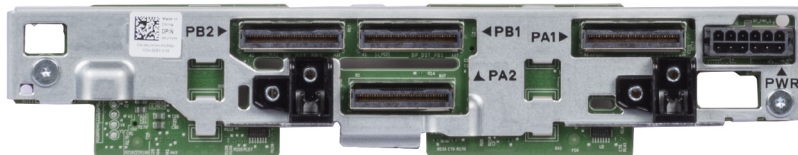


Figure 123. x8 EDSFF backplane

2. Identify the current system configuration (see column **Upgrade from** in the table) and the upgrade to configuration (see column **Upgrade to** in the table).
3. Disconnect the card or cables (see column **Disconnect and remove card or cables from the connector** in the table) and replace with the new card or cables (see column **Replace with the card or cables** in the table).
4. Setup the cables for the new configuration (see column **Refer to cabling configurations** in the table).

Topics:

- [PERC H755 MX Upgrade kit](#)
- [PERC H965 MX Upgrade kit](#)
- [HBA350i MX Upgrade kit](#)

PERC H755 MX Upgrade kit

The below table provides the upgrade kit information about PERC H755 MX available After Point of Sale (APOS):

Table 66. PERC H755 MX upgrade kit

Backplane configuration	Upgrade from:	Upgrade to:	Disconnect and remove card or cables from the connector (cable marking):	Replace with the card or cables (cable marking):	Refer to cabling configurations
X6 Universal backplane	Onboard SATA/SWRAID/NVME	H755 MX (NVME HW RAID)	<ul style="list-style-type: none"> • SATA cable (MB SL3 – BP SA1) • PCIE1 cable (MB SL1 – BP PA1) 	<ul style="list-style-type: none"> • H755 MX card • PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) • PCIEB cable (CTRL_PB1 – BP PA2) 	Cable routing > PCIe cabling diagram of configuration 2 - 6 x 2.5-inch universal backplane with H755 MX or H965i MX

Table 66. PERC H755 MX upgrade kit (continued)

Backplane configuration	Upgrade from:	Upgrade to:	Disconnect and remove card or cables from the connector (cable marking):	Replace with the card or cables (cable marking):	Refer to cabling configurations
			<ul style="list-style-type: none"> PCIE2 cable (MB SL2 – BP PB1) PCIE4 cable (MB SL4 – BP PA2) 		
X4 Universal backplane	Onboard SATA/SWRAID/NVME	H755 MX (SAS Controller)	<ul style="list-style-type: none"> SATA cable (MB SL3 – BP SA1) 	<ul style="list-style-type: none"> H755 MX card SAS cable (CTRL_SA1 – BP SA1) 	Cable routing > SAS/PCle cabling diagram of configuration 8 - 4 x 2.5-inch universal backplane with H755 MX or H965i MX
		H755 MX (NVME HW RAID)	<ul style="list-style-type: none"> SATA cable (MB SL3 – BP SA1) PCIE1 cable (MB SL1 – BP PA1) PCIE2 cable (MB SL2 – BP PB1) 	<ul style="list-style-type: none"> H755 MX card PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) 	Cable routing > SATA cabling diagram of configuration 11 - 4 x 2.5-inch universal backplane with H755 MX or H965i MX
	HBA350i MX (SAS Controller /Non-RAID)	H755 MX (SAS controller)	HBA350i MX card	H755 MX card	No cable change
		H755 MX (NVME HW RAID)	<ul style="list-style-type: none"> HBA350i MX card SAS cable (CTRL_SA1–BP SA1) 	<ul style="list-style-type: none"> H755 MX card PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) 	Cable routing > PCIe cabling diagram of configuration 11 - 4 x 2.5-inch universal backplane with H755 MX or H965i MX
X6 SAS/SATA backplane	Onboard SATA/SWRAID	H755 MX (SAS Controller)	<ul style="list-style-type: none"> SATA cable (MB SL3 – BP SA1) 	<ul style="list-style-type: none"> H755 MX card SAS cable (CTRL_SA1 – BP SA1) 	Cable routing > SAS cabling diagram of configuration 5 - 6 x 2.5-inch SAS/SATA backplane with H755 MX or H965i MX
x8 EDSFF backplane	Onboard NVME	H755 MX (NVMe)	<ul style="list-style-type: none"> PCIE1 cable (MB SL1 – BP PA1) PCIE2 cable (MB SL2 – BP PB1) PCIE4 cable (MB SL4, MB SL5 – BP PA2, BP PB2) 	<ul style="list-style-type: none"> H755 MX card PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) PCIEB cable (CTRL_PB1 – BP PA2 and BP PB2) 	Cable routing > SAS cabling diagram of configuration 14 - 8 x E3.s backplane with H755 MX or H965i MX

PERC H965 MX Upgrade kit

The below table provides the upgrade kit information about PERC H965 MX available After Point of Sale (APOS):

Table 67. PERC H965 MX upgrade kit

Backplane configuration	Upgrade from:	Upgrade to:	Disconnect and remove card or cables from the connector (cable marking):	Replace with the card or cables (cable marking):	Refer to cabling configurations
X6 Universal backplane	Onboard SATA/SWRAID/NVME	H965 MX (NVME HW RAID)	<ul style="list-style-type: none"> SATA cable (MB SL3 – BP SA1) PCI E1 cable (MB SL1 – BP PA1) PCI E2 cable (MB SL2 – BP PB1) PCI E4 cable (MB SL4 – BP PA2) 	<ul style="list-style-type: none"> H965 MX card PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) PCIEB cable (CTRL_PB1 – BP PA2) 	Cable routing > PCIe cabling diagram of configuration 2 - 6 x 2.5-inch universal backplane with H755 MX or H965i MX
X4 Universal backplane	Onboard SATA/SWRAID/NVME	H965 MX (SAS Controller)	<ul style="list-style-type: none"> SATA cable (MB SL3 – BP SA1) 	<ul style="list-style-type: none"> H965 MX card SAS cable (CTRL_SA1 – BP SA1) 	Cable routing > SAS/PCIe cabling diagram of configuration 8 - 4 x 2.5-inch universal backplane with H755 MX or H965i MX
		H965 MX (NVME HW RAID)	<ul style="list-style-type: none"> SATA cable (MB SL3 – BP SA1) PCI E1 cable (MB SL1 – BP PA1) PCI E2 cable (MB SL2 – BP PB1) 	<ul style="list-style-type: none"> H965 MX card PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) 	Cable routing > SATA cabling diagram of configuration 11 - 4 x 2.5-inch universal backplane with H755 MX or H965i MX
	HBA350i MX (SAS Controller /Non-RAID)	H965 MX (SAS controller)	HBA350i MX card	H965 MX card	No cable change
		H965 MX (NVME HW RAID)	<ul style="list-style-type: none"> HBA350i MX card SAS cable (CTRL_SA1–BP SA1) 	<ul style="list-style-type: none"> H965 MX card PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) 	Cable routing > PCIe cabling diagram of configuration 11 - 4 x 2.5-inch universal backplane with H755 MX or H965i MX
X6 SAS/SATA backplane	Onboard SATA/SWRAID	H965 MX (SAS Controller)	<ul style="list-style-type: none"> SATA cable (MB SL3 – BP SA1) 	<ul style="list-style-type: none"> H965 MX card SAS cable (CTRL_SA1 – BP SA1) 	Cable routing > SAS cabling diagram of configuration 5 - 6 x 2.5-inch SAS/SATA backplane with H755 MX or H965i MX

Table 67. PERC H965 MX upgrade kit (continued)

Backplane configuration	Upgrade from:	Upgrade to:	Disconnect and remove card or cables from the connector (cable marking):	Replace with the card or cables (cable marking):	Refer to cabling configurations
x8 EDSFF backplane	Onboard NVME	H965 MX (NVMe)	<ul style="list-style-type: none"> PCIE1 cable (MB SL1 – BP PA1) PCIE2 cable (MB SL2 – BP PB1) PCIE4 cable (MB SL4, MB SL5 – BP PA2, BP PB2) 	<ul style="list-style-type: none"> H965 MX card PCIEA cable (CTRL_PA1 – BP PA1 and BP PB1) PCIEB cable (CTRL_PB1 – BP PA2 and BP PB2) 	Cable routing > SAS cabling diagram of configuration 14 - 8 x E3.s backplane with H755 MX or H965i MX

HBA350i MX Upgrade kit

The below table provides the upgrade kit information about HBA350i MX available After Point of Sale (APOS):

Table 68. HBA350i MX upgrade kit

Backplane configuration	Upgrade from:	Upgrade to:	Disconnect and remove card or cables from the connector (cable marking):	Replace with the card or cables (cable marking):	Refer to cabling configurations
X4 Universal backplane	Onboard SATA/SWRAID/NVME	HBA350i (SAS Controller/ Non-RAID)	SATA cable (MB SL3 – BP SA1)	<ul style="list-style-type: none"> HBA350i MX card SAS cable (CTRL_SA1–BP SA1) 	Cable routing > SAS/PCle cabling diagram of configuration 7 - 4 x 2.5-inch universal backplane with HBA350i MX
X6 SAS/SATA backplane	Onboard SATA/SWRAID	HBA350i (SAS Controller/ Non-RAID)	SATA cable (MB SL3 – BP SA1)	<ul style="list-style-type: none"> HBA350i card SAS cable (CTRL_SA1–BP SA1) 	Cable routing > SAS/PCle cabling diagram of configuration 4 - 6 x 2.5-inch SAS/SATA backplane with HBA350i MX

Jumpers and connectors

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

Topics:

- System board jumpers and connectors
- System board jumper settings
- Disabling a forgotten password

System board jumpers and connectors

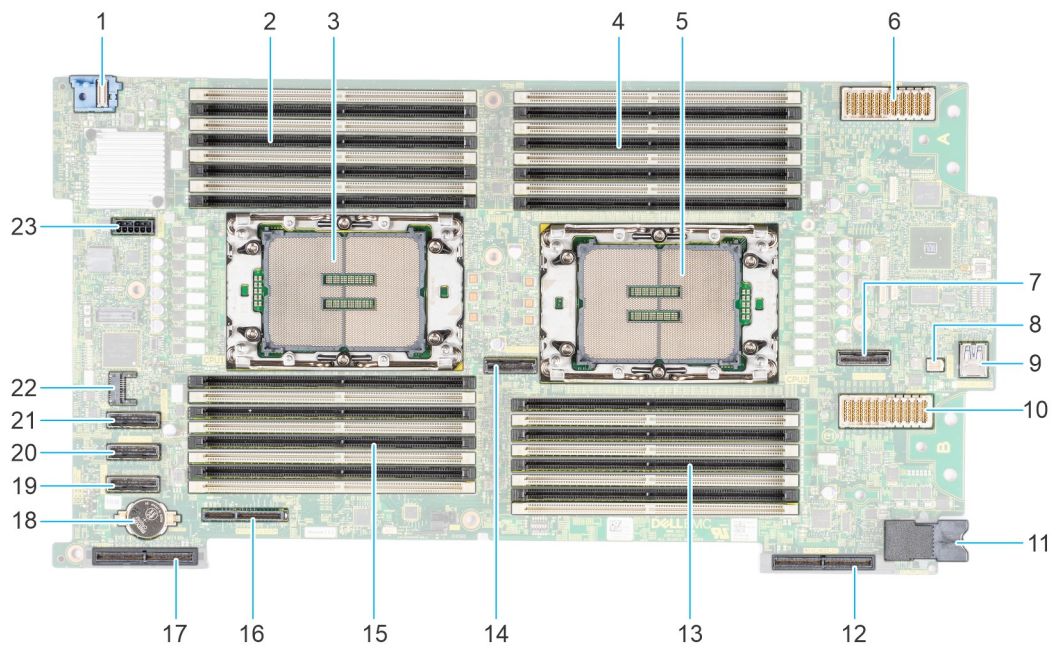






Figure 124. System board jumpers and connectors

- | | |
|--|---|
| 1. Front I/O connector | 2. DIMMs for processor 1 (CPU 1) channels E,F,G,H |
| 3. Processor 1 (CPU 1) | 4. DIMMs for processor 2 (CPU 1) channels A,B,C,D |
| 5. Processor 2 (CPU 2) | 6. MEZZ connector A (MEZZ_A1) |
| 7. PCIe connector 5 (SL5_CPU2_PB4) | 8. Leak detect connector (J_LEAK) |
| 9. Internal USB (INT_USB1_3.0) | 10. MEZZ connector B (MEZZ_B1) |
| 11. Power connector | 12. Mini Mezz connector C (MNI_MEZZ_C1) |
| 13. DIMMs for processor 2 (CPU 1) channels E,F,G,H | 14. PCIe connector 4 (SL4_CPU2_PB3) |
| 15. DIMMs for processor 1 (CPU 1) channels A,B,C,D | 16. BOSS N1 (M.2) |
| 17. PERC connector | 18. CMOS battery |
| 19. SATA connector (SL3_PCH_SA1) | 20. PCIe connector 2 (SL2_CPU1_PA2) |
| 21. PCIe connector 1 (SL1_CPU1_PB2) | 22. TPM connector |
| 23. Backplane power connector (SOG_PWR_0) | |

System board jumper settings

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

Table 69. System board jumper settings

Jumper	Setting	Description
NVRAM_CLR	 1 2 3 (default)	The BIOS configuration settings are retained at system boot.
	 1 2 3	The BIOS configuration settings are cleared at system boot.
PWRD_EN	 1 2 3 (default)	The BIOS password feature is enabled.
	 1 2 3	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.

CAUTION: You should be cautious when changing the BIOS settings. The BIOS interface is designed for advanced users. Any changes in the setting might prevent your system from starting correctly and may even result in data loss.

Disabling a forgotten password

The software security features of the system 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. Power off the compute sled and remove the compute sled from chassis.
2. Remove the system cover.
3. Move the jumper on the system board from pins 1 and 2 to pins 2 and 3.
4. Replace the system cover.
 - NOTE:** The existing passwords are not disabled (erased) until the system boots with the jumper on pins 2 and 3. However, before you assign a new system and/or setup password, you must move the jumper back to pins 1 and 2.
 - NOTE:** If you assign a new system and/or setup password with the jumper on pins 2 and 3, the system disables the new password(s) the next time it boots.
5. Insert compute sled into chassis and power on the compute sled.
6. Power off the compute sled and remove the compute sled from chassis.
7. Remove the system cover.
8. Move the jumper on the system board from pins 2 and 3 to pins 1 and 2.
9. Replace the system cover.
10. Insert compute sled into chassis and power on the compute sled.
11. 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:

- [Power button LED](#)
- [System health and system ID indicator codes](#)
- [Drive indicator codes](#)

Power button LED

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



Figure 125. Power button LED

Table 70. Power button LED

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

NOTE: When MX760c is installed in MX7000, the power button LED indicator display the status as off for one minute while the sled is initialized, even if the sled is configured to power on automatically (for example, with an AC power recovery policy of, On or Last). After one minute, if the sled is configured to power on automatically, the power button LED will start slowly blinking to indicate the system is performing the powering on sequence.

System health and system ID indicator codes

The system health and system ID indicator is located on the left control panel of the system.



Figure 126. System health and system ID indicators

Table 71. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system health and system ID button to switch to system ID mode.

Table 71. System health and system ID indicator codes (continued)

System health and system ID indicator code	Condition
Blinking blue	Indicates that the system ID mode is active. Press the system health and system ID button to switch to system health mode.
Solid amber	Indicates that the system is in fail-safe mode. If the problem persists, see the Getting help section.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log for specific error messages. For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > Look Up > Error Code , type the error code, and then click Look it up .

Drive indicator codes

The LEDs on the drive carrier indicate the state of each drive. Each drive carrier has two LEDs: an activity LED (green) and a status LED (bicolor, green/amber). The activity LED blinks whenever the drive is accessed.



Figure 127. Drive indicators

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

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

NOTE: Drive status indicator behavior is managed by Storage Spaces Direct. Not all drive status indicators may be used.

Table 72. Drive indicator codes

Drive status indicator code	Condition
Blinks green twice per second	Indicates that the drive is being identified or preparing for removal.
Not powered on	Indicates that the drive is ready for removal. NOTE: The drive status indicator remains off until all drives are initialized after the system is powered on. Drives are not ready for removal during this time.
Blinks green, amber, and then powers off	Indicates that there is an unexpected drive failure.
Blinks amber four times per second	Indicates that the drive has failed.
Blinks green slowly	Indicates that the drive is rebuilding.
Solid green	Indicates that the drive is online.
Blinks green for three seconds, amber for three seconds, and then powers off after six seconds	Indicates that the rebuild has stopped.


Using system diagnostics

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

Topics:

- [Dell Embedded System Diagnostics](#)

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 provide 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 issues 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. When the system is booting, 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 start executing the tests on all the detected devices.

System diagnostic controls

Table 73. 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:

- [Recycling or End-of-Life service information](#)
- [Contacting Dell Technologies](#)
- [Accessing system information by using QRL](#)
- [Receiving automated support with Secure Connect Gateway \(SCG\)](#)

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 and select the relevant country.

Contacting Dell Technologies

Dell provides online and telephone based support and service options. If you do not have an active internet connection, you can find Dell contact information on your purchase invoice, packing slip, bill or Dell product catalog. The availability of services varies depending on the country and product, and some services may not be available in your area. To contact Dell for sales, technical assistance, or customer service issues follow these steps:

Steps

1. Go to 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 the system Service Tag in the **Enter a Service Tag, Serial Number, Service Request, Model, or Keyword** field.
 - b. Click **Search**.
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 [Contact Technical Support](#).
 - b. The **Contact Technical Support** page is displayed with details to call, chat, or e-mail the Dell Global Technical Support team.

Accessing system information by using QRL

You can use the Quick Resource Locator (QRL) located on the information tag in the front of the MX760c system, to access information about PowerEdge MX760c. There is also another QRL for accessing product information located on the back of the system cover.

Prerequisites

Ensure that your smartphone or tablet has a QR code scanner installed.

The QRL includes the following information about your system:

- How-to videos
- Reference materials, including the Installation and Service Manual, and mechanical overview
- The system service tag to quickly access the specific hardware configuration and warranty information
- A direct link to Dell to contact technical assistance and sales teams

Steps

1. Go to 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 system or in the Quick Resource Locator section.

Quick Resource Locator for PowerEdge MX760c system



Figure 128. Quick Resource Locator for PowerEdge MX760c system

Receiving automated support with Secure Connect Gateway (SCG)

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

- Automated issue detection — Secure Connect Gateway (SCG) monitors your Dell devices and automatically detects hardware issues, both proactively and predictively.
- Automated case creation — When an issue is detected, Secure Connect Gateway (SCG) automatically opens a support case with Dell Technical Support.
- Automated diagnostic collection — Secure Connect Gateway (SCG) automatically collects system state information from your devices and uploads it securely to Dell. This information is used by Dell Technical Support to troubleshoot the issue.
- Proactive contact — A Dell Technical Support agent contacts you about the support case and helps you resolve the issue.

The available benefits vary depending on the Dell Service entitlement purchased for your device. For more information about Secure Connect Gateway (SCG), go to www.dell.com/secureconnectgateway.

Documentation resources

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

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


- From the Dell 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 model number, see the front of your system.
- 3. On the Product Support page, click **Documentation**.
- Using search engines:
 - Type the name and version of the document in the search box.

Table 74. Additional documentation resources for your system

Task	Document	Location
Setting up your system	For information about setting up your system, see the <i>Getting Started Guide</i> document that is shipped with your system.	www.dell.com/poweredgemanuals
Configuring your system	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.	www.dell.com/poweredgemanuals
	For information about understanding Remote Access Controller Admin (RACADM) subcommands and supported RACADM interfaces, see the RACADM CLI Guide for iDRAC.	
	For information about Redfish and its protocol, supported schema, and Redfish Eventing implemented in iDRAC, see the Redfish API Guide.	
	For information about iDRAC property database group and object descriptions, see the Attribute Registry Guide.	
	For information about Intel QuickAssist Technology, see the Integrated Dell Remote Access Controller User's Guide.	
	For information about earlier versions of the iDRAC documents.	www.dell.com/idracmanuals
	To identify the version of iDRAC available on your system, on the iDRAC web interface, click ? > About .	
	For information about installing the operating system, see the operating system documentation.	www.dell.com/operatingsystemmanuals
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	www.dell.com/support/drivers

Table 74. Additional documentation resources for your system (continued)

Task	Document	Location
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	www.dell.com/poweredgemanuals
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	www.dell.com/openmanagemanuals > OpenManage Server Administrator
	For information about installing and using Dell Secure Connect Gateway, see the Dell Secure Connect Gateway Enterprise User's Guide.	https://www.dell.com/serviceabilitytools
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	www.dell.com/openmanagemanuals
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.	www.dell.com/storagecontrollermanuals
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 qrl.dell.com > Look Up > Error Code , type the error code, and then click Look it up .	www.dell.com/qrl
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	www.dell.com/poweredgemanuals